

UAB Carlo Gavazzi Industri Kaunas



Environmental Product Declaration

Product: name:

MOFT20

Site Plant:

Raudondvario pl. 101
LT-47184 – Kaunas (Lithuania)

in compliance with ISO 14025 and EN 50693


Program Operator	EPDItaly
Publisher	EPDItaly
Declaration Number	LT2024MOF
EPDItaly Registration Number	EPDITALY0661
Issue Date	2024/03/27
Valid to	2029/03/27



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➡ General information

EPD Owner	UAB Carlo Gavazzi Industri Kaunas, Raudondvario pl. 101 LT-47184 – Kaunas (Lithuania) www.gavazzi-automation.com info@gavazzi.lt
Reference production site(s)	Kaunas plant: Raudondvario pl. 101 LT-47184 – Kaunas (Lithuania)
Scope of application	This document refers to the device of the SENSORS family.
Programme Operator	EPDItaly - info@epditaly.it
Independent Verification	This declaration was developed according to the EPDItaly Regulations; further information and the Regulations themselves are available at www.epditaly.it Independent verification of the declaration and data carried out according to ISO 14025:2010 <input type="checkbox"/> _Internal <input checked="" type="checkbox"/> _External Third-party verification performed by: ICMQ SpA, via De Castilia, 10 20124 - _Milan (www.icmq.it) Accredited by Accredia
CPC Code	4621 "Electricity distribution or control apparatus"
Company contact	<u>Ernestas Greicius</u> , Factory Manager.
Technical support	 Aequilibria Srl - SB P.le della Stazione, 8 35131 – Padova (PD) - ITALIA
Comparability	Environmental statements published within the same product category, but from different programs, may not be comparable. In particular, EPDs of similar products may not be comparable if they do not comply with the relevant Technical Standard.
Responsability	UAB Carlo Gavazzi Industri Kaunas releases EPDItaly from any non-compliance with environmental legislation. The holder of the declaration will be responsible for the supporting information and evidence; EPDItaly disclaims any responsibility regarding the manufacturer's information, data and results of the life cycle assessment.



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Reference documents	This statement was developed following the EPDItaly Program Regulations (Rev.6 of 30/10/2023 available at www.epditaly.it . The EN 50693:2019 standard is the framework reference for PCR "Electronic and electrical products and systems" (PCR EPDItaly007).
PCR – Product Category Rules	Core-PCR: EPDITALY007 "Electronic and electrical product and systems" Rev. 3 of 13/01/2023

Table 1. General information of EPD

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Foreword

This document represents the EPD study conducted for the **MOFT20** device manufactured by UAB Carlo Gavazzi Industri Kaunas, in accordance with the EPDItaly Program and its Regulations, developed in accordance with ISO 14025 and aimed at providing a tool for the development, verification and publication of Environmental Product Declarations.

The study was carried out in accordance with PCR EPDItaly007 (PCR for electronic and electrical products and systems), which identifies and documents the objective and scope of LCA-based information for the product category, the rules for producing additional environmental information, the life cycle stages to be included, the parameters to be addressed, and the manner in which the parameters are to be collected and communicated in a report.

Producer information and environmental policy

UAB CARLO GAVAZZI INDUSTRI KAUNAS stays at the forefront in sensor manufacturing in Lithuania.

It belongs to CARLO GAVAZZI ACBU GROUP, one of the leading companies in the world, which is active in the manufacture and design of sensors and automation.

To ensure the leading role, prosperity, and growth of UAB CARLO GAVAZZI INDUSTRI KAUNAS, it is necessary to follow this quality policy, which underpin future activities of the company. To implement this objective, products that fully satisfy customer demands should be supplied to the market, and manufacture of new products, including sensors for use in potentially explosive atmospheres, should be mastered.

This policy shall be followed to achieve the objectives and in accordance with the principles:

- to create a quality and environmental management system complying with the requirements of international standards ISO 9001 and ISO 14001 and to continuously improve it.
- priority for quality in all areas of the company's activities.
- to ensure that market is supplied with reliable and safe products, including sensors for use in potentially explosive atmospheres, which fully comply with the requirements of legal acts and regulations applicable in the markets served as well as the requirements of the company's customer and user, including Directive 2014/34 EU.

