

# Environmental Product Declaration


# Helvar



945, 950 Application Controllers

## Helvar EPD



|                           |                                                                                                         |
|---------------------------|---------------------------------------------------------------------------------------------------------|
| Owner of the type II EPD: | Helvar Oy Ab                                                                                            |
| Name of the product:      | 945, 950 Application Controllers                                                                        |
| Document number:          | D009894                                                                                                 |
| Document version:         | 1.3                                                                                                     |
| Date of publication:      | 21.10.2025                                                                                              |
| Signatures:               | <br>Lotta Marjamäki |

## GENERAL INFORMATION, PURPOSE OF THE ENVIRONMENTAL DECLARATION (TYPE II)

## 1. Owner of the declaration

Helvar Oy Ab

Keilaranta 5, FI-02150 ESP00 Finland

M: (+358) 50 306 0431

www.helvar.com

## 2. Product name and number

|                            |
|----------------------------|
| 945 Application Controller |
| 950 Application Controller |

### 3. Place of production

Produced in Malaysia.

### 4. Additional information

Additional information from Lotta Marjamäki.

Lotta Marjamäki

Sustainability Engineer

Helvar Oy Ab

Lotta.marjamaki@helvar.com

### 5. Product Category Rules and the scope of the declaration

The declaration has been prepared in accordance with EN ISO 14021:2001, EN 15804:2019+A2 and ISO 14025:2006 standards and the additional requirements stated in the RTS PCR (English version, 26.8.2020)

The LCA study was made using excel-tool built for the purpose, which connects the primary product data and scenarios to appropriate ecoinvent 3.9. LCIA and LCI dataset results. The dataset results have been calculated for the excel-tool using OpenLCA 10.1. and EN15804+A2 impact method.

### 6. Author of the lifecycle assessment and declaration

Helvar Oy Ab

Keilaranta 5, FI-02150 ESPOO Finland

Lotta Marjamäki

Lotta.marjamaki@helvar.com

### 7. Verification


This is a type II EPD made with Helvar's proprietary inhouse tool. It has not undergone external verification according to any PCR program, but the tool has been reviewed by a third-party consultant for functionality.

## Product information

### Product description

The 945 and 950 Application Controllers are certified DALI-2 Multi Master application controllers capable of controlling DALI-2 Lighting (Control Gear), DALI-2 Controls (Control Devices) as well as Helvar's unique range of loads and controls which also connect to the DALI-2 network. The products are designed to be used indoors.

### Product standards

| Conformity and standards                                                                                                                         |                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Conformity:                                                                                                                                      |  |
| DALI:                                                                                                                                            | DALI-2 Application controller (Multi Master) IEC 62386 Parts 101 and 103          |
| See DALI Alliance Website <a href="http://www.dali-alliance.org/products">www.dali-alliance.org/products</a> for full detail of supported parts. |                                                                                   |
| EMC emission:                                                                                                                                    | EN 55015, EN 61000-6-3                                                            |
| EMC immunity:                                                                                                                                    | EN 55035, EN 61547                                                                |
| Safety:                                                                                                                                          | EN 61347                                                                          |
| Environment:                                                                                                                                     | Complies with WEEE, RoHS and REACH directives.                                    |

## Raw materials of the product and product information (used in production)

| Product structure/composition/<br>raw material | Quantity p% | Renewable | Nonrenewable | Recycled | Origin of the raw materials |
|------------------------------------------------|-------------|-----------|--------------|----------|-----------------------------|
| Polycarbonate casing                           | 65%         | 0%        | 100%         | 0%       | Asia                        |
| Printed circuit board                          | 23%         | 0%        | 100%         | 0%       | Asia                        |
| Cardboard packaging                            | 12%         | 100%      | 0%           | 0%       | Asia                        |
| <b>Total:</b>                                  | 100%        | 12%       | 88%          | 0%       | Asia                        |

# LCA information

## Scope of lifecycle assessment

| Production                                                      |                           |               | Installation               |                            | Use stage         |             |        |             |               |                        |                       | End-of-Life                 |                  |                                                   |          | Next product system                    |
|-----------------------------------------------------------------|---------------------------|---------------|----------------------------|----------------------------|-------------------|-------------|--------|-------------|---------------|------------------------|-----------------------|-----------------------------|------------------|---------------------------------------------------|----------|----------------------------------------|
| Raw material supply (extraction, processing, recycled material) | Transport to manufacturer | Manufacturing | Transport to building site | Installation into building | Use / application | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction / demolition | Transport to EoL | Waste processing for reuse, recovery or recycling | Disposal | Reuse, recovery or 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         | MND    | MND         | MND           | MND                    | MND                   | X                           | X                | X                                                 | X        | MND                                    |

MND = Module not Declared.

