

Next-Gen Water Safety
With UV-C LED



MASSPHOTON LIMITED

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MASSPHOTON LIMITED

Leading the Mercury-Free Future:
More Efficient, Longer-Lasting, And Safer UV Disinfection Modules

MASSPHOTON

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

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About Us

UV-C 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 UV-C 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 cleaning 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.

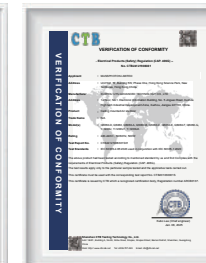
Qualifications and Honors



■ International Invention Exhibition Gold Award

2024 Silicon Valley International Invention Exhibition

2024 Geneva International Invention Exhibition



■ Compliance Qualifications & Certifications

ISO Quality Management System & CE Certification

Multiple Authoritative Testing Reports

What is the disinfection principle of

UV-C LED

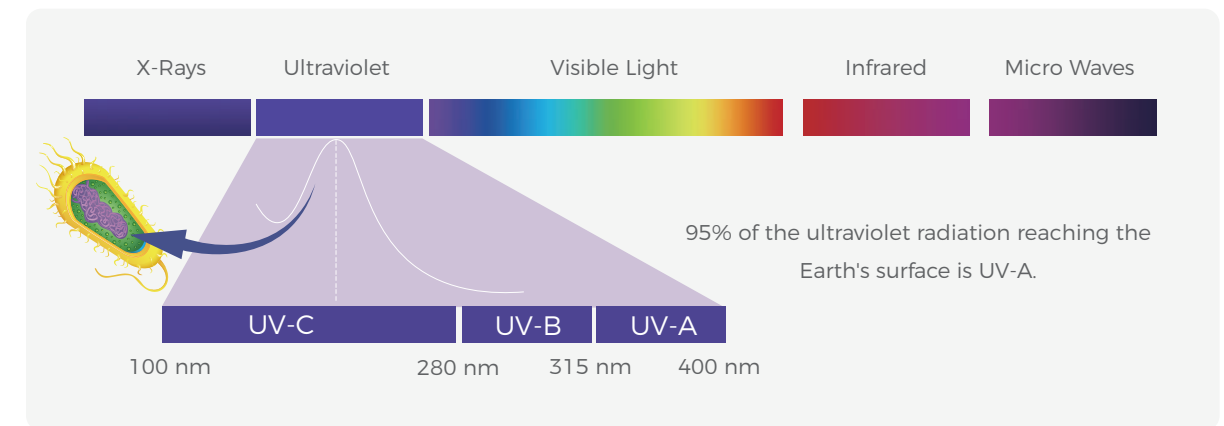
UV-C LED technology utilizes the germicidal power of ultraviolet light in the 200-280 nm range. By emitting targeted radiation, it penetrates microorganisms and disrupts their DNA and RNA, causing irreversible damage that prevents replication. This process effectively inactivates pathogens and safeguards against infection.

About UV-C LED

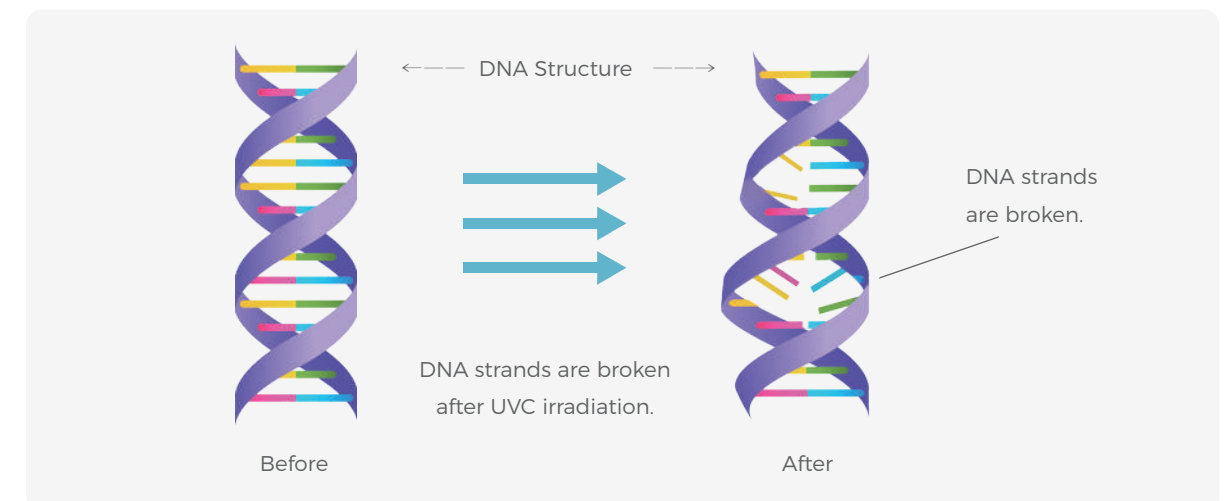
How does UVC kill bacteria?

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 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.





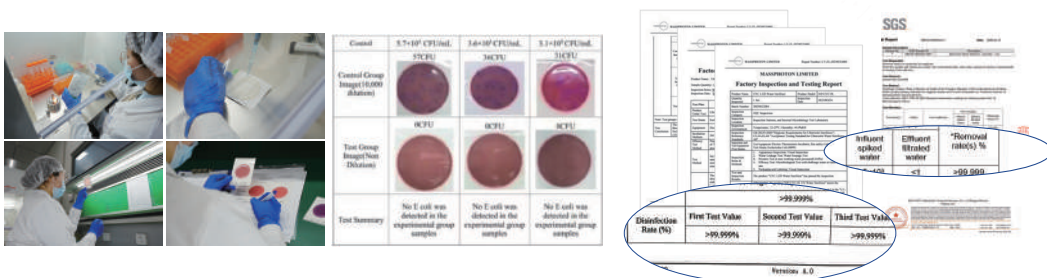
100% Disinfection Efficacy Test



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.



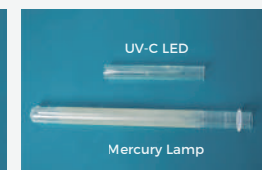
Water Scale Test Comparison:

Mercury Lamp vs. UV-C LED UV Disinfection Water Purification Technology

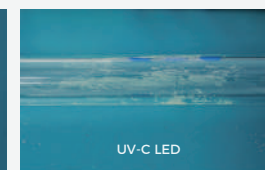
- Test conditions: Under the fair test conditions of the same usage duration and water source environment.
- Performance of mercury lamp water purification products: When the casing of mercury lamp water purification products is opened, the filter elements and the inner walls of the pipes are already covered with lumpy scale, which can be scraped off by hand.
- Performance of UV-C LED ultraviolet disinfection water purifiers: In contrast, for the UV-C 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 UV-C LED Water Disinfection



Scale from Mercury Lamp Water Disinfection

Features of Our Water Disinfection Products

- Powered by self-developed UV-C LED chips, our products offer 99.99%+ 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.



Safe & Eco-Friendly

Mercury-free, no chemical residues, no secondary pollution.

Low-carbon design: Uses far less power than mercury lamps, no wastewater.



Powerful Disinfection

Advanced UV-C LED chips and compact optical design for 99.999% germicidal efficiency.

Long-lasting stability with a 5-year LED service life.



