

# Product Environmental Profile

## TM4 Network Module





## General information

### Representative product

TM4 Network Module - TM4ES4

### Description of the range

The Modicon TM4 communication module offer is dedicated to Modicon M241 and Modicon M251 logic controllers, increasing the options for connection. Two communication module models are available:

- The TM4ES4 Ethernet switch module, offering an Ethernet connection with 4 ports
- The TM4PDPS1 Profibus DP slave module

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.

### Functional unit

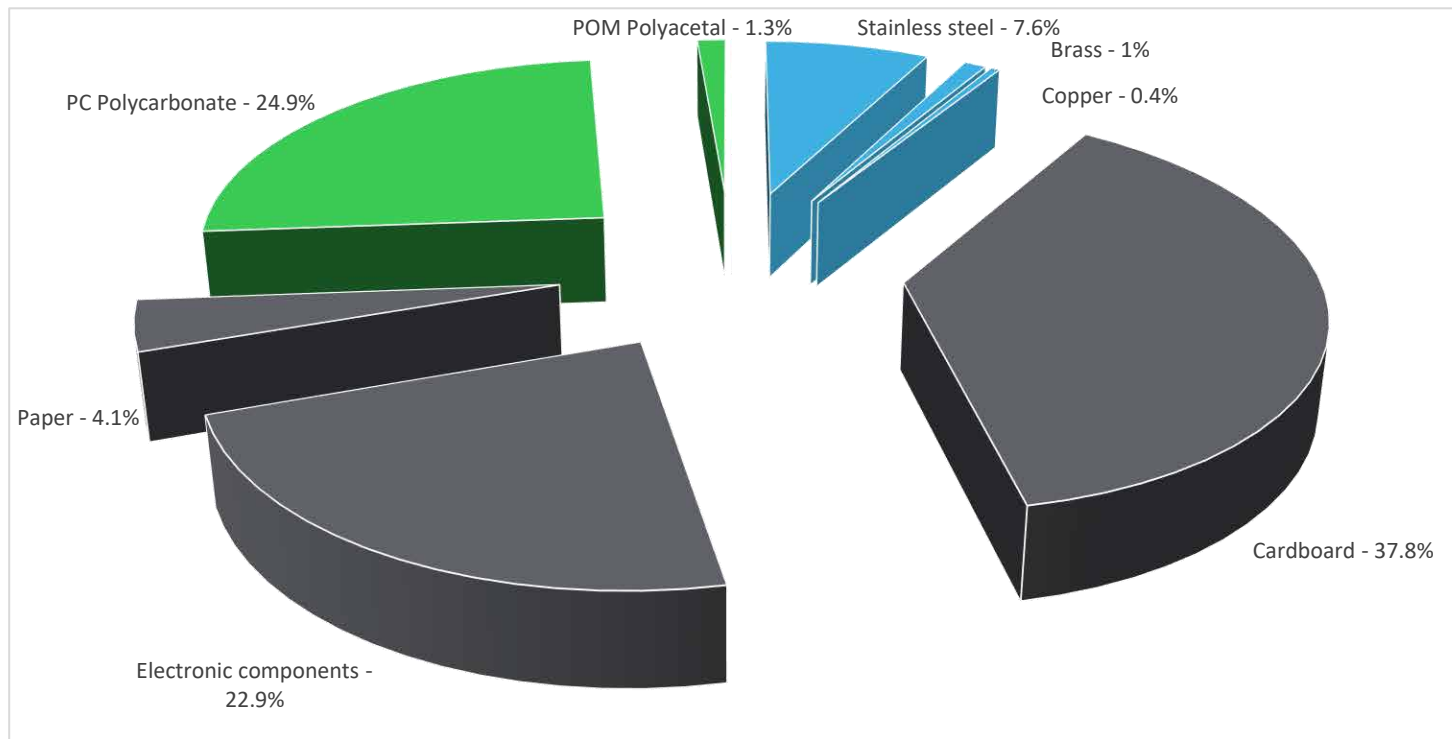
to enhance the capabilities of logic controllers by offering an Ethernet connection with 4 ports (TM4ES4) or configuring a slave connection on the Profibus DP bus (TM4PDPS1) 78,60% of the time for 10 years.



## Constituent materials

### Reference product mass

214.2 g including the product, its packaging and additional elements and accessories



Plastics	26.2%
Metals	9.0%
Others	64.8%

## Substance assessment

Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2011/65/EU of 8 June 2011) 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

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.

