ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	**SALTO Systems**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
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Valid to	10.10.2024
EPD registration no.	S-P-01820

XS4 ORIGINAL NARROW BODY VERSION

SALTO Systems

EPD®

THE INTERNATIONAL EPD® SYSTEM

Institut Bauen und Umwelt e.V.

www.ibu-epd.com / https://epd-online.com

ECO PLATFORM EPD EN 15804 VERIFIED

1. General Information

SALTO Systems, S.L.

Programme holder
IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number
EPD-SAL-20190067-IBC1-EN

This declaration is based on the product category rules:
Building Hardware products, 02.2016
(PCR checked and approved by the SVR)

Issue date
11.10.2019

Valid to
10.10.2024

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

Dr. Alexander Röder
(Managing Director IBU)

XS4 Original escutcheon, narrow body version

Owner of the declaration
SALTO SYSTEMS S.L.
Arkotz 9, Polígono Lanbarren
20180 Oiartzun - Gipuzkoa
Spain

Declared product / declared unit
The declared unit consist on 1 piece of XS4 Original escutcheon, narrow body version.

Scope:
This declaration is based on LCA data for SALTO's EX40 XS4 Original narrow-body for European and Scandinavian versions, not including the mortise lock.

Final assembly takes place in SALTO HQ in Oiartzun (Spain), being external suppliers who provide the different elements to be incorporated in the device.

IBU shall not be liable with respect to manufacturer information, LC data and evidence, as SALTO is the only owner of the declaration and the information and data included.

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.

Verification

The standard /EN 15804/ serves as the core PCR
Independent verification of the declaration and data according to /ISO 14025:2010/
☐ internally ☒ externally

Dr.-Ing. Wolfram Trinius
(Independent verifier appointed by SVR)

2. Product

2.1 Product description / Product definition

The SALTO XS4 Original electronic escutcheon, narrow version, is a smart RFID lock series that provides tailor-made wire-free access control.
The reader circuit includes an RFID reading module that detects the proximity of an object and reads its content (card, tag, fob,…). The read information is sent to the control board which then grants or denies the access, unlocking the door or keeping it locked.
The reader can be equipped with the following technologies:
- RFID (13,56MHz)
- Bluetooth SMART (2.4GHz)

This EPD covers the European and Scandinavian version of the SALTO XS4 Original Escutcheon. The only difference between these two versions is where the handle is placed. For European escutcheons it is in the middle, for Scandinavian ones on the bottom. The worst-case scenario has been used for each parameter when making the corresponding calculations.

For the placing on the market in the EU/EFTA (with the exception of Switzerland) the following legal provisions apply:/Directive 2014/53/EU/, 16 April 2014, on the harmonisation of the laws of the Member States relating to the marking available on the market of radio equipment and repealing Directive 1995/5/EC, and the harmonised standards based on these provisions: /ETSI EN 300 3208 /, title, /ETSI EN 300 330/, /ETSI EN 301 489/, /EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + AC:2011 + A2:2013/, /EN 62311:2008/. 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.

2.2 Application

Tthe XS4 electronic escutcheon sets need no hard wiring and provide a totally wire-free networked electronic locking solution with a range of features. The XS4 Original Escutcheon range is specially designed to fit on most standard doors, and work with the majority of Scandinavian, European and American National Standards Institute (ANSI) mortise locks and tubular latches.

2.3 Technical Data

The technical properties of XS4 are detailed in next table:

Technical data

Name	Value	Unit
Power supply (batteries - VDC)	4.5	V
Current Requirements ...Peak opening	0.4	A
Current Requirements ...Standby	0.00005	A
Operating Temperature	-20 - 60	°C
Operating Humidity up to	80	%
Transmit Frequency	13560	kHz
Power Consumption NSC - w/IPM	0.225/ 0.180 standby	mW
Peak Power Draw during card read	0.675	W

VDC: Volts Direct Current
NSC: Normal Standby Current
IPM: Intelligent Power Management Mode

CE marked product, /RED Directive/ compliance.

