Standard product reference diagram

Water Disinfection Unit CCL-50F274

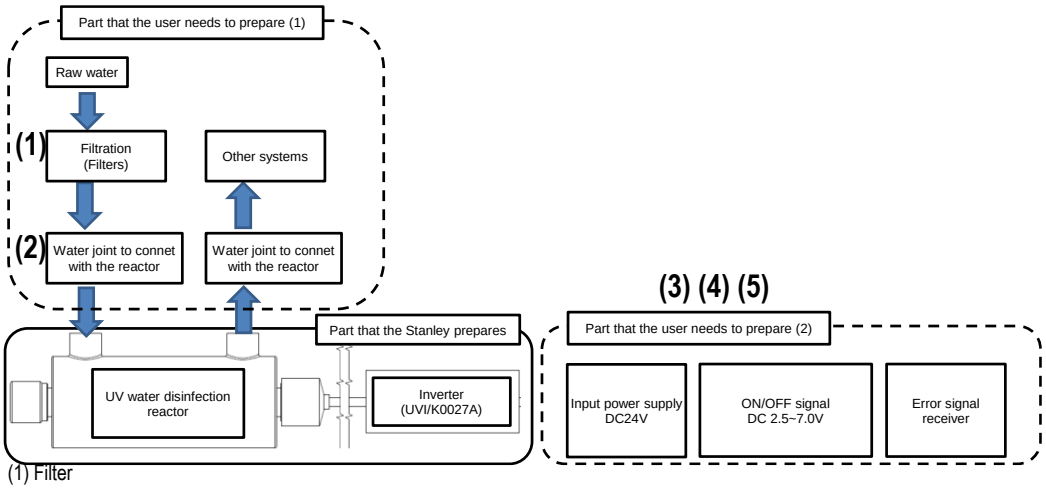
[Features]

-Water amount: Can handle 2 to 6L/min.
-Service life is 2,000h (approx. 2 years), thus reducing maintenance frequency.

-Service life is not affected even if control is turned ON/OFF, so the customer can set the lamp ON conditions that suit them.

-Water bearing pressure= 1.75MPa (Static water pressure/water bearing test JIS3200-1)
-There is a "lamp ON verification window" (UV resistant) that enables you to determine visually whether the lamp is ON.

[Ultraviolet water disinfectant reactor configuration and scope of operations]



(1) Filter
Before passing water through the UV reactor, install filters, etc., and use raw water within the scope of the specifications.

(2) Water inlet/outlet joints and piping
Reactor joint screw standards: Joints suited to RC1/4 water in/out pipes, one-touch joints, etc....*Use UV-resistant joints and pipe tubes.

(3) DC power supply for inverter motor
Recommended output specifications: 24V±10%/2A min.; switching power supply, etc.

(4) Inverter input terminal XAP-04V (JST)

(5) Reactor securing jig
Secure the main reactor unit (φ50) using the securing jig, etc. φ50 securing holder, machine mounting holder, for φ50, etc.

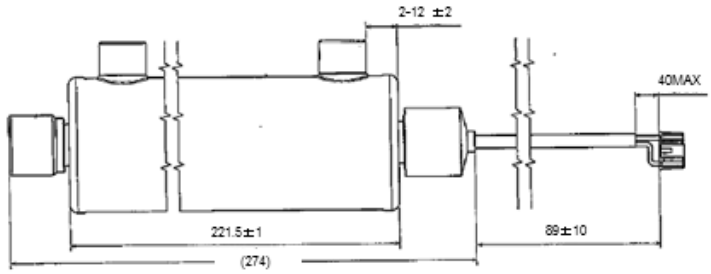
[Recommended Applications]

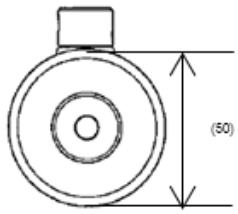
Recommended for cyclically disinfecting water purifiers and water in water tanks, etc.

