

Product Environmental Profile

Modicon M241 analog current inputs cartridge

Modicon M241 Cartridges I/Os





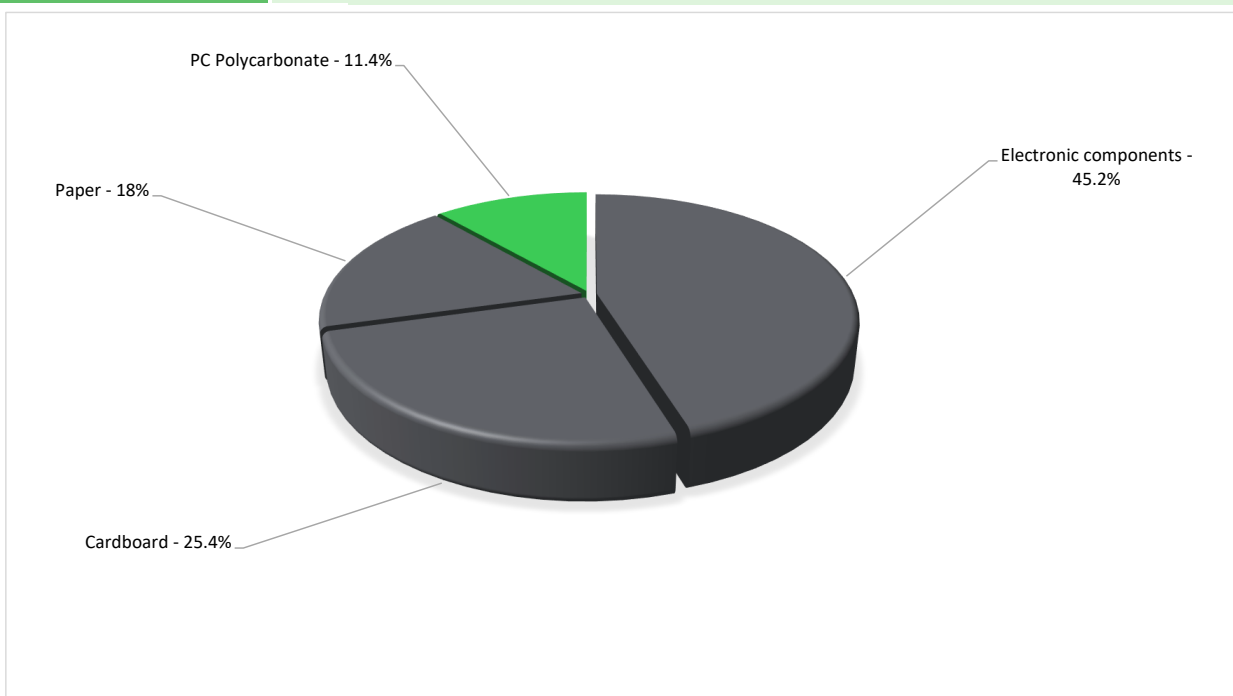
General information

Reference product	Modicon M241 analog current inputs cartridge - TMC4AI2
Description of the product	This product is part of the Modicon M241 range, an offer of logic controllers for performance demanding applications. This analogue input cartridge is for logic controllers.
Description of the range	The products of the range are: The main purpose of the TMC Cartridge is to provide more IO capacity of TM221 & TM241 which includes analog input and output, temperature input. The environmental impacts of this reference product are representative of the impacts of the other products of the range which are developed with a similar technology.
Functional unit	To extend I/O communication capacities (2 analog inputs/outputs, 2 temperature inputs) of the Modicon M221 and M241 Logic Controllers 100% of the time for 10 years based on following parameter:
Specifications are:	Technical data -Supply voltage limits: 20.4...28.8 V -Analogue input number: 2 -Analogue input resolution: 16 bits



Constituent materials

Reference product mass	74 g	including the product, its packaging and additional elements and accessories
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Plastics	11.40%
Metals	0.00%
Others	88.60%



