ENVIRONMENTAL PRODUCT DECLARATION

SIMATIC ET 200SP

DI 6ES7131-6BH01-0BA0

Type II according to ISO 14021 including life cycle impact assessment (LCIA)

SIEMENS

General information

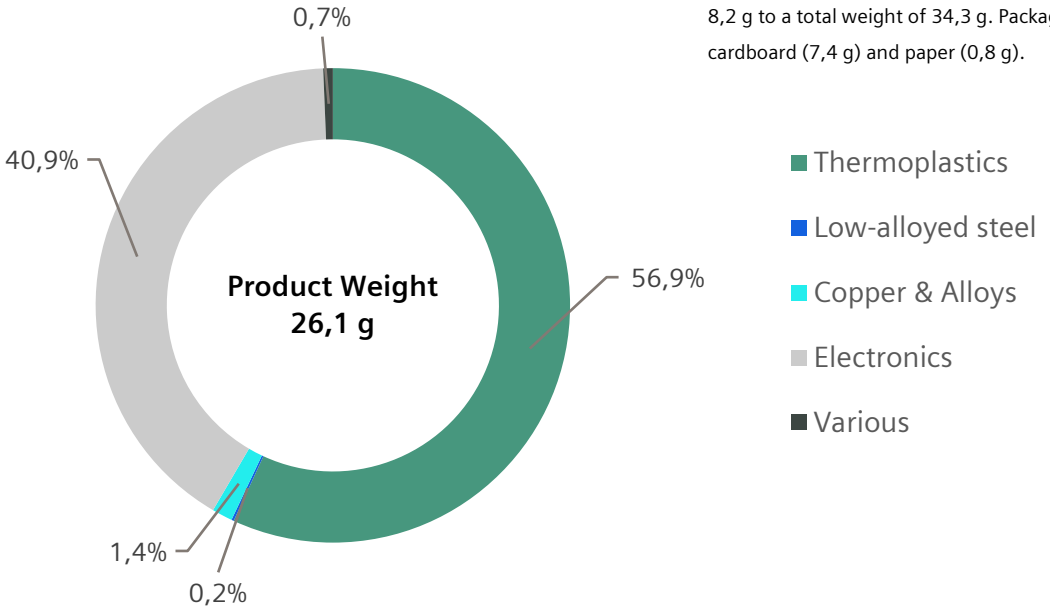
This environmental product declaration (EPD) is based on the international standard ISO 14021 (“Environmental labels and declarations – Self-declared environmental claims – Type II”). The data in this EPD has been evaluated on a full-scale life cycle assessment (LCA) study according to ISO 14040/44, taking into account the product category rules (PCR) for electronic and electrotechnical products and systems defined in EN 50693.

Siemens is dedicated to an environmentally conscious design of its products in line with IEC 62430 and has implemented an integrated management system according to ISO 9001, ISO 14001 and ISO 45001.

Products	6ES7131-6BH01-0BA0, including its SIPLUS extreme variants
Represented by	6ES7131-6BH01-0BA0
Product Description	SIMATIC ET 200SP, Digital input module, DI 16x 24V DC Standard, type 3 (IEC 61131), sink input, (PNP, P-reading), fits to BU-type A0, Colour Code CC00, input delay time 0,05..20ms, diagnostics wire break, diagnostics supply voltage
Functional Unit	To manage digital input (DI) signals over the reference service lifetime of 10 years

Material composition

The following chart outlines the overall material composition of the calculated reference product.



Product weight of 26,1 g adds up with packaging weight of 8,2 g to a total weight of 34,3 g. Packaging consists of cardboard (7,4 g) and paper (0,8 g).

Substance assessment

At Siemens, we are committed to the development and production of environmentally sound and sustainably produced equipment. This includes avoiding hazardous substances in our products without compromising their benefits for our customers. Please visit the following website to learn more about how we comply with product-related environmental regulations like RoHS, REACH, WEEE and others: Product Related Environmental Protection

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Life cycle stages and reference scenarios

Manufacturing

This stage covers the extraction of natural resources, production of raw materials, manufacturing, packaging, and transport distances.

