

Product Environmental Profile

**TM5SDI12D - reference product for Modicon TM5 I/O
Expansion Module range**





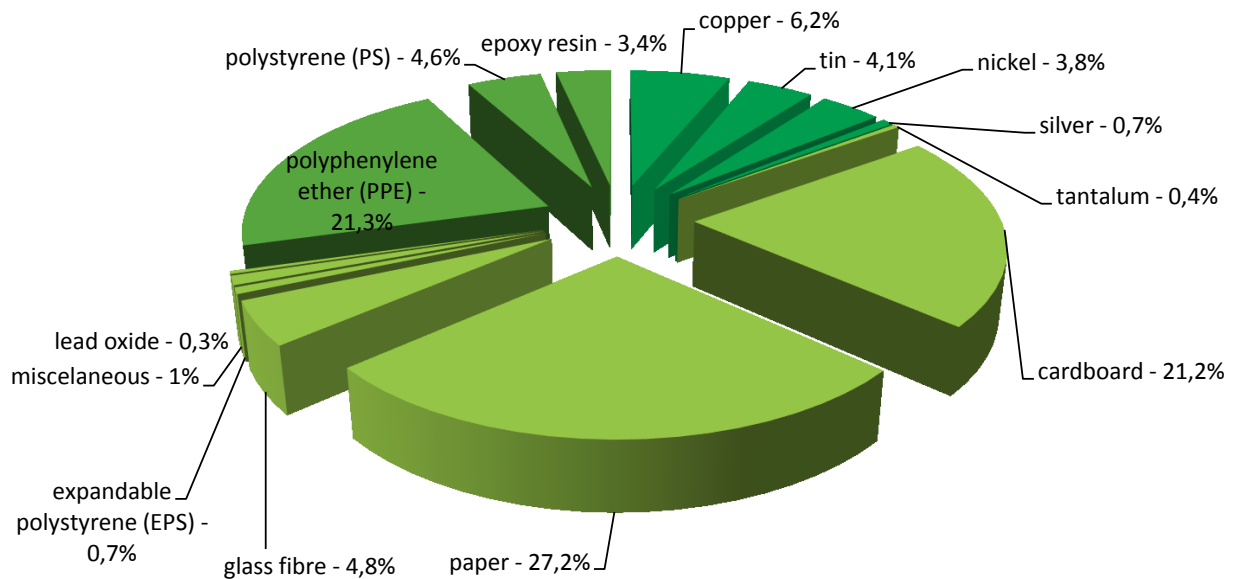
General information

Representative product	TM5SDI12D - reference product for Modicon TM5 I/O Expansion Module range -TM5SDI12D
Description of the product	The TM5SDI12D is the reference product for the Modicon TM5 I/O Expansion Module (Analog / Digital / Expert) range. It complements the embedded I/O in the various TM258 logic controllers, LMC058 motion controllers and Pac Drive controllers These products are used to adapt to the application requirements as closely as possible
Description of the range	The range covers TM5 I/O Expansion Modules weighting from 17,5g to 82,2g and dissipating power from 0W to 3,35W The environmental impacts of the reference product are representative of the impacts of the other products of the range which are developed with a similar technology
Functional unit	To manage Digital or Analog I/O signal 100% of the time for 10 years



Constituent materials

Reference product mass	37,16 g including the product, its packaging and additional elements and accessories
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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 TM5SDI12D - reference product for Modicon TM5 I/O Expansion Module range presents the following relevant environmental aspects

