Product ID: 3BSE078774R1

Environmental Product Declaration for Select I/O group

EPD type III in accordance with ISO 14025:2006 and EN 50693:2020

Program	The International EPD® System, www.environdec.com
Program operator	EPD International AB
EPD registration number	EPD-IES-0028164:001
Version date	2026-02-10
Validity date	2031-02-10
Product Category Rules (PCR)	Electronic and electrical equipment, and electronic components (non-construction), 2024:06, version 1.0.1
The EPD covers multiple products	DIS850, AIS810, AIS815, AIS830, AIS850, AIS880, AIS885, AIS890, AOS810, AOS850, AOS880, DIS801, DIS810, DIS820, DIS821, DIS880, DIS890, DOS801, DOS810, DOS820, DOS880, DOS885, GFS810, GIS810, GIS880

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication on www.environdec.com.

EPD
INTERNATIONAL EPD SYSTEM

START

Company information

ABB is a global technology leader in electrification and automation, enabling a more sustainable and resource-efficient future. By connecting its engineering and digitalization expertise, ABB helps industries run at high performance, while becoming more efficient, productive and sustainable so they outperform. At ABB, we call this ‘Engineered to Outrun’. The company has over 140 years of history and around 110,000 employees worldwide.

Our Automation business offers a range of solutions for process and hybrid industries, including control technologies. Based on its deep domain knowledge, experience and expertise in delivering world-class automation products, systems and solutions, a wide area of complimenting digital and collaborative solutions across applications and sectors, the Automation business helps customers remain competitive, improving their ROI and running safe and productive operations.

Owner of the EPD	ABB Automation
Name and location of production site	Sieradz, Poland
Contact	ch-papcp.communications@abb.com

ABB Sustainability

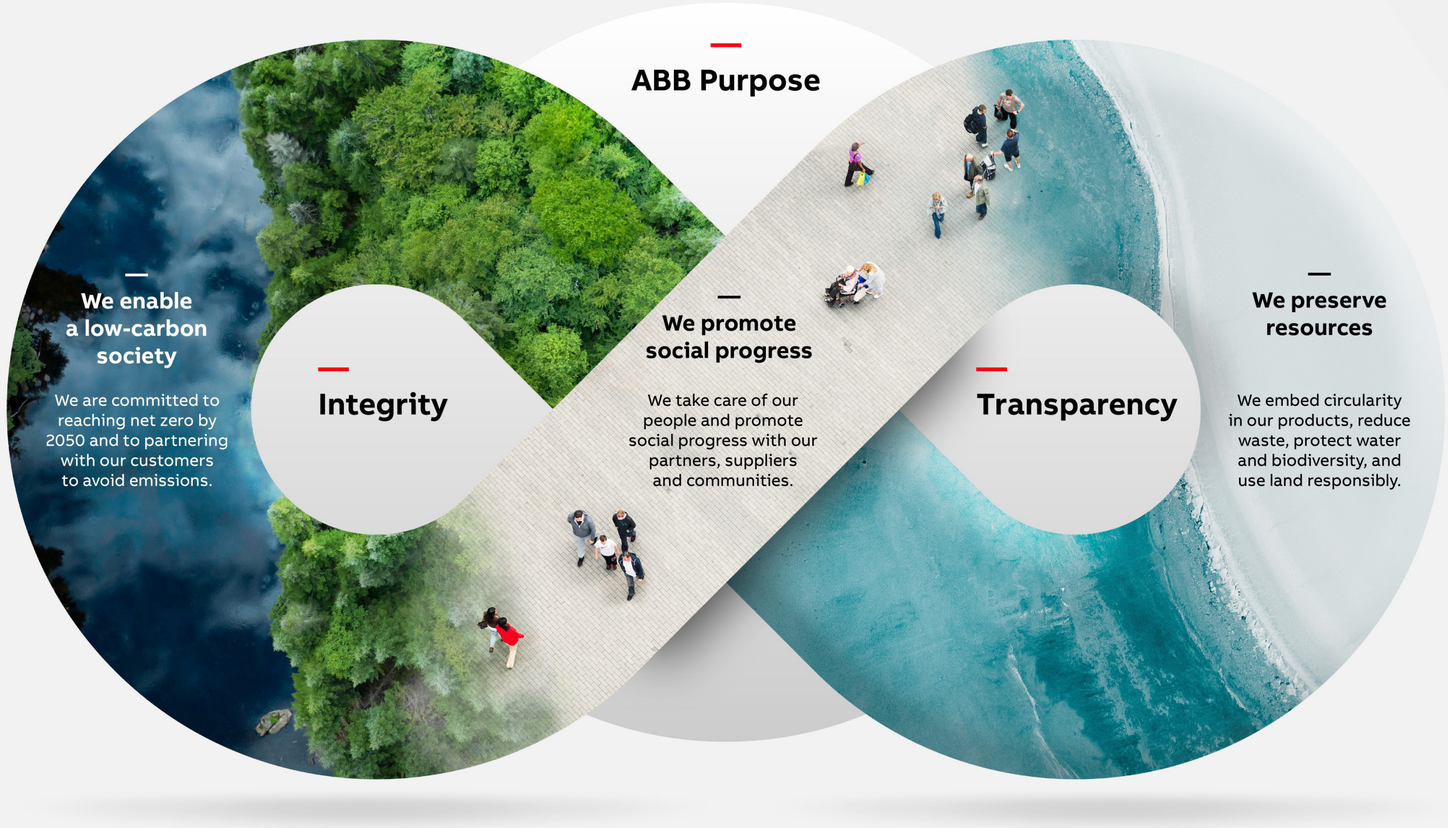
ABB is at the core of accelerating the energy transition. Every day, we empower customers across the globe to optimize, electrify and decarbonize their operations.

Our Sustainability Agenda is fully in line with this mission. Guided by recognized best-practice standards and guidance, and embedded across our business, it aims to enable a low-carbon society, preserve resources and promote social progress for a net-zero future. Our actions are underpinned by our culture of integrity and transparency, extending across our value chain.

We believe in an inclusive energy transition to a net-zero future, with lifted-up communities, workers and societies. We respect and promote human rights and dignity, and strive to create safe, fair, and inclusive working environments where our people can thrive.

