

DME100 M DIFFERENTIAL CIRCUIT BREAKER

Product Environmental Profile

Environmental Product Declaration



Document in compliance with ISO 14025: 2010 "Environmental labels and declarations. Type III environmental declarations"

ORGANIZATION		CONTACT INFORMATION			
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ABB Purpose & Embedding Sustainability

ABB is committed to continually promoting and embedding sustainability across its operations and value chain, aspiring to become a role model for others to follow. With its ABB Purpose, ABB is focusing on reducing harmful emissions, preserving natural resources and championing ethical and humane behavior.



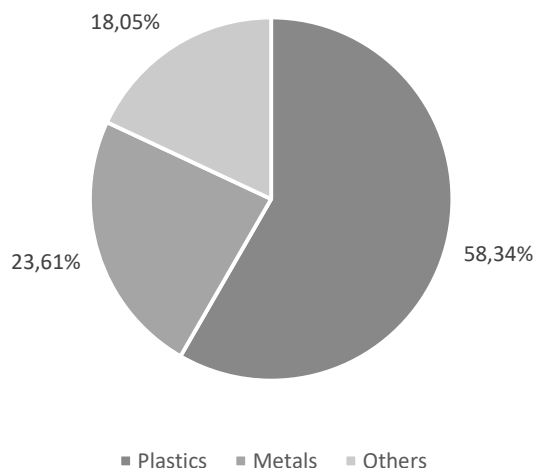
General Information

Reference product	DME100 M C20 A30 – 2CDB363501R1204
Description of the product	DME100 M is specifically designed to protect people and sites, both commercial and industrial, from overloads, short-circuits and earth-fault currents.
Functional unit	Protecting during 20 years the installation against overloads and short-circuits and people premises at risk of fire or explosion against insulation defects in circuit with assigned voltage U (230V) and rated current I _n (20A). The protection is ensured in accordance with the following parameters: 1P+N, Breaking Capacity 10kA, C Tripping Curve, 30mA Sensitivity A type.
Other products covered	DME100 M homogeneous family: 6kA & 10kA breaking capacity B and C char from 6 up to 40 A 30 mA type A & AC 1P+N black or blue color cable

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Constituent materials



**Total weight of
Reference product**

220,9 g

Plastics as % of weight		Metals as % of weight		Others as % of weight	
Name and CAS number	Weight-%	Name and CAS number	Weight-%	Name and CAS number	Weight-%
Copper	33,0	PA6-20MF-5GF	21,4	PCB	6,6
Mixed steels	12,1	PPE+PS GF	0,6	Cardboard	10,4
Stainless steel	2,4	PBT V0	0,6	Paper	1,1
Other metals	10,8	Other plastics	1,1	–	–

Total weight of the reference product and its packaging: 249,5 g (10,36% box and 1,1% paper)

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Additional Environmental Information

Manufacturing	Includes the environmental impacts associated with extraction and processing of the raw materials used to produce the product and its packaging, transport to the manufacturing site and assembly.
Distribution	Includes the transportation in its packaging from the manufacturer's last logistic platform to the distributor.
Installation	Installation stage includes the installation of the products made manually and packaging.
Use	Energy consumption is calculated by following the PSR. The energy models used in this phase are the specific energy mixes based on ABB distribution. No maintenance is necessary. Reference product consumption over 20 years is 57,99 kWh
End of life	Includes its transportation from the installation site to the final end of life treatment site, and end of life treatment processes. A value of 1000 km transport by lorry is used for the transportation.
Benefits and loads beyond the system boundaries	Potential for reuse, recovery and/or recycling, expressed as net benefits and impacts



