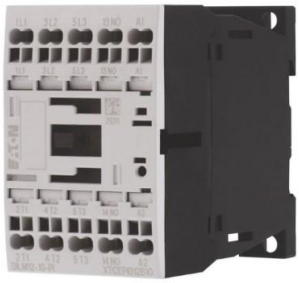
Product Environmental Profile



BG1 Push In DC Contactor

Representative product	DILM12-10(24VDC)-PI BG1 Push In DC (Y7-199243) Product Category: Contactor, Remote Control Switch
Description of the product	Eaton Moeller series DILM contactor are designed to establish and cut off the supply of a downstream installation from an electrical and/or mechanical control in industrial application areas. The reference product has 4 poles and rated voltage of 690 V AC.
Homogeneous Environmental Families Covered	The PEP concerns following product offerings from Eaton Moeller contactor as mentioned below : DILM12-10(24VDC)-PI (Reference) ; DILM7-10(24VDC)-PI ; DILM7-01(24VDC)-PI ; DILM9-10(24VDC)-PI ; DILM9-01(24VDC)-PI ; DILM12-01(24VDC)-PI ; DILM15-10(24VDC)-PI ; DILM15-01(24VDC)-PI ; DILMP20(24VDC)-PI ; DILMC12-01(24VDC) ; DILM9-01(24VDC)-PI-GVP ; DILM12-10(24VDC)-PI-GVP ; DILM9-10(24VDC)-PI-GVP
Functional unit	Establish and cut off the supply of a downstream installation from an electrical and/or mechanical control characterized by the composition of 3 NO main poles, 1 NO aux. contact, a rated voltage of 690 V AC, a rated current 12A at AC-3, a control circuit voltage 24V DC, with 4 poles and IP20 rating in the Industrial application areas, according to the appropriate use scenario, and during the reference service life of the product of 20 years.
Company information	Eaton Electro Productie s.r.l, Independentei 8, Sarbi, Romania, 437157 Email: productstewardship-es@eaton.com

Constituent Materials			
Reference product mass	3.14E-01 kg (With packaging)		
Category PEP Material	**Materials**	**Mass (kg)**	**Percentage (%)**
Metal	Steel	1.05E-01	33.4%
Metal	Copper wire	7.25E-02	23.1%
Plastic	Polyamide	6.94E-02	22.1%
Others	Electronic Component	2.05E-02	6.5%
Metal	Brass	1.61E-02	5.1%
Other	Cardboard	1.30E-02	4.1%
Plastic	Polybutylene Terephthalate (PBT)	7.01E-03	2.2%
Other	Wood	3.43E-03	1.1%
Metal	Bronze	3.34E-03	1.1%
Metal	Stainless steel	1.46E-03	0.5%
Metal	Silver	1.07E-03	0.3%
Others	Label	6.12E-04	0.2%
Plastic	PE-LD Film	3.94E-04	0.1%
Metal	Nickel	2.68E-04	0.1%
Total		3.14E-01	100.0%

Substance Assessment
The representative product is compliant with the EU-RoHS Directive (2011/65/EU) without any exemption and the product doesn't contain any substance listed as Substance-of-Very-High-Concern (SVHC) on the Candidate List of the EU-REACH Regulation (1907/2006/EC).

Additional Environmental Information	
Manufacturing	The reference product is assembled at an Eaton plant Sarbi, Romania holding management system certifications according to ISO 14001 standards.
Distribution	Eaton is committed to minimizing weight and volume of product and packaging with focus to optimize transport efficiency.
Installation	The installation process does not require any energy consumption and there is no waste other than the obsolete product packaging generated during this step.
Use	The product requires energy consumption during operation.
End of life	The recyclability rate of the overall product is 84.04% if it is properly dismantled prior to shredding. The rate is calculated based on "ECO'DEEE recyclability and recoverability calculation method" (version V1, 20 Sep. 2008 presented to the French Agency for Environment and Energy Management: ADEME).

Environmental Impacts	
The calculation of the environmental impacts is the result of the Product's Life Cycle Analysis in accordance with ISO 14040/44, covering the entire lifecycle, i.e., "Cradle-to-Grave" including the following life cycle phases: production, distribution, installation, use and end of life. System modelling was carried out using the commercial LCA software EIME v6.2.22 with database version CODDE-2023-02. Indicators Set: PEF EF 3.0 (Compliance: PEP ed.4, EN15804+A2) v2.0	
Manufacturing Phase	The product is assembled as well as packed at Eaton facility Eaton Electro Productie s.r.l, Independentei 8, Sarbi, Romania plant. Energy model used: Romania, Europe
Distribution Phase	Distribution of the product in its packaging from the Eaton's last logistics platform to the installation place in Europe is considered as per PCR rules.
Installation Phase	Product is installed in Europe. Installation of product and treatment of packaging waste are considered in this phase. There is no energy consumption for reference product. Energy model used: Europe
Use Phase	Reference lifetime: 20 Years Usage profile: The product has power loss of 1.5 W at full load condition. For industrial applications considering 50% of the loading rate and 50% use time rate, total losses are 32.85 kWh over the 20 years. Product do not require any maintenance/replacement during useful life. Energy Model Used: Europe
End of life Phase	Product disposed with WEEE guidelines. Energy model used: Europe
Module-D	Module D is calculated according to PCR-ed4-EN-2021 09 06 based on the materials recycled and the modelled end-of-life scenario. It expresses the net benefits and loads beyond the boundaries of the system and are not to be included in the life cycle totals.

