

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

UniStreet/LumiStreet gen2 Solar

VGP282/VGP292/VGP393

Signify N.V.



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Signify N.V.
Address	High Tech Campus 48, 5656 AE Eindhoven, The Netherlands
Contact details	sustainability@signify.com
Website	https://www.signify.com/global

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Electrical product
Category of EPD	Pre-verified EPD
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Sustainability Signify
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☒ Internal certification ☐ External verification

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of lighting products may not be comparable if they do not comply with EN 15804 and if they are not compared in a lighting context.

PRODUCT

Product name	UniStreet/LumiStreet gen2 Solar Mini
Additional labels	VGP282 40 4S/730 24V III DM10 48/60S
Product reference	910925868304
Place of production	Poland
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit of 3520 lumens over 100000 hours
Declared unit mass	4.633 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	1.04E+02
GWP-total, A1-A3 (kgCO ₂ e)	1.03E+02
Secondary material, inputs (%)	6.87
Secondary material, outputs (%)	64.3
Total energy use, A1-A3 (kWh)	301.0
Total water use, A1-A3 (m ³ e)	4.31E-01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Signify is the world leader in lighting for professionals, consumers and lighting for the Internet of Things. Our energy efficient lighting products, systems and services enable our customers to enjoy a superior quality of light, and make people’s lives safer and more comfortable, businesses more productive and cities more liveable.

For more information, please visit: <https://www.signify.com/global>

PRODUCT DESCRIPTION

Designed for large-scale projects, our luminaire is the ideal solution for municipalities who seek to meet their sustainability goals. Thanks to its energy efficiency and low initial cost, UniStreet/UniStreet gen2 Solar enables a fast payback and significant energy savings in a short period of time. All, by using the free, abundant solar power. UniStreet/UniStreet gen2 Solar, comes with several different optics and lumen packages customized to fit exact project requirements. Thanks to Service tag, you will enjoy the benefits of hassle free installation and maintenance while at the end of its lifetime our luminaire is ready to be dismantled and recycled. The compact luminaire, using high-quality materials is also easy to dismantle and recycle at the end of its lifetime

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
-----------------------	-----------------	-----------------

Metals	78.03	APAC , EU
Minerals	16.19	EU
Fossil materials	5.79	APAC , EU
Bio-based materials	0	Not applicable

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.163

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Product
Mass per declared unit	4.633 kg
Functional unit	1 unit of 3520 lumens over 100000 hours
Reference service life	100000 hours

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
x	x	x	x	x	MNR	MNR	MNR	MNR	MNR	x	MNR	MNR	x	x	x	x	
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recycling

Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, electricity, and waste formed in the production processes at Signify’s manufacturing facilities are included in this stage.

The product is made of metals, plastics, and electronic components. All components are transported to Signify’s production facility, where the main manufacturing processes primarily are associated with assembly. The finished product is packaged with polyethylene, cardboard, and/or paper as packaging material before being sent to customers. Manufacturing loss, ancillaries and wastes are calculated according to the data that each manufacturing site is sharing with Signify. The total annual amount of waste in kg is allocated to the total annual production in kg at the specific manufacturing site responsible for the production of the studied luminaire.

Footer_input

Thus, it is possible to allocate it according to the weight of the product analysed in this study. Some of the wastes are due to ancillary materials used during manufacturing while the rest is due to material losses.

TRANSPORT AND INSTALLATION (A4-A5)

Transport distances were calculated on the base of the supplier location and manufacturing location and then made a cumulative group choosing the conservative scenario. Environmental impacts from installation include waste packaging materials (A5). The impacts of energy consumption and the used ancillary materials during installation are considered negligible.

PRODUCT USE AND MAINTENANCE (B1-B7)

During the use phase, the product consumes electricity from Europe’s electricity grid mix (B6). The total power consumption of the reference product is calculated as follows: Wattage x Reference lifetime = kWh consumed throughout the entire use phase B6.

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. It is assumed that the waste is collected separately and transported to the waste treatment centre. Transportation distance to treatment is assumed as 150 km and the transportation method is assumed to be lorry (C2). According to EN 50693:2019, the sequence of treatment operations occurring to the product shall include de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery and disposal. In this study, the default values from table G.4 of EN 50693 is used for treating materials in different waste treatment methods. Due to the material and energy recovery potential of parts in the lighting system, the end-of-life product is converted into recycled raw materials, while the energy recovered from incineration displaces electricity and heat

production (D). The benefits and loads of incineration and recycling are included in Module D.

SYSTEM BOUNDARY



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, ancillary materials, energy & water consumption, material loss and waste generation at the manufacturing site are attributed to the bill of materials of the products, therefore, they are allocated by partitioning the quantities on the base of the total production in kg throughout the year. Thus, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

This EPD is created with a most conservative scenario in A1-A3 in terms of material composition.

