PHILIPS

Natural Trust
UV-C LED Module

Philips NaturalTrust UV-C LED module

Philips NaturalTrust UV-C LED Module for **water treatment.**

Philips is launching the NaturalTrust range based on UV-C LED technology

The Philips NaturalTrust sealed UV-C LED Module is designed to treat ambient water (> 8°C) as well as cold water (< 8°C). The UV-C LED module emits UV-C radiation which, in laboratory tests, has been shown to inactivate 99.9% of E-coli [1] . Because of its small size, the module is designed to fit appliances where conventional mercury discharge lamps cannot be integrated, such as refrigerators, coffee machines, ice makers etc. It operates on low voltage DC below 24V. In cold conditions such as cold water reservoirs or refrigerators, there is no UV-C output drop like with conventional mercury discharge lamps.

[1] In a study conducted by the National Institute of Public Health-PZH (Poland) in a laboratory setting, these LED UV-C modules irradiating various samples of water inoculated with Escherichia coli ATCC 8739 (E-coli) inactivated 99.9% of E-coli in 20 minutes (1 liter sample), 30 minutes (2 liter sample) and 60 minutes (5 liter sample). For more details please contact your local Signify representative.

Features	Benefits
Inactivate 99.9% of E-Coli [1]	Water treatment
Small size	Design flexibility
Instant on/off	Instant irradiation
Silicone snap fit housing*	Plug & play and compact sealed-to-water solution
Low voltage	Designed with safety in mind
No UV-C output drop in cold conditions**	Can be used in cold water, refrigerators,...
On board electronics	Output independent from input voltage
Low power	Low energy consumption
Contains no mercury	Easy disposal

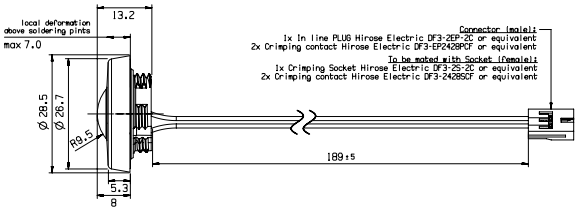
* only for sealed UV-C-LED module
** for cable versions only

Philips NaturalTrust UV-C LED Module

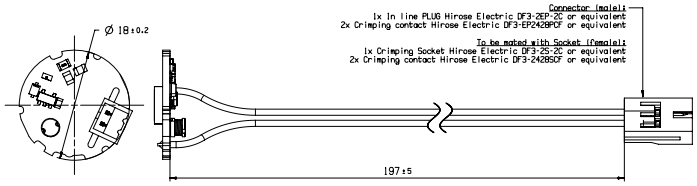
Dimensional drawings

Dimensions in mm

Sealed cable version



Non-sealed cable version



Technical specifications

Module specifications	
Supply voltage	12 – 24 VDC
Input current	Depending on input voltage, max 90mA
Module power consumption	Max 0.8 W
IEC 62031	As 'Built-in LED Module'
UL: Registered Component	UL 979, C22.2 No. 68-09 E338671

UVC LED cable sealed

Module performance after 100hr operation

	Philips NaturalTrust UV-C LED cable	Philips NaturalTrust UV-C LED cable sealed
Ordering code	927898650001	927898660001
Silicone sealing	no	yes
Fixation	na	nut****
Connector	on cable*	on cable*
UV-C output	9,5 mW @ (Tc 70°C)	8 mW (@Tc 50°C)
Max radiation at wavelength	275 nm	275 nm
Operation temperature**	Tc max 70°C	Tc max 70°C
UV-C maintenance (L70B10) ***	9.000 operational hours	10.000 operational hours
Maximum humidity	95%	95%
# Switches	min. 100K	min. 100K

The UV-C output does NOT depend on the input voltage.

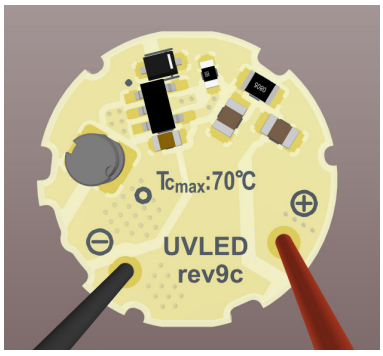
* See design-in guide for details.

