Product Environmental Profile

Power Contactor- DILEM DC Schraube

Representative product	DILEM-10-G(24VDC) (Y7-010213) Product Category: Contactors, Remote Control Switch
Description of the product	Eaton Moeller series DILEM Mini contactors 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 3 main poles, specification includes 380 V 400 V 4 kW, Cotacts 1 N/O, Screw terminals, DC Operation.
Homogeneous Environmental Families Covered	The PEP concerns following product offerings from Eaton Moeller contactor as mentioned below:

DILEM-10-G(24VDC)	DILEM-01-G(110VDC)	DILEM-10(230V50HZ,240V60HZ)-GVP
DILEEM-10-G-EA(24VDC)	DILEM-01-G(220VDC)	DILEM-01-G(24VDC)-GVP
DILEEM-01-G-EA(24VDC)	DILEM-10-G(48VDC)	DILEM-10-G(12VDC)
DILEEM-10-G(125VDC)	DILEM-10-G(110VDC)	DILEM-01-G(12VDC)
DILEEM-10-G(220VDC)	DILEM-10-G(220VDC)	DILEM12-10-G(24VDC)
DILEEM-10-G(110VDC)	DILEM-01-G(24VDC)	DILEM12-01-G(24VDC)
DILEEM-10-G(48VDC)	DILEM-01-G(48VDC)	DILEM12-10-G(24VDC)-GVP
DILEEM-10-G(24VDC)	DILEM-10(42V50HZ,48V60HZ)-GVP	DILEM12-10-G-EA(24VDC)
DILEEM-10-G(12VDC)	DILEM-01-G(250VDC)	DILEM12-01-G-EA(24VDC)
DILEEM-01-G(220VDC)	DILEM-01-G(125VDC)	DILEM4-G(24VDC)
DILEEM-01-G(110VDC)	DILEM-10-G-EA(24VDC)	DILEM4-G(48VDC)
DILEEM-01-G(48VDC)	DILEM-01-G-EA(24VDC)	DILEM4-G(110VDC)
DILEEM-01-G(12VDC)	DILEM-10-GSOND684	DILEM4-G(220VDC)
DILEEM-01-G(24VDC)	DILEM-01-GSOND684	DILEM4-G(12VDC)

Functional unit	Establish and cut off the supply of a downstream installation from an electrical and/or mechanical control characterized by composition of 3 NO main poles, 1 NO auxiliary contact, a rated voltage of 690 V AC, a rated current 9A 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. For the other products in the homogeneous family, current rating, interrupting capacity & number of poles will vary and needs to be considered respectively.
Company information	Eaton Industries GmbH, Schemmener Str. 28-30, Gummersbach, Germany – 51647 Email: productstewardship-es@eaton.com

Constituent Materials			
Reference product mass	2.24E-01 kg (With packaging)		
Category PEP Material	**Materials**	**Mass (kg)**	**Percentage (%)**
Metal	Stainless Steel	7.88E-02	35.2%
Metal	Copper	5.40E-02	24.1%
Plastic	Polyamide 6	4.02E-02	18.0%
Other	Carton	1.50E-02	6.7%
Metal	Brass	1.22E-02	5.4%
Plastic	Polybutylene terephthalate	8.74E-03	3.9%
Metal	Steel	7.00E-03	3.1%
Other	Wood	2.33E-03	1.0%
Metal	Bronze	2.10E-03	0.9%
Other	Electronics	1.39E-03	0.6%
Other	Paper	1.00E-03	0.4%
Metal	Silver	5.72E-04	0.3%
Plastic	LDPE (low density polyethylene)	4.00E-04	0.2%
Metal	Nickel	1.43E-04	0.1%
Total		**2.24E-01**	**100.0%**

