Environmental Fact Sheet

Pico wireless control

The aim of this document is to provide relevant and reliable information on the environmental performance of the Pico Wireless Control. Results reported are based on a Life Cycle Assessment (LCA) carried out by an independent company (Sphera).

This environmental information sheet uses the PSR0005 - Electrical Switchgear and Control Gear Solutions, “Contactors, Remote Control Switch” classification, from the PEP ecopassport® Program (PSR-0005-ed3-EN-2023 06 06, supplemented by the PCR PCR-4-ed4-EN-2021 09 06) as a reference, following the specific requirements for “Contactors, remote control switch”, and is based on a Life Cycle Assessment (LCA) study conducted according to DIN ISO 14040/44.

All relevant environmental data relating to climate change (Carbon footprint) as well as an overview of other environmental impact categories applying EN 15804+A2 methodology are disclosed in this information sheet.

Manufacturer

Lutron Electronics Co., Inc.
7200 Suter Rd, Coopersburg, PA 18036

Study conducted by

Sphera Solutions GmbH
Hauptstraße 111-113, 70771 Leinfel-den-Echterdingen, Germany

Product description

The Pico wireless control is a flexible and easy to use device that allows the user to control Lutron wireless load-control devices from anywhere in the space. This battery-operated control requires no external power or communication wiring.

System description

The product system for this study considers the 3BRL product as a baseline, that represents the product family due to its close similarities to other Pico wireless controls in Lutron’s portfolio: the 2B, 2BRL and 4B.

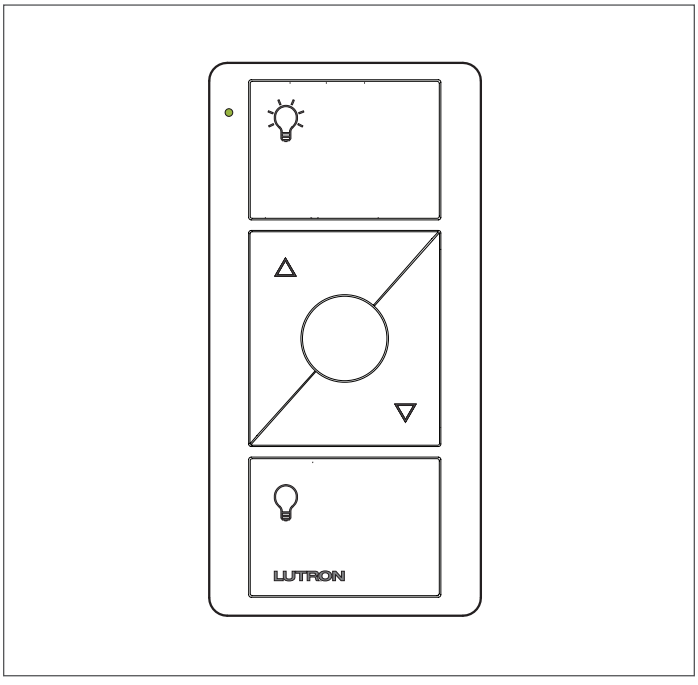
The functional unit is defined according to the PSR standard and the reference unit for this study is one Pico wireless control used over 20 years.

Primary data for the analysis was collected by Lutron including electronics (populated printed wiring boards). Other relevant data, e.g., upstream processing of polymers, metals, magnets, motor, and others including relevant manufacturing processes according to the Bill of Materials information was taken from Sphera’s 2023 Managed LCA Content, which is representative of the state-of-the-art processes.

Product reference

The functional unit as defined by the PSR meets specific standards for one Pico wireless control:

“Establish and cut off the supply of a downstream installation from a wireless, battery powered electrical control characterized by a rated voltage of 3V, a rated current 10mA, in the Household/ Commercial application areas, and during the reference service life of the product of 20 years.”



