



# Environmental Product Declaration for CI845 Ethernet FCI module (Select I/O)

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

<b>Program</b>	The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a>
<b>Program operator</b>	EPD International AB
<b>EPD registration number</b>	EPD-IES-0028163:003
<b>Version date</b>	2026-02-11
<b>Validity date</b>	2031-02-06
<b>Product Category Rules (PCR)</b>	Electronic and electrical equipment, and electronic components (non-construction), 2024:06, version 1.0.1

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](http://www.environdec.com).

# 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.

<b>Owner of the EPD</b>	ABB Automation
<b>Name and location of production site</b>	Sieradz, Poland
<b>Contact</b>	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

## CI845 Fieldbus Communication Interface Module (Select I/O)

The product covered in this EPD is CI845 from the Select I/O series.

Select I/O is 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.

The CI845 Ethernet Fieldbus Communication Interface Module (FCI) is responsible for communications of S800 I/O or Select I/O to the AC 800M controllers. For redundant configurations, two CI845s are required to be installed in the TU860 or TU865 Ethernet Field Communications Interface MTUs.

<b>Product identification:</b>	CI845
<b>UN CPC code</b>	UN CPC 482
<b>Geographical cope</b>	Europe is considered for the use phase
<b>Energy mix</b>	Low voltage electricity mix for Europe (from ecoinvent 3.11; emission factor is 0.34 kg CO <sub>2</sub> -eq/kWh.)
<b>Standards</b>	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 CI845 module 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 CI845 module 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 communication between Select I/O or S800 I/O modules and the AC 800M controller system by one CI845 Module 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

CI845 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 CI845 is 5 W.

### System boundaries

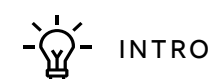
This EPD adopts a cradle-to-grave approach, covering the following life cycle stages:

**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 CI845 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.



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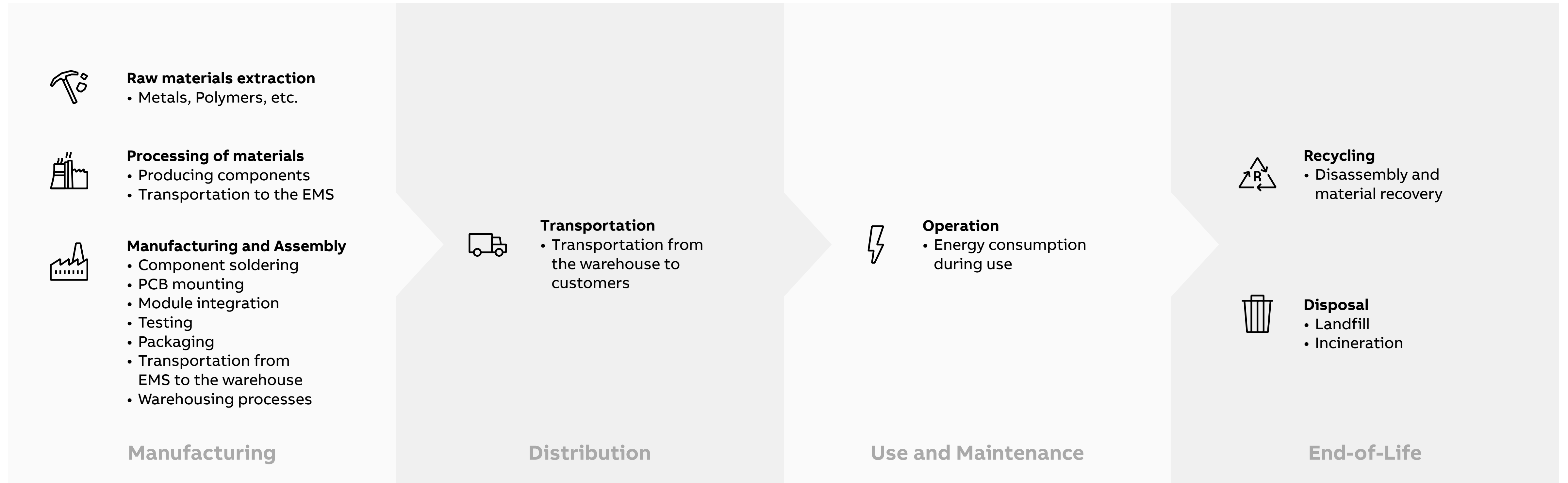


