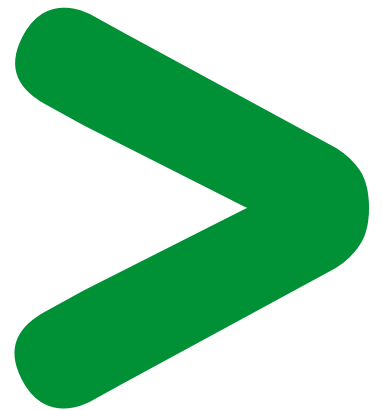


# Product Environmental Profile

Harmony XB5S  
Biometric switch



# Product Environmental Profile - PEP

## Product overview

The product is a "switch" in the Harmony range, which uses digital fingerprint reading as a method of control. Its purpose is to improve the safety level of the operators and machines by means of better access control: only a person authorised to do so must be allowed to activate the function. Typical applications are: access to machine parameters via the controller, PLC or MMI, maintenance mode management, unlocking machine protection devices.

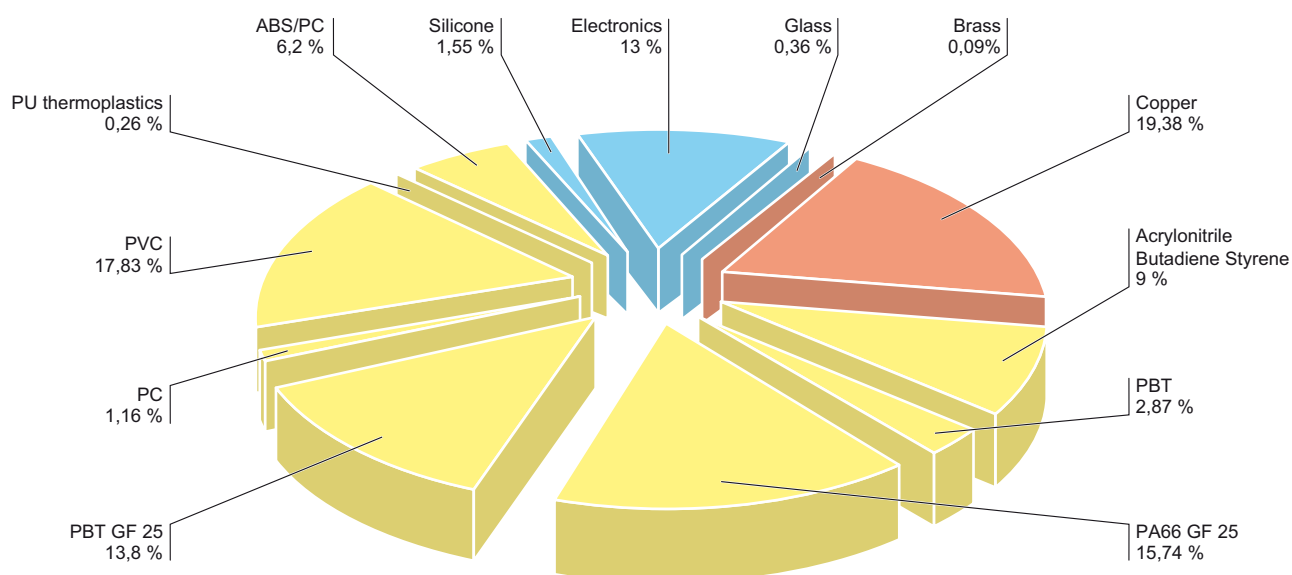
This type of functionality is very often assigned to a key switch. The weak points of key systems are that the key can easily be copied, lent, lost or stolen, which generally means that the key holder is not necessarily the "authorised" person. This also applies to the use of a password. Improving security systems for legal, normative or personal protection reasons requires a more sophisticated system.

The project offers a solution with a completely autonomous biometric product, which is comprehensive and simple to use and implement. Front panel LEDs display the communication functions. A 22 mm diameter mounting + nut are used. The optical digital fingerprint sensor / reader is extremely reliable. The product is compatible with industrial environments: mechanical robustness, chemical and electromagnetic environment. The representative product used for the analysis is the Harmony XB5S1B2L2. The environmental impacts of this referenced product are representative of the impacts of the other products in the range for which the same technology is used. The environmental analysis was performed in conformity with ISO 14040 "Environmental management: Life cycle assessment – Principle and framework". This analysis takes the stages in the life cycle of the product into account.

## Constituent materials

The mass of the products in the range is approximately 130 g, not including the packaging. It is 136 g for the Harmony XB5S1B2L2 analysed.

The constituent materials are distributed as follows:



All necessary steps have been taken with our services, suppliers and subcontractors to ensure that the materials used in the composition of the Harmony XB5S product range do not contain any substances prohibited by the legislation that was in force<sup>(1)</sup> when it was put on the market.

*(1) according to the list available on request.*

The products in the range are designed in compliance with the requirements of the RoHS directive (directive 2002/95/EC of 27 January 2003) and do not contain levels of lead, mercury, cadmium, hexavalent chromium or flame retardants (polybrominated biphenyls PBB, polybrominated diphenyl ethers PBDE) above the permissible thresholds mentioned in the directive.

# Product Environmental Profile - PEP

## Manufacturing

The Harmony XB5S product range is manufactured at a Schneider Electric production site on which an ISO 14001 certified environmental management system has been established.

## Distribution

The weight and volume of the packaging have been reduced in compliance with the European Union's packaging directive.

The weight of the packaging of the Harmony XB5S1B2L2 is 40.01 g. It is made of recyclable materials: cardboard (40 g) and polyethylene (0.01 g).