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Material content

Total weight of reference product (incl. packaging) [g]	0.036	
Plastics	**mass [g]**	**% of total weight**
Polycarbonate (PC)	0.011	30.01%
Total plastics	0.0107	30%
Metals and others	**mass [g]**	**% of total weight**
Battery strap	0.001	2.8%
Battery	0.003	7.9%
Total metals and others	0.004	11%
Mixed parts (plastic and metals)	**mass [g]**	**% of total weight**
Total mixed parts	0.0002	1%
Printed circuit board assembly	**mass [g]**	**% of total weight**
Total PCBA	0.005	14%
Packaging	0.016	44%

Table 1: Material Content of Pico 3BRL Wireless Control

Scope of the LCA

A Cradle-to-Grave LCA study was carried out according to DIN ISO 14040/44 using LCA for Experts software. The system boundary includes upstream raw material production and transportation to the manufacturing site. The Use stage was considered in the US, and domestic End-of-Life (EoL) as the base scenario.

Environmental impacts of the system were calculated following EN15804+A2 with a focus on climate change (kg CO_2 eq.), while also addressing other midpoint impact categories.

Figure 1: Schematic Representation of the Pico Wireless Control's Life Cycle

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Climate change results for the base scenario

The Carbon footprint of one Pico 3BRL Wireless Control is 0.56 kg CO_2 eq. The climate change results show that the Product stage (A1-A3) is the main contributor to the overall impact of the Pico, representing 90% of potential impacts. The Use stage contributes 10% to the overall impact of the Pico. Installation (A4) and end-of-life (EoL) have negligible impacts, representing only 0.2% of the overall impact.

