PRODUCTS FAMILY DECLARATION FOR OUTDOOR STATION OF ABB

PRODUCT ENVIRONMENTAL PROFILE

Environmental Product Declaration

ORGANIZATION	WEBSITE
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ABB Purpose & Embedding Sustainability

ABB is demonstrating their commitment to sustainability by making themselves sustainable. Across their own operations and value chain, aspiring to become a role model for others to follow. With **ABB Purpose** ABB is focusing on reducing harmful emissions, preserving natural resources, and championing ethical and humane behavior to achieve this. Detail info see the website: Sustainability strategy 2030 — ABB Group (global.abb)

General Information

Reference product	The refence product is one unit of outdoor station produced by ABB, the representative product is H81383K-S (SAP Number: 2TMA130010X0037).
Description of the product	The Video outdoor station is an important component of the wire bus door entry system produced by ABB Xiamen. It uses video, audio and screen, transponder, keypad and/or key button as the ending device for the communication with IP panel, guard unit or property management.
Functional unit of the representative product	To provide effective communication between visitors (outdoor) and residents (indoor) over a reference lifetime of 10 years through the cooperation amount the outdoor video station and indoor devices of the door entry system.
Products concerned	The visitors can achieve the communication with the residents in the building through the key button. The products covered by this PEP are: H81381P1-S (2TMA130010X0001), H81381P1-W (2TMA130010W0021), H81381P1-S-03 (2TMA130010X0019), H81381P1-W-03 (2TMA130010W0023), H81381P2-S (2TMA130010X0002), H81381P2-W (2TMA130010W0025), H81381P2-S-03 (2TMA130010X0020), H81381P2-W-03 (2TMA130010W0027), H81381P3-S (2TMA130010X0003), H81381P3-W (2TMA130010W0029), H81381P3-S-03 (2TMA130010X0021), H81381P3-W-03 (2TMA130010W0031), H81383K-S (2TMA130010X0037), H81384K-S (2TMA130010X0038), H81381K-W (2TMA130010W0033), H81382K-W (2TMA130010W0037), H81383K-S-03 (2TMA130010X0043), H81384K-S-03 (2TMA130010X0044), H81381K-W-03 (2TMA130010W0035), H81382K-W-03 (2TMA130010W0039), A21051P1-A-03 (2TMA200010A0001), A21051P1-A-04 (2TMA220010A0001), A21051P2-A-03 (2TMA200010A0002), A21051P2-A-04 (2TMA220010A0002), A21051P3-A-03 (2TMA200010A0003), A21051P3-A-04 (2TMA220010A0003), A21381P1-S-03 (2TMA200010X0003), A21381P1-S-04 (2TMA220010X0001), A21381P2-S-03 (2TMA200010X0004), A21381P2-S-04 (2TMA220010X0002), A21381P3-S-03 (2TMA200010X0005), A21381P3-S-04 (2TMA220010X0003), M21382K-A (2TMA210010A0053), 51383CR (2TMA210160N0014).

Constituent materials

Total weight of Reference product	Net weight of the product is 1.45 kg. The total weight of packaged product is 1.92 kg (including product packaging and transportation packaging).

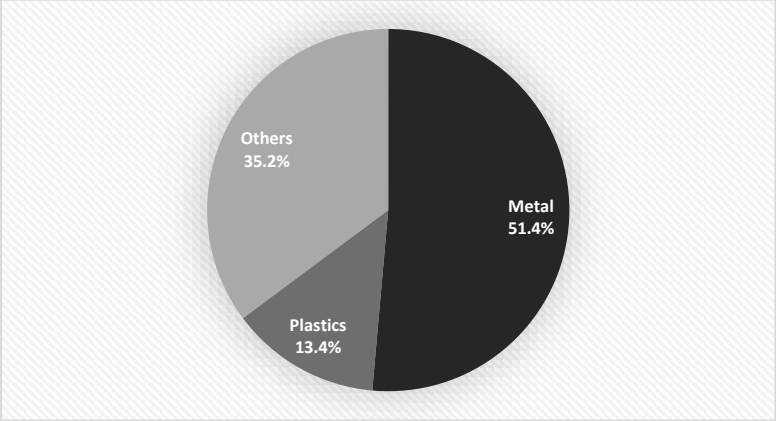

Figure 1 Constituent materials of the reference product (2TMA130010X0037 outdoor station)

Table 1 Information on mass of reference product and its packaging

Components	2TMA130010X0037	Product weight, incl. product pack (kg)	Product weight, incl. product pack and transportation pack (kg)
Product (kg)	1.45	1.90	1.92
Product packaging (kg)	0.45		
Transportation packaging (kg)	0.02		

Detailed constituent materials of the reference product were shown in Figure 1 and then listed in Table 2.