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	Not applicable

This EPD is product and factory specific and does not contain average calculations. It is created with a most conservative scenario in A1-A3 in terms of material composition.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent 3.8 database was used as the source of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	1.02E+02	9.48E-01	-5.96E-03	1.03E+02	9.46E-01	6.05E-01	MNR	MNR	MNR	MNR	MNR	8.44E+02	MNR	MNR	6.62E-02	3.07E-01	3.09E-01	-4.83E+01
GWP – fossil	kg CO ₂ e	1.02E+02	9.47E-01	5.80E-01	1.04E+02	9.45E-01	1.61E-02	MNR	MNR	MNR	MNR	MNR	8.42E+02	MNR	MNR	6.62E-02	3.07E-01	3.09E-01	-4.83E+01
GWP – biogenic	kg CO ₂ e	-3.29E-01	0.00E+00	-5.89E-01	-9.18E-01	3.66E-04	5.89E-01	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	-5.17E-03
GWP – LULUC	kg CO ₂ e	1.43E-01	5.94E-04	2.68E-03	1.46E-01	3.49E-04	5.28E-06	MNR	MNR	MNR	MNR	MNR	1.97E+00	MNR	MNR	2.44E-05	1.00E-04	5.93E-05	-3.59E-03
Ozone depletion pot.	kg CFC ₁₁ e	3.75E-06	1.96E-07	7.17E-08	4.02E-06	2.18E-07	1.55E-09	MNR	MNR	MNR	MNR	MNR	4.27E-05	MNR	MNR	1.52E-08	8.00E-09	5.69E-09	-1.30E-06
Acidification potential	mol H ⁺ e	6.92E-01	2.32E-02	2.43E-03	7.18E-01	4.00E-03	1.21E-04	MNR	MNR	MNR	MNR	MNR	4.81E+00	MNR	MNR	2.80E-04	8.36E-04	2.63E-04	-4.81E-01
EP-freshwater ²⁾	kg Pe	4.24E-03	4.62E-06	2.51E-05	4.27E-03	7.74E-06	1.62E-07	MNR	MNR	MNR	MNR	MNR	8.92E-02	MNR	MNR	5.42E-07	3.16E-06	9.35E-07	-3.01E-03
EP-marine	kg Ne	1.05E-01	5.76E-03	1.12E-03	1.11E-01	1.19E-03	5.11E-05	MNR	MNR	MNR	MNR	MNR	6.38E-01	MNR	MNR	8.33E-05	1.92E-04	8.60E-05	-5.36E-02
EP-terrestrial	mol Ne	1.15E+00	6.40E-02	7.03E-03	1.22E+00	1.31E-02	5.31E-04	MNR	MNR	MNR	MNR	MNR	7.26E+00	MNR	MNR	9.19E-04	2.18E-03	8.68E-04	-6.17E-01
POCP (“smog”) ³⁾	kg NMVOCe	3.34E-01	1.68E-02	1.78E-03	3.52E-01	4.20E-03	1.33E-04	MNR	MNR	MNR	MNR	MNR	1.99E+00	MNR	MNR	2.94E-04	5.89E-04	2.52E-04	-1.78E-01
ADP-minerals & metals ⁴⁾	kg Sbe	1.11E-03	1.57E-06	3.08E-06	1.11E-03	2.22E-06	5.09E-08	MNR	MNR	MNR	MNR	MNR	7.86E-03	MNR	MNR	1.55E-07	7.54E-06	1.10E-07	-1.37E-04
ADP-fossil resources	MJ	9.93E+02	1.26E+01	7.71E+00	1.01E+03	1.42E+01	1.20E-01	MNR	MNR	MNR	MNR	MNR	1.79E+04	MNR	MNR	9.94E-01	9.07E-01	5.67E-01	-4.72E+02
Water use ⁵⁾	m ³ e depr.	1.86E+01	4.34E-02	2.19E-01	1.88E+01	6.35E-02	2.84E-02	MNR	MNR	MNR	MNR	MNR	4.90E+02	MNR	MNR	4.45E-03	2.40E-02	3.83E-02	-3.09E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	7.70E-06	5.22E-08	4.42E-08	7.80E-06	1.09E-07	1.12E-09	MNR	MNR	MNR	MNR	MNR	1.58E-05	MNR	MNR	7.63E-09	1.09E-08	4.97E-09	-2.60E-06
Ionizing radiation ⁶⁾	kBq U235e	3.30E+00	5.84E-02	2.00E-02	3.38E+00	6.76E-02	4.35E-04	MNR	MNR	MNR	MNR	MNR	4.85E+02	MNR	MNR	4.74E-03	5.55E-03	2.88E-03	-2.82E+00

Ecotoxicity (freshwater)	CTUe	3.02E+03	9.03E+00	2.16E+01	3.05E+03	1.28E+01	8.30E-01	MNR	MNR	MNR	MNR	MNR	1.22E+04	MNR	MNR	8.94E-01	4.32E+00	3.33E+02	-8.55E+02
Human toxicity, cancer	CTUh	1.22E-07	4.96E-10	4.12E-10	1.23E-07	3.14E-10	3.73E-11	MNR	MNR	MNR	MNR	MNR	3.99E-07	MNR	MNR	2.20E-11	1.34E-10	2.86E-10	2.56E-09
Human tox. non-cancer	CTUh	2.38E-06	7.05E-09	6.67E-09	2.40E-06	1.26E-08	1.56E-09	MNR	MNR	MNR	MNR	MNR	1.31E-05	MNR	MNR	8.85E-10	5.68E-09	4.71E-09	-8.54E-07
SQP ⁷⁾	-	2.76E+02	5.83E+00	1.65E+01	2.98E+02	1.64E+01	6.54E-02	MNR	MNR	MNR	MNR	MNR	3.24E+03	MNR	MNR	1.15E+00	1.63E+00	8.02E-01	-8.59E+01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	7.01E+01	1.04E-01	6.26E+00	7.65E+01	1.60E-01	3.97E-03	MNR	MNR	MNR	MNR	MNR	3.65E+03	MNR	MNR	1.12E-02	1.30E-01	2.47E-02	-6.05E+00
Renew. PER as material	MJ	2.99E+00	0.00E+00	5.16E+00	8.15E+00	0.00E+00	-5.16E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renew. PER	MJ	7.31E+01	1.04E-01	1.14E+01	8.46E+01	1.60E-01	-5.16E+00	MNR	MNR	MNR	MNR	MNR	3.65E+03	MNR	MNR	1.12E-02	1.30E-01	2.47E-02	-6.05E+00
Non-re. PER as energy	MJ	9.86E+02	1.26E+01	7.47E+00	1.01E+03	1.42E+01	1.20E-01	MNR	MNR	MNR	MNR	MNR	1.79E+04	MNR	MNR	9.94E-01	9.08E-01	5.67E-01	-4.72E+02
Non-re. PER as material	MJ	7.16E+00	0.00E+00	5.82E-02	7.22E+00	0.00E+00	-5.82E-02	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	-2.08E+00	-2.08E+00	0.00E+00
Total use of non-re. PER	MJ	9.94E+02	1.26E+01	7.53E+00	1.01E+03	1.42E+01	6.19E-02	MNR	MNR	MNR	MNR	MNR	1.79E+04	MNR	MNR	9.94E-01	-1.17E+00	-1.51E+00	-4.72E+02
Secondary materials	kg	3.18E-01	5.02E-03	4.00E-01	7.23E-01	3.94E-03	1.43E-04	MNR	MNR	MNR	MNR	MNR	1.84E+00	MNR	MNR	2.76E-04	8.99E-04	1.77E-03	1.97E+00
Renew. secondary fuels	MJ	4.98E-02	2.18E-05	2.83E-02	7.82E-02	3.98E-05	2.38E-06	MNR	MNR	MNR	MNR	MNR	1.50E-02	MNR	MNR	2.79E-06	4.63E-05	1.16E-05	-7.73E-04
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m³	4.25E-01	1.07E-03	5.19E-03	4.31E-01	1.84E-03	5.01E-04	MNR	MNR	MNR	MNR	MNR	1.54E+01	MNR	MNR	1.29E-04	7.77E-04	3.36E-04	-1.43E-01

