ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	dormakaba International Holding GmbH
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-DOR-20220087-CBA4-EN
Issue date	17/03/2022
Valid to	16/03/2028

EntriWorX Unit 92 40

dormakaba

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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General Information

dormakaba

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-DOR-20220087-CBA4-EN

This declaration is based on the product category rules:

Electronic and physical Access Control Systems, 01/08/2021
(PCR checked and approved by the SVR)

Issue date

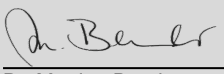
17/03/2022

Valid to

16/03/2028



Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)



Dr. Martina Bender
(Managing Director Institut Bauen und Umwelt e.V.)

EntriWorX Unit 92 40

Owner of the declaration

dormakaba International Holding GmbH
DORMA Platz 1
58256 Ennepetal
Germany

Declared product / declared unit

1 piece of the product: EntriWorX Unit 92 40

Scope:

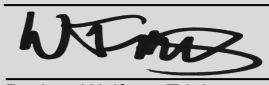
This EPD refers to a specific product manufactured by dormakaba. The production site is located in Villingen-Schwenningen (Germany).

The data represents the year 2020.
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR			
Independent verification of the declaration and data according to ISO 14025:2011			
☐	internally	☒	externally



Dr.-Ing. Wolfram Trinius,
(Independent verifier)

Product

Product description/Product definition

The EntriWorX Unit 92 40 is the central control unit for different domains like access control, escape route management and door sequence control. It is capable of managing simple or even complex entrance and exit door configurations.
Based on a state-of-the-art operating system the EntriWorX Control Unit is a modern IoT edge device respecting IT security requirements and enabling connectivity to cloud services.
Power supply via PoE and a compact design allows easy integration in SOHO as well as in Enterprise environments.
Standardized interface and protocols based on RS-485 and CAN facilitate the integration of peripheral devices. For the placing on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the following legal provisions apply:

- *Electromagnetic Compatibility Directive (EMC)*
- *Low Voltage Directive (LVD)*
- *Restriction of Hazardous Substances (RoHS)*
- *Radio Equipment Directive (RED)*
- *EN 50581:2012*

The CE-marking takes into account the proof of conformity with the respective harmonized standards based on the legal provisions above. For the application and use the respective national
provisions apply.

Application

The EntriWorX Unit 92 40 networks the door technology components through simple plug & play instead of complex wiring and different transmission protocols and enables the commissioning of door systems based on a simple app. This setup app simplifies commissioning based on pre-configured parameters and provides all the information needed for installation. Once the building is in operation, the data from the connected door components can then be transferred to a higher-level system for controlling the processes in the building. This can be an existing system of the customer or EntriWorX Insights.

Technical Data

The EntriWorX Unit 92 40 has the following technical properties:

Name	Value	Unit
Operating Temperature	0 - 50	°C
Operating Humidity	5 - 85	%
Height Dimension	208	mm
Width Dimension	208	mm
Depth Dimension	48	mm
Weight (without packaging)	0,675	kg
Weight (with packaging)	0,923	kg
Power consumption "idle mode"	5	W
Power consumption "on mode"	12	W

Host Interface

• Ethernet 10/100 Mbit/s

Peripherals Interface

Variant MRD
• 2x coaxial for registration units (LEGIC / MIFARE)
• 1x RS-485
• 1x RS-232
• 1x CAN Bus
• 3x potential-free relays, 30 V AC/DC; max. 2 A
• 4x digital inputs
• 1x tamper contact

Power supply

• PoE, as per IEEE 802.3af
• PoE+, as per IEEE 802.3at

Output voltage

• Reader: 5/12 V DC
• Elec. door opener: 12/24 V DC

Class of protection as per *EN 60529:IP40.*

The product is not harmonised in accordance with the Construction Product Regulations (CPR) but in accordance with other provisions for harmonisation of the EU. Compliance with the European Union Directive and technical specifications:

- *EN 55032:2015*
- *EN 55024:2010 + A1:2015*
- *EN 50364:2010*
- *EN 62368-1:2014 + A11:2017*
- *EN 60529:2014*
- *EN 301489-1 V2.2.1 Draft*
- *EN 301489-3 V2.1.1*
- *EN 300330 V2.1.1*

