Standard Product Reference Sheet

UV-CCL UW TYPE

Features

UV Cold Cathode lamp for disinfection water, air and surface.

Size, Wavelength	Product diameter φ9.0mm Product length 89mm, 169mm, 259mm 3 types Wavelength 254nm 1 type
Product features	・Long life Life time of L:89mm is 30,000Hrs., L:169mm and 259mm are 50,000Hrs. ・Compact ・Vibration-proof ・Power saving ・Never unlighted even the lamp turns ON/OFF repeatedly

Recommended Applications

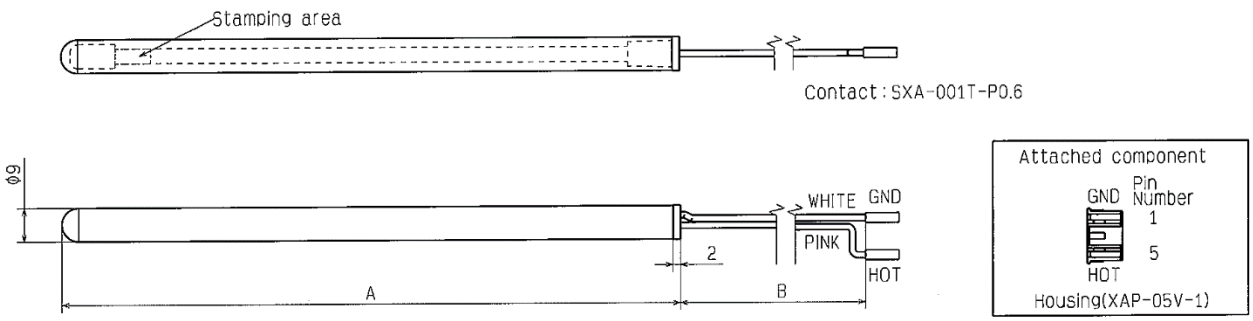
Humidifier, Water purifier, Water disinfection unit etc.

*UV-CCLs are mercury-contained products. According to rules of municipalities, segregate and discharge them individually at homes, and companies should follow laws and regulations.
According to the conventions of Mercury, please see the Japan Lighting Manufactures Association's HP.
http://jlma.or.jp/kankyo/suigin/

Outline Dimensions

UV-CCL UW TYPE

Unit : mm



* The housing that connect with the edges of wire harnesses, will be attached as a another part of this assembly.
（Due to easy to assemble this product to your product that needs water proof design with O ring.
: Please see page P.12.）

Part Name

Part Name	Dimension: A (mm)	Dimension: B (mm)	Peak Wavelength (nm)	Lamp Length (mm)
UW/9F89/9	89	100	254	70
UW/9F169/9	169		254	150
UW/9F259/9	259		254	240

【General Characteristics／Germicidal Lamp】

Part Name	UW/9F89/9	UW/9F169/9	UW/9F259/9	Unit	Note
Lamp length	70mm	150mm	240mm		
Starting Voltage	400MAX	600MAX	860MAX	(V RMS)	Ambient temperature25℃, Note1
	600MAX	900MAX	1300MAX		Ambient temperature0℃, Note1
Recommended applied voltage	1000MIN	1200MIN	1500MIN	(V RMS)	For discharge in dark space, Note2
Discharge in dark space	1MAX	1MAX	1MAX	(s)	Note3
Lamp current	10±0.05	15±0.05	15±0.05	(mA RMS)	
Lamp voltage	Initial 140±35 End of life 240MAX	Initial 205±25 End of life 320MAX	Initial 320±50 End of life 440MAX	(V RMS)	
Lamp power consumption	Initial 1.4	Initial 3.1	Initial 4.7	(W)	Commutation value
UV irradiance	2.1±0.5	6.7±0.8	11.4±1.5	($\mu W/cm^2$)	Measurement distance shall be 1.0m , Note4
UV radiant Flux	0.2	0.6	1.1	(W)	Calculation from JIS C7605
Time to stabilize UV irradiance	60MAX	60MAX	60MAX	(s)	Note5

＊It is likely to change without a previous notice. Please acknowledge it beforehand.