Substance assessment

Details of ROHS and REACH substances information are available on the Schneider-Electric Green Premium website

<https://www.se.com/ww/en/work/support/green-premium/>



Additional environmental information

End Of Life	Recyclability potential:	0%	The recyclability rate was calculated from the recycling rates of each material making up the product with the exception of data using the ESR database. For materials or components using the ESR database or the absence of data the conservative hypothesis "0% recyclability" was used.
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Environmental impacts

Reference service life time	10 years			
Product category	Other equipments - Active product			
Installation elements	The product does not require any installation operations			
Use scenario	The product is in active mode 100% of the time with a power use of 0.72W for 10 years			
Time representativeness	The collected data are representative of the year 2023			
Technological representativeness	The Modules of Technologies such as material production, manufacturing processes and transport technology used in the PEP analysis (LCA EIME in the case) are Similar and representative of the actual type of technologies used to make the product.			
Geographical representativeness	Rest of the World			
Energy model used	[A1 - A3]	[A5]	[B6]	[C1 - C4]
	Electricity Mix; High voltage; 2018; Indonesia, ID	Electricity Mix; Low voltage; 2018; China, CN	Electricity Mix; Low voltage; 2018; China, CN	Electricity Mix; Low voltage; 2018; China, CN
		Electricity Mix; Low voltage; 2018; United States, US	Electricity Mix; Low voltage; 2018; United States, US	Electricity Mix; Low voltage; 2018; United States, US
		Electricity Mix; Low voltage; 2018; Turkey, TR	Electricity Mix; Low voltage; 2018; Turkey, TR	Electricity Mix; Low voltage; 2018; Turkey, TR
		Electricity Mix; Low voltage; 2018; Italy, IT	Electricity Mix; Low voltage; 2018; Italy, IT	Electricity Mix; Low voltage; 2018; Italy, IT
		Electricity Mix; Low voltage; 2018; Germany, DE	Electricity Mix; Low voltage; 2018; Germany, DE	Electricity Mix; Low voltage; 2018; Germany, DE

Detailed results of the optional indicators mentioned in PCRed4 are available in the LCA report and on demand in a digital format - Country Customer Care Center - <http://www.schneider-electric.com/contact>

Mandatory Indicators			Modicon M241 analog current inputs cartridge - TMC4AI2					
Impact indicators	Unit	Total (without Module D)	[A1 - A3] - Manufacturing	[A4] - Distribution	[A5] - Installation	[B1 - B7] - Use	[C1 - C4] - End of life	[D] - Benefits and loads
Contribution to climate change	kg CO2 eq	5.14E+01	9.42E+00	5.92E-03	0*	4.18E+01	1.48E-01	0.00E+00
Contribution to climate change-fossil	kg CO2 eq	5.14E+01	9.40E+00	5.92E-03	0*	4.18E+01	1.35E-01	0.00E+00
Contribution to climate change-biogenic	kg CO2 eq	5.20E-02	1.85E-02	0*	0*	2.00E-02	1.35E-02	0.00E+00
Contribution to climate change-land use and land use change	kg CO2 eq	9.99E-06	9.99E-06	0*	0*	0*	0*	0.00E+00
Contribution to ozone depletion	kg CFC-11 eq	1.15E-06	9.44E-07	0*	0*	2.06E-07	1.16E-10	0.00E+00
Contribution to acidification	mol H+ eq	3.34E-01	5.80E-02	3.95E-05	0*	2.75E-01	1.08E-04	0.00E+00
Contribution to eutrophication, freshwater	kg (PO4) ³⁻ eq	3.41E-05	1.42E-05	0*	3.64E-09	1.91E-05	7.82E-07	0.00E+00
Contribution to eutrophication marine	kg N eq	3.91E-02	8.65E-03	1.86E-05	4.68E-06	3.04E-02	5.44E-05	0.00E+00
Contribution to eutrophication, terrestrial	mol N eq	4.58E-01	9.29E-02	2.04E-04	4.76E-05	3.64E-01	5.58E-04	0.00E+00
Contribution to photochemical ozone formation - human health	kg NMVOC eq	1.29E-01	2.79E-02	5.18E-05	0*	1.01E-01	1.35E-04	0.00E+00
Contribution to resource use, minerals and metals	kg Sb eq	1.30E-03	1.30E-03	0*	0*	1.08E-06	0*	0.00E+00
Contribution to resource use, fossils	MJ	8.31E+02	1.17E+02	0*	0*	7.14E+02	1.95E-01	0.00E+00
Contribution to water use	m3 eq	3.56E+00	1.88E+00	0*	1.74E-03	1.67E+00	5.42E-03	0.00E+00