### A1 – Component production and production process

The product is manufactured at a factory in Malaysia. The manufacturing process comprises of mounting and soldering of the electronic components, and the assembly of the printed circuit board and the plastic or metal casing. There are two ways to mount the components, and both ways can be used on a single board. The components can be surface mounted or through-hole mounted. After mounting the components are wave soldered, reflow soldered, or both. Sometimes larger or more complex components are soldered by hand. Then the printed circuit board is assembled with the product casing (plastic or metal) and packaged. Then the finished product is packed and sent to warehousing. The module is modelled with secondary data but based on primary product information (such as Bill of Materials), and supplier locations and electricity consumption.

### A2 – Transportation of components to the assembly site

Includes transportation from component manufacturers to the assembly facility and transportation to warehouse. Modelled with secondary data, based on assumed distances based on supplier locations.

### A3 – Assembly site operations

Includes production of product packaging and ancillary materials based on their amounts and ecoinvent datasets, and the waste treatment operations (incl. transportation) of production loss.

#### A4 – Transportation to the customer

Transportation efforts to the customer, based on Searates.com transportation distances from warehousing location to the customer in Central Europe.

#### A5 – Waste treatment of packaging

Includes recycling of cardboard and plastic packaging. Based on actual amounts of packaging used for the product.

#### C1 – Deconstruction

The product is dismantled at the end of its life cycle. The module's results are assumed to be zero, as no material or energy flows are involved, and thus is not included in the result tables.

#### C2 – Transportation to the waste treatment

Transportation to recycling (estimated 200 km) and waste treatment based on actual material shares in the product. Transportation dataset considers region (EU).

#### C3 – Waste treatment operations

Includes manual dismantling and shredding of the product, and the energy recovery (incineration) of the non-recyclable plastic material. Based on the actual material shares in the product.

#### C4 – Waste disposal

Disposal of ceramic materials in the product, by incineration.

#### Functional / declared unit

|                         |                                                   |
|-------------------------|---------------------------------------------------|
| Functional unit:        | 1 product, including packaging, over its lifetime |
| Reference service life: | 87600 hours; 10 years                             |

#### System boundary

This EPD covers the following modules: A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing). The construction stage includes modules A4 (Transport to the site), and A5 (Treatment of packaging waste). In addition, in the end of life stage is included information from C1- C4. B6 module is ruled out of the scope of the study, as electricity consumption calculation representative of the actual use of product could not be determined in time for this EPD version. D-module is not declared, as the recovered materials and their respective amounts from the product in recovery stage are not known.

#### Cut-off criteria

The cut-off criteria used is 1% of the total mass input unit of the process, and 1% of the renewable and non-renewable primary energy usage. Expert judgement and comparison and assumption are used to demonstrate compliance with the criteria. The main processes cut-off from the study were the product sticker, and some product handling processes deemed not relevant for the results (such as any possible use of hand tools in installing the product).

#### Allocation

The allocation used for waste materials only, and it is based on the mass of waste materials directed to recycling and energy recovery. The system boundary of the product system after disposal is drawn where the outputs of the system under study, such as materials, products or components, have achieved the state of complete waste treatment. Consequently, the processes of waste treatment of the material flows for each module of the product system are defined within the system boundaries of the corresponding module as above. The end-of-waste stage for recycled



material is set at the point where the material intended for recycling is separated from other materials and ready to be used as a raw material in other manufacturing process.

## Data and data quality

Primary data used in the study includes product data from Bill of Materials, i.e. types of components and materials and their amounts in the products, product energy consumption, and electricity consumption in the manufacturing. The transportation distances and End-of-Life treatment of product parts are assumed and estimated. Secondary data is used to model component and material manufacturing, transportation methods, electricity profiles and end-of-life treatment processes.

The data quality assessment is done according to EN 15804+A2 annex E, using data quality level and criteria of the UN Environment Global Guidance on LCA database development. Life cycle inventory data, i.e. primary data, was evaluated based on how it was collected and allocated to the product, on geographical, technical and time representativeness.