Environmental impacts

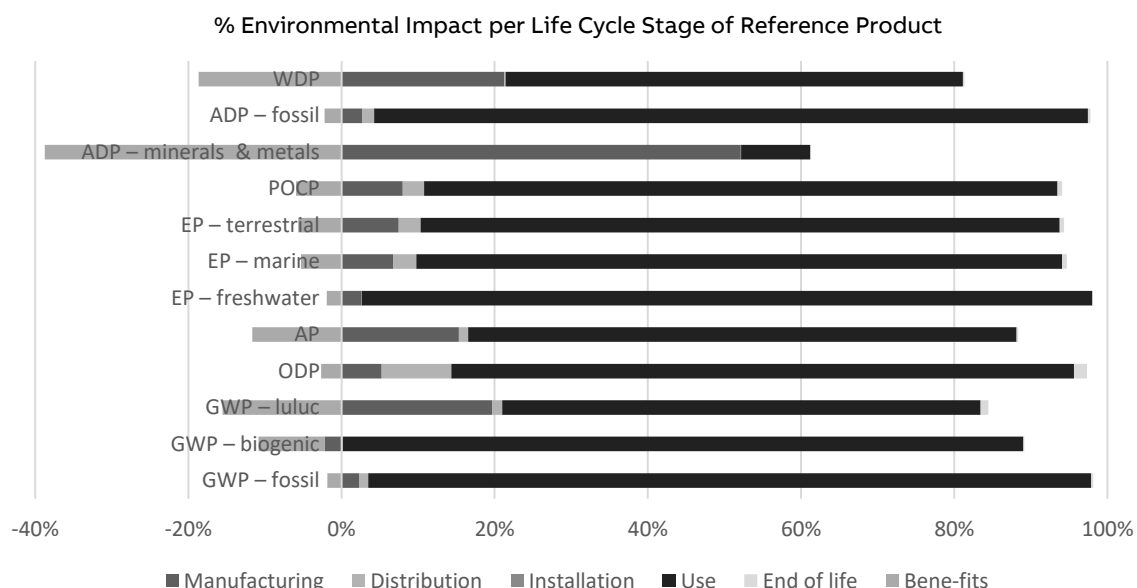
Reference lifetime	20 years
Product category	Differential Circuit Breaker
Installation elements	Installation carried out manually. End of life of packaging.
Use scenario	Load time: 50% of rated current in continuous operation (In). Use time rate: 30% of reference lifetime (RLT).
Geographical representativeness	Middle East, Australia & India
Technological representativeness	Materials and processes data are specific for the production of DME100 M C20 A30 – 2CDB363501R1204 and its family
Software and database used	Simapro 9.3.0.3 and Ecoinvent v3.8

Energy model used

Manufacturing	Poland General Energy Renewable
Installation	Manually done. Global
Use	Australia, India, Qatar, Arab Emirates, Kuwait, Saudi Arabia & Egypt
End of life	Recycling of product

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Common base of mandatory indicators



