



## ENVIRONMENTAL PRODUCT DECLARATION

# SENTRON

MCCB 3VA2[0,1,2]..-...[3,4]..-AA.

MCCB 3VA6[1,2]..-...[3,4]..-AA.

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



# 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 environmental labelling"). 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 control gear equipment in IEC TS 63058 ED1.0.

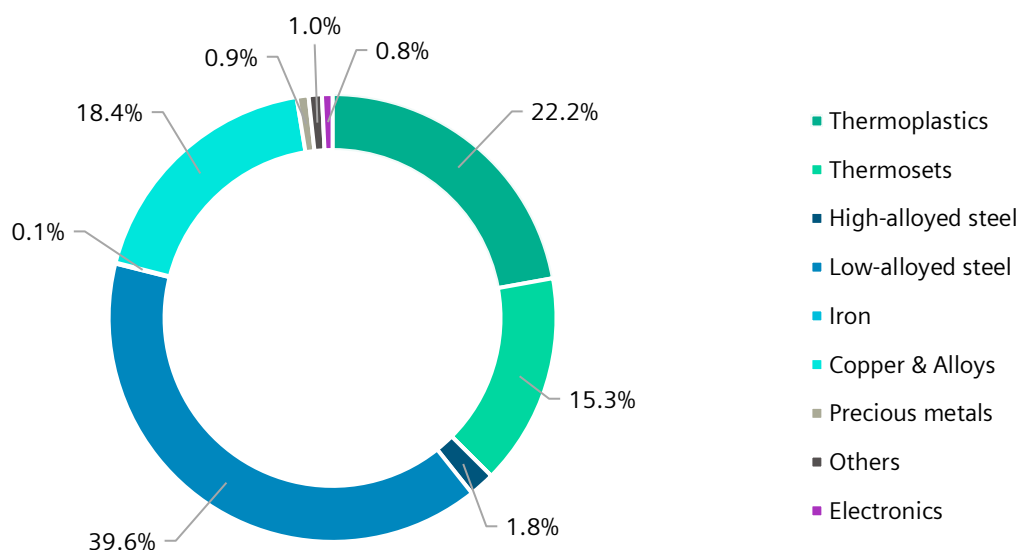
Siemens is dedicated to an environmentally conscious design of its products in line with IEC 62430 and has implemented an integrated management system according to ISO 9001, ISO 14001 and ISO 45001.

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Products</b>            | <b>All variants in the range of 3VA2[0,1,2]...[3,4]; 3VA6[1,2]...[3,4]...AA.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Represented by</b>      | 3VA2110-5HL36-0AA0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Product Description</b> | circuit breaker 3VA2 IEC frame 160 breaking capacity class M $I_{cu}=55kA$ @ 415V 3-pole, line protection ETU320, LI, $I_n=100A$ overload protection $I_r=40A...100A$ short-circuit protection $I_i=1.5...12 \times I_n$ clamp connection                                                                                                                                                                                                                                                                                                 |
| <b>Functional Unit</b>     | To carry its rated current on 3 or 4 poles, as defined in IEC 60947-2, without interruption for a period of 20 years. To make and break its rated current for a defined number (M) times. To interrupt an overload current at a specific multiple (N) of the rated current for a defined number (M) times, where M and N are given in IEC 60947-2. To break and make a short-circuit up to its ultimate short-circuit capacity ( $I_{cu}$ ) and its service short-circuit breaking capacity ( $I_{cs}$ ), in accordance with IEC 60947-2. |

## Material composition

The following chart outlines the overall material composition of the calculated reference product without packaging. Product weight of 2.237 kg adds up with packaging weight of 173.5 g to a total weight of 2.410 kg. Packaging consists of PAP 20 corrugated fiber board ~140 g, Instruction & Label (PAP 22 paper ~31.4 g) and bag for consumables (HDPE 2 ~2.1 g).

