

# PRODUCT ENVIRONMENTAL PROFILE

## Schneider Electric



REGISTRATION NUMBER SCHN-01338-V01.01-EN	IN COMPLIANCE WITH PCR-ED4_EN2021 0906 SUPPLEMENTED BY PSR-0005-ED3.1-EN-2023 12 08
VERIFIER ACCREDITATION NUMBER VH52	INFORMATION AND REFERENCE DOCUMENTS <a href="http://WWW.PEPE-ECOPASSPORT.ORG">WWW.PEPE-ECOPASSPORT.ORG</a>
DATE OF ISSUE 01-2025	VALIDITY PERIOD 5 YEARS
INDEPENDENT VERIFICATION OF DECLARATION AND DATA, IN COMPLIANCE WITH ISO 14025:2006	
INTERNAL <input type="checkbox"/>	EXTERNAL <input checked="" type="checkbox"/>
THE PCR REVIEW WAS CONDUCTED BY A PANEL OF EXPERTS CHAIRED BY JULIE ORGELET (DDE MAIN)	
PEP ARE COMPLIANT WITH XP C08-100-1:2016 OR EN 50693:2019 THE ELEMENTS OF THE PRESNET PEPCANNOT BE COMPARED WITH ELEMENTS FROM ANOTHER PROGRAM.	
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### **Company Information**

<b>Company name</b>	Schneider Electric Industries SAS
<b>Company address</b>	35, Rue Joseph Monier CS 30323 F-92500 Rueil Malmaison Cedex "RCS Nanterre 954 503 439 Capital Social 928 298 512 €"
<b>Company website</b>	www.se.com

### **General Information**

<b>Representative product</b>	RE10RCMUN – Harmony Timer Relay
<b>Description of the product</b>	It maintains an output signal for a set period after the input signal is turned off. This delay allows connected equipment or circuits to keep running for a specified time, ensuring smooth transitions and controlled shutdowns in automated processes.
<b>Functional unit</b>	Providing time-controlled switching for electrical devices in an installation, ensuring reliable operation under specified conditions (voltage, current, and environmental factors) for a service life of 10 years. The usage profile taken into account is 80% active and 20% off in use phase.

