



### Digital Residual Current Circuit Breaker, RCCB Type - B

<b>Representative product</b>	FRCDM-63/4/003-G/B (Y7-167894) Product Category: Blocks and Differential Switches
<b>Description of the product</b>	Eaton's mechanical Residual Current Circuit Breakers are designed to provide circuit protection for low-voltage distribution systems. Eaton circuit breakers protect conductors and connected apparatus, such as motors and motor starters, against short circuits.
<b>Homogeneous Environmental Families Covered</b>	The PEP concerns following product offerings from Eaton Moeller series xEffect - FRCdM Type B, B+, Bfq RCCB as mentioned below: Series: FRCDM, PFIM, PXF Number of Poles: 4 Rated Current: 25, 40, 63 Amp. Tripping Curves: B, Bfq, G/B, G/B+, G/BFQ, S/B, S/B+, S/BFQ, XG/B, XG/Bfq, XS/B
<b>Functional unit</b>	Protect the installation and protect people and premises at a risk of fire or explosion against insulation defects in a circuit with rated voltage 415 V, rated current 63A, with 4 poles, a rated breaking capacity 630A, the tripping curve G/B, the Sensitivity 30mA, and the type of differential protection B in the Household/Commercial application area, according to the appropriate use scenario, and during the reference service life of the product of 20 years.
<b>Company information</b>	Eaton Elektrotechnika s.r.o, 37806 Suchdol and Luznici, Havlíčkova 89 / Czech Republic Email: <a href="mailto:productstewardship-es@eaton.com">productstewardship-es@eaton.com</a>

Constituent Materials			
Reference product mass	4.54E-01Kg (with packaging)		
Category PEP Material	Materials	Mass (kg)	Percentage (%)
Plastic	Polyamide	1.44E-01	31.7%
Metal	Copper	8.87E-02	19.6%
Metal	Steel	6.92E-02	15.3%
Others	Electronic Components	5.23E-02	11.5%
Metal	Stainless Steel	2.61E-02	5.8%
Plastic	Phenolic Resin	1.77E-02	3.9%
Others	Label	1.31E-02	2.9%
Others	Carton	1.24E-02	2.7%
Others	Wood	1.17E-02	2.6%
Metal	Silver	3.77E-03	0.8%
Plastic	Polycarbonate	3.17E-03	0.7%
Others	Paper	2.86E-03	0.6%
Metal	Nickel	2.59E-03	0.6%
Plastic	Polyvinyl Chloride	2.54E-03	0.6%
Metal	Tin	5.30E-04	0.1%
Others	Miscellaneous	2.99E-03	0.7%
Total		4.54E-01	100.00%

Substance Assessment	
<p>The representative product is compliant with the EU-RoHS Directive (2011/65/EU) with exemption and the product does not contain Lead as substance listed as Substance-of-Very-High-Concern (SVHC) on the Candidate List of the EU-REACH Regulation (1907/2006/EC).</p>	