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
-----------------	------	----	----	----	-------	----	----	----	----	----	----	----	----	----	----	----	----	----	---

Hazardous waste	kg	1.88E+01	1.70E-02	2.95E-02	1.88E+01	1.88E-02	1.83E-04	MNR	MNR	MNR	MNR	MNR	6.43E+01	MNR	MNR	1.32E-03	6.47E-03	2.06E-03	-7.61E+00
Non-hazardous waste	kg	1.56E+02	1.83E-01	4.73E-01	1.56E+02	3.09E-01	4.01E-01	MNR	MNR	MNR	MNR	MNR	4.07E+03	MNR	MNR	2.17E-02	3.19E-01	1.56E+00	-1.36E+02
Radioactive waste	kg	1.66E-03	8.73E-05	1.29E-05	1.76E-03	9.50E-05	1.93E-07	MNR	MNR	MNR	MNR	MNR	1.30E-01	MNR	MNR	6.65E-06	3.76E-06	0.00E+00	-1.04E-03

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	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	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	2.98E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	1.59E-01	1.59E-01	0.00E+00	0.00E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	2.18E+00	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	9.92E+01	9.40E-01	6.00E-01	1.01E+02	9.36E-01	1.55E-02	MNR	MNR	MNR	MNR	MNR	8.34E+02	MNR	MNR	6.55E-02	3.05E-01	3.07E-01	-4.73E+01
Ozone depletion Pot.	kg CFC ₁₁ e	3.27E-06	1.56E-07	6.08E-08	3.48E-06	1.72E-07	1.35E-09	MNR	MNR	MNR	MNR	MNR	3.71E-05	MNR	MNR	1.21E-08	6.50E-09	4.58E-09	-1.11E-06
Acidification	kg SO ₂ e	5.84E-01	1.85E-02	1.77E-03	6.04E-01	3.11E-03	8.82E-05	MNR	MNR	MNR	MNR	MNR	4.08E+00	MNR	MNR	2.18E-04	6.70E-04	2.03E-04	-4.15E-01
Eutrophication	kg PO ₄ ³ e	1.65E-01	2.16E-03	1.29E-03	1.69E-01	7.08E-04	6.57E-05	MNR	MNR	MNR	MNR	MNR	3.14E+00	MNR	MNR	4.96E-05	2.27E-04	4.39E-04	-1.17E-01

POCP ("smog")	kg C ₂ H ₄ e	3.34E-02	4.87E-04	1.24E-04	3.40E-02	1.21E-04	2.76E-06	MNR	MNR	MNR	MNR	MNR	1.67E-01	MNR	MNR	8.50E-06	2.49E-05	1.38E-05	-2.06E-02
ADP-elements	kg Sbe	1.09E-03	1.53E-06	2.70E-06	1.09E-03	2.15E-06	3.99E-08	MNR	MNR	MNR	MNR	MNR	7.84E-03	MNR	MNR	1.50E-07	7.53E-06	1.02E-07	-1.33E-04
ADP-fossil	MJ	9.93E+02	1.26E+01	7.66E+00	1.01E+03	1.42E+01	1.20E-01	MNR	MNR	MNR	MNR	MNR	1.79E+04	MNR	MNR	9.94E-01	9.07E-01	5.67E-01	-4.72E+02

APPENDIX (EPD HUB ALIGNED)

This section represents the scaling method for the **B6 module**, following the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). The GWP results were scaled from a reference variant of a product family, based on various light management scenarios and power inputs of the luminaires within the same product family

To calculate the Scaled Impact (*SI*), we have followed the below methods:

- 1. Calculate the power scaling factor (PSF), which is the ratio of the power input of the variant in questions P_{in} and the power input of the base variant P_{base} .

$$PSF = \frac{P_{in}}{P_{base}}$$

- 2. Calculate the Total Scaling factor by multiplying the PSF by the control scaling factor (CSF), where the CSF is determined according the relevant control factor scenario (e.g. if the luminaire has a presence detection system). The presented controls factors values in Table A1 are based on BS EN 15193-1:2017. Please refer to this publication or contact Signify directly for more information.

$$TSF = PSF * CSF$$

Table A1: Light management function (PEP EcoPassport aligned)

Scenario	Abbrev.	CSF
No control	NC	1
Daylight dependency factor	DD	0.75
Presence sensing	PS	0.75
Daylight dependency and presence sensing	DD+PS	0.55

3. Lastly, the GWP of the base variant is then scaled by the TSF.

$$Scaled\ Impact = GWP_{case} * TSF$$

Table A2 Scaled GWP per scaling factor (EPD Hub aligned)

