

# 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-20220340-CBA2-EN
Issue date	11.09.2023
Valid to	14.03.2028

## Optical Turnstile SU5000 dormakaba

[www.ibu-epd.com](http://www.ibu-epd.com) | <https://epd-online.com>



## General Information

### dormakaba

#### Programme holder

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

#### Declaration number

EPD-DOR-20220340-CBA2-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

11.09.2023

#### Valid to

14.03.2028



Dipl.-Ing. Hans Peters  
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Florian Pronold  
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### Optical Turnstile SU5000

#### Owner of the declaration

dormakaba International Holding GmbH  
DORMA Platz 1  
58256 Ennepetal  
Germany

#### Declared product / declared unit

1 piece of the product: SU5000, consisting of the following items:

- housing
- steering
- drive unit
- panels
- sensors
- power adapter
- product packaging

#### Scope:

This Environmental Product Declaration refers to a specific Optical Turnstile manufactured by dormakaba. The production site is located in China (USA).


The data represents the year 2022.

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		
<input type="checkbox"/>	internally	<input checked="" type="checkbox"/> externally



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

## Product

### Product description/Product definition

The Optical Turnstile SU5000 has a slim size. It is the ideal solution for areas where space is limited. The turnstile allows bi-directional passage when the product solution is integrated in the building's access control system. The system offers many different operational modes and features to suit a variety of applications.

For the SU 5000 the standards which can be applied are the following:

- UL2593
- 2011/65/EU (RoHS)

The CE marking takes into account the proof of conformity with the respective harmonised standards based on the legal provisions above.

### Application

SU5000 is ideal for secured entry control applications for main lobby access, employee entrances, elevator bank access and visitor management applications. Areas of application are:

- Corporate security
- Industrial facilities
- Government security
- Higher education
- Health and fitness

### Technical Data

The Optical Turnstile SU 5000 has following technical properties:

Name	Value	Unit
Length	1321	mm
Height	1038	mm
Width	993	mm
Passage way	711	mm

## LCA: Calculation rules

### Declared Unit

The declared unit is 1 piece of the product: Optical Turnstile SU5000 including packaging.

### Declared unit

Name	Value	Unit
Declared unit	1	pce.
Mass (total system)	166.47	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.

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision which can be applied are mentioned above.

### Base materials/Ancillary materials

The major material composition including the packaging of the product is listed below:

Name	Value	Unit
Steel	46	%
Plastics	25	%
Plexi Glass	17	%
Aluminium	6	%
Electronics	4	%
Zinc	2	%

The product includes partial articles which contain substances listed in the Candidate List of REACH Regulation 1907/2006/EC (date: 14.06.2023) exceeding 0.1 percentage by mass: no

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 Optical Turnstile SU 5000 amounts to 20 years, depending on the application and frequency of use. For repairs and renewals, suitable spare parts are available. The Optical Turnstile is tested and certified to UL 2593.

### 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.

### Maintenance

#### – Module B2

This module includes the production and the end of life of the batteries. The potential use of batteries is declared in module B2.

### Use stage - Module B6

The use stage related to the operation of the building includes:

- B6, operational energy use
- The potential use of electricity from the grid is declared in module B6.

### 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: United States

#### 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. 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	-	kg C
Biogenic carbon content in accompanying packaging	0,425	kg C

#### Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	0.00276	l/100km
Capacity utilisation (including empty runs)	55	%
Transport distance	100	km

The product is transported via truck. The main distribution region is North America. In order to allow scaling to a specific point of installation 100 km are declared.

#### Installation into the building (A5)

Name	Value	Unit
Paper packaging	1,1531	kg
Plastic packaging	0,393	kg

#### Reference service life

Name	Value	Unit
Life Span according to the manufacturer	20	a

#### Operational energy use (B6)

Name	Value	Unit
Electricity consumption for 1 year	183.23	kW
Days per year in use	365	days
On mode per day	1,1	h
Idle mode per day	22,9	h
On mode power	40	W
Idle mode power	20	W

#### End of life (C1-C4)

C1: The product expansion depends on the building. The product share is so low that no environmental burden is assumed.

C2: Transport to waste management is 50 km.

Name	Value	Unit
Collected separately waste type	164.97	kg
Recycling	91.1	kg
Energy recovery	68.6	kg
Landfilling	5.27	kg

The product is disassembled in a recycling process. Material recycling is then assumed for the metals, electronic and electromechanics. The plastic components are assumed to be incinerated with energy recovery. Minor proportions of residues arising from the recycling process are landfilled. Region for the End of Life is: Global.

## LCA: Results

B2 declares the environmental impact for the use stage under the assumption that batteries are used.

B6 declares the environmental impact for the use stage under the assumption that electricity from the grid (B6/1: region EU, B6/2: region mainly US) is used.