Environmental impact indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life	Bene- fits
GWP-total	kg CO ₂ eq.	5,54E+01	1,29E+00	6,77E-01	2,00E-03	5,32E+01	1,54E-01	-1,07E+00
GWP-fossil	kg CO ₂ eq.	5,52E+01	1,29E+00	6,77E-01	1,99E-03	5,31E+01	1,53E-01	-1,05E+00
GWP-biogenic	kg CO ₂ eq.	1,41E-01	-3,56E-03	2,72E-04	2,23E-06	1,44E-01	1,72E-04	-1,40E-02
GWP-luluc	kg CO ₂ eq.	6,35E-03	1,48E-03	1,01E-04	9,88E-07	4,70E-03	7,60E-05	-1,17E-03
GWP-fossil = Global Warming Potential fossil fuels GWP-biogenic = Global Warming Potential biogenic GWP-luluc = Global Warming Potential land use and land use change								
OPD	kg CFC-11 eq.	1,67E-06	9,02E-08	1,57E-07	3,81E-10	1,40E-06	2,93E-08	-4,56E-08
OPD = Depletion potential of the stratospheric ozone layer								
AP	H ⁺ eq.	3,02E-01	5,24E-02	4,12E-03	1,00E-05	2,45E-01	7,72E-04	-3,98E-02
AP = Acidification potential, Accumulated Exceedance								
EP-freshwater	kg P eq.	8,44E-03	2,25E-04	1,76E-06	2,50E-08	8,21E-03	1,93E-06	-1,67E-04
EP-marine	kg N eq.	4,39E-02	3,15E-03	1,37E-03	3,60E-06	3,91E-02	2,77E-04	-2,45E-03
EP-terrestrial	mol N eq.	4,98E-01	3,95E-02	1,51E-02	3,92E-05	4,40E-01	3,01E-03	-2,98E-02
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment EP-terrestrial = Eutrophication potential, Accumulated Exceedance								
POCP	kg NMVOC eq.	1,33E-01	1,13E-02	3,96E-03	1,08E-05	1,17E-01	8,33E-04	-8,37E-03
POCP = Formation potential of tropo-spheric ozone								
ADP-minerals & metals	kg Sb eq.	1,41E-03	1,20E-03	6,89E-07	1,00E-08	2,08E-04	7,73E-07	-8,91E-04
ADP-fossil	MJ	6,11E+02	1,71E+01	9,52E+00	2,43E-02	5,83E+02	1,87E+00	-1,39E+01
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic depletion for fossil resources potential								
WDP	m ³ e depr.	5,01E+00	1,31E+00	1,07E-02	1,53E-04	3,68E+00	1,18E-02	-1,15E+00
WDP = Water Deprivation potential								

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Common base of mandatory indicators

Inventory flows indicator – Resource use indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life	Bene- fits
PERE	MJ	4,82E+01	3,07E+00	5,34E-02	5,59E-04	4,50E+01	4,30E-02	-2,03E+00
PERM	MJ	6,79E-01	6,79E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	4,88E+01	3,75E+00	5,34E-02	5,59E-04	4,50E+01	4,30E-02	-2,03E+00
PENRE	MJ	6,10E+02	1,55E+01	9,52E+00	2,43E-02	5,83E+02	1,87E+00	-1,39E+01
PENRM	MJ	1,59E+00	1,59E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	6,11E+02	1,71E+01	9,52E+00	2,43E-02	5,83E+02	1,87E+00	-1,39E+01

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials
 PERM = Use of renewable primary energy resources used as raw materials
 PERT = Total Use of renewable primary energy resources
 PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials
 PENRM = Use of non-renewable primary energy resources used as raw materials
 PENRT = Total Use of non-renewable primary energy re-sources)

Inventory flows indicator – Indicators describing the use of secondary materials, water, and energy re-sources

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life	Bene- fits
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,44E-01	3,15E-02	4,35E-04	5,09E-06	1,12E-01	3,92E-04	-2,76E-02

SM = Use of secondary material
 RSF = Use of renewable secondary fuels
 NRSF = Use of non-renewable secondary fuels
 FW = Use of net fresh water

Inventory flows indicator – Waste category indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life	Bene- fits
Hazardous waste disposed	kg	4,14E-04	3,79E-05	2,49E-05	6,91E-08	3,46E-04	5,31E-06	-1,68E-05
Non- hazardous waste disposed	kg	2,58E+00	3,75E-01	4,48E-02	1,17E-03	2,07E+00	9,03E-02	-2,62E-01
Radioactive waste disposed	kg	4,24E-04	3,67E-05	6,69E-05	1,59E-07	3,08E-04	1,22E-05	-2,43E-05

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Common base of mandatory indicators

Inventory flows indicator – Output flow indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life	Bene- fits
Components for re-use	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	2,18E-01	1,93E-02	0,00E+00	0,00E+00	0,00E+00	1,99E-01	0,00E+00
Materials for energy recovery	kg	1,74E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,74E-02	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Inventory flow indicator – other indicators

Indicator	Unit	Total
Biogenic carbon content of the product	kg of C	0,00E+00
Biogenic carbon content of the associated packaging	kg of C	1,96E-02