To preserve the earth's resources for future generations, we are moving to circular business models that eliminate waste and keep products and materials in use. Our Circularity Approach covers all stages of the product life cycle, from design and sourcing, through production and use, all the way to responsible end-of-life services.

To enable a low-carbon society, we are taking action across our value chain. With our technologies, we empower customers to avoid emissions and ramp up renewables. To cut our own greenhouse gas emissions, we follow targets that are aligned with the Net-Zero Standard of the Science Based Targets initiative (SBTi).



Product information

I/O Systems - Select I/O

The product group covered by this EPD consists of selected Select I/O modules that function as an Ethernet networked, single channel granular I/O system for the ABB Ability™ System 800xA automation platform. Select I/O helps decouple project tasks, minimizes the impact of late changes, and supports standardization of I/O cabinetry ensuring automation projects are delivered on time and under budget.

A Signal Conditioning Module (SCM) performs the necessary signal conditioning and powering of the connected field device for one I/O channel.

Product identification:	DIS850
Other products covered in this EPD	AIS810, AIS815, AIS830, AIS850, AIS880, AIS885, AIS890, AOS810, AOS850, AOS880, DIS801, DIS810, DIS820, DIS821, DIS880, DIS890, DOS801, DOS810, DOS820, DOS880, DOS885, GFS810, GIS810, GIS880
UN CPC code	UN CPC 482
Geographical cope	Europe is considered for the use phase
Energy mix	Low voltage electricity mix for Europe (from ecoinvent 3.11; emission factor is 0.34 kg CO_2-eq/kWh.)
Standards	G3 compliant to ISA 71.04, IP20 according to IEC/EN 61131-2, EMC, Marine certified, RoHS, REACH and WEEE compliant.

LCA information

Data quality, allocation rules and cut-off criteria

Data quality, allocation rules and cut-off criteria

The data used comprises both primary and secondary sources. Primary data related to the production of Select I/O module DIS850 are obtained from EMS facilities, reflecting production conditions and practices in Sieradz, Poland, in 2024.

Secondary data for manufacturing component processes represent regional and global averages from the Ecoinvent v3.11 database, available in the Simapro 10.2.0.1 software. Background data for product components is sourced from the bill of materials and data sheets for Select I/O DIS850 available in ABB's data management system in 2025. Special attention is given to accurately modeling processes such as electronic component manufacturing and printed circuit board (PCB) assembly to reflect current industrial practices.

An activity-based allocation method is used to calculate the energy, resource use, and waste associated with the manufacturing stage. Because the EMS facility produces many different electronic products, only a proportional share of the total environmental impact is assigned to the studied product. The allocation is based on the actual production time of each work center and the typical energy consumption of the machines used. This ensures that the calculated impacts reflect the real manufacturing activities related to the product.

Allocation rules have been applied to calculate the share of resources and waste attributed to the ABB warehouse based on the quantity of the product.

A 1% cut-off threshold has been applied in this study. This means that the included inventory data collectively account for at least 99% of the results across all environmental impact categories, 99% of the total product mass, and 99% of the energy use throughout the product life cycle. Additionally, as mandated by the PCR, certain materials, electronic components, and processes such as PCBA (Printed Circuit Board Assembly) are excluded from any cut-off criteria, regardless of their contribution.

LCA information

Functional unit, Use stage and System boundaries

Functional unit

The functional unit of this study is defined as the provision of signal conditioning, communication, and control interface functions for one field device channel by a Select I/O module within the ABB Ability™ System 800xA automation platform, over a 25-year product lifespan. This functional unit serves as a standardized measure for assessing the environmental impacts of the product. Since no complementary PCR (c-PCR), or Product Specific Rule (PSR) exists for industrial process modules, a Reference Service Life (RSL) could not be established from standardized guidelines. Instead, the product lifespan has been used to define the functional unit, ensuring consistency with the goal and scope of the study.

Use stage

Select I/O modules are employed across a wide range of facilities and industries, with their power consumption varying based on the specific applications they support. These modules are designed for continuous operation, running 24 hours a day. For this study, the power consumption is based on data provided in ABB's product manuals available on ABB's website. The average electricity consumption of DIS850, the representative product of the group is 0.4 W.

System boundaries

This EPD adopts a cradle-to-grave approach, covering the following life cycle stages:

Manufacturing - This stage includes the extraction and processing of raw materials such as metals and plastics, as well as manufacturing PCBs and all the components mounted on them. It covers the energy and resources consumed in raw material extraction, intermediate product manufacturing, transportation to the assembly facilities and to the ABB warehouse, and all the warehousing processes. Specific data covers the assembly, testing, and packaging of the modules, including energy and material consumption per unit and waste generation. The electricity mix for production processes is based on Poland's residual mix, using the ecoinvent dataset "Electricity, medium voltage {PL} | electricity, medium voltage, residual mix | Cut-off, U."

Distribution - This stage addresses the environmental impacts associated with transporting the final product from the ABB warehouse to end users. This includes fuel consumption and emissions during the transit. The products are transported within Europe using generic data from EN50693, which assumes an average intracontinental transport distance of 3,500 km by a EURO6 diesel lorry with a 16–32 metric ton capacity.

Use and Maintenance - This stage focuses on the electricity consumption of a Select I/O module during its operational life and any maintenance requirements. Low voltage electricity mix for Europe as an ecoinvent process is chosen for this stage. No maintenance is required during the product's lifetime. Installation and de-installation are not considered relevant for this product system, as these processes are negligible in terms of environmental impacts. Therefore, they are excluded from the LCA.

End-of-Life - The end-of-life scenario follows IEC/TR 62635 recyclability rates for electronics. Non-recyclable materials are assumed to be treated as a mix of incineration and landfill. No potential benefits from material or energy recovery are declared in this study. Accordingly, the rules of EN 50693 Annex G, Section G.2 have been applied.

LCA information

Raw materials extraction
- Metals, Polymers, etc.

