

# Product Environmental Profile

## Mallia Senses 1 gang 1 way switch 16AX




### LEGRAND'S ENVIRONMENTAL COMMITMENTS

- Incorporate environmental management into our industrial sites**  
 Of all Legrand sites worldwide, over 85% are ISO 14001-certified (sites belonging to the Group for more than five years).
- Offer our customers environmentally friendly solutions**  
 Develop innovative solutions to help our customers design more energy efficient, better managed and more environmentally friendly installations.
- Involve the environment in product design and provide informations in compliance with ISO 14025**  
 Reduce the environmental impact of products over their whole life cycle.  
 Provide our customers with all relevant information (composition, consumption, end of life, etc.).



### REFERENCE PRODUCT

<b>Function</b>	Establish, support and interrupt the rated current 16AX and rated voltage 250V, for a wall-mounted installation, according to the appropriate use scenario, and for the reference service life of the product of 20 years.
<b>Reference Product</b>	
	Cat.No 281000MW
	1 gang 1 way switch 16AX.

The company reserves the right to change specifications and designs without notice. All illustrations, descriptions, dimensions and weights in the document are for guidance and cannot be held binding on the company.



### PRODUCTS CONCERNED

The environmental data is representative of the following products:

<b>Catalogue Numbers</b> <ul style="list-style-type: none"> <li> <b>1 gang:</b> 281000MW, 281000MB, 281000CH, 281000DS, 281000MG, 281000DB, 281000MWSG, 281000MBSG, 281000CHSG, 281000DS, 281000MGSG, 281000DBSG                 </li> <li> <b>2 gang:</b> 281002MW, 281002MB, 281002CH, 281002DS, 281002MG, 281002DB, 281002MWSG, 281002MBSG, 281002CHSG, 281002DS, 281002MGSG, 281002DBSG                 </li> <li> <b>3 gang:</b> 281004MW, 281004MB, 281004CH, 281004DS, 281004MG, 281004DB, 281004MWSG, 281004MBSG, 281004CHSG, 281004DS, 281004MGSG, 281004DBSG                 </li> <li> <b>4 gang:</b> 281006MW, 281006MB, 281006CH, 281006DS, 281006MG, 281006DB, 281006MWSG, 281006MBSG, 281006CHSG, 281006DS, 281006MGSG, 281006DBSG                 </li> </ul>
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### ■ CONSTITUENT MATERIALS

This Reference Product contains no substances prohibited by the regulations applicable at the time of its introduction to the market. It respects the restrictions on use of hazardous substances as defined in the RoHS directive 2011/65/EU amended by delegated directive (EU) 2015/863, and its amendment 2017/2102/EU.

<b>Total weight of Reference Product</b>	<b>0.15 kg</b> (all packaging included)
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Product alone weight 0.12 kg					
Plastics as % of weight		Metals as % of weight		Other as % of weight	
PC	26.1 %	Steel	40.3 %	Fluid	0.5 %
PP	10.1 %	Copper and copper alloys	1.4 %		
		Silver alloys	<0.1 %		

Packaging (alone) : 0.03 kg					
PP	1.3 %			Cardboard	13.5 %
PE	0.3 %			Wood	6.4 %
				Paper	0.1 %

<b>Total plastics : 0.06 kg</b>	<b>37.8 %</b>	<b>Total metals : 0.06 kg</b>	<b>41.7 %</b>	<b>Total others : 0.03 kg</b>	<b>20.5 %</b>
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At the date of edition of this document, the content of recycled material(s) is :

- Product alone (excluding packaging): 10% by mass
- Packaging only: 56% by mass



### ■ MANUFACTURE

This Reference Product comes from a site that has received ISO14001 certification.



### ■ DISTRIBUTION

Products are distributed from logistics centres located with a view to optimize transport efficiency. The Reference Product is therefore transported over an average distance of 63 km by road from our warehouse to the local point of distribution into the market in United Arab Emirates.

Packaging is compliant with applicable regulation.



### ■ INSTALLATION

For the installation of the product, only standard tools are needed.



### ■ USE

Under normal conditions of use, this product requires no servicing, no maintenance or additional products.

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### END OF LIFE

The product end of life factors are taken into account during the design phase. Dismantling and sorting of components or materials is made as easy as possible with a view to recycling or failing that, another form of reuse.



### ENVIRONMENTAL IMPACTS

The evaluation of environmental impacts examines the stages of the Reference Product life cycle: manufacturing, distribution, installation, use and end of life. It is representative of products marketed and used in United Arab Emirates.

