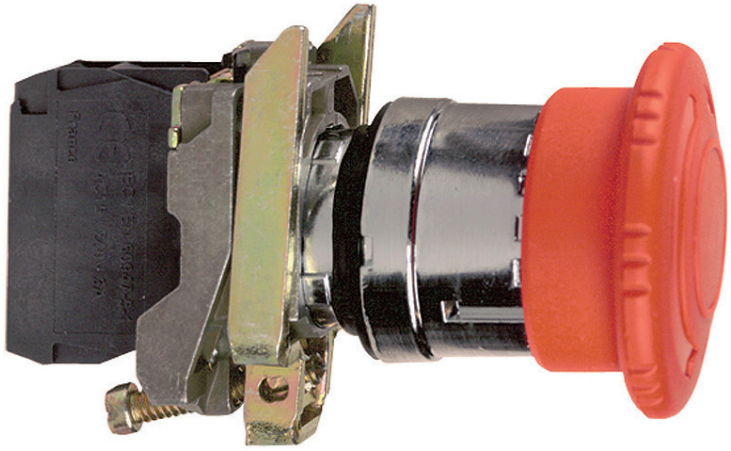
Product Environmental Profile

Harmony XB4-BS844#
Emergency stop pushbutton
Metal Ø 22 mm



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Product Overview

The control units in the Harmony Ø 22 product range are used industrially for man-machine communication and in the construction industry (lighting or safety controls and small automated controls).
The emergency stop pushbutton control units are used to give an emergency stop signal and designed to guard against or prevent dangers that may cause personal injury or damage to the machine or the work in progress.
The “emergency stop” Harmony style 4 range consists of metal products with latch actuators.

This table summarises the XB4 BS control units:

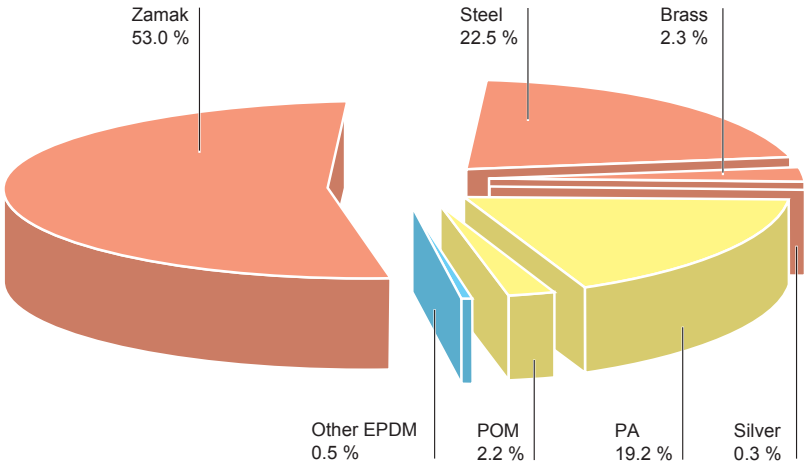
Reference	Type of actuator	Service life(1)
XB4 BT/BX	"Push - pull" snap lock button	0.3
XB4 BS	"Turn to unlock" snap lock button	0.3

(1) In millions of operating cycles.

The representative product used for the analysis of “punch” actuators, with or without keys, was the XB4-BS844# emergency stop pushbutton, where “#” represents the product colour code. The same manufacturing process is used for the other products in the range.
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 from 118 g to 170 g, packaging not included. It is 121 g for the XB4-BS844# analysed.
The constituent materials are distributed as follows:



Substance assessment

Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2002/95/EC of 27 January 2003) and do not contain, or in the authorised proportions, lead, mercury, cadmium, chromium hexavalent, flame retardant (polybromobiphenyles PBB, polybromodiphenylthers PBDE) as mentioned in the Directive.

Manufacturing

The Harmony XB4 Ø 22 product range is manufactured at a Schneider Electric production site on which an ISO 14001 certified environmental management system has been established.
The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

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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 XB4-BS844# is 9.6 g.
It is made of 100 % recyclable cardboard.
The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

Use

The products in the Harmony XB4 Ø 22 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.
To minimise losses due to the Joule effect, the resistance of the electrical contacts was optimised to ensure that the environmental impact of the product is negligible when it is in use.

End of life

At end of life, the products in the Harmony XB4 Ø 22 range can either be shredded to facilitate the recovery of the various constituent materials.
The recycling potential is more than 75 %. This percentage includes all the metal parts: Steel, Zamak, Silver and Brass.
In addition, the recovery potential of the product is greater than 95 %.

Environmental impacts

The EIME (Environmental Impact and Management Explorer) software, version 1.6, and its database, version 5.4, were used for the Life Cycle Assessment.
The assumed service life of the product is 10 years, the utilisation rate of the installation is 34 % and the European electrical power model is used.
The analysis focused on the XB4-BS844#.
The environmental impacts were analysed for the Manufacturing (M) phase, including the processing of raw materials, and for the Distribution (D) phase.

Presentation of the environmental impacts

Environmental indicators	Unit	For 1 XB4-BS844# emergency stop pushbutton		
		F + D	F	D
Depletion of natural resources	**Y-1**	**$3.21\ 10^{-14}$**	$3.21\ 10^{-14}$	$2.82\ 10^{-18}$
Water depletion	**dm^3**	**11.1**	10.6	$4.97\ 10^{-1}$
Global Warming	**g≈CO_2**	**$8.58\ 10^{2}$**	$6.83\ 10^{2}$	$1.74\ 10^{2}$
Ozone Depletion	**g≈CFC-11**	**$2.18\ 10^{-3}$**	$2.15\ 10^{-3}$	$3.52\ 10^{-5}$
Photochemical Ozone Creation	**g≈C_2H_4**	**1.10**	$7.98\ 10^{-1}$	$3.02\ 10^{-1}$
Air acidification	**g≈H^+**	**3.67**	3.64	$2.44\ 10^{-2}$
Hazardous waste production	**kg**	**$2.18\ 10^{-3}$**	$2.16\ 10^{-3}$	$2.29\ 10^{-5}$

The life cycle analysis showed that the Manufacturing phase (phase M) has the greatest impact on most of the environmental indicators and the environmental parameters of this phase were optimised at the design stage.

Product Environmental Profile - PEP

System approach

As the product of the range are designed in accordance with the RoHS Directive (European Directive 2002/95/EC of 27 January 2003), they can be incorporated without any restriction within an assembly or an installation submitted to this Directive.

N.B.: please note that the environmental impacts of the product depend on the use and installation conditions of the product.
Impacts values given above are only valid within the context specified and cannot be directly used to draw up the environmental assessment of 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^3.

Global Warming (GW)

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_2.

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 ethylene (C_2H_4).

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^+.

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.

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