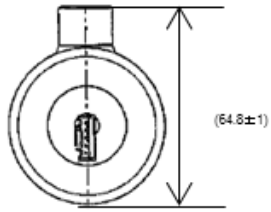
*This product uses mercury.
Separate and drain in the home according to local government rules, and businesses, etc., should discard according to the law.
For treaties concerning mercury, see the website of the Japan Lighting Manufacturers Association.
http://jlma.or.jp/kankyo/suigin/index.htm"

May 1, 2018

[Dimensions]

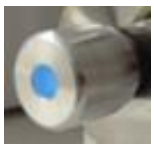






With lamp ON verification window

ON OFF



You can check that the lamp in the reactor is ON even after the joints and piping have been connected.

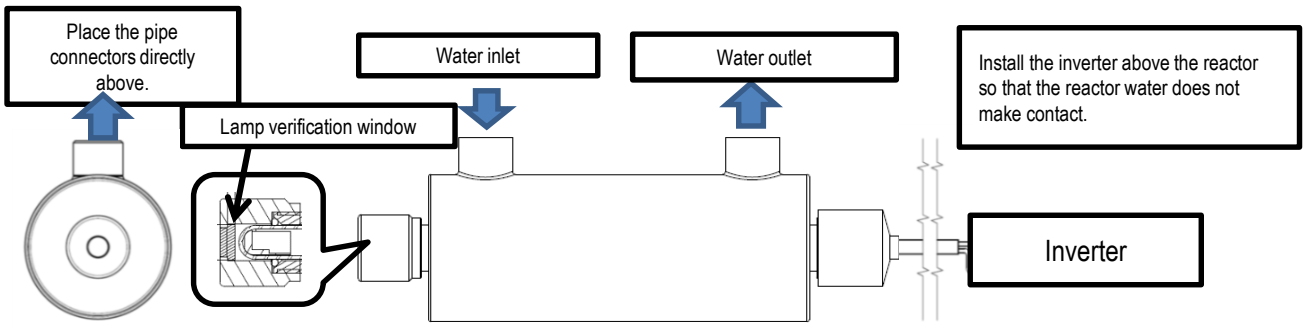
[Specifications]

No.	Item	Standard value	Unit	Notes
1	Max. flow amount	2 to 6	(L/min.)	Note 1
2	Max. use pressure	0.875	(MPa)	Use pressure
3	Pressure resistance value	1.75 min.	(MPa)	Using static water pressure and pressure resistance test JIS S3200-1
4	Use temperature range	4 to 40	(ºC)	Environment temperature and raw water temperature
5	Power consumption	(6.6)	(W)	Note 2
6	Product service life	20,000 min.	(h)	Notes 3 and 4
7	Reactor materials	Equivalent to SUS304	-	Outer surface is #400 buff finish
8	Primary raw water	Use water that conforms to tap water quality standards, and satisfy the specified range for chloride ion concentrations	-	Water examined and verified as drinkable by the insurance agency with regional jurisdiction
		Chloride ion concentration: Less than 20	(mg/L)	Raw water specifications
9	Joint connectors	Rc 1/4	(inch)	Compatible with Rc 1/4 standard joints
10	Ultraviolet radiation intensity	7.0 min.	($\mu W/cm^2$)	Measuring distance=1m Intensity of the lamp only until the end of service life

