



SWDC SERIES

Harvatek's UVC LED based modules are mercury and free
offer the best solution for water sterilization with no
resurrection and no side effects.

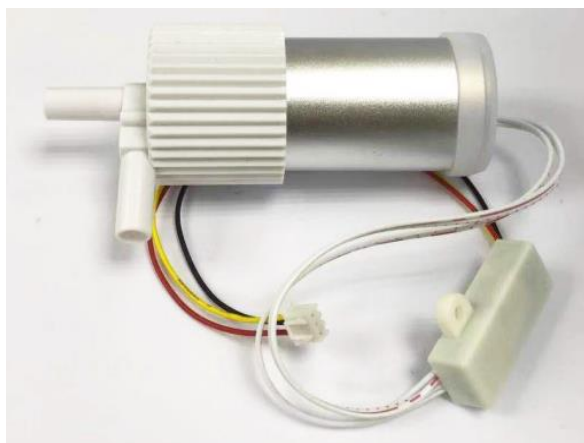
**SWDC-F0xx-
E0000**

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SWDC-Fxxx Series

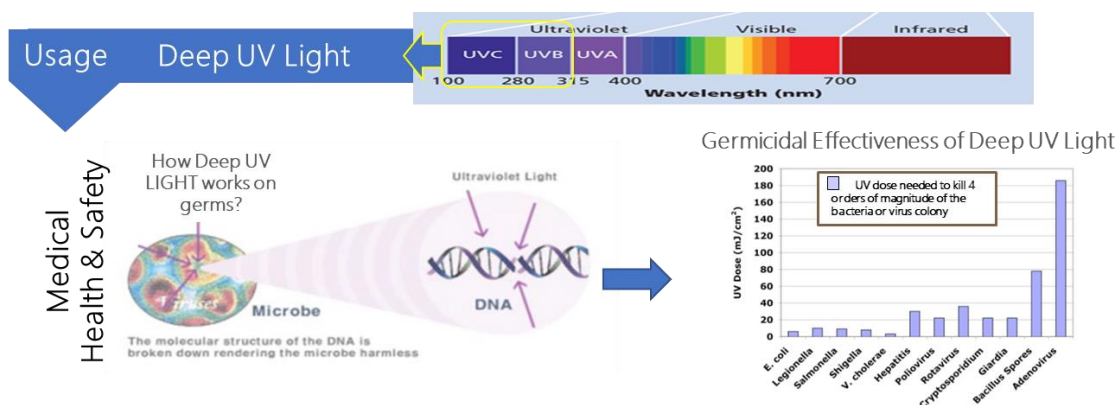
SWDC series are UVC LED based modules using high-power ultraviolet light emission between 265nm and 280 nm (UVC region).



UV emission is an invisible light source subdivided in 3 regions: UVA, UVB and UVC (see graph below). A Wavelength between 230 & 285nm (UVC & UVB) is recommended for maximum efficiency of sterilization and disinfection. UVC & UVB are absorbed by the DNA and RNA of bacterial microorganisms, which can effectively sterilize our environment

(water, air, surfaces). UVC sterilization has the highest efficiency in sterilization with no resurrection and no side effects.

When the water flows through the SWDC modules, UVC light will initiate sterilization immediately. The SWDC modules totally solve the problems of bacterial contamination levels in drinking water, exceeding standards, achieving instant effect during usage. It has and will continue to vastly improve the quality of everyone's daily life and has made the public's drinking experience safer.



