ABB EQ METER

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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STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
In Review	Public	ABBG-00006-V01.01-EN	1	en	1/10

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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	ABB EQ METER B23 111-100
Description of the product	Advanced compact DIN-rail meter with an easy to read back lighted display. The meter is intended for use in the commercial or residential buildings etc. The meter can be used in 3 or 4 wire systems. The meter has several instrumentation values, 25 possible alarms and event logs. Three phase direct connected for active energy. One output for pulses or alarm etc. Accuracy class 1.0 (or B for MID meters). The meters is IEC approved + MID approved and verified.
Functional unit	Measure energy consumption for sub billing purposes with direct and indirect (via CT) connection. The measure has to be provided with a rated level of accuracy (1%). The measurement can be readout by the user in different ways (based on the product code): via HMI, via Modbus or via Mbus
Other products covered	ABB EQ METER B21 112-100 ABB EQ METER B23 112-100 ABB EQ METER B23 113-100 ABB EQ METER B24 113-100 ABB EQ METER C11 110-301

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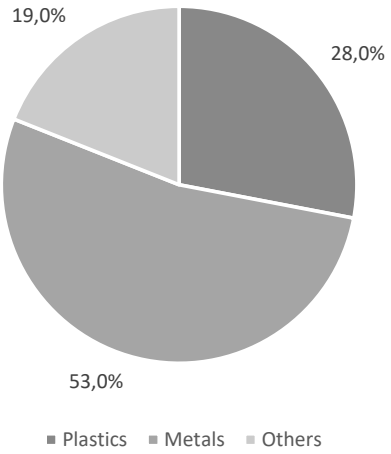
Constituent materials



Total weight of Reference product	302 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-%**
Plastics	28,0	Metals	53,0	Others (including electronics)	19,0

Products of this range are designed in conformity with the requirements of the RoHS directive (European directive 2011/65/EU), considering exemptions if applicable. Details of RoHS and REACh substances information are available on ABB Website. Products of this range are also in scope of Directive 2012/19/EU on waste electrical and electronic equipment (WEEE).

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Additional Environmental Information

Manufacturing	Manufacturing takes place in ABB plant in Santa Palomba (RM), Italy. The site is ISO14001 certified.
Distribution	Distribution scenario has been modelled considering ABB average market for the product. ABB EQ meters delivery scenario includes 1039 km by ship and 3332 km by truck
Installation	As installation is performed manually, no environmental burdens are associated to this phase besides end of life of product packaging
Use	Use phase scenario has been modelled based on PCR v3 requirements and scenarios. Based on PCR parameters, total energy demand for the use phase is equal to 126 kWh
End of life	End of life scenario has been modelled based on PCR v3 requirements and scenarios. 1000 km from waste generation to waste treatment facility are considered
Software and database used	Simapro v 9.3.0.2 - Ecoinvent v 3.8 + ELCD
Standards	"PCR-ed3-EN-2015 04 02" (PEP Association, 2015) "PSR-0005-ed2-EN-2016 03 29" (PEP Association, 2016b)

Environmental impacts

Reference lifetime	20 years
Product category	Electrical switchgear and control gear Solutions. Meters have been modelled with parameters specified by PSR as "Other equipment" in its scope (§3.13)
Installation elements	N/A
Use scenario	Load measurement related to customer applications. Maximum current is related to the product (for direct connection max 65A for B series and 40A for C series) and the
Geographical representativeness	World
Technological representativeness	ABB Energy Meters have the following instrumentation values as a minimum: Active power, Voltage, Current, Power factor; and are designed to monitor energy consumption and energy
Energy model used	
Manufacturing	Italian grid mix, medium voltage
Installation	N/A
Use	European grid mix, medium voltage
End of life	N/A