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- to create a work environment that would encourage the staff to improve its qualification and engage into the implementation of objectives and tasks of the quality policy.
- do not make any decisions that could adversely affect the quality of the products supplied, including their safety, at any stage of their handling in the company, or when it is used by end user.
- to appreciate the staff's proposals on the improvement of the company's performance to enhance its organization and flexibility.
- to follow the principles of sustainable development and pollution prevention.
- to improve waste management in the company.
- economical and rational use of natural and energy resources.
- to raise the quality and environmental objectives of the policy and allocate the necessary resources for it's achievement.

The company management invites all employees to concentrate their efforts around this quality and environmental policy.

Product Information

The product under analysis is device MOFT20, belonging to the SENSORS family, nominal consumption 0,12 W, weight 350 g (0,35 kg) including packaging and manual.

The adopted functional unit was defined, based on the reference PCR, as **a device, characterized by its own operating power at 0,12 W for a life time (RSL - Reference Service Life") of 10 years, including its packaging, and operating throughout its useful life.**

These are electrical energy measurement devices, performance class 1, indirect measurement, and comply with the following international regulations: Electromagnetic Compatibility Directive, RoHS Directive.

Product assembly and testing are carried out at the UAB Carlo Gavazzi Industri Kaunas production site.

Regarding the use phase, the product does not require periodic maintenance, is considered to be active throughout its estimated useful life of 10 years, with a nominal consumption of 0,12 W at a voltage of 8 VDC.

The finished device is then sent to the various Gavazzi distribution centers or, in some cases, directly to a specific customer.

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Product family	SENSORS	
Product identification number	5709870073682 (GTIN13)	
Technical Data	Power: 0,12 W Weight: 0,347 kg (escluso packaging) Service Life Time (RLS): 10 years	
Packaging	Weight: 0,003 kg (3 g) Material: Polyethylene	

Table 2. Product related information MOFT20

Materials and constituents of the product

The declaration of materials is made in accordance with EN IEC 62474.

The products comply with substance restrictions in the EU RoHS directive (2011/65/EU).

The product does not contain batteries and any recycled material content in the device is unknown.

Below is the total mass of the product (including packaging) and the weight percentages of each individual raw material to the total product.

Total mass of the device	0,350 kg (including packaging)
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Raw Material Category SCLAM	SCLAM	SCLAM description	% of total weight	% of category to total weight
PCB	PCB-XX	Simple printed circuit boards (up to two layers)	0,23%	0,23%
Electronic Components	DDSMD	SMD - Diodes, zeners, leds, transils, rectifier bridges	0,003%	0,014%
	RESMD	SMD Resistors	0,011%	
Sclam product specifications	OPEL	Opto elements	0,011%	0,068%
	PTTCP	Potting compounds	0,043%	
	PTTCP	Potting compounds	0,014%	

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Cables	CABLE	Cables, sleeves and wirings PUR	97,71%	97,71%
Small metallic parts	MECUS	Custom metal parts	0,020%	0,020%
Plastics	PLCUS	Custom plastic parts	0,43%	0,77%
	PLCUS	Custom plastic parts	0,09%	
	PLCUS	Custom plastic parts	0,09%	
	PLSTD	Standard plastic parts	0,17%	
Plastic primary packaging	LAPAC	Packaging labels	0,31%	1,30%
	PLBAG	Plastic bags	0,99%	
Paper primary packaging	-	-	-	-