Processing of materials
- Producing components
- Transportation to the EMS

Manufacturing and Assembly
- Component soldering
- PCB mounting
- Module integration
- Testing
- Packaging
- Transportation from EMS to the warehouse
- Warehousing processes

Manufacturing

Transportation
- Transportation from the warehouse to customers

Distribution

Operation
- Energy consumption during use

Use and Maintenance

Recycling
- Disassembly and material recovery

Disposal
- Landfill
- Incineration

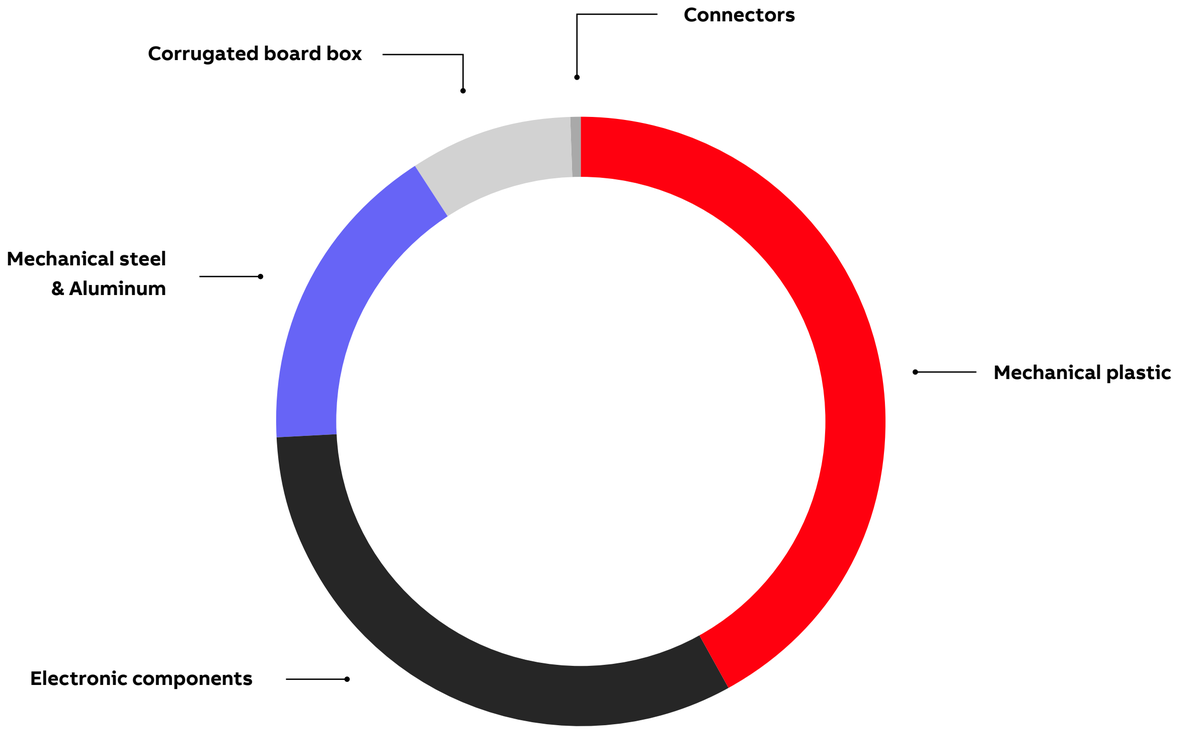
End-of-Life

Content declaration

Product with packaging

Based on content of the representative product in this EPD

Materials	DIS850	Percentage
Mechanical steel & Aluminum	12.82 g	16.61%
Mechanical plastic	32.40 g	41.97%
Connectors	0.27 g	0.35%
Electronic components	24.93 g	32.30%
Corrugated board box*	6.77 g	8.77%
Total weight	**77.20 g**	



The product contains substances from the SVHC list. For the latest updated details please check the SCIP database.

DIS850 Id: d454b2af-8062-4b5c-82d6-8032204b43b5

* ≈99% biogenic content

Environmental performance

Potential environmental impact

The environmental performance indicators follow Version 3.0, based on EN 15804:2012+A2:2019/AC:2021, including mandatory indicators and GWP-GHG. The assessment method used is EN 15804+A2.

Impact Category		Unit	Manufacturing	Distribution	Use and Maintenance	End of Life	Total
Global Warming Potential (GWP)	**Biogenic**	kg CO2 eq	-5.98E-02	2.92E-05	9.36E-01	1.19E-02	**8.88E-01**
	Fossil	kg CO2 eq	5.09E+00	6.37E-02	2.88E+01	4.55E-02	**3.40E+01**
	Land use and land use change	kg CO2 eq	5.06E-03	1.99E-05	8.50E-02	1.32E-05	**9.01E-02**
	TOTAL	kg CO2 eq	**5.04E+00**	**6.37E-02**	**2.98E+01**	**5.75E-02**	**3.50E+01**
Acidification potential (AP)		mol H+ eq	7.23E-02	1.29E-04	1.66E-01	6.80E-05	**2.38E-01**
Eutrophication potential (EP)	**Aquatic marine**	kg N eq	5.88E-03	3.06E-05	2.64E-02	3.18E-05	**3.24E-02**
	Aquatic freshwater	kg P eq	3.52E-03	4.28E-06	2.77E-02	1.34E-05	**3.12E-02**
	Aquatic terrestrial	mol N eq	6.46E-02	3.30E-04	2.34E-01	1.67E-04	**2.99E-01**
Ozone depletion potential (ODP)		kg CFC11 eq	1.14E-07	1.40E-09	5.41E-07	6.97E-10	**6.57E-07**
Photochemical oxidant creation potential (POCP)		kg NMVOC eq	2.10E-02	2.07E-04	7.49E-02	6.54E-05	**9.62E-02**
Abiotic depletion potential (ADP)	**Fossil resources**	MJ	6.26E+01	8.98E-01	6.64E+02	2.32E-01	**7.28E+02**
	Minerals and Metals (non-fossil resources)	kg Sb eq	5.71E-04	2.17E-07	3.89E-04	6.35E-08	**9.60E-04**
Water deprivation potential (WDP)		m3 depriv.	8.41E-01	3.19E-03	6.99E+00	7.95E-04	**7.83E+00**

Environmental performance

GWP-GHG

Indicator	Unit	Manufacturing	Distribution	Use an Maintenance	End of Life	TOTAL
GWP - GHG	kg CO2 eq	5.13E+00	6.37E-02	2.90E+01	5.50E-02	**3.42E+01**
Share of specific data		60.00%				