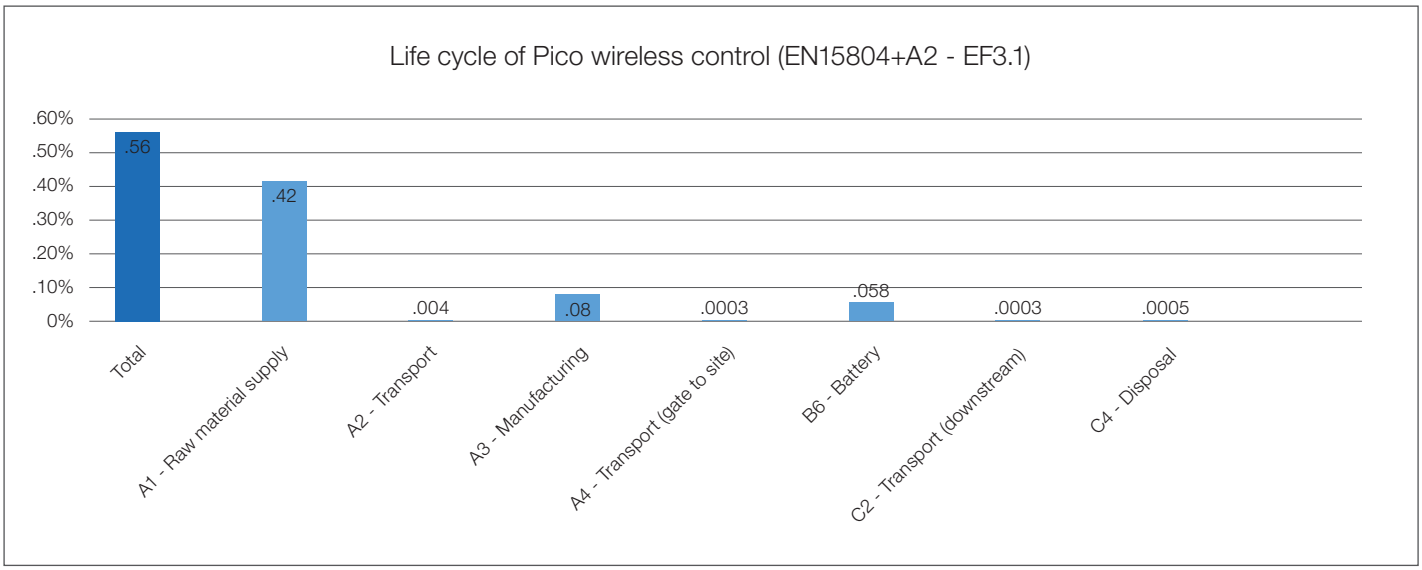

Figure 2: Pico 3BRL Wireless Control Life Cycle Results

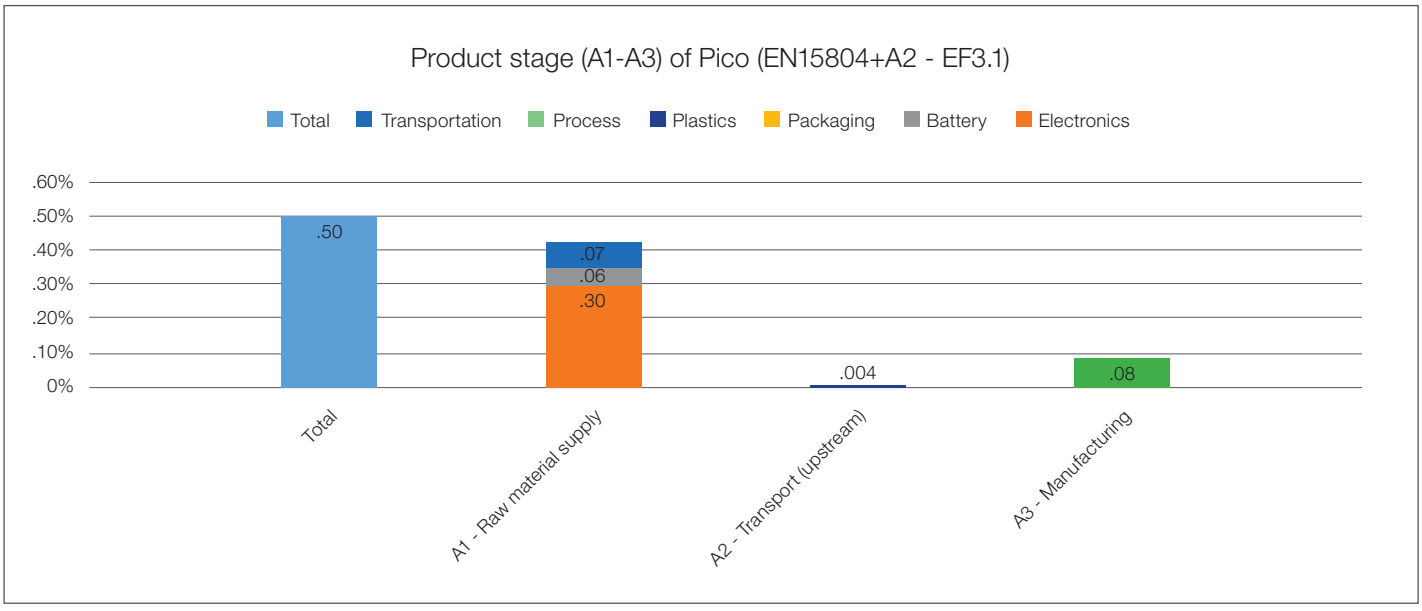

Figure 3: Pico 3BRL Wireless Control Product Stage (A1-A3) Results

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Climate change results comparing the base scenario with different Pico variants