Configuration	Flux [lm]	Power [W]	Efficacy [lm/W]	PSF	Total Scaling Factor (TSF)				Scaled Impacts (GWP100 B6 - kg CO2eq.)			
					NC	DD	PS	DD+PS	NC	DD	PS	DD+PS
VGP282, VGP292, VGP293 LED15-4S/730/730	1320.0	7.5	176.0	0.352	0.352	0.264	0.264	0.194	297.1	222.8	222.8	163.7
VGP282, VGP292, VGP293 LED17-4S/730/730	1496.0	8.6	174.0	0.404	0.404	0.303	0.303	0.222	341.0	255.7	255.7	187.4
VGP282, VGP292, VGP293 LED20-4S/730/730	1760.0	10.3	170.9	0.484	0.484	0.363	0.363	0.266	408.5	306.4	306.4	224.5
VGP282, VGP292, VGP293 LED22-4S/730/730	1936.0	11.4	169.8	0.535	0.535	0.401	0.401	0.294	451.5	338.4	338.4	248.1
VGP282, VGP292, VGP293 LED25-4S/730/730	2200.0	13.1	167.9	0.615	0.615	0.461	0.461	0.338	519.1	389.1	389.1	285.3
VGP282, VGP292, VGP293 LED30-4S/730/730	2640.0	16.0	165.0	0.751	0.751	0.563	0.563	0.413	633.8	475.2	475.2	348.6
VGP282, VGP292, VGP293 LED35-4S/730/730	3080.0	18.4	167.4	0.864	0.864	0.648	0.648	0.475	729.2	546.9	546.9	400.9
VGP282 40 4S/730 24V III DM10 48/60S	3520.0	21.3	165.3	1.0	1.0	0.75	0.75	0.55	844.0	633.0	633.0	464.2
VGP282, VGP292, VGP293 LED45-4S/730/730	3960.0	24.3	163.0	1.141	1.141	0.856	0.856	0.628	963.0	722.5	722.5	530.0
VGP282, VGP292, VGP293 LED50-4S/730/730	4400.0	27.2	161.8	1.277	1.277	0.958	0.958	0.702	1077.8	808.6	808.6	592.5
VGP282, VGP292, VGP293 LED55-4S/730/730	4840.0	30.2	160.3	1.418	1.418	1.063	1.063	0.78	1196.8	897.2	897.2	658.3
VGP282, VGP292, VGP293 LED60-4S/730/730	5220.0	33.2	157.2	1.559	1.559	1.169	1.169	0.857	1315.8	986.6	986.6	723.3

VGP282, VGP292, VGP293 LED65-4S/730/730	5655.0	36.3	155.8	1.704	1.704	1.278	1.278	0.937	1438.2	1078.6	1078.6	790.8
VGP282, VGP292, VGP293 LED70-4S/730/730	6090.0	39.4	154.6	1.85	1.85	1.388	1.388	1.018	1561.4	1171.5	1171.5	859.2
VGP282, VGP292, VGP293 LED75-4S/730/730	6525.0	42.5	153.5	1.995	1.995	1.496	1.496	1.097	1683.8	1262.6	1262.6	925.9
VGP282, VGP292, VGP293 LED80-4S/730/730	6960.0	45.7	152.3	2.146	2.146	1.609	1.609	1.18	1811.2	1358.0	1358.0	995.9
VGP282, VGP292, VGP293 LED85-4S/730/730	7395.0	48.9	151.2	2.296	2.296	1.722	1.722	1.263	1937.8	1453.4	1453.4	1066.0
VGP282, VGP292, VGP293 LED90-4S/730/730	7830.0	50.7	154.4	2.38	2.38	1.785	1.785	1.309	2008.7	1506.5	1506.5	1104.8
VGP282, VGP292, VGP293 LED95-4S/730/730	8170.0	53.8	151.9	2.526	2.526	1.894	1.894	1.389	2131.9	1598.5	1598.5	1172.3
VGP282, VGP292, VGP293 LED100-4S/730/730	8600.0	57.0	150.9	2.676	2.676	2.007	2.007	1.472	2258.5	1693.9	1693.9	1242.4
VGP282, VGP292, VGP293 LED105-4S/730/730	9030.0	60.1	150.2	2.822	2.822	2.117	2.117	1.552	2381.8	1786.7	1786.7	1309.9
VGP282, VGP292, VGP293 LED110-4S/730/730	9460.0	63.4	149.2	2.977	2.977	2.233	2.233	1.637	2512.6	1884.7	1884.7	1381.6
VGP282, VGP292, VGP293 LED115-4S/730/730	9890.0	66.6	148.5	3.127	3.127	2.345	2.345	1.72	2639.2	1979.2	1979.2	1451.7
VGP282, VGP292, VGP293 LED120-4S/730/730	10200.0	69.9	145.9	3.282	3.282	2.462	2.462	1.805	2770.0	2077.9	2077.9	1523.4
VGP282, VGP292, VGP293 LED15-4S/740/740	1320.0	7.2	183.3	0.338	0.338	0.254	0.254	0.186	285.3	214.4	214.4	157.0
VGP282, VGP292, VGP293 LED17-4S/740/740	1496.0	8.2	182.4	0.385	0.385	0.289	0.289	0.212	324.9	243.9	243.9	178.9
VGP282, VGP292, VGP293 LED20-4S/740/740	1760.0	9.8	179.6	0.46	0.46	0.345	0.345	0.253	388.2	291.2	291.2	213.5
VGP282, VGP292, VGP293 LED22-4S/740/740	1936.0	10.9	177.6	0.512	0.512	0.384	0.384	0.282	432.1	324.1	324.1	238.0
VGP282, VGP292, VGP293 LED25-4S/740/740	2200.0	12.6	174.6	0.592	0.592	0.444	0.444	0.326	499.6	374.7	374.7	275.1
VGP282, VGP292, VGP293 LED30-4S/740/740	2640.0	15.3	172.5	0.718	0.718	0.538	0.538	0.395	606.0	454.1	454.1	333.4
VGP282, VGP292, VGP293 LED35-4S/740/740	3080.0	18.1	170.2	0.85	0.85	0.637	0.637	0.468	717.4	537.6	537.6	395.0
VGP282, VGP292, VGP293 LED35-4S/740/740	3080.0	17.6	175.0	0.826	0.826	0.619	0.619	0.454	697.1	522.4	522.4	383.2
VGP282, VGP292, VGP293 LED40-4S/740/740	3520.0	20.4	172.5	0.958	0.958	0.718	0.718	0.527	808.6	606.0	606.0	444.8
VGP282, VGP292, VGP293 LED45-4S/740/740	3960.0	23.2	170.7	1.089	1.089	0.817	0.817	0.599	919.1	689.5	689.5	505.6
VGP282, VGP292, VGP293 LED50-4S/740/740	4400.0	26.0	169.2	1.221	1.221	0.916	0.916	0.672	1030.5	773.1	773.1	567.2
VGP282, VGP292, VGP293 LED55-4S/740/740	4840.0	28.9	167.5	1.357	1.357	1.018	1.018	0.746	1145.3	859.2	859.2	629.6