Note 1: Peak voltage on both ends of lamp when lamp is completely turned on by sliding-up voltage method.
Note 2: Required voltage that apply to the both edges of UV-lamp, for turning this lamp on correctly in a darkness area where this specifications stated.
Note 3: Turn lamp on at rating current for 60sec., store lamp for 24hrs in a completely dark space at room temperature, and turn lamp on within 1sec with 0.1lx.(Supply voltage: demand applied voltage)
Note 4: The measurement part is made respect not stamped.
Note 5: Time which reaches 90% of UV irradiance in saturation
(at 25℃・As a state of the single lamp item)

【About “starting voltage” and “recommended applied voltage”】

[Starting voltage]
Needed input voltage to the both edge of the lamp to turn it on under the ambient illuminance is less than 0.1(lx).

[Recommended applied voltage]
In a case of the ambient illuminance would be under 0.1(lx), we recommend to input higher voltage than the starting voltage.
When the ambient illuminance is under 0.1(lx), there is a possibility to late the lighting start time. Inputting higher voltage, has an effect to improve its lighting start time, so this specification stated it as a recommended value.

【Absolute Maximum Ratings】

Items		Standards			
		MIN	TYP	MAX	Note
Operation Temperature	(℃)	0	-	60	—
Operation Humidity	(%Rh)	5	-	95	—
Storage Temperature	(℃)	-30	-	85	—
Storage Humidity	(%Rh)	5	-	95	—
Operation Lamp Current	(mA)	2	10	11	70mm
		2	15	16	150mm,240mm
Operation Frequency	(kHz)	30	55	100	—

【Lifetime】

1. Germicidal lamp

	Lamp Length	Rated Current	Life	Ambient Temperature
Room temperature continuous lighting	70mm	10mA	30,000h(MIN)	25±5℃
	150mm,240mm	15mA	50,000h(MIN)	
Low temperature continuous lighting	70mm	10mA	1,800h(MIN)	0±2℃
	150mm,240mm	15mA	3,000h(MIN)	

【Definition of Life】

UV irradiance reaches 50% of the initial irradiance. (254nm)

Reliability Testing Results

UV-CCL UW TYPE

No.	Items	Test Conditions	Standards
1	Life Operation test	25±5℃ Rated Current Germicidal lamp 70mm : 30,000hrs. Germicidal lamp 150mm, 240mm : 50,000hrs.	B
2	On-Off Operation test	25±5℃ ON/1min OFF/1min (the off time is conclude) Rated Current Germicidal lamp 70mm : 30,000hrs. Germicidal lamp 150mm, 240mm : 50,000hrs.	B
3	Low temperature Operation test	0±2℃ Rated Current Germicidal lamp 70mm : 1,800hrs. Germicidal lamp 150mm, 240mm : 3,000hrs.	B
4	High temp., High humidity Operation test	60±2℃ 90±5%Rh Rated Current Germicidal lamp 70mm : 1,800hrs. Germicidal lamp 150mm, 240mm : 3,000hrs.	B
5	Temperature cycle Operation test Heat shock test	-30℃ ⇔ 85℃ 200 cycles (0.5h) (0.5h)	A
6	Vibration test	Amplitude (x,y,z) 1.5mm, Test time 2hrs, Frequency sweep condition : 10～55～10Hz/1minitue	A, D
7	Impact test	1470m/s^2, 0.8ms 5 times	A, D
8	Lead wire Tension test	Loading : 29.4N (Longer direction) 10s 10 times	A
9	Lead wire Bending test	Loading: 2.45N, 90 degree bend ⇒ reset: 1 time, reversed 90 degree bend ⇒ reset: 1 time = Total 2 times.	A
10	Hermetic test	Soak lamp in warm water (90 ～ 100℃) for 3 min ⇒ in cold water (5℃) for 3 min. 3 cycles	A, D
11	Lighting in dark space test	Turn lamp on at rating: 15mArms for 1min ⇒ Store it for 24hrs. ⇒ Turn lamp on within 1sec with 0.1lx. lamp voltage of test is demand applied voltage.	C
12	Harness Tension test	Weight: 14.7N (tube axis direction) 10s 4.9N (vertical direction) 10s	A
13	Harness Bending test	Weight: 4.9N Bend a lead wire at 90° and put it back to original position. This is one cycle. The same is done to an opposite direction. Repeat the cycle twice.	A