Details of ROHS and REACH substances information are available on the Schneider-Electric Green Premium website  
<http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page>

## Additional environmental information

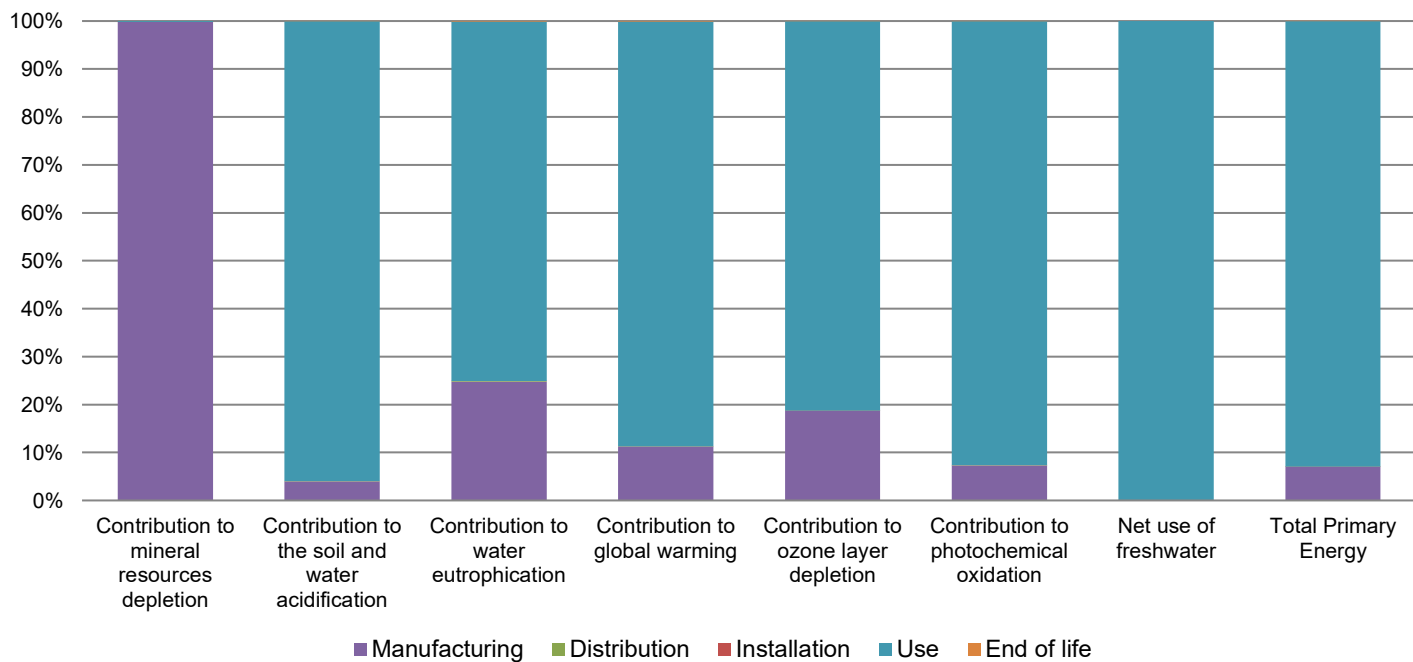
The TM4 Network Module presents the following relevant environmental aspects

<b>Manufacturing</b>	Manufactured at a Schneider Electric production site ISO14001 certified
<b>Distribution</b>	Weight and volume of the packaging optimized, based on the European Union's packaging directive Packaging weight is 88.2 g, consisting of cardboard (89.7%) and paper (10.3%)
<b>Installation</b>	Does not require any installation operations
<b>Use</b>	The product does not require special maintenance operations.
<b>End of life</b>	<p>End of life optimized to decrease the amount of waste and allow recovery of the product components and materials</p> <p>This product contains electronic card (49.90g) that should be separated from the stream of waste so as to optimize end-of-life treatment.</p> <p>The location of these components and other recommendations are given in the End of Life Instruction document which is available on the Schneider-Electric Green Premium website  <a href="http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page">http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page</a></p> <p>Recyclability potential: <b>20%</b> Based on "ECO'DEEE recyclability and recoverability calculation method" (version V1, 20 Sep. 2008 presented to the French Agency for Environment and Energy Management: ADEME).</p>

## Environmental impacts

<b>Reference life time</b>	10 years			
<b>Installation elements</b>	No special components needed			
<b>Use scenario</b>	The product is in active mode 57,20% of the time with a power use of 2W and in stand-by mode 21,40% of the time with a power use of 1,5W, and off 21,40% of the time, for 20 year			
<b>Geographical representativeness</b>	Europe			
<b>Energy model used</b>	<b>Manufacturing</b>	<b>Installation</b>	<b>Use</b>	<b>End of life</b>
	Energy model used: Indonesia	Electricity grid mix; AC; consumption mix, at consumer; < 1kV; EU-27	Electricity grid mix; AC; consumption mix, at consumer; < 1kV; EU-27	Electricity grid mix; AC; consumption mix, at consumer; < 1kV; EU-27