VGP282, VGP292, VGP293 LED60-4S/740/740	5280.0	31.7	166.6	1.488	1.488	1.116	1.116	0.818	1255.9	941.9	941.9	690.4
VGP282, VGP292, VGP293 LED65-4S/740/740	5655.0	34.7	163.0	1.629	1.629	1.222	1.222	0.896	1374.9	1031.4	1031.4	756.2
VGP282, VGP292, VGP293 LED70-4S/740/740	6090.0	37.6	162.0	1.765	1.765	1.324	1.324	0.971	1489.7	1117.5	1117.5	819.5
VGP282, VGP292, VGP293 LED75-4S/740/740	6525.0	40.6	160.7	1.906	1.906	1.429	1.429	1.048	1608.7	1206.1	1206.1	884.5
VGP282, VGP292, VGP293 LED80-4S/740/740	6960.0	43.6	159.6	2.047	2.047	1.535	1.535	1.126	1727.7	1295.5	1295.5	950.3
VGP282, VGP292, VGP293 LED85-4S/740/740	7395.0	46.7	158.4	2.192	2.192	1.644	1.644	1.206	1850.0	1387.5	1387.5	1017.9
VGP282, VGP292, VGP293 LED90-4S/740/740	7830.0	48.4	161.8	2.272	2.272	1.704	1.704	1.25	1917.6	1438.2	1438.2	1055.0
VGP282, VGP292, VGP293 LED95-4S/740/740	8265.0	51.4	160.8	2.413	2.413	1.81	1.81	1.327	2036.6	1527.6	1527.6	1120.0
VGP282, VGP292, VGP293 LED100-4S/740/740	8700.0	54.4	159.9	2.554	2.554	1.915	1.915	1.405	2155.6	1616.3	1616.3	1185.8
VGP282, VGP292, VGP293 LED105-4S/740/740	9135.0	57.4	159.1	2.695	2.695	2.021	2.021	1.482	2274.6	1705.7	1705.7	1250.8
VGP282, VGP292, VGP293 LED110-4S/740/740	9460.0	60.5	156.4	2.84	2.84	2.13	2.13	1.562	2397.0	1797.7	1797.7	1318.3
VGP282, VGP292, VGP293 LED115-4S/740/740	9890.0	63.5	155.7	2.981	2.981	2.236	2.236	1.64	2516.0	1887.2	1887.2	1384.2
VGP282, VGP292, VGP293 LED120-4S/740/740	10320.0	66.7	154.7	3.131	3.131	2.348	2.348	1.722	2642.6	1981.7	1981.7	1453.4
VGP282, VGP292, VGP293 LED125-4S/740/740	10750.0	69.8	154.0	3.277	3.277	2.458	2.458	1.802	2765.8	2074.6	2074.6	1520.9
VGP282, VGP292, VGP293 LED129-4S/740/740	11094.0	72.3	153.4	3.394	3.394	2.546	2.546	1.867	2864.5	2148.8	2148.8	1575.7
VGP282, VGP292, VGP293 LED15-4S/830/830	1320.0	8.1	163.0	0.38	0.38	0.285	0.285	0.209	320.7	240.5	240.5	176.4
VGP282, VGP292, VGP293 LED17-4S/830/830	1496.0	9.3	160.9	0.437	0.437	0.328	0.328	0.24	368.8	276.8	276.8	202.6
VGP282, VGP292, VGP293 LED20-4S/830/830	1760.0	11.2	157.1	0.526	0.526	0.395	0.395	0.289	443.9	333.4	333.4	243.9
VGP282, VGP292, VGP293 LED22-4S/830/830	1936.0	12.5	154.9	0.587	0.587	0.44	0.44	0.323	495.4	371.4	371.4	272.6
VGP282, VGP292, VGP293 LED25-4S/830/830	2200.0	14.4	152.8	0.676	0.676	0.507	0.507	0.372	570.5	427.9	427.9	314.0
VGP282, VGP292, VGP293 LED30-4S/830/830	2640.0	17.6	150.0	0.826	0.826	0.619	0.619	0.454	697.1	522.4	522.4	383.2
VGP282, VGP292, VGP293 LED35-4S/830/830	3045.0	21.0	145.0	0.986	0.986	0.74	0.74	0.542	832.2	624.6	624.6	457.4
VGP282, VGP292, VGP293 LED40-4S/830/830	3480.0	23.5	148.1	1.103	1.103	0.827	0.827	0.607	930.9	698.0	698.0	512.3
VGP282, VGP292, VGP293 LED45-4S/830/830	3915.0	26.8	146.1	1.258	1.258	0.944	0.944	0.692	1061.8	796.7	796.7	584.0