Table 2 Materials distribution of the reference product

Plastics as % of weight		Metals as % of weight		Paper as % of weight		Other as % of weight	
Name and CAS number	Weight-%	Name and CAS number	Weight-%	Name and CAS number	Weight-%	Name and CAS number	Weight-%
PC	9.7%	316 stainless steel	42.2%	Corrugated board	20.2%	Electronic parts	12.1%
PA66, GF filled	1.0%	Aluminum alloy	5.1%	Print paper	2.5%	Ceramics	0.1%
PE	0.8%	Carbon steel	1.9%	Folding boxboard carton	0.2%	Others	<0.1%
Silicon rubber	0.6%	304 stainless steel	2.1%				
PA66	0.4%	Copper	0.1%				
ABS	0.3%						
PU foam	0.4%						
EPDM foam	0.2%						

Environmental impacts

Reference lifetime		10 years
Product category		Outdoor station. According to the Specific rules for electrical switchgear and control gear Solutions (PSR-0005-ed3-EN-2023 06 06), the product is covered by other equipment - Category 2: active products.

Installation elements		The product is installed manually. There is no input of materials / accessories and energy during the installation. The main environmental impact was caused by the waste generated in this stage.
Use scenario		The reference product is used in Finland, Hungary and Italy using low voltage electricity.
Geographical representativeness		The studied product is produced in China but used in Finland, Hungary, and Italy.
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 3.8 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.
Software and databases used		Simapro version 9.4.04 & databases ecoinvent 3.8 & EF3.0
Standards applied in ABB		ABB had used many recycling materials, e.g., plastic and metal. The products' standards applied include: EN 62368-1:2014/A11:2017 EN IC 61000-6-1:2019 EN 61000-6-3:2007/A1:2011

Energy model used	**Manufacturing**	**Distribution**	**Installation**	**Use**	**End of life**
	Average electricity mix in China	Non-applicable	Non-applicable	Finland, Hungary, Italy	Global

Table 3 Environmental impact indicators of life cycle Impact assessment

Compulsory Indicators

Impact indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life
Climate change	kg CO2 eq	2.10E+02	3.91E+01	1.28E+01	7.43E-01	1.56E+02	1.36E+00
Climate change - Fossil	kg CO2 eq	2.03E+02	3.90E+01	1.28E+01	5.87E-02	1.50E+02	1.36E+00
Climate change - Biogenic	kg CO2 eq	5.52E+00	8.56E-02	4.10E-03	6.85E-01	4.75E+00	3.73E-03
Climate change - Land use and LU change	kg CO2 eq	6.05E-01	5.88E-02	7.92E-04	8.38E-06	5.45E-01	4.60E-04
Ozone depletion	kg CFC11 eq	1.79E-05	2.01E-06	2.90E-06	2.99E-09	1.29E-05	9.19E-08
Acidification	mol H+ eq	1.08E+00	2.60E-01	6.65E-02	1.61E-04	7.44E-01	1.11E-02
Eutrophication, freshwater	kg P eq	1.36E-01	3.22E-02	1.66E-04	2.40E-06	1.03E-01	2.60E-04
Eutrophication, marine	kg N eq	2.12E-01	5.20E-02	2.44E-02	7.60E-05	1.28E-01	6.79E-03
Eutrophication, terrestrial	mol N eq	2.01E+00	5.08E-01	2.67E-01	6.83E-04	1.23E+00	9.04E-03
Photochemical ozone formation	kg NMVOC eq	5.62E-01	1.50E-01	6.90E-02	1.74E-04	3.39E-01	3.00E-03
Resource use, minerals and metals	kg Sb eq	9.72E-03	8.21E-03	3.79E-06	6.78E-08	1.49E-03	1.46E-05
Resource use, fossils	MJ	4.33E+03	4.56E+02	1.79E+02	2.20E-01	3.69E+03	8.97E+00
Water use	m3 depriv.	7.14E+01	1.04E+01	1.22E-01	1.82E-02	6.05E+01	3.98E-01

Note: the recycled content and the scrape rates of raw materials of the products and products' packaging are adjusted to 0% and 30% respectively according to the PSR.

Table 4 Resource use indicators of life cycle Impact assessment

Compulsory Indicators

Resource use indicators	Unit	Total	Manufac-turing	Distribu-tion	Installa-tion	Use	End of life
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	7.93E+02	5.99E+01	5.46E-01	5.52E-03	7.32E+02	7.66E-01
Use of renewable primary energy resources as raw materials	MJ	5.76E+00	5.76E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	7.99E+02	6.57E+01	5.46E-01	5.52E-03	7.32E+02	7.66E-01
Use of non-renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	4.30E+03	4.47E+02	1.79E+02	2.20E-01	3.67E+03	8.97E+00
Use of non-renewable primary energy resources as raw materials	MJ	8.22E+00	8.22E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	4.31E+03	4.55E+02	1.79E+02	2.20E-01	3.67E+03	8.97E+00
Use of secondary materials	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Freshwater	m3	3.19E+00	3.24E-01	5.23E-03	6.06E-04	2.85E+00	1.07E-02

Table 5 Waste category indicators of life cycle Impact assessment

Compulsory Indicators

Waste category indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life
Hazardous waste disposed	kg	9.11E-03	5.44E-03	4.77E-04	5.37E-07	2.58E-03	6.05E-04
Non-hazardous waste disposed	kg	2.55E+01	1.07E+01	3.56E-01	4.65E-01	1.12E+01	2.81E+00
Radioactive waste disposed	kg	3.24E-02	1.06E-03	1.27E-03	9.95E-07	3.00E-02	4.73E-05

Table 6 Output flow indicators

Compulsory Indicators

Output flow indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	7.75E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.75E-01
Materials for energy recovery	kg	1.19E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-01
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Note: The recovery of materials for materials and energy was calculated according to Annex D of the PCR.