Substance Assessment
The representative product is compliant with the EU-RoHS Directive (2011/65/EU) with an exemption and the product does contain Lead as a 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 Gummersbach, Germany 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 85.8% 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.	
Manufacturing Phase	The product is assembled as well as packed at Eaton facility Eaton Industries GmbH – Plant Gummersbach, Schemmener Str. 28-30, Gummersbach, Germany – 51647 Energy model used: Germany
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 0.9 W at full load condition. For Industrial applications considering 50% of the loading rate and 50% of the use time rate, total losses are 19.71 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	Unit	Total	Manufacturing	Distribution	Installation	Use(only B6)	End of life		Module-D
Resource use, minerals, and metals	kg SB eq.	9.43E-04	9.29E-04	2.96E-09	7.86E-10	5.85E-07	1.32E-05		-5.27E-04
Resource use, fossils	MJ	2.63E+02	3.74E+01	1.05E+00	1.71E-01	2.06E+02	1.91E+01		-1.38E+01
Acidification	mol H^+ eq.	7.50E-02	2.57E-02	4.76E-04	5.55E-05	4.61E-02	2.65E-03		-1.40E-02
Eutrophication, freshwater	kg P eq.	6.26E-04	1.84E-04	2.82E-08	2.45E-07	2.21E-05	4.20E-04		-2.60E-06
Eutrophication marine	kg N eq.	7.34E-03	1.52E-03	2.23E-04	2.40E-05	5.24E-03	3.33E-04		-6.97E-04
Eutrophication, terrestrial	mol N eq.	1.03E-01	1.78E-02	2.45E-03	1.57E-04	7.87E-02	4.09E-03		-7.57E-03
Climate change	kg CO_2 eq.	1.05E+01	1.90E+00	7.52E-02	2.13E-02	8.08E+00	3.98E-01		-8.97E-01
Climate change-Biogenic	kg CO_2 eq.	6.91E-02	4.45E-02	0.00E+00	1.84E-03	1.08E-02	1.20E-02		-1.38E-02
Climate change-Fossil	kg CO_2 eq.	1.04E+01	1.86E+00	7.52E-02	1.95E-02	8.07E+00	3.86E-01		-8.83E-01
Climate change-Land use and land use change	kg CO_2 eq.	3.70E-07	1.17E-07	0.00E+00	-1.39E-10	0.00E+00	2.54E-07		0.00E+00
Ozone depletion	kg CFC-11 eq.	3.49E-07	2.95E-07	1.15E-10	4.48E-10	3.45E-08	1.84E-08		-1.66E-07
Photochemical ozone formation - human health	kg NMVOC eq.	2.51E-02	6.39E-03	6.17E-04	3.77E-05	1.68E-02	1.20E-03		-3.00E-03
Water use	m^3 eq.	2.87E+00	2.16E+00	2.85E-04	3.34E-03	2.86E-01	4.19E-01		-1.18E+00

Inventory Flow Indicators: Mandatory

Mandatory Inventory flow indicators	Unit	Total	Manufacturing	Distribution	Installation	Use(only B6)	End of life		Module-D
Use of renewable primary energy excluding renewable primary energy used as raw material	MJ	4.27E+01	2.83E+00	1.40E-03	5.56E-02	3.95E+01	3.10E-01		-3.01E-01
Use of renewable primary energy resources used as raw material	MJ	3.15E-01	3.15E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00		-2.36E-01
Total use of renewable primary energy resources	MJ	4.30E+01	3.14E+00	1.40E-03	5.56E-02	3.95E+01	3.10E-01		-5.37E-01
Use of non-renewable primary energy excluding non-renewable primary energy used as raw material	MJ	2.62E+02	3.60E+01	1.05E+00	1.71E-01	2.06E+02	1.91E+01		-1.30E+01
Use of non-renewable primary energy resources used as raw material	MJ	1.40E+00	1.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		-8.52E-01
Total use of non-renewable primary energy resources	MJ	2.63E+02	3.74E+01	1.05E+00	1.71E-01	2.06E+02	1.91E+01		-1.38E+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	6.69E-02	5.04E-02	6.64E-06	7.78E-05	6.66E-03	9.75E-03		-2.75E-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	2.64E-01	7.96E-02	0.00E+00	1.70E-03	0.00E+00	1.83E-01		0.00E+00
Materials for energy recovery	kg	4.10E-03	9.43E-04	0.00E+00	2.32E-03	0.00E+00	8.39E-04		0.00E+00
Exported Energy	MJ	8.24E-04	0.00E+00	0.00E+00	8.24E-04	0.00E+00	0.00E+00		0.00E+00
Hazardous waste disposed	kg	1.86E+01	1.83E+01	0.00E+00	4.02E-04	1.51E-01	2.07E-01		-1.18E+01