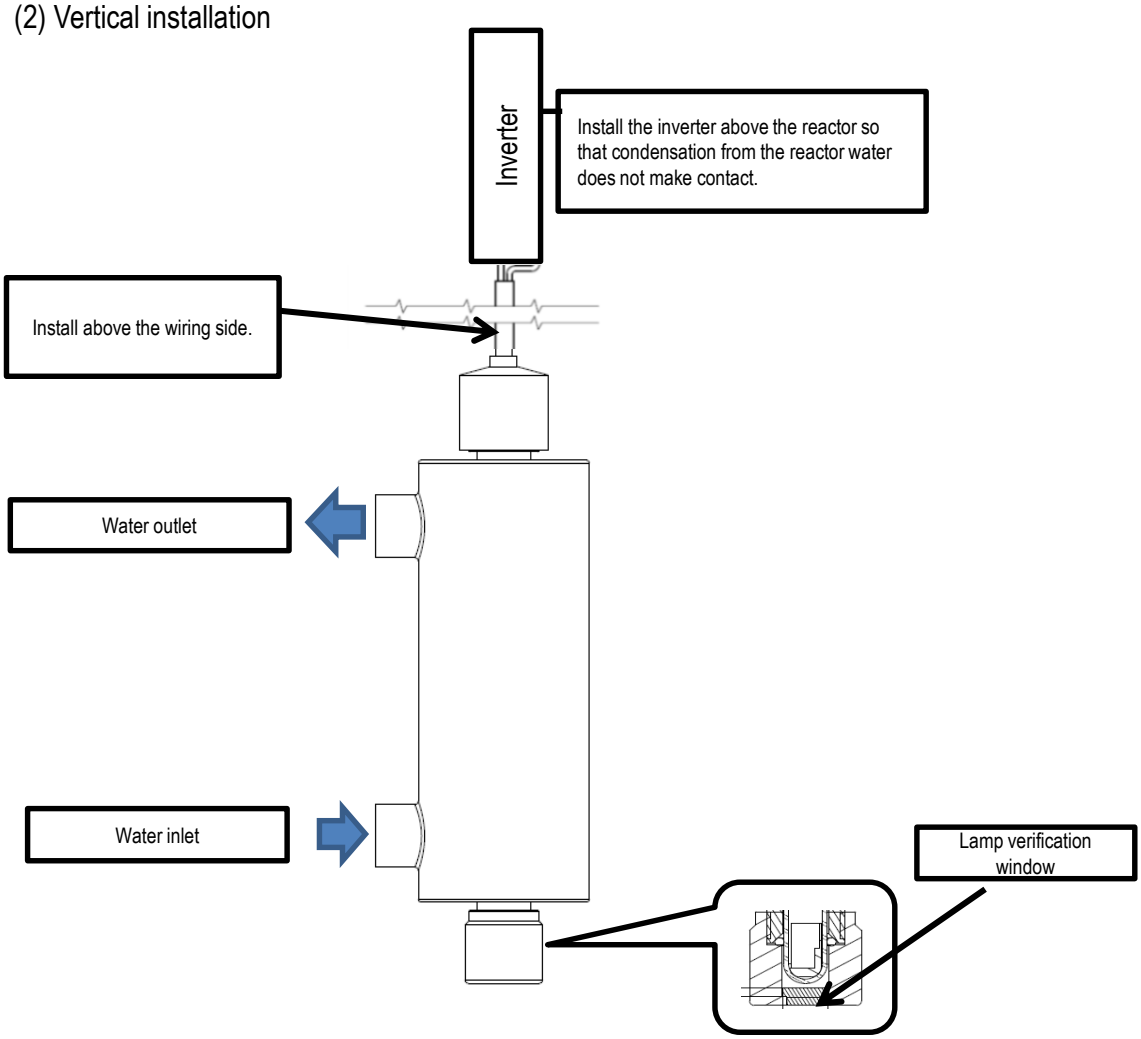
Note 1. The amount of flow into the reactor changes depending on the joints and pipe diameters used, as well as the pressure conditions.
If the amount of water exceeds the maximum, disinfection performance will be reduced.
Note 2. This is the input power when operating the water disinfectant reactor.
Note 3. Definition of product service life
When the ultraviolet intensity of the disinfectant lamp is 7$\mu W/cm^2$.
Note 4. Replace each water disinfectant unit individually when replacing a water disinfectant reactor at the end of its service life.
Note 5. The weight of the reactor (excluding the inverter) is approx. 353g when empty, and approx. 760g when filled with water.

[Installation Method]

(1) Horizontal installation



(2) Vertical installation



[Operations, Storage Environment, and Use Conditions]

Item		Standard		
		MIN.	TYP	MAX.
Operating temperature range	(ºC)	4	-	40
Operating humidity range	(%Rh)	5	-	95
Storage temperature range	(ºC)	-20	-	85
Storage humidity range	(%Rh)	5	-	95

*"Storage" means in a state where no water can enter and the packaging is unopened.
*The recommended storage temperature is 0ºC to 40ºC with 80%h max. relative humidity.
*Make sure the storage period is 6 months max.