Efficient & Cost-Effective

Up to 90% energy savings compared to mercury-based systems.

Minimal maintenance: No scale buildup, instant startup, no ballast required.

Compact, easy-to-install design with configurable monitoring.



Intelligent Upgrades

Integrated sensors for temperature, TDS, and water quality tracking.

IoT-enabled for remote monitoring and smart water management.

Product Category

Our UV-C LED water disinfection modules provide safe, healthy, and chemical-free water for homes and businesses. Using advanced UV-C LED technology, 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.

UV-C LED Water Disinfection Module

—MP-UVC-4LB



Product Series

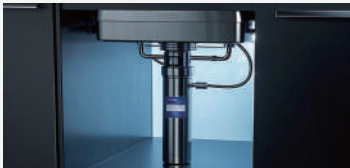


MP-UVC-4LB

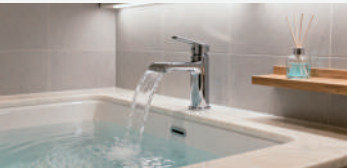
Application Scenarios



Water Dispenser



Water Purifier



Bathroom Fixtures



Washing Machine



Dishwasher



Motorhome/Yacht

Product Parameters

- | | |
|------------------------------------|---|
| • Model: MP-UVC-4LB | • Disinfection Efficiency: Up to 99.999% or 5.0 Log Reduction (*) |
| • Rated Flow Rate: 4 L/min (1 GPM) | • Water Pipe Interface Specification: 1/4" Quick Connect |
| • Power Adapter Input: DC 24 V | • Maximum Inlet Pressure: 0.4 MPa (60 psi) |
| • Total Power: 5 W | • Operating Temperature Range: 4 °C to 60 °C |
| • UV-C LED Wavelength: 270-280 nm | • Product Dimensions: Φ25.4 mm * 130 mm (Φ1 in * 5.1 in) |
| • Product Lifetime: 15,000 Hours | • Exterior Material: Aluminum |

(*) The actual disinfection efficiency subjects to the water quality. The above test results are based on the following test conditions with test strain of Escherichia coli (8099), with 5×10^4 to 5×10^5 CFU/mL dechlorinated sterile test water.

pH	UV transmittance	Turbidity	Temperature	TDS
7.5 ± 0.5	98 ± 2%	< 1.0 NTU	20 ± 2.5 °C (68 ± 5 °F)	200 to 500 mg/L

UV-C LED Water Disinfection System

—MP-UVC-4LC



UV-C LED Water Disinfection

Product Series



MP-UVC-4LC

Application Scenarios



Daily Drinking Water



Kitchen



Bathroom



Catering Industry



Food and Beverage Processing



Medical and Laboratory Water

Product Parameters

- | | |
|---|---|
| • Model: MP-UVC-4LC | • Disinfection Efficiency: Up to 99.999% or 5.0 Log Reduction (*) |
| • Rated Flow Rate: 4 L/min (1 GPM) | • Water Pipe Interface Specification: 1/4" Quick Connect |
| • Power Adapter Input: 100-240 V 50/60 Hz | • Maximum Inlet Pressure: 0.4 MPa (60 psi) |
| • Total Power: 5 W | • Operating Temperature Range: 5 °C to 40 °C |
| • UV-C LED Wavelength: 270-280 nm | • Product Dimensions: Φ42 mm * 252 mm (Φ1.7 in * 9.9 in) |
| • Product Lifetime: 15,000 Hours | • Exterior Material: Stainless Steel |

(*) The actual disinfection efficiency subjects to the water quality. The above test results are based on the following test conditions with test strain of Escherichia coli (8099), with 5×10^4 to 5×10^5 CFU/mL dechlorinated sterile test water.

pH	UV transmittance	Turbidity	Temperature	TDS
7.5 ± 0.5	98 ± 2%	< 1.0 NTU	20 ± 2.5 °C (68 ± 5 °F)	200 to 500 mg/L

UV-C LED Water Disinfection System

—MP-UVC-48LC



Product Series



MP-UVC-48LC

Application Scenarios



Whole-House Central Water Purification System



Public Direct Drinking Water & Pipeline Systems



Food Processing Water Lines



Central Kitchens & Restaurant Chains



Hospital General Water Systems



Laboratory Water Circulation Systems

Product Parameters

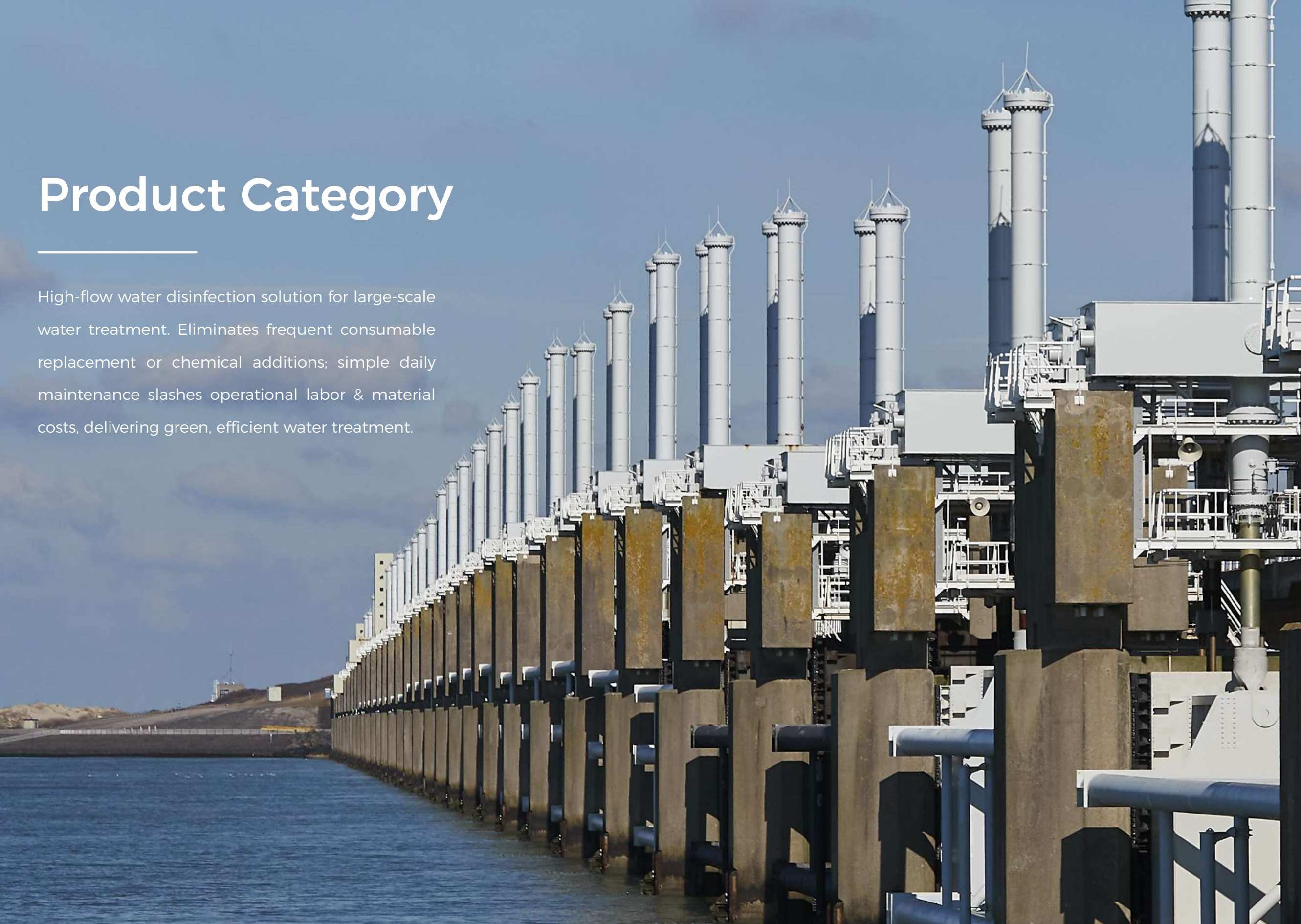
• Model: MP-UVC-48LC	• Disinfection Efficiency: Up to 99.999% or 5.0 Log Reduction (*)
• Rated Flow Rate: 48 L/min (12 GPM)	• Water Pipe Fitting: 1"
• Power Adapter Input: 100-240 V 50/60 Hz	• Water Pressure: 0.1 MPa - 0.8 MPa (Max 1.6 MPa)
• Power Adapter Output: 24 V, 2.7 A	• Target Microorganisms: E.coli, among others
• UV-C LED Wavelength: 270-280 nm	• Product Dimensions: $\Phi 70\text{ mm} \times 338.5\text{ mm}$ ($\Phi 2.8\text{ in} \times 13.3\text{ in}$)
• Product Lifetime: 15,000 Hours	• Exterior Material: Aluminum