- The GWP-GHG indicator accounts for all greenhouse gases included in GWP-total, except for biogenic carbon dioxide uptake, biogenic CO_2 emissions, and biogenic carbon stored in the product.
- The share of specific data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more specific data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories

Environmental performance

Use of resources in functional unit [MJ, net calorific value]

Parameter		Manufacturing	Distribution	Use and Maintenance	End of Life	Total
Primary energy resources – Renewable	Use as energy carrier	3.97E+00	1.64E-02	1.79E+02	9.18E-03	**1.83E+02**
	Use as raw material	2.83E+00	0.00E+00	0.00E+00	0.00E+00	**2.83E+00**
	TOTAL	**6.80E+00**	**1.64E-02**	**1.79E+02**	**9.18E-03**	**1.86E+02**
Primary energy resources – Non-renewable	Use as energy carrier	5.95E+01	9.54E-01	6.92E+02	2.48E-01	**7.52E+02**
	Use as raw material	7.38E+00	0.00E+00	0.00E+00	0.00E+00	**7.38E+00**
	TOTAL	**6.69E+01**	**9.54E-01**	**6.92E+02**	**2.48E-01**	**7.60E+02**

Environmental performance

Extrapolation factors for other modules in the group

According to the PCR for electronics and EN 50693, the twenty five Select I/O modules in this group are treated as a homogeneous product family. They share similar hardware design, materials, and manufacturing processes, differing mainly in protocol or application-specific functions. DIS850 has been chosen as the representative product, as it has the highest revenue share among all group members. An extrapolation method has been applied to extend the results to the entire group.

To ensure the validity of this approach, an analysis is performed for each life cycle stage of the representative product (DIS850). This analysis identified the most influential parameters impacting the environmental categories.

Using these parameters, extrapolation factors have been defined, with the DIS850 serving as the reference product.

For information regarding SVHCs please check the product entry in the SCIP database.

AIS810 ID: 3e020ff7-2833-4400-abda-58478bdffef4
AIS850 ID: 47661326-ad4e-4f6c-b789-f7a613abf4ec
AIS880 ID: 448f935f-697b-4e36-ad2e-f37208e6047f
AIS885 ID: 8664cde4-3afe-4159-a23f-dd492b57eae3
AIS890 ID: 4c374c17-87dc-4dff-b584-80f316ed56d6
AOS810 ID: b50b8fb4-8bda-4614-8260-d22cc63a9f24
AOS850 ID: bf7694f0-6962-465a-a048-82d3d0187d10
AOS880 ID: 9c3f5cab-906d-4bfa-a0ba-23eb31a3e841
DIS801 ID: 1f02c429-e7fc-494a-84d2-ad6056603bb1
DIS810 ID: 98132437-5efa-4e04-8ed3-1a7333132284
DIS880 ID: f026ff54-811a-4cd0-af94-8394cc875ebf
DIS890 ID: 289f1014-c78b-43de-bb9b-b3b9dadb44dd
DOS801 ID: a87628e8-2eb5-42b6-b906-42613366057a
DOS810 ID: ce149c63-7621-4fd8-ba16-0bf56aafe04f
DOS880 ID: fc6c5439-91db-4a78-8c45-39eec4050e98
DOS885 ID: ad696363-5565-4738-bc45-424615df3c97
GFS810 ID: 8f2b2510-0859-42ca-8ea5-7a72e3ebecb3
GIS810 ID: 754d1808-d129-4268-8097-bb7c438ebc4d
GIS880 ID: 993f4828-473e-4cd4-9d75-7a728eba9521

LCA stages	Manufacturing	Distribution	Use	End of Life
Influential parameters	PCBA weight	Yearly Average Inventory	Power consumption	Total weight

Controller	Manufacturing	Distribution	Use	End of Life
DIS850	1.00	1.00	1.00	1.00
AIS810	1.06	3.83	1.55	1.03
AIS815	1.01	0.24	1.58	1.00
AIS830	0.63	0.19	1.00	0.74
AIS850	1.11	0.58	1.53	1.03
AIS880	1.03	1.07	1.55	1.02
AIS885	1.05	0.29	1.63	1.03
AIS890	1.10	0.20	1.58	1.04
AOS810	1.00	1.48	1.50	1.02
AOS850	1.04	0.29	1.75	1.02
AOS880	1.03	0.13	1.50	1.02
DIS801	0.68	1.84	1.13	0.75
DIS810	0.98	4.85	1.38	1.00
DIS820	0.79	0.23	1.25	0.81
DIS821	0.77	0.13	1.25	0.81

Environmental performance

Extrapolation factors for other modules in the group

LCA stages	Manufacturing	Distribution	Use	End of Life
Influential parameters	PCBA weight	Yearly Average Inventory	Power consumption	Total weight

Controller	Manufacturing	Distribution	Use	End of Life
DIS880	1.04	1.63	1.38	1.02
DIS890	1.03	0.32	1.00	1.02
DOS801	0.67	1.26	1.28	0.76
DOS810	1.02	2.35	0.90	1.01
DOS820	0.87	0.21	1.25	0.84
DOS880	1.03	1.80	0.90	1.02
DOS885	1.04	0.23	1.53	1.02
GFS810	1.02	0.11	1.00	1.01
GIS810	1.00	1.37	1.00	1.06
GIS880	1.00	0.54	1.00	1.08

Environmental performance

Variation of results for other modules comparing to DIS850

Potential environmental impact

Results cover the full lifecycle, i.e., cradle-to-grave.