【Basis of judgment】

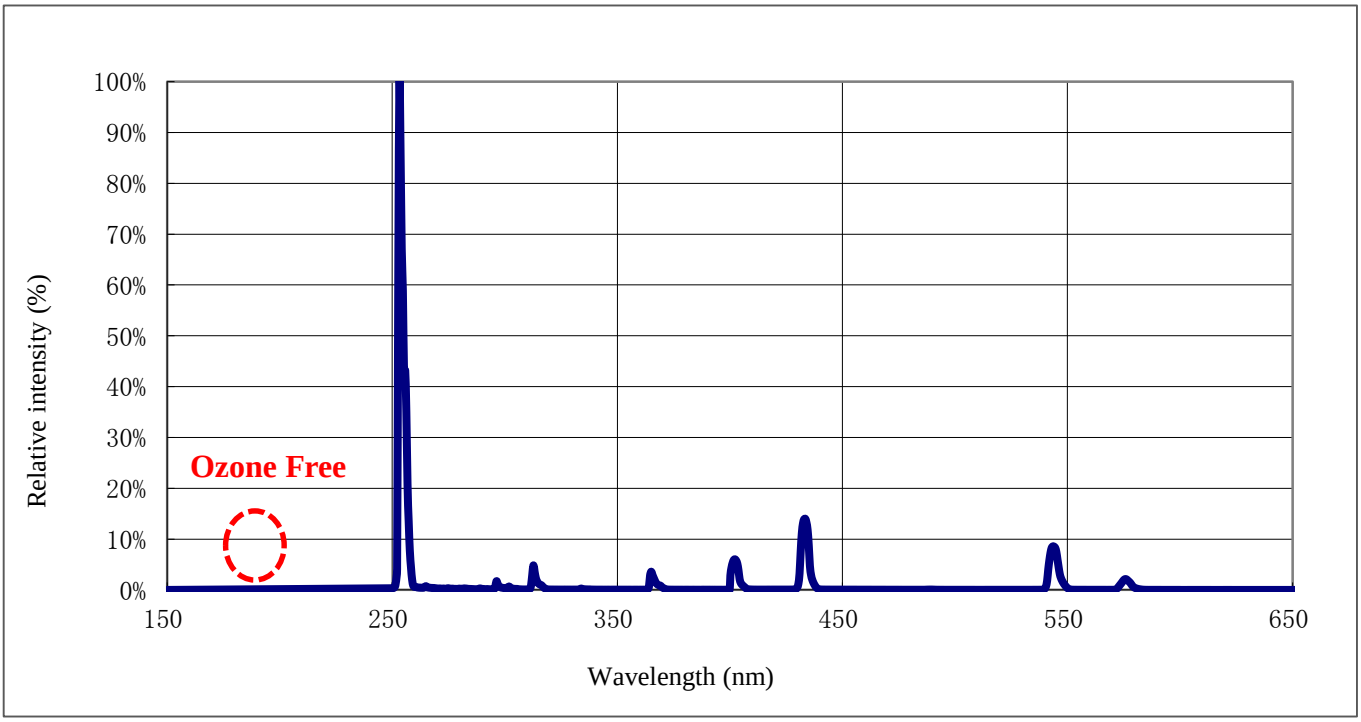
After reliability test, lamp shall be kept for 24hours under environmental conditions of room temperature and humidity and then shall satisfy standards as follows.