For each phase, the following modelling elements were taken in account:

<b>System Limit</b>	<b>Manufacture A1-A3</b>	Materials and components of the product, all transport for the manufacturing, the packaging and the waste generated by the manufacturing.
	<b>Distribution A4</b>	Transport between the last Group distribution centre and an average delivery point in the sales area.
	<b>Installation A5</b>	The end of life of the packaging.
	<b>Use B1-B7</b>	<ul style="list-style-type: none"> <li>Product category: Switches Wall-mounted - «PSR-0005-ed3-EN-2023 06 06 § 3.7. Specific rules for the 'Switches' family».</li> <li>Use scenario: non-continuous operation in all application area for 20 years at 10% of rated load, during 30% of the time. This modelling duration does not constitute a minimum durability requirement.</li> <li>Energy model: Electricity Mix_Low voltage_2018_Syria_SYR - 2018.</li> </ul>
	<b>End of life C1-C4</b>	Choice of end-of-life by default model for PCR-ed4-EN-2021 09 06
<b>D Module</b>	Module D is calculated according to PCR-ed4-EN-2021 09 06 based on the materials recycled and the modelled end-of-life scenario. It expresses the net benefits and burdens beyond the boundaries of the system, and are not to be included in the life cycle totals.	
<b>Software and data-base used</b>	EIME V6 & its database CODDE-2023-02	

Unless otherwise indicated the modelling energetic mix are those integrated in the data modules used from the aforementioned database.

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### ENVIRONMENTAL IMPACTS

	Total Life Cycle		Manufacturing	Distribution	Installation	Use <sup>(1)</sup>			End of Life	Module D
			A1-A3	A4	A5	Total B1-B7	B2	B6	C1-C4	
Climate change - total	1.34E+00	kg CO <sub>2</sub> eq.	6.63E-01	4.84E-04	1.03E-02	3.65E-01	0*	3.65E-01	3.04E-01	-1.47E-01
Climate change - fossil fuels	1.33E+00	kg CO <sub>2</sub> eq.	6.50E-01	4.84E-04	1.03E-02	3.64E-01	0*	3.64E-01	3.04E-01	-1.50E-01
Climate change - biogenics	1.43E-02	kg CO <sub>2</sub> eq.	1.34E-02	0*	0*	5.76E-04	0*	5.76E-04	2.94E-04	2.94E-03
Climate change - land use and land use transformation	5.89E-05	kg CO <sub>2</sub> eq.	5.89E-05	0*	0*	0*	0*	0*	2.16E-08	0.00E+00
Ozone depletion	1.37E-08	kg CFC-11 eq.	1.18E-08	0*	5.41E-11	2.08E-10	0*	2.08E-10	1.62E-09	3.72E-10
Acidification (AP)	5.70E-03	mole of H <sup>+</sup> eq.	3.71E-03	3.06E-06	2.46E-05	1.44E-03	0*	1.44E-03	5.24E-04	-5.42E-04
Freshwater eutrophication	1.37E-05	kg P eq.	4.93E-06	0*	6.33E-09	3.09E-08	0*	3.09E-08	8.70E-06	2.04E-07
Marine aquatic eutrophication	1.00E-03	kg of N eq.	7.20E-04	1.44E-06	1.13E-05	1.75E-04	0*	1.75E-04	9.55E-05	-6.40E-05
Terrestrial eutrophication	1.10E-02	mole of N eq.	7.84E-03	1.57E-05	1.20E-04	1.92E-03	0*	1.92E-03	1.10E-03	-7.94E-04
Photochemical ozone formation	3.42E-03	kg NMVOC eq.	2.43E-03	3.97E-06	2.88E-05	5.86E-04	0*	5.86E-04	3.67E-04	-3.30E-04
Depletion of abiotic resources - elements	1.55E-04	kg Sb eq.	1.55E-04	0*	0*	0*	0*	0*	-4.56E-07	-6.19E-07
Depletion of abiotic resources - fossil fuels	3.99E+01	MJ	2.43E+01	6.74E-03	3.18E-02	5.21E+00	0*	5.21E+00	1.03E+01	-1.22E+01
Water requirement	2.93E-01	m <sup>3</sup> deprivation worldwide eq.	2.01E-01	0*	3.50E-03	5.63E-03	0*	5.63E-03	8.31E-02	-6.17E-02
Emission of fine particles	3.66E-08	incidence of diseases	2.20E-08	2.49E-11	1.33E-10	1.18E-08	0*	1.18E-08	2.63E-09	-2.58E-09

