MASSPHOTON



MASSPHOTON LIMITED

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MASSPHOTON

With Leading Technology, Delivering More "Efficient, Stable, High-Quality, and Intelligent" Water Disinfection Solutions.

15+ years
With over 15 years of experience

4000+ ㎡
UVC LED manufacturing line

1000+ ㎡
Electronic product assembly line

WHAT WE DO

UVC LED Technology

Founded by a senior technical team, focusing on the development of deep ultraviolet LED chip technology and application products, committed to providing efficient UVC LED disinfection systems through continuous technological innovation to protect human health.

Digital Disinfection Technology

We have accumulated rich application experience in air disinfection, surface disinfection, water treatment and other fields; the team's original NitroSteriX® digital disinfection technology is at the industry-leading level.

Industrial Solutions

Combining IoT, artificial intelligence and other technologies, we have launched solutions for different industries, hoping to create a better life through continuous technological innovation and application.

Powerful Disinfection

Advanced UVC-LED chips & compact optics deliver 99.999% germicidal efficiency;Stable performance, 5-year LED service life.

Safe & Eco-Friendly

Mercury-free, zero chemical residues & secondary pollution;Low-carbon: Far lower power than mercury lamps, no wastewater.

Efficient & Cost-Effective

Up to 90% energy saving vs mercury-based systems;Low maintenance: No scale buildup, instant startup, no ballast needed;Compact, easy-to-install, with configurable monitoring.

Intelligent Upgrades

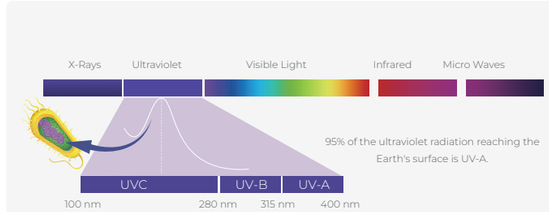
Built-in sensors track temperature, TDS and water quality;IoT-supported for remote monitoring & smart water management.

ABOUT UVC LED

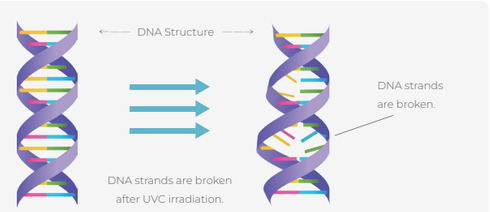
How does UVC kill bacteria?

According to wavelength, ultraviolet (UV) light is usually divided into UVA (315-400 nm), UVB (280-315 nm), and UVC (200-280 nm). The wavelength UVC band, also known as the solar-blind band, is almost non-existent in the near Earth solar spectrum due to the strong absorption of ozone in the atmosphere.

Ultraviolet rays only account for 5% to 6% of the light that reaches the Earth's surface.



Ultraviolet radiation destroys the DNA and RNA of microorganisms, causing them to lose their reproductive ability and die, achieving the effect of disinfection and sterilization.



Comparison of Water Disinfection Technologies

Technical Dimension	UV Ultraviolet Technology	Ozone Disinfection Technology	Traditional Chlorine Dosing
Disinfection Mechanism	Physical: Destroys DNA/RNA	Chemical: Oxidative dissolution of cell membranes	Chemical: Destroys key enzyme systems inside cells
Spore Inactivation Ability	Extremely High (Preferred Choice)	High (Requires certain contact time)	Extremely Poor (Almost No Effect)
Organic Matter Removal Ability	None (Unless combined with catalysts)	Excellent (Can remove VOCs / deodorize)	None (May even increase toxicity)
Continuous Protection Ability	None (No residual)	Extremely Low (Decomposes within minutes)	Excellent (Long-term protection against secondary pollution)
Impact on Taste	Excellent: No odor and does not alter water structure	Excellent: Effectively removes color and odors, increases dissolved oxygen	Poor: Easily generates chloramines, brings pungent bleaching powder smell
Harmful Byproduct Risk	None	Bromate (Carcinogenic)	Trihalomethanes (THMs), Haloacetic Acids
Usage Cost	Low (Significant LED cost reduction)	High (Huge power consumption of generators)	Extremely Low (Affordable chemical procurement)
Equipment/Pipeline Aging Impact	Relatively Low Local Risk: Only degrades plastics/rubber within the irradiation range	Extremely High Overall Risk: Highly corrosive, entire system must use special materials such as 316L/PTFE	Moderate Long-term Risk: Chloride ions accelerate electrochemical corrosion and aging of metal pipelines