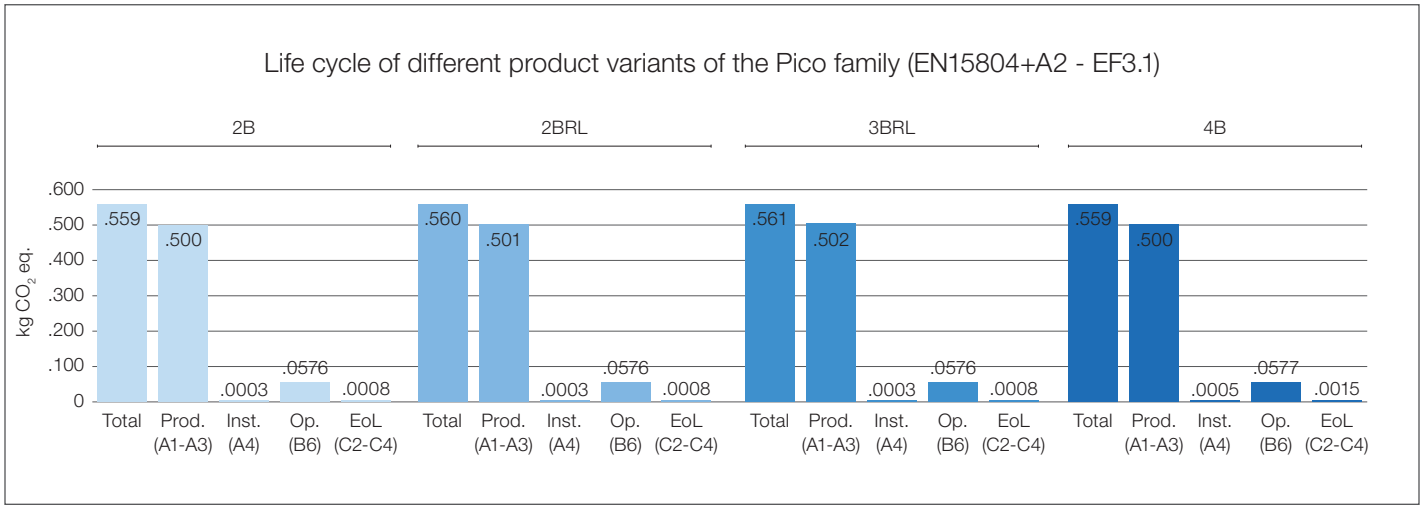

Figure 4: Climate change Potential in the Life Cycle of Different Pico wireless controls

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Additional environmental impact indicators

	Total	A1 - Raw Material Supply	A2 - Transport	A3 - Manuf.	A4 - Transport (gate to site)	B6 - Use (Battery)	C2 - Transport (downstream)	C3 - Waste Processing	C4 - Disposal	D - Reuse/ Recovery/ Recycling Potential
Climate change - total [kg CO_2 eq.]	5.61E-01	4.18E-01	4.07E-03	8.02E-02	2.78E-04	5.76E-02	2.78E-04	0.00E+00	5.12E-04	0.00E+00
Ozone depletion [kg CFC-11 eq.]	1.10E-09	5.52E-10	2.98E-16	2.73E-13	4.09E-17	5.50E-10	4.09E-17	0.00E+00	1.36E-15	0.00E+00
Acidification [Mole of H+ eq.]	5.50E-03	3.57E-03	7.44E-05	7.59E-04	3.86E-07	1.09E-03	3.86E-07	0.00E+00	3.80E-06	0.00E+00
Eutrophication, freshwater [kg P eq.]	5.61E-06	4.44E-06	2.01E-09	7.22E-08	1.15E-09	1.10E-06	1.15E-09	0.00E+00	1.08E-09	0.00E+00
Eutrophication, marine [kg N eq.]	6.10E-04	4.31E-04	3.14E-05	7.47E-05	1.35E-07	7.19E-05	1.35E-07	0.00E+00	9.82E-07	0.00E+00
Eutrophication, terrestrial [Mole of N eq.]	6.10E-03	4.36E-03	3.44E-04	8.27E-04	1.58E-06	5.56E-04	1.58E-06	0.00E+00	1.08E-05	0.00E+00
Photochemical ozone formation, human health [kg NMVOC eq.]	1.83E-03	1.30E-03	8.58E-05	2.43E-04	3.47E-07	2.00E-04	3.47E-07	0.00E+00	2.96E-06	0.00E+00
Resource use, mineral and metals [kg Sb eq.]	6.03E-05	5.24E-05	5.49E-11	3.68E-09	2.08E-11	7.96E-06	2.08E-11	0.00E+00	2.48E-11	0.00E+00
Resource use, fossils [MJ]	8.02E+00	5.97E+00	4.98E-02	1.13E+00	4.28E-03	8.46E-01	4.28E-03	0.00E+00	7.13E-03	0.00E+00
Water use [m^3 world equiv.]	2.50E-01	1.50E-01	1.01E-05	5.44E-02	3.79E-06	4.50E-02	3.79E-06	0.00E+00	5.88E-05	0.00E+00