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

<sup>(1)</sup> For the Use phase and according to the current PCR, the information modules B1, B3, B4, B5 and B7, all having indicator values equal to «0» (zero), are not listed in this table

In accordance with current PCR rules, the environmental indicator values in the «Module D» column must not be summed with the values in the «Total Life Cycle» column

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	Total Life Cycle		Manufacturing	Distribution	Installation	Use <sup>(1)</sup>			End of Life	Module D
			A1-A3	A4	A5	Total B1-B7	B2	B6	C1-C4	
Ionizing radiation, human health	1.48E+00	kBq of U235 eq.	1.48E+00	0*	0*	1.23E-03	0*	1.23E-03	4.02E-03	-1.25E-01
Ecotoxicity (fresh water)	9.61E+00	CTUe	8.25E+00	0*	1.85E-01	1.91E-01	0*	1.91E-01	9.84E-01	3.67E-01
Human toxicity, carcinogenic effects	2.68E-08	CTUh	2.65E-08	0*	2.44E-10	3.31E-11	0*	3.31E-11	2.52E-11	-9.48E-09
Human toxicity, non-carcinogenic effects	1.95E-08	CTUh	1.51E-08	0*	8.67E-11	3.97E-10	0*	3.97E-10	3.89E-09	-4.56E-09
Impacts related to land use/soil quality	2.57E-01	-	1.96E-01	0*	0*	7.39E-03	0*	7.39E-03	5.28E-02	2.22E-04
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	4.69E-01	MJ	3.52E-01	0*	7.10E-05	1.09E-01	0*	1.09E-01	7.55E-03	-7.93E-02
Use of renewable primary energy resources used as raw materials	3.62E-01	MJ	3.62E-01	0*	0*	0*	0*	0*	0*	3.20E-01
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	8.31E-01	MJ	7.14E-01	0*	0*	1.09E-01	0*	1.09E-01	7.55E-03	2.41E-01
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	3.77E+01	MJ	2.21E+01	6.74E-03	3.18E-02	5.21E+00	0*	5.21E+00	1.03E+01	-1.21E+01
Use of non-renewable primary energy resources used as raw materials	2.19E+00	MJ	2.19E+00	0*	0*	0*	0*	0*	0*	-9.97E-02
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	3.99E+01	MJ	2.43E+01	6.74E-03	3.18E-02	5.21E+00	0*	5.21E+00	1.03E+01	-1.22E+01

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

<sup>(1)</sup> For the Use phase and according to the current PCR, the information modules B1, B3, B4, B5 and B7, all having indicator values equal to «0» (zero), are not listed in this table

In accordance with current PCR rules, the environmental indicator values in the «Module D» column must not be summed with the values in the «Total Life Cycle» column

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	Total Life Cycle		Manufacturing	Distribution	Installation	Use <sup>(1)</sup>			End of Life	Module D
			A1-A3	A4	A5	Total B1-B7	B2	B6	C1-C4	
Use of secondary materials	3.46E-02	kg	3.46E-02	0*	0*	0*	0*	0*	0*	0.00E+00
Use of renewable secondary fuels	0.00E+00	MJ	0*	0*	0*	0*	0*	0*	0*	0.00E+00
Use of non-renewable secondary fuels	0.00E+00	MJ	0*	0*	0*	0*	0*	0*	0*	0.00E+00
Net use of fresh water	7.52E-03	m <sup>3</sup>	5.37E-03	0*	8.15E-05	1.31E-04	0*	1.31E-04	1.93E-03	-1.44E-03
Hazardous waste disposed of	3.32E-01	kg	2.26E-01	0*	0*	6.71E-05	0*	6.71E-05	1.06E-01	-5.59E-02
Non-hazardous waste disposed of	3.69E-01	kg	3.00E-01	0*	3.33E-02	2.62E-02	0*	2.62E-02	8.83E-03	1.31E-02
Radioactive waste disposed of	2.18E-04	kg	1.93E-04	0*	1.41E-07	1.56E-05	0*	1.56E-05	9.46E-06	5.99E-06
Components for re-use	0.00E+00	kg	0*	0*	0*	0*	0*	0*	0*	0.00E+00
Materials for recycling	6.99E-02	kg	1.65E-02	0*	0*	0*	0*	0*	5.34E-02	0.00E+00
Materials for energy recovery	0.00E+00	MJ by energy vector	0*	0*	0*	0*	0*	0*	0*	0.00E+00
Exported energy	0.00E+00	MJ	0*	0*	0*	0*	0*	0*	0*	0.00E+00
Total use of primary energy during the life cycle	4.07E+01	MJ	2.50E+01	6.75E-03	3.19E-02	5.32E+00	0*	5.32E+00	1.03E+01	-1.20E+01
Biogenic carbon content of the product	0.00E+00	kg of C	0*	0*	0*	0*	0*	0*	0*	0.00E+00
Biogenic carbon content of the associated packaging	9.69E-03	kg of C	9.69E-03	0*	0*	0*	0*	0*	0*	0.00E+00