Additional internal testing for humidity.

2.4 Delivery status

Units are packed individually in cardboard boxes together with specifications, mounting scheme and batteries.
Cardboard package dimensions are: 310 mm x 235 mm x 58 mm.

2.5 Base materials / Ancillary materials

The material composition of a single device is given in percentages (%); packaging and labeling are not included (ESC version).

Name	Value	Unit
Steel	48.2	%
Stainless steel	34.5	%
Batteries (Other)	2.0	%
Brass, bronze	0.3	%
Electronic	2.1	%
Zinc	9.9	%
Plastics	2.9	%

2.6 Manufacture

XS4 Original Escutcheons are fully designed and assembled in SALTO Systems' facilities in Oiartzun. Most of the components included in the device are produced in Spain by different companies except for handles (made in China).
The factory of SALTO has a certification of Quality Management system in accordance with /ISO 9001/.

2.7 Environment and health during manufacturing

SALTO Systems is highly committed to the health and safety of the people working in its facilities and offices. All relevant risks have been evaluated and controlled, training activities promoted and communication plans defined to keep people protected.
There is a Code of Conduct covering human rights, adequate labor conditions, ethics and respect for the environment, for supplies in risk areas defined by UNESCO.

RoHS2 compliance.
Pursuant to the legal requirements established by the European Union with respect to restrictions on the use of certain dangerous substances in electrical or electronic appliances, SALTO Systems S.L. guarantees that all its products comply with /EU Directive 2015/863/ (ROHs 3) and that, according to /EN 50581:2012/, these products contain Pb, Cr VI, PBB, PBDE, DEHP, BBP, DBP and DIBP in concentrations below 0.1% by weight and Cd and Hg in concentrations below 0.01% by weight in all homogeneous materials.

Environmental protection.
SALTO Systems' factory is /ISO 14001/ certified, meaning that environmental aspects (water, energy, wastes, etc.) are identified, monitored and audited periodically, and that there is a verification of complete compliance with environmental legislation.
In addition, SALTO Systems has calculated the carbon footprint of the main products focusing on the life cycle. There are plans to reduce CO2 emissions in the manufacturing and transport processes and other different plans about environmental sustainability in design and manufacture. All wastes generated are controlled, minimized when possible and recycled.

2.8 Product processing/Installation

The installation of XS4 Original Escutcheon is performed with the aid of hand tools by trained installers.
The assembly instructions and mounting scheme are included inside the packaging of each unit.

2.9 Packaging

Product packaging consists of a cardboard box including product labels, batteries, a mounting scheme and instructions in a plastic bag.

Material	Value (%)	Kg
Cardboard / paper	99,00	0,2419
Plastic	1,00	0,0025
TOTAL	100,00	0,2444

All packaging materials are recyclable.
European waste codes:

- Cardboard packaging 15 01 01
- Plastic packaging 15 01 02

2.10 Condition of use

During the use of the device under normal conditions, no maintenance is needed, with the exception of replacement batteries when required.
Special cleaning is not needed.

2.11 Environment and health during use
There are no interactions between the device and the environment or health while it is operating.

2.12 Reference service life
Certified according to /EN 1906-7/ for 400.000 cycles. Under normal conditions and depending on cycle frequency, door weight etc., it means an approximate duration of 15 years.

2.13 Extraordinary effects

Fire
The Fire resistance is /EN 1634-1/ Ei60 and Ei120 compliant.
The product is Solid particle resistant, meaning that the quantity of dust ingress is not sufficient to interfere with normal operation.

Water
There is no interaction between the device and water under normal conditions or in case of flood.
Liquid ingress resistant: Water projected (12.5mm nozzle) against the enclosure from any direction for 3 minutes, 100 liters per minute, 100 kN/m² at distance of 3m, has no harmful effects (IP56).