Table 2: Life Cycle Impact of One 3BRL Pico in EN15804+A2 EF 3.1 categories

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Additional environmental impact indicators

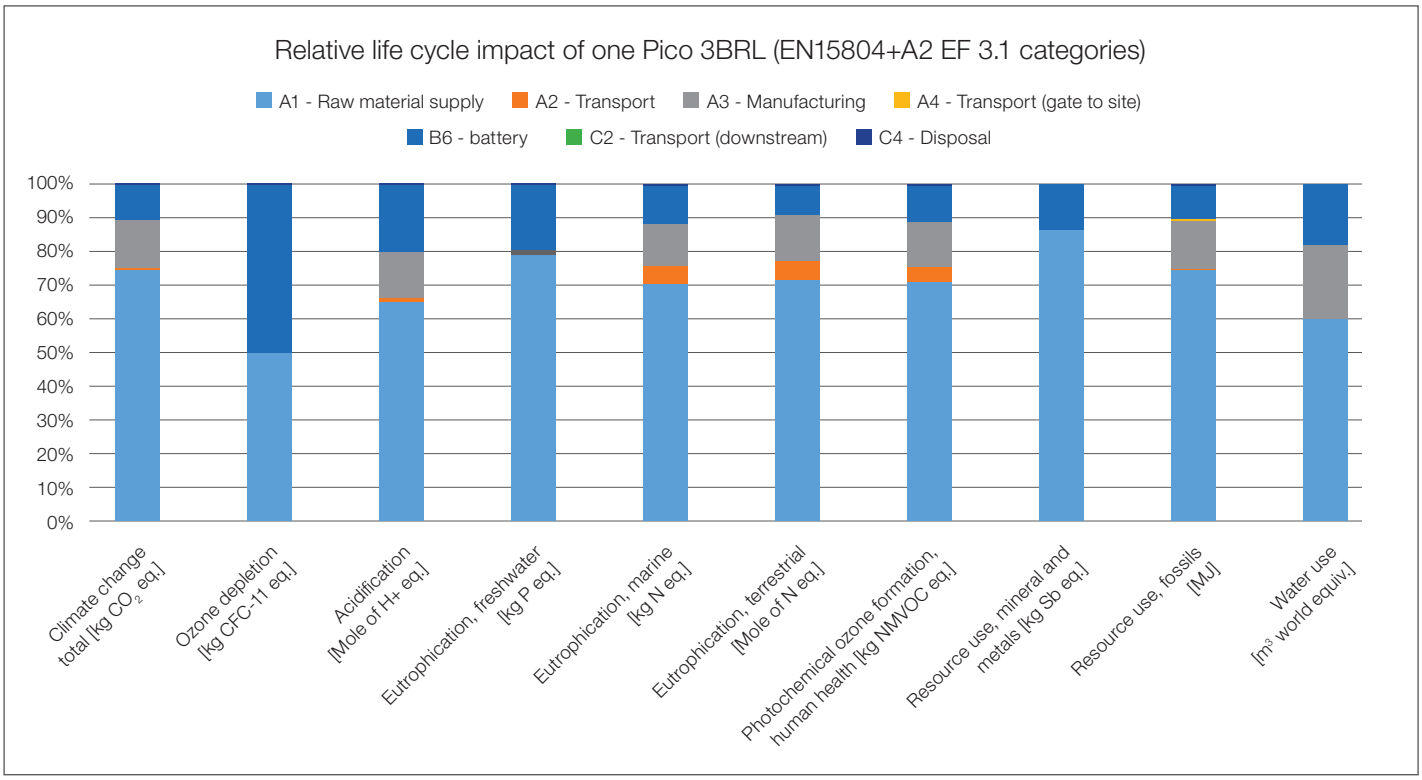

Figure 5: Relative Life Cycle Impact of one Pico 3BRL in EN 15804+A2 categories

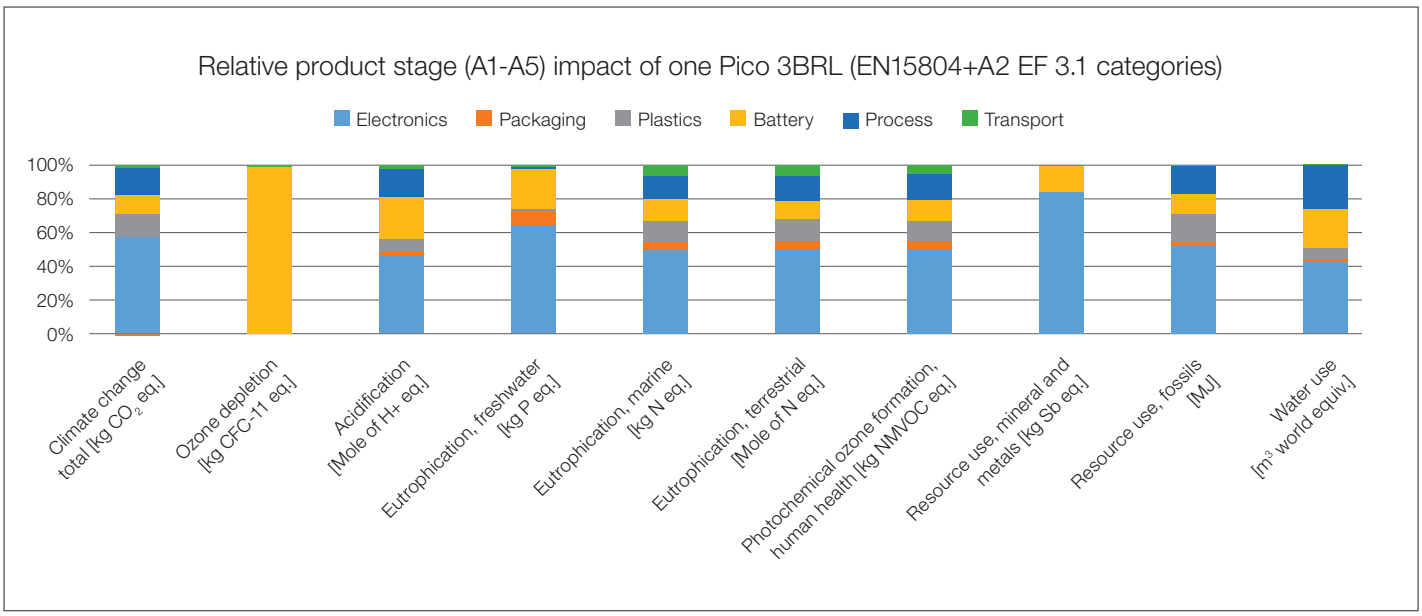

Figure 6: Relative Product Stage (A1-A3) Impact of one Pico 3BRL in EN15804+A2 categories

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Summary and conclusion

Climate change was used as a reference indicator to assess the environmental impact of the Pico products produced by Lutron. The results on all impact categories show that climate change can be used as a good proxy to estimate the environmental impacts of this product. Exception to this rule of thumb is the impact category “resource use, minerals and metals”, which is specifically influenced by metal contents and hence behave differently from the other impact categories.

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