Environmental Impact Indicators: Mandatory

Mandatory environmental impact indicators	Units	Sum	Manufacturing	Distribution	Installation	Use (B6 - Operational energy use)	End of life	Module-D
Resource use, minerals and metals	kg SB eq.	7.70E-03	7.68E-03	4.15E-09	4.22E-10	9.75E-07	1.78E-05	-6.61E-04
Resource use, fossils	MJ	4.55E+02	8.64E+01	1.47E+00	1.49E-01	3.43E+02	2.42E+01	-3.27E+01
Acidification	mole of H^+ eq.	1.19E-01	3.81E-02	6.67E-04	4.82E-05	7.68E-02	3.60E-03	-1.70E-02
Eutrophication, freshwater	kg P eq.	8.54E-04	2.52E-04	3.95E-08	2.21E-07	3.69E-05	5.65E-04	-3.94E-06
Eutrophication marine	kg N eq.	1.25E-02	2.96E-03	3.13E-04	2.23E-05	8.73E-03	4.52E-04	-1.10E-03
Eutrophication, terrestrial	mol N eq.	1.68E-01	2.79E-02	3.43E-03	1.48E-04	1.31E-01	5.54E-03	-8.25E-03
Climate change	kg CO_2 eq.	1.74E+01	3.24E+00	1.05E-01	2.05E-02	1.35E+01	5.27E-01	-1.14E+00

Mandatory environmental impact indicators	Units	Sum	Manufacturing	Distribution	Installation	Use (B6 - Operational energy use)	End of life	Module-D
Climate change-Biogenic	kg CO_2 eq.	6.98E-02	3.50E-02	0.00E+00	6.89E-04	1.80E-02	1.61E-02	-1.70E-02
Climate change-Fossil	kg CO_2 eq.	1.73E+01	3.21E+00	1.05E-01	1.98E-02	1.34E+01	5.11E-01	-1.12E+00
Climate change-Land use and land use change	kg CO_2 eq.	4.75E-07	1.33E-07	0.00E+00	-1.37E-10	0.00E+00	3.42E-07	0.00E+00
Ozone depletion	kg CFC-11 eq.	4.16E-07	3.29E-07	1.61E-10	2.10E-10	5.76E-08	2.88E-08	-7.48E-08
Photochemical ozone formation - human health	kg NMVOC eq.	4.11E-02	1.06E-02	8.65E-04	3.54E-05	2.80E-02	1.62E-03	-3.43E-03
Water use	m^3 eq	1.09E+01	9.85E+00	4.00E-04	-6.48E-04	4.76E-01	5.59E-01	-1.76E+00

Inventory Flow Indicators: Mandatory

Mandatory Inventory flow indicators	Units	Sum	Manufacturing	Distribution	Installation	Use (B6 - Operational energy use)	End of life	Module-D
Use of renewable primary energy excluding renewable primary energy used as raw material	MJ	6.99E+01	3.55E+00	1.96E-03	3.41E-02	6.59E+01	4.29E-01	-3.67E-01
Use of renewable primary energy resources used as raw material	MJ	2.99E-01	2.99E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.21E-01
Total use of renewable primary energy resources	MJ	7.02E+01	3.85E+00	1.96E-03	3.41E-02	6.59E+01	4.29E-01	-5.87E-01
Use of non renewable primary energy excluding non renewable primary energy used as raw material	MJ	4.53E+02	8.37E+01	1.47E+00	1.49E-01	3.43E+02	2.42E+01	-3.13E+01
Use of non renewable primary energy resources used as raw material	MJ	2.63E+00	2.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.46E+00
Total use of non-renewable primary energy resources	MJ	4.55E+02	8.64E+01	1.47E+00	1.49E-01	3.43E+02	2.42E+01	-3.27E+01
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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	0.00E+00
Net use of freshwater	m^3	2.53E-01	2.29E-01	9.31E-06	-1.51E-05	1.11E-02	1.30E-02	-4.11E-02
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	3.48E-01	9.53E-02	0.00E+00	1.22E-03	0.00E+00	2.52E-01	0.00E+00
Materials for energy recovery	kg	3.88E-03	7.58E-04	0.00E+00	2.43E-03	0.00E+00	6.90E-04	0.00E+00
Exported Energy	MJ	1.14E-03	0.00E+00	0.00E+00	1.14E-03	0.00E+00	0.00E+00	0.00E+00
Hazardous waste disposed	kg	2.67E+01	2.61E+01	0.00E+00	3.63E-04	2.52E-01	3.19E-01	-1.09E+01
Non hazardous waste disposed	kg	3.09E+00	9.60E-01	3.70E-03	9.28E-03	1.94E+00	1.83E-01	-5.62E-02
Radioactive waste disposed	kg	1.04E-03	5.00E-04	2.63E-06	9.22E-07	4.05E-04	1.30E-04	-3.21E-05
Biogenic carbon content of the product	kg C	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content of the associated packaging	kg C	5.16E-03	5.16E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Environmental Impact Indicators: Optional