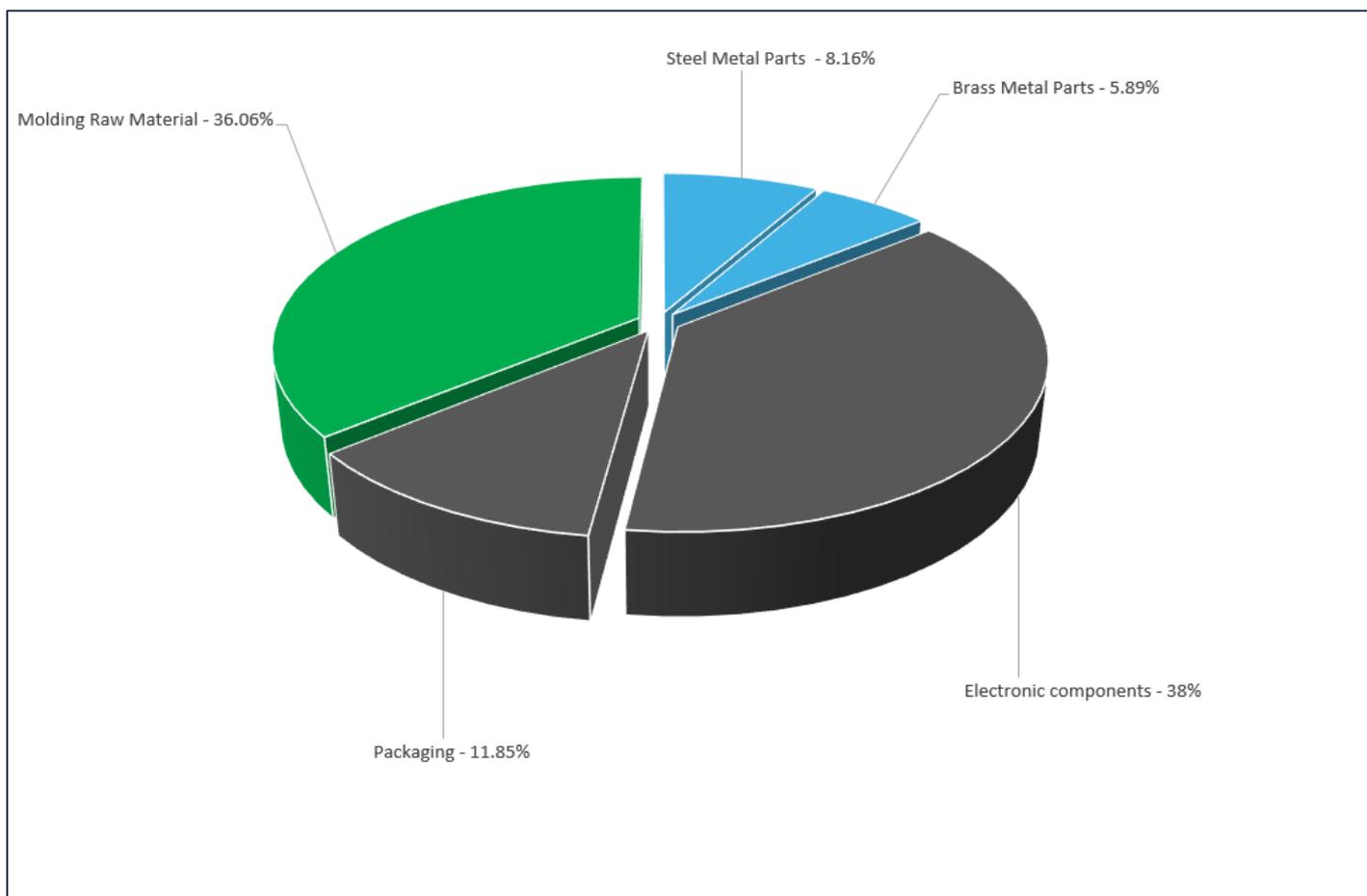
### **Product's Key Features**

<b>Supply Voltage</b>	240 VAC / 24 VAC/DC, '-15% to +10%'
<b>Supply Frequency</b>	47 Hz to 63 Hz
<b>Power Consumption</b>	0.75 W @ 24 VDC / 7 VA @ 240 VAC
<b>Contact Rating</b>	5A (Resistive) @ 240 VAC / 28 VDC
<b>Operating Temperature</b>	-15°C to +60°C
<b>Setting Accuracy</b>	±5% of full scale
<b>Timing Ranges (T)</b>	3s, 30s, 3m, 30m, 3hr, and 30hr
<b>Timing Adjustment (t)</b>	0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, and 1
<b>Reset Time</b>	100 ms (maximum)

## Constituent Materials

**Reference product mass** 80 g including product raw materials and its packaging

Material category	%
Metals	43.23
Plastic	34.92
Other	21.85



### **Details of life cycle stages**

<b>Manufacturing</b>	<b>Distribution</b>	<b>Installation</b>	<b>Use</b>	<b>End-of-life</b>	<b>Benefits beyond life cycle</b>
<ul style="list-style-type: none"> <li>-Acquisition of raw materials</li> <li>-Transportation to manufacturing site</li> <li>-Manufacturing, assembly and packaging</li> <li>- EoL treatment of generated waste</li> </ul>	<ul style="list-style-type: none"> <li>- Transportation to distributor/ logistic center</li> </ul>	<ul style="list-style-type: none"> <li>- Installation</li> <li>- EoL treatment of generated waste (Packaging)</li> </ul>	<ul style="list-style-type: none"> <li>- Usage</li> </ul>	<ul style="list-style-type: none"> <li>- Deinstallation</li> <li>- Collection and transport</li> <li>- EoL treatment (disposal)</li> </ul>	<ul style="list-style-type: none"> <li>- Benefits from recyclable material</li> </ul>

#### **Additional details:**

##### **a) Manufacturing stage-**

This stage includes raw material extraction, its transport to the manufacturing site and the manufacturing process. Some material after the products use can be recycled but is not reused in product manufacturing. Hence, the recycled content is 0%. The waste generated during manufacturing is considered under non-hazardous waste. The transportation of manufacturing waste is also considered in this stage and is assumed to be 100 km. Raw material packaging is also considered with an assumption of an average packaging content of 5% of the reference product mass which shall be treated as 100% incineration without heat recovery. No packaging material is reused on site. The Indian (western grid) energy mix is used in this phase. The emission due to manufacturing and packaging waste which is scraped is also considered which is plastic. The emission due to manufacturing and packaging waste (polycarbonate and packaging plastic) which is scraped is considered. The scrap rate is considered based on default values from PSR. The treatment considered for the scrap is 100% incineration.

**b) Distribution stage-**

This stage includes finished product transport from manufacturing site to implementation site and a global database is considered for the same. There is no electricity consumption in this phase.

**c) Installation stage-**

This stage includes the emissions during installation. Also, end of life of packaging and its transportation is included. The transportation is assumed to be 100 km by truck and the packaging waste is treated as 100% incineration without heat recovery. There is no electricity consumption in this phase.

**d) Use stage-**

This stage includes the electricity consumption during the use of the product. The delay timer consumes around 0.845 W electricity. Considering the 10 years of service life; 80% of which is active and 20% off (inactive), the total electricity is 59.216 kWh. The global energy mix is used in this phase.