Mandatory Inventory flow indicators	Unit	Total	Manufacturing	Distribution	Installation	Use**(only B6)**	End of life		Module-D
Non-hazardous waste disposed	kg	1.99E+00	6.98E-01	2.64E-03	9.13E-03	1.16E+00	1.16E-01		-1.67E-01
Radioactive waste disposed	kg	8.16E-04	4.93E-04	1.88E-06	8.79E-07	2.43E-04	7.72E-05		-8.36E-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	5.51E-03	5.51E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00

Environmental Impact Indicators: Optional

Environmental impact indicators	Unit	Total	Manufacturing	Distribution	Installation	Use(only B6)	End of life		Module-D
Ecotoxicity, freshwater	CTUe	2.29E+02	1.06E+02	5.06E-02	2.17E-01	8.70E+01	3.58E+01		-6.81E+01
Human toxicity, cancer	CTUh-c	1.45E-03	1.45E-03	1.32E-12	1.82E-09	9.42E-10	5.24E-08		-1.33E-03
Human toxicity, non-cancer	CTUh-nc	3.56E-07	2.81E-07	1.43E-10	7.78E-11	3.74E-08	3.68E-08		-1.67E-07
Ionising radiation, human health	kBq U^{235} eq.	7.31E+01	6.01E+01	1.83E-04	1.00E+00	1.20E+01	2.81E-02		-1.76E+01
Land use	No Dimension	1.87E+00	5.33E-01	0.00E+00	1.86E-03	1.61E-01	1.17E+00		-1.54E-04
EF-particulate Matter	Disease occurrence	6.52E-07	2.75E-07	3.87E-09	3.30E-10	3.58E-07	1.58E-08		-1.62E-07
Total Primary Energy	MJ	3.07E+02	4.05E+01	1.05E+00	2.27E-01	2.45E+02	1.94E+01		-1.43E+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:

Part Number	Product Description	Heat dissipation, current-dependent (W)	Extrapolation Factor for all impact categories				
			Manufacturing Phase	Distribution Phase	Installation Phase	End of Life Phase	Module - D Phase
Y7-10213	DILEM-10-G(24VDC) - Reference	0.9	1.00				
Y7-189980	DILEEM-10-G-EA(24VDC)	0.6					
Y7-189982	DILEEM-01-G-EA(24VDC)						
Y7-292892	DILEEM-10-G(125VDC)						
Y7-51639	DILEEM-10-G(220VDC)						
Y7-51640	DILEEM-10-G(110VDC)						
Y7-51642	DILEEM-10-G(48VDC)						
Y7-51643	DILEEM-10-G(24VDC)						
Y7-51644	DILEEM-10-G(12VDC)						
Y7-51645	DILEEM-01-G(220VDC)						
Y7-51646	DILEEM-01-G(110VDC)						
Y7-51648	DILEEM-01-G(48VDC)						
Y7-51649	DILEEM-01-G(12VDC)						

Part Number	Product Description	Heat dissipation, current-dependent (W)	Extrapolation Factor for all impact categories				
			Manufacturing Phase	Distribution Phase	Installation Phase	End of Life Phase	Module - D Phase
Y7-51650	DILEEM-01-G(24VDC)						
Y7-10136	DILEM-01-G(110VDC)	0.9					
Y7-10168	DILEM-01-G(220VDC)						
Y7-10245	DILEM-10-G(48VDC)						
Y7-10309	DILEM-10-G(110VDC)						
Y7-10325	DILEM-10-G(220VDC)						
Y7-10343	DILEM-01-G(24VDC)						
Y7-10496	DILEM-01-G(48VDC)						
Y7-106480	DILEM-10(42V50HZ,48V60HZ)-GVP						
Y7-180641	DILEM-01-G(250VDC)						
Y7-182885	DILEM-01-G(125VDC)						
Y7-189984	DILEM-10-G-EA(24VDC)						
Y7-189986	DILEM-01-G-EA(24VDC)						
Y7-210048	DILEM-10-GSOND684						
Y7-210049	DILEM-01-GSOND684						
Y7-37074	DILEM-10(230V50HZ,240V60HZ)-GVP						
Y7-51998	DILEM-01-G(24VDC)-GVP						
Y7-79594	DILEM-10-G(12VDC)						
Y7-79642	DILEM-01-G(12VDC)						
Y7-127132	DILEM12-10-G(24VDC)	1.8					
Y7-127137	DILEM12-01-G(24VDC)						
Y7-151669	DILEM12-10-G(24VDC)-GVP						
Y7-189988	DILEM12-10-G-EA(24VDC)						
Y7-189990	DILEM12-01-G-EA(24VDC)						
Y7-12701	DILEM4-G(24VDC)	7.17					
Y7-12811	DILEM4-G(48VDC)						
Y7-13166	DILEM4-G(110VDC)						
Y7-13194	DILEM4-G(220VDC)						
Y7-79680	DILEM4-G(12VDC)						