1. An inverter is required to turn ON the product's lamp.
   The inverter has a high voltage. As there is a risk of electric shock, do not touch the lamp or inverter when they are ON.

2. See the inverter data for information regarding the inverter.

3. The lamp emits ultraviolet rays (mainly 254nm) when it is ON.
   Do not look directly at the beam with the naked eye. Also make sure that reflected light does not enter the eyes.
   Doing so may cause eye pain or damage your eyesight.

4. Do not allow the ultraviolet rays to contact your skin either directly or indirectly. Doing so may cause skin inflammation or sunburn.

5. Do not immerse the product in water. Doing so risks short circuit and electric shock.

7. If the connection between the wire harness and the inverter is incomplete, it may cause smoke and fire.
   Check that the fitting is complete to the very end.

Compliance with RoHS Directions and the Minamata Convention

1. This product conforms to RoHS directives.

2. The product is outside the scope of the Minamata Convention.
   Both manufacture and sale will be possible from 2020. Use with peace of mind.
   Separate and drain in the home according to local government rules, and businesses, etc., should process according to the law.

Requests and precautions described in this data sheet and when using the product

1) The technical information described in this data sheet describes typical application examples and characteristics, etc., and does not constitute a warranty for the implementation of business eights, etc., or consent for implementation rights.

2) The products, specifications, characteristics, and data, etc., described in this data sheet is subject to change without notice due to product improvements, etc. When using, make sure to check for the latest specifications.

3) When using the product described in the data sheet, make sure to strictly observe the maximum ratings described in the latest specifications, the operations power supply voltage range, heat discharge characteristics, and other precautions for use. Further, YesLED can bear no responsibility for damages caused by use of the product that deviates from the maximum ratings described in the specifications, operations power supply voltage range, heat discharge characteristics, or other precautions for use.

4) The product described in the data sheet was manufactured for the purpose of use in general electronic device applications (office automation devices, communications devices, audiovisual devices, home appliances, and measuring instruments). Customers planning to use the product for applications other than those described above, or for applications that require high levels of reliability and safety, or applications where malfunction or misoperations poses a risk to human life or of bodily harm (aviation devices, aerospace devices, shipping devices, medical devices, and nuclear power control devices, etc.) should consult YesLED's helpdesk beforehand.

5) Products among those described in the data sheet to which the "Foreign Exchange and Foreign Trade Act" applies require authorization from the Japanese government if being shipped or taken out of Japan.

6) This data sheet may not be copied or reproduced either in whole or in part.

7) Acquire the latest version of this data sheet from the following address.
   Website address: http://www.yesled.com

Precautions for water sterilization reactor

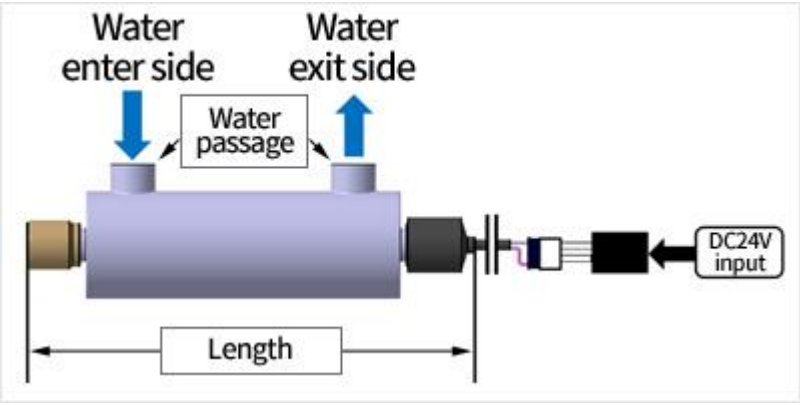
warning :