Additional Environmental Information	
<b>Manufacturing</b>	The reference product is assembled at an Eaton plant holding management system. Certifications according to ISO 14001 standards.
<b>Distribution</b>	Eaton is committed to minimizing weight and volume of product and packaging with focus to optimize transport efficiency.
<b>Installation</b>	The installation process does not require any energy consumption and there is no waste other than the obsolete product packaging generated during this step
<b>Use</b>	The product does not require any maintenance during operation.
<b>End of life</b>	The recyclability rate of the overall product is 79% 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	
<p>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.</p> <p>System modelling was carried out using the commercial LCA software EIME v6.1.3 with database version CODDE-2023-02.</p> <p>Indicators Set: PEF EF 3.0 (Compliance: PEP ed.4, EN15804+A2) v2.0.</p>	
Manufacturing Phase	The product is assembled as well as packed at Eaton Elektrotechnika s.r.o, Czech Republic. Energy model used: Czech Republic, 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. Energy model used: Europe
Installation Phase	Product is installed in Europe. Installation of product, manufacturing and distribution of nails and treatment of packaging waste are considered in this phase. There is energy consumption for reference product. Energy model used: Europe
Use Phase	Reference lifetime: 20 Years Usage profile: The product has power loss of 10 W at full load condition. For commercial applications considering 20% of the loading rate and 30% use time rate, total losses are 21.024 kWh over the 20 years. Product do not require any maintenance/replacement during its commercial useful life. Commercial Usage profile is considered. 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 (Only B6)	End of life	Module-D
Resource use, minerals, and metals (ADPe)	kg SB eq.	6.10E-03	6.08E-03	4.26E-09	7.99E-10	6.24E-07	1.75E-05	-2.04E-03
Resource use, fossils (ADPf)	MJ	4.19E+02	1.73E+02	1.51E+00	3.01E-01	2.20E+02	2.41E+01	-3.76E+01
Acidification (AP)	mole of H+ eq.	1.28E-01	7.32E-02	6.86E-04	9.10E-05	4.92E-02	4.51E-03	-1.67E-02
Eutrophication, freshwater (Epf)	kg P eq.	8.55E-04	2.79E-04	4.06E-08	4.68E-07	2.36E-05	5.52E-04	-5.76E-06
Eutrophication marine (Epm)	kg N eq.	1.38E-02	7.08E-03	3.21E-04	4.43E-05	5.59E-03	7.94E-04	-1.51E-03
Eutrophication, terrestrial (Ept)	mol N eq.	1.67E-01	7.32E-02	3.53E-03	2.85E-04	8.39E-02	6.40E-03	-1.54E-02
Climate change (GWP)	kg CO <sub>2</sub> eq.	1.86E+01	9.24E+00	1.08E-01	4.17E-02	8.62E+00	6.02E-01	-1.79E+00

Mandatory environmental impact indicators	Units	Sum	Manufacturing	Distribution	Installation	Use (Only B6)	End of life	Module-D
Climate change-Biogenic (GWPb)	kg CO <sub>2</sub> eq.	7.46E-02	4.35E-02	0.00E+00	1.44E-03	1.15E-02	1.82E-02	-1.90E-02
Climate change-Fossil (GWPf)	kg CO <sub>2</sub> eq.	1.85E+01	9.20E+00	1.08E-01	4.03E-02	8.61E+00	5.84E-01	-1.77E+00
Climate change-Land use and land use change (GWPlu)	kg CO <sub>2</sub> eq.	4.77E-07	1.84E-07	0.00E+00	-1.39E-10	0.00E+00	2.93E-07	0.00E+00
Ozone depletion (ODP)	kg CFC-11 eq.	1.97E-06	1.88E-06	1.66E-10	3.98E-10	3.68E-08	5.31E-08	-1.08E-07
Photochemical ozone formation - human health (POCP)	kg NMVOC eq.	4.56E-02	2.48E-02	8.89E-04	6.87E-05	1.79E-02	1.89E-03	-5.05E-03
Water use (WU)	m <sup>3</sup> eq	1.01E+01	4.04E+00	4.11E-04	3.09E-03	3.05E-01	5.79E+00	-9.71E-01

### Inventory Flow Indicators: Mandatory

Inventory flow indicators	Units	Sum	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	4.82E+01	5.37E+00	2.02E-03	9.11E-02	4.22E+01	5.84E-01	-4.94E-01
Use of renewable primary energy resources used as raw material	MJ	4.94E-01	4.94E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.13E-01
Total use of renewable primary energy resources	MJ	4.87E+01	5.86E+00	2.02E-03	9.11E-02	4.22E+01	5.84E-01	-1.11E+00
Use of non-renewable primary energy excluding non-renewable primary energy used as raw material	MJ	4.14E+02	1.69E+02	1.51E+00	3.01E-01	2.20E+02	2.41E+01	-3.45E+01
Use of non-renewable primary energy resources used as raw material	MJ	4.53E+00	4.53E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.09E+00
Total use of non-renewable primary energy resources	MJ	4.19E+02	1.73E+02	1.51E+00	3.01E-01	2.20E+02	2.41E+01	-3.76E+01
Use of secondary material	kg	6.47E-02	6.47E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.30E-02
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 <sup>3</sup>	2.52E-01	9.40E-02	9.57E-06	7.19E-05	7.10E-03	1.51E-01	-2.26E-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	4.12E-01	8.64E-02	0.00E+00	3.78E-03	0.00E+00	3.21E-01	0.00E+00
Materials for energy recovery	kg	1.18E-02	5.79E-04	0.00E+00	5.57E-03	0.00E+00	5.69E-03	0.00E+00
Exported Energy	MJ	3.86E-03	0.00E+00	0.00E+00	3.86E-03	0.00E+00	0.00E+00	0.00E+00
Hazardous waste disposed	kg	4.30E+01	4.24E+01	0.00E+00	7.59E-04	1.61E-01	4.64E-01	-1.19E+01
Non-hazardous waste disposed	kg	6.41E+00	4.73E+00	3.80E-03	2.06E-02	1.24E+00	4.21E-01	-8.62E-01
Radioactive waste disposed	kg	1.32E-02	1.26E-02	2.71E-06	1.33E-06	2.60E-04	3.01E-04	-8.17E-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