**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	X	X	X	X	X

## RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece SU5000 Optical Turnstile with Motorized Barriers

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq	8.21E+02	1.46E+00	2.63E+00	2.06E+03	0	7.15E-01	1.74E+02	8E-02	-4.36E+02
GWP-fossil	kg CO <sub>2</sub> eq	8.2E+02	1.39E+00	1.04E+00	2.06E+03	0	6.83E-01	1.74E+02	8E-02	-4.36E+02
GWP-biogenic	kg CO <sub>2</sub> eq	-4.19E-01	6.4E-02	1.59E+00	4.45E-01	0	3.2E-02	9E-03	2.73E-04	8.94E-01
GWP-luluc	kg CO <sub>2</sub> eq	8.94E-01	3.31E-05	8.34E-05	6.21E-01	0	1.63E-05	1E-02	2.3E-04	-5.87E-01
ODP	kg CFC11 eq	1.92E-09	1.47E-16	7.98E-16	7.25E-12	0	7.21E-17	8.79E-14	2.96E-16	-4.98E-10
AP	mol H <sup>+</sup> eq	3.81E+00	1E-03	6.36E-04	3.33E+00	0	6.84E-04	3.1E-02	5.73E-04	-1.72E+00
EP-freshwater	kg P eq	1.07E-03	2.98E-07	1.38E-07	1E-03	0	1.46E-07	1.4E-05	1.37E-07	-3.92E-04
EP-marine	kg N eq	5.38E-01	4.43E-04	2.05E-04	7.13E-01	0	2.18E-04	7E-03	1.48E-04	-2.69E-01
EP-terrestrial	mol N eq	5.86E+00	5E-03	3E-03	7.65E+00	0	2E-03	1.41E-01	2E-03	-2.92E+00
POCP	kg NMVOC eq	2.59E+00	1E-03	5.49E-04	2.04E+00	0	6.15E-04	1.9E-02	4.47E-04	-8.11E-01
ADPE	kg Sb eq	4.35E-02	4.17E-08	1.16E-08	4.09E-04	0	2.05E-08	1.21E-06	7.18E-09	-1.9E-02
ADPF	MJ	1.35E+04	1.97E+01	9.79E-01	3.33E+04	0	9.69E+00	8.08E+01	1.05E+00	-5.8E+03
WDP	m <sup>3</sup> world eq deprived	1.71E+02	3E-03	3.05E-01	3.98E+02	0	1E-03	1.78E+01	8E-03	-1.22E+02

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 SU5000 Optical Turnstile with Motorized Barriers

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	MJ	2.1E+03	6.2E-02	1.41E+01	5.27E+03	0	3.1E-02	2.1E+01	1.37E-01	-1.4E+03
PERM	MJ	1.39E+01	0	-1.38E+01	0	0	0	-3E-02	0	0
PERT	MJ	2.11E+03	6.2E-02	2.14E-01	5.27E+03	0	3.1E-02	2.1E+01	1.37E-01	-1.4E+03
PENRE	MJ	1.12E+04	1.98E+01	1.79E+01	3.33E+04	0	9.7E+00	2.37E+03	1.05E+00	-5.8E+03
PENRM	MJ	2.31E+03	0	-1.69E+01	0	0	0	-2.29E+03	0	0
PENRT	MJ	1.35E+04	1.98E+01	9.79E-01	3.33E+04	0	9.7E+00	8.08E+01	1.05E+00	-5.8E+03
SM	kg	3.82E+01	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m <sup>3</sup>	7.51E+00	1.12E-04	7E-03	1.22E+01	0	5.48E-05	4.26E-01	2.64E-04	-5.39E+00

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 SU5000 Optical Turnstile with Motorized Barriers

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	kg	4.32E-05	1.92E-09	2.53E-09	1.28E-05	0	9.41E-10	3.08E-07	1.6E-08	-1.89E-05
NHWD	kg	7.67E+01	2E-03	1.55E-01	1.03E+01	0	9.92E-04	1.81E+01	5.27E+00	-4.15E+01
RWD	kg	2.59E-01	2.12E-05	4.43E-05	2.97E+00	0	1.04E-05	3E-03	1.19E-05	-2.18E-01
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	8.96E+01	0	0

MER	kg	0	0	0	0	0	0	0	0	0
EEE	MJ	9.74E-01	0	4.32E+00	0	0	0	0	0	0
EET	MJ	1.77E+00	0	8.73E+00	0	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 SU5000 Optical Turnstile with Motorized Barriers

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM	Disease incidence	5.35E-05	7.32E-09	4.81E-09	2.98E-05	0	3.59E-09	3.96E-07	7.1E-09	-3.04E-05
IR	kBq U235 eq	3.35E+01	3E-03	6E-03	2.45E+02	0	1E-03	2.7E-01	1E-03	-3.83E+01
ETP-fw	CTUe	6.11E+03	1.4E+01	4.19E-01	9.93E+03	0	6.87E+00	3.03E+01	5.99E-01	-2.37E+03
HTP-c	CTUh	9.15E-05	2.63E-10	2.8E-11	2.14E-07	0	1.29E-10	2.62E-09	8.88E-11	-5.36E-07
HTP-nc	CTUh	2.47E-05	1.13E-08	2.09E-09	8.08E-06	0	5.52E-09	2.66E-07	9.78E-09	2.14E-06
SQP	SQP	2.23E+03	5.1E-02	2.76E-01	3.05E+03	0	2.5E-02	2.42E+01	2.19E-01	-7.01E+02

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 “Potential Human exposure efficiency relative to U235”. 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 or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

## References

### ISO 14025

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

### EN 15804

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

### UL 2593

UL 2593: 2011-26, Underwriters Laboratories, UL LLC Outline of Investigation for Motor Driven Turnstile Operators and Systems

### REACH

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

### RoHS

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

### European Chemicals Agency (ECHA)

<https://echa.europa.eu/de/>

### Further References

### IBU 2021

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](http://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/gabidatabase-2020-lci-documentation/>).

### LCA-tool dormakaba

Tool no.: IBU-DOR-202109-LT1-EN.  
Developed by Sphera Solutions GmbH.

### PCR Part A

PCR – Part A: Calculation Rules for the Life Cycle Assessment 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](http://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](http://www.ibu-epd.com).



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