- **Please do not bring it close to the fire.**It may cause fire or malfunction.
- **Please use water that meets tap water quality standards.**If tap water or well water outside the water quality standard is used, harmful substances may not be removed.
- **Please do not use the seawater.**It may cause malfunction or wasting color.
- **Please do not use hot water (more than 45 degree).**It may cause malfunction or sterilization power may get lower.
- **Please do not put it in the water.**Water may permeate the electrical wiring, leakage may occur, and there is a possibility of electric shock.
- **Please do not give too much shock to it.**It may cause malfunction or get broken.
- **Please do not put any chemicals or any liquids other than water.**It will cause deterioration of the materials.
- **UV light(254nm disinfection light) is emitted from the lamp when it is turned ON. Please do not look at UV light directly and expose directly your skin to it.**
- **Mercury is used for this product. Please follow the rules of each local government for destruction method. (Rohs compliant)**
- **Please do not disassemble it with the light on or do not put the light on with the reactor disassembled.**

Notes :

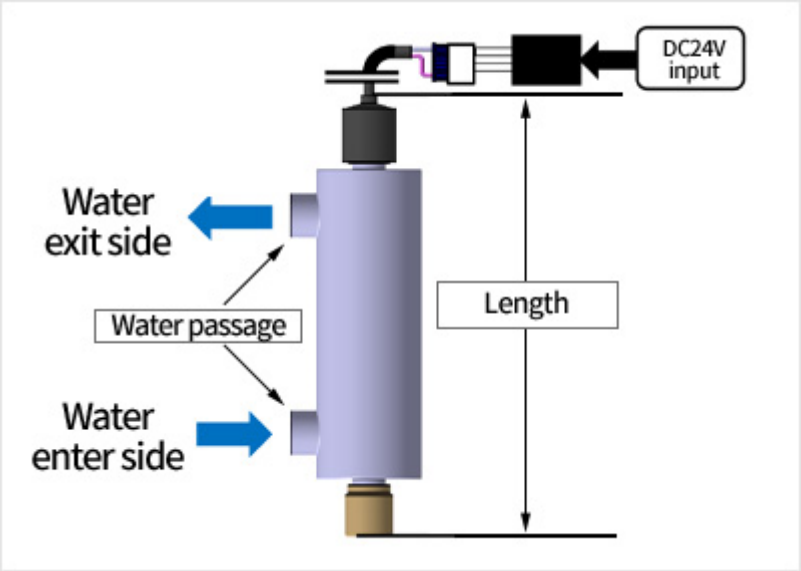
- **This product is a device to inactivate bacteria of water passing through the reactor by irradiating UV rays.**(It will not work on items stuck to the piping route where the products are installed.)
- **Since this product does not have filtration function, it is not possible to remove solid matter such as dust.**
- **In order to use this product effectively, please use it in the process after removing the solid component with a product with filtration function.** Please do not connect it to water pipe directly.
- **We recommend it to put the reactor horizontally and water passage facing up.** It is the most effective way to be installed.
- **we recommend it to put the reactor connection so that it faces directly above the ground.** It is the most effective way to be installed.
- **Please do not put the reactor in a cold place (colder than 5 degree).**It may cause malfunction or get broken.
- **Please use the reactor within the warranty period.**If you don't, the sterilization power will get lower.
- **Please discharge for more than 30 seconds before use.**It is because there may be bacteria in the horse.
- **It is impossible to remove radioactive materials by reactor.**
- **Glass is used for this product. Please be careful.**
- **Please be careful with high voltage.**
- **Please use the rector with the flow rate and piping diameter described in the specifications.**

When using the reactor in landscape orientation :