** Use additional cooling of the device to reduce operating temperature.

*** 10% of the products will have 70% of the initial UV-C output at the declared lifetime. 90% of the products will have higher UV-C output. If the module is operated at temperatures above the operation temperature, the L70B10 point may be less than the declared lifetime, and product failures may occur.

**** Nut not part of product offering, to be ordered separately (code number: 322201958701).

Location of Tc



Philips NaturalTrust UV-C LED cable version

Spectral irradiance UV-C Module

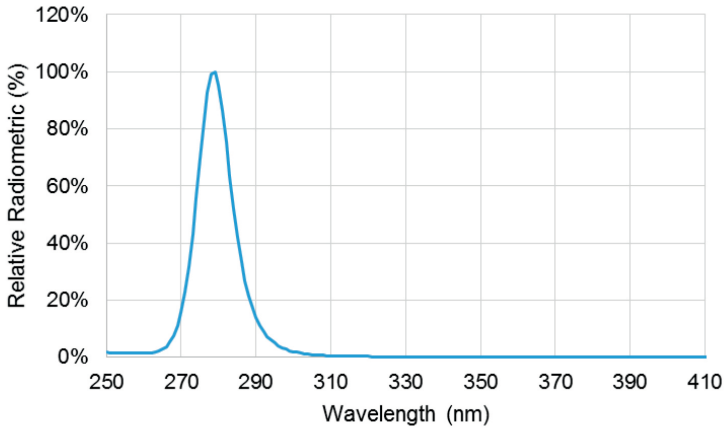


Fig 2. Relative Spectral Distribution

Water tightness & dust ingression (sealed version)

IEC standard 60529	IP68 (from silicone side)
Maximum working pressure	No water leak at 50 psi / 3,5 bar
Cycling water pressure	Tested for 0 mbar / 250 mbar

Philips reliability tests

Characteristic checked	Test or inspection items	
Reliability non operational	Temperature cycle	IEC 60068
	Thermal shock	IEC 60068
	Wet High Temperature Storage Life	IEC 60068
Reliability operational module	Power and Temperature Cycling	IEC 60068
	Room Temperature Operating Life time module	IEC 60068
	High Temperature Operating Life LED	IEC 60068
	Room Temperature Operating Life time LED	IEC 60068
	Switching cycles	
Design in	Thermal management	
	Corrosion Test	
	Field tests	
	Microbiological performance	
	Materials release in appliance	
Mechanical tests/ water sealing	Sinusoid vibration	JESD 22-B103
	Random vibration	JESD 22-B103
	Mechanical impact	
	IP level	IEC 60529:2003
	Low pressure water	
Sustainability	Material compliance with RoHS / Reach	
Electrical safety	IEC 61347	
	IEC 62031	
Electro Magnetic Compatibility	Radiated Electromagnetic Disturbance	EN55015:2013
	Radio Frequency Electromagnetic Field	EN55015:2013
	Electrostatic discharge	EN61547:2009 / EN61000-4-4:2009
	Electromagnetic Field Immunity	EN61547:2009 / EN61000-4-3:2007
Packaging	Drop test	ISO 2248
	Transportation test (for shipped finished products)	
Approbation	CE safety: CB report available	
	UL 979	
	CSA C22.2 No68	
Drinking water and food contact compliance	Closures with sealing gaskets for food containers	21 CFR 177.1210 FDA
	Rubber articles intended for repeated use	21 CFR 177.2600 FDA
	(EC) 1935/2004 and German LFGB	

Data subject to change

Warnings for UV-C LED modules

1. UV-C radiation is harmful for eyes and skin, therefore people and animals should always avoid direct exposure to UV-C. When installing the module make sure the installation manual of the device is followed and modules are not switched-on during installation. All Philips UV-C LED modules have warning text and signs on the boxes.

UV-C RISK GROUP 3

WARNING: These UV-C LED modules are not for general residential or commercial use. Do not purchase this UV-C LED module unless it will be installed in a fixture/system specifically designed to accommodate an UV-C LED module. If you install these modules in general purpose lighting fixtures, you may expose yourself and others to dangerous ultraviolet radiation, possibly leading to severe skin and eye damage.

2. All plants and/or animals that are exposed to UV-C and/or ozone for a long time may become damaged and/or discolored.
3. Materials that are exposed to UV-C and/or ozone for a long time may become damaged and/or discolored.
4. Our UV-C sources are not intended and shall not be used in applications or activities which may cause death, personal injury and/or damage to the environment.

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