ENVIRONMENTAL PRODUCT DECLARATION

SIMATIC IDENT RF380R

6GT2801-3BA10

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 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.

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.

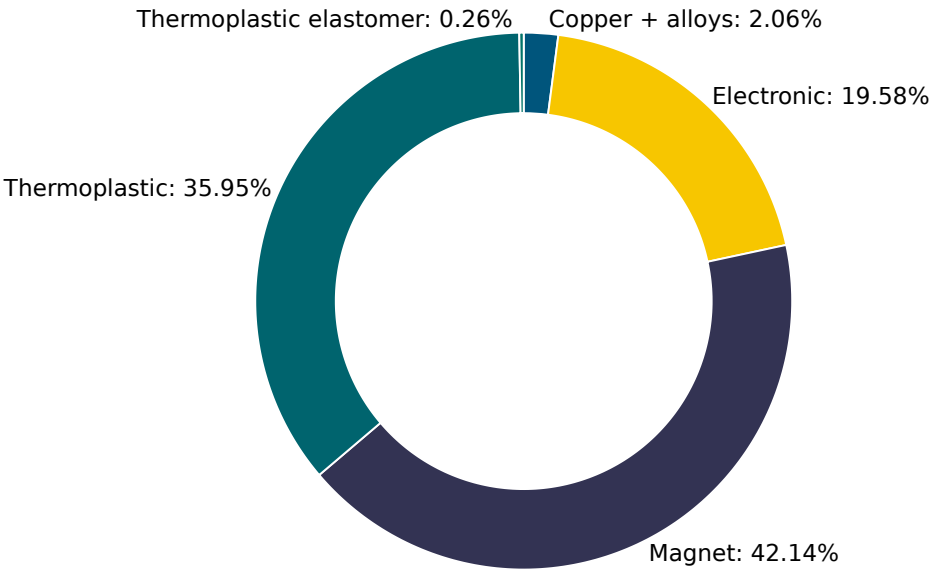
Products	**6GT2801-1BAxx-xxxx; 6GT2801-2xxxx-xxxx; 6GT2801-3xxxx-xxxx; 6GT2801-4xxxx-xxxx; 6GT2803-1xxxx; 6GT2821-2xxxx; 6GT2821-4xxxx; 6GT2821-5xxxx; 6GT2821-6xxxx; 6GT2821-8xxxx 6GT2823-0xxxx**
Represented by the reference product	6GT2801-3BA10
Product Description	SIMATIC RF300 Reader RF380R (GEN2) RS422/232 interface (3964R) IP67, -25 to +70 °C, 160x 80x 41 mm with integrated antenna.
Functional Unit	Production of 1 pc SIMATIC IDENT RF380R G2 and use over the reference service lifetime of 10 years.[1]

[1] The lifetime value used for calculation is a reference value and does not equate with the minimum, average or real life time.

Material composition

The following chart outlines the overall material composition of the calculated reference product without packaging. Product weight of 0.36 kg adds up with packaging weight of 0.1 kg to a total weight of 0.46 kg. Packaging consists of: Graphic Paper, PE film.

Product Weight 0.36 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

Manufacturing

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

Distribution and Operation

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

End-of-Life

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

Scenarios

Energy model used:
Europe (standard mix)

Transportation model:
Truck-trailer (GLO), 34-40t gross weight, 3500 km default distance

Energy model used:
Europe (standard mix)

Distribution scenario:
Truck-trailer, 34 - 40t gross weight 3500 km

Use Scenario:
3.6 W full load, 100% service uptime: reference lifetime 10 years

Energy model used:
EMEA

End-of-life methodology:
Modeled according to Cut-off methodology.

