



ENVIRONMENTAL PRODUCT DECLARATION

SIRIUS

Power Contactor, 3RT2.1, AC-3e/AC-3
with DC-Coil

Type II according to ISO 14021 including life cycle impact assessment (LCIA)
[siemens.com](https://www.siemens.com)



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, as well as product specific rules (PSR) for low-voltage switchgear and controlgear equipment in IEC TS 63058 ED1.0.

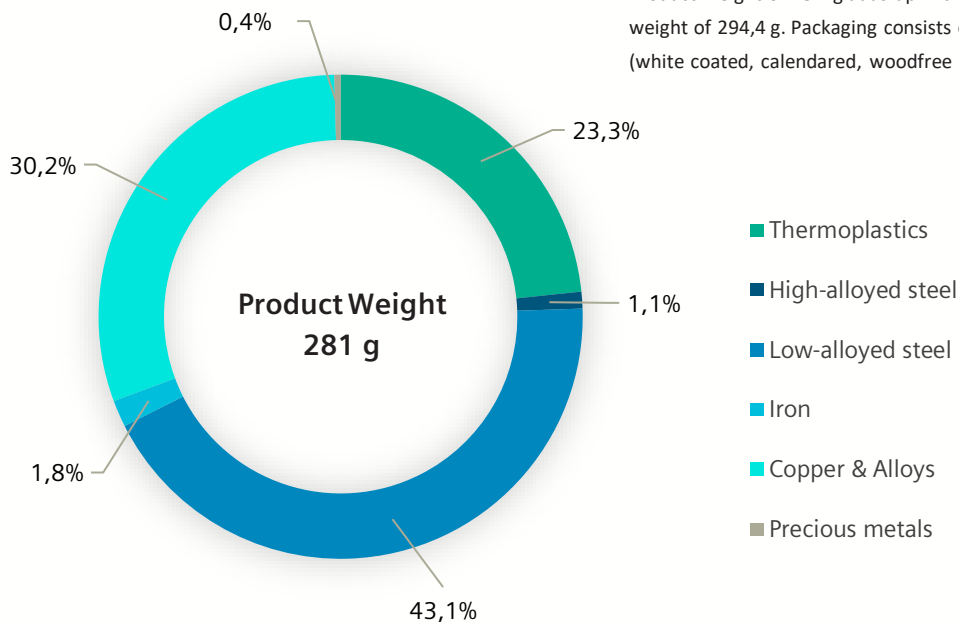
Siemens is dedicated to an environmentally conscious design of its products in line with IEC 62430 and has implemented an integrated management system according to ISO 9001, ISO 14001 and ISO 45001.



Products	All variants in the range of 3RT2.1,AC-3e/AC-3withDC-coil
Represented by	3RT2018-1BB41
Product Description	power contactor, AC-3e/AC-3, 16 A, 7.5 kW / 400 V, 3-pole, 24 V DC, auxiliary contacts: 1 NO, screw termina
Functional Unit	To make, carry and break currents at rated operation voltages U_e and for the utilization categories and N operations according to IEC 60947-4-1 by a remotely operated switching device. To provide galvanic opening of a circuit. To withstand short-circuit currents for specified co-ordination type(s).

Material composition

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

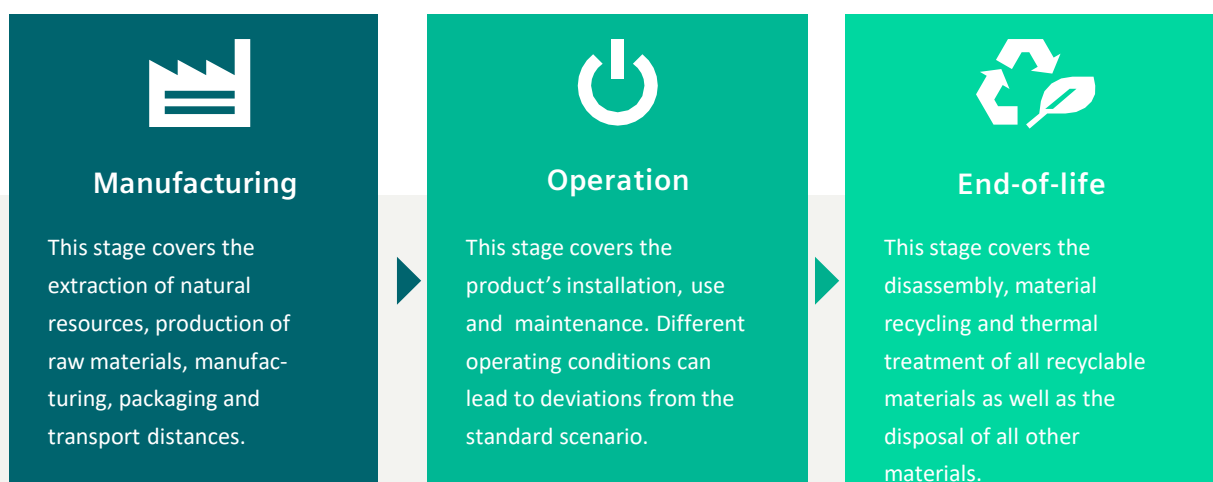


Product weight of 281 g adds up with packaging weight of 13,4 g to a total weight of 294,4 g. Packaging consists of triplex cardboard ~13 g and Label (white coated, calendared, woodfree paper, FSC certified, ~0,4 g).

