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			
ABB S.p.A.		Chiara Simonini - chiara.simonini@it.abb.com			
ADDRESS		WEBSITE			
ABB S.p.A. – ELSB Viale dell'Industria, 18 20009 Vittuone (MI) - Italy		new.abb.com/it			
STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
In Review	Public	ABBG-00006-V01.01-EN	1	en	1/10

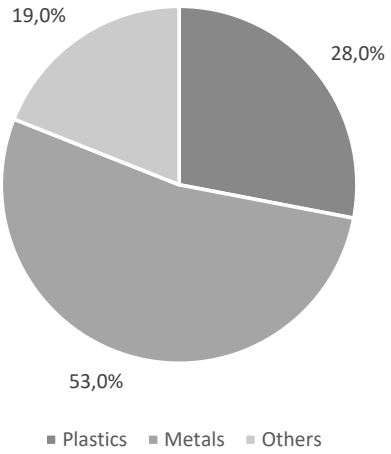
ABB Purpose & Embedding Sustainability

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

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).

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)

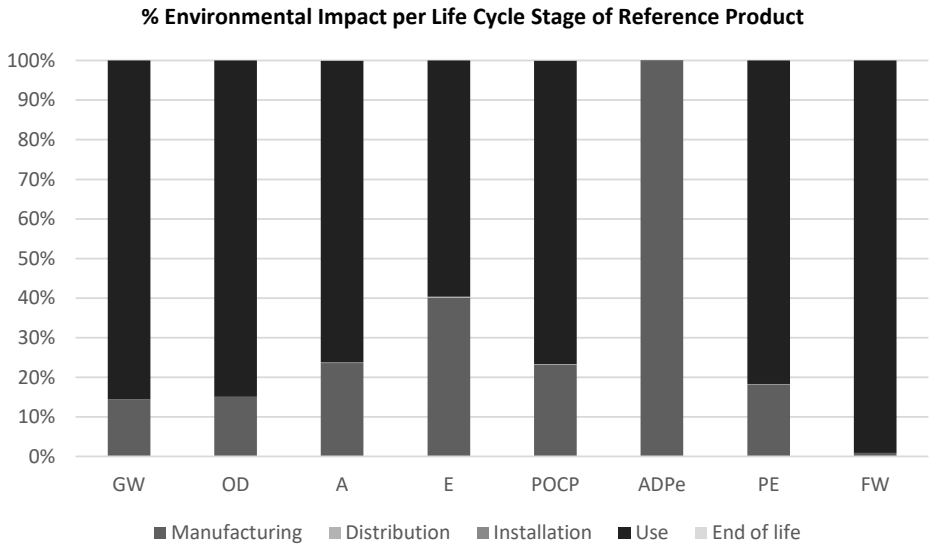
Environmental impacts

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

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%



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

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
A41 112-100	2CMA170500R1000	A43 113-100	2CMA100245R1000	A44 213-200	2CMA100124R1000
A41 112-200	2CMA100083R1000	A43 113-10Ö	2CMA101624R1000	A44 213-600	2CMA225213R1000
A41 113-100	2CMA100240R1000	A43 113-200	2CMA100556R1000	A44 311-100	2CMA170536R1000
A41 113-200	2CMA100241R1000	A43 121-100	2CMA170521R1000	A44 311-200	2CMA100125R1000
A41 212-100	2CMA170501R1000	A43 121-200	2CMA100107R1000	A44 311-600	2CMA225203R1000
A41 212-200	2CMA100084R1000	A43 211-100	2CMA100012R1000	A44 312-11J	2CMA227362R1000
A41 311-100	2CMA170502R1000	A43 211-200	2CMA100108R1000	A44 352-100	2CMA170537R1000
A41 311-200	2CMA100085R1000	A43 212-100	2CMA170522R1000	A44 352-200	2CMA100126R1000
A41 312-100	2CMA170503R1000	A43 212-200	2CMA100109R1000	A44 352-600	2CMA224553R1000
A41 312-200	2CMA100086R1000	A43 212-600	2CMA225323R1000	A44 353-100	2CMA170538R1000
A41 312-600	2CMA226773R1000	A43 213-100	2CMA170523R1000	A44 353-10H	2CMA100536R1000
A41 313-100	2CMA170504R1000	A43 213-200	2CMA100110R1000	A44 353-200	2CMA100127R1000
A41 313-200	2CMA100087R1000	A43 213-600	2CMA225313R1000	A44 353-600	2CMA224543R1000
A41 412-100	2CMA170505R1000	A43 311-100	2CMA170524R1000	A44 451-200	2CMA100250R1000
A41 412-200	2CMA100088R1000	A43 311-200	2CMA100111R1000	A44 452-100	2CMA170540R1000
A41 412-600	2CMA223103R1000	A43 312-100	2CMA170525R1000	A44 452-200	2CMA100129R1000