(*) The actual disinfection efficiency subjects to the water quality. The above test results are based on the following test conditions with test strain of Escherichia coli (8099), with 5×10^4 to 5×10^5 CFU/mL dechlorinated sterile test water.

pH	UV transmittance	Turbidity	Temperature	TDS
7.5 ± 0.5	98 ± 2%	< 1.0 NTU	20 ± 2.5°C (68 ± 5 °F)	200 to 500 mg/L

Product Category

High-flow water disinfection solution for large-scale water treatment. Eliminates frequent consumable replacement or chemical additions; simple daily maintenance slashes operational labor & material costs, delivering green, efficient water treatment.



UV-C LED Water Disinfection Purifier

—MP-UVC-12LB

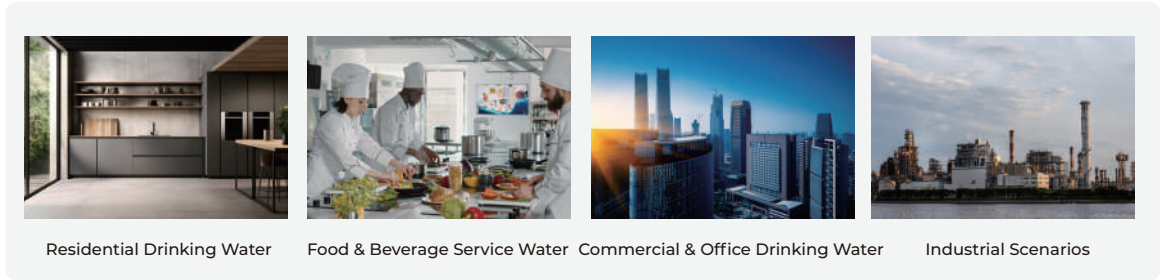


Product Series



MP-UVC-12LB

Application Scenarios



Product Parameters-Filter

• Rated Flow Rate: 10-16 L/min	• Recommended Replacement Cycle: 6-12 Months
• Applicable Water Temperature: 5-40 °C	• Type of filter: PP
• Applicable Water Pressure: 0.1-0.4 MPa	• Filtration Rating: 5 μm

Product Parameters

• Model: MP-UVC-12LB	• Product Dimensions: 329 mm * 404 mm * 156 mm
• Maximum Flow Rate: 12 L/min	• UV-C LED Emission Wavelength: 270-280 nm
• Rated Voltage: 100-240 V 50/60 HZ	• Operating Temperature Range: 4 °C to 60 °C
• Input Current: 0.8 A Max	• Rated inlet Water Pressure: 0.1-0.3 MPa
• Rated Total Power: 10 W	• Absolute Max. Inlet Water Pressure: 0.35 MPa
• Water Pipe Fitting: 1/2" or 3/8"	

(*) The actual disinfection efficiency subjects to the water quality. The above test results are based on the following test conditions with test strain of Escherichia coli (8099), with 5 × 10⁴ to 5 × 10⁵ CFU/mL dechlorinated sterile test water.

pH	UV transmittance	Turbidity	Temperature	TDS
7.5 ± 0.5	98 ± 2%	< 1.0 NTU	20 ± 2.5 °C (68 ± 5 °F)	200 to 500 mg/L