Inventory flows Indicators		Modicon M241 analog current inputs cartridge - TMC4AI2						
Inventory flows	Unit	Total (without Module D)	[A1 - A3] - Manufacturing	[A4] - Distribution	[A5] - Installation	[B1 - B7] - Use	[C1 - C4] - End of life	[D] - Benefits and loads
Contribution to use of renewable primary energy excluding renewable primary energy used as raw material	MJ	1.10E+02	3.19E+00	0*	0*	1.06E+02	0*	0.00E+00
Contribution to use of renewable primary energy resources used as raw material	MJ	6.34E-01	6.34E-01	0*	0*	0*	0*	0.00E+00
Contribution to total use of renewable primary energy resources	MJ	1.10E+02	3.82E+00	0*	0*	1.06E+02	0*	0.00E+00
Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material	MJ	8.30E+02	1.16E+02	0*	0*	7.14E+02	1.95E-01	0.00E+00
Contribution to use of non renewable primary energy resources used as raw material	MJ	6.77E-01	6.77E-01	0*	0*	0*	0*	0.00E+00
Contribution to total use of non-renewable primary energy resources	MJ	8.31E+02	1.17E+02	0*	0*	7.14E+02	1.95E-01	0.00E+00
Contribution to use of secondary material	kg	2.98E-06	2.98E-06	0*	0*	0*	0*	0.00E+00
Contribution to use of renewable secondary fuels	MJ	0.00E+00	0*	0*	0*	0*	0*	0.00E+00
Contribution to use of non renewable secondary fuels	MJ	0.00E+00	0*	0*	0*	0*	0*	0.00E+00
Contribution to net use of freshwater	m³	8.31E-02	4.39E-02	0*	4.05E-05	3.90E-02	1.26E-04	0.00E+00
Contribution to hazardous waste disposed	kg	2.42E+01	2.31E+01	0*	0*	1.07E+00	3.34E-02	0.00E+00
Contribution to non hazardous waste disposed	kg	8.87E+00	2.20E+00	0*	1.90E-02	6.62E+00	2.38E-02	0.00E+00
Contribution to radioactive waste disposed	kg	1.30E-03	7.47E-04	1.48E-07	0*	5.50E-04	7.53E-07	0.00E+00
Contribution to components for reuse	kg	0.00E+00	0*	0*	0*	0*	0*	0.00E+00
Contribution to materials for recycling	kg	3.51E-07	3.51E-07	0*	0*	0*	0*	0.00E+00
Contribution to materials for energy recovery	kg	0.00E+00	0*	0*	0*	0*	0*	0.00E+00
Contribution to exported energy	MJ	1.30E-06	1.30E-06	0*	0*	0*	0*	0.00E+00
* represents less than 0.01% of the total life cycle of the reference flow								
Contribution to biogenic carbon content of the product	kg de C	0.00E+00						
Contribution to biogenic carbon content of the associated packaging	kg de C	5.34E-03						