A41 413-100	2CMA170506R1000	A43 312-200	2CMA100112R1000	A44 452-600	2CMA224533R1000
A41 413-200	2CMA100089R1000	A43 312-600	2CMA225303R1000	A44 453-100	2CMA170541R1000
A41 512-100	2CMA100237R1000	A43 313-100	2CMA170526R1000	A44 453-110	2CMA170542R1000
A41 512-200	2CMA100559R1000	A43 313-10H	2CMA100535R1000	A44 453-200	2CMA100130R1000
A41 513-100	2CMA170508R1000	A43 313-200	2CMA100113R1000	A44 551-200	2CMA100251R1000
A41 513-200	2CMA100091R1000	A43 313-600	2CMA225293R1000	A44 552-100	2CMA170545R1000
A42 111-100	2CMA170555R1000	A43 411-200	2CMA100246R1000	A44 552-110	2CMA170549R1000
A42 111-200	2CMA100093R1000	A43 412-100	2CMA170528R1000	A44 552-200	2CMA100134R1000
A42 112-100	2CMA170510R1000	A43 412-200	2CMA100115R1000	A44 552-210	2CMA100137R1000
A42 112-200	2CMA100094R1000	A43 413-100	2CMA170529R1000	A44 552-600	2CMA224523R1000
A42 113-100	2CMA100242R1000	A43 413-200	2CMA100116R1000	A44 553-100	2CMA170546R1000
A42 113-200	2CMA100243R1000	A43 511-100	2CMA100143R1000	A44 553-110	2CMA170548R1000
A42 212-100	2CMA170511R1000	A43 511-200	2CMA100247R1000	A44 553-200	2CMA100135R1000
A42 212-200	2CMA100095R1000	A43 512-100	2CMA170531R1000	A44 553-210	2CMA100138R1000
A42 312-100	2CMA170512R1000	A43 512-200	2CMA100119R1000	A44 553-600	2CMA224513R1000
A42 312-200	2CMA100097R1000	A43 512-600	2CMA225283R1000		
A42 312-600	2CMA223093R1000	A43 513-100	2CMA170532R1000		
A42 412-100	2CMA170513R1000	A43 513-200	2CMA100120R1000		
A42 412-200	2CMA100098R1000	A43 513-600	2CMA225273R1000		
A42 413-100	2CMA170514R1000	A44 111-100	2CMA170533R1000		
A42 413-200	2CMA100099R1000	A44 111-200	2CMA100121R1000		
A42 552-100	2CMA100238R1000	A44 112-100	2CMA100248R1000		
A42 552-120	2CMA170518R1000	A44 112-200	2CMA100557R1000		
A42 552-200	2CMA100560R1000	A44 113-100	2CMA100249R1000		
A42 552-220	2CMA100104R1000	A44 113-10Ö	2CMA100834R1000		
A42 553-100	2CMA170516R1000	A44 113-200	2CMA100558R1000		
A42 553-120	2CMA170519R1000	A44 211-100	2CMA100013R1000		
A42 553-220	2CMA100105R1000	A44 211-200	2CMA100122R1000		
A43 111-100	2CMA170520R1000	A44 211-600	2CMA225233R1000		
A43 111-10D	2CMA100690R1000	A44 212-100	2CMA170534R1000		
A43 111-200	2CMA100106R1000	A44 212-200	2CMA100123R1000		

