

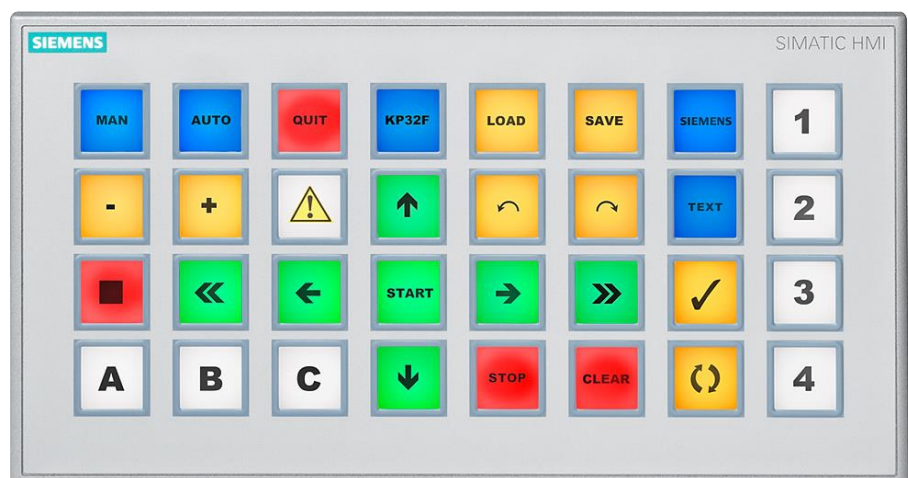


## ENVIRONMENTAL PRODUCT DECLARATION

# SIMATIC

# HMI 6AV3688-3EH47-0AX0


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



# General information

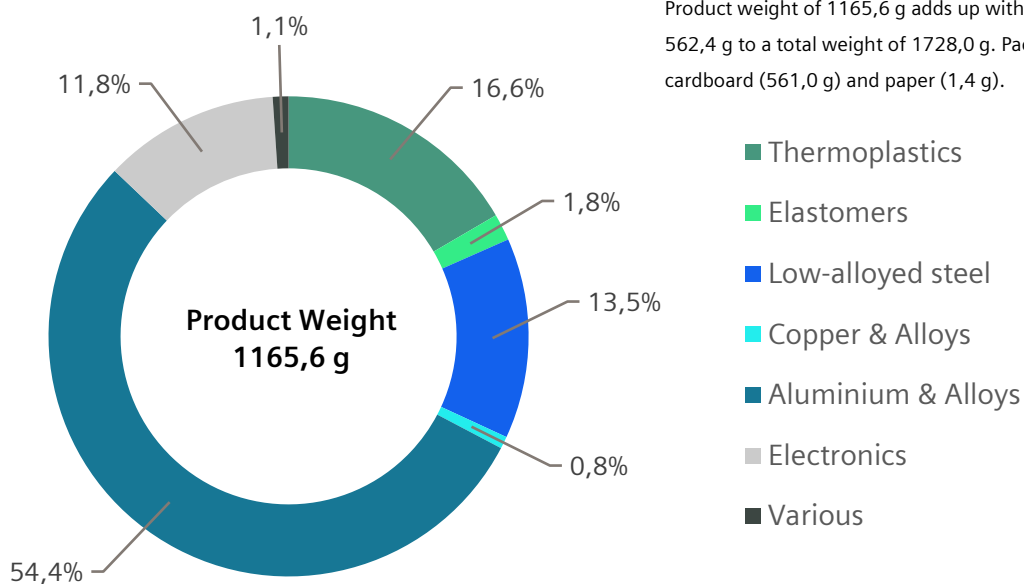
This environmental product declaration (EPD) is based on the international standard ISO 14021 ("Environmental labels and declarations – Self-declared environmental claims – Type II"). The data in this EPD has been evaluated on a full-scale life cycle assessment (LCA) study according to ISO 14040/44, 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 operator control integrated management system according to ISO 9001, ISO 14001 and ISO 45001.

