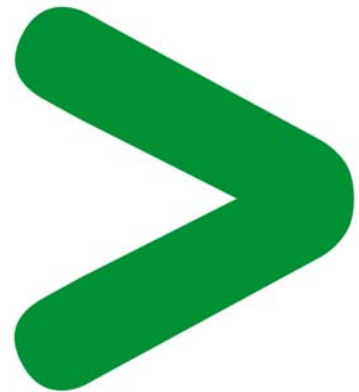# Product Environmental Profile

TAC Xenta 911 / 511 / 527 / 527-NPR / 555 / 701 / 711 / 721 / 731 / 913 Series Controllers

Schneider Electric

Product Environmental Profile - PEP

Product overview

TAC Xenta 911 / 511 / 527 / 527-NPR / 555 / 701 / 711 / 721 / 731 / 913 Series Controllers are products used in Building Automation Systems for different purposes. Their common characteristic is that they all communicate using TCP/IP over Ethernet. The main functionality for the different products includes communication infrastructure, gateway, web server and controller.

This range consists of: Controllers mentioned above and all variants of them.

The representative product used for the analysis is TAC Xenta 913 Ref: 007308351 including Terminal Part TAC Xenta 400 Ref: 007309020
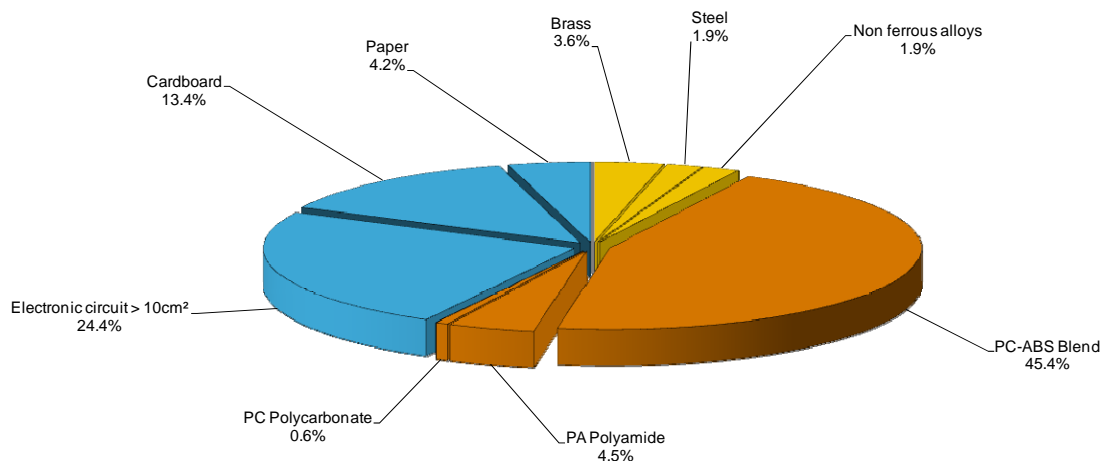
The environmental impacts of this referenced product are representative of the impacts of the other products of the range which are developed with a similar technology.

The environmental analysis was performed in conformity with ISO 14040.

Constituent materials

The mass of the product range is 327g (approx.) including packaging.
The constituent materials are distributed as follows:

Brass 3.6%
Steel 1.9%
Non ferrous alloys 1.9%
Paper 4.2%
Cardboard 13.4%
Electronic circuit > 10cm² 24.4%
PC Polycarbonate 0.6%
PA Polyamide 4.5%
PC-ABS Blend 45.4%

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 only contain in the authorised proportions, lead, mercury, cadmium, hexavalent chromium or flame retardants (polybrominated biphenyls - PBB, polybrominated diphenyl ethers - PBDE) as mentioned in the Directive.

Manufacturing

Products of this range are manufactured at a Schneider Electric production site on which an ISO14001 certified environmental management system has been established.

Distribution

The weight and volume of the packaging have been optimized, based on the European Union's packaging directive.
Products of this range packaging weight are 54.5 g. It consists of Cardboard (44g) and Paper (10.5g).
The product distribution flows are optimized by Schneider Electric's production site in Västerhaninge, Sweden and set up as the distribution center to service both international and local market areas.

Use

Products of this range do not generate environmental pollution (noise, emissions) requiring special precautionary measures in standard use.
The electrical power consumption depends on the conditions under which the product is implemented and used. The electrical power consumed by the products of this range is between 1.7 W and 2.2 W. It is 2.2 W in active mode and 100% in standby mode for the referenced TAC Xenta 913, Ref: 007308351.

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End of life

At end of life, the products of this range have been optimized to decrease the amount of waste and allow recovery of the product components and materials.