● **SWDC-FXXX Series, Products Features:**

1. Sterilization efficiency above 99.99% ①
2. Mercury Free
3. Fast sterilization, high performance, no heat, pure physical sterilization, unaltered physical and chemical characteristics of water after sterilization, colorless, odorless, with no by-products produced
4. Aesthetic module structure and appearance, quality material, and sterilization efficiency certified by several renowned third-party entities.
5. The parts of the module that are in contact with the water are made of food grade quartz glass and food grade PC plastic. The module housing is made of high-quality aluminum alloy. It is light in weight, very pressure resistant, has long life cycle and aesthetic appearance.
6. Module structure with multiple design aspects optimized can offer 4 different water flows, are easy to install and to use, safe and simple to manage
7. Water diverter: high purity quartz glass + food grade PC material
8. Housing: aluminum alloy that has gone through anodizing process
9. Outlet/Inlet diameter: 3/8" pull-in water connector
10. Maximum influent water pressure: 1 MPa. It is strictly prohibited to exceed the operating pressure
11. Operating life②:
 - a) Continuous mode regime: Above 1,000 hours.
 - b) Pulsed mode regime: 10,000 hours (using a standard household water usage estimation)



It is highly recommended to use the modules in a pulsed regime (using a controller, not included): when water flows through, the module is turned on (the sterilization starts); when water flow stops, it turns off the module (it will prolong its lifetime).

Note: The module is designed to be placed vertically. Please consult with us before using the modules in other configurations.

① The standard *Escherichia coli* ATCC25922 were used in a ISO100-grade laboratory to calculate the sterilization rate by measuring the number of colonies before and after irradiation. Please contact us for detailed test methods and bacteria strains used.

② IESNA (Illuminating Engineering Society of North America) LM80 experimental method, 70% Lumens depreciation evaluation standard

● **SWDC-F0XX Series, Products Specifications:**

The SWDC-F0XX Series offers 4 different module categories based on water flows: 0.6, 1, 1.5 and 2 L/min

1. Module Spec (0.6 L/min):

Spec		Symbol	SWDC-F006- NNN	SWDC-F006- DNN
Water Flow Rate		L/min	0.6 (If the water flow rate exceeds this flow, the sterilization efficiency will be diminished)	
Wavelength		nm	265-280	
Radiant	Typ.	mW	36	
Voltage		VCC	24	
Power Consumption ③	Typ.	W	1.9	
	Max		2.3	
Hosing Type			Pitch 2.5/2Pin	Pitch2.5/3pin
Signal Detection			----	LED board open and short circuit
Weight		g	110g ± 10%	

2. Module Spec (1.0 L/min):

Spec		Symbol	SWDC-F010- NNN	SWDC-F010- DNN
Water Flow Rate		L/min	1.0 (If the water flow rate exceeds this flow, the sterilization efficiency will be diminished)	
Wavelength		nm	265-280	
Radiant	Typ.	mW	72	
Voltage		VCC	24	
Power Consumption ③	Typ.	W	3.4	
	Max		4.5	
Hosing Type			Pitch 2.5/2Pin	Pitch2.5/3pin
Signal Detection			----	LED board open or short circuit
Weight		g	110g ± 10%	

3. Module Spec (1.5 L/min):

Spec		Symbol	SWDC-F015 -NNN	SWDC-F015 -DNN
Water Flow Rate		L/min	1.5 (If the water flow rate exceeds this flow, the sterilization efficiency will be diminished)	
Wavelength		nm	265-280	
Radiant	Typ.	mW	108	
Voltage		VCC	24	
Power Consumption③	Typ.	W	4.8	
	Max		6.0	
Hosing Type			Pitch 2.5/2Pin	Pitch2.5/3pin
Signal Detection			----	LED board open or short circuit
Weight		g	110g ± 10%	

4. Module Spec (2.0 L/min):

Spec		Symbol	SWDC-F020- NNN	SWDC-F020- DNN
Water Flow Rate		L/min	2.0 (If the water flow rate exceeds this flow, the sterilization efficiency will be diminished)	
Wavelength		nm	265-280	
Radiant	Typ.	mW	144	
Voltage		VCC	24	
Power Consumption③	Typ.	W	6.3	
	Max		7.5	
Hosing Type			Pitch2.5/2Pin	Pitch2.5/3pin
Signal Detection			----	LED board open or short circuit
Weight		g	110g ± 10%	

③Power consumption can be changed by surrounding temperature and current with ±10% tolerance, recommend use a power capacity above 15W