VGP282, VGP292, VGP293 LED50-4S/830/830	4350.0	30.1	144.5	1.413	1.413	1.06	1.06	0.777	1192.6	894.6	894.6	655.8
VGP282, VGP292, VGP293 LED55-4S/830/830	4785.0	33.5	142.8	1.573	1.573	1.18	1.18	0.865	1327.6	995.9	995.9	730.1
VGP282, VGP292, VGP293 LED60-4S/830/830	5220.0	37.0	141.1	1.737	1.737	1.303	1.303	0.955	1466.0	1099.7	1099.7	806.0
VGP282, VGP292, VGP293 LED65-4S/830/830	5655.0	40.5	139.6	1.901	1.901	1.426	1.426	1.046	1604.4	1203.5	1203.5	882.8
VGP282, VGP292, VGP293 LED70-4S/830/830	6020.0	44.0	136.8	2.066	2.066	1.549	1.549	1.136	1743.7	1307.4	1307.4	958.8
VGP282, VGP292, VGP293 LED75-4S/830/830	6450.0	47.6	135.5	2.235	2.235	1.676	1.676	1.229	1886.3	1414.5	1414.5	1037.3
VGP282, VGP292, VGP293 LED80-4S/830/830	6880.0	51.2	134.4	2.404	2.404	1.803	1.803	1.322	2029.0	1521.7	1521.7	1115.8
VGP282, VGP292, VGP293 LED85-4S/830/830	7310.0	54.9	133.2	2.577	2.577	1.933	1.933	1.417	2175.0	1631.5	1631.5	1195.9
VGP282, VGP292, VGP293 LED90-4S/830/830	7740.0	56.6	136.7	2.657	2.657	1.993	1.993	1.461	2242.5	1682.1	1682.1	1233.1
VGP282, VGP292, VGP293 LED95-4S/830/830	8075.0	60.2	134.1	2.826	2.826	2.119	2.119	1.554	2385.1	1788.4	1788.4	1311.6
VGP282, VGP292, VGP293 LED100-4S/830/830	8500.0	63.8	133.2	2.995	2.995	2.246	2.246	1.647	2527.8	1895.6	1895.6	1390.1
VGP282, VGP292, VGP293 LED105-4S/830/830	8925.0	67.4	132.4	3.164	3.164	2.373	2.373	1.74	2670.4	2002.8	2002.8	1468.6
VGP282, VGP292, VGP293 LED110-4S/830/830	9240.0	71.1	130.0	3.338	3.338	2.503	2.503	1.836	2817.3	2112.5	2112.5	1549.6

* Note that if the product is non-dimmable, only the values for "NC (No Control)" are valid; if the driver type is PSU, only the values for "NC (No Control)" and "PS (presence sensing)" for are valid.

APPENDIX (PEP ECOPASSPORT ALIGNED)

This section represents the scaling method for the **B6 module**, following the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). The GWP results were scaled from a reference variant of a product family, based on various light management functions, the lumen output (O_{lum}) and reference service life (RSL) of each product within the same product family.

To calculate the Scaled Impact (SI_{pep}), we have followed the below methods:

1. Calculate the power scaling factor (PSF), which is the ratio of the power input of the variant in questions P_{in} and the power input of the base variant P_{base} .

$$PSF = \frac{P_{in}}{P_{base}}$$

2. Using this scaled GWP, we then can apply the PEP Ecopassport method for calculating the environmental impact of the functional unit for a luminary (1000 lumens over 35000 hours), applied to B6, where the Functional Unit application considers the lumen output (O_{lum}) and reference service lifetime (RSL) of the product to estimate the final environmental impact. The scaled impact (SI_{pep}) is presented in Table A4.

$$GSF = \frac{FU_{pep}}{FU_p} = \frac{1,000}{O_{lum}} * \frac{35,000}{RSL}$$

3. Calculate the GWP scaling factor ($PGSF$), by multiplying the PSF by the GSF.

$$PGSF = PSF * GSF$$

4. Calculate the Total Scaling factor by multiplying the PSF by the control scaling factor (CSF), where the CSF is determined according the relevant control factor scenario (e.g. if the luminaire has a presence detection system), as presented in Table A1.

$$TSF = PGSF * CSF$$

Table A3: Light management functions (PEP EcoPassport aligned)

Scenario	Abbrev.	CSF
No control	NC	1
Daylight dependency factor	DD	0.75
Presence sensing	PS	0.75
Daylight dependency and presence sensing	DD+PS	0.55

5. Lastly, the GWP of the base variant is then scaled by the TSF.

$$Scaled\ GWP = GWP_{case} * TSF$$

As described in the EPD, calculations are made based on dataset describing electricity available on the low voltage level in Europe for year 2022 (source Ecoinvent 3.8 database). This value should be adjusted depending on specific project requirements. Presented controls factors and functional unit conversion values are based on the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). Please refer to this publication or contact Signify directly for more information.

Table A4 Scale impact per scaling factor (PEP EcoPassport aligned)

Configuration	Flux [lm]	Power [W]	Efficacy [lm/W]	PSF	Total Scaling Factor (TSF)				Scaled Impacts (GWP100 B6 - kg CO2eq.)			
					NC	DD	PS	DD+PS	NC	DD	PS	DD+PS
VGP282, VGP292, VGP293 LED15-4S/730/730	1320.0	7.5	176.0	0.352	0.093	0.07	0.07	0.051	78.5	59.1	59.1	43.0
VGP282, VGP292, VGP293 LED17-4S/730/730	1496.0	8.6	174.0	0.404	0.095	0.071	0.071	0.052	80.2	59.9	59.9	43.9
VGP282, VGP292, VGP293 LED20-4S/730/730	1760.0	10.3	170.9	0.484	0.096	0.072	0.072	0.053	81.0	60.8	60.8	44.7