Optional Environmental impact indicators	Units	Sum	Manufacturing	Distribution	Installation	Use (B6 - Operational energy use)	End of life	Module-D
Ecotoxicity, freshwater	CTUe	2.72E+02	7.81E+01	7.09E-02	1.86E-01	1.45E+02	4.83E+01	-2.49E+01
Human toxicity, cancer	CTUh	2.35E-06	2.26E-06	1.85E-12	1.65E-09	1.57E-09	9.04E-08	-1.46E-06
Human toxicity, non-cancer	CTUh	5.38E-07	4.26E-07	2.00E-10	7.29E-11	6.23E-08	4.91E-08	-2.18E-07
Ionising radiation, human health	kBq U235 eq.	9.71E+01	7.70E+01	2.57E-04	2.18E-03	2.00E+01	4.12E-02	-2.20E+01
Land use	No dimension	2.56E+00	7.21E-01	0.00E+00	1.82E-03	2.68E-01	1.57E+00	-1.39E-04
EF-particulate Matter	Disease occurrence	8.57E-07	2.34E-07	5.42E-09	2.82E-10	5.96E-07	2.18E-08	-1.02E-07
Total Primary Energy	MJ	5.25E+02	9.02E+01	1.47E+00	1.83E-01	4.09E+02	2.46E+01	-3.33E+01

To evaluate the environmental impact of other product covered by this PEP, multiply the impact figures by-

Factors for Manufacturing, Distribution, Installation, End-of-Life, and Module-D Phase:

Product	Product Weight (Kg)	Multiplying Factor for different phases				
		Manufacturing Phase	Distribution Phase	Installation Phase	End of Life Phase	Module D Phase
DILM12-10(24VDC)-PI (Reference)	0.285	1.00				
DILM7-10(24VDC)-PI	0.285					
DILM7-01(24VDC)-PI	0.285					
DILM9-10(24VDC)-PI	0.285					
DILM9-01(24VDC)-PI	0.285					
DILM12-01(24VDC)-PI	0.285					
DILM15-10(24VDC)-PI	0.285					
DILM15-01(24VDC)-PI	0.285					
DILMP20(24VDC)-PI	0.285					
DILMC12-01(24VDC)	0.286					
DILM9-01(24VDC)-PI-GVP	0.285					
DILM12-10(24VDC)-PI-GVP	0.285					
DILM9-10(24VDC)-PI-GVP	0.285					

Multiplying Factors and Use Phase Energy Consumption for homogenous products.

Part Number	Description	Extrapolation Factor
Y7-199243	DILM12-10(24VDC)-PI	1.00
Y7-199223	DILM7-10(24VDC)-PI	0.60

Part Number	Description	Extrapolation Factor
Y7-199228	DILM7-01(24VDC)-PI	0.60
Y7-199233	DILM9-10(24VDC)-PI	0.80
Y7-199238	DILM9-01(24VDC)-PI	0.80
Y7-199248	DILM12-01(24VDC)-PI	1.00
Y7-199253	DILM15-10(24VDC)-PI	1.60
Y7-199258	DILM15-01(24VDC)-PI	1.60
Y7-199263	DILMP20(24VDC)-PI	2.00
Y7-277564	DILMC12-01(24VDC)	1.00
Y7-400134	DILM9-01(24VDC)-PI-GVP	0.80
Y7-400135	DILM12-10(24VDC)-PI-GVP	1.00
Y7-400154	DILM9-10(24VDC)-PI-GVP	0.80

Disclaimer

This Product Environmental Profile and its content is based on information available to us. It refers to the product at the date of issue. We make no express or implied representations or warranties with respect to the information contained herein.

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Verifier accreditation Number	VH53	Supplemented by	PSR-0005-ed3-EN-2023 06 06
Date of issue	05-2024	*Information and reference documents*	www.pep-ecopassport.org
		Validity period	5 years
Independent verification of the declaration and data, in compliance with ISO 14025: 2006			
Internal	X	External	
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)			
PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 *The components of the present PEP may not be compared with components from any other program.*			
Document complies with ISO 14025: 2006 « Environmental labels and declarations. Type III environmental declarations »			