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● SWDC-F0XX Series, Mechanical Specifications:

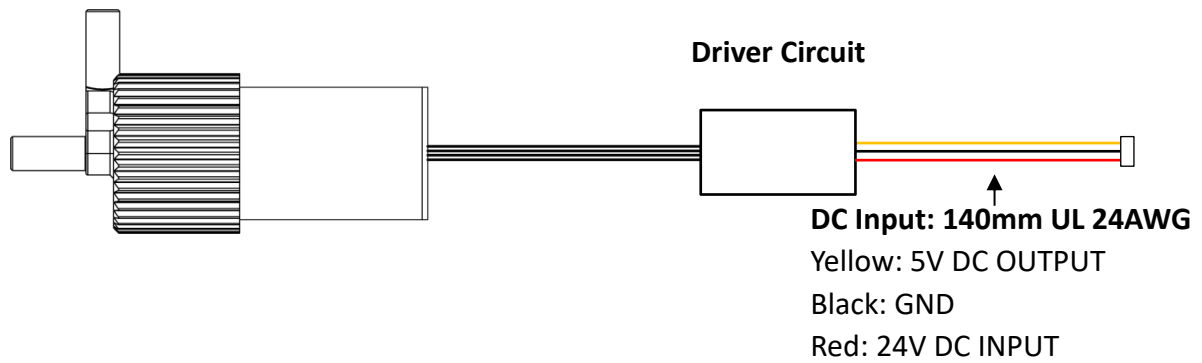


Fig. 1 Wire Schematic

Module dimension: $\varnothing 42\text{mm} \times 138\text{mm}$

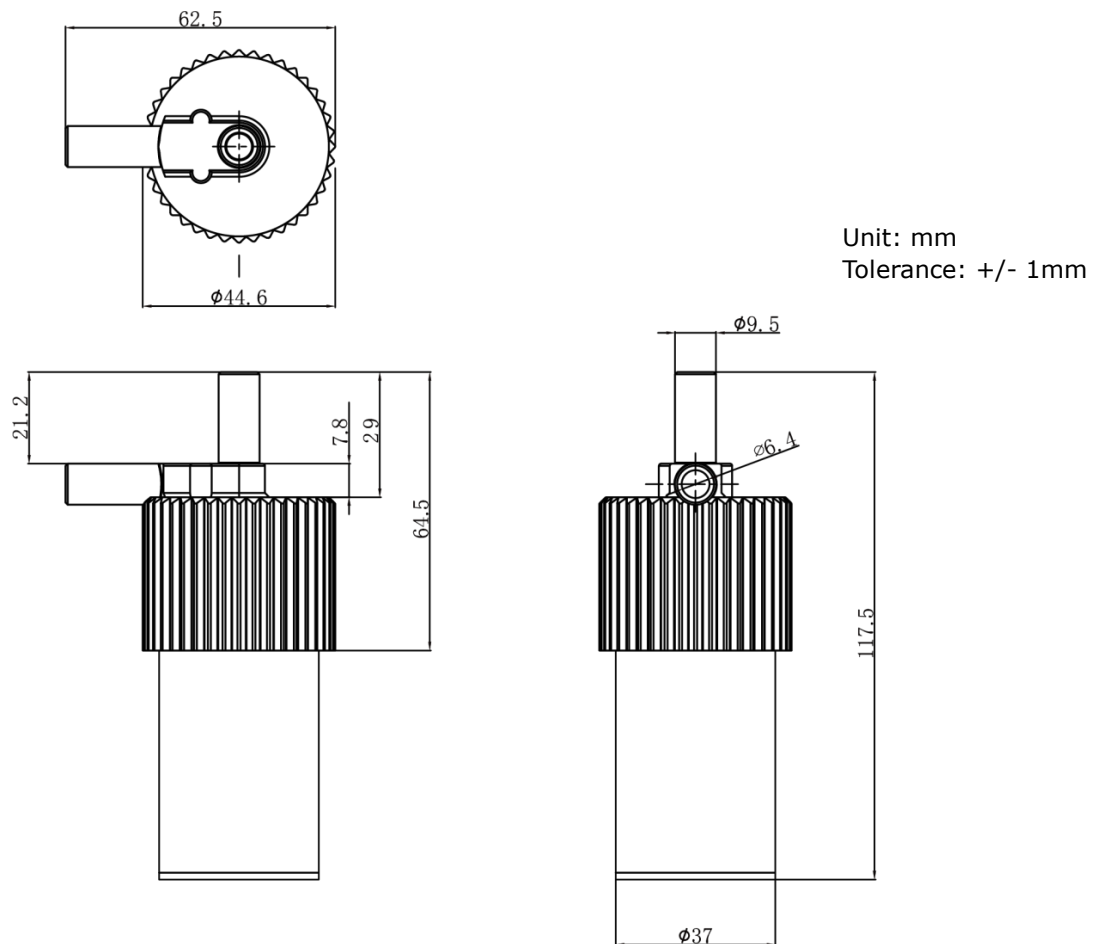


Fig.2 Outline Dimensions

- **SWDC-FXXX Series, Installation instructions:**

1. It is recommended to fix the module vertically on a support.
Connect to the water network through the quick-connect connector provided along with the module. Ensure to connect the inlet and outlet to the appropriate port locations as shown in Figure 3.
2. Turn on the power and the LEDs will start by themselves while the system will enter sterilization mode. By using external water flow to trigger the control switch, LED sterilization will work in pulse