PRODUCT INTRODUCTION

Our UVC LED water disinfection modules provide safe, healthy, and chemical-free water for homes and businesses. Using advanced UVC LED technol-ogy, they effectively inactivate bacteria, viruses, and other harmful microorganisms. Easy to integrate and highly reliable, our solutions ensure every drop is clean, safe, and of superior quality.

PRODUCT FEATURES

Powered by self-developed UVC LED chips, our products offer 99.999%+ germicidal efficiency. Optimized 270-280 nm wavelengths disrupt microbial DNA/RNA, inactivating bacteria, viruses and protozoa thoroughly. More energy-efficient than traditional mercury lamps, 15,000+ hours stable lifespan and zero warm-up for instant disinfection. Smart sensors enable real-time UV monitoring and automatic dosage adjustment. Mercury-free, chemical-free — no residues, pure water safety assured.



KEY FEATURES & ADVANTAGES

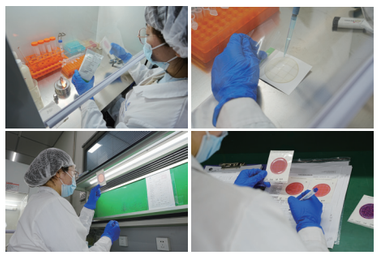
- 99.999% Germicidal Efficiency
- Mercury-free & Eco-friendly
- No Secondary Pollution
- Instant On
- Long Lifespan
- Low Maintenance
- Stable performance
- Multi-scenario Use



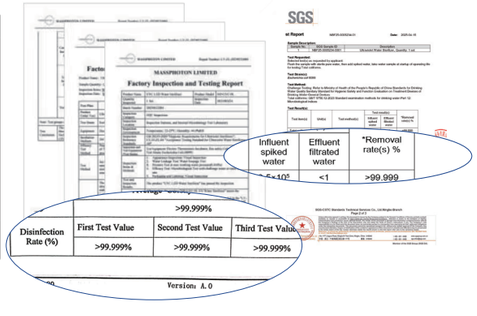
100% FACTORY-TESTED FOR DISINFECTION EFFICACY

Quality Assurance

- Strict Quality Management: Complies with ISO 9001/13485; pressure/tightness tests ensure stability.
- 100% Single-Tube Factory Testing: Exclusive in the industry — all UV disinfection modules undergo 100% single-tube testing, with each module accompanied by a unique serial number test report.



Control	$4.1x10^2$ CFU/mL	$2.2x10^2$ CFU/mL	$2.5x10^2$ CFU/mL
Control Group Image (10,000 dilution)	41CFU	22CFU	25CFU
Test Group Image (Non dilution)	0CFU	0CFU	0CFU
Test Summary	No E coli was detected in the experimental group samples	No E coli was detected in the experimental group samples	No E coli was detected in the experimental group samples