Mandatory Indicators		Modicon M241 analog current inputs cartridge - TMC4AI2							
Impact indicators	Unit	[B1 - B7] - Use	[B1]	[B2]	[B3]	[B4]	[B5]	[B6]	[B7]
Contribution to climate change	kg CO2 eq	4.18E+01	0*	0*	0*	0*	0*	4.18E+01	0*
Contribution to climate change-fossil	kg CO2 eq	4.18E+01	0*	0*	0*	0*	0*	4.18E+01	0*
Contribution to climate change-biogenic	kg CO2 eq	2.00E-02	0*	0*	0*	0*	0*	2.00E-02	0*
Contribution to climate change-land use and land use change	kg CO2 eq	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to ozone depletion	kg CFC-11 eq	2.06E-07	0*	0*	0*	0*	0*	2.06E-07	0*
Contribution to acidification	mol H+ eq	2.75E-01	0*	0*	0*	0*	0*	2.75E-01	0*
Contribution to eutrophication, freshwater	kg (PO4)³⁻ eq	1.91E-05	0*	0*	0*	0*	0*	1.91E-05	0*
Contribution to eutrophication marine	kg N eq	3.04E-02	0*	0*	0*	0*	0*	3.04E-02	0*
Contribution to eutrophication, terrestrial	mol N eq	3.64E-01	0*	0*	0*	0*	0*	3.64E-01	0*
Contribution to photochemical ozone formation - human health	kg NMVOC eq	1.01E-01	0*	0*	0*	0*	0*	1.01E-01	0*
Contribution to resource use, minerals and metals	kg Sb eq	1.08E-06	0*	0*	0*	0*	0*	1.08E-06	0*
Contribution to resource use, fossils	MJ	7.14E+02	0*	0*	0*	0*	0*	7.14E+02	0*
Contribution to water use	m3 eq	1.67E+00	0*	0*	0*	0*	0*	1.67E+00	0*

Inventory flows Indicators		Modicon M241 analog current inputs cartridge - TMC4AI2							
Inventory flows	Unit	[B1 - B7] - Use	[B1]	[B2]	[B3]	[B4]	[B5]	[B6]	[B7]
Contribution to use of renewable primary energy excluding renewable primary energy used as raw material	MJ	1.06E+02	0*	0*	0*	0*	0*	1.06E+02	0*
Contribution to use of renewable primary energy resources used as raw material	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to total use of renewable primary energy resources	MJ	1.06E+02	0*	0*	0*	0*	0*	1.06E+02	0*
Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material	MJ	7.14E+02	0*	0*	0*	0*	0*	7.14E+02	0*
Contribution to use of non renewable primary energy resources used as raw material	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to total use of non-renewable primary energy resources	MJ	7.14E+02	0*	0*	0*	0*	0*	7.14E+02	0*
Contribution to use of secondary material	kg	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to use of renewable secondary fuels	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to use of non renewable secondary fuels	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to net use of freshwater	m³	3.90E-02	0*	0*	0*	0*	0*	3.90E-02	0*
Contribution to hazardous waste disposed	kg	1.07E+00	0*	0*	0*	0*	0*	1.07E+00	0*
Contribution to non hazardous waste disposed	kg	6.62E+00	0*	0*	0*	0*	0*	6.62E+00	0*
Contribution to radioactive waste disposed	kg	5.50E-04	0*	0*	0*	0*	0*	5.50E-04	0*
Contribution to components for reuse	kg	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to materials for recycling	kg	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to materials for energy recovery	kg	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to exported energy	MJ	0*	0*	0*	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 v6.1, database version 2023-02 in compliance with ISO14044, EF 3.0 method is applied, for biogenic carbon storage, assessment methodology 0/0 is used

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of other products of this range, ratios to apply can be provided upon request

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 number :	ENVPEP1403017_V4	Drafting rules	PCR-4-ed4-EN-2021 09 06
Date of issue	09-2024	Supplemented by	PSR-0005-ed3-EN-2023 06 06
		Information and reference documents	www.pep-ecopassport.org
		Validity period	5 years
Independent verification of the declaration and data, in compliance with ISO 14021 : 2016			
Internal	X	External	
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)			
PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500 :2022			
The components of the present PEP may not be compared with components from any other program.			
Document complies with ISO 14021:2016 "Environmental labels and declarations. Type II environmental declarations"			

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