UV-C LED Water Disinfection Module

—MP-UVC-10LB



Product Series



MP-UVC-10LB

Application Scenarios



Commercial Water Vending Machines



Office Central Drinking Water Systems



Public Centralized Water Points



Restaurant & Catering Kitchen Water Systems



Food & Beverage Processing Water



Medical Water Supply

Product Parameters

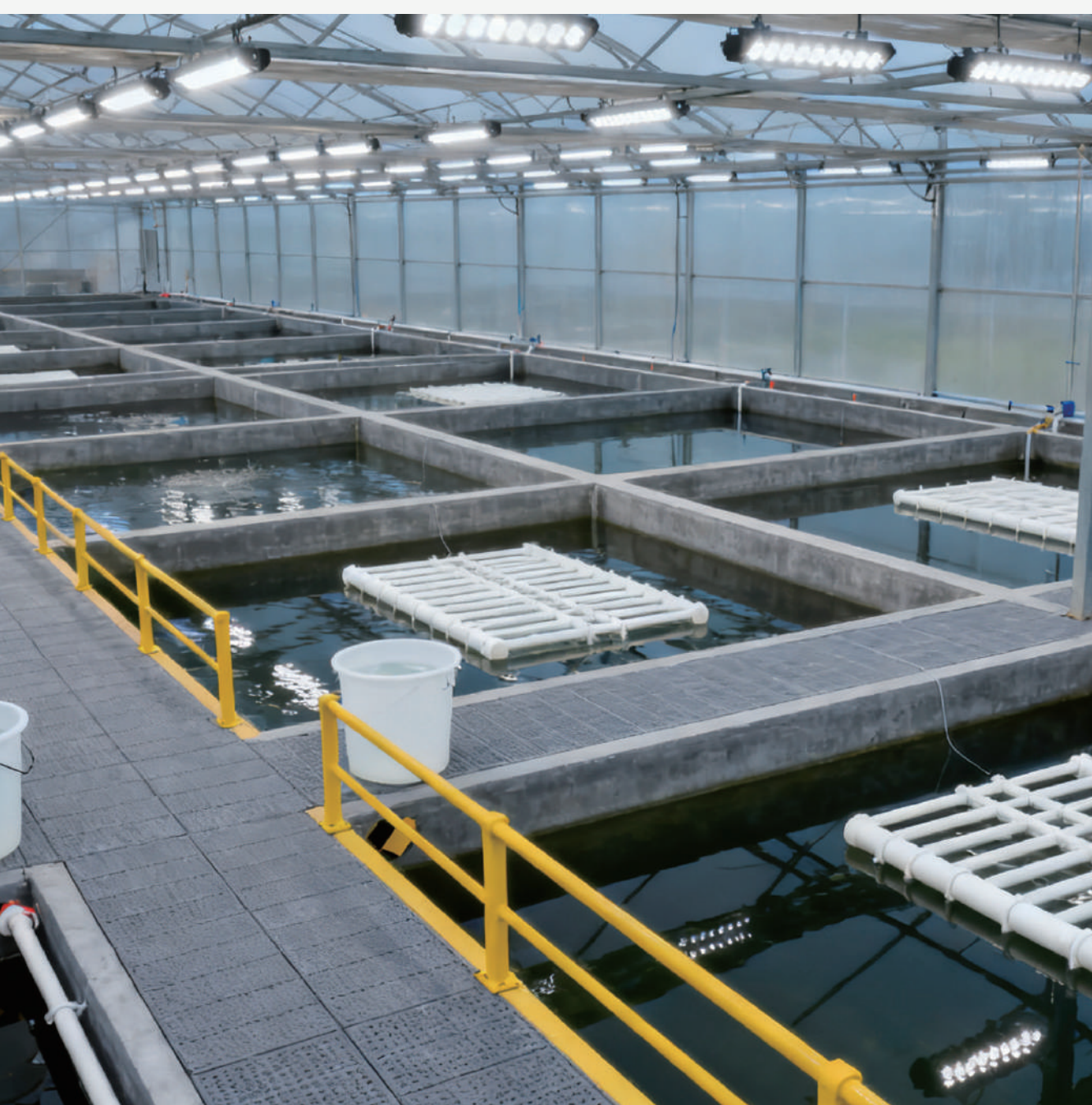
• Model: MP-UVC-10LB	• Disinfection Efficiency: Up to 99.999% or 5.0 Log Reduction (*)
• Rated Flow Rate: 10 L/min (2.6 GPM)	• Water Pipe Interface Specification: 1/2 Inch Thread
• Power Adapter Input: DC 24V	• Maximum Inlet Pressure: 0.4 MPa (60 psi)
• Total Power: 7.2 W	• Operating Temperature Range: 4 °C to 60 °C
• UV-C LED Wavelength: 270-280 nm	• Product Dimensions: Φ35 mm * 185 mm (Φ1.4 in * 7.3 in)
• Product Lifetime: 15,000 Hours	• Exterior Material: Aluminum

(*) The actual disinfection efficiency subjects to the water quality. The above test results are based on the following test conditions with test strain of Escherichia coli (8099), with 5×10^4 to 5×10^5 CFU/mL dechlorinated sterile test water.

pH	UV transmittance	Turbidity	Temperature	TDS
7.5 ± 0.5	98 ± 2%	< 1.0 NTU	20 ± 2.5 °C (68 ± 5 °F)	200 to 500 mg/L

UV-C LED Water Disinfection Module

—MP-UVC-45LB



Product Series



MP-UVC-45LB

Application Scenarios



Whole-House Water Treatment



Catering and Food Processing



Medical-Purified Water



Laboratory Water



Aquaculture and Agriculture



Food & Beverage Processing Water

Product Parameters

• Model: MP-UVC-45LB	• Disinfection Efficiency: Up to 99.999% or 5.0 Log Reduction (*)
• Rated Flow Rate: 45 L/min (12 GPM)	• Water Pipe Interface Specification: 1 Inch Thread
• Power Adapter Input: 100-240 V 50/60 Hz	• Maximum Inlet Pressure: 0.8 MPa (120 psi)
• Total Power: 43 W	• Operating Temperature Range: 5 °C to 40 °C
• UV-C LED Wavelength: 270-280 nm	• Product Dimensions: Φ70 mm * 253 mm (Φ2.8 in * 10 in)
• Product Lifetime: 15,000 Hours	• Exterior Material: Aluminum

(*) The actual disinfection efficiency subjects to the water quality. The above test results are based on the following test conditions with test strain of Escherichia coli (8099), with 5×10^4 to 5×10^5 CFU/mL dechlorinated sterile test water.

pH	UV transmittance	Turbidity	Temperature	TDS
7.5 ± 0.5	98 ± 2%	< 1.0 NTU	20 ± 2.5 °C (68 ± 5 °F)	200 to 500 mg/L



Product Solutions

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

- Medical Application Scenario
- Commercial Application Scenario
- Public Application Scenario

Medical Application Scenario

Centered on deep ultraviolet (UV-C LED) disinfection technology, we strictly adhere to the sterile standards for medical water, precisely inactivating microorganisms and harmful impurities in water. This builds a solid safety barrier for critical links such as diagnostic and therapeutic procedures and pharmaceutical preparation, safeguarding the health of medical staff and patients with professional purification, filling every drop of medical water with peace of mind and trust.



Providing Sterile Water Assurance For Endoscope Cleaning

Key Challenges

- **Drug-Resistant Bacteria Risk**
Biofilm in water systems breeds resistant pathogens, posing a cross-infection risk to patients via endoscopy.
- **Chemical Residue Hazard**
Residues from chlorine-containing disinfectants and other chemicals can easily irritate patients' mucous membranes, cause sensitization, and endanger medical safety.
- **Limitations Of Traditional Disinfection**
Traditional methods struggle to achieve complete disinfection. Prolonged use may easily lead to the development of drug resistance and a cycle of repeated (inadequate) use.

Solution

Full-Process UV-C Disinfection, Blocking Pollution At The Source

- **End-of-Purified Water Preparation Disinfection**

Install MASSPHOTON UV-C LED ultraviolet module at the water output of the reverse osmosis purified water machine to ensure qualified output water.

- **Pipeline Circulation Disinfection**

Install fixed UV-C disinfectors in main pipelines, branch ends, and storage tank inlets, automatically circulating disinfection for 1 hour every early morning to remove biofilms and drug-resistant bacteria.

- **Cleaning Machine Inlet Disinfection**

Embed small MASSPHOTON UV-C LED components at the inlet of fully automatic cleaning and disinfection machines to ensure sterile rinsing water.

Value Embodiment

- 100% Elimination Of Waterborne Resistant Bacteria
- Equipment Lifespan Extended By Over 30%
- Zero Chemical Residue For Maximum Patient Safety



Pilot Cases——

Chengdu Seventh People's Hospital, Xuzhou Medical University



成都市第七人民医院
Chengdu Seventh People's Hospital



徐州医科大学
XUZHOU MEDICAL UNIVERSITY

Provide Sterile Guarantee For Daily Water Supply For Immunocompromised Patients

Key Challenges

- **Zero Tolerance For Microbial Infection Risks**

Bone marrow transplant patients are in an "immune blank period" for 100 days post-surgery, where opportunistic pathogens like *Pseudomonas aeruginosa* and *Stenotrophomonas maltophilia* in water can invade the body through drinking, mouth rinsing, skin cleaning (e.g., wipe baths), causing infections with mortality rates up to 40%-60%, one of the main causes of non-relapse deaths in bone marrow transplant patients.

- **Difficult Problem Of Biofilm Removal In Water Supply System**

Inner walls of water supply pipelines easily form biofilms (protective structures formed by bacterial aggregation); traditional chemical disinfection only kills surface bacteria, cannot penetrate biofilms, and drug-resistant bacteria persist.