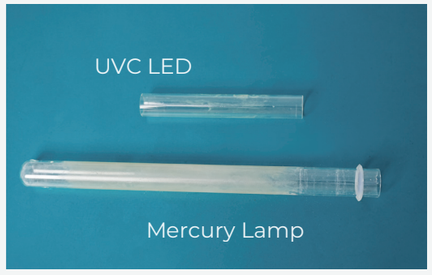
WATER SCALE TEST COMPARISON

Mercury Lamp vs. UVC LED UV Disinfection Water Purification Technology

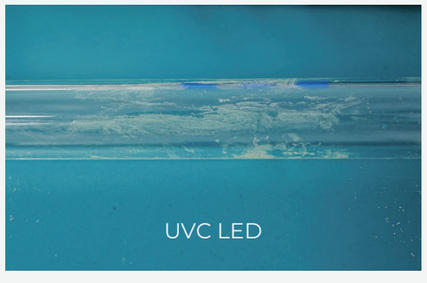
- Test conditions: Under the fair test conditions of the same usage duration and water source environment.
- Performance of mercury lamp water purification products: When the casing of mercury lamp water purification products is opened, the filter elements and the inner walls of the pipes are already covered with lumpy scale, which can be scraped off by hand.
- Performance of UVC LED ultraviolet disinfection water purifiers: In contrast, for the UVC LED ultraviolet sterilization water purifier, only a tiny amount of fine residues remain inside the casing, which can be wiped clean with a damp cloth gently to restore its cleanliness.



Comparison Chart 1



Comparison Chart 2



Scale from UVC LED Water Disinfection



Scale from Mercury Lamp Water Disinfection

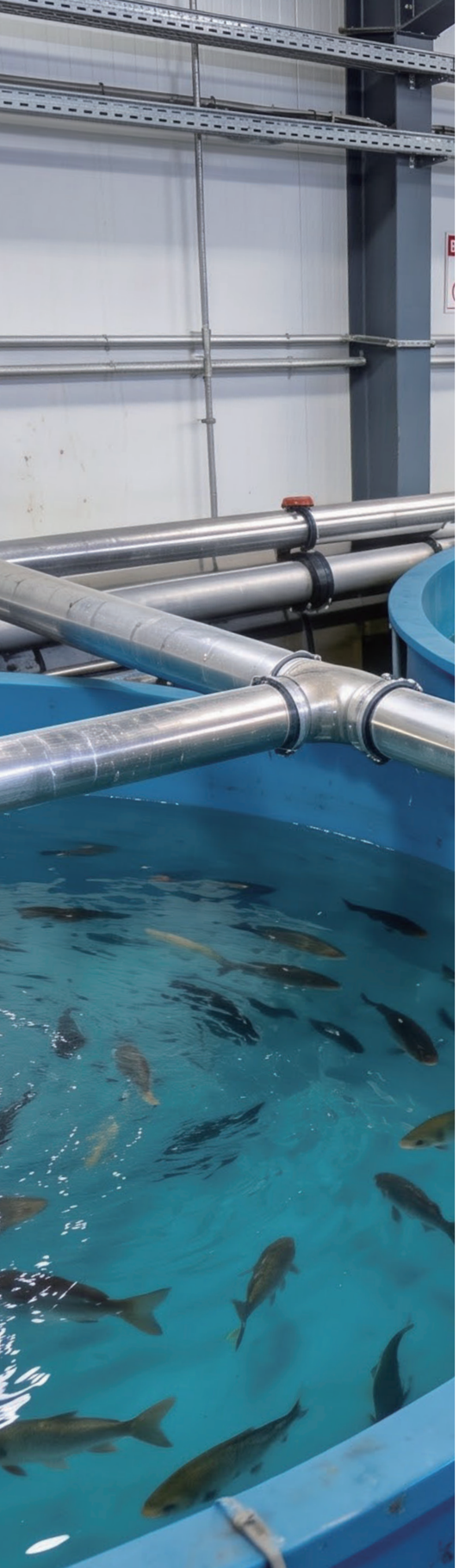


UVC LED STANDALONE SMART WATER DISINFECTION DEVICE

The standalone smart UVC-LED water disinfection system is an all-in-one treatment unit. Equipped with integrated disinfection chamber, intelligent controller, real-time flow & UV intensity monitoring and multi-safety protections, it connects to diverse water sources for 24/7 high-flow continuous disinfection.