			AIS810		AIS815		AIS830		AIS850		AIS880		AIS885	
Impact Category		**Unit**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
Global Warming Potential (GWP)	**Biogenic**	kg CO2 eq	**1.40E+00**	57.61%	**1.43E+00**	60.54%	**9.07E-01**	2.10%	**1.37E+00**	54.62%	**1.40E+00**	57.81%	**1.47E+00**	65.55%
	Fossil	kg CO2 eq	**5.04E+01**	48.01%	**5.06E+01**	48.69%	**3.21E+01**	-5.65%	**4.97E+01**	46.06%	**5.00E+01**	47.02%	**5.23E+01**	53.59%
	Land use and land transformation	kg CO2 eq	**1.37E-01**	52.29%	**1.39E-01**	54.28%	**8.82E-02**	-2.07%	**1.35E-01**	50.15%	**1.37E-01**	52.05%	**1.43E-01**	59.24%
	TOTAL	kg CO2 eq	**5.19E+01**	**48.27%**	**5.21E+01**	**49.00%**	**3.31E+01**	**-5.45%**	**5.12E+01**	**46.29%**	**5.16E+01**	**47.31%**	**5.39E+01**	**53.91%**
Acidification potential (AP)		mol H+ eq	**3.34E-01**	40.23%	**3.34E-01**	40.21%	**2.12E-01**	-11.13%	**3.33E-01**	39.88%	**3.32E-01**	39.11%	**3.46E-01**	45.01%
Eutrophication potential (EP)	**Aquatic marine**	kg N eq	**4.74E-02**	46.26%	**4.76E-02**	47.02%	**3.02E-02**	-6.73%	**4.69E-02**	44.85%	**4.71E-02**	45.42%	**4.92E-02**	51.90%
	Aquatic freshwater	kg P eq	**4.66E-02**	49.48%	**4.71E-02**	51.06%	**2.99E-02**	-4.14%	**4.61E-02**	47.80%	**4.65E-02**	49.08%	**4.87E-02**	55.99%
	Aquatic terrestrial	mol N eq	**4.33E-01**	44.63%	**4.34E-01**	45.07%	**2.75E-01**	-7.99%	**4.29E-01**	43.43%	**4.30E-01**	43.64%	**4.49E-01**	49.93%
Ozone layer depletion (ODP)		kg CFC11 eq	**9.65E-07**	46.94%	**9.68E-07**	47.34%	**6.14E-07**	-6.52%	**9.53E-07**	45.09%	**9.58E-07**	45.80%	**1.00E-06**	52.23%
Photochemical oxidant creation potential (POCP)		kg NMVOC eq	**1.39E-01**	44.75%	**1.39E-01**	44.79%	**8.83E-02**	-8.16%	**1.38E-01**	43.23%	**1.38E-01**	43.46%	**1.44E-01**	49.65%
Abiotic depletion potential (ADP)	**Fossil resources**	MJ	**1.10E+03**	51.05%	**1.11E+03**	52.44%	**7.05E+02**	-3.25%	**1.08E+03**	48.81%	**1.10E+03**	50.43%	**1.15E+03**	57.39%
	Metals and minerals	kg Sb eq	**1.21E-03**	25.92%	**1.19E-03**	23.78%	**7.52E-04**	-21.71%	**1.23E-03**	27.90%	**1.19E-03**	23.97%	**1.23E-03**	28.41%
Water deprivation potential (WDP)		m3 depriv.	**1.17E+01**	49.82%	**1.19E+01**	51.35%	**7.52E+00**	-3.95%	**1.16E+01**	48.01%	**1.17E+01**	49.37%	**1.22E+01**	56.28%

Environmental performance

Variation of results for other modules comparing to DIS850

Potential environmental impact

Results cover the full lifecycle, i.e., cradle-to-grave.

			AIS890		AOS810		AOS850		AOS880		DIS801		DIS810	
Impact Category		**Unit**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
Global Warming Potential (GWP)	**Biogenic**	kg CO2 eq	**1.42E+00**	59.95%	**1.36E+00**	52.72%	**1.59E+00**	78.80%	**1.00E+00**	13.02%	**1.26E+00**	41.32%	**1.12E+00**	26.49%
	Fossil	kg CO2 eq	**5.11E+01**	50.11%	**4.85E+01**	42.45%	**5.58E+01**	64.00%	**3.77E+01**	10.85%	**4.33E+01**	27.14%	**4.14E+01**	21.60%
	Land use and land transformation	kg CO2 eq	**1.39E-01**	54.81%	**1.33E-01**	47.18%	**1.54E-01**	70.97%	**1.01E-01**	11.93%	**1.20E-01**	33.61%	**1.11E-01**	23.56%
	TOTAL	kg CO2 eq	**5.26E+01**	**50.37%**	**5.00E+01**	**42.72%**	**5.75E+01**	**64.39%**	**3.88E+01**	**10.90%**	**4.46E+01**	**27.51%**	**4.26E+01**	**21.73%**
Acidification potential (AP)		mol H+ eq	**3.41E-01**	43.10%	**3.21E-01**	34.82%	**3.66E-01**	53.35%	**2.61E-01**	9.49%	**2.78E-01**	16.50%	**2.79E-01**	17.00%
Eutrophication potential (EP)	**Aquatic marine**	kg N eq	**4.82E-02**	48.75%	**4.56E-02**	40.87%	**5.24E-02**	61.89%	**3.58E-02**	10.63%	**4.05E-02**	24.90%	**3.90E-02**	20.41%
	Aquatic freshwater	kg P eq	**4.75E-02**	52.14%	**4.50E-02**	44.34%	**5.21E-02**	66.94%	**3.47E-02**	11.39%	**4.05E-02**	29.67%	**3.81E-02**	22.00%
	Aquatic terrestrial	mol N eq	**4.40E-01**	47.13%	**4.17E-01**	39.17%	**4.77E-01**	59.46%	**3.30E-01**	10.28%	**3.67E-01**	22.56%	**3.58E-01**	19.55%
Ozone layer depletion (ODP)		kg CFC11 eq	**9.79E-07**	48.99%	**9.28E-07**	41.29%	**1.07E-06**	62.31%	**7.27E-07**	10.61%	**8.25E-07**	25.54%	**7.95E-07**	21.08%
Photochemical oxidant creation potential (POCP)		kg NMVOC eq	**1.41E-01**	46.87%	**1.34E-01**	39.05%	**1.53E-01**	59.13%	**1.06E-01**	10.16%	**1.18E-01**	22.44%	**1.15E-01**	19.87%
Abiotic depletion potential (ADP)	**Fossil resources**	MJ	**1.12E+03**	53.26%	**1.06E+03**	45.68%	**1.23E+03**	68.69%	**8.12E+02**	11.54%	**9.58E+02**	31.58%	**8.96E+02**	23.12%
	Metals and minerals	kg Sb eq	**1.24E-03**	29.45%	**1.15E-03**	20.30%	**1.27E-03**	32.76%	**1.02E-03**	6.73%	**9.25E-04**	-3.64%	**1.05E-03**	9.07%
Water deprivation potential (WDP)		m3 depriv.	**1.19E+01**	52.37%	**1.13E+01**	44.63%	**1.31E+01**	67.31%	**8.73E+00**	11.41%	**1.02E+01**	30.08%	**9.58E+00**	22.25%

Environmental performance

Variation of results for other modules comparing to DIS850

Potential environmental impact

Results cover the full lifecycle, i.e., cradle-to-grave.