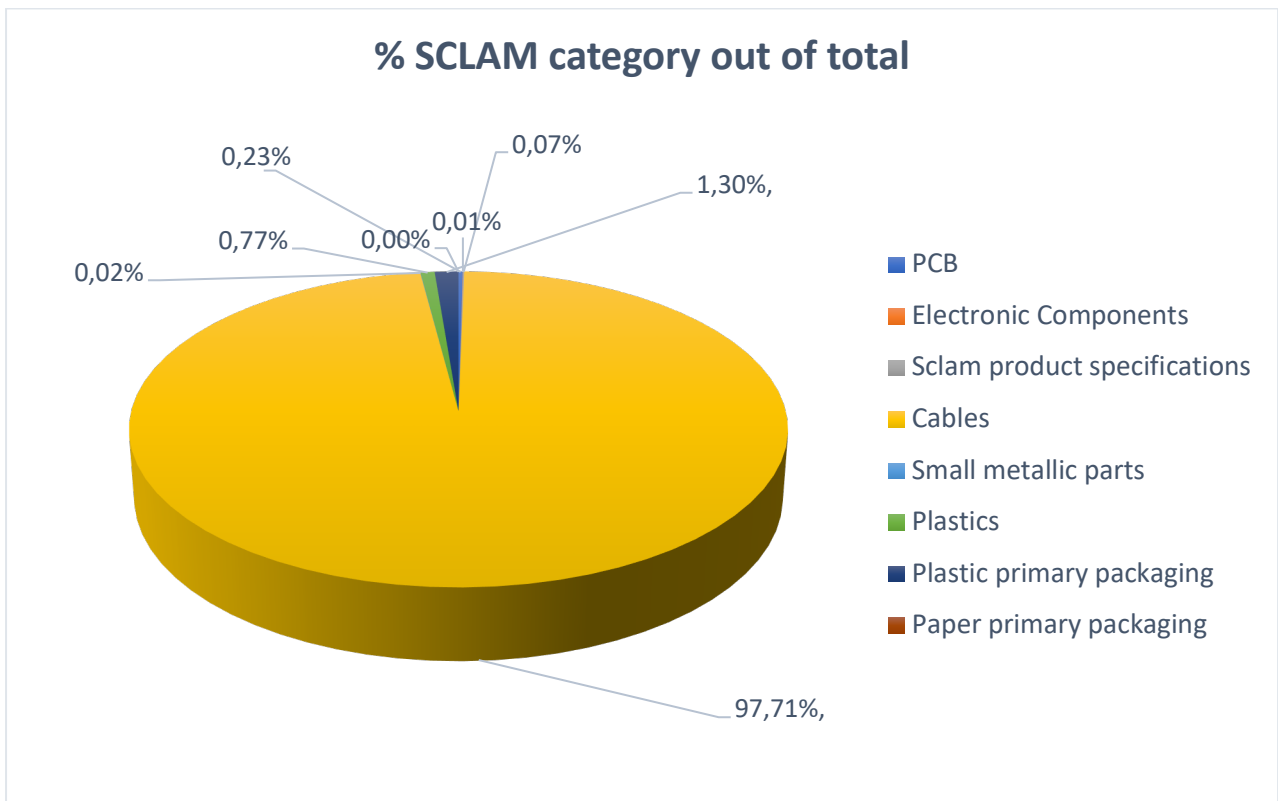


Figure 1. Material breakdown of the **MOFT20** device

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Information related to the study

System boundaries	The boundaries of the study system are “ cradle-to-grave ”.
Geographical validity	Global
Reference year data	2022
Reference tool	This EPD was generated using the results automatically generated by the Excel tool “LCA tool_data 2022_GAV Kaunas_rev1” of 16/02/2024

Table 4. Information related to the study

The assessment of all potential environmental impacts above is based on the entire life cycle of the product under analysis: production, distribution, installation, use and end of life.

The elements and processes considered for the assessment of impacts related to each phase are described below:

Production	<ul style="list-style-type: none"> Product and packaging raw materials (primary and secondary), auxiliary materials and related transportation production and processing processes (involving energy and water consumption, air emissions, waste generated by production) - Electricity Dataset <i>elettricità: Electricity, medium voltage {LT} electricity, medium voltage, residual mix Cut-off (Ecoinvent 3.9)</i> 																		
Distribution	<ul style="list-style-type: none"> transportation from the Gavazzi plant to the latest distribution logistics platforms <table border="1" style="width: 100%; text-align: center;"> <thead> <tr style="background-color: #FFD700;"> <th colspan="3">FINISHED PRODUCT DISTRIBUTION (CoD)</th> </tr> <tr style="background-color: #FFF2CC;"> <th>Distribution center finished product</th> <th>% distributed to the CoD</th> <th>Further distribution at the continental level?</th> </tr> </thead> <tbody> <tr> <td>CGC-CdD Italy</td> <td>25%</td> <td>Yes</td> </tr> <tr> <td>CGC-CdD USA</td> <td>25%</td> <td>Yes</td> </tr> <tr> <td>CGC-CdD Canada</td> <td>25%</td> <td>Yes</td> </tr> <tr> <td>CGC-CdD Singapore</td> <td>25%</td> <td>Yes</td> </tr> </tbody> </table>	FINISHED PRODUCT DISTRIBUTION (CoD)			Distribution center finished product	% distributed to the CoD	Further distribution at the continental level?	CGC-CdD Italy	25%	Yes	CGC-CdD USA	25%	Yes	CGC-CdD Canada	25%	Yes	CGC-CdD Singapore	25%	Yes
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CGC-CdD Canada	25%	Yes																	
CGC-CdD Singapore	25%	Yes																	