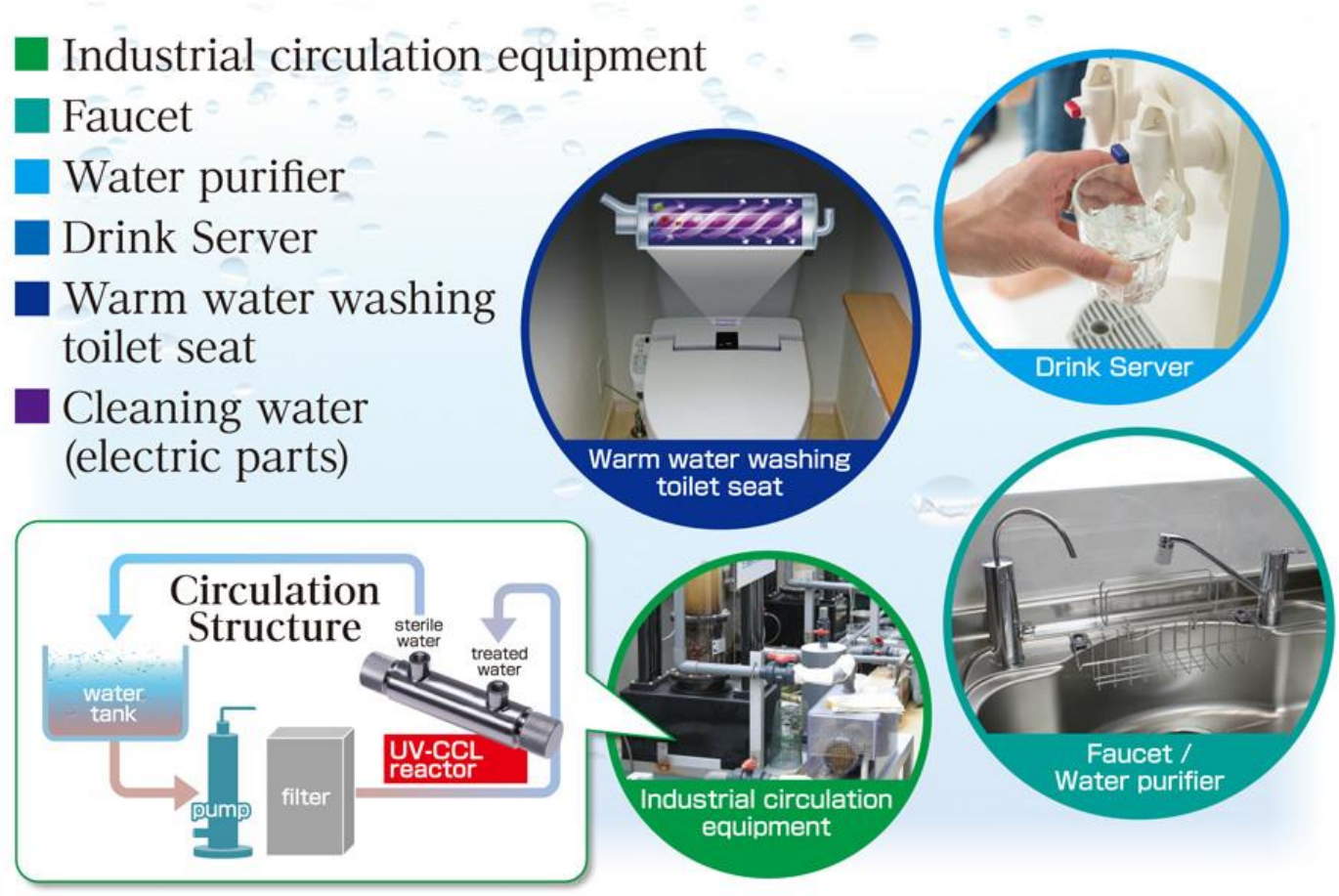
1. Please install it with water passage upward against the ground.
   ⇒It's the best way to obtain the max sterilization power. If installing it in a wrong way, the water will flow in a different way, which will cause less sterilization power.
2. You can put the lamp on by inputting DC24V to the inverter.
3. We recommend that you wait at least 1 minute after the lamp is lit before using.
4. Please install the inverter on the top of the reactor so that dew condensation water will not be transmitted.

When using the product in portrait orientation :



1. When installing this product vertically, please insert water from the lower water passage.
   ⇒It's the best way for getting max sterilization power. If you install it in other ways, sterilization power will get lower.
2. You can put the lamp on by inputting DC24V to the inverter.
3. We recommend that you wait at least 1 minute after the lamp is lit before using.
4. Please install the inverter on the top of the reactor so that dew condensation water will not be transmitted.