The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

## Use

The products in the Harmony XB5S range do not generate any environmental pollution requiring special precautionary measures (noise, emissions, etc.).

The dissipated power depends on the conditions under which the product is implemented and used.

The power consumption of the "Harmony XB5S" product range is 6 W in active mode and 1.2 W in standby mode for the Harmony XB5S1B2L2 referenced.

## End of life

At end of life, the products in the Harmony XB5S range can either be dismantled or crushed to facilitate the recovery of the various constituent materials.

The recycling potential of the Harmony XB5S range is 60%. This percentage is mainly due to the use of components and filled plastics (PA).

The end of life data appears on the product end-of-life sheet.

## Environmental impacts

The EIME (Environmental Impact and Management Explorer) software, version 4, and its database, version 10, were used for the Life Cycle Assessment (LCA).

The assumed service life of the product is 5 years, the utilisation rate of the installation is 60% and the European electrical power model is used.

The analysis focused on a Harmony XB5S1B2L2.

The environmental impacts were analysed for the Manufacturing (M) phase, including the processing of raw materials, and for the Distribution (D) and Utilisation (U) phases.

### Presentation of product environmental impacts:

| Indicator                                          | Unit                            | For a Harmony XVC4B35S   |                         |   |                         |
|----------------------------------------------------|---------------------------------|--------------------------|-------------------------|---|-------------------------|
|                                                    |                                 | S = F + D + U            | F                       | D | U                       |
| Depletion of natural resources                     | Y-1                             | 1,16 10 <sup>-11</sup>   | 1,16 10 <sup>-11</sup>  | 0 | 5,93 10 <sup>-15</sup>  |
| Water depletion                                    | dm <sup>3</sup>                 | 9,0753 10 <sup>2</sup>   | 4,1861 10 <sup>1</sup>  | 0 | 8,6567 10 <sup>2</sup>  |
| Contribution to the greenhouse effect              | g≈CO <sub>2</sub>               | 4,20870 10 <sup>5</sup>  | 3,8199 10 <sup>3</sup>  | 0 | 4,17050 10 <sup>5</sup> |
| Contribution to the destruction of the ozone layer | g≈CFC-11                        | 5,52112 10 <sup>-2</sup> | 5,04 10 <sup>-4</sup>   | 0 | 5,1608 10 <sup>-2</sup> |
| Atmospheric ozone creation                         | g≈C <sub>2</sub> H <sub>4</sub> | 1,5033 10 <sup>2</sup>   | 3,142                   | 0 | 1,4719 10 <sup>2</sup>  |
| Air acidification                                  | g≈H <sup>+</sup>                | 7,1534 10 <sup>1</sup>   | 8,1251 10 <sup>-1</sup> | 0 | 7,0721 10 <sup>1</sup>  |
| Hazardous waste production                         | kg                              | 6,042                    | 6,6246 10 <sup>-2</sup> | 0 | 5,976                   |

The life cycle analysis showed that the Utilisation phase has the greatest impact on most of the environmental indicators; the environmental parameters of this phase were optimised at the design stage.

# Product Environmental Profile - PEP

## System approach

As the products in the range were designed in conformity with the RoHS directive (2002/95/EC of 27 January 2003), they can be integrated unrestrictedly in a device or installation directly governed by these regulations.

N.B.: the environmental impacts of the product depend on the conditions under which it is installed and used.

The environmental impact values listed in the above table are only valid within the specified context and cannot be used directly in the environmental report on the installation.

## Glossary

### Raw Material Depletion (RMD)

This indicator quantifies the consumption of raw materials during the life cycle of the product. It is expressed as the fraction of natural resources that disappear each year, with respect to all the annual reserves of the material.

### Energy Depletion (ED)

This indicator gives the quantity of energy consumed, whether it be from fossil, hydroelectric, nuclear or other sources. This indicator takes into account the energy from the material produced during combustion. It is expressed in MJ.

### Water Depletion (WD)

This indicator calculates the volume of water consumed, including drinking water and water from industrial sources. It is expressed in dm<sup>3</sup>.

### Global Warming Potential (GWP)

The global warming of the planet is the result of the increase in the greenhouse effect due to the sunlight reflected by the earth's surface being absorbed by certain gases known as "greenhouse-effect" gases. The effect is quantified in gram equivalent of CO<sub>2</sub>.

### Ozone Depletion (OD)

This indicator defines the contribution to the phenomenon of the disappearance of the stratospheric ozone layer due to the emission of certain specific gases. The effect is expressed in gram equivalent of CFC-11.

### Photochemical Ozone Creation (POC)

This indicator quantifies the contribution to the «smog» phenomenon (the photochemical oxidation of certain gases which generates ozone) and is expressed in gram equivalent of ethene (C<sub>2</sub>H<sub>4</sub>).

### Air Acidification (AA)

The acid substances present in the atmosphere are carried by rain. A high level of acidity in the rain can cause damage to forests. The contribution of acidification is calculated using the acidification potentials of the substances concerned and is expressed in mode equivalent of H<sup>+</sup>.

### Hazardous Waste Production (HWP)

This indicator calculates the quantity of specially treated waste created during all the life cycle phases (manufacturing, distribution and utilization). For example, special industrial waste in the manufacturing phase, waste associated with the production of electrical power, etc. It is expressed in kg.



We are committed to safeguarding our planet by "Combining innovation and continuous improvement to meet the new environmental challenges".

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This document is based on ISO 14020 which relates to the general principles of environmental declarations and the ISO TR 14025 technical report relating to type III environmental declarations.

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