A. Lamp shall satisfy rating specification.
B. Lamp shall satisfy definition of life.
C. Lamp shall be turned on within 1sec.
D. No cracks on quartz tubes and/or lamps..

1. Recommended storage conditions
   - Temperature is 0～40℃
   - Humidity is under 80%Rh
   - Storage term is within 6 months.

2. In a case of the storage term (6 months) exceeded
   - There are possibilities that the lighting start time delays or unlighted, if the UV-CCL were stored in a dark space for long time. It's possible to use the lamp again if it's turned on for one minute under the rating conditions, in a daylight area.

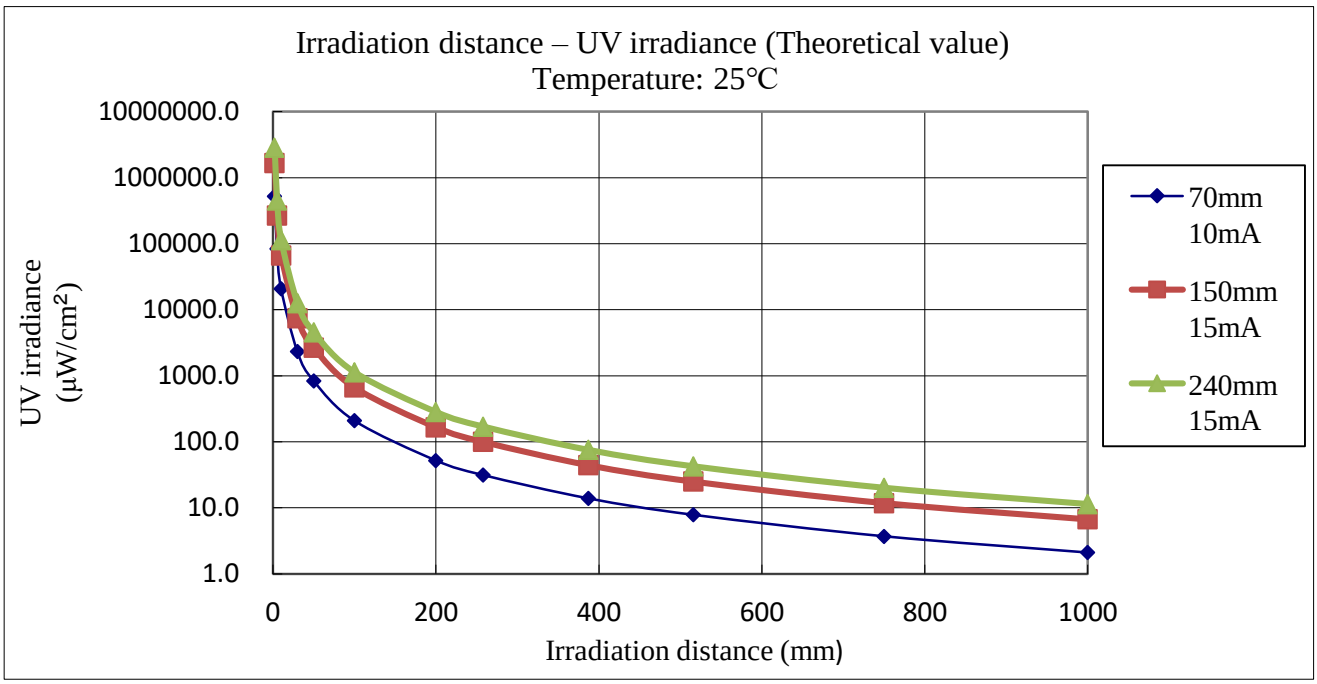
【 Germicidal Lamp spectrum (254nm) 】



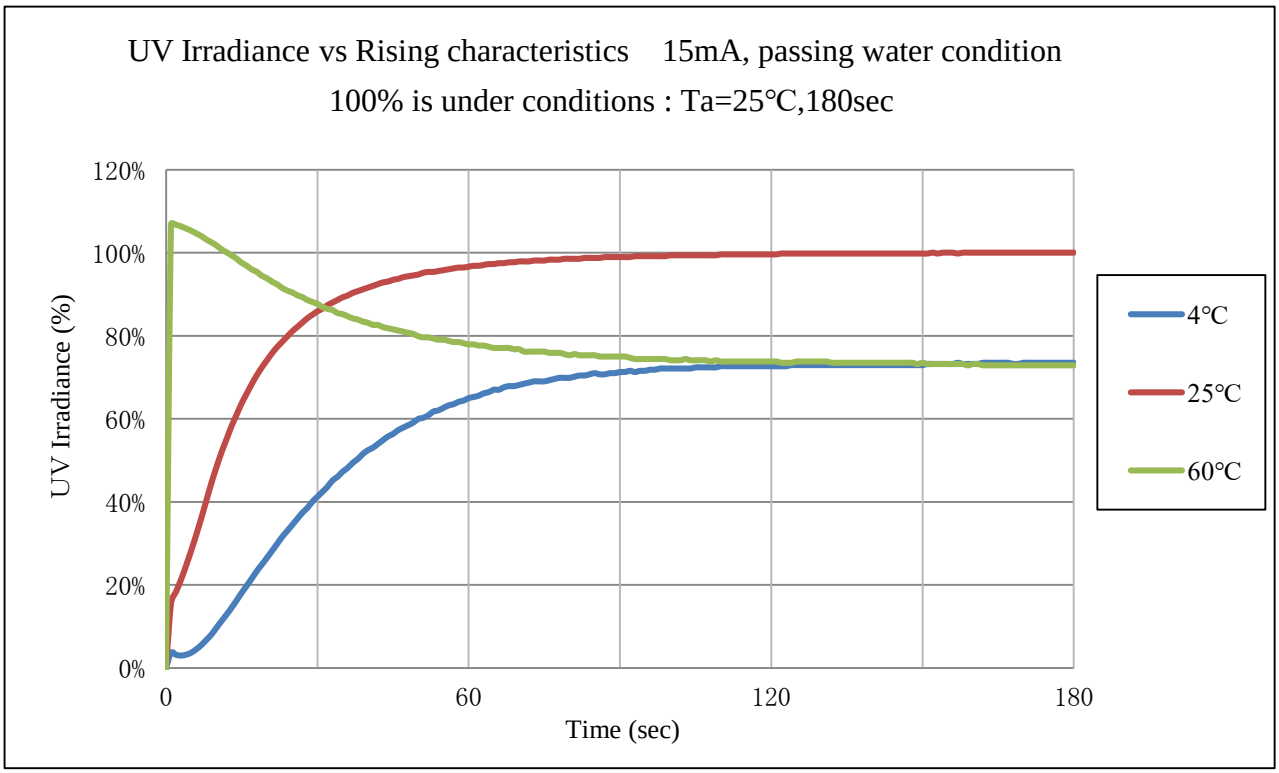
The irradiance of UV is in inverse proportion to the second power of the distance.
(point source of light)