Operations

This stage covers the product's installation, use and maintenance. Different operating conditions can lead to deviations from the reference scenario.

End-of-Life

This stage covers the disassembly, material recycling and thermal treatment of all recyclable materials as well as the disposal of all other materials.

Scenarios

Energy model used:
EU-28: Electricity grid mix

Transportation model used:
100 km default distance,
GLO: Truck-trailer, Euro IV

Energy model used:
EU-28: Electricity grid mix

Use scenario:
70% active mode (0,8 W[1]),
30% Off,
reference lifetime 10 years

Energy model used:
EU-28: Electricity grid mix

Key environmental performance indicators

The following impact categories characterize the product's environmental footprint. They have been calculated with LCIA methodology EF3.0; LCA tool: GaBi 10.6.2.9, Database: GaBi Professional & Extensions, 2022.2.

Impact category	Unit	Total	Manufacturing	Distribution[2]	Operation	End-of-Life
Acidification	Mole of H^+ eq	4,16E-02	4,08E-02	3,34E-05	3,80E-02	-3,72E-02
Climate change – total	kg CO_2 eq	2,10E+01	4,25E+00	5,89E-03	1,75E+01	-7,43E-01
Ecotoxicity, freshwater – total	CTUe	1,63E+02	2,64E+01	5,45E-02	1,38E+02	-1,70E+00
Eutrophication, freshwater	kg P eq	5,98E-05	9,35E-06	1,75E-08	5,06E-05	-1,66E-07
Eutrophication, marine	kg N eq	1,12E-02	4,07E-03	1,63E-05	8,54E-03	-1,41E-03
Eutrophication, terrestrial	Mole of N eq	1,18E-01	4,39E-02	1,81E-04	8,96E-02	-1,54E-02
Human toxicity, cancer – total	CTUh	4,38E-09	8,93E-10	1,10E-12	3,96E-09	-4,70E-10
Human toxicity, non-cancer – total	CTUh	1,54E-07	3,69E-08	6,07E-11	1,45E-07	-2,83E-08
Ionising radiation, human health	kBq U235 eq	8,90E+00	3,68E-01	1,42E-05	8,52E+00	1,31E-02
Land Use	dimensionless (pt)	1,21E+02	8,22E+00	2,70E-02	1,13E+02	-5,51E-01
Ozone depletion	kg CFC-11 eq	6,17E-10	1,01E-10	3,52E-16	2,54E-10	2,62E-10
Particulate matter	Disease incidences	4,27E-07	3,92E-07	1,15E-10	3,15E-07	-2,80E-07
Photochemical ozone formation	kg NMVOC eq	3,02E-02	1,29E-02	3,15E-05	2,31E-02	-5,80E-03
Resource use, fossils	MJ	3,64E+02	5,92E+01	7,85E-02	3,14E+02	-9,50E+00
Resource use, mineral and metals	kg Sb eq	1,20E-04	5,80E-04	4,93E-10	4,73E-06	-4,64E-04
Water use	m^3 world eq	4,53E+00	7,19E-01	5,27E-05	3,95E+00	-1,41E-01

[1] Measurement setup: power consumption of the whole module; ambient temperature 25°C, supply voltage 24 VDC, inputs enabled, no encoder connected

[2] Distribution scenario: Truck-trailer (GLO), Euro IV, 27 t payload, 85% loading rate, 3500 km