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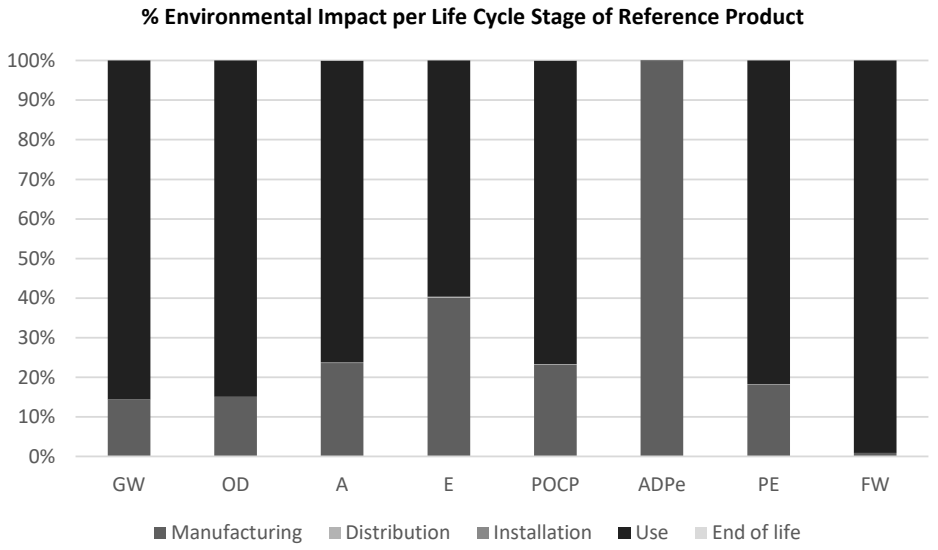
Compulsory Indicators

Impact indicators	Unit	Total	Manu-facturing	Distri-bution	Instal-lation	Use	End of life
Global warming (GW)	kg CO_2 eq.	7,233E+01	1,040E+01	3,380E-02	<0,01%	6,190E+01	<0,01%
Ozone depletion (OD)	kg CFC-11 eq.	4,746E-06	7,160E-07	<0,01%	<0,01%	4,030E-06	<0,01%
Acidification of soil and water (A)	kg SO_2 eq.	3,384E-01	7,980E-02	5,340E-04	<0,01%	2,580E-01	4,110E-05
Eutrophication (E)	kg $(PO_4)^3$ eq.	2,616E-02	1,050E-02	6,400E-05	<0,01%	1,560E-02	<0,01%
Photochemical ozone creation (POCP)	kg C_2H_4 eq.	1,852E-02	4,290E-03	2,840E-05	<0,01%	1,420E-02	2,410E-06
Depletion of abiotic resources – elements (ADPe)	kg Sb eq.	3,754E-03	3,750E-03	<0,01%	<0,01%	4,420E-06	<0,01%

Resource use indicators	Unit	Total	Manu-facturing	Distri-bution	Instal-lation	Use	End of life
Total use of primary energy (PE)	MJ	8,545E+02	1,560E+02	4,530E-01	<0,01%	6,980E+02	<0,01%
Net freshwater use (FW)	m^3	2,966E+01	2,600E-01	<0,01%	<0,01%	2,940E+01	<0,01%



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2 identified parameters allow to identify a linear dependency between impacts and product features. Therefore, linear interpolation has been performed to estimate the relations among products in the same family.

Overview of representative products and parameters

Product family	Reference product for which PEP results are reported	Parameter – All life cycle stages besides use phase	Parameter – Use phase
EQ meters	EQMETER B23 111-100	PCBA mass in the product [g]	Nominal power [W]

An overview of selected models and reference nominal parameters is reported below:

List of reference parameters for interpolation

METER FAMILY	PCBA mass [g]	power [W]
5. EQMETER B21 112-100	42,57	0,41
6. EQMETER B23 111-100	38,13	0,72
7. EQMETER B23 112-100	45,70	0,72
8. EQMETER B23 113-100	43,07	0,72
9. EQMETER B24 113-100	58,74	0,72
10. EQMETER C11 110-301	26,00	0,22

Next sections contain information and details about how the extrapolation rules have been computed for the product family. These extrapolation rules allow to pass from impacts reported in the PEP associated to a reference product to impacts associated to different products in the same family, providing the reference parameter.

For the investigated category the equation linking impacts among products is defined as

$$y = ax + b$$

Where:
y is the generic environmental impact category
x is the nominal value of reference parameter
a and b are coefficients computed starting from the assumption about the existence of linear dependency between impacts and product features

Next section contains all the details and the parameters to extrapolate results for other products in the same homogeneous family, and an example of extrapolation.