VGP282, VGP292, VGP293 LED22-4S/730/730	1936.0	11.4	169.8	0.535	0.097	0.073	0.073	0.053	81.9	61.6	61.6	44.7
VGP282, VGP292, VGP293 LED25-4S/730/730	2200.0	13.1	167.9	0.615	0.098	0.074	0.074	0.054	82.7	62.5	62.5	45.6
VGP282, VGP292, VGP293 LED30-4S/730/730	2640.0	16.0	165.0	0.751	0.1	0.075	0.075	0.055	84.4	63.3	63.3	46.4
VGP282, VGP292, VGP293 LED35-4S/730/730	3080.0	18.4	167.4	0.864	0.098	0.074	0.074	0.054	82.7	62.5	62.5	45.6
VGP282 40 4S/730 24V III DM10 48/60S	3520.0	21.3	165.3	1.0	0.099	0.074	0.074	0.054	83.6	62.5	62.5	45.6
VGP282, VGP292, VGP293 LED45-4S/730/730	3960.0	24.3	163.0	1.141	0.1	0.075	0.075	0.055	84.4	63.3	63.3	46.4
VGP282, VGP292, VGP293 LED50-4S/730/730	4400.0	27.2	161.8	1.277	0.102	0.076	0.076	0.056	86.1	64.1	64.1	47.3
VGP282, VGP292, VGP293 LED55-4S/730/730	4840.0	30.2	160.3	1.418	0.102	0.076	0.076	0.056	86.1	64.1	64.1	47.3
VGP282, VGP292, VGP293 LED60-4S/730/730	5220.0	33.2	157.2	1.559	0.104	0.078	0.078	0.057	87.8	65.8	65.8	48.1
VGP282, VGP292, VGP293 LED65-4S/730/730	5655.0	36.3	155.8	1.704	0.106	0.08	0.08	0.058	89.5	67.5	67.5	49.0
VGP282, VGP292, VGP293 LED70-4S/730/730	6090.0	39.4	154.6	1.85	0.105	0.079	0.079	0.058	88.6	66.7	66.7	49.0
VGP282, VGP292, VGP293 LED75-4S/730/730	6525.0	42.5	153.5	1.995	0.108	0.081	0.081	0.059	91.2	68.4	68.4	49.8
VGP282, VGP292, VGP293 LED80-4S/730/730	6960.0	45.7	152.3	2.146	0.107	0.08	0.08	0.059	90.3	67.5	67.5	49.8
VGP282, VGP292, VGP293 LED85-4S/730/730	7395.0	48.9	151.2	2.296	0.108	0.081	0.081	0.059	91.2	68.4	68.4	49.8
VGP282, VGP292, VGP293 LED90-4S/730/730	7830.0	50.7	154.4	2.38	0.107	0.08	0.08	0.059	90.3	67.5	67.5	49.8
VGP282, VGP292, VGP293 LED95-4S/730/730	8170.0	53.8	151.9	2.526	0.109	0.082	0.082	0.06	92.0	69.2	69.2	50.6
VGP282, VGP292, VGP293 LED100-4S/730/730	8600.0	57.0	150.9	2.676	0.11	0.083	0.083	0.061	92.8	70.1	70.1	51.5
VGP282, VGP292, VGP293 LED105-4S/730/730	9030.0	60.1	150.2	2.822	0.11	0.083	0.083	0.061	92.8	70.1	70.1	51.5
VGP282, VGP292, VGP293 LED110-4S/730/730	9460.0	63.4	149.2	2.977	0.11	0.083	0.083	0.061	92.8	70.1	70.1	51.5
VGP282, VGP292, VGP293 LED115-4S/730/730	9890.0	66.6	148.5	3.127	0.109	0.082	0.082	0.06	92.0	69.2	69.2	50.6
VGP282, VGP292, VGP293 LED120-4S/730/730	10200.0	69.9	145.9	3.282	0.112	0.084	0.084	0.062	94.5	70.9	70.9	52.3
VGP282, VGP292, VGP293 LED15-4S/740/740	1320.0	7.2	183.3	0.338	0.09	0.068	0.068	0.05	76.0	57.4	57.4	42.2
VGP282, VGP292, VGP293 LED17-4S/740/740	1496.0	8.2	182.4	0.385	0.09	0.068	0.068	0.05	76.0	57.4	57.4	42.2
VGP282, VGP292, VGP293 LED20-4S/740/740	1760.0	9.8	179.6	0.46	0.092	0.069	0.069	0.051	77.6	58.2	58.2	43.0

VGP282, VGP292, VGP293 LED22-4S/740/740	1936.0	10.9	177.6	0.512	0.093	0.07	0.07	0.051	78.5	59.1	59.1	43.0
VGP282, VGP292, VGP293 LED25-4S/740/740	2200.0	12.6	174.6	0.592	0.094	0.071	0.071	0.052	79.3	59.9	59.9	43.9
VGP282, VGP292, VGP293 LED30-4S/740/740	2640.0	15.3	172.5	0.718	0.095	0.071	0.071	0.052	80.2	59.9	59.9	43.9
VGP282, VGP292, VGP293 LED35-4S/740/740	3080.0	18.1	170.2	0.85	0.097	0.073	0.073	0.053	81.9	61.6	61.6	44.7
VGP282, VGP292, VGP293 LED35-4S/740/740	3080.0	17.6	175.0	0.826	0.094	0.071	0.071	0.052	79.3	59.9	59.9	43.9
VGP282, VGP292, VGP293 LED40-4S/740/740	3520.0	20.4	172.5	0.958	0.095	0.071	0.071	0.052	80.2	59.9	59.9	43.9
VGP282, VGP292, VGP293 LED45-4S/740/740	3960.0	23.2	170.7	1.089	0.096	0.072	0.072	0.053	81.0	60.8	60.8	44.7
VGP282, VGP292, VGP293 LED50-4S/740/740	4400.0	26.0	169.2	1.221	0.098	0.074	0.074	0.054	82.7	62.5	62.5	45.6
VGP282, VGP292, VGP293 LED55-4S/740/740	4840.0	28.9	167.5	1.357	0.098	0.074	0.074	0.054	82.7	62.5	62.5	45.6
VGP282, VGP292, VGP293 LED60-4S/740/740	5280.0	31.7	166.6	1.488	0.098	0.074	0.074	0.054	82.7	62.5	62.5	45.6
VGP282, VGP292, VGP293 LED65-4S/740/740	5655.0	34.7	163.0	1.629	0.101	0.076	0.076	0.056	85.2	64.1	64.1	47.3
VGP282, VGP292, VGP293 LED70-4S/740/740	6090.0	37.6	162.0	1.765	0.101	0.076	0.076	0.056	85.2	64.1	64.1	47.3
VGP282, VGP292, VGP293 LED75-4S/740/740	6525.0	40.6	160.7	1.906	0.103	0.077	0.077	0.057	86.9	65.0	65.0	48.1
VGP282, VGP292, VGP293 LED80-4S/740/740	6960.0	43.6	159.6	2.047	0.102	0.076	0.076	0.056	86.1	64.1	64.1	47.3
VGP282, VGP292, VGP293 LED85-4S/740/740	7395.0	46.7	158.4	2.192	0.103	0.077	0.077	0.057	86.9	65.0	65.0	48.1
VGP282, VGP292, VGP293 LED90-4S/740/740	7830.0	48.4	161.8	2.272	0.102	0.076	0.076	0.056	86.1	64.1	64.1	47.3
VGP282, VGP292, VGP293 LED95-4S/740/740	8265.0	51.4	160.8	2.413	0.101	0.076	0.076	0.056	85.2	64.1	64.1	47.3
VGP282, VGP292, VGP293 LED100-4S/740/740	8700.0	54.4	159.9	2.554	0.102	0.076	0.076	0.056	86.1	64.1	64.1	47.3
VGP282, VGP292, VGP293 LED105-4S/740/740	9135.0	57.4	159.1	2.695	0.102	0.076	0.076	0.056	86.1	64.1	64.1	47.3
VGP282, VGP292, VGP293 LED110-4S/740/740	9460.0	60.5	156.4	2.84	0.105	0.079	0.079	0.058	88.6	66.7	66.7	49.0
VGP282, VGP292, VGP293 LED115-4S/740/740	9890.0	63.5	155.7	2.981	0.104	0.078	0.078	0.057	87.8	65.8	65.8	48.1
VGP282, VGP292, VGP293 LED120-4S/740/740	10320.0	66.7	154.7	3.131	0.106	0.08	0.08	0.058	89.5	67.5	67.5	49.0
VGP282, VGP292, VGP293 LED125-4S/740/740	10750.0	69.8	154.0	3.277	0.108	0.081	0.081	0.059	91.2	68.4	68.4	49.8
VGP282, VGP292, VGP293 LED129-4S/740/740	11094.0	72.3	153.4	3.394	0.109	0.082	0.082	0.06	92.0	69.2	69.2	50.6