Biogenic Carbon of product and packaging

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.

Table 7 Amount of biogenic carbon of product and packaging

Item	Unit (kg of C)	Total
Biogenic carbon content of the product	0.00E+00	0.00E+00
Biogenic carbon content of the associated packaging	1.86E-01	1.86E-01

Extrapolation to a homogeneous environmental family

To determine the environmental impact of a product covered by the PEP other than the representative product, the following rules apply:

1) Manufacturing stage

The impact for this phase of a product covered by the PEP other than the representative product is proportional to weight of the product, thus, the impacts should be calculated by multiple the coefficients factor_1 in Table 8 by the environmental impact for this phase of the representative product.

2) Distribution

The impact for this phase of a product covered by the PEP other than the representative product is proportional to the packaged product weight, thus, the impacts should be calculated by multiple the coefficients factor_2 in Table 8 by the environmental impact for those phases of the representative product.

3) Installation

The impact for this phase of a product covered by the PEP other than the representative product is proportional to weight of the product packaging, thus, the impacts should be calculated by multiple the coefficients factor_3 in Table 8 by the environmental impact for those phases of the representative product.

4) Use

The environmental impact for B1-B6 stage of a product covered by the PEP other than the representative product should be calculated by multiple the factor_4 in Table 8 by the environmental impact for this phase of the representative product.

5) End of life phases

The impacts of the representing product from the end-of-life are less than 2% of the total impact. However, the impact for this phase of a product covered by the PEP other than the representative product is calculated by multiple the coefficients factor_1 in Table 8 by the environmental impact for this phase of the representative product.

Table 8 Extrapolation rules for the homogeneous family products

SAP Number	Article Number	Factor_1	Factor_2	Factor_3	Factor_4
2TMA130010W0021	H81381P1-W	0.53	0.64	1.00	0.71
2TMA130010W0023	H81381P1-W-03	0.53	0.64	1.00	0.71
2TMA130010W0025	H81381P2-W	0.53	0.64	1.00	0.72
2TMA130010W0027	H81381P2-W-03	0.53	0.64	1.00	0.72
2TMA130010W0029	H81381P3-W	0.53	0.64	1.00	0.72
2TMA130010W0031	H81381P3-W-03	0.53	0.64	1.00	0.72
2TMA130010W0033	H81381K-W	0.67	0.78	1.15	1.00
2TMA130010W0035	H81381K-W-03	0.67	0.78	1.15	1.00
2TMA130010W0037	H81382K-W	0.67	0.78	1.15	1.00
2TMA130010W0039	H81382K-W-03	0.67	0.78	1.15	1.00
2TMA130010X0001	H81381P1-S	0.81	0.86	1.00	0.71
2TMA130010X0002	H81381P2-S	0.81	0.86	1.00	0.72
2TMA130010X0003	H81381P3-S	0.81	0.86	1.00	0.72
2TMA130010X0019	H81381P1-S-03	0.81	0.86	1.00	0.71
2TMA130010X0020	H81381P2-S-03	0.81	0.86	1.00	0.72
2TMA130010X0021	H81381P3-S-03	0.81	0.86	1.00	0.72
2TMA130010X0037	H81383K-S	1.00	1.00	1.00	1.00
2TMA130010X0038	H81384K-S	1.00	1.04	1.15	1.00
2TMA130010X0043	H81383K-S-03	1.00	1.04	1.15	1.00
2TMA130010X0044	H81384K-S-03	1.00	1.04	1.15	1.00
2TMA200010A0001	A21051P1-A-03	0.35	0.50	0.97	0.07
2TMA200010A0002	A21051P2-A-03	0.35	0.50	0.97	0.07
2TMA200010A0003	A21051P3-A-03	0.35	0.50	0.97	0.07

2TMA200010X0003	A21381P1-S-03	0.91	0.85	0.63	0.23
2TMA200010X0004	A21381P2-S-03	0.80	0.84	1.00	0.23
2TMA200010X0005	A21381P3-S-03	0.80	0.85	1.00	0.23
2TMA210010A0053	M21382K-A	0.56	0.70	1.18	0.49
2TMA210160N0014	51383CR	0.08	0.09	0.14	0.20
2TMA220010A0001	A21051P1-A-04	0.35	0.50	0.99	0.07
2TMA220010A0002	A21051P2-A-04	0.35	0.50	0.99	0.07
2TMA220010A0003	A21051P3-A-04	0.35	0.50	0.99	0.07
2TMA220010X0001	A21381P1-S-04	0.80	0.85	1.00	0.23
2TMA220010X0002	A21381P2-S-04	0.80	0.84	1.00	0.23
2TMA220010X0003	A21381P3-S-04	0.80	0.85	1.00	0.23

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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 or EN 50693:2019 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"	