UV irradiance (μW/cm²) = UV irradiance (μW/cm²) / Distance (R1/R2)²

*R1: Distance between UV lamp and object.
R2: Standard distance



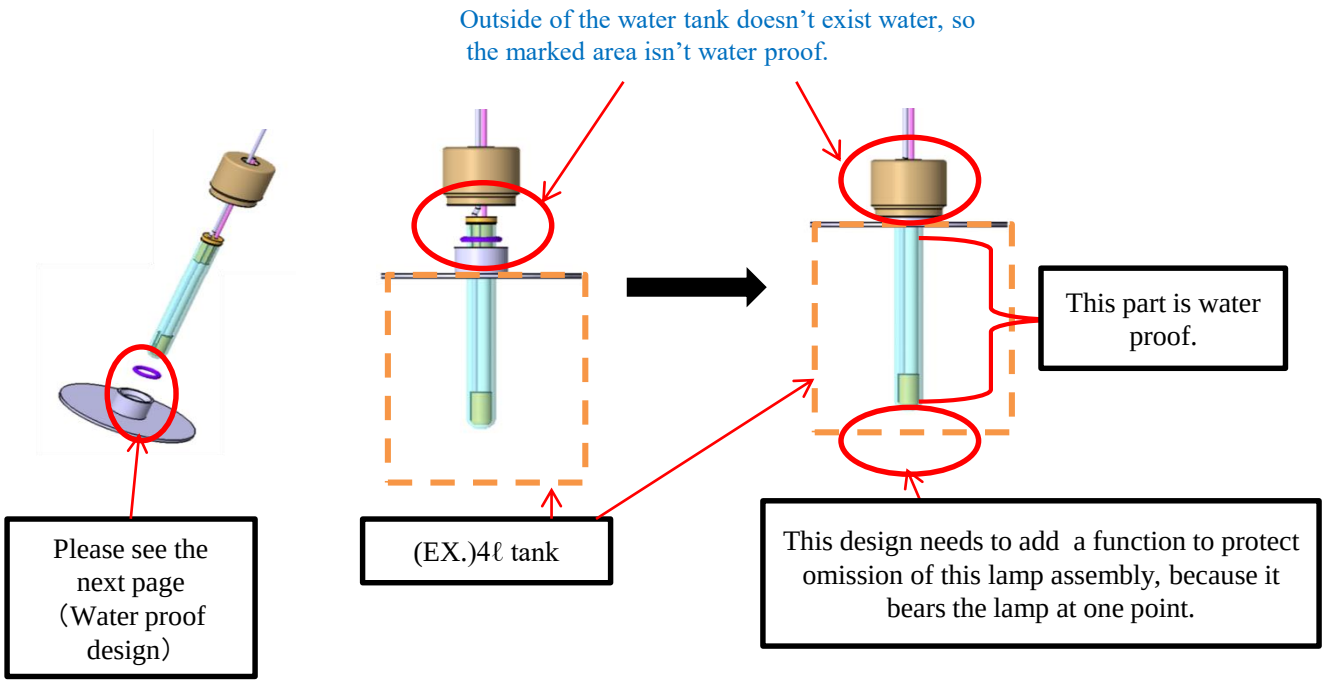
◇It's easy to install the lamp close to the target area because of its small size, and possible to get high disinfection power.



◇UV irradiance would be changed depends on the ambient temperature.

Key points to design water proof mechanism with our product "UW type".

When you design a water proof mechanism with our "UW type," please ready for a connection port that can stop water with O ring, at first. Please see below.



EX. Water proof design with our product

1. 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.

2. Regarding to the invertor, please ask our sales.

3. While the UV-CCL is lit, do not look at the UV light(Germicidal Lamp:254nm)
   with your naked eyes. Also, please do not see the reflected light.
   It would be causes of eyes pain and dystonia.

4. Please do not irradiate UV rays to your skin directly or indirectly.
   It would be causes of skin anger and tanning.

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

6. When the connection of the wire harness and the inverter is defective it causes smoking and the ignition.
   Please affirm made of engagement to the end.

7. It isn't based on the premise that the wire harness is emitted UV rays directly.
   Please change the wire harness to a fluorine-coated wire rod, if the UV rays emit to it directly, under your usage condition.

8. The rubber socket inside the quartz tube, doesn't have a waterproof function.
   Please design waterproof function outside of that tube, in a case of the product will dip in water.

1. This product is in compliance with RoHS.

2. This product is exempt from the Minamata Convention on Mercury.
   It has been possible to manufacture and sell the lamp after 2020.
   According to rules of municipalities, segregate and discharge them individually at homes,
   and companies should follow laws and regulations.

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