This product range contains PCBAs that should be separated from the stream of waste so as to optimize end-of-life treatment by special treatments. The location of these components and other recommendations are given in the End of Life Instruction document which is available for this product range.

The recyclability potential of the products has been evaluated using the "ECO-DEEE recyclability and recoverability calculation method" (version V1, 20 Sep. 2008 presented to the French Agency for Environment and Energy Management: ADEME).

According to this method, the potential recyclability ratio is: 35%.

As described in the recyclability calculation method this ratio includes only metals and plastics which have proven industrial recycling processes.

Environmental impacts

Life cycle assessment has been performed on the following life cycle phases: Materials and Manufacturing (M), Distribution (D), Installation (I) Use (U), and End of life (E).

Modeling hypothesis and method:
- The calculation was performed on the TAC Xenta 913, Ref: 007308351 including Terminal Part TAC Xenta 400 Ref: 007309020.
- Product packaging: is included.
- Installation components: no special components included.
- Scenario for the Use phase: this product range is included in the category Energy consuming product: (assumed service life is 10 years and use scenario is: Active phase: consumed power 2.2 W during 100% uptime, 24 hours per day, during 10 years.

The electrical power model used for calculation is European model.

The product does not require any special maintenance operations.

End of life impacts are based on a worst case transport distance to the recycling plant (1000km).

Presentation of the product environmental impacts

Environmental indicators	Unit	TAC Xenta 913, Ref: 007308351 including Terminal Part TAC Xenta 400 Ref: 007309020					
		$S = M + D + I + U + E$	M	D	I	U	E
Raw Material Depletion	Y-1	6.79E-14	6.54E-14	5.35E-19	0.00E+00	2.51E-15	6.67E-19
Energy Depletion	MJ	2.31E+03	1.01E+02	3.92E-01	0.00E+00	2.21E+03	4.89E-01
Water depletion	dm^3	3.90E+02	7.08E+01	3.72E-02	0.00E+00	3.19E+02	4.64E-02
Global Warming	$g{\approx}CO_2$	1.18E+05	6.16E+03	3.10E+01	0.00E+00	1.11E+05	3.87E+01
Ozone Depletion	$g{\approx}CFC\text{-}11$	7.43E-03	1.33E-03	2.20E-05	0.00E+00	6.05E-03	2.74E-05
Air Toxicity	m^3	1.98E+07	1.27E+06	5.85E+03	0.00E+00	1.85E+07	7.29E+03
Photochemical Ozone Creation	$g{\approx}C_2H_4$	3.95E+01	1.73E+00	2.65E-02	0.00E+00	3.77E+01	3.31E-02
Air acidification	$g{\approx}H^+$	1.59E+01	8.73E-01	3.96E-03	0.00E+00	1.50E+01	4.93E-03
Water Toxicity	dm^3	3.31E+04	1.34E+03	3.88E+00	0.00E+00	3.18E+04	4.84E+00
Water Eutrophication	$g{\approx}PO_4$	7.65E-01	5.02E-01	5.16E-04	0.00E+00	2.62E-01	6.44E-04
Hazardous waste production	kg	2.06E+00	2.13E-01	1.15E-05	0.00E+00	1.85E+00	1.44E-05

Life cycle assessment has been performed with the EIME software (Environmental Impact and Management Explorer), version 4.0, and with its database version 11.0.

The use phase is the life cycle phase which has the greatest impact on the majority of environmental indicators.

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of other products of this range: Depending on the impact analysis, the environmental indicators of other products in this family may be proportionally extrapolated by the mass of the products for the Manufacturing (M), Distribution (D) and the end of life (E). The environmental impact indicators related to the use phase (U) may be proportionally extrapolated based on the energy consumption of the products.

System approach

As the products 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 in an assembly or an installation subject to this Directive.

Please note that the values given above are only valid within the context specified and cannot be used directly to draw up the environmental assessment of an installation.

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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.

Air Toxicity (AT)
This indicator represents the air toxicity in a human environment. It takes into account the usually accepted concentrations for several gases in the air and the quantity of gas released over the life cycle. The indication given corresponds to the air volume needed to dilute these gases down to acceptable concentrations.

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^+.

Water Toxicity (WT)
This indicator represents the water toxicity. It takes into account the usually accepted concentrations for several substances in water and the quantity of substances released over the life cycle. The indication given corresponds to the water volume needed to dilute these substances down to acceptable concentrations.

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.

PEP achieved with Schneider-Electric TT01 V5 and TT02 V15 procedures in compliance with ISO14040 series standards

PEP established according to PEPecopassport PCR : PEP- PCR-ed 2-EN-2011 12 09 rules