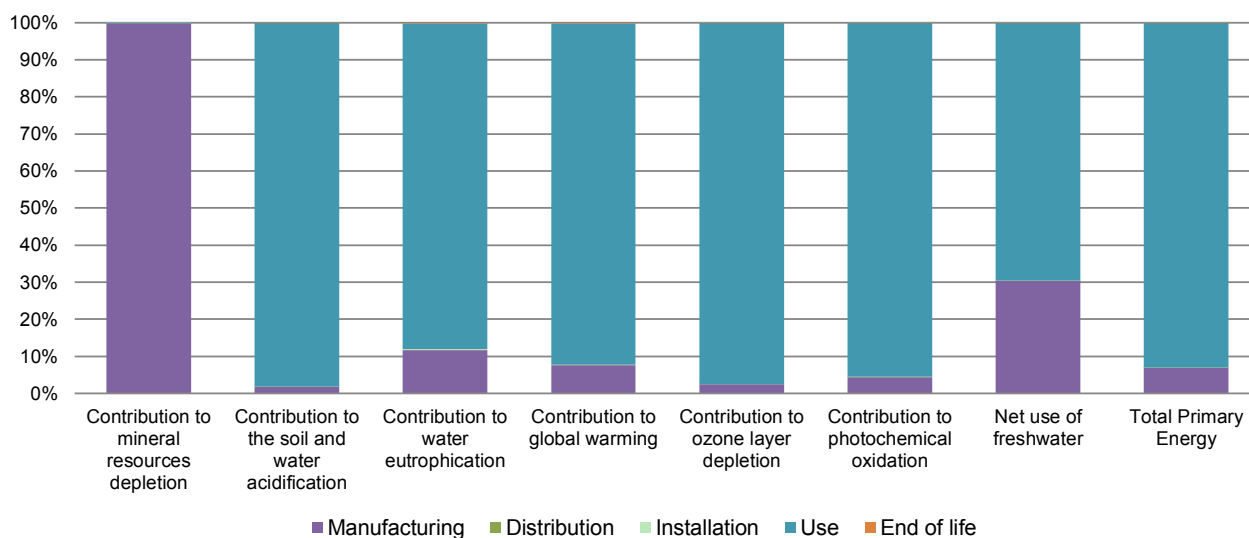
Manufacturing	Manufactured at a production site complying with the regulations
Distribution	Weight and volume of the packaging optimized, based on the European Union's packaging directive Packaging weight is 17,5 g, consisting of cardboard (44%), paper (56%)
Installation	The product range does not require any installation operations
Use	The product range does not require special maintenance operations
End of life	End of life is optimized to decrease the amount of waste and allow recovery of the product components and materials This product contains Electronic card (9,2g) that should be separated from the stream of waste so as to optimize end-of-life treatment 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 http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page Recyclability potential: 5% 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)



Environmental impacts

Reference life time	10 years			
Product category	Active products			
Installation elements	There are no special components needed for the product range installation			
Use scenario	The product is active 100% of the time for 10 years, with a reference power dissipation of 0,18W			
Geographical representativeness	Europe			
Technological representativeness	The TM5SDI12D is the reference product for the Modicon TM5 I/O Expansion Module (Analog / Digital / Expert) range. It complements the embedded I/O in the various TM258 logic controllers, LMC058 motion controllers and Pac Drive controllers These products are used to adapt to the application requirements as closely as possible			
Energy model used	Manufacturing	Installation	Use	End of life
	Energy model used: Austria	Electricity Mix; AC; consumption mix, at consumer; < 1kV; EU-27	Electricity Mix; AC; consumption mix, at consumer; < 1kV; EU-27	Electricity Mix; AC; consumption mix, at consumer; < 1kV; EU-27