Solution

■ Full-Process UV-C Disinfection, Blocking Pollution At The Source

- **Disinfection Of Terminal Domestic Drinking Water**

Install small UV-C disinfection modules at ward water dispenser outlets and direct drinking machine faucets in public areas, forming a "disinfect upon output" closed loop. Built-in water flow sensors enable "automatic start when water is taken, shut off when stopped" to avoid unnecessary energy consumption.

- **Point-of-Use Water Disinfection For Medical Care**

Integrate disinfection modules at shower heads and washbasin faucets, provide sterile daily water for patients.

Value Embodiment

- **Strengthen Infection Defense, Reduce Fatal Risks:** Terminal output water colony count stably controlled below 1 CFU/100 mL, cutting off water-borne infection paths at the source.
- **Residue-Free Safety:** Pure physical sterilization without adding any chemicals, avoiding damage from disinfection byproducts, especially suitable for populations on long-term immunosuppressive therapy.
- **Optimize Nursing Processes:** Disinfection synchronizes with water use, requiring no additional operations from medical staff.



Pilot Cases——

Beijing University People's Hospital



Providing Sterile Water For Dental Treatment

Key Challenges

• Pain Points In Dental Chair Waterway System

With complex small pipes, humid conditions and fluctuating water flow – are prone to biofilm growth. Untreated water can have up to 10^5 - 10^6 CFU/mL bacteria.

• Inherent Defects Of Traditional Disinfection

Traditional disinfection only kills surface bacteria, fails to eliminate biofilm-embedded pathogens, and may produce irritating byproducts, trigger allergies or corrode equipment.

• Limitations Of Flushing Disinfection

Water flushing merely replaces surface stagnant water, cannot remove biofilms, and its disinfection effect lasts less than 2 hours, insufficient for full-day use.

Solution

■ Full-Process UV-C Disinfection, Blocking Pollution At The Source

• Pre Treatment Of Inlet End

Pre-treat municipal water or storage tank before connecting to dental chair to reduce subsequent pipeline contamination risks.

• Disinfection Of Return Water Pipeline

Combine with waterline circulation system for secondary disinfection of used water to prevent biofilm growth.

• Independent Module Integration

Build ultraviolet disinfection modules into the water supply system, forming a sealed disinfection space via metal cavities to ensure sufficient UV irradiation.

Value Embodiment

• **Zero Microbial Pollution:** Post-disinfection dental chair waterline output colony count stably controlled below 10 CFU/mL, or below 1 CFU/mL in special scenarios, completely eliminating pathogen contamination risks.

• **Significant Cost Reduction And Efficiency Improvement:** No need to purchase chemical disinfectants or replace corroded pipeline components, annual consumables cost reduced by over 50%; disinfection requires no downtime, adding 2-3 daily treatment slots per chair, boosting revenue.



Pilot Cases——

Beijing Stomatological Hospital Affiliated to Capital Medical University;
Hangzhou Stomatological Hospital



Commercial Application Scenario

Leveraging the high efficiency and stability of UV-C LED disinfection, our solution adapts to diverse commercial needs including hotels, catering establishments, and office buildings. While ensuring large-flow water supply, it deeply purifies water quality and eliminates odors, allowing guests and office workers to conveniently access pure, high-quality water. This conveys the meticulous care embedded in commercial services.



Aquaculture Scenario: Balancing Safety, Efficiency, And Cost

Key Challenges

- **Pathogen Growth And Disease Outbreak**

Untimely water exchange increases ammonia nitrogen/nitrite, breeding Vibrio ($\geq 60\%$ in untreated water), IPN virus, myxobolus, causing shrimp/fish diseases.

- **Biofilm Pollution In The Circulating Water System**

Inner walls of pipelines, filters, and other equipment are prone to forming biofilms (blocking the equipment and releasing pathogenic bacteria), difficult to remove with conventional chemical disinfection.

- **Chemical Disinfection Residue Risk**

Traditional disinfectants such as chlorine agents can only inhibit bacteria in the short term and can also damage the aquatic microbiota and kill beneficial algae; Drug residues can enter the food chain through aquatic products.

Solution

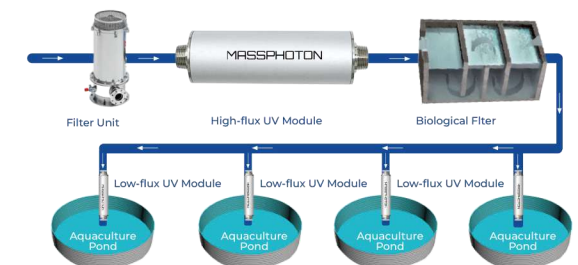
Full-Process UV-C Disinfection, Blocking Pollution At The Source

- **Treatment Of Inflow End Of Breeding Farm**

At farm inlets (post-water intake pumps) to treat external sources like rivers, lakes, seas.

- **Disinfection Of Circulating Water System**

Deploy ultraviolet modules after filtration unit of circulating water system and before biological filter to ensure disinfected circulating water enters the breeding pool and avoid secondary contamination by pathogens.



Value Embodiment

- **Ensure Biosafety, Reduce Disease Losses:** Post-disinfection pathogen kill rate reaches 99.99%, bacterial infection rates drop sharply, fry survival rates increase significantly, fish mortality reduced by 30%, boosting production and income.
- **Reduce Chemical Dependency, Enhance Product Competitiveness:** Fully replace chlorine disinfectants and some antibiotics, drug costs reduced 50%-70%, aquatic products free of chemical residues.
- **Optimize Resource Utilization, Lower Operating Costs:** Circulating water utilization rate from 30% to over 80%, water-saving costs as proportion of total revenue from 15% to 5%; equipment maintenance frequency reduced 60% due to less biofilm, lifespan extended over 2 years, significantly cutting replacement and repair expenses.



Solving Drinking Water Safety Dilemmas In Poultry Farming

Key Challenges

• Biofilm Pollution In Drinking Water Pipelines

Narrow/curved poultry drinking lines + feed residues/feces → biofilms. Breed E. coli, Salmonella, etc., causing diseases, 15%-20% lower egg production, 10%-15% mortality.

• Conflict Between Disinfectants And Gut Health

Long-term antibiotics/acidifiers for pollution control. Antibiotics disrupt gut flora, reduce immunity, induce drug resistance; acidifiers have poor biofilm removal, irritate chicks' mucosa, affect feed intake.

• Management Challenges Of Large-scale Poultry Farming

Multiple sheds, dispersed drinking systems. Manual cleaning (2-3 h/shed) → incomplete biofilm removal. Lagging water testing, no real-time disinfection monitoring → easy epidemic spread.