Compulsory indicators		TM4 Network Module - TM4ES4					
Impact indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Contribution to mineral resources depletion	kg Sb eq	2.48E-03	2.47E-03	0*	0*	5.46E-06	0*
Contribution to the soil and water acidification	kg SO <sub>2</sub> eq	2.73E-01	1.08E-02	1.26E-04	0*	2.62E-01	5.96E-05
Contribution to water eutrophication	kg PO <sub>4</sub> <sup>3-</sup> eq	2.11E-02	5.23E-03	2.91E-05	0*	1.58E-02	2.91E-05
Contribution to global warming	kg CO <sub>2</sub> eq	7.09E+01	7.94E+00	2.76E-02	0*	6.29E+01	9.06E-02
Contribution to ozone layer depletion	kg CFC11 eq	5.04E-06	9.45E-07	0*	0*	4.10E-06	3.11E-09
Contribution to photochemical oxidation	kg C <sub>2</sub> H <sub>4</sub> eq	1.56E-02	1.13E-03	9.00E-06	0*	1.44E-02	4.98E-06
Resources use	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Net use of freshwater	m3	2.28E+02	7.76E-02	0*	0*	2.28E+02	0*
Total Primary Energy	MJ	1.35E+03	9.51E+01	3.91E-01	0*	1.26E+03	2.55E-01



Optional indicators		TM4 Network Module - TM4ES4					
Impact indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Contribution to fossil resources depletion	MJ	8.05E+02	9.11E+01	3.88E-01	0*	7.14E+02	2.38E-01
Contribution to air pollution	m <sup>3</sup>	3.39E+03	6.78E+02	1.18E+00	0*	2.71E+03	1.85E+00
Contribution to water pollution	m <sup>3</sup>	3.35E+03	7.48E+02	4.54E+00	0*	2.59E+03	3.93E+00
Resources use	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Use of secondary material	kg	9.90E-03	9.90E-03	0*	0*	0*	0*
Total use of renewable primary energy resources	MJ	1.64E+02	4.77E+00	0*	0*	1.60E+02	0*
Total use of non-renewable primary energy resources	MJ	1.19E+03	9.03E+01	3.90E-01	0*	1.10E+03	2.54E-01
Use of renewable primary energy excluding renewable primary energy used as raw material	MJ	1.63E+02	3.13E+00	0*	0*	1.60E+02	0*
Use of renewable primary energy resources used as raw material	MJ	1.64E+00	1.64E+00	0*	0*	0*	0*
Use of non renewable primary energy excluding non renewable primary energy used as raw material	MJ	1.18E+03	8.78E+01	3.90E-01	0*	1.10E+03	2.54E-01
Use of non renewable primary energy resources used as raw material	MJ	2.57E+00	2.57E+00	0*	0*	0*	0*
Use of non renewable secondary fuels	MJ	0.00E+00	0*	0*	0*	0*	0*
Use of renewable secondary fuels	MJ	0.00E+00	0*	0*	0*	0*	0*

Waste categories	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Hazardous waste disposed	kg	6.08E+00	5.78E+00	0*	0*	3.28E-02	2.72E-01
Non hazardous waste disposed	kg	2.36E+02	1.79E+00	0*	0*	2.34E+02	0*
Radioactive waste disposed	kg	1.57E-01	8.39E-04	0*	0*	1.57E-01	0*
Other environmental information	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Materials for recycling	kg	1.27E-01	1.50E-02	0*	8.78E-02	0*	2.47E-02
Components for reuse	kg	0.00E+00	0*	0*	0*	0*	0*
Materials for energy recovery	kg	2.50E-02	5.34E-04	0*	0*	0*	2.44E-02
Exported Energy	MJ	0.00E+00	0*	0*	0*	0*	0*

\* represents less than 0.01% of the total life cycle of the reference flow

Life cycle assessment performed with EIME version EIME v 5.7.0.3, database version 2016-11 in compliance with ISO14044.

The use phase is the life cycle phase which has the greatest impact on the majority of environmental indicators (based on compulsory 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 (without mineral resources depletion) of other products in this family may be proportional extrapolated by energy consumption values. For mineral resources depletion, impact may be proportional extrapolated by mass of the product.

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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Verifier accreditation N°	VH33	Information and reference documents	<a href="http://www.pep-ecopassport.org">www.pep-ecopassport.org</a>
Date of issue	07/2018	Validity period	5 years
Independent verification of the declaration and data, in compliance with ISO 14025 : 2010			
Internal	External	X	
The PCR review was conducted by a panel of experts chaired by Philippe Osset (SOLINNEN)			
PEP are compliant with XP C08-100-1 :2014			
The elements of the present PEP cannot be compared with elements from another program.			
Document in compliance with ISO 14025 : 2010 « Environmental labels and declarations. Type III environmental declarations »			



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