			DIS820		DIS821		DIS880		DIS890		DOS801		DOS810	
Impact Category		**Unit**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
Global Warming Potential (GWP)	**Biogenic**	kg CO2 eq	**1.13E+00**	27.51%	**1.13E+00**	27.61%	**1.24E+00**	39.30%	**8.87E-01**	-0.19%	**1.16E+00**	30.86%	**7.93E-01**	-10.68%
	Fossil	kg CO2 eq	**4.01E+01**	17.86%	**4.00E+01**	17.60%	**4.50E+01**	32.42%	**3.41E+01**	0.35%	**4.03E+01**	18.44%	**3.13E+01**	-7.86%
	Land use and land transformation	kg CO2 eq	**1.10E-01**	22.38%	**1.10E-01**	22.29%	**1.22E-01**	35.59%	**9.02E-02**	0.16%	**1.12E-01**	24.12%	**8.17E-02**	-9.27%
	TOTAL	kg CO2 eq	**4.13E+01**	**18.12%**	**4.13E+01**	**17.87%**	**4.64E+01**	**32.60%**	**3.51E+01**	**0.34%**	**4.16E+01**	**18.77%**	**3.22E+01**	**-7.93%**
Acidification potential (AP)		mol H+ eq	**2.65E-01**	10.97%	**2.63E-01**	10.48%	**3.03E-01**	27.21%	**2.41E-01**	0.93%	**2.60E-01**	9.27%	**2.24E-01**	-6.16%
Eutrophication potential (EP)	**Aquatic marine**	kg N eq	**3.77E-02**	16.50%	**3.76E-02**	16.20%	**4.25E-02**	31.33%	**3.26E-02**	0.52%	**3.77E-02**	16.54%	**2.99E-02**	-7.60%
	Aquatic freshwater	kg P eq	**3.74E-02**	19.78%	**3.73E-02**	19.60%	**4.17E-02**	33.66%	**3.13E-02**	0.35%	**3.77E-02**	20.71%	**2.85E-02**	-8.58%
	Aquatic terrestrial	mol N eq	**3.44E-01**	14.92%	**3.43E-01**	14.57%	**3.90E-01**	30.18%	**3.01E-01**	0.61%	**3.43E-01**	14.50%	**2.78E-01**	-7.16%
Ozone layer depletion (ODP)		kg CFC11 eq	**7.67E-07**	16.77%	**7.65E-07**	16.47%	**8.65E-07**	31.65%	**6.60E-07**	0.42%	**7.69E-07**	17.04%	**6.08E-07**	-7.52%
Photochemical oxidant creation potential (POCP)		kg NMVOC eq	**1.10E-01**	14.70%	**1.10E-01**	14.33%	**1.25E-01**	30.12%	**9.67E-02**	0.55%	**1.10E-01**	14.35%	**8.94E-02**	-6.98%
Abiotic depletion potential (ADP)	**Fossil resources**	MJ	**8.80E+02**	20.90%	**8.79E+02**	20.75%	**9.80E+02**	34.60%	**7.30E+02**	0.19%	**8.91E+02**	22.32%	**6.64E+02**	-8.75%
	Metals and minerals	kg Sb eq	**9.37E-04**	-2.37%	**9.28E-04**	-3.32%	**1.13E-03**	17.36%	**9.78E-04**	1.90%	**8.81E-04**	-8.18%	**9.35E-04**	-2.58%
Water deprivation potential (WDP)		m3 depriv.	**9.40E+00**	20.01%	**9.39E+00**	19.84%	**1.05E+01**	33.86%	**7.86E+00**	0.31%	**9.48E+00**	21.05%	**7.16E+00**	-8.61%

Environmental performance

Variation of results for other modules comparing to DIS850

Potential environmental impact

Results cover the full lifecycle, i.e., cradle-to-grave.