VGP282, VGP292, VGP293 LED15-4S/830/830	1320.0	8.1	163.0	0.38	0.101	0.076	0.076	0.056	85.2	64.1	64.1	47.3
VGP282, VGP292, VGP293 LED17-4S/830/830	1496.0	9.3	160.9	0.437	0.102	0.076	0.076	0.056	86.1	64.1	64.1	47.3
VGP282, VGP292, VGP293 LED20-4S/830/830	1760.0	11.2	157.1	0.526	0.105	0.079	0.079	0.058	88.6	66.7	66.7	49.0
VGP282, VGP292, VGP293 LED22-4S/830/830	1936.0	12.5	154.9	0.587	0.106	0.08	0.08	0.058	89.5	67.5	67.5	49.0
VGP282, VGP292, VGP293 LED25-4S/830/830	2200.0	14.4	152.8	0.676	0.107	0.08	0.08	0.059	90.3	67.5	67.5	49.8
VGP282, VGP292, VGP293 LED30-4S/830/830	2640.0	17.6	150.0	0.826	0.11	0.083	0.083	0.061	92.8	70.1	70.1	51.5
VGP282, VGP292, VGP293 LED35-4S/830/830	3045.0	21.0	145.0	0.986	0.113	0.085	0.085	0.062	95.4	71.7	71.7	52.3
VGP282, VGP292, VGP293 LED40-4S/830/830	3480.0	23.5	148.1	1.103	0.111	0.083	0.083	0.061	93.7	70.1	70.1	51.5
VGP282, VGP292, VGP293 LED45-4S/830/830	3915.0	26.8	146.1	1.258	0.112	0.084	0.084	0.062	94.5	70.9	70.9	52.3
VGP282, VGP292, VGP293 LED50-4S/830/830	4350.0	30.1	144.5	1.413	0.113	0.085	0.085	0.062	95.4	71.7	71.7	52.3
VGP282, VGP292, VGP293 LED55-4S/830/830	4785.0	33.5	142.8	1.573	0.115	0.086	0.086	0.063	97.1	72.6	72.6	53.2
VGP282, VGP292, VGP293 LED60-4S/830/830	5220.0	37.0	141.1	1.737	0.116	0.087	0.087	0.064	97.9	73.4	73.4	54.0
VGP282, VGP292, VGP293 LED65-4S/830/830	5655.0	40.5	139.6	1.901	0.118	0.088	0.088	0.065	99.6	74.3	74.3	54.9
VGP282, VGP292, VGP293 LED70-4S/830/830	6020.0	44.0	136.8	2.066	0.12	0.09	0.09	0.066	101.3	76.0	76.0	55.7
VGP282, VGP292, VGP293 LED75-4S/830/830	6450.0	47.6	135.5	2.235	0.121	0.091	0.091	0.067	102.1	76.8	76.8	56.5
VGP282, VGP292, VGP293 LED80-4S/830/830	6880.0	51.2	134.4	2.404	0.123	0.092	0.092	0.068	103.8	77.6	77.6	57.4
VGP282, VGP292, VGP293 LED85-4S/830/830	7310.0	54.9	133.2	2.577	0.124	0.093	0.093	0.068	104.7	78.5	78.5	57.4
VGP282, VGP292, VGP293 LED90-4S/830/830	7740.0	56.6	136.7	2.657	0.12	0.09	0.09	0.066	101.3	76.0	76.0	55.7
VGP282, VGP292, VGP293 LED95-4S/830/830	8075.0	60.2	134.1	2.826	0.122	0.091	0.091	0.067	103.0	76.8	76.8	56.5
VGP282, VGP292, VGP293 LED100-4S/830/830	8500.0	63.8	133.2	2.995	0.123	0.092	0.092	0.068	103.8	77.6	77.6	57.4
VGP282, VGP292, VGP293 LED105-4S/830/830	8925.0	67.4	132.4	3.164	0.123	0.092	0.092	0.068	103.8	77.6	77.6	57.4
VGP282, VGP292, VGP293 LED110-4S/830/830	9240.0	71.1	130.0	3.338	0.127	0.095	0.095	0.07	107.2	80.2	80.2	59.1

* Note that if the product is non-dimmable, only the values for "NC (No Control)" are valid; if the driver type is PSU, only the values for "NC (No Control)" and "PS (presence sensing)" for are valid.