Key environmental performance indicators

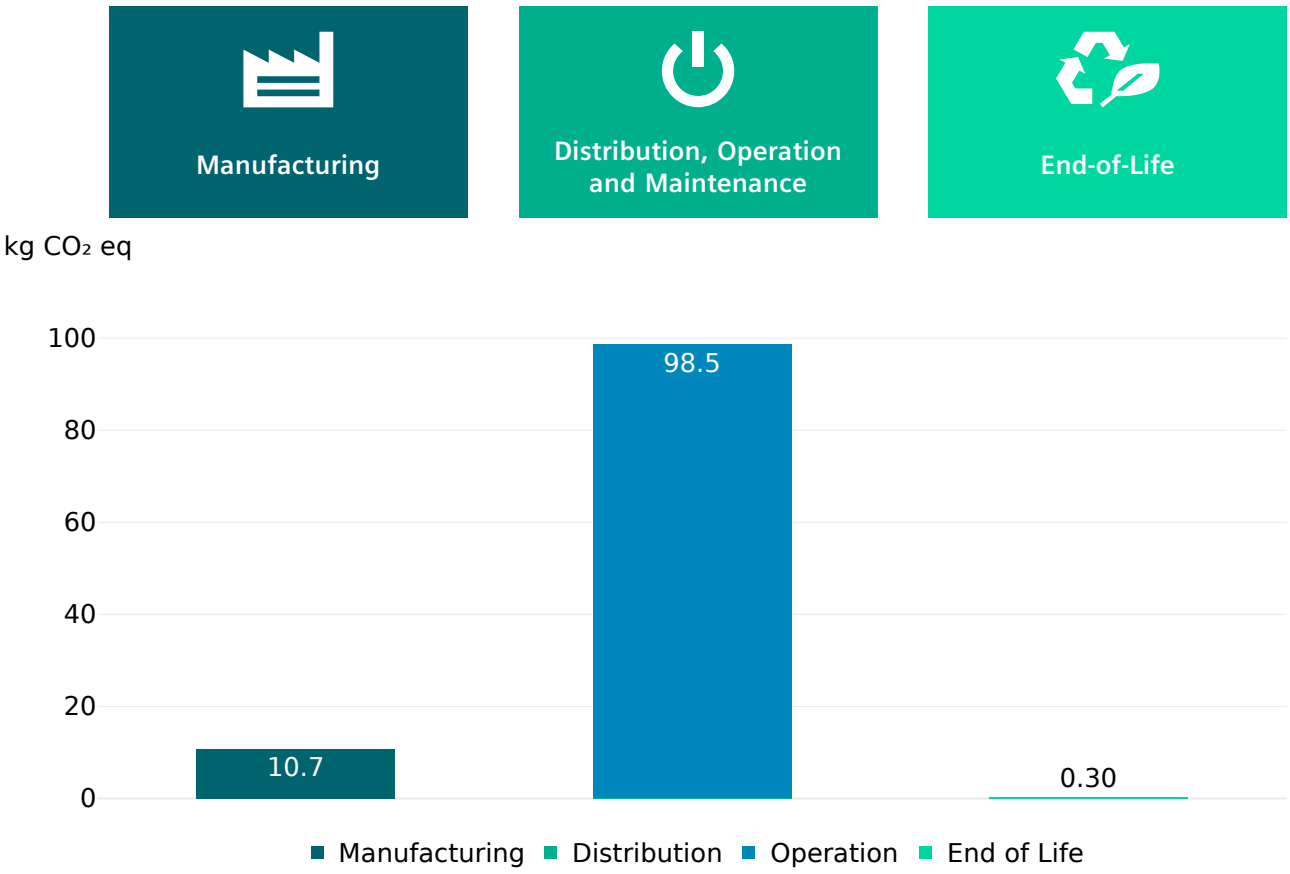
The following impact categories characterize the product's environmental footprint. They have been calculated with LCIA methodology EF3.1; LCA tool: Green Digital Twin (GDT), Database: One Siemens LCA Database (based on MLC CUP 2023.2, formerly GaBi).

To ensure the high quality and completeness of the LCA results, Primary Data have been used whenever possible. Datasets for resources, such as electrical energy or natural gas, are chosen from the region where the device is produced and assembled. If primary data are not available, datasets reflecting state-of-the-art manufacturing technology are considered.

Impact Category	Unit	Total	Manufacturing	Distribution	Operation	End-of-life
Acidification	Mole of H+ eq	2.62E-1	5.32E-2	1.46E-4	2.08E-1	5.16E-4
Climate change – total	kg CO_2 eq	1.10E+2	1.07E+1	1.14E-1	9.85E+1	3.00E-1
Climate change – fossil	kg CO_2 eq	1.09E+2	1.07E+1	1.13E-1	9.76E+1	3.00E-1
Climate change – biogenic	kg CO_2 eq	9.23E-1	5.89E-2	3.06E-4	8.64E-1	1.14E-4
Climate Change, land use and land use change	kg CO_2 eq	1.86E-2	7.90E-3	1.06E-3	1.06E-2	1.13E-5
Ecotoxicity, freshwater – total	CTUe	6.44E+2	7.31E+1	1.11E+0	5.70E+2	1.25E-1
Eutrophication, freshwater	kg P eq	4.55E-4	8.86E-5	4.17E-7	3.66E-4	2.26E-7
Eutrophication, marine	kg N eq	5.88E-2	8.67E-3	4.96E-5	4.99E-2	2.52E-4
Eutrophication, terrestrial	Mole of N eq	6.16E-1	9.18E-2	5.97E-4	5.21E-1	2.79E-3
Human toxicity, cancer – total	CTUh	3.44E-8	4.20E-9	2.26E-11	3.02E-8	1.04E-11
Human toxicity, non-cancer – total	CTUh	6.51E-7	1.68E-7	1.01E-9	4.81E-7	6.00E-10
Ionising radiation, human health	kBq U235 eq	5.48E+1	7.71E-1	4.35E-4	5.41E+1	4.93E-3
Land Use	dimensionless (pt)	8.72E+2	6.36E+1	6.49E-1	8.08E+2	9.72E-2
Ozone depletion	kg CFC-11 eq	3.12E-9	1.32E-9	1.48E-14	1.80E-9	1.92E-13
Particulate matter	Disease incidences	2.33E-6	5.82E-7	1.07E-9	1.75E-6	1.66E-9
Photochemical ozone formation, human health	kg NMVOC eq	1.59E-1	2.53E-2	1.26E-4	1.33E-1	6.48E-4
Resource use, fossils	MJ	2.21E+3	1.57E+2	1.55E+0	2.05E+3	4.26E-1
Resource use, mineral and metals	kg Sb eq	1.03E-3	1.01E-3	7.56E-9	1.51E-5	1.73E-9
Water use	m^3 water eq deprived water	2.40E+1	2.51E+0	1.38E-3	2.15E+1	3.19E-2

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 references 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 7% mainly due to metal content
- **an** energy recoverability of up to 38% from plastic materials
- **a** minimum disposal rate of 54%

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.