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# LCA information



# Content declaration

## Product with packaging

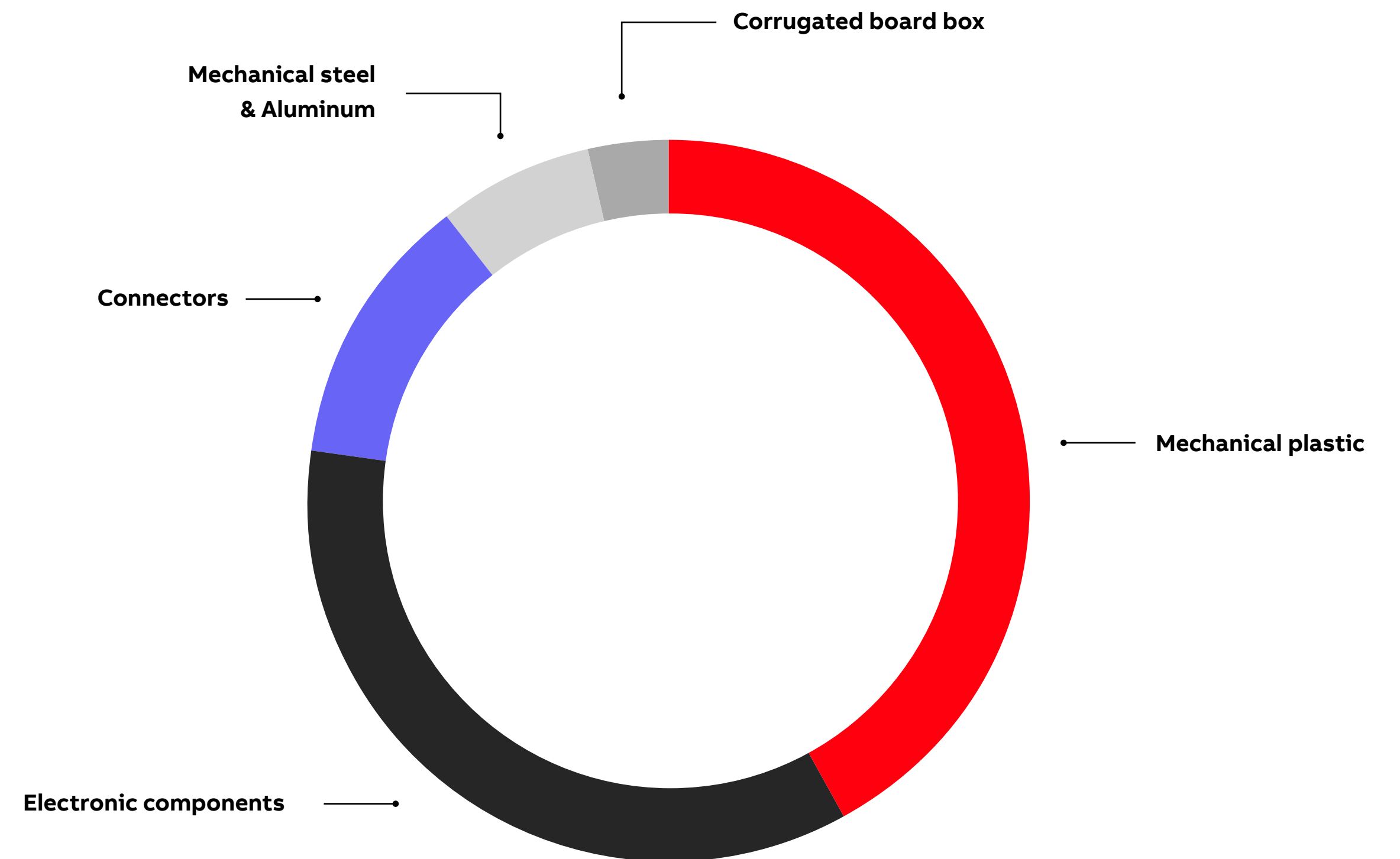
Based on content of the representative product in this EPD