modes of “water flows and the module switches on” and “water stops and module switches off”. This will help extend the life cycle of the module.
3. Module SWDC-Fxxx-DNN with 2 warning functions, provide instant feedback of low voltage (under 1V) for normal working status (sterilization is effective) and high voltage (4.5~ 5V) for the following failure modes (sterilization compromised):
LED short circuit or LED open circuit
4. Installation is complete if the hydraulic pressure test can be carried out without water leakage at 4 Kg/cm². This module is designed to be splash proof, thus the module can withstand ordinary water spray and still be in working order.

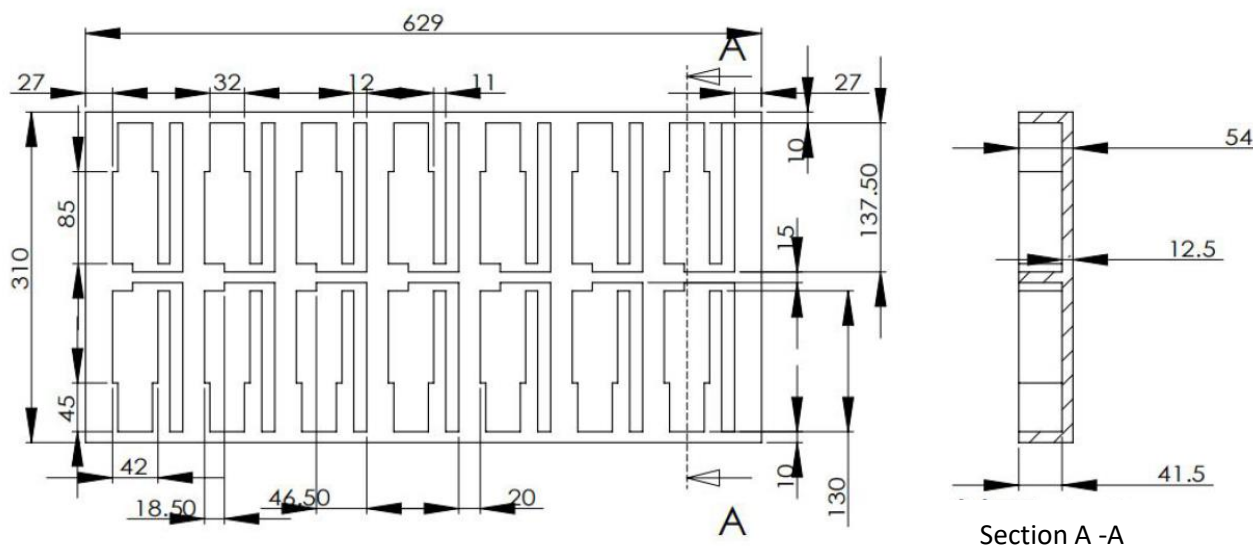


Fig.3 Schematic diagram of the inlet and outlet of the UV sterilization module

● Packing information:

1. Protective Foam Dimension: 629 x310 x54 mm

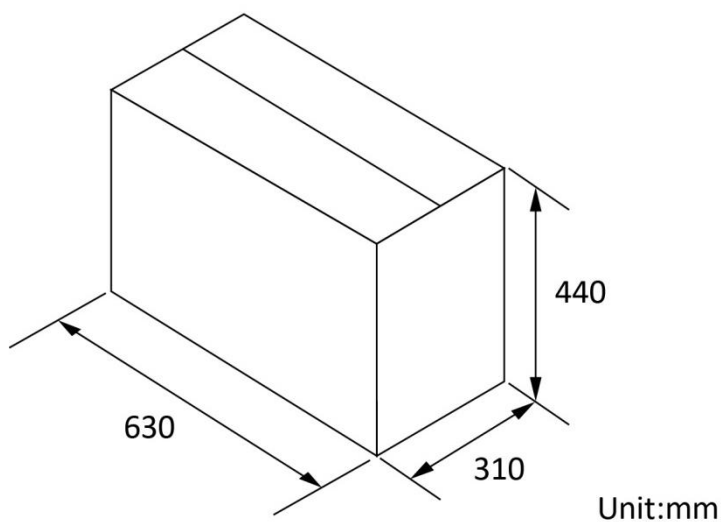
Quantity: 14 pieces/ layer



2. Outer Carton Box Dimension: 630 x310 x440 mm

Quantity: 8 layers/ box

Weight: 14.5 kg



*Tolerance: +/- 10mm

● Test Report: Independent Laboratory



Test Report

Report No: ASH18-049555-01

Issue Date: Oct 17 2018

TEST METHOD(S):

Total coliforms removal rate; Refer to MOH Sanitary Standard for Hygienic Safety and Function Evaluation on Treatment Devices of Drinking Water – General Devices & GB/T 5750.12-2006 Standard Examination Methods for Drinking Water – Microbiological Parameters

TEST RESULT(S):

Test item(s)	Unit(s)	Test method(s)	Test result(s)		Removal rate(s)(%)**
			Influent spiked water	Effluent filtrated water	
Total coliforms*	cfu/100mL	GB/T 5750.12-2006	8.0×10^4	<1	>99.99

Remark: 1. Testing condition: Flow rate 2.0L/min

2. *Challenge test organism: E.coli ATCC 25922.

3. ** Removal rate (%) = (Influent spiked water test result - Effluent filtrated water test result) / Influent spiked water test result \times 100%.

SAMPLE DESCRIPTION: SWDC-2L01



*** End ***

Note:

Each type of microbial killing requires specific ultraviolet radiation energy. The radiation of SWDC-Fxxx ultraviolet sterilization module, in strict accordance with national standards, is $30\text{mJ}/\text{cm}^2$, which can kill more than 99.99% of bacteria and viruses. When the to-be sterilized water is turbid, high in water hardness, calcium, or magnesium, bacteria extermination may be weakened. Therefore, it is recommended to set a filter device at the front end of the module inlet to reduce the influence of water quality on bacteria eradication.

Ultraviolet rays also cause damages to the human body. For safety reasons, this module is designed for all components to be assembled within an enclosed case without any exchangeable repair parts inside. Therefore, it is not recommended to disassemble the module by oneself unless necessary. Please be sure to open the module under the professional guidance of our company.

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- **History of Version:**

[illegible]