Model	MP-UVC-2LB	MP-UVC-4LB	MP-UVC-10LB	MP-UVC-24LB
MASSPHOTON STANDARD CONFIGURATION (30 mJ/cm² at 95% UVT)	**2 LPM** (0.5 gpm) (0.1 m³/hr)	**4 LPM** (1.1 gpm) (0.2 m³/hr)	**10 LPM** (2.6 gpm) (0.6 m³/hr)	**24 LPM** (6.3 gpm) (1.4 m³/hr)
ALTERNATE CONFIGURATION (16 mJ/cm² at 95% UVT)	3.8 LPM (0.9 gpm) (0.2 m³/hr)	7.5 LPM (2.1 gpm) (0.4 m³/hr)	18.8 LPM (4.9 gpm) (1.1 m³/hr)	45 LPM (11.8 gpm) (2.6 m³/hr)
ALTERNATE CONFIGURATION (40 mJ/cm² at 95% UVT)	1.5 LPM (0.4 gpm) (0.1 m³/hr)	3 LPM (0.8 gpm) (0.2 m³/hr)	7.5 LPM (2 gpm) (0.5 m³/hr)	18 LPM (4.7 gpm) (1.1 m³/hr)
Operating Pressure	0.2 MPa (30 psi)	0.4 MPa (60 psi)	0.4 MPa (60 psi)	0.4 MPa (60 psi)
Connection Size	OD 8.5mm Barb connector	3/8" Quick Connect	G 1/2"	G 1/2"
UVC LED Wavelength	270 nm-280 nm	270 nm-280 nm	270 nm-280 nm	270 nm-280 nm
Electrical	DC 24V	DC 24V	DC 24 V	DC 24 V
UVC LED Lifetime	L70 > 15,000 hours		L70 > 15,000 hours	
Power	3 W	9 W	10 W	29 W
Exterior Material	Food-Grade Plastic	Anodized Aluminum	Anodized Aluminum	Anodized Aluminum
Operating Water Temperature	4°C to 60°C (39.2°F to 140°F)		4°C to 60°C (39.2°F to 140°F)	
Product Dimensions	0.7*1.7*4.8 in (18*43*121 mm)	Φ1*5.1 in (Φ25.4*130 mm)	Φ1.4*7.3 in (Φ35*185 mm)	Φ1.4*11 in (Φ35*279 mm)



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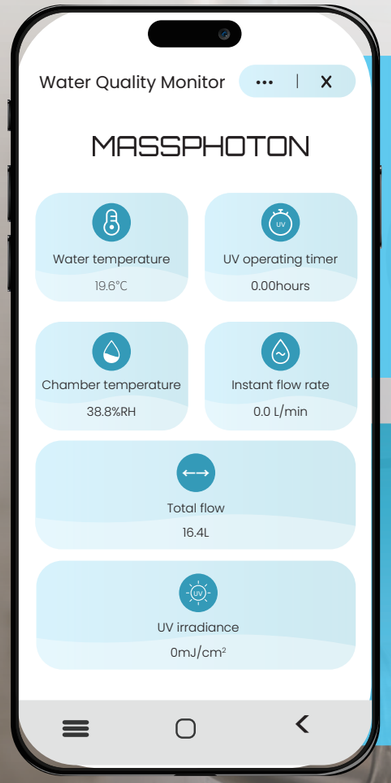
Model	MP-UVC-4LC	MP-UVC-10LC	MP-UVC-48LC	MP-UVC-70LP
MASSPHOTON STANDARD CONFIGURATION (30 mJ/cm² at 95% UVT)	**4 LPM** (1.1 gpm) (0.3 m³/hr)	**10 LPM** (2.6 gpm) (0.6 m³/hr)	**48 LPM** (12.7 gpm) (2.9 m³/hr)	93 LPM (24.7 gpm) (5.6 m³/hr)
ALTERNATE CONFIGURATION (16 mJ/cm² at 95% UVT)	7.5 LPM (2.1 gpm) (0.4 m³/hr)	19 LPM (4.9 gpm) (1.1 m³/hr)	90 LPM (23.8 gpm) (5.5 m³/hr)	175 LPM (46.3 gpm) (10.5 m³/hr)
ALTERNATE CONFIGURATION (40 mJ/cm² at 95% UVT)	3 LPM (0.8 gpm) (0.2 m³/hr)	7.5 LPM (2 gpm) (0.5 m³/hr)	36 LPM (10 gpm) (2.1 m³/hr)	**70 LPM** (18.5 gpm) (4.2 m³/hr)
Operating Pressure	0.4 MPa (60 psi)	0.4 MPa (60 psi)	0.1 to 0.8 MPa (14 to 116 psi)	0.1 to 0.8 MPa (14 to 116 psi)
Connection Size	1/4" Quick Connect	G 1/2"	1" MNPT	1" MNPT
UVC LED Wavelength	270 nm-280 nm	270 nm-280 nm	270 nm-280 nm	270 nm-280 nm
Electrical	100~240 V 50/60 Hz	100~240 V 50/60 Hz	100~240 V 50/60 Hz	100~240 V 50/60 Hz
UVC LED Lifetime	L70 > 15,000 hours		L70 > 15,000 hours	
Power	8 W	10 W	15 W	29 W
Exterior Material	304 Stainless Steel (316 Available Upon Request)	Anodized Aluminum	Anodized Aluminum	Anodized Aluminum
Operating Water Temperature	5°C to 40°C (41°F to 104°F)	4°C to 60°C (39.2°F to 140°F)	5°C to 40°C (41°F to 104°F)	5°C to 40°C (41°F to 104°F)
Product Dimensions	Φ1.7*10 in (Φ42*252 mm)	1.7*1.7*8.9 in (42*42*225 mm)	Φ2.8*13.3 in (Φ70*338.5 mm)	Φ3.3*18 in (Φ84*458mm)