<b>Products</b>	6AV3688-3EH47-0AX0, including its SIPLUS extreme variants	
<b>Represented by</b>	6AV3688-3EH47-0AX0	
<b>Product Description</b>	SIMATIC HMI KP32F PN, Key Panel, 32 short-stroke keys with multi-colored LEDs, PROFINET interfaces with PROFI-safe, 16 DI+16 DI/DO, 4 safety DI pins, 24 V DC can be looped through parameterizable as of STEP 7 V5.5	
<b>Functional Unit</b>	To provide a human machine interface to control tasks at machine level over the reference service lifetime of 10 years	

## Material composition

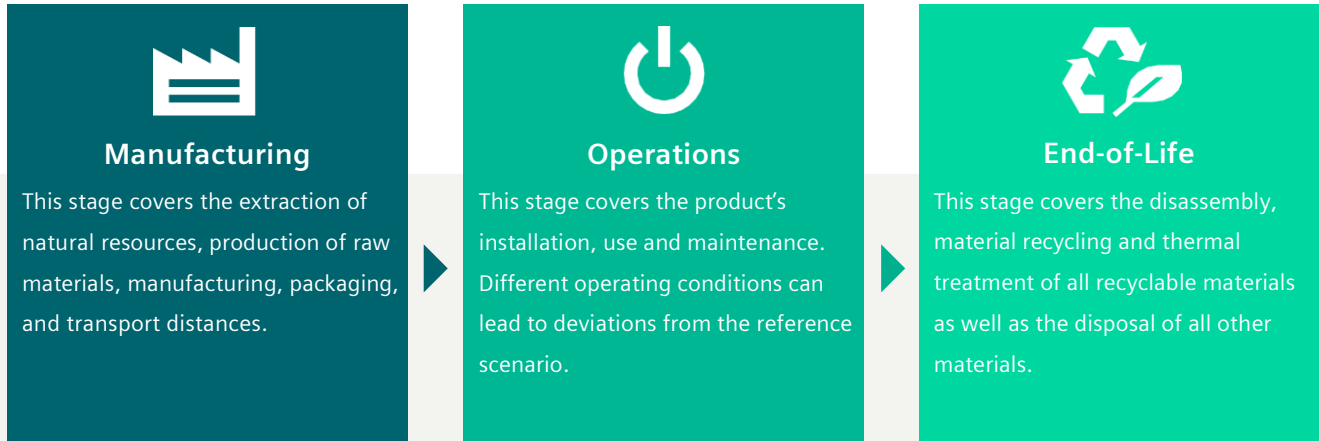
The following chart outlines the overall material composition of the calculated reference product.



## 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		
<p><b>Energy model used:</b> EU-28: Electricity grid mix</p> <p><b>Transportation model used:</b> 100 km default distance, GLO: Truck-trailer, Euro IV</p>	<p><b>Energy model used:</b> EU-28: Electricity grid mix</p> <p><b>Use scenario:</b> 50% active mode w/ LEDs (3,8 W<sup>1</sup>), 20% active mode w/o LEDs (3,1 W<sup>1</sup>), 30% Off, reference lifetime 10 years</p>	<p><b>Energy model used:</b> EU-28: Electricity grid mix</p>