The product is subject to CE marking according to the relevant harmonization legislation.
In addition, the product also conforms to the following standards:

- *UL 294:2013*
- *UL62368-1:2014-12*
- *CAN/CSA-22.2 No. 62368-1:2014-12*
- *FCC*

Base materials/Ancillary materials

The major material compositions including packaging of the product are listed below:

Name	Value	Unit
Plastics	48,5	%
Paper	27	%
Electronics	23,5	%
Steel	1	%

The product includes partial articles which contain substances listed in the Candidate List of *REACH* Regulation *1907/2006/EC* (date: 17.01.2022) exceeding 0.1 percentage by mass in the alloy: yes

- Lead (Pb): 7439-92-1 (CAS No.) is included in some of the alloys used. The concentration of lead in each individual alloy does not exceed 4.0% (by mass).
- Lead titanium trioxide (O3 Pb Ti): 12060-00-03

The Candidate List can be found on the *ECHA* website address: https:echa.europa.eu/de/home.

Reference service life

The reference service life of the dormakaba EntriWorX Unit 92 40 is estimated to be 15 years. This number is based on the support and service life and is not an estimated lifetime.

LCA: Calculation rules

Declared Unit
The declared unit is 1 piece of the product: EntriWorX Unit 92 40.

Name	Value	Unit
Declared unit	1	pce.
Conversion factor to 1 kg (kg per declared unit)	1.08	-
Product weight including packaging	0,923	kg

System boundary
The type of EPD is: cradle to gate with options, modules C1–C4, and module D (A1–A3 + C + D and additional modules: A4 + A5 + B6)

Production - Module A1-A3
The product stage includes:

— A1, raw material extraction, processing and mechanical treatments, processing of
secondary material input (e.g. recycling processes),
— A2, transport to the manufacturer,
— A3, manufacturing and assembly

including provision of all materials, products and energy, as well as waste processing up
to the end-of waste state.

Construction stage - Modules A4-A5
The construction process stage includes:
— A4, transport to the building site;
— A5, installation into the building;

including provision of all materials, products and energy, as well as waste processing up to the end-of-waste state or disposal of final residues during the construction process stage.

Use stage - Module B6
The use stage related to the operation of the building includes:
— B6, operational energy use

End-of-life stage– Modules C1-C4 and D
The end-of-life stage includes:
— C1, de-construction, demolition:
— C2, transport to waste processing;
— C3, waste processing for reuse, recovery and/or recycling;
— C4, disposal; including provision and all transport, provision of all materials, products and related energy and water use.

Module D (Benefits and loads beyond the system boundary) includes:
— D, recycling potentials, expressed as net impacts and benefits.

Geographic Representativeness
Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Germany

Comparability
Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. Background database: *GaBi*, SP40.

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

Information on describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic carbon content in product	0.01	kg C
Biogenic carbon content in accompanying packaging	0.1	kg C

The following technical scenario information is required for the declared modules.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel per 1 kg (truck)	0.00276	l/100km
Transport distance (truck)	750	km
Capacity utilisation (including empty runs)	51	%
Transort distance (ship)	1000	km

Installation into the building (A5)

Name	Value	Unit
Waste Packaging (paper)	0.227	kg
Waste Packaging (plastic)	0,022	kg

Reference service life

Name	Value	Unit
Life Span according to the manufacturer	15	a

Operational energy use (B6) and Operational water use (B7)
The use stage is declared for 15 years.

Name	Value	Unit
Energy consumption for 1 year	54.02	kWh
on mode per day	4	h
idle mode	20	h
on mode power	12	W
idle mode	5	W
Days per year in use	365	days

End of life (C1-C4)
C1: The product dismantling from the building is done manually without environmental burden.
C2: Transport to waste treatment at end of life is 50km.

Name	Value	Unit
Recycling (Steel)	0.01	kg
Energy recovery (Plastic)	0.43	kg
Energy recovery (Paper)	0,02	kg
Recycling and landfilling (Electronics)	0,21	kg
Transportation to Waste	50	km

Region for end of life: Global

Reuse, recovery and/or recycling potentials (D), relevant scenario information
Collection rate is 100%.

LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MNR	MNR	MNR	X	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece EntriWorX Unit 92 40

Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
GWP-total	kg CO_2 eq	1.59E+01	6.36E-02	3.75E-01	4.13E+02	2.98E-03	1.08E+00	4.05E-04	-1.24E+00
GWP-fossil	kg CO_2 eq	1.61E+01	6.09E-02	6.16E-02	4.11E+02	2.85E-03	1.08E+00	4.02E-04	-1.24E+00
GWP-biogenic	kg CO_2 eq	-2.4E-01	2.68E-03	3.14E-01	8.16E-01	1.32E-04	2.53E-05	1.37E-06	1.69E-04
GWP-luluc	kg CO_2 eq	2.31E-02	1.44E-06	8.32E-06	5.78E-01	6.78E-08	6.13E-05	1.16E-06	-1.45E-03
ODP	kg CFC11 eq	1.75E-09	6.39E-18	8.5E-17	6.2E-12	3.01E-19	5.47E-16	1.49E-18	-8.26E-15
AP	mol H^+ eq	8.57E-02	1.69E-04	9.97E-05	1.83E+00	2.85E-06	1.93E-04	2.88E-06	-1.14E-02
EP-freshwater	kg P eq	1.14E-04	1.31E-08	1.56E-08	7.83E-04	6.1E-10	8.73E-08	6.9E-10	-1.18E-06
EP-marine	kg N eq	1.52E-02	4.78E-05	3.47E-05	3E-01	9.07E-07	4.35E-05	7.42E-07	-9.75E-04
EP-terrestrial	mol N eq	1.62E-01	5.26E-04	4.49E-04	3.23E+00	1.01E-05	8.8E-04	8.16E-06	-1.05E-02
POCP	kg NMVOC eq	4.47E-02	1.34E-04	9.22E-05	8.67E-01	2.56E-06	1.21E-04	2.25E-06	-3.19E-03
ADPE	kg Sb eq	1.31E-01	1.81E-09	1.29E-09	8.48E-05	8.54E-11	7.5E-09	3.61E-11	-4.92E-04
ADPF	MJ	2.07E+02	8.57E-01	1.26E-01	6.19E+03	4.04E-02	5.03E-01	5.27E-03	-1.79E+01
WDP	m^3 world eq deprived	3.51E+00	1.19E-04	4.54E-02	8.74E+01	5.58E-06	1.11E-01	4.21E-05	-3.54E-01

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece EntriWorX Unit 92 40

Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
PERE	MJ	4.5E+01	2.71E-03	2.75E+00	2.32E+03	1.27E-04	3.95E-01	6.91E-04	-3.05E+00
PERM	MJ	4.8E+01	0	-2.72E+00	0	0	-2.64E-01	0	0
PERT	MJ	2.36E+02	2.71E-03	2.49E-02	2.32E+03	1.27E-04	1.31E-01	6.91E-04	-3.05E+00
PENRE	MJ	2.07E+02	8.58E-01	1.03E+00	6.2E+03	4.04E-02	1.59E+01	5.28E-03	-1.79E+01
PENRM	MJ	2.24E+02	0	-9.05E-01	0	0	-1.54E+01	0	0
PENRT	MJ	2.08E+02	8.58E-01	1.26E-01	6.2E+03	4.04E-02	5.03E-01	5.28E-03	-1.79E+01
SM	kg	7.1E-03	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	9.51E-02	0	0	0	0	0	0	0
FW	m^3	9.51E-02	4.86E-06	1.07E-03	3.16E+00	2.28E-07	2.65E-03	1.33E-06	-7.79E-03

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

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece EntriWorX Unit 92 40

Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
HWD	kg	1.39E-05	8.33E-11	2.44E-10	2.87E-06	3.92E-12	1.92E-09	8.04E-11	-3.1E-08
NHWD	kg	5.21E-01	8.77E-05	1.56E-02	3.87E+00	4.13E-06	1.13E-01	2.65E-02	-1.4E-01
RWD	kg	4.8E-03	9.22E-07	6.26E-06	7.18E-01	4.34E-08	1.87E-05	6E-08	-7.74E-04
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	2.28E-01	0	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	1.07E-01	0	5.86E-01	0	0	0	0	0
EET	MJ	1.95E-01	0	1.11E+00	0	0	0	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 piece EntriWorX Unit 92 40

Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
PM	Disease incidence	8.63E-07	2.2E-09	6.21E-10	2.56E-05	1.5E-11	2.46E-09	3.57E-11	-9.35E-08
IR	kBq U235 eq	4.65E-01	1.32E-04	9.09E-04	1.16E+02	6.2E-06	1.68E-03	6.18E-06	-1.24E-01
ETP-fw	CTUe	1.35E+02	6.08E-01	5.75E-02	2.28E+03	2.86E-02	1.89E-01	3.01E-03	-6.86E+00
HTP-c	CTUh	1.91E-08	1.14E-11	3.36E-12	8.34E-08	5.39E-13	1.63E-11	4.47E-13	-4.78E-10
HTP-nc	CTUh	2.96E-07	4.91E-10	1.92E-10	3.32E-06	2.3E-11	1.65E-09	4.92E-11	-3.26E-08
SQP	SQP	7.6E+01	2.21E-03	3.44E-02	1.71E+03	1.04E-04	1.51E-01	1.1E-03	-6.06E+00

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator IRP This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator. This EPD was created using a software tool.

References

Standards

CAN/CSA-22.2 No. 62368-1
CAN/CSA-22.2 No. 62368-1:2014, Audio/video, information and communication technologyequipment — Part 1: Safety requirements.

Electromagnetic Compatibility Directive (EMC)
Directive 2014/30/EU of the European Parliamant and of the Council of 26 February 2014 on the harmonisation of the laws of the Member
States relating to electromagnetic compatibility.

EN 15804+A2
EN 15804:2019+A2 (in press), Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

EN 300330 V2.1.1
Short Range Devices (SRD) - Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz - Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU.

EN 301489-1 V2.2.1
ElectroMagnetic Compatibility (EMC) standard for radio equipment and services - Part 1: Common technical requirements - Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU.

EN 301489-3 V2.1.1
ElectroMagnetic Compatibility (EMC) standard for radio equipment and services - Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz - Harmonised standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU.

EN 50364
EN 50364:2010, Limitation of human exposure to electromagnetic fields from devices operating in the frequency range 0 Hz to 300 GHz, used in Electronic Article Surveillance (EAS), Radio Frequency Identification (RFID) and similar applications.

EN 55024+A1
EN 55024:2010+A1:2015, Information technology equipment - Immunity characteristics - Limits and methods of measurement.

EN 55032
EN 55032:2015, Electromagnetic compatibility of multimedia equipment - Emission Requirements.

EN 60529
EN 60529:2014, Degrees of protection provided by enclosures (IP 20).

EN 62368-1+A11
EN 62368-1:2014+A11:2017, Audio/video, information and communication technology equipment - Part 1: Safety requirements.

ISO 14025
DIN EN ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

Low Voltage Directive (LVD)
Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.

Radio Equipment Directive (RED)
Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.

Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Restriction of Hazardous Substances (RoHS)
Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), Directive (EU) No 2011/65.

UL 294
UL 294:2013, Standard for Safety Access Control System Unit.

UL 62368-1
UL 62368-1:2014, Standard for Audio/video, information and communication technology equipment - Part 1: Safety requirements.

Further References

IBU 2021
Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V. Version 2.0., Berlin: Institut Bauen und Umwelt e.V., 2021. www.ibu-epd.com

GaBi ts software
Sphera Solutions GmbH Gabi Software System and Database for Life Cycle Engineering 1992-2020 Version 10.0.0.71 University of Stuttgart Leinfelden-Echterdingen

GaBi ts documentation
GaBi life cycle inventory data documentation (https://www.gabi-software.com/support/gabi/gabi-database-2020-lci-documentation/).

LCA-tool dormakaba
LCA tool, version 1.0. Developed by Sphera Solutions GmbH.

PCR Part A
PCR – Part A:
Calculation Rules for the Life Cycle As-sessment and Requirements on the Project Re-port according to EN 15804+A2:2019, Version 1.0, Institut Bauen und Umwelt e.V., www.ibu-epd.com.

PCR Part B
PCR – Part B: Requirements on the EPD for Electronic and physical Access Control Systems, version 08/2021, Institut Bauen und Umwelt e.V., www.ibu-epd.com.

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