Mechanical destruction
During unexpected mechanical destruction, batteries might be broken and their content released.

2.14 Re-use phase
The device can be re-used, moving it from one door to another one until the end of its service life, though this is not a typical procedure.

2.15 Disposal
Disposal of the device is under Waste of Electrical and Electronic Equipment (WEEE) European Directive. (/WEEE Directive 2012/19/EU/)
The device can be dissembled and most of the components are recyclable or reused; the rest are used for energy recovering by incineration.
According to /European Waste Catalogue and Hazardous Waste list/ (EWC), waste codes are:

- EWC/ 16 02 13* discarded equipment containing hazardous components (1) other than those mentioned in 16 02 09 to 16 02 1
- EWC/ 17 04 05 iron, Steel
- EWC/ 17 04 01 copper, bronze, brass
- EWC/ 17 04 11 cables
- EWC/ 17 04 04 zinc
- EWC/ 17 02 03 plastic

2.16 Further information
Additional information about SALTO Systems' XS4 Original Escutcheon can be found in:

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3. LCA: Calculation rules

3.1 Declared Unit
The declared unit refers to 1 piece of SALTO XS4 Original Escutcheon as specified in /IBU PCR PART B/ requirements on the EPD for Building Hardware products.

Declared unit

Name	Value	Unit
Declared unit for readers	1	pce.
Mass (total system)	1.68	kg
Conversion factor to 1 kg	0.595	-

3.2 System boundary
The EPD is of type "cradle to gate - with options". The following life cycle stages have been considered under this declaration as part of the system boundaries:
Module A1-A3 – production stage, including raw material extraction and processing, transport to manufacturing plant and manufacturing/ assembly.
Module A5 – installation, only packaging waste treatment included.
Module B6 – operational energy use, including the production of batteries and their disposal over their life time.
Modules C3 for end-of-life stages including waste processing for thermal recovery of plastic parts and incineration of the printed wired board and recycling of metals. Module C4 covers landfilling of the batteries.
Module D including benefits and loads beyond the system boundaries resulting from the recycling and recovery processes taking place under module A5 and C3.

3.3 Estimates and assumptions
For transporting components from European suppliers, a worst-case distance of 590 km has been used (module A2). In case some components are transported by sea, 10.000 km by ship has been added to the road transportation assumption.
In the end-of-life phase, a 100% collection rate is assumed for the recycling scenarios.

3.4 Cut-off criteria
All available relevant data from production process have been considered, i.e. all raw materials usage and electric power consumption, and modelled using best available Life Cycle Inventory (LCI) datasets. Only small amounts of oil used in the laboratory or grease for some machines, as well as production waste, were not considered in the modelling. These represent less than 1% of mass and have negligible environmental impact relevance compared with the rest of the materials and energy inputs used to make the product. Production of capital equipment, facilities and infrastructure required for manufacture are outside the scope of this assessment.
Transport processes for the packaging materials have also been neglected.

3.5 Background data
The GaBi Databases have been used as background data to model the Life Cycle Assessment of the declared product using the GaBi Software /GaBi/ 8 ts.

3.6 Data quality
Thinkstep AG updates its GaBi Databases yearly and performs a variety of checks to ensure high quality of its datasets. The 2019 version of the GaBi Databases has been applied in this declaration. The last revision of the background data used in this EPD is less than 10 years ago.

3.7 Period under review
The collection of the foreground data refers to the year 2017 (12 months).

3.8 Allocation
All applied incineration processes are displayed via a partial stream consideration for the combustion process, according to the specific composition of the incinerated material. For the waste incineration plant an R1-value of 0.6 is assumed.
The credits for thermal and electrical energy are calculated via inversion of the life cycle inventory of European average data.