B21 - B23 - B24					
B21 111-100	2CMA100149R1000	B23 113-10B	2CMA275092R1000	B24 212-400	2CMA100264R1000
B21 111-10L	2CMA106049R1000	B23 113-200	2CMA100803R1000	B24 212-600	2CMA225263R1000
B21 111-200	2CMA100793R1000	B23 212-100	2CMA100166R1000	B24 213-200	2CMA100813R1000
B21 111-300	2CMA100144R1000	B23 212-10D	2CMA104352R1000	B24 311-10J	2CMA101710R1000
B21 111-400	2CMA100252R1000	B23 212-10K	2CMA100686R1000	B24 311-300	2CMA100175R1000
B21 112-100	2CMA100150R1000	B23 212-10M	2CMA106054R1000	B24 311-400	2CMA100265R1000
B21 112-10K	2CMA100854R1000	B23 212-200	2CMA100804R1000	B24 312-10J	2CMA101711R1000
B21 112-10N	2CMA218942R1000	B23 212-300	2CMA100160R1000	B24 312-300	2CMA100176R1000
B21 112-200	2CMA100794R1000	B23 212-400	2CMA100259R1000	B24 312-400	2CMA100266R1000
B21 112-300	2CMA100145R1000	B23 212-600	2CMA223083R1000	B24 313-10J	2CMA101712R1000
B21 112-400	2CMA100253R1000	B23 213-200	2CMA100805R1000	B24 351-100	2CMA100182R1000
B21 113-100	2CMA100151R1000	B23 311-100	2CMA100168R1000	B24 351-10B	2CMA100540R1000
B21 113-200	2CMA100795R1000	B23 311-10B	2CMA100537R1000	B24 351-200	2CMA100814R1000
B21 212-100	2CMA100152R1000	B23 311-10J	2CMA101707R1000	B24 351-300	2CMA100836R1000
B21 212-200	2CMA100796R1000	B23 311-200	2CMA100806R1000	B24 351-400	2CMA100838R1000
B21 212-300	2CMA100146R1000	B23 311-300	2CMA100161R1000	B24 352-100	2CMA100183R1000
B21 212-400	2CMA100254R1000	B23 311-400	2CMA100260R1000	B24 352-10B	2CMA100541R1000
B21 213-200	2CMA100797R1000	B23 311-600	2CMA225353R1000	B24 352-200	2CMA100815R1000
B21 311-100	2CMA100154R1000	B23 312-100	2CMA100169R1000	B24 352-300	2CMA100837R1000
B21 311-10J	2CMA101704R1000	B23 312-10B	2CMA100538R1000	B24 352-400	2CMA100839R1000
B21 311-200	2CMA100798R1000	B23 312-10J	2CMA101708R1000	B24 352-600	2CMA225253R1000
B21 311-300	2CMA100147R1000	B23 312-10K	2CMA100687R1000	B24 353-100	2CMA100184R1000
B21 311-400	2CMA100255R1000	B23 312-200	2CMA100807R1000	B24 353-10B	2CMA100542R1000
B21 311-600	2CMA223133R1000	B23 312-300	2CMA100162R1000	B24 353-200	2CMA100816R1000
B21 312-100	2CMA100155R1000	B23 312-400	2CMA100261R1000	B24 353-600	2CMA225243R1000
B21 312-10J	2CMA101705R1000	B23 312-600	2CMA225343R1000		
B21 312-200	2CMA100799R1000	B23 313-100	2CMA100170R1000		
B21 312-300	2CMA100148R1000	B23 313-10B	2CMA100539R1000		
B21 312-400	2CMA100256R1000	B23 313-10J	2CMA101709R1000		
B21 312-600	2CMA223123R1000	B23 313-10K	2CMA100688R1000		
B21 313-100	2CMA100156R1000	B23 313-200	2CMA100808R1000		
B21 313-10J	2CMA101706R1000	B23 313-600	2CMA225333R1000		
B21 313-200	2CMA100800R1000	B24 111-100	2CMA100177R1000		
B21 313-600	2CMA223113R1000	B24 111-10B	2CMA217372R1000		
B23 111-100	2CMA100163R1000	B24 111-200	2CMA100809R1000		
B23 111-10B	2CMA250022R1000	B24 111-300	2CMA100172R1000		
B23 111-200	2CMA100801R1000	B24 111-400	2CMA100262R1000		
B23 111-300	2CMA100158R1000	B24 112-100	2CMA100178R1000		
B23 111-400	2CMA100257R1000	B24 112-10B	2CMA235022R1000		
B23 112-100	2CMA100164R1000	B24 112-200	2CMA100810R1000		
B23 112-10B	2CMA225742R1000	B24 112-300	2CMA100173R1000		
B23 112-10E	2CMA104350R1000	B24 112-400	2CMA100263R1000		
B23 112-10M	2CMA100689R1000	B24 113-100	2CMA100179R1000		
B23 112-10N	2CMA217631R1000	B24 113-10B	2CMA219682R1000		
B23 112-10P	2CMA234835R1000	B24 113-200	2CMA100811R1000		
B23 112-200	2CMA100802R1000	B24 212-100	2CMA100180R1000		
B23 112-300	2CMA100159R1000	B24 212-10D	2CMA104354R1000		
B23 112-400	2CMA100258R1000	B24 212-200	2CMA100812R1000		
B23 113-100	2CMA100165R1000	B24 212-300	2CMA100174R1000		

C11 -C13	
C11 110-100	2CMA100014R1000
C11 110-101	2CMA103571R1000
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

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)

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"