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Optional indicators

Environmental indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life	Bene- fits
Total use of primary energy during the life cycle	MJ	6,60E+02	2,08E+01	9,57E+00	2,49E-02	6,28E+02	1,92E+00	-1,59E+01
Emissions of fine particles	incidence of diseases	7,160E-07	1,510E-07	1,150E-08	1,310E-10	5,430E-07	1,030E-08	-1,170E-07
Ionizing radiation, human health	kBq U235 eq.	3,170E-01	4,190E-02	4,130E-02	1,060E-03	2,260E-01	8,140E-01	-2,990E+02
Ecotoxicity (fresh water)	CTUe	9,830E+02	4,010E+02	5,520E+00	2,880E-02	5,740E+02	2,210E+00	-2,990E+02
Human toxicity, carcinogenic effects	CTUh	1,190E-06	6,640E-07	8,180E-09	2,560E-11	5,200E-07	1,970E-09	-4,940E-07
Human toxicity, non-carcinogenic effects	CTUh	2,290E-08	1,050E-08	1,130E-10	1,370E-12	1,220E-08	1,050E-10	-7,440E-09
Impact related to land use/soil quality	kg	6,510E+01	2,040E+01	1,640E+00	1,130E-02	4,210E+01	8,720E-01	-1,370E+01

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Extrapolation rules

For other products than the Reference product covered by this PEP, the environmental impacts for each phase of the lifecycle are obtained by multiplying the values of the Reference product by the following coefficients:

* if the coefficient is "1", the impacts of the phase of the life cycle are assimilated to the Reference product, meaning that the impacts are unchanged in comparison to the Reference product

Amperage (A)	Manufacturing	Distribution	Installation	Use	EoL
6	1,00	1,00	1,00	0,46	1,00
10	1,00	1,00	1,00	0,58	1,00
16	1,00	1,00	1,00	0,88	1,00
20	1,00	1,00	1,00	1,00	1,00
25	1,00	1,00	1,00	1,20	1,00
32	1,00	1,00	1,00	1,46	1,00
40	1,00	1,00	1,00	1,93	1,00

Product description	Product code
DME60D C6 AC30	2CDB362500R1064
DME60D C10 AC30	2CDB362500R1104
DME60D C16 AC30	2CDB362500R1164
DME60D C20 AC30	2CDB362500R1204
DME60D C25 AC30	2CDB362500R1254
DME60D C32 AC30	2CDB362500R1324
DME60D C40 AC30	2CDB362500R1404
DME60D C6 A30	2CDB362501R1064
DME60D C10 A30	2CDB362501R1104
DME60D C16 A30	2CDB362501R1164
DME60D C20 A30	2CDB362501R1204
DME60D C25 A30	2CDB362501R1254
DME60D C32 A30	2CDB362501R1324
DME60D C40 A30	2CDB362501R1404
DME100 M C6 AC30	2CDB363500R1064
DME100 M B6 AC30	2CDB363500R1065
DME100 M C10 AC30	2CDB363500R1104
DME100 M B10 AC30	2CDB363500R1105
DME100 M C16 AC30	2CDB363500R1164
DME100 M B16 AC30	2CDB363500R1165
DME100 M C20 AC30	2CDB363500R1204
DME100 M B20 AC30	2CDB363500R1205
DME100 M C25 AC30	2CDB363500R1254
DME100 M B25 AC30	2CDB363500R1255
DME100 M C32 AC30	2CDB363500R1324
DME100 M B32 AC30	2CDB363500R1325
DME100 M C40 AC30	2CDB363500R1404
DME100 M B40 AC30	2CDB363500R1405
DME100 M C6 A30	2CDB363501R1064
DME100 M B6 A30	2CDB363501R1065
DME100 M C10 A30	2CDB363501R1104
DME100 M B10 A30	2CDB363501R1105