Materials	CI845	Percentage
Mechanical steel & Aluminum	19.00 g	7.01%
Mechanical plastic	113.79 g	41.97%
Connectors	33.55 g	12.38%
Electronic components	95.70 g	35.30%
Corrugated board box*	9.06 g	3.34%
<b>Total weight</b>	<b>271.1 g</b>	

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

CI845 Id: 6a8217cf-a914-420a-8eed-ffafd521c168

\* ≈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	-2.37E-02	1.03E-04	1.17E+01	5.05E-02	1.17E+01
	Fossil	kg CO2 eq	1.35E+01	2.24E-01	3.60E+02	1.92E-01	3.74E+02
	Land use and land use change	kg CO2 eq	2.06E-02	6.98E-05	1.06E+00	5.57E-05	1.08E+00
	TOTAL	kg CO2 eq	1.35E+01	2.24E-01	3.73E+02	2.42E-01	3.87E+02
Acidification potential (AP)	mol H+ eq	1.31E-01	4.54E-04	2.07E+00	2.86E-04	2.20E+00	
Eutrophication potential (EP)	Aquatic marine	kg N eq	1.67E-02	1.07E-04	3.31E-01	1.34E-04	3.47E-01
	Aquatic freshwater	kg P eq	1.34E-02	1.50E-05	3.46E-01	5.68E-05	3.59E-01
	Aquatic terrestrial	mol N eq	1.79E-01	1.16E-03	2.93E+00	7.02E-04	3.11E+00
Ozone depletion potential (ODP)	kg CFC11 eq	5.06E-07	4.91E-09	6.76E-06	2.93E-09	7.27E-06	
Photochemical oxidant creation potential (POCP)	kg NMVOC eq	5.61E-02	7.27E-04	9.36E-01	2.74E-04	9.93E-01	
Abiotic depletion potential (ADP)	Fossil resources	MJ	1.75E+02	3.15E+00	8.31E+03	9.72E-01	8.48E+03
	Minerals and Metals (non-fossil resources)	kg Sb eq	2.87E-03	7.63E-07	4.86E-03	2.66E-07	7.74E-03
Water deprivation potential (WDP)	m3 depriv.	2.75E+00	1.12E-02	8.74E+01	3.32E-03	9.01E+01	



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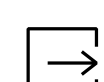
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# Environmental performance

## GWP-GHG

Indicator	Unit	Manufacturing	Distribution	Use an Maintenance	End of Life	TOTAL
GWP - GHG	kg CO2 eq	1.35E+01	2.24E-01	3.62E+02	2.32E-01	3.76E+02
Share of specific data		37.00%				

- The GWP-GHG indicator accounts for all greenhouse gases included in GWP-total, except for biogenic carbon dioxide uptake, biogenic CO<sub>2</sub> 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	1.70E+01	5.76E-02	2.24E+03	3.86E-02	2.26E+03
	Use as raw material	2.83E+00	0.00E+00	0.00E+00	0.00E+00	2.83E+00
	<b>TOTAL</b>	<b>1.99E+01</b>	<b>5.76E-02</b>	<b>2.24E+03</b>	<b>3.86E-02</b>	<b>2.26E+03</b>
Primary energy resources – Non-renewable	Use as energy carrier	1.80E+02	3.35E+00	8.64E+03	1.04E+00	8.83E+03
	Use as raw material	7.38E+00	0.00E+00	0.00E+00	0.00E+00	7.38E+00
	<b>TOTAL</b>	<b>1.87E+02</b>	<b>3.35E+00</b>	<b>8.64E+03</b>	<b>1.04E+00</b>	<b>8.84E+03</b>

# Program information and references

## The International EPD® System

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SE-100 31 Stockholm  
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info@environdec.com

## 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](http://www.environdec.com). The review panel may be contacted via [support@environdec.com](mailto: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:

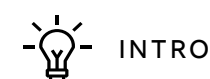
- No

## 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 C1845 Ethernet FCI module (Select I/O) carried out by ABB Automation (PCP), Sweden, 2025



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# 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](http://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](mailto:ch-papcp.communications@abb.com)
- ABB Automation has the sole ownership, liability, and responsibility of this EPD.



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