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

<sup>(1)</sup> For the Use phase and according to the current PCR, the information modules B1, B3, B4, B5 and B7, all having indicator values equal to «0» (zero), are not listed in this table

In accordance with current PCR rules, the environmental indicator values in the «Module D» column must not be summed with the values in the «Total Life Cycle» column

The values of the indicators defined in the PCR-ed4-EN-2021 09 06 are available in the digital database of pep-ecopassport.org website.

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### ENVIRONMENTAL IMPACTS

The environmental impacts are calculated for a configuration composed by 2 gang, 3 gang, 4 gang switch For a configuration (281002MW, 281004MW, 281006MW), the environmental impacts of each phase of the lifecycle are obtained by adopting the following coefficients on those of the Reference Product.

	Total LCA			Manufacturing [A1-A3]			Distribution [A4]			Installation [A5]			Use [B1-B7]			B2	B6			End of life [C1-C4]		
	281002MW 2 gang	281004MW 3 gang	281006MW 4 gang	281002MW 2 gang	281004MW 3 gang	281006MW 4 gang	281002MW 2 gang	281004MW 3 gang	281006MW 4 gang	281002MW 2 gang	281004MW 3 gang	281006MW 4 gang	281002MW 2 gang	281004MW 3 gang	281006MW 4 gang	281002MW/ 281004MW/ 281006MW 2 gang/3 gang/4 gang	281002MW 2 gang	281004MW 3 gang	281006MW 4 gang	281002MW 2 gang	281004MW 3 gang	281006MW 4 gang
Climate change - total																						
Climate change - fossil fuels																						
Climate change - biogenics																						
Climate change - land use and land use transformation																						
Ozone depletion																						
Acidification (AP)																						
Freshwater eutrophication																						
Marine aquatic eutrophication																						
Terrestrial eutrophication																						
Photochemical ozone formation																						
Depletion of abiotic resources - elements																						
Depletion of abiotic resources - fossil fuels																						
Water requirement																						
Emission of fine particles																						
Ionizing radiation, human health																						
Ecotoxicity (fresh water)																						
Human toxicity, carcinogenic effects																						
Human toxicity, non-carcinogenic effects																						
Impacts related to land use/soil quality																						
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials																						
Use of renewable primary energy resources used as raw materials	1.2	1.5	1.8	1.1	1.3	1.5	1	1.1	1.1	1	1	1	2.1	3.1	4.9	1	2.1	3.1	4.9	1.2	1.4	1.7
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)																						
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials																						
Use of non-renewable primary energy resources used as raw materials																						
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)																						
Use of secondary materials																						
Use of renewable secondary fuels																						
Use of non-renewable secondary fuels																						
Net use of fresh water																						
Hazardous waste disposed of																						
Non-hazardous waste disposed of																						
Radioactive waste disposed of																						
Components for re-use																						
Materials for recycling																						
Materials for energy recovery																						
Exported energy																						
Total use of primary energy during the life cycle																						
Biogenic carbon content of the product																						
Biogenic carbon content of the associated packaging																						

# Product Environmental Profile

**Mallia Senses**  
**1 gang 1 way switch 16AX**



Registration number: <b>LGRP-01654-V01.01-EN</b>	Drafting rules: « <b>PEP-PCR-ed4-EN-2021 09 06</b> » <b>Supplemented by «PSR-0005-ed3-2023 06 06»</b>
Verifier accreditation N°: <b>VH08</b>	Information and reference documents : <b>www.pep-ecopassport.org</b>
Date of issue : <b>01-2024</b>	Validity period : <b>5 years</b>
<b>Independent verification of the declaration and data, in compliance with ISO 14025 : 2006</b>	
<b>Internal</b> <input type="checkbox"/> <b>External</b> <input checked="" type="checkbox"/>	
The PCR review was conducted by a panel of experts chaired by Julie ORGELET (DDemain)	
PEP are compliant with XP C08-100-1 :2016 or EN 50693 :2019 The elements of the present PEP cannot be compared with elements from another program	
Document in compliance with ISO 14025 : 2006: «Environmental labels and declarations. Type III environmental declarations»	

Environmental data in alignment with EN 15804: 2012 + A2 : 2019