## 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.

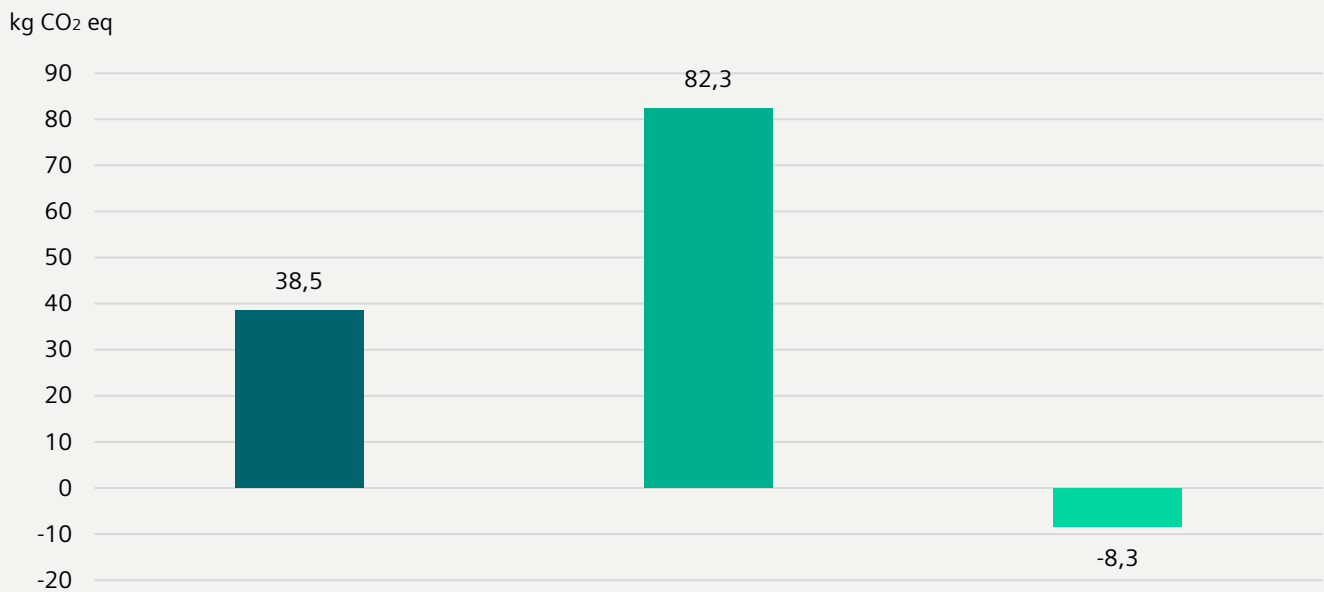
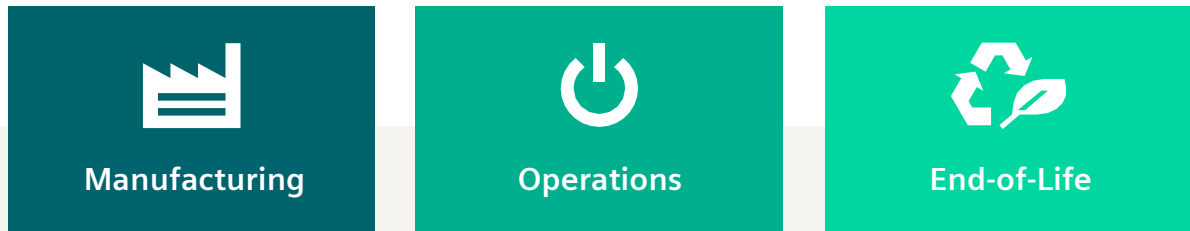
Impact category	Unit	Total	Manufacturing	Distribution <sup>2</sup>	Operation	End-of-Life
Acidification	Mole of H <sup>+</sup> eq	2,37E-01	2,25E-01	1,68E-03	1,79E-01	-1,68E-01
Climate change – total	kg CO <sub>2</sub> eq	1,13E+02	3,85E+01	2,97E-01	8,23E+01	-8,27E+00
Ecotoxicity, freshwater – total	CTUe	8,61E+02	2,45E+02	2,74E+00	6,48E+02	-3,45E+01
Eutrophication, freshwater	kg P eq	3,74E-04	1,37E-04	8,83E-07	2,38E-04	-1,93E-06
Eutrophication, marine	kg N eq	6,41E-02	3,21E-02	8,23E-04	4,01E-02	-8,94E-03
Eutrophication, terrestrial	Mole of N eq	6,79E-01	3,46E-01	9,11E-03	4,21E-01	-9,71E-02
Human toxicity, cancer – total	CTUh	2,71E-08	1,31E-08	5,53E-11	1,86E-08	-4,64E-09
Human toxicity, non-cancer – total	CTUh	9,68E-07	4,85E-07	3,06E-09	6,82E-07	-2,01E-07
Ionising radiation, human health	kBq U235 eq	4,24E+01	3,66E+00	7,15E-04	4,01E+01	-1,34E+00
Land Use	dimensionless (pt)	6,88E+02	1,13E+02	1,36E+00	5,33E+02	4,06E+01
Ozone depletion	kg CFC-11 eq	4,78E-08	4,55E-08	1,77E-14	1,19E-09	1,11E-09
Particulate matter	Disease incidences	2,60E-06	2,35E-06	5,77E-09	1,48E-06	-1,24E-06
Photochemical ozone formation	kg NMVOC eq	1,74E-01	9,68E-02	1,59E-03	1,09E-01	-3,24E-02
Resource use, fossils	MJ	1,88E+03	5,14E+02	3,95E+00	1,48E+03	-1,12E+02
Resource use, mineral and metals	kg Sb eq	1,28E-03	3,81E-03	2,48E-08	2,22E-05	-2,55E-03
Water use	m <sup>3</sup> world eq	2,41E+01	6,11E+00	2,65E-03	1,86E+01	-5,77E-01

<sup>1</sup> Measurement setup: room temperature, power supply 24 V, all PN interfaces active, DI/DQ not connected, 50% of the LEDs on in active mode w/ LEDs (lightening) and no LEDs on in active mode w/o LEDs (non-lightening)

<sup>2</sup> Distribution scenario: Truck-trailer (GLO), Euro IV, 27 t payload, 85% loading rate, 3500 km

# 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 48,8%**
- an **energy recoverability rate of up to 48,1%**
- a **minimum disposal rate of 3,1%**

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**

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