**e) End of life and module D stage-**

This stage includes emissions caused due to disposal scenario considered and benefits achieved beyond the life cycle. In this case, 30% of the material is assumed to be disposed to landfill and 70% of the total product material is assumed to be recyclable. There is no electricity consumption in this phase.

***Additional Environmental Information***

<b>Design</b>	The product is designed as per IEC/ EN standards and complies to UL, CCC.
<b>Manufacturing</b>	All the manufacturing is done on site in India which is ISO 9001, ISO14001, ISO 45001 certified.
<b>Distribution</b>	The product outreach is all over the world majorly Asia-Pacific, Europe and USA.
<b>Installation</b>	The product does not require any installation operations.
<b>Use</b>	The product does not require any maintenance operations.
<b>End of life</b>	This product contains steel, plastic and various electronic components which should be separately disposed for recovery of materials which is assumed to be around 70%.

## ***Environmental Impacts***

<b>Reference service life</b>	10 years	
<b>Use scenario</b>	The product is in active phase for 80% of the time and off for the rest 20% of the time with an electricity consumption of 0.845 W.	
<b>Time representativeness</b>	Data collection regarding manufacturing of the Harmony Timer Relay is done in Jan 2023- Dec 2023	
<b>Geographical representativeness</b>	Global	
<b>Technological representativeness</b>	The Harmony Timer Relay manufacturing process involves raw material inspection, component preparation, PCB assembly with automated and manual soldering, testing, and final assembly, including casing and marking. The finished product undergoes inspection before packing for distribution.	
<b>Software usage</b>	SimaPro v 9.6.0.1	
<b>Secondary database</b>	Ecoinvent v3.10	
<b>Energy model used</b>	<b>Manufacturing</b>	<b>Use</b>
	Market energy for Indian region Electricity, high voltage {IN-Western grid}   market for electricity, high voltage   Cut-off, U	Market energy for global region Electricity, high voltage {GLO}  market group for electricity, high voltage   Cut-off, U

Compulsory Indicators								
Indicators	Unit	Manufacturing	Distribution	Installation	Use	End of life	Total	Benefits beyond life cycle
Acidification	mol H+ eq	4.67E-02	1.18E-04	7.47E-07	2.04E-01	1.38E-02	2.64E-01	-3.23E-02
Climate change	kg CO2 eq	5.62E+00	6.03E-03	3.26E-04	4.22E+01	1.58E+00	4.94E+01	-3.67E+00
Climate change - Biogenic	kg CO2 eq	3.20E-03	-1.15E-06	9.51E-09	5.63E-02	7.18E-04	6.02E-02	-1.68E-03
Climate change - Fossil	kg CO2 eq	5.61E+00	6.02E-03	3.26E-04	4.21E+01	1.57E+00	4.93E+01	-3.67E+00
Climate change - Land use and LU change	kg CO2 eq	7.05E-03	2.90E-06	1.32E-07	5.67E-02	2.08E-03	6.59E-02	-4.86E-03
Ecotoxicity, freshwater - part 1	CTUe	2.75E+01	1.20E-02	8.95E-04	7.27E+01	7.36E+00	1.08E+02	-1.72E+01
Ecotoxicity, freshwater - part 2	CTUe	1.11E+02	4.26E-03	3.34E-04	2.46E+01	3.32E+01	1.69E+02	-7.74E+01
Ecotoxicity, freshwater - inorganics	CTUe	1.27E+02	9.39E-03	8.05E-04	8.68E+01	3.73E+01	2.51E+02	-8.69E+01
Ecotoxicity, freshwater - organics - p.1	CTUe	4.13E+00	6.43E-03	4.00E-04	9.70E+00	1.23E+00	1.51E+01	-2.86E+00
Ecotoxicity, freshwater - organics - p.2	CTUe	6.89E+00	4.50E-04	2.37E-05	7.94E-01	2.07E+00	9.75E+00	-4.82E+00
Particulate matter	disease inc.	3.15E-07	2.76E-10	2.43E-11	1.83E-06	9.39E-08	2.24E-06	-2.19E-07
Eutrophication, marine	kg N eq	7.65E-03	2.92E-05	1.73E-07	4.11E-02	2.24E-03	5.10E-02	-5.22E-03
Eutrophication, freshwater	kg P eq	6.40E-03	2.94E-07	2.58E-08	1.82E-02	1.89E-03	2.64E-02	-4.41E-03
Eutrophication, terrestrial	mol N eq	8.31E-02	3.24E-04	1.87E-06	4.13E-01	2.44E-02	5.21E-01	-5.70E-02