Compulsory indicators		TM5SDI12D - reference product for Modicon TM5 I/O Expansion Module range - TM5SDI12D					
Impact indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Contribution to mineral resources depletion	kg Sb eq	3,89E-04	3,89E-04	0*	0*	4,24E-07	0*
Contribution to the soil and water acidification	kg SO ₂ eq	7,18E-02	1,34E-03	2,19E-05	0*	7,04E-02	9,59E-06
Contribution to water eutrophication	kg PO ₄ ³⁻ eq	3,00E-03	3,49E-04	5,04E-06	3,65E-06	2,64E-03	4,35E-06
Contribution to global warming	kg CO ₂ eq	1,01E+01	7,74E-01	4,79E-03	1,22E-02	9,31E+00	1,29E-02
Contribution to ozone layer depletion	kg CFC11 eq	2,32E-06	5,96E-08	0*	0*	2,26E-06	5,65E-10
Contribution to photochemical oxidation	kg C ₂ H ₄ eq	3,49E-03	1,55E-04	1,56E-06	5,77E-07	3,33E-03	8,06E-07
Resources use	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Net use of freshwater	m3	3,49E-02	1,07E-02	0*	5,58E-06	2,43E-02	6,97E-06
Total Primary Energy	MJ	2,03E+02	1,42E+01	6,78E-02	2,93E-02	1,89E+02	4,69E-02



Optional indicators		TM5SDI12D - reference product for Modicon TM5 I/O Expansion Module range - TM5SDI12D					
Impact indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Contribution to fossil resources depletion	MJ	1,07E+02	1,05E+01	6,74E-02	2,40E-02	9,59E+01	3,94E-02
Contribution to air pollution	m³	4,75E+02	7,53E+01	2,04E-01	2,18E-01	3,99E+02	2,96E-01
Contribution to water pollution	m³	4,70E+02	7,78E+01	7,88E-01	4,64E-01	3,91E+02	6,00E-01
Resources use	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Use of secondary material	kg	1,05E-01	1,05E-01	0*	0*	0*	0*
Total use of renewable primary energy resources	MJ	1,45E+01	9,84E-01	0*	0*	1,35E+01	0*
Total use of non-renewable primary energy resources	MJ	1,88E+02	1,32E+01	6,77E-02	2,93E-02	1,75E+02	4,69E-02
Use of renewable primary energy excluding renewable primary energy used as raw material	MJ	1,42E+01	7,37E-01	0*	0*	1,35E+01	0*
Use of renewable primary energy resources used as raw material	MJ	2,46E-01	2,46E-01	0*	0*	0*	0*
Use of non renewable primary energy excluding non renewable primary energy used as raw material	MJ	1,88E+02	1,24E+01	6,77E-02	2,93E-02	1,75E+02	4,69E-02
Use of non renewable primary energy resources used as raw material	MJ	8,47E-01	8,47E-01	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	1,72E+00	1,65E+00	0*	2,10E-02	0*	4,70E-02
Non hazardous waste disposed	kg	3,57E+01	8,92E-01	0*	0*	3,48E+01	0*
Radioactive waste disposed	kg	2,85E-02	1,08E-04	0*	0*	2,84E-02	0*
Other environmental information	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Materials for recycling	kg	8,22E-02	6,72E-02	0*	1,40E-02	0*	9,56E-04
Components for reuse	kg	0,00E+00	0*	0*	0*	0*	0*
Materials for energy recovery	kg	2,48E-02	1,80E-02	0*	3,49E-03	0*	3,35E-03
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 v5.5, database version 2015-04

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

To extrapolate the environmental impact to another product from the range, apply the following extrapolation rules to each indicator per life cycle stage:

MANUFACTURING(i) = Mass of electronics in grams / 9,2

DISTRIBUTION (i) = Mass of (product+packaging) in grams / 27,3

INSTALLATION (i) = Mass of (packaging) in grams / (7,6)

USE (i) = Power dissipated in Watts / (0,18)

END OF LIFE (i) = Mass of (product) in grams / (19,7)

TOTAL (i) = $\sum$ Life Cycle Stages (i)

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

Registration N°	SCHN-00094-V01.01-EN	Drafting rules	PCR-ed3-EN-2015 04 02
Verifier accreditation N°	VH08	Information and reference documents	www.pep-ecopassport.org
Date of issue	01/09/2016	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). 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 » Environmental data in alignment with EN 15804 : 2012 + A1 : 2013			



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