Product description	Product code
DME100 M C16 A30	2CDB363501R1164
DME100 M B16 A30	2CDB363501R1165
DME100 M C20 A30	2CDB363501R1204
DME100 M B20 A30	2CDB363501R1205
DME100 M C25 A30	2CDB363501R1254
DME100 M B25 A30	2CDB363501R1255
DME100 M C32 A30	2CDB363501R1324
DME100 M B32 A30	2CDB363501R1325
DME100 M C40 A30	2CDB363501R1404
DME100 M B40 A30	2CDB363501R1405
DME60D C6 AC30	2CDB372500R1064
DME60D C10 AC30	2CDB372500R1104
DME60D C16 AC30	2CDB372500R1164
DME60D C20 AC30	2CDB372500R1204
DME60D C25 AC30	2CDB372500R1254
DME60D C32 AC30	2CDB372500R1324
DME60D C40 AC30	2CDB372500R1404
DME100 M C6 A30	2CDB373501R1064
DME100 M B6 A30	2CDB373501R1065
DME100 M C10 A30	2CDB373501R1104
DME100 M B10 A30	2CDB373501R1105
DME100 M C16 A30	2CDB373501R1164
DME100 M B16 A30	2CDB373501R1165
DME100 M C20 A30	2CDB373501R1204
DME100 M B20 A30	2CDB373501R1205
DME100 M C25 A30	2CDB373501R1254
DME100 M B25 A30	2CDB373501R1255
DME100 M C32 A30	2CDB373501R1324
DME100 M B32 A30	2CDB373501R1325
DME100 M C40 A30	2CDB373501R1404
DME100 M B40 A30	2CDB373501R1405

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Verifier accreditation number:	Information and reference documents:	
VH48	www.pep-ecopassport.org	
Date of issue:	03-2023	Validity period: 5 years

Independent verification of the declaration and data, in compliance with ISO 14025: 2010

Internal ☐

External ☒

The PCR review was conducted by a panel of experts chaired by Julie ORGELET (DDemain)

PEP are compliant with XP C08-100-1: 2016 or EN 50693:2019

The elements of the present PEP cannot be compared with elements from another program

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Environmental Impact Indicator Glossary

Impact indicators

Indicator	Description	Unit
Global warming potential (GWP) - total	Indicator of potential global warming caused by emissions to air contributing to the greenhouse effect. The total global warming potential (GWP-total) is the sum of three sub-categories of climate change. GWP-total = GWP-fossil + GWP-biogenic + GWP- land use and land use change	kg CO ₂ eq.
Ozone depletion (OD)	Emissions to air that contribute to the destruction of the stratospheric ozone layer	kg CFC-11 eq.
Acidification of soil and water (A)	Acidification of soils and water caused by the release of certain gases to the atmosphere, such as nitrogen oxides and sulphur oxides	H ⁺ eq.
Eutrophication (E)	Indicator of the contribution to eutrophication of water by the enrichment of the aquatic ecosystem with nutritional elements, e.g. industrial or domestic effluents, agriculture, etc. This indicator is divided to three: freshwater, marine and terrestrial.	kg P eq., kg N eq., mole N eq.
Photochemical ozone creation (POCP)	Indicator of emissions of gases that affect the creation of photochemical ozone in the lower atmosphere (smog) because of the rays of the sun.	kg NMVOC eq.
Depletion of abiotic resources – elements (ADPe)	Indicator of the depletion of natural non-fossil resources	kg Sb eq.
Depletion of abiotic resources – fossil fuels (ADPf)	The use of non-renewable fossil resources in an unsustainable way (e.g. from material to waste)	MJ (lower heating value)
Water Deprivation potential (WDP)	Deprivation-weighted water consumption. Assesses the potential of water deprivation, to either humans or ecosystems, building on the assumption that the less water remaining available per area, the more likely another user will be deprived.	m ³ e depr.

Resource use indicators

Indicator	Description	Unit
Total use of primary energy	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) + Total use of renewable primary energy re-sources (primary energy and primary energy resources used as raw materials)	MJ (lower heating value)

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