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	<ul style="list-style-type: none"> • transportation from Gavazzi's CdD to the specific customer (Company Name, Country) • disposal of secondary packaging
Installation	<ul style="list-style-type: none"> • End of life of primary packaging.
Use and maintenance phase	<ul style="list-style-type: none"> • Product Category: Photoelectric • usage scenario: 10-year service life, continuous operation at 100% rated load, rated power 0,12 W.
End of life	<ul style="list-style-type: none"> • Device End of Life Scenario (WEEE).

Table 5. Processes considered at various stages of the study

The LCA study was carried out according to UNI EN ISO 14040/14044 standards, following the guidelines of IS EN 50693:2019.

The software used for impact assessment is SimaPro 9.5.1; Ecoinvent 3.9 database.

The methods used to calculate impacts refer to the CML baseline and IPCC method for the climate change impact category.

Site-specific data were used for all of the following processes::

- production and transportation of device raw materials, auxiliary materials and packaging materials;
- manufacturing processes, plant energy consumption, air emissions and waste;
- weight, power of the device;
- transportation to the distribution center (last logistics platform).

Generic data were used for:

- recycling, energy recovery and disposal rates for primary and secondary packaging materials and WEEE (global data).

Default scenarios described in PCR 007 were used for:

- transportation to the point of sale: intercontinental and local transportation scenario;
- Lifetime (RLS) of the device: 10 years.

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Environmental impact assessment

The potential environmental impacts assessed through an LCA of the **MOFT20** device are given in Table 6 below.

Impacts were calculated using SimaPro Developer 9.5.1 software and the Ecoinvent 3.9 database.

ENVIRONMENTAL IMPACT								
Impact category	Unit of measurement	PRODUCTION phase		DISTRIBUTION phase	INSTALLATION Phase	Use and Maintenance Phase	END OF LIFE phase	TOTAL
		UPSTREAM module	CORE module	DOWNSTREAM module				
GWP TOT (Global Warming Potential)	kg CO ₂ eq	2,59E+00	6,41E-02	1,97E+00	5,79E-04	5,08E+00	9,69E-02	9,80
GWP - fossil	kg CO ₂ eq	2,57E+00	6,21E-02	1,96E+00	2,89E-04	4,94E+00	9,69E-02	9,63
GWP - biogenic	kg CO ₂ eq	1,66E-02	1,87E-03	1,20E-03	2,90E-04	9,79E-02	-2,29E-05	0,12
GWP Luluc (GWP land use and land use change)	kg CO ₂ eq	3,91E-03	1,46E-04	2,35E-04	2,65E-07	3,90E-03	5,39E-05	0,04
Ozone layer depletion	kg CFC ₁₁ eq	3,78E-08	8,91E-03	3,04E-08	2,18E-12	7,51E-08	2,62E-10	0,01
Photochemical oxidation	kg NMVOC eq	3,00E-02	1,62E-03	1,15E-02	7,78E-07	1,54E-02	1,16E-04	0,06
Acidification	mol H ⁺ eq	1,36E-01	1,55E-04	8,38E-03	5,75E-07	2,72E-02	1,30E-04	0,17
Eutrophication, freshwater	kg P eq	4,05E-02	1,05E-02	7,66E-04	3,93E-05	2,23E-08	2,48E-03	0,01
Eutrophication, marine	Kg N eq	7,67E-03	8,34E-03	3,36E-03	2,38E-07	4,42E-03	4,02E-05	0,02
Eutrophication, terrestrial	mol N eq	1,03E-01	4,29E-04	3,61E-02	2,40E-06	4,36E-02	3,94E-04	0,18
Water use	m ³ depriv.	2,11E+00	1,07E-02	5,00E-02	3,96E-05	1,08E+00	4,22E-03	3,26
Resource use, fossils	MJ	3,69E+01	9,42E-01	2,57E+01	1,52E-03	7,89E+01	2,90E-01	142,79
Resource use, minerals and metals	kg Sb eq	2,12E+00	1,42E-07	9,43E-07	2,63E-10	4,06E-05	1,49E-07	2,12

Table 6. Results for various environmental impact categories for device MOFT20.