## Results of the lifecycle assessment

### Environmental impacts

The results of the impact assessment are relative. They do not predict the effects on the weighted values of the categories, the exceedance limits, safety margins and risks. The unit is expressed per functional or declared unit. Environmental impact data for A4 and C2 is to be reported per kilometre.

| Lifecycle indicator | Unit                              | A1–A3     | A4       | A5       | C2       | C3       | C4       |
|---------------------|-----------------------------------|-----------|----------|----------|----------|----------|----------|
| GWP - total         | kg CO <sub>2</sub> eq.            | 2,88E+01  | 2,47E-01 | 7,59E-02 | 2,37E-02 | 1,95E-01 | 1,90E+00 |
| GWP - fossil        | kg CO <sub>2</sub> eq.            | 2,89E+01  | 2,47E-01 | 1,66E-02 | 2,37E-02 | 1,95E-01 | 1,90E+00 |
| GWP - biogenic      | kg CO <sub>2</sub> eq.            | -5,83E-02 | 0,00E+00 | 5,83E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| GWP - LULUC         | kg CO <sub>2</sub> eq.            | 5,42E-02  | 1,27E-04 | 1,00E-03 | 7,86E-06 | 6,99E-05 | 1,01E-05 |
| ODP                 | kg CFC 11 eq.                     | 1,34E-06  | 3,69E-09 | 6,64E-10 | 4,71E-10 | 4,37E-10 | 1,48E-09 |
| AP                  | mol H <sup>+</sup> eq.            | 2,94E-01  | 8,88E-04 | 1,39E-04 | 4,93E-05 | 2,74E-04 | 5,26E-04 |
| EP, aq. freshwater  | kg P eq.                          | 3,86E-02  | 2,00E-05 | 1,50E-05 | 1,60E-06 | 1,81E-05 | 1,18E-05 |
| EP, aq. marine      | kg N eq.                          | 4,33E-02  | 2,86E-04 | 1,14E-04 | 1,18E-05 | 6,63E-05 | 3,40E-04 |
| EP, terrestrial     | mol N eq.                         | 4,68E-01  | 3,08E-03 | 3,85E-04 | 1,28E-04 | 7,48E-04 | 2,73E-03 |
| POCP                | kg NMVOC eq.                      | 1,42E-01  | 1,19E-03 | 7,30E-05 | 8,19E-05 | 1,74E-04 | 7,04E-04 |
| ADPE*               | kg Sb eq.                         | 9,47E-03  | 8,05E-07 | 2,73E-07 | 7,89E-08 | 4,03E-07 | 9,71E-08 |
| ADPF*               | MJ, net calorific value           | 3,58E+02  | 3,49E+00 | 1,57E-01 | 3,33E-01 | 4,98E-01 | 4,83E-01 |
| WDP*                | m <sup>3</sup> world eq. deprived | 1,10E+01  | 1,64E-02 | 3,45E-02 | 1,63E-03 | 1,49E-02 | 5,93E-02 |

\*The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

## Other indicators

| Lifecycle indicator | Unit | A1– A3   | A4       | A5       | C2       | C3        | C4       |
|---------------------|------|----------|----------|----------|----------|-----------|----------|
| PERE                | MJ   | 4,27E+01 | 4,40E-02 | 0,00E+00 | 5,72E-03 | 7,33E-02  | 1,46E-02 |
| PERM                | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 |
| PERT                | MJ   | 4,27E+01 | 4,40E-02 | 0,00E+00 | 5,72E-03 | 7,33E-02  | 1,46E-02 |
| PENRE               | MJ   | 3,71E+02 | 3,19E+00 | 2,02E-04 | 3,02E-01 | 4,86E-01  | 4,51E-01 |
| PENRM               | MJ   | 2,82E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -2,82E+00 | 0,00E+00 |
| PENRT               | MJ   | 3,73E+02 | 3,19E+00 | 2,02E-04 | 3,02E-01 | -2,33E+00 | 4,51E-01 |
| FW                  | m3   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 |
| RSF                 | kg   | 3,99E-01 | 3,20E-04 | 1,00E-04 | 1,06E-04 | 5,65E-04  | 2,55E-04 |
| NRSF                | kg   | 1,02E+00 | 1,45E-03 | 2,02E-04 | 0,00E+00 | 1,51E-03  | 3,78E-02 |
| SM                  | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 |

