

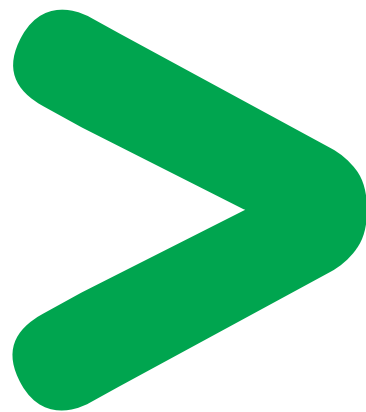
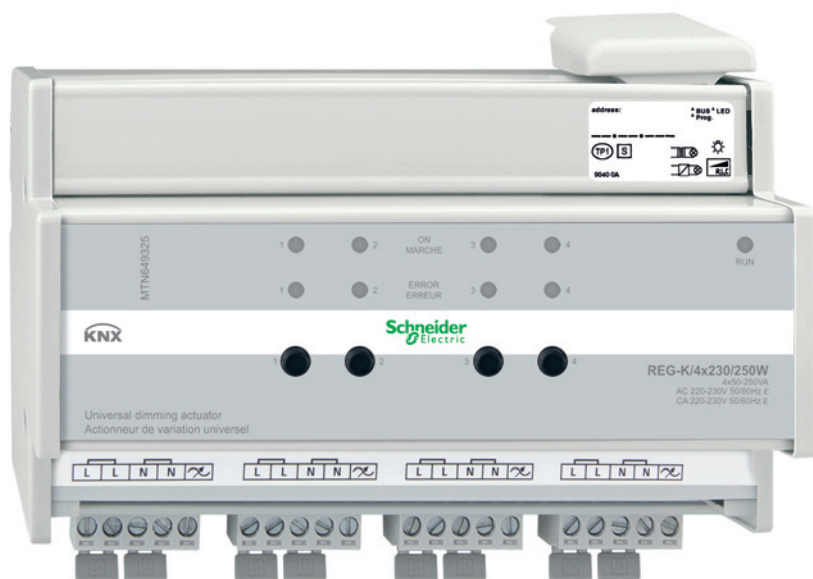
# Product Environmental Profile

KNX UNIVERSAL

Dimming actuator

REG-K/4X230/250 W

REF: MTN649325



# Product Environmental Profile - PEP

## Product Overview

The main function of the KNX Universal dimming actuator/Control units product range is to switch and dim incandescent lamps, HV halogen lamps and LV halogen lamps using dimmable wound transformers or electronic transformers.

This range consists of articles: standard and universal dimming actuators, Control units, DALI gateways.

This product is the representative of all similar dimming actuators or articles in its product range.

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.

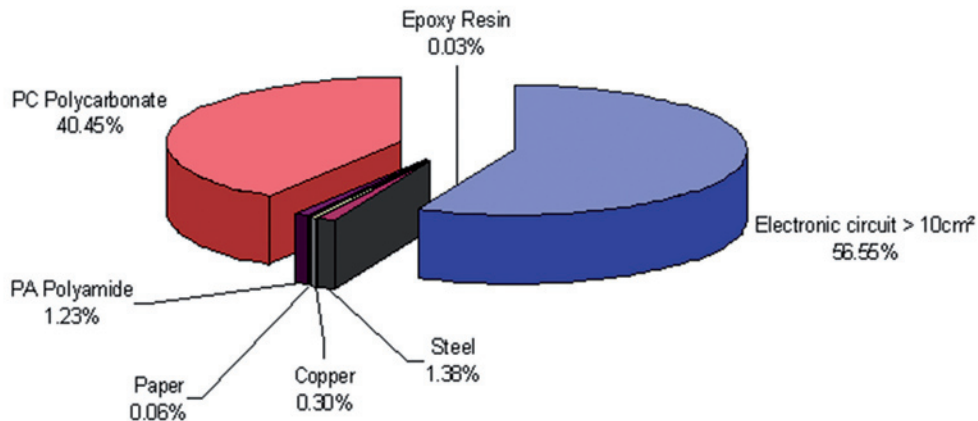
The environmental analysis was performed in conformity with ISO 14040 "Environmental management: Life cycle assessment – Principle and framework".

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 175 g and 197 g packing excluded. It is 186 g for the KNX Universal dimming actuator REG-K/4x230/250 W, Ref: MTN649325.

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, polybromodiphenylthethers PBDE) as mentioned in the Directive.

## Manufacturing

The KNX Dimming actuator 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 Dimming actuator packaging weight is 186 g. It consists of Cardboard (96 % recycled, grey board) 73 g, Paper (Recycled, With Deinking) 53 g, Cardboard (Duplex-Triplex) 60 g. The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

# Product Environmental Profile - PEP

## Utilization

The products of the KNX Dimming actuator 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.

The electrical power consumed by the KNX Switch actuator range is 0.46 W in active mode and 100 % for the referenced KNX Universal dimming actuator REG-K/4x230/250 W, Ref: MTN649325.

## End of life

At end of life, the products in the KNX Dimming actuator range can either be dismantled or grinded to facilitate the recovery of the various constituent materials.

The proportion of recyclable material is higher than 61 %.

This percentage includes the following materials: Epoxy Resin, PC Polycarbonate, PA Polyamide, EPDM (Ethylene Propylene Diene copolymer), Paper, Steel, Electronic circuit > 10cm<sup>2</sup>.

The products of this range also include Electronic circuit > 10cm<sup>2</sup> 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 Dimming actuator.

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

Environmental indicators	Unit	For MTN649325			
		S = M + D + U	M	D	U
Raw Material Depletion	Y-1	1.5561 <sup>-12</sup>	1.5556 <sup>-12</sup>	8.6621 <sup>-18</sup>	4.5926 <sup>-16</sup>
Energy Depletion	MJ	6.74882	2.5682 <sup>2</sup>	7.666	4.1039 <sup>2</sup>
Water Depletion	dm3	2.46442	1.7927 <sup>2</sup>	3.708	63.461
Global Warming Potential	g ~CO2	3.69394	1.5701 <sup>4</sup>	2.6877 <sup>2</sup>	2.097 <sup>4</sup>
Ozone Depletion	g ~CFC-11	4.0746 <sup>-3</sup>	2.0978 <sup>-3</sup>	1.7245 <sup>-4</sup>	1.8044 <sup>-3</sup>
Photochemical Ozone Creation	g~C2H4	12.28	4.782	2.2058 <sup>-1</sup>	7.277
Air Acidification	g ~H+	6.983	3.601	6.3607 <sup>-2</sup>	3.319
Hazardous Waste Production	kg	7.3533 <sup>-1</sup>	4.0106 <sup>-1</sup>	5.7378 <sup>-5</sup>	3.3421 <sup>-1</sup>

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 %.

# 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<sup>3</sup>.

### 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<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 ethylene (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.

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