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](#)

Life cycle stages and reference scenarios



Scenarios

Energy model used:	Energy model used:	Energy model used:
EU-28: Electricity grid mix	EU-28: Electricity grid mix	EU-28: Electricity grid mix
Transportation model used:	Use scenario:	
100 km default distance, GLO: Truck-trailer, Euro IV	6,98 W full load, 50% loading rate of I _n : 16A, 50% service uptime; 20 years reference lifetime	

Key environmental performance indicators

The following impact categories characterize the product's environmental footprint. They have been calculated with LCIA methodology EF3.0 and *EN 15804+A2; LCA tool: GaBi 10.6.2, Database: GaBi Professional & Extensions, 2020.

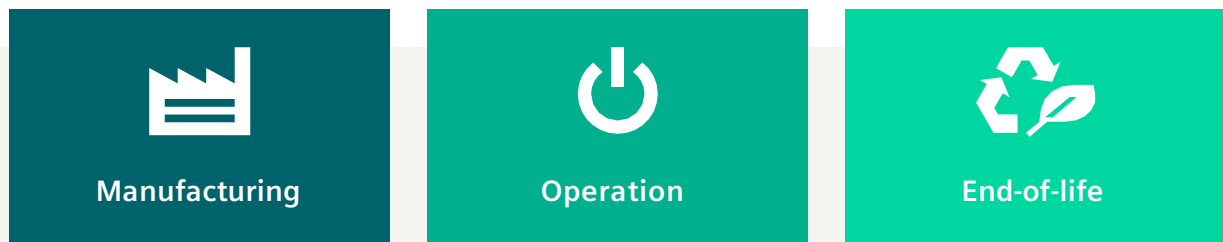
For extrapolation rules for all variants declared in the title of this EPD please refer to the Annex Extrapolation Rules.

Impact category	Unit	Total	Manufacturing	Operation	End-of-life**
Acidification	Mole of H+ eq	3,32E-01	1,73E-02	3,30E-01	-1,47E-02
Global warming potential	kg CO ₂ eq	1,53E+02	1,42E+00	1,52E+02	-3,05E-01
Ecotoxicity, freshwater – total	CTUe	1,20E+03	1,03E+01	1,19E+03	-2,78E+00
Eutrophication, freshwater	kg P eq	4,41E-04	2,82E-06	4,38E-04	-4,70E-07
Eutrophication, marine	kg N eq	7,46E-02	9,22E-04	7,40E-02	-3,77E-04
Eutrophication, terrestrial	Mole of N eq	7,82E-01	9,68E-03	7,76E-01	-3,89E-03
Human toxicity, cancer – total	CTUh	3,91E-08	5,41E-09	3,43E-08	-6,35E-10
Human toxicity, non-cancer – total	CTUh	1,27E-06	4,89E-08	1,26E-06	-3,36E-08
Ionising radiation, human health	kBq U235 eq	7,41E+01	1,49E-01	7,38E+01	5,64E-02
Land Use	dimensionless (pt)	9,88E+02	7,26E+00	9,83E+02	-2,94E+00
Ozone depletion	kg CFC-11 eq	5,72E-09	2,86E-09	2,20E-09	6,58E-10
Particulate matter	Disease incidences	2,76E-06	1,25E-07	2,73E-06	-9,51E-08
Photochemical ozone formation	kg NMVOC eq	2,02E-01	3,60E-03	2,00E-01	-1,87E-03
Resource use, fossils	MJ	2,74E+03	2,01E+01	2,73E+03	-4,12E+00
Resource use, mineral and metals	kg Sb eq	9,02E-05	3,26E-04	4,10E-05	-2,76E-04
Water scarcity	m ³ world eq	3,44E+01	3,24E-01	3,43E+01	-1,54E-01
*Use of non-renewable primary energy	MJ	2,74E+03	2,01E+01	2,73E+03	-4,13E+00
*Use of renewable primary energy	MJ	1,52E+03	5,16E+00	1,51E+03	-4,27E-01
*Net use of fresh water	m ³	1,45E+00	8,91E-03	1,44E+00	-2,68E-03
*Hazardous waste disposed	kg	2,41E-07	6,00E-09	2,36E-07	-5,31E-10
*Non-hazardous waste disposed	kg	2,13E+00	1,52E-01	2,05E+00	-7,18E-02
*Radioactive waste disposed	kg	4,37E-01	9,55E-04	4,36E-01	1,01E-04