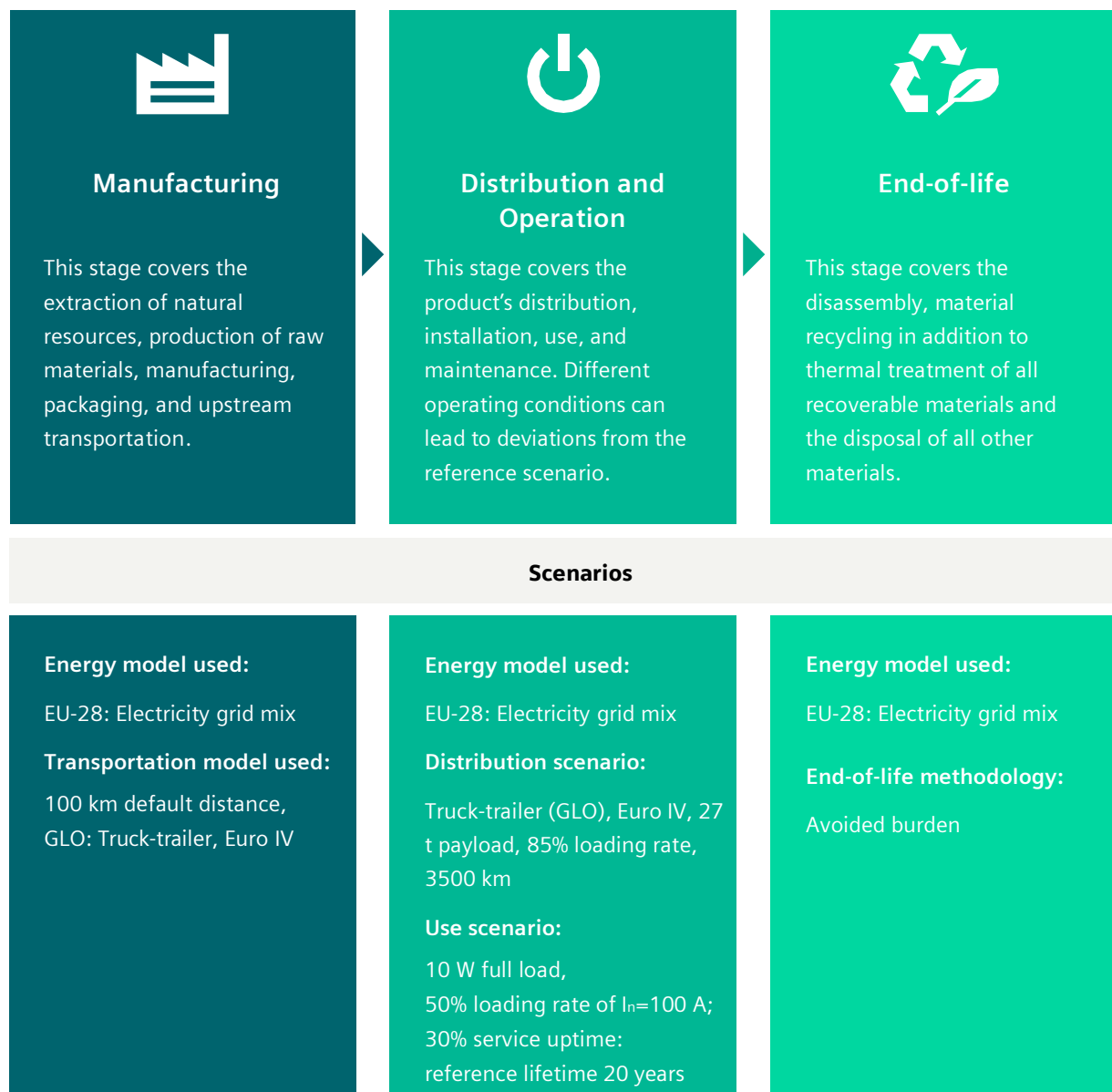
### Product Weight 2.237 kg



# 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



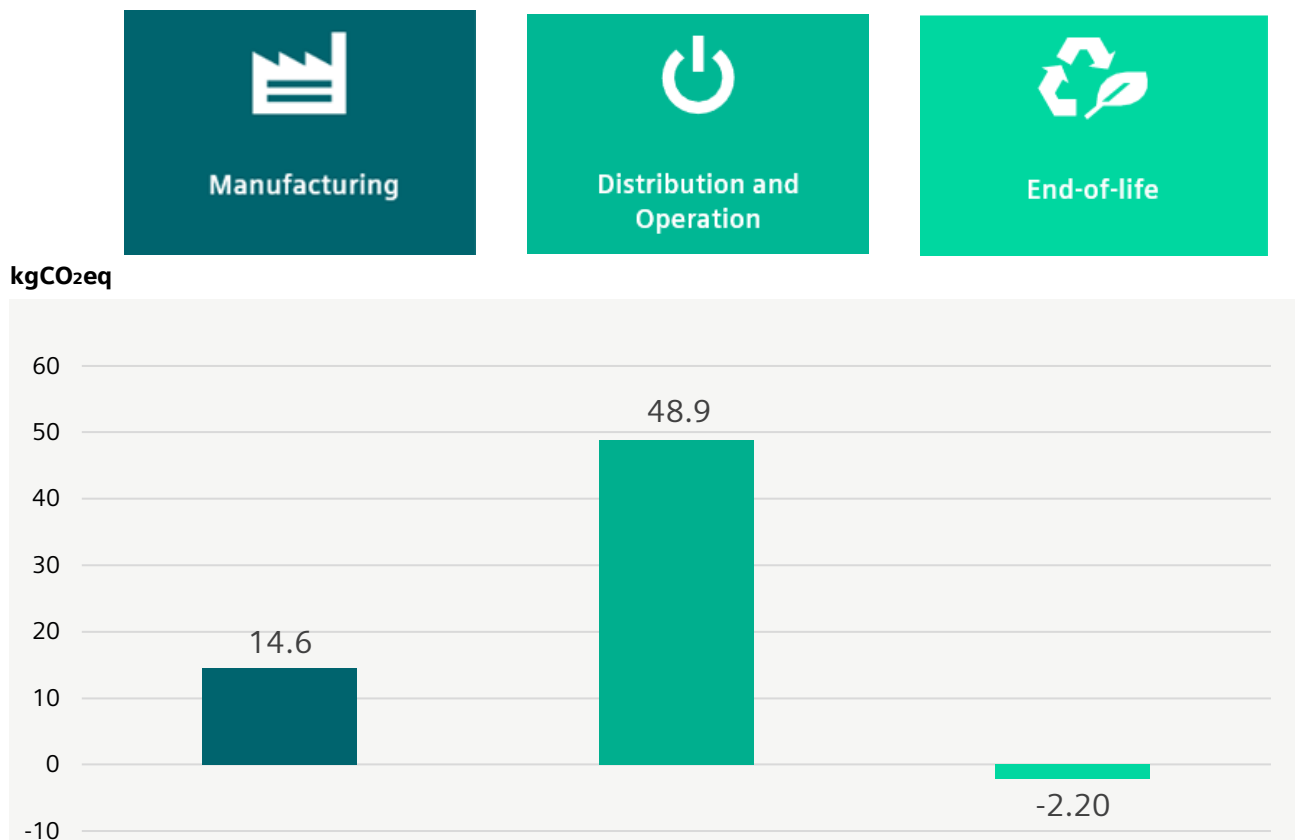
# Key environmental performance indicators

The following impact categories characterize the product's environmental footprint. They have been calculated with LCIA methodology EF3.1; LCA tool: GaBi 9.5, Database: GaBi Professional & Extensions, 2020.