PEP ecopassport  
SCHN-01338-V01.01-EN

Human toxicity, cancer	CTUh	1.65E-08	2.76E-11	1.71E-12	4.29E-08	4.89E-09	6.43E-08	-1.14E-08
Human toxicity, cancer - inorganics	CTUh	2.49E-09	7.69E-13	2.38E-14	2.56E-09	7.34E-10	5.78E-09	-1.71E-09
Human toxicity, cancer - organics	CTUh	1.40E-08	2.68E-11	1.69E-12	4.04E-08	4.16E-09	5.85E-08	-9.68E-09
Human toxicity, non-cancer	CTUh	2.14E-07	3.06E-11	2.87E-12	2.14E-07	6.21E-08	4.91E-07	-1.45E-07
Human toxicity, non-cancer - inorganics	CTUh	2.05E-07	2.87E-11	2.70E-12	2.06E-07	5.91E-08	4.70E-07	-1.38E-07
Human toxicity, non-cancer - organics	CTUh	9.80E-09	1.95E-12	1.73E-13	8.37E-09	2.94E-09	2.11E-08	-6.85E-09
Ionising radiation	kBq U-235 eq	5.85E-01	4.69E-05	3.80E-06	5.79E+00	1.75E-01	6.55E+00	-4.08E-01
Land use	Pt	2.60E+01	2.22E-02	2.77E-03	8.03E+01	7.71E+00	1.14E+02	-1.80E+01
Ozone depletion	kg CFC11 eq	2.16E-07	8.75E-11	4.83E-12	2.50E-07	6.46E-08	5.30E-07	-1.51E-07
Photochemical ozone formation	kg NMVOC eq	2.59E-02	9.15E-05	1.05E-06	1.23E-01	7.62E-03	1.56E-01	-1.78E-02
Resource use, fossils	MJ	7.03E+01	7.77E-02	4.58E-03	5.46E+02	2.06E+01	6.37E+02	-4.81E+01
Resource use, minerals and metals	kg Sb eq	1.78E-03	1.08E-08	1.06E-09	1.48E-05	5.35E-04	2.33E-03	-1.25E-03
Water use	m3 depriv.	1.62E+00	2.48E-04	2.09E-05	6.60E+00	4.81E-01	8.70E+00	-1.12E+00

Note: All the results are at product level.

Optional Indicators: Resource								
Indicators	Unit	Manufacturing	Distribution	Installation	Use	End of life	Total	Benefits beyond life cycle
PERE	MJ	8.01E+00	7.17E-04	5.79E-05	7.70E+00	7.20E-01	1.64E+01	-3.92E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	8.01E+00	7.17E-04	5.79E-05	7.70E+00	7.20E-01	1.64E+01	-3.92E+00
PENRE	MJ	6.83E+01	7.74E-02	4.54E-03	6.18E+02	6.17E+00	6.93E+02	-3.35E+01
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	6.83E+01	7.74E-02	4.54E-03	6.18E+02	6.17E+00	6.93E+02	-3.35E+01
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m <sup>3</sup>	4.70E-02	6.32E-06	5.56E-07	6.24E-02	4.23E-03	1.14E-01	-2.30E-02

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

Optional Indicators: Waste								
Indicators	Unit	Manufacturing	Distribution	Installation	Use	End of life	Total	Benefits beyond life cycle
Hazardous waste disposed	kg	2.97E-04	4.26E-07	2.90E-08	2.69E-03	2.68E-05	3.01E-03	-1.45E-04
Non-hazardous waste disposed	kg	4.72E-01	1.61E-03	2.23E-04	7.64E-01	4.35E-02	1.28E+00	-2.31E-01
Radioactive waste disposed	kg	1.47E-04	1.13E-08	9.23E-10	7.13E-06	1.33E-05	1.68E-04	-7.22E-05

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

Optional Indicators: Output flow								
Indicators	Unit	Manufacturing	Distribution	Installation	Use	End of life	Total	Benefits beyond life cycle
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total primary energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Optional Indicators: Biogenic		
Indicators	Unit	Total
Biogenic carbon content of the product	kg	1.36E-02
Biogenic carbon content of the product	kg	-1.12E-02

## References

- ISO (2006a), ISO 14025:2006, Environmental labels and declarations – Type III- environmental declarations – Principles and procedures
- ISO (2006b), ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework
- ISO (2006c), ISO 14044: 2006, Environmental management – Life cycle assessment – Requirements and guidelines
- EN50693:2019 – Product category rules for life cycle assessments of electronic and electrical products and systems
- PCR “Electrical, Electronic and HVAC-R products (PEP-PCR-ed4-EN-2021 09 06)”
- PSR “Electrical switchgear and control gear solutions (PSR-0005-ed3.1-EN-2023 12 08).”
- [www.se.com](http://www.se.com)
- SimaPro version 9.6.0.1
- Ecoinvent database version 3.10