Appendix

For other MLFBs covered by this EPD, please consider the following factors:

Product	Description	Manufacturing	Distribution	Operation	End-of-Life
6GT2801-3BA10	SIMATIC RF300 Reader RF380R (GEN2) RS422/232	1	1	1,00	1
6GT2801-1BA10	SIMATIC RF300; Reader RF310R (GEN2) RS422	1	1	0,40	1
6GT2821-6AC10	SIMATIC RF200 Reader RF260R RS-422	1	1	0,33	1
6GT2821-4AC10	SIMATIC RF200 Reader RF240R RS-422	1	1	0,33	1
6GT2821-1AC10	SIMATIC RF200 Reader RF210R RS-422	1	1	0,33	1
6GT2801-4BA10	SIMATIC RF300; Reader RF350R (GEN2) RS422	1	1	0,40	1
6GT2801-3AB20-0AX0	SIMATIC RF300 Reader RF382R RS422/232	1	1	1,07	1
6GT2821-8AC10	SIMATIC RF200 Reader RF280R RS422	1	1	0,87	1
6GT2821-6AC32	SIMATIC RF200 Reader RF260R IO-Link	1	1	0,33	1
6GT2821-4BC32	SIMATIC RF200 Reader RF240R IO-Link	1	1	0,33	1
6GT2821-2AC10	SIMATIC RF200 Reader RF220R RS422	1	1	0,33	1
6GT2821-1BC32	SIMATIC RF200 Reader RF210R IO-Link	1	1	0,33	1
6GT2821-1AC32	SIMATIC RF200 Reader RF210R IO-Link	1	1	0,33	1
6GT2821-6BC32	SIMATIC RF200 Reader RF260R IO-Link	1	1	0,33	1
6GT2821-2AC32	SIMATIC RF200 Reader RF220R IO-Link	1	1	0,33	1
6GT2821-5BC32	SIMATIC RF200 Reader RF250R IO-Link	1	1	0,33	1
6GT2801-3BA10-0AX2	SIMATIC RF300 Reader RF380R (GEN2) RS422/232	1	1	1,00	1
6GT2801-1BA10-0AX1	READER RF310R (GEN2) RS422/BODEN GEDREHT	1	1	0,40	1
6GT2801-1BA10-0AX2	Reader RF310R (GEN2) RS422 (ATEX)	1	1	0,40	1
6GT2801-1BA20-0AX1	READER RF310R (GEN2) SCANMODE	1	1	0,40	1
6GT2801-2BA10	Reader RF340R (GEN2) RS422	1	1	0,40	1
6GT2801-2BA10-0AX2	Reader RF340R (GEN2) RS422 (ATEX)	1	1	0,40	1
6GT2801-4BA10-0AX2	READER RF350R(GEN2) RS422 (ATEX)	1	1	0,40	1
6GT2801-1BA10-0AX0	FBG RF310R GEN2 fuer RF350M	1	1	0,40	1
6GT2801-4BA10-0AX0	FBG RF350R GEN2 fuer RF350M (ext. Ant.)	1	1	0,40	1
6GT2801-2BA10	Reader RF340R (GEN2) RS422	1	1	0,40	1
6GT2821-4AC32	Reader RF240R IO-LINK	1	1	0,40	1
6GT2821-5AC10	Reader RF250R RS422	1	1	0,40	1
6GT2821-4AC40	Reader RF240R RS232 (ASCII)	1	1	0,40	1
6GT2821-2BC32	Reader RF220R IO-LINK V1.1	1	1	0,40	1
6GT2821-6AC40	Reader RF260R RS232 (ASCII)	1	1	0,40	1
6GT2821-5AC32	Reader RF250R IO-LINK	1	1	0,40	1
6GT2823-0AA00	Mobile Reader RF210M	1	1	0,40	1
6GT2821-8AC40	READER RF280R (ASCII) RS232	1	1	0,40	1
6GT2803-1FA00	HF MOBILE READER HEAD RF360H	1	1	0,40	1
6GT2821-5AC40	READER RF250R RS232 (ASCII)	1	1	0,40	1
6GT2821-4AC40	Reader RF240R RS232 (ASCII)	1	1	0,40	1
6GT2821-5AC40	READER RF250R RS232 (ASCII)	1	1	0,40	1

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.

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