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USE OF RESOURCES								
Impact category	Unit of measurement	PRODUCTION phase		DISTRIBUTION phase	INSTALLATION Phase	Use and Maintenance Phase	END OF LIFE phase	TOTAL
		UPSTREAM module	CORE module	DOWNSTREAM module				
PENRE	MJ	3,91E+01	1,03E+00	2,73E+01	1,62E-03	8,43E+01	3,09E-01	152,08
PENRM	MJ	2,80E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,28
PENRT	MJ	3,96E+01	1,03E+00	2,73E+01	1,62E-03	8,43E+01	3,09E-01	152,64
PERE	MJ	6,21E+00	5,64E-02	1,13E-01	2,29E-05	2,22E+01	2,53E-02	28,58
PERM	MJ	0,00E+00	1,32E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,13
PERT	MJ	6,21E+00	1,89E-01	1,13E-01	2,29E-05	2,22E+01	2,53E-02	28,71
FW (Net use of fresh water)	m ³	5,16E-02	5,61E-04	1,78E-03	1,13E-06	1,02E-01	1,63E-04	0,16
MS (use of secondary materials)	kg	0,00E+00	5,61E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00
RSF (use of renewable secondary fuels)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00
NRSF (Use of non-renewable secondary fuels)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00

Legend: **PENRE** = Use of non-renewable primary energy resources excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources as raw materials; **PENRT** = Total use of non-renewable primary energy resources; **PERE** = Use of renewable primary energy resources excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources as raw materials; **PERT** = Total use of renewable primary energy resources.

Table 7. Environmental impacts related to resource consumption for the MOFT20 device.



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WASTE PRODUCTION								
Impact category	Unit of measurement	PRODUCTION phase		DISTRIBUTION phase	INSTALLATION Phase	Use and Maintenance Phase	END OF LIFE phase	TOTAL
		UPSTREAM module	CORE module	DOWNSTREAM module				
Hazardous waste disposal (HWD)	kg	4,86E-03	6,01E-03	3,94E-04	8,51E-05	3,44E-03	5,26E-03	2,01E-02
Non-hazardous waste disposal (NHWD)	kg	8,06E-01	1,57E-02	1,77E-01	2,99E-03	3,42E-01	9,62E-03	1,35E+00
Radioactive waste disposal (RWD)	kg	5,59E-05	1,15E-06	2,28E-06	3,38E-10	3,83E-04	4,80E-07	4,43E-04
Materials for energy recovery (MER)	kg	0,00E+00	0,00E+00	4,48E-04	3,86E-04	0,00E+00	0,00E+00	8,34E-04
Materials for recycling (MFR)	kg	0,00E+00	7,47E-02	0,00E+00	8,63E-04	0,00E+00	6,01E-02	1,36E-01
Components for reuse (CRU)	kg	0,00E+00	0,00E+00	2,86E-03	0,00E+00	0,00E+00	0,00E+00	2,86E-03
ETE (exported thermal energy)	MJ	0,00E+00	0,00E+00	1,28E-03	1,10E-03	0,00E+00	0,00E+00	2,38E-03
EEE (exported electricity energy)	MJ	0,00E+00	0,00E+00	6,23E-04	5,36E-04	0,00E+00	0,00E+00	1,16E-03

Table 8. Waste-related environmental impacts for the MOFT20 device.

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References

- ❖ ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework
- ❖ ISO 14044:2018 Environmental management - Life cycle assessment - Requirements and guidelines
- ❖ ISO 14020:2000 Environmental labels and declarations - General principles
- ❖ UNI EN ISO 14025:2010, Environmental labels and declarations - Type III environmental statements - Principles and procedures
- ❖ EN 50693:2019 Product category rules for life cycle assessments of electronic and electrical products and systems
- ❖ EPDItaly Program Regulations Rev. 6 of 30/10/2023
- ❖ Core-PCR: EPDITALY007 " Electronic and electrical product and systems" Rev. 3 of 13/01/2023