Solution

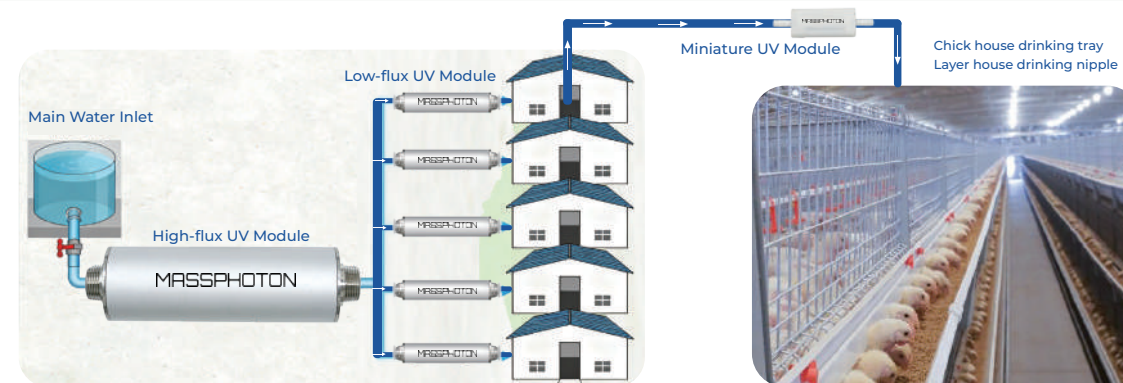
■ Full-Process UV-C Disinfection, Blocking Pollution At The Source

• Water Source Pre-Treatment And Main Pipeline Disinfection

Medium UV-C at farm main inlets (initial disinfection); small UV-C at shed pipeline entrances → "total-branch" two-level system, full water sterilization.

• Terminal Nipple/Trough Disinfection

Add micro UV-C to chick drinking trays & hen nipple fronts: terminal output ≤ 50 CFU/mL, blocks pathogens. High-end LED UV-C (2 cm diameter): compact, directly embeddable, no system mods.



Value Embodiment

- **Ensure Poultry Health & Reduce Disease Losses:** Post-disinfection drinking water: colony count ≤ 50 CFU/mL, E. coli/Salmonella detection rate < 5%.
- **Reduce Chemical Dependency & Improve Product Quality:** Replace drinking water antibiotics + partial acidifiers. Drug costs cut 50%-70%, poultry products chemical-free, meeting EU/Japan/Korea standards.
- **Optimize Management & Lower Operating Costs:** No manual pipeline dismantling: per-shed disinfection from 2 hrs/week to 10 mins/day, labor costs down 60%. UV-C LED power consumption 1/5 of traditional UV, energy costs reduced. Biofilm reduction cuts pipeline blockage 80%, nipple replacement 70%, maintenance costs cut over 50%.



Breaking Water Safety Bottlenecks In Modern Agricultural Planting

Key Challenges

- **Microbial Pollution In Irrigation Water Causing Disease Outbreaks**
Vertical planting's recirculating irrigation breeds pathogens/fecal microbes; fruit planting's rainwater/river irrigation spreads pathogens, causing widespread diseases.
- **Residues And Ecological Costs Of Chemical Disinfection**
Copper/chlorine agents cause soil compaction, beneficial microbe reduction, fruit pollution, and produce safety risks.
- **Management Challenges In Efficient Planting Modes**
Vertical planting has hard-to-clean irrigation "dead corners"; large-scale fruit planting lacks real-time disinfection monitoring, leading to rapid disease spread.

Solution

Full-Process UV-C Disinfection, Blocking Pollution At The Source

• Vertical Planting Scenario

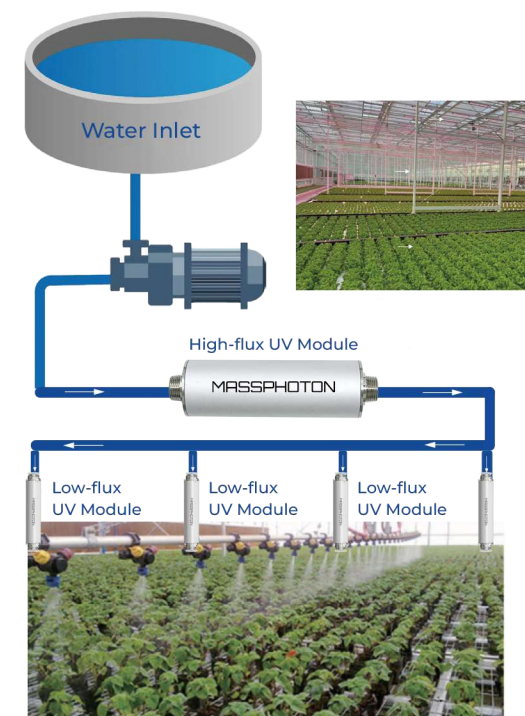
"Three-level UV-C disinfection network" – reservoir outlets (medium-large units), circulating main lines (medium-flow modules), branch inlets (small components) to prevent pollution.

• Fruit Planting Scenario

① Field Irrigation: Orchard pump stations (large UV-C, 20-50 m³/h, variable frequency); drip branch inlets (micro UV-C); strawberry spray heads (additional modules). ② Post-Harvest: UV-C disinfectors for cleaning lines (wash water ≤ 10 CFU/mL, no cross-contamination).

Value Embodiment

- **Disease Control for Stable Yield:** Post-disinfection irrigation pathogen detection < 0.5%, hydroponic lettuce root rot drops 80% to 5%, vertical strawberry gray mold from 35% to 4%.
- **Zero Residues Boost Competitiveness:** Replace chemical disinfectants and fumigants, pesticide use down 50%-70%, produce "zero pesticide detection".
- **Water Saving, Cost Reduction, Efficiency Boost:** Hydroponic water utilization from 40% to 95%, vertical irrigation from 60% to 85%; pipeline blockage down 90%, maintenance from 2 days weekly to 30 mindaily, labor costs down 50%, energy consumption 1/10 of original UV disinfection.



Central Kitchens And Food Processing

Multi-Dimensional Enhancement

From Safety To Efficiency

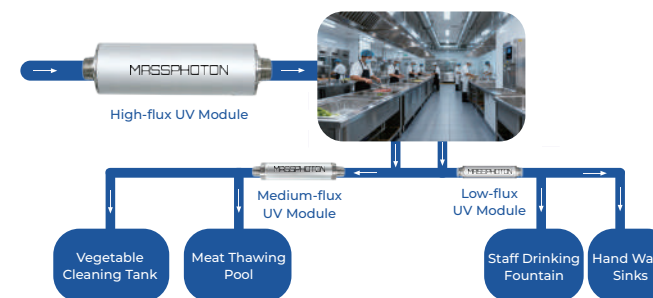
Key Challenges

- **Microbial Pollution Causing Foodborne Disease Risks**
Raw material wash water and equipment rinse water containing Salmonella, Listeria, E. coli O157:H7 easily cause poisoning via fruits/veg, meat, dairy carriers.
- **Residues And Quality Impact Of Chemical Disinfection**
Traditional chlorine (e.g., sodium hypochlorite) for water treatment provides short-term kill but forms chlorine residues on food surfaces, affecting taste (chlorine in drinking water, off-flavors in juice); reactions with organics produce trihalomethanes, increasing failed safety inspections.
- **Production Efficiency And Compliance Pressure**
High water use in central kitchens/food plants (dozens to thousands tons daily), frequent residue testing time-consuming; biofilms on pipelines/tanks require 3-4 hours shutdown for manual cleaning, affecting assembly line progress.