Inventory flow indicators	Units	Sum	Manufacturing	Distribution	Installation	Use (Only B6)	End of life	Module-D
Biogenic carbon content of the associated packaging	kg C	1.41E-02	1.41E-02	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 (Only B6)	End of life	Module-D
Ecotoxicity, freshwater	CTUe	4.65E+02	3.14E+02	7.29E-02	3.89E-01	9.28E+01	5.80E+01	-1.71E+02
Human toxicity, cancer	CTUh-c	4.74E-03	4.74E-03	1.90E-12	3.45E-09	1.00E-09	1.91E-07	-4.34E-03
Human toxicity, non-cancer	CTUh-nc	5.30E-07	4.38E-07	2.06E-10	1.51E-10	3.99E-08	5.22E-08	-1.35E-07
Ionising radiation, human health	kBq U <sup>235</sup> eq.	4.76E+01	3.47E+01	2.64E-04	4.66E-03	1.28E+01	6.38E-02	-1.10E+01
Land use	-	2.69E+00	8.23E-01	0.00E+00	1.89E-03	1.71E-01	1.69E+00	-3.25E-04
EF-particulate Matter	Disease Occurrence	9.36E-07	5.22E-07	5.58E-09	5.38E-10	3.81E-07	2.63E-08	-1.42E-07
Total Primary Energy	MJ	4.68E+02	1.79E+02	1.51E+00	3.92E-01	2.62E+02	2.47E+01	-3.87E+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	Amperage Rating (A)	Extrapolation Factor for all impact categories				
			Manufacturing	Distribution	Installation	End of Life	Module-D
Y7-167894	FRCDM-63/4/003-G/B (Reference)	63 A	1.00				
Y7-167904	FRCDM-25/4/03-S/BFQ	25 A					
Y7-167896	FRCDM-25/4/03-S/B						
Y7-167908	FRCDM-25/4/03-G/BFQ						
Y7-167900	FRCDM-25/4/03-G/B						
Y7-167880	FRCDM-25/4/003-G/B+						
Y7-167892	FRCDM-25/4/003-G/B						
Y7-179530	FRCDM-25/4/003-G/BFQ						
Y7-167905	FRCDM-40/4/03-S/BFQ	40 A					
Y7-167885	FRCDM-40/4/03-S/B+						
Y7-167897	FRCDM-40/4/03-S/B						
Y7-167909	FRCDM-40/4/03-G/BFQ						
Y7-167889	FRCDM-40/4/03-G/B+						
Y7-167901	FRCDM-40/4/03-G/B						
Y7-179531	FRCDM-40/4/003-G/BFQ						
Y7-167881	FRCDM-40/4/003-G/B+						
Y7-167893	FRCDM-40/4/003-G/B						
Y7-300301	PXF-40/4/03-S/B						
Y7-300978	PXF-40/4/03-Bfq						

Part Number	Product Description	Amperage Rating (A)	Extrapolation Factor for all impact categories				
			Manufacturing	Distribution	Installation	End of Life	Module-D
Y7-300300	PXF-40/4/03-B	63 A					
Y7-300976	PXF-40/4/003-Bfq						
Y7-300299	PXF-40/4/003-B						
Y7-300307	PFIM-40/4/03-XS/B						
Y7-300984	PFIM-40/4/003-XG/Bfq						
Y7-300305	PFIM-40/4/003-XG/B						
Y7-167906	PXF-63/4/03-S/B						
Y7-167886	PXF-63/4/03-B						
Y7-167898	PXF-63/4/003-Bfq						
Y7-300304	PXF-63/4/003-B						
Y7-300303	PFIM-63/4/03-XS/B						
Y7-300980	PFIM-63/4/003-XG/Bfq						
Y7-300302	PFIM-63/4/003-XG/B						
Y7-300308	FRCDM-63/4/03-S/BFQ						
Y7-300985	FRCDM-63/4/03-S/B+						
Y7-300306	FRCDM-63/4/03-S/B						
Y7-167910	FRCDM-63/4/03-G/BFQ						
Y7-167890	FRCDM-63/4/03-G/B+						
Y7-167902	FRCDM-63/4/03-G/B						
Y7-167882	FRCDM-63/4/003-G/B+						
Y7-179532	FRCDM-63/4/003-G/BFQ						

