Product Environmental Profile

KNX LOGIC MODUL BASIC REG-K
REF: 676090 OR MTN676090

PEP ecoPASSPORT®

Schneider Electric

Product Environmental Profile - PEP

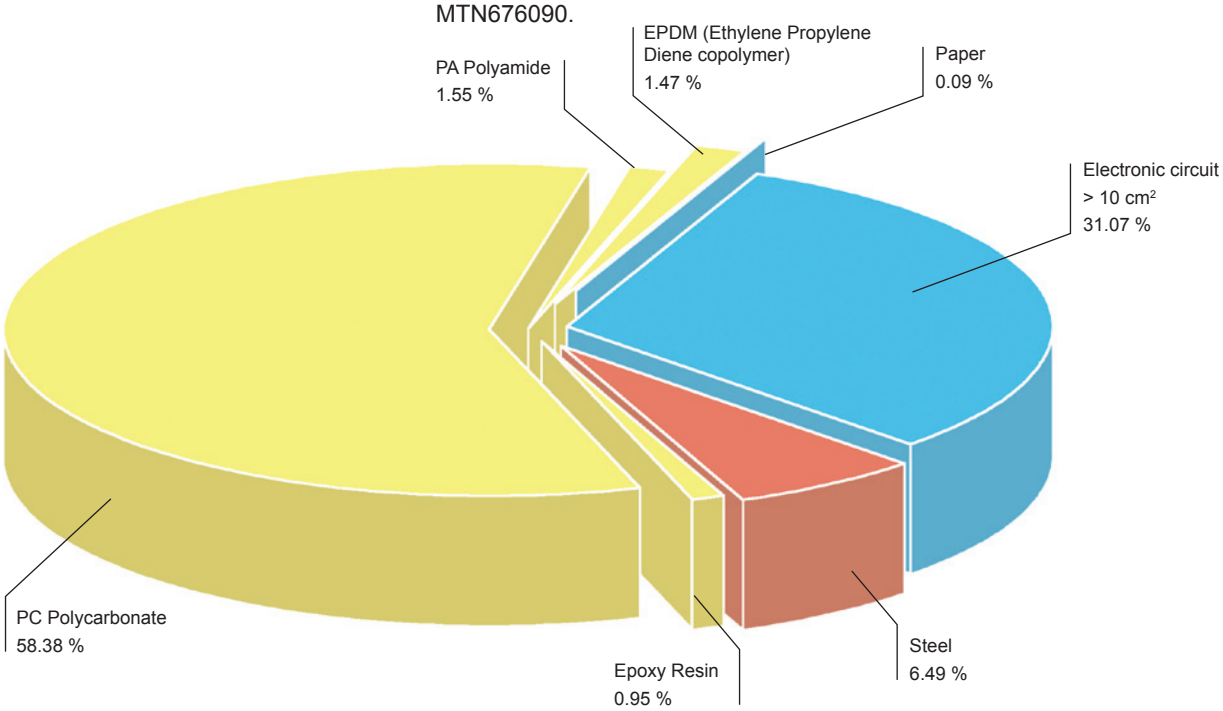
Product Overview

The main function of the KNX System devices product range is to manage system services. This range consists of interfaces/gateways: Power supplies, KNX/IP router REG/K, Data rail connector, Bus coupler REG, Mini-function module REG, Function Module REG. These devices manage data on the EIB or provide necessary energy for bus communication (as power supply).

The representative product used for the analysis is KNX logic module Basic REG-K Ref: 676090, MTN676090. The environmental impacts of this referenced product are representative of the impacts of the other products of the range which are developed with the same technology.
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 range products spreads out between 105 g and 127 g packing excluded.
It is 116 g for the KNX logic module Basic REG-K Ref: 676090, MTN676090.



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 KNX logic module Basic REG-K 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 KNX logic module Basic REG-K packaging weight is 27.03 g. It consists of Cardboard (96 % recycled, grey board) 19 g, Paper (Recycled, With Deinking) 6.03 g, Cardboard (Duplex-Triplex) 2 g.
The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

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Utilization

The products of the KNX logic module Basic REG-K range do not generate environmental pollution requiring special precautionary measures (noise, emissions, and so on).
The dissipated power depends on the conditions under which the product is implemented and used. This dissipated power spreads out between 0.20 W and 0.25 W for the KNX logic module Basic REG-K product range. For an utilisation rate of 100 %, it is 0.22 W for the referenced KNX logic module Basic REG-K Ref: 676090, MTN676090.

End of life

At end of life, the products in the KNX logic module Basic REG-K range can either be dismantled or grinded to facilitate the recovery of the various constituent materials.
The proportion of recyclable material is higher than 70 %.
This percentage includes the following materials: Epoxy Resin, PC Polycarbonate, PA Polyamide, EPDM (Ethylene Propylene Diene copolymer), Paper, Steel, Electronic circuit > 10cm².
The products of this range also include Electronic circuit > 10cm² which have to be disassembled and which must be sent to specialised treatment systems.

The end of life details appear on the product end-of-life recovery sheet.

Environmental impacts

The EIME (Environmental Impact and Management Explorer) software, version 4.0, and its database, version V10 were used for the life cycle assessment (LCA).
The assumed service life of the product is 10 years with a utilisation rate of the installation of 100 % and the electrical power model used is ON (ON, OFF, Stand by).
The scope of the analysis was limited to a KNX logic module Basic REG-K Ref: 676090, MTN676090.
The environmental impacts were analysed for the Manufacturing (M) phases, including the processing of raw materials, and for the Distribution (D) and Utilization (U) phases.

Presentation of the product environmental impacts

Indicator	Unit	For reference group			
		S = M + D + U	**M**	**D**	**U**
Raw material depletion	**Y^{-1}**	**$3.1643E^{-14}$**	$3.1422E^{-14}$	$1.3013E^{-18}$	$2.1965E^{-16}$
Energy depletion	**MJ**	**$2.3292E^{2}$**	35.533	1.115	$1.9628E^{2}$
Water depletion	**dm^3**	**40.791**	9.985	$4.5482E^{-1}$	30.351
Global warming potential	**g ~CO_2**	**$1.2407E^{4}$**	$2.3362E^{3}$	41.251	$1.0029E^{4}$
Ozone depletion potential	**g ~CFC-11**	**$1.0569E^{-3}$**	$1.6414E^{-4}$	$2.9762E^{-5}$	$8.6295E^{-4}$
Photochemical ozone creation	**g ~C_2H_4**	**4.757**	1.24	$3.6975E^{-2}$	3.48
Air acidification	**g ~H^+**	**1.95**	$3.5102E^{-1}$	$1.134E^{-2}$	1.587
Hazardous waste production	**kg**	**$1.7958E^{-1}$**	$1.9731E^{-2}$	$8.7543E^{-6}$	$1.5984E^{-1}$

The life cycle analysis shows that the USE phase (M, D or U phase) is the life cycle phase which has the greatest impact on the majority of environmental indicators. The environmental parameters of this phase have been optimized at the design stage. For example, we eliminated all possible mechanically moving parts, because these are the first that shorten the life expectancy of the device.

The environmental impacts variability between the upper part and the lower part of the range is less than 10 %.

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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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