SMART MONITORING SYSTEM

Digital Water Quality Management

Every water disinfection unit can be equipped with an intelligent monitoring system.

The water quality detector dynamically monitors disinfection effect by collecting real-time data on water quality, flow rate, UV intensity and device status. It automatically triggers alerts and sends notifications once UV output drops, malfunctions occur or disinfection fails, helping maintenance staff troubleshoot promptly.



Abnormal alarm

The APP will send alerts when UV output weakens, flow is abnormal, temperature exceeds limits, equipment malfunctions or disinfection duration is insufficient.

Real-time monitoring

It continuously collects and displays real-time data of water temperature, flow rate, UV irradiation intensity and equipment operating status.

OPTIONAL EQUIPMENT MODULES

Multiple options available for diverse needs

Smart Control Box



- **Real-time parameter monitoring:** UV output intensity, runtime, water temperature, flow rate, etc.
- **Multi-level alarms:** insufficient UV dosage, abnormal flow/humidity, overdue operation and other faults.

Water Flow Sensor



- UVC-LED disinfection activates automatically when flow reaches preset value.
- Instant start, energy saving and extended service life.

4-20 mA Module



- The device converts UV output into a 4-20mA signal for transmission to the control unit, enabling UV intensity evaluation and real-time monitoring.

UV Module App (Tuya™)



- Integrated WiFi monitoring solution compatible with WEB, Android and iOS platforms.
- Supports remote data management for single or multiple devices with simple configuration.

PRODUCT APPLICATION FIELDS

Safeguard drinking water health with deep ultraviolet (UVC) disinfection technology. Fully adapted to three core scenarios — medical, commercial, and public — our solution leverages UVC LED disinfection to build a robust water quality defense line everywhere, bringing pure and reassuring drinking water to every corner of life.

RESIDENTIAL & COMMERCIAL



Whole-house Purification (Villa)


Household Water Purifiers


Hotel & Catering (Pool/Rooms)



Commercial Direct-drink Dispenser

FOOD & BEVERAGE PROCESSING


Bottled Water & Beverage Filling


Dairy Products


Central Kitchen


Prepared Food Processing

AGRICULTURE & AQUACULTURE


Greenhouse Irrigation


Livestock Drinking Water


Aquaculture


Aquarium

MEDICAL & LIFE SCIENCES


Hospital Water Supply


Pharmaceutical-grade Water


Laboratory


Dental Chair Unit Water Supply

MUNICIPAL & WATER UTILITIES


Water Treatment Plant


Secondary Water Supply


Wastewater Treatment


Rural Water Supply