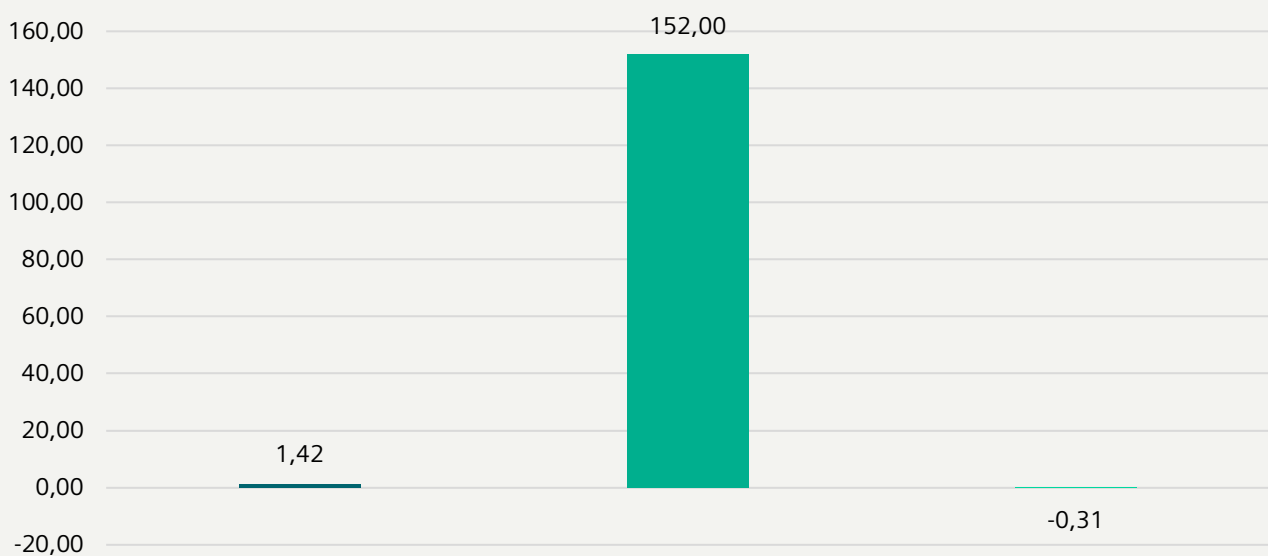
** Avoided burden method used

Global warming potential

This chart shows the overall global warming potential of the product. The operations phase is the lifecycle phase with the biggest overall impact. Different operating conditions can lead to deviations from the standard scenario.



kg CO₂ eq



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 of up to 69%** mainly due to high metal content
- an **energy recoverability of up to 26%** from plastic materials
- a **minimum landfill rate of 10%**

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 ecologically sensible. Observe all local and applicable laws.

Legal Disclaimer

This Environmental Product Declaration (EPD) is for information purposes only. It is based upon the standards mentioned above.

This EPD does not warrant or guarantee the composition of a product or that the product will retain a particular composition for a particular period. Therefore, all warranties, representations, conditions, and all other terms of any kind whatsoever implied by statute or common law are – to the fullest extent permitted by applicable law – excluded.

Please be aware that the data of this EPD cannot be compared with data calculated based upon product category rules (PCRs) other than the standards mentioned above. The values given are only valid within the context specified and cannot be used directly to draw up the environmental assessment of an installation.

Siemens THEREFORE DOES NOT ASSUME ANY LIABILITY FOR ANY ERROR OR FOR ANY CONSEQUENCE WHICH MAY ARISE FROM THE USE OF THIS INFORMATION TO THE MAXIMUM EXTENT UNDER THE LAW.

**Published by
Siemens AG**

Smart Infrastructure
Electrical Products
Werner-von-Siemens-Str.48
Postbox
92220 Amberg
Germany

Subject to changes and errors.

The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

All product designations may be trademarks or product names of Siemens AG or other companies whose use by third parties for their own purposes could violate the rights of the owners.

© 2023 by Siemens AG, Berlin and Munich

Annex Extrapolation Rules

The extrapolation rules have been defined as follows:

LCAs have been performed on several representative products in the range of 3RT2.1, AC-3e/AC-3 with DC-coil.

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of all variants in this range.

To extrapolate the impact from the reference product **3RT2018-1BB41** to another product from the range, apply the following extrapolation rules to each key environmental performance indicator (i) per life cycle stage:

MANUFACTURING(i) = Mass of (product) / Mass of (reference product) * manufacturing indicator (i) of the reference product

OPERATION (i) = $(P_p * 0,25 + P_{vp}) * 0,235 \text{ W}^{-1}$ * operation indicator (i) of the reference product

P_p : Power loss [W] at AC in hot operating state per pole (product)

P_{vp} : holding power [W] of magnet coil at DC (product)

END OF LIFE (i) = Mass of (product) / Mass of (reference product) * end-of-life indicator (i) of the reference product

TOTAL (i) = Σ Life Cycle Stages (i)

Data Sources:

Mass of product in the product catalog

Product specific electrical data in the technical data sheets