| Impact category                               | Unit                                   | Total    | Manufacturing | Distribution | Operation | End-of-life |
|-----------------------------------------------|----------------------------------------|----------|---------------|--------------|-----------|-------------|
| Acidification                                 | Mole of H <sup>+</sup> eq              | 1.51E-01 | 2.43E-01      | 2.94E-03     | 1.06E-01  | -2.02E-01   |
| Climate change – total                        | kg CO <sub>2</sub> eq                  | 6.18E+01 | 1.46E+01      | 5.14E-01     | 4.89E+01  | -2.20E+00   |
| Climate change – fossil                       | kg CO <sub>2</sub> eq                  | 4.90E+02 | 1.19E+02      | 5.42E+00     | 3.85E+02  | -1.96E+01   |
| Climate change – biogenic                     | kg CO <sub>2</sub> eq                  | 1.74E-04 | 3.43E-05      | 1.06E-06     | 1.41E-04  | -3.00E-06   |
| Climate change – land use and land use change | kg CO <sub>2</sub> eq                  | 3.21E-02 | 1.09E-02      | 1.45E-03     | 2.39E-02  | -4.10E-03   |
| Ecotoxicity, freshwater – total               | CTUe                                   | 3.39E-01 | 1.15E-01      | 1.61E-02     | 2.50E-01  | -4.30E-02   |
| Eutrophication, freshwater                    | kg P eq                                | 7.29E-08 | 6.75E-08      | 1.08E-10     | 1.11E-08  | -5.77E-09   |
| Eutrophication, marine                        | kg N eq                                | 5.92E-07 | 5.48E-07      | 5.71E-09     | 4.05E-07  | -3.66E-07   |
| Eutrophication, terrestrial                   | Mole of N eq                           | 2.51E+01 | 8.39E-01      | 6.69E-04     | 2.38E+01  | 4.00E-01    |
| Human toxicity, cancer – total                | CTUh                                   | 3.50E+02 | 4.86E+01      | 2.15E+00     | 3.17E+02  | -1.81E+01   |
| Human toxicity, non-cancer – total            | CTUh                                   | 2.91E-08 | 2.34E-08      | 7.33E-14     | 7.09E-10  | 4.90E-09    |
| Ionising radiation, human health              | kBq U235 eq                            | 1.28E-06 | 1.73E-06      | 1.02E-08     | 8.82E-07  | -1.34E-06   |
| Land Use                                      | dimensionless (pt)                     | 8.93E-02 | 4.49E-02      | 2.78E-03     | 6.45E-02  | -2.28E-02   |
| Ozone depletion                               | kg CFC-11 eq                           | 1.06E+03 | 2.14E+02      | 6.83E+00     | 8.79E+02  | -4.28E+01   |
| Particulate matter                            | Disease incidence                      | 4.08E-04 | 3.18E-03      | 5.33E-08     | 1.32E-05  | -2.78E-03   |
| Photochemical ozone formation, human health   | kg NMVOC eq                            | 1.28E+01 | 2.82E+00      | 2.03E-03     | 1.11E+01  | -1.08E+00   |
| Resource use, fossils                         | MJ                                     | 1.51E-01 | 2.43E-01      | 2.94E-03     | 1.06E-01  | -2.02E-01   |
| Resource use, mineral and metals              | kg Sb eq                               | 6.18E+01 | 1.46E+01      | 5.14E-01     | 4.89E+01  | -2.20E+00   |
| Water use                                     | m <sup>3</sup> water eq deprived water | 4.90E+02 | 1.19E+02      | 5.42E+00     | 3.85E+02  | -1.96E+01   |

# Climate change

This chart shows the overall impact of the product on climate change – total. 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 and its impact is included in the operation bar.



## End-of-life results

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 50%** mainly due to metal content
- an **energy recoverability of up to 42%** from plastic materials
- a **minimum disposal rate of 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.

# 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.

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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.

**Published by  
Siemens AG**

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