Solution

Full-Process UV-C Disinfection, Blocking Pollution At The Source

- **Central Kitchen**
Install large UV-C units (flow 50-200 m³/h) at inlet pipelines for source pre-treatment; add medium modules (10-30 m³/h) at vegetable wash tanks, meat thaw pools; embed small components at staff drinkers, hand basins, forming "total-branch-terminal" three-level protection.
- **Beverage/Juice Processing**
Install large UV-C systems in raw water pre-treatment, add UV-C modules before filling pipelines to prevent secondary pollution, meeting aseptic filling requirements.
- **Food Processing Water**
E.g., dough mixing water for bread, tempering water for chocolate, install small UV modules before use points to meet product-specific standards.



Value Embodiment

- **Block Foodborne Risks:** Post-disinfection water pathogen kill rate 99.999%.
- **Zero Residues Improve Quality, Boost Competitiveness:** Replace chemicals, no chlorine on food surfaces, enhanced taste in juices/drinking water.
- **Cost Reduction, Efficiency, Output Boost:** Water recycling rate up 50%-70%, annual savings over 28,000 US dollars; biofilm reduction lowers cleaning from 3 times to 1 time weekly, cleaners down 60%; auto data logging generates compliance reports, manual testing costs down 70%.



Hotel Water Safety Management Shifting From "Basic Assurance" To "Experience Value-Add"

Key Challenges

• Pipeline Biofilms Causing Health Risks

Hotel supply pipelines stagnant long-term (e.g., vacant rooms), suitable temperatures breed Legionella, Pseudomonas aeruginosa and biofilms. Guests inhale bacteria-laden shower mist, risking Legionnaires' disease (mortality 10%-30%); faucet water microbial exceedance causes skin allergies, digestive discomfort.

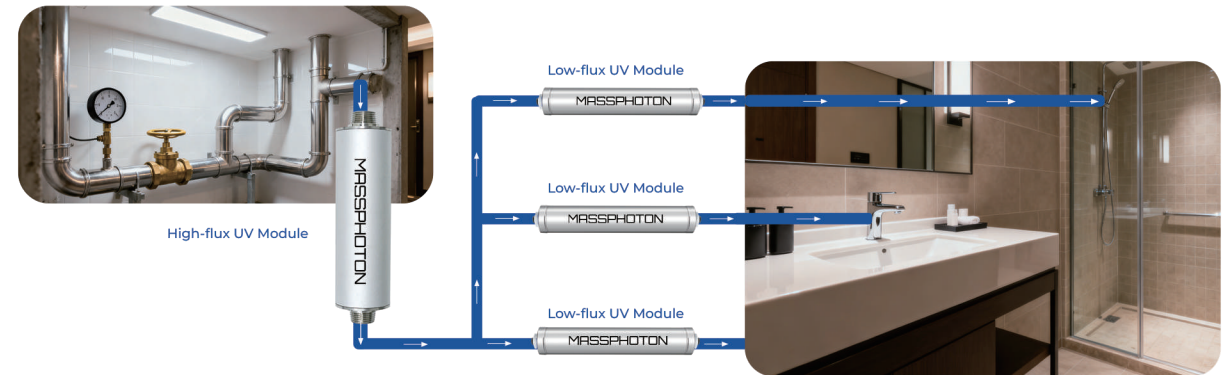
• Chemical Disinfection Affects Experience And Equipment Life

Traditional chlorine for tanks/pipelines leaves odors, causing irritating smells in room drinking/shower water, impacting guest experience; chlorine corrodes pipeline walls and water equipment (heaters, coffee machines), shortening lifespan.

Solution

■ Full-Process UV-C Disinfection, Blocking Pollution At The Source

- Install medium UV-C modules (flow 5-10 m³/h) at floor supply branch inlets.
- Embed micro components at each room basin/shower faucet, forming "area-terminal" dual protection.



Value Embodiment

- **Block Health Risks, Protect Brand Reputation:** Post-disinfection pathogen kill 99.999%, room Legionella detection 0.
- **Enhance Experience Quality, Boost Competitiveness:** Chlorine-free drinking water, non-irritating showers, improved guest satisfaction.
- **Cost-Effective Operations:** Water recycling up 40%-60%, annual savings USD 21,480; biofilm reduction lowers water equipment maintenance 50%, hot water energy down 12%.



Commercial Water Dispenser Safety Management From "Passive Inspection Response" To "Proactive Defense Building"



Key Challenges

• Secondary Pollution Causing Microbial Exceedance Risks

Barrel water dispenser reservoirs and faucet gaps breed E. coli, Pseudomonas; summer heat can exceed colonies 10 times; direct drinker/vending machine post-RO tanks form biofilms if not disinfected timely, output "visually clear but microbiologically exceeding".

• Maintenance Pressure

Dispersed commercial dispensers require heavy manual cleaning, annual per-unit cost over 143.20 US dollars; GB 5749-2022 strict on terminal microbial indicators, operators face quarterly inspections and fines for exceedance.

Solution

• Barrel Water Dispenser

Embed static UV-C LED antibacterial modules in reservoirs for real-time sterilization; add micro UV-C flow sterilizers before cold/hot faucets, forming "storage + output" dual barriers to eliminate terminal pollution.

• Direct Drinker/Vending Machine

Integrate UV-C modules post-RO membrane, in tanks, main lines, and outlets for "purification-storage-output" full-process dead-angle-free disinfection.

• Smart Maintenance

Connect to IoT platform for real-time upload of disinfection duration, water parameters, lifespan; support remote "pipeline flush + enhanced disinfection + smart cut-off" programs.



Value Embodiment

- **Strengthen Health Defense, Reduce Risk Costs:** Post-output colonies ≤ 5 CFU/mL, pathogen detection 0.
- **Cost Reduction, Maintenance Efficiency, Market Boost:** Auto disinfection reduces manual cleaning, per-unit annual costs from 25.78 to 85.92 US dollars; smart monitoring boosts efficiency 300%.



Swimming Pool Water Purification Solution

Reducing Chemical Disinfectant Use

Key Challenges

- Traditional Pool Chlorine Disinfection Reacts With Sweat/Urine To Form "Trichloramine"

Causing "pungent chlorine smell", irritating skin/eyes, reducing experience. High trichloramine may cause eye swelling, throat pain, skin allergies.