UV water disinfection reactor application



UV-CCL Handling Precautions

UV Light :

While the UV-CCL is lit, do not allow direct contact with skin and do not look at the UV light without preventative eye-wear.
UV light not only affects germs but also resin and other organic materials.

Ozone :

Ozone is generated by the radiation of 185nm in this product. This is hazardous to human body as its concentration gets higher. When lamp is on, wearing protections such as mask are required. The maximum allowed output of ozone varies by country and /or region. We ask that you verify and control total output laws for your specific product.
*Ozone Threshold Limit Values:
0.1ppm Japan Society for Occupational Health Recommended Value (1992), 0.1ppm (TWA) ACGIH (1992-1993) US Department of Labor (OSHA)

Mercury :

To emit UV light, mercury is included in our product. Per tube, there is less than 3.5mg of mercury.
Our mercury use is in accordance with RoHS and it's exempt from the Minamata Convention on Mercury.
It has been possible to manufacture and sell the lamp after 2020.
When discarding lamp, regulations of municipality and countries where the final product will be discarded, shall be applied on.

Lighting circuit :

This product needs invertor (lighting circuit) for turn it on. The invertor is high voltage. Please do not touch the lamp and invertor under the switch is on. It would be cause of electrification.

Others :

Please do not dip this product in water. The water penetrate electric wirings and it would be causes of short and electrification.

What is UV-CCLs?

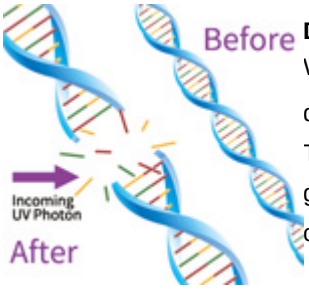
What is Ultra Violet (UV) rays?

UV is an electromagnetic ray wave spectrum from 100 to 400 nm (nanometer). This spectrum can be separated in UV-A, -B & -C. UV-rays are also part of natural sun light.

UV-A and -B is already well-known causing suntan on people's skin after sunlight exposure. Knowledge of UV-C is less spread, because these most aggressive rays normally do not reach us through the protective earth's ozone "shield". Though fortunate for our everyday life, we can instrumentalize UV-C as most effective disinfectant leaving no such waste as e.g. chemical detergents.

Though established very well already e.g. in the medical industry, proper handling is crucial to benefit from UV-C application, while steering safe of any accompanying risk.

Vacuum Ultra Violet Rays	Near UV Rays		
	UV-C	UV-B	UV-A
10~200nm	200~280nm	280~315nm	315~380nm
Air/Water disinfection, deodorization			Photo-catalyst
172nm: Surface reforming, Cleaning (Excimer UV lamp) **185nm: Ozone rays (Low pressure mercury lamp)** 193nm: Photolithography (Ar excimer laser)	248nm: Photolithography (KrF excimer laser) **254nm: Bactericidal rays (Low pressure mercury lamp)**		**365nm: Resin curing Photolithography (High pressure mercury lamp)**



Disinfection Mechanism

When reproducing organic matter is exposed to UV-C rays (200 ~ 280nm) the DNA is ruptured. The damage inflicts on its reproductive capability.

This is called "inactivation". Bacteria irrespective of environmental media (air or water) discontinues to grow and existent stems wither. Disinfection with UV–C is in total considered much safer than using chemicals, especially for children and pets, plus no waste is left polluting the environment.

Characteristics of YESLED's UV Cold Cathode Lamp (UV-CCL)

'Hot Cathode Lamps' (UV-HCL), called GL Lamp, application is widely spread in industrial fields. Though its radiant power is considerable, GL lamps size is big and lifetime is short. Mainly these are the reasons, why application in consumer products is so far limited.

YESLED is focusing its attention on these weaknesses to expand beneficial attributes attention such as the unparalleled disinfection of UV-C by releasing NEW UV devices in 2010. Product characteristics cover existing products disadvantages by featuring

Compact size Long life Power Saving Vibration-proof

In response to heightened awareness to health concerns & environmental pollution YESLED Electric's products are also safely applicable to consumer products for deodorization, air conditioners and vacuum cleaner air purification.