Multiplying Factors and Use Phase Energy Consumption for homogenous products:

Part Number	Product Description	Heat dissipation, current-dependent (W)	Energy consumed in its RLT (Wh)	Extrapolation Factor for all impact categories
Y7-10213	DILEM-10-G(24VDC) - Reference	0.9	19710	1.00
Y7-189980	DILEEM-10-G-EA(24VDC)	0.6	13140	0.67
Y7-189982	DILEEM-01-G-EA(24VDC)			
Y7-292892	DILEEM-10-G(125VDC)			
Y7-51639	DILEEM-10-G(220VDC)			
Y7-51640	DILEEM-10-G(110VDC)			
Y7-51642	DILEEM-10-G(48VDC)			
Y7-51643	DILEEM-10-G(24VDC)			
Y7-51644	DILEEM-10-G(12VDC)			
Y7-51645	DILEEM-01-G(220VDC)			
Y7-51646	DILEEM-01-G(110VDC)			
Y7-51648	DILEEM-01-G(48VDC)			
Y7-51649	DILEEM-01-G(12VDC)			
Y7-51650	DILEEM-01-G(24VDC)			
Y7-10136	DILEM-01-G(110VDC)	0.9	19710	1.00
Y7-10168	DILEM-01-G(220VDC)			
Y7-10245	DILEM-10-G(48VDC)			
Y7-10309	DILEM-10-G(110VDC)			
Y7-10325	DILEM-10-G(220VDC)			
Y7-10343	DILEM-01-G(24VDC)			
Y7-10496	DILEM-01-G(48VDC)			
Y7-106480	DILEM-10(42V50HZ,48V60HZ)-GVP			
Y7-180641	DILEM-01-G(250VDC)			
Y7-182885	DILEM-01-G(125VDC)			
Y7-189984	DILEM-10-G-EA(24VDC)			
Y7-189986	DILEM-01-G-EA(24VDC)			
Y7-210048	DILEM-10-GSOND684			
Y7-210049	DILEM-01-GSOND684			
Y7-37074	DILEM-10(230V50HZ,240V60HZ)-GVP			
Y7-51998	DILEM-01-G(24VDC)-GVP			
Y7-79594	DILEM-10-G(12VDC)			
Y7-79642	DILEM-01-G(12VDC)			
Y7-127132	DILEM12-10-G(24VDC)	1.8	39420	2.00
Y7-127137	DILEM12-01-G(24VDC)			
Y7-151669	DILEM12-10-G(24VDC)-GVP			
Y7-189988	DILEM12-10-G-EA(24VDC)			
Y7-189990	DILEM12-01-G-EA(24VDC)			
Y7-12701	DILEM4-G(24VDC)	7.17	157023	7.97

Part Number	Product Description	Heat dissipation, current-dependent (W)	Energy consumed in its RLT (Wh)	Extrapolation Factor for all impact categories
Y7-12811	DILEM4-G(48VDC)			
Y7-13166	DILEM4-G(110VDC)			
Y7-13194	DILEM4-G(220VDC)			
Y7-79680	DILEM4-G(12VDC)			

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.

Registration Number	EATO-00136-V01.01-EN	*Drafting rules*	PCR-ed4-EN-2021 09 06
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 »			