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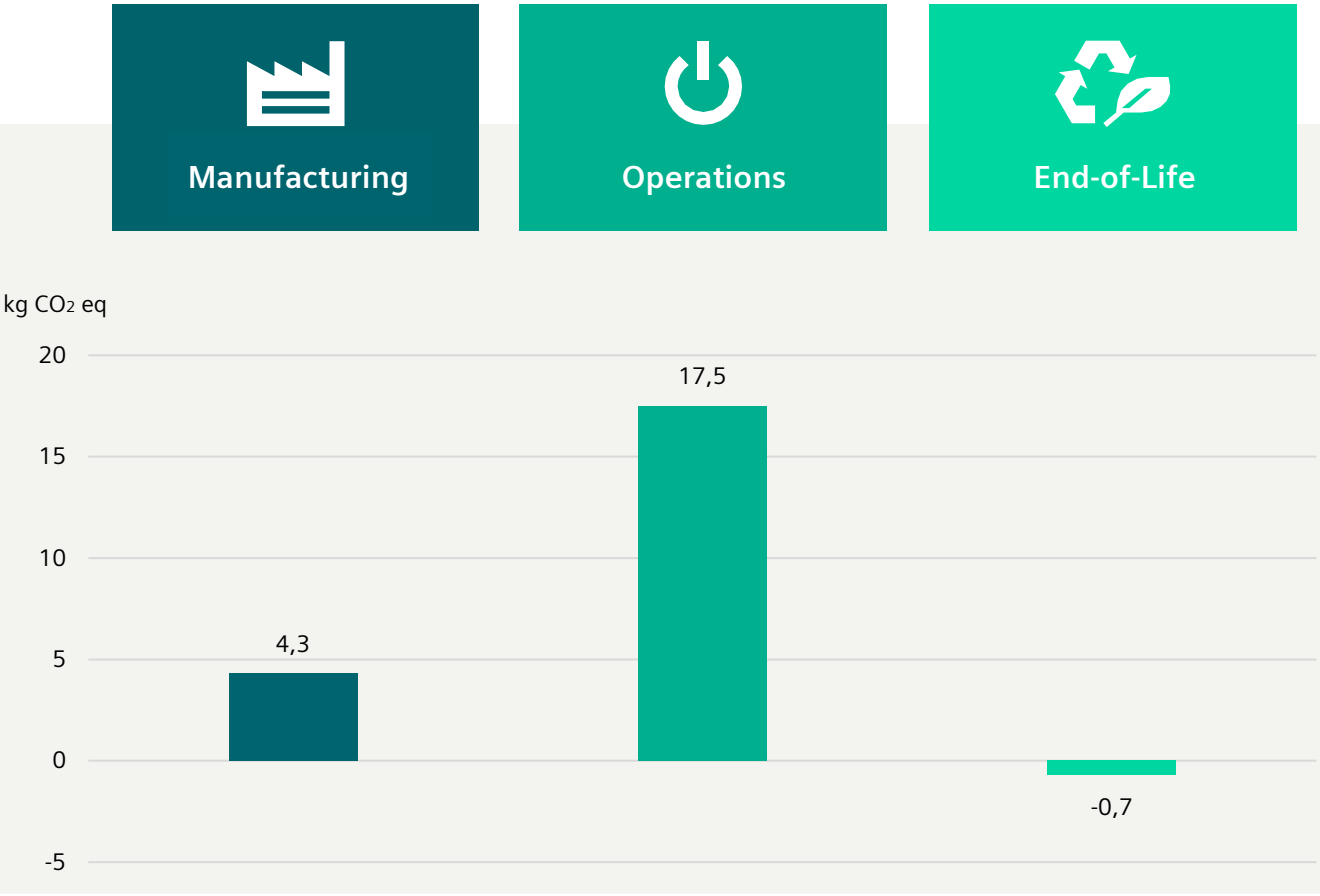
Climate change

This chart shows the overall impact of the product on climate change. The operations phase is the lifecycle phase with the biggest overall impact. Different operating conditions can lead to deviations from the reference scenario. The distribution stage of the reference product is not shown in the chart due to its relatively small contribution to climate change.



End-of-Life scenario

The End-of-Life stage was modelled by shredding of the device, followed by sorting and material separation process.
It leads to:

- **an overall product recyclability rate of up to 9,9%**
- **an energy recoverability rate of up to 76,2%**
- **a minimum disposal rate of 13,9%**

The exact final values depend on the used recycling process and add up to 100%.

Note: The device should not be disposed of as unsorted municipal waste. Special treatment for specific components may be mandated by law or recommended for environmental reasons. Observe all local and applicable laws.

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Digital Industries
Factory Automation
Gleiwitzer Str. 555
90475 Nürnberg-Moorenbrunn
Germany

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