The burdens of paper/board packaging recycling are modelled using a cut-off approach. I.e., input of waste paper is considered without environmental burden, resulting waste paper for recycling is not credited. The recycling process and the production process of paper are merged in the production process. The C-balance referring to fresh fibre has been corrected via CO_2 emissions (biotic) (assumption of final decomposition or incineration in the time frame of 100 years).
After collection in the end-of-life stage, the recycling potential is then calculated considering the net scrap and the value of scrap methodology.

3.9 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.

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4. LCA: Scenarios and additional technical information

The following technical information is a basis for the declared modules and can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (Paper packaging)	0.463	kg
Output substances following waste treatment (Plastic packaging)	0.054	kg
waste		
Recycling steel	0.978	kg
Landfilling 0.0344	-	kg
Recycling aluminum	0.00059	kg
Recycling electronic and metals	0.0368	kg

In case a **reference service life (RSL)** according to applicable ISO standards is declared then the assumptions and in-use conditions underlying the determined RSL shall be declared. The same holds for a service life declared by the manufacturer.

Reference service life

Name	Value	Unit
Reference service life (according to ISO 15686-1, -2, -7 and -8)	15	a

Operational energy use (B6)
Salto Systems' proximity locks are powered using batteries, they are not connected to mains electricity. These batteries are provided by Salto Systems to the supplier as part of the product (production of the batteries considered under B6). During the operation of the escutcheon, the only energy consumption is from the batteries themselves. These must be exchanged five times over the declared RSL.

End of life (C1-C4)

Name	Value	Unit
Collected separately steel, stainless steel, aluminum, plastic, copper and other metals, as well as electronics	1.646	kg
Collected as mixed construction	0.034	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information
In module D, the potential benefits derived from waste treatment processes (e.g. energy recovery and material recycling) that occur in modules A5 and C3 are declared.

5. LCA: Results

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

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	MND	X	MND	MND	MNR	MNR	MNR	X	MND	MND	MND	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 piece XS4 Original escutcheon, narrow body version

Parameter	Unit	A1-A3	A5	B6	C3	C4	D
Global warming potential	[kg CO_2-Eq.]	9.96E+0	8.24E-1	1.33E+0	1.44E-1	5.11E-4	-4.27E+0
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	3.85E-10	1.73E-16	4.05E-15	2.51E-16	2.97E-18	9.00E-15
Acidification potential of land and water	[kg SO_2-Eq.]	5.23E-2	1.48E-4	1.07E-2	5.39E-5	3.07E-6	-2.34E-2
Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	4.13E-3	2.82E-5	5.80E-4	6.35E-6	3.48E-7	-1.40E-3
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	3.75E-3	1.02E-5	6.13E-4	2.74E-6	2.35E-7	-1.50E-3
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	1.59E-3	1.38E-8	6.17E-5	2.48E-8	1.88E-10	-5.18E-4
Abiotic depletion potential for fossil resources	[MJ]	1.25E+2	2.00E-1	1.43E+1	1.19E-1	7.16E-3	-4.72E+1

RESULTS OF THE LCA - RESOURCE USE: 1 piece XS4 Original escutcheon, narrow body version

Parameter	Unit	A1-A3	A5	B6	C3	C4	D
Renewable primary energy as energy carrier	[MJ]	3.13E+1	6.98E+0	8.92E-1	5.50E-2	9.39E-4	-5.75E+0
Renewable primary energy resources as material utilization	[MJ]	0.00E+0	-6.94E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total use of renewable primary energy resources	[MJ]	3.13E+1	3.52E-2	9.59E-1	5.50E-2	9.39E-4	-5.75E+0
Non-renewable primary energy as energy carrier	[MJ]	1.37E+2	2.57E+0	1.51E+1	1.64E-1	7.41E-3	-4.87E+1
Non-renewable primary energy as material utilization	[MJ]	0.00E+0	-2.34E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total use of non-renewable primary energy resources	[MJ]	1.37E+2	2.23E-1	1.51E+1	1.64E-1	7.41E-3	-4.87E+1
Use of secondary material	[kg]	4.77E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	[MJ]	9.68E-7	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of non-renewable secondary fuels	[MJ]	1.23E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of net fresh water	[m^3]	9.00E-2	2.28E-3	4.93E-3	4.27E-4	1.87E-6	-4.42E-2