| Waste | Unit | A1–A3    | A4       | A5       | C2       | C3       | C4       |
|-------|------|----------|----------|----------|----------|----------|----------|
| HWD   | kg   | 1,64E+00 | 3,99E-03 | 4,82E-04 | 3,30E-04 | 4,39E-03 | 2,38E-02 |
| NHWD  | kg   | 4,34E+00 | 1,64E-01 | 5,18E-03 | 3,66E-03 | 1,18E-02 | 7,62E-01 |
| RWD   | kg   | 8,09E-04 | 7,02E-07 | 2,60E-07 | 1,07E-07 | 1,14E-06 | 2,30E-07 |

| Waste | Unit | A1–A3    | A4       | A5       | C2       | C3       | C4       |
|-------|------|----------|----------|----------|----------|----------|----------|
| CRU   | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MFR   | kg   | 4,27E+01 | 0,00E+00 | 2,97E-04 | 0,00E+00 | 3,66E-01 | 0,00E+00 |
| MER   | kg   | 7,75E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,29E-01 | 0,00E+00 |
| EE    | MJ   | 4,28E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,66E-05 | 0,00E+00 |
| EET   | MJ   | 3,71E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 8,01E-05 | 0,00E+00 |

## Scenarios and additional technical information

### Energy in the manufacturing phase

| Name                                         | Value | Unit     | Data quality                                                         |
|----------------------------------------------|-------|----------|----------------------------------------------------------------------|
| Electricity consumption in the manufacturing | 0.16  | kWh/unit | Data from supplier, calculated using consumption mix for the region. |



## Technical information of transportation (A2) for components

| Transportation mode   | Distance | Unit | Data quality                     |
|-----------------------|----------|------|----------------------------------|
| Lorry, 16-32t, EUR06: | 527      | km   | Data estimated from Searates.com |
| Container ship:       | 15076    | km   | Data estimated from Searates.com |

## Technical information of transportation (A4) from production plant to building site

| Transportation mode   | Distance | Unit | Data quality                     |
|-----------------------|----------|------|----------------------------------|
| Lorry, 16-32t, EUR06: | 1800     | km   | Data estimated from Searates.com |
| Container ship:       | 82       | km   | Data estimated from Searates.com |

## End-of-life process description, module C

| Name                                  | Value | Unit | Data quality                                                                     |
|---------------------------------------|-------|------|----------------------------------------------------------------------------------|
| Collected separately waste type       | 0.623 | kg   | Total mass collected separately as Waste from Electrical and Electric Equipment. |
| Collected as mixed construction waste | 0     | kg   | Product is WEEE waste.                                                           |
| Reuse                                 | 0     | kg   | No reuse scenario.                                                               |
| Recovered material                    | 0.366 | kg   | WEEE recycling assumed due to EU-wide extended producer responsibility system.   |
| Energy recovery                       | 0.229 | kg   | Plastic mechanics and plastic and ceramic portions of the PCB are incinerated.   |
| Landfilling                           | 0.028 | kg   | Ceramic residual material landfill                                               |

## Reference of the common information

### ISO 14021

ISO 14021:2001 Environmental labels and declarations. Self-declared environmental claims (Type II environmental labelling)

### ISO 14025

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

### EN 15804

EN15804:2019 Sustainability of construction works. Environmental Product Declarations. Core rules for the product category of construction products.

## RTS

The Building Information Foundation RTS (RTS EPD Product Category Rules). Rakennustietosäätiö RTS sr (RTS EPD PCR menetelmäohje 15804:2019)

## Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin(pub.):Generation of Environmental Product Declarations (EPDs), [www.bau-umwelt.de](http://www.bau-umwelt.de)

## General principles

for the EPD range of Institute Bauen und Umwelt e.V. (IBU), 2013/04

## PCR Part A

Institute Construction and Environment e.V (IBU) :Product Category Rules for Building-Related Products

Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report , Version 1.4

## PCR Part B

Institute Construction and Environment e.V (IBU) : PCR Guidance-Texts for Building-Related Products and Services

Part B: Requirements of the EPD for the Luminaires, lamps and components for luminaires Version 1.6

## Ecoinvent 3.9.

Ecoinvent Centre [www.ecoinvent.org](http://www.ecoinvent.org)

## OpenLCA 1.11.0

OpenLCA [www.openlca.org/](http://www.openlca.org/)