			DOS820		DOS880		DOS885		GFS810		GIS810		GIS880	
Impact Category		**Unit**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
Global Warming Potential (GWP)	**Biogenic**	kg CO2 eq	**1.13E+00**	27.03%	**7.93E-01**	-10.69%	**1.38E+00**	55.09%	**8.87E-01**	-0.10%	**8.89E-01**	0.08%	**8.89E-01**	0.13%
	Fossil	kg CO2 eq	**4.05E+01**	18.99%	**3.13E+01**	-7.90%	**4.93E+01**	44.93%	**3.40E+01**	0.07%	**3.40E+01**	0.08%	**3.40E+01**	-0.13%
	Land use and land transformation	kg CO2 eq	**1.11E-01**	22.81%	**8.17E-02**	-9.26%	**1.35E-01**	49.74%	**9.01E-02**	0.07%	**9.01E-02**	0.01%	**9.00E-02**	-0.03%
	TOTAL	kg CO2 eq	**4.17E+01**	**19.20%**	**3.22E+01**	**-7.98%**	**5.08E+01**	**45.20%**	**3.50E+01**	**0.07%**	**3.50E+01**	**0.08%**	**3.50E+01**	**-0.13%**
Acidification potential (AP)		mol H+ eq	**2.70E-01**	13.25%	**2.24E-01**	-6.07%	**3.28E-01**	37.69%	**2.39E-01**	0.43%	**2.38E-01**	0.02%	**2.38E-01**	-0.14%
Eutrophication potential (EP)	**Aquatic marine**	kg N eq	**3.82E-02**	17.87%	**2.99E-02**	-7.58%	**4.65E-02**	43.51%	**3.25E-02**	0.21%	**3.24E-02**	0.04%	**3.24E-02**	-0.11%
	Aquatic freshwater	kg P eq	**3.76E-02**	20.63%	**2.85E-02**	-8.54%	**4.59E-02**	46.99%	**3.12E-02**	0.17%	**3.12E-02**	0.01%	**3.12E-02**	-0.05%
	Aquatic terrestrial	mol N eq	**3.49E-01**	16.55%	**2.78E-01**	-7.13%	**4.25E-01**	41.85%	**3.00E-01**	0.25%	**2.99E-01**	0.04%	**2.99E-01**	-0.13%
Ozone layer depletion (ODP)		kg CFC11 eq	**7.76E-07**	18.07%	**6.07E-07**	-7.57%	**9.45E-07**	43.77%	**6.58E-07**	0.10%	**6.58E-07**	0.10%	**6.56E-07**	-0.14%
Photochemical oxidant creation potential (POCP)		kg NMVOC eq	**1.12E-01**	16.34%	**8.94E-02**	-7.01%	**1.36E-01**	41.59%	**9.63E-02**	0.16%	**9.62E-02**	0.08%	**9.60E-02**	-0.18%
Abiotic depletion potential (ADP)	**Fossil resources**	MJ	**8.85E+02**	21.55%	**6.64E+02**	-8.79%	**1.08E+03**	48.15%	**7.28E+02**	0.03%	**7.29E+02**	0.05%	**7.28E+02**	-0.09%
	Metals and minerals	kg Sb eq	**9.80E-04**	2.12%	**9.37E-04**	-2.35%	**1.19E-03**	23.65%	**9.69E-04**	0.95%	**9.60E-04**	0.04%	**9.58E-04**	-0.22%
Water deprivation potential (WDP)		m3 depriv.	**9.46E+00**	20.82%	**7.16E+00**	-8.59%	**1.15E+01**	47.23%	**7.84E+00**	0.13%	**7.83E+00**	0.02%	**7.83E+00**	-0.06%

Environmental performance

Variation of results for other modules comparing to DIS850

Use of resources in functional unit [MJ, net calorific value]

		AIS810		AIS815		AIS830		AIS850		AIS880		AIS885	
Parameters		**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
Primary energy resources – Renewable	**Use as energy carrier**	**2.82E+02**	53.96%	**2.87E+02**	56.26%	**1.82E+02**	-0.80%	**2.78E+02**	51.59%	**2.82E+02**	53.86%	**2.96E+02**	61.25%
	Used as raw materials	**3.00E+00**	5.95%	**2.86E+00**	0.79%	**1.80E+00**	-36.51%	**3.15E+00**	11.11%	**2.91E+00**	2.78%	**2.98E+00**	5.16%
	TOTAL	**2.85E+02**	**53.23%**	**2.89E+02**	**55.41%**	**1.84E+02**	**-1.34%**	**2.81E+02**	**50.98%**	**2.85E+02**	**53.09%**	**2.99E+02**	**60.39%**
Primary energy resources – Non-renewable	**Use as energy carrier**	**1.14E+03**	51.39%	**1.15E+03**	52.83%	**7.30E+02**	-3.00%	**1.12E+03**	49.09%	**1.13E+03**	50.79%	**1.19E+03**	57.78%
	Used as raw materials	**7.82E+00**	5.95%	**7.44E+00**	0.79%	**4.68E+00**	-36.51%	**8.20E+00**	11.11%	**7.58E+00**	2.78%	**7.76E+00**	5.16%
	TOTAL	**1.15E+03**	**50.95%**	**1.16E+03**	**52.32%**	**7.34E+02**	**-3.32%**	**1.13E+03**	**48.72%**	**1.14E+03**	**50.33%**	**1.19E+03**	**57.27%**

Indicator describing GWP- GHG per functional unit

		AIS810		AIS815		AIS830		AIS850		AIS880		AIS885	
Indicator	**Unit**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
GWP - GHG	kg CO2 eq	**5.06E+01**	47.99%	**5.09E+01**	48.67%	**3.23E+01**	-5.66%	**5.00E+01**	46.04%	**5.03E+01**	47.00%	**5.25E+01**	53.57%

Environmental performance

Variation of results for other modules comparing to DIS850

Use of resources in functional unit [MJ, net calorific value]

		AIS890		AOS810		AOS850		AOS880		DIS801		DIS810	
Parameters		**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
Primary energy resources – Renewable	**Use as energy carrier**	**2.87E+02**	56.46%	**2.73E+02**	48.92%	**3.18E+02**	73.45%	**2.06E+02**	12.28%	**2.49E+02**	36.00%	**2.28E+02**	24.45%
	Used as raw materials	**3.13E+00**	10.32%	**2.83E+00**	0.00%	**2.95E+00**	3.97%	**2.91E+00**	2.78%	**1.93E+00**	-31.75%	**2.78E+00**	-1.98%
	TOTAL	**2.90E+02**	**55.76%**	**2.76E+02**	**48.17%**	**3.21E+02**	**72.39%**	**2.09E+02**	**12.14%**	**2.51E+02**	**34.97%**	**2.31E+02**	**24.05%**
Primary energy resources – Non-renewable	**Use as energy carrier**	**1.16E+03**	53.58%	**1.10E+03**	46.03%	**1.27E+03**	69.17%	**8.40E+02**	11.60%	**9.93E+02**	32.06%	**9.28E+02**	23.31%
	Used as raw materials	**8.14E+00**	10.32%	**7.38E+00**	0.00%	**7.67E+00**	3.97%	**7.58E+00**	2.78%	**5.04E+00**	-31.75%	**7.23E+00**	-1.98%
	TOTAL	**1.16E+03**	**53.16%**	**1.11E+03**	**45.58%**	**1.28E+03**	**68.54%**	**8.47E+02**	**11.52%**	**9.99E+02**	**31.44%**	**9.35E+02**	**23.07%**

Indicator describing GWP- GHG per functional unit

		AIS890		AOS810		AOS850		AOS880		DIS801		DIS810	
Indicator	**Unit**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
GWP - GHG	kg CO2 eq	**5.14E+01**	50.09%	**4.87E+01**	42.43%	**5.61E+01**	63.97%	**3.79E+01**	10.84%	**4.35E+01**	27.11%	**4.16E+01**	21.59%