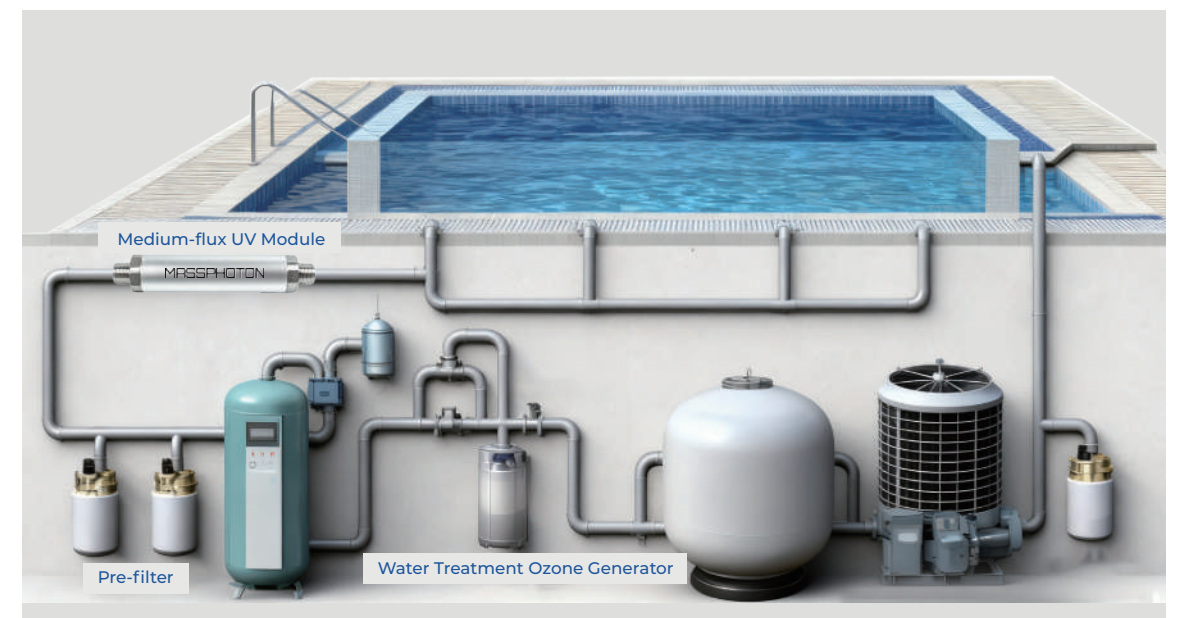
Solution

- Add MASSPHOTON medium-flux UV-C LED water disinfectant to pool circulation systems (with filtration, ozone), reducing chlorine use 50-70%, UV-C LED kills stubborn viruses ozone can't (e.g., norovirus).



Value Embodiment

- Reduce pool chlorine odor, extend water change frequency (traditional weekly to 2-3 weeks with UVC), lowering water costs.



Public Application Scenario

Focusing on crowded public areas such as schools, communities, and airports, we build a comprehensive water quality protection network with UV-C LED disinfection technology, balancing durability and ease of maintenance. This ensures that every member of the public — from the elderly to children — can drink safe, worry-free water. We safeguard the drinking health of the entire population through technological strength, illuminating every pure moment in daily life.

Public Direct Drinking Water Assurance Achieving Sterile-Level Direct Drinking And Efficient Maintenance

Key Challenges

- **Secondary Pollution Risks Under High-Frequency Use**
Campus direct drinker faucets/tanks breed E. coli, Staphylococcus from student hand contact/splashes; municipal points (parks, subways) exposed outdoors, dust/insects enter, summer exceedance up to 35%.
- **Experience-Safety Conflict in Traditional Disinfection**
Manual dismantling pauses use (1-2 hours per unit), affecting supply; chlorine soaking kills but leaves taste; ozone requires 30+ min wait before drinking.
- **Large-Scale Maintenance and Regulatory Pressure**
Large campuses (universities) have hundreds of units, city-wide municipal points require heavy manual inspections, high annual per-unit costs.

Solution

• Disinfection Without Dead Corners Throughout Entire Process

Integrate UV-C modules post-RO membrane in tanks, main lines, outlets for "purification-storage-output" full dead-angle-free disinfection.

• Data Monitoring And Alerts

All devices connect to IoT platform, real-time upload UV intensity, running status; auto alert or cutoff if intensity drops to 70% or water abnormal. Support remote "enhanced disinfection", campus/municipal staff manage 300+ units per person via PC, greatly reducing labor.



Value Embodiment

- **Strengthen Health Defense, Reduce Risks:** Post-output colonies ≤ 5 CFU/mL, pathogens 0.
- **Cost Savings, Maintenance Boost, Competitiveness:** Auto reduces cleaning, per-unit costs from 84 to 25 US dollars; smart system boosts efficiency 300%.



Pilot Cases——
Beijing Universal Resort



Suitable For Outdoor Nebulization Cooling Systems

Key Challenges

• Microbial Exceedance And Health Risks

Full chain from municipal supply to atomizing nozzles has breeding risks. Reservoirs prone to dust/insects, humid environments breed Legionella, E. coli, colonies exceed 20 times in summer heat; pipeline walls form biofilms, water visually clear but hidden exceedance; nozzle apertures 0.1-0.5 mm easily blocked by microbes breeding bacteria, spreading via aerosols causing respiratory infections, skin allergies in vulnerable groups like elderly/children.

• Equipment Blockage And High Maintenance Costs

Systems dispersed outdoors, manual periodic dismantling of reservoirs, pipelines, nozzles for cleaning, annual per-system cost over USD 112; nozzles frequently replaced due to microbial blockage (1-2 times monthly), consumables over USD 42 per year, blockage causes uneven nebulization, cooling efficiency down over 50%.

Solution

• Source End

Install pre-treatment UVC modules at reservoir inlets, embed static UVC antibacterial inside for "inlet-storage" dual sterilization;

• Water Delivery End

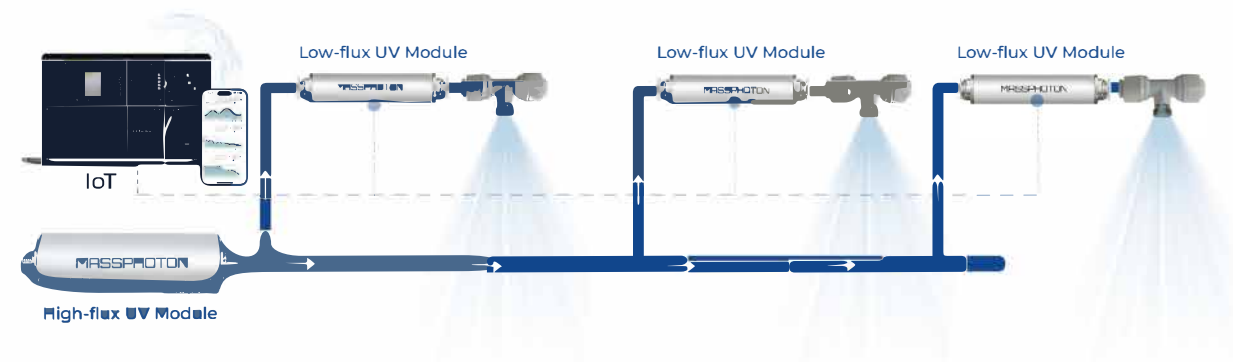
Install pipeline-type UVC flow-through modules every 5-10 meters along main/branch pipelines to instantly kill microorganisms,

• Nebulization End

Add micro UVC before nozzle inlets for anti-blockage + final disinfection;

• Smart Maintenance

Connect all UV-C LED modules to "Outdoor Nebulization System IoT Platform" for real-time monitoring, remote control, alert reminders.



Value Embodiment

- **Strengthen Public Health Defense, Zero-Risk Operations:** Post-disinfection water microbes ≤ 10 CFU/mL, aerosols pathogens 0, fully compliant, eliminating respiratory/skin risks; shift from "passive inspections" to "proactive monitoring", no fine worries, avoid service losses from pauses.
- **Cost Savings, Ease Burden:** Auto reduces 90% manual cleaning (monthly to quarterly), per-system cost from USD 112 to USD 28; reduced wear, nozzle blockage down 95%, replacement from from USD 42 to <USD 4.2 per year, stable nebulization keeps cooling at 90%+.
- **Enhance Public Service Experience, Strengthen Competitiveness:** Clean odor-free aerosols avoid "fishy smell after nebulization", improve comfort; failure rate down 80%, less downtime, ensure continuous cooling services for public spaces such as parks and squares, and assist operators in creating a "healthy and comfortable" public scene image.