### Multiplying factor for Use phase


Part Number	Product Description	Amperage Rating (A)	Use - Commercial Application (Only B6)
Y7-167894	FRCDM-63/4/003-G/B	63 A	1.00
Y7-167904	FRCDM-25/4/03-S/BFQ	25 A	0.46
Y7-167896	FRCDM-25/4/03-S/B		
Y7-167908	FRCDM-25/4/03-G/BFQ		
Y7-167900	FRCDM-25/4/03-G/B		
Y7-167880	FRCDM-25/4/003-G/B+		
Y7-167892	FRCDM-25/4/003-G/B		
Y7-179530	FRCDM-25/4/003-G/BFQ		
Y7-167905	FRCDM-40/4/03-S/BFQ		
Y7-167885	FRCDM-40/4/03-S/B+		
Y7-167897	FRCDM-40/4/03-S/B		
Y7-167909	FRCDM-40/4/03-G/BFQ		
Y7-167889	FRCDM-40/4/03-G/B+		
Y7-167901	FRCDM-40/4/03-G/B		
Y7-179531	FRCDM-40/4/003-G/BFQ		
Y7-167881	FRCDM-40/4/003-G/B+		

Part Number	Product Description	Amperage Rating (A)	Use - Commercial Application (Only B6)
Y7-167893	FRCDM-40/4/003-G/B		
Y7-300301	PXF-40/4/03-S/B		
Y7-300978	PXF-40/4/03-Bfq		
Y7-300300	PXF-40/4/03-B		
Y7-300976	PXF-40/4/003-Bfq		
Y7-300299	PXF-40/4/003-B		
Y7-300307	PFIM-40/4/03-XS/B		
Y7-300984	PFIM-40/4/003-XG/Bfq		
Y7-300305	PFIM-40/4/003-XG/B		
Y7-167906	PXF-63/4/03-S/B		
Y7-167886	PXF-63/4/03-B		
Y7-167898	PXF-63/4/003-Bfq		
Y7-300304	PXF-63/4/003-B		
Y7-300303	PFIM-63/4/03-XS/B		
Y7-300980	PFIM-63/4/003-XG/Bfq		
Y7-300302	PFIM-63/4/003-XG/B		
Y7-300308	FRCDM-63/4/03-S/BFQ		
Y7-300985	FRCDM-63/4/03-S/B+		
Y7-300306	FRCDM-63/4/03-S/B		
Y7-167910	FRCDM-63/4/03-G/BFQ		
Y7-167890	FRCDM-63/4/03-G/B+		
Y7-167902	FRCDM-63/4/03-G/B		
Y7-167882	FRCDM-63/4/003-G/B+		
Y7-179532	FRCDM-63/4/003-G/BFQ		

**Note:** For part numbers intended for industrial application as well, the Use Phase (B6) impacts of commercial/residential application of specific part number should be multiplied by 6.25 to calculate impacts for Industrial application of that specific part number. The impact for other phases remains the same for all applications.

## 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.

<i>Registration Number</i>	EATO-00110-V01.01-EN	<i>Drafting rules</i>	PCR-ed4-EN-2021 09 06
<i>Verifier accreditation Number</i>	VH53	Supplemented by	PSR-0005-ed3-EN-2023 06 06
<i>Date of issue</i>	03-2024	<i>Information and reference documents</i>	<a href="http://www.pep-ecopassport.org">www.pep-ecopassport.org</a>
		<i>Validity period</i>	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)			
<i>PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019</i>			
<i>The components of the present PEP may not be compared with components from any other program.</i>			
<i>Document complies with ISO 14025: 2006 « Environmental labels and declarations. Type III environmental declarations »</i>			