Environmental performance

Variation of results for other modules comparing to DIS850

Use of resources in functional unit [MJ, net calorific value]

		DIS820		DIS821		DIS880		DIS890		DOS801		DOS810	
Parameters		**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
Primary energy resources – Renewable	**Use as energy carrier**	**2.27E+02**	23.99%	**2.27E+02**	23.96%	**2.27E+02**	23.96%	**1.83E+02**	0.06%	**2.31E+02**	26.20%	**1.66E+02**	-9.72%
	Used as raw materials	**2.24E+00**	-21.03%	**2.19E+00**	-22.62%	**2.19E+00**	-22.62%	**2.92E+00**	3.17%	**1.91E+00**	-32.54%	**2.90E+00**	2.38%
	TOTAL	**2.30E+02**	**23.31%**	**2.29E+02**	**23.25%**	**2.29E+02**	23.25%	**1.86E+02**	0.11%	**2.33E+02**	25.30%	**1.68E+02**	-9.53%
Primary energy resources – Non-renewable	**Use as energy carrier**	**9.12E+02**	21.22%	**9.11E+02**	21.08%	**9.11E+02**	21.08%	**7.54E+02**	0.17%	**9.23E+02**	22.73%	**6.86E+02**	-8.83%
	Used as raw materials	**5.83E+00**	-21.03%	**5.71E+00**	-22.62%	**5.71E+00**	-22.62%	**7.61E+00**	3.17%	**4.98E+00**	-32.54%	**7.55E+00**	2.38%
	TOTAL	**9.18E+02**	**20.81%**	**9.17E+02**	**20.65%**	**9.17E+02**	**20.65%**	**7.61E+02**	**0.19%**	**9.28E+02**	**22.20%**	**6.93E+02**	**-8.72%**

Indicator describing GWP- GHG per functional unit

		DIS820		DIS821		DIS880		DIS890		DOS801		DOS810	
Indicator	**Unit**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
GWP - GHG	kg CO2 eq	**4.03E+01**	17.85%	**4.02E+01**	17.59%	**4.53E+01**	32.41%	**3.43E+01**	0.35%	**4.05E+01**	18.42%	**3.15E+01**	-7.86%

Environmental performance

Variation of results for other modules comparing to DIS850

Use of resources in functional unit [MJ, net calorific value]

		DOS820		DOS880		DOS885		GFS810		GIS810		GIS880	
Parameters		**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
Primary energy resources – Renewable	**Use as energy carrier**	**2.28E+02**	24.16%	**1.66E+02**	-9.72%	**2.78E+02**	51.44%	**1.83E+02**	0.03%	**1.83E+02**	0.00%	**1.83E+02**	-0.01%
	Used as raw materials	**2.45E+00**	-13.49%	**2.91E+00**	2.78%	**2.95E+00**	3.97%	**2.88E+00**	1.59%	**2.83E+00**	0.00%	**2.82E+00**	-0.40%
	TOTAL	**2.30E+02**	**23.58%**	**1.68E+02**	**-9.52%**	**2.81E+02**	50.71%	**1.86E+02**	0.05%	**1.86E+02**	0.00%	**1.86E+02**	-0.02%
Primary energy resources – Non-renewable	**Use as energy carrier**	**9.16E+02**	21.81%	**6.86E+02**	-8.87%	**1.12E+03**	48.48%	**7.52E+02**	0.01%	**7.53E+02**	0.05%	**7.52E+02**	-0.09%
	Used as raw materials	**6.38E+00**	-13.49%	**7.58E+00**	2.78%	**7.67E+00**	3.97%	**7.50E+00**	1.59%	**7.38E+00**	0.00%	**7.35E+00**	-0.40%
	TOTAL	**9.23E+02**	**21.47%**	**6.93E+02**	**-8.76%**	**1.12E+03**	**48.05%**	**7.60E+02**	**0.03%**	**7.60E+02**	**0.05%**	**7.59E+02**	**-0.09%**

Indicator describing GWP- GHG per functional unit

		DOS820		DOS880		DOS885		GFS810		GIS810		GIS880	
Indicator	**Unit**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**	**Total**	**Variation**
GWP - GHG	kg CO2 eq	**4.07E+01**	18.97%	**3.15E+01**	-7.90%	**4.96E+01**	44.91%	**3.42E+01**	0.07%	**3.42E+01**	0.08%	**3.42E+01**	-0.13%

Program information and references

The International EPD® System

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Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

- PCR: Electronic and electrical equipment, and electronic components (non-construction), 2024:06, VERSION 1.0.1, 2024-12-09.
- PCR review was conducted by The technical committee of the International EPD® System. A full list of members available on www.environdec.com. The review panel may be contacted via support@environdec.com.
- The product category corresponds to UN CPC divisions 43-48 and 84, and HS code 85 Electrical machinery and equipment and parts thereof.

Third-party verification

- External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via:

  ☑ EPD verification through an individual EPD verification

- Third-party verifier: Pär Lindman, Miljögiraff.
- Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third-party verifier:

☑ No

Life Cycle Assessment (LCA)

- LCA accountability: R&D department, ABB Automation, Mostafa Ghaffarian and Elena Puertas

References

- General Programme Instructions of the International EPD System, version 4.0
- General Programme Instructions of the International EPD System, version 5.0
- Electronic and electrical equipment, and electronic components (non-construction), 2024:06, version 1.0.1
- ISO 14040:2006 Environmental management – Life cycle assessment - Principles and Framework
- ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and Guidelines
- EN 50693:2020 Product category rules for life cycle assessments of electronic and electrical products and systems
- Ecoinvent version 3.11
- Simapro 10.2.0.1
- LCA Internal Report Select I/O group carried out by ABB Automation (PCP), Sweden, 2025

Notes

- An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication on www.environdec.com.
- EPDs within the same product category but from different programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.
- Further information regarding products or EPD to be addressed to EPD owner:
  - ABB Automation
  - ch-papcp.communications@abb.com
- ABB Automation has the sole ownership, liability, and responsibility of this EPD.