Interpolation			B23 212-200 (PCBA mass 38,13 g)	
MANUFACTURING STAGE y = ax + b	a	b	Formula	Result
Global warming	0,1935	2,7630	a*PCBA mass (x) +b	10,1418895
Ozone depletion	0,0000	0,0000	a*PCBA mass (x) +b	0,0000007
Acidification	0,0011	0,0212	a*PCBA mass (x) +b	0,0648494
Eutrophication	0,0002	0,0013	a*PCBA mass (x) +b	0,0098354
Photochemical ozone formation	0,0001	0,0011	a*PCBA mass (x) +b	0,0037066
Depletion of abiotic resources	0,0001	0,0004	a*PCBA mass (x) +b	0,0033450
Total use of primary energy	2,9888	36,9438	a*PCBA mass (x) +b	150,9068466
Net use of fresh water	0,0015	0,1982	a*PCBA mass (x) +b	0,2538026

Interpolation			B23 212-200 (Power 0,721 W)	
USE STAGE y = ax + b	a	b	Formula	Result
Global warming	85,8622	- 0,0264	a*Power (x) +b	61,8801826
Ozone depletion	0,0000	- 0,0000	a*Power (x) +b	0,0000040
Acidification	0,3582	- 0,0001	a*Power (x) +b	0,2581201
Eutrophication	0,0216	- 0,0000	a*Power (x) +b	0,0155849
Photochemical ozone formation	0,0197	- 0,0000	a*Power (x) +b	0,0141832
Depletion of abiotic resources	0,0000	- 0,0000	a*Power (x) +b	0,0000044
Total use of primary energy	968,7816	- 0,2982	a*Power (x) +b	698,1933345
Net use of fresh water	40,7892	- 0,0126	a*Power (x) +b	29,3964445

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A41 - A42 -A43 - A444					
A41 111-100	2CMA170554R1000	A43 112-100	2CMA100244R1000	A44 212-600	2CMA225223R1000
A41 111-200	2CMA100082R1000	A43 112-200	2CMA100555R1000	A44 213-100	2CMA170535R1000
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A41 112-200	2CMA100083R1000	A43 113-10Ö	2CMA101624R1000	A44 213-600	2CMA225213R1000
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C11 110-10A	2CMA101403R1000
C11 110-300	2CMA170550R1000
C11 110-300 (B10)	2CMA170600R1000
C11 110-301	2CMA103572R1000
C11 110-401	2CMA103573R1000
C11 110-401 B	2CMA104388R1000
C13 110-100	2CMA100191R1000
C13 110-101 MID	2CMA103574R1000
C13 110-300	2CMA100192R1000
C13 110-300	2CMA100194R1000
C13 110-301	2CMA103575R1000
C13 110-401	2CMA104386R1000
C13 110-401 B	2CMA104387R1000

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Environmental Impact Indicator Glossary

Impact indicators	Description	Unit
Global warming (GW)	Indicator of potential global warming caused by emissions to air contributing to the greenhouse effect. Includes fossil and biogenic	kg CO_2 eq.
Ozone depletion (OD)	Indicator of emissions to air that contribute to the destruction of the ozone layer	kg CFC-11 eq.
Acidification of soil and water (A)	Indicator of the potential acidification of soils and water caused by the release of certain gases to the atmosphere	kg SO_2 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.	kg $(PO_4)^3$ 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 C_2H_4 eq.
Depletion of abiotic resources – elements (ADPe)	Indicator of the depletion of natural non-fossil resources	kg Sb eq.

Resource use indicators	Description	Unit
Total use of primary energy (PE)	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) + Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ (lower heating value)

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Registration number:		Drafting Rules:	PCR-ed3-EN-2015 04 02
ABBG-00006-V01.01-EN		Supplemented by:	PSR-0005-ed2-EN-2016 03 29
Verifier accreditation number:		Information and reference documents:	
VH40		www.pep-ecopassport.org	
Date of issue:	07/22/2022	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 Philippe Osset (SOLINNEN)

PEP are compliant with XP C08-100-1: 2016
The elements of the present PEP cannot be compared with elements from another program

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

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