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 piece XS4 Original escutcheon, narrow body version

Parameter	Unit	A1-A3	A5	B6	C3	C4	D
Hazardous waste disposed	[kg]	1.08E-4	4.28E-10	6.71E-8	4.68E-10	1.26E-10	-2.44E-4
Non-hazardous waste disposed	[kg]	3.35E-1	2.12E-2	1.90E-1	1.65E-2	3.44E-2	-2.11E-2
Radioactive waste disposed	[kg]	5.21E-3	1.37E-5	3.08E-4	1.79E-5	9.96E-8	-6.14E-4
Components for re-use	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	[kg]	0.00E+0	0.00E+0	0.00E+0	1.61E+0	0.00E+0	0.00E+0
Materials for energy recovery	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	1.35E+0	0.00E+0	2.60E-1	0.00E+0	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	2.44E+0	0.00E+0	5.90E-1	0.00E+0	0.00E+0

6. LCA: Interpretation

The main contributors to the LCA results are the electric and electronic components. The highest contribution comes from the IC dataset used to simulate the control circuit of some subassemblies of the electronic components.

XS4 Original Escutcheons are mainly made of metal materials, above all composed by steel and stainless-steel parts. This is also reflected in the final results, where for all impact categories the main contributors after the electronic components are the steel and stainless-steel parts.
As an exception, for Abiotic Depletion Potential (ADP) elements, the main contributor to that result is the component made of zamak (zinc-based part), followed by the electric and electronic components. And for Depletion Potential of the stratospheric ozone layer (ODP), the main contributor is the group of electric and electronic components followed by the use of Acrylonitrile butadiene styrene (ABS) in some components (above all for the chloromethane emissions out of the production of that plastic in the upstream).
[BS1]Acrylnitril-Butadien-Styrol-Copolymere

Considering the life cycle phases, the main contribution is seen by module A1-A3 (representing 80-100% of the results for the main impact categories). The use stage (module B6) is contributing up to 15% of the total results for all indicators. Module D for credits and loads represents for all impact categories except for ODP around 20% of the results.

7. Requisite evidence

There are no negative impacts on the environment or human health during the use phase of the product.

8. References

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UNE-EN 60950-1:2007/A11:2009
Information technology equipment - Safety -- Part 1: General requirements

RoHS Conformity
RoHS Conformity: EN50581:2012 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

ISO 9001
ISO 9001:2015. Quality management systems - Requirements.

ISO 14001
ISO 14001:2015. Environmental management systems - Requirements with guidance for use.

RoHS Conformity
RoHS Conformity: EN50581:2012 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

EU Directive 2015/863/ (ROHs 3)
Commission Delegated Directive (EU) 2015/863 of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances

EU Directive 2011/65
Directive 2011/65/EU of the European parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

EWC - European waste codes
Commission Decision of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (notified under document number C(2000) 1147) (Text with EEA relevance) (2000/532/EC)

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EN 1634-1
UNE-EN 1634-1:2016+A1:2018. Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware - Part 1: Fire resistance test for door and shutter assemblies and openable windows

WEEE Directive 2012/19/EU
Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE).

ISO 15686
ISO 15686-5:2017
Buildings and constructed assets -- Service life planning -- Part 5: Life-cycle costing

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

IBU PCR PART A
PART A PCR - Part A: Calculation rules for the Life Cycle Assessment and Requirements on the Background Report, version 1.7, Institut Bauen und Umwelt e.V., www.bau-umwelt.com, 2018

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/EN 15804/
/EN 15804:2012-04+A1 2013/, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

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