IP68 50-Meter Deep Water Waterproof and Anti-Collision LED Tube

An Innovative Solution for Mariculture Lighting

Product Description:

tLight's IP68 super–protected LED tube, the world's first lighting fixture capable of long–term operation at a depth of 50 meters, is specifically engineered for extreme environments. Encased in a polycarbonate (PC) housing—available in transparent or opal white—it boasts both IK10 impact resistance and superior corrosion resistance, making it ideally suited to the harsh conditions of mariculture, including high salinity, high humidity, and heavy dust. Whether deployed in inshore aquaculture ponds, deep–sea cages, or recirculating aquaculture systems (RAS), it delivers consistent and high–efficiency illumination support.

Core Advantages of This Product in Mariculture Applications:

1. **Superior Waterproofing and Corrosion Resistance**

IP68 protection rating: Capable of continuous operation at a 50–meter water depth, unaffected by seawater immersion, wave splashing, or high–pressure washing.

Salt spray–resistant design: The housing and components are constructed from stainless steel or marine–grade materials to prevent rust and extend service life.

2.Precise Spectral Control for Enhanced Biological Growth

Selectable light colors: Available in blue (450–500nm), green (500–550nm), and red (600–700nm) wavelengths to meet the needs of different aquaculture species:

Blue light: Promotes algal reproduction (for bait cultivation) and is suitable for juvenile fish stages.

Red light: Stimulates gonadal development in adult fish and improves breeding efficiency.

High–transmittance PC housing: The transparent version offers over 90% light transmittance, ensuring efficient spectral penetration through water.

3.Energy Efficiency and Reduced Operational Costs

Luminous efficacy of 135–140 lm/W: Achieves over 60% energy savings compared to traditional metal halide lamps.

Long lifespan design: Maintains L70 luminous flux for 100,000 hours (approximately 20 years), reducing replacement frequency.

4.Intelligent Control and Flexibility

0–10V/DALI dimming: Adjusts light intensity according to day–night cycles or growth stages to simulate natural light rhythms.

Optional sensors: Microwave motion sensors for automatic on/off functionality to save energy; photosensitive controls for automatic light supplementation based on ambient brightness.

5.Safety, Reliability, and Maintenance–Free Design

IK10 impact resistance rating: Withstands mechanical collisions during aquaculture operations.

Wide temperature operating range (–25° C to +50° C): Suitable for cold–water aquaculture (e.g., salmon) and tropical waters (e.g., shrimp).

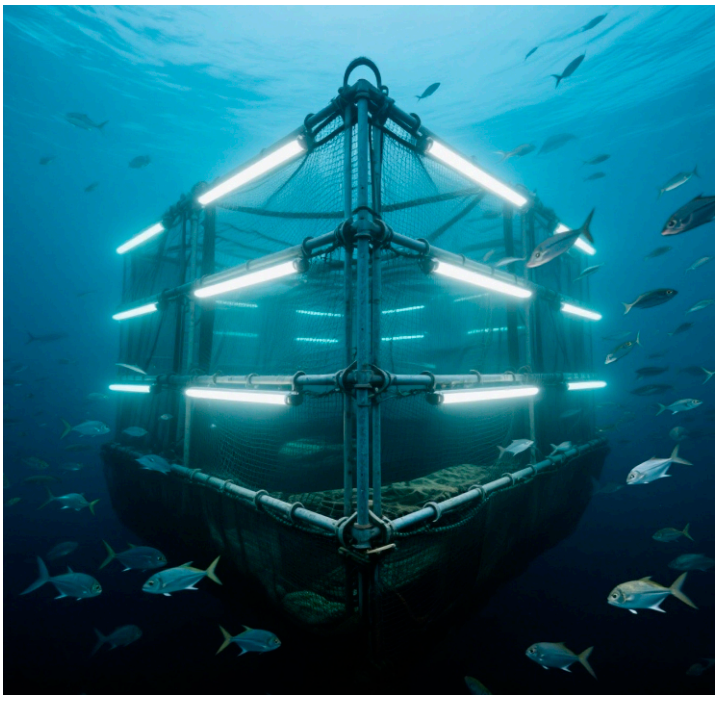
Emergency lighting function: Provides 90 minutes to 3 hours of backup illumination during sudden power outages to prevent stress in cultured organisms.

6.Versatile Installation Adaptability

Bracket/suspension/track mounting options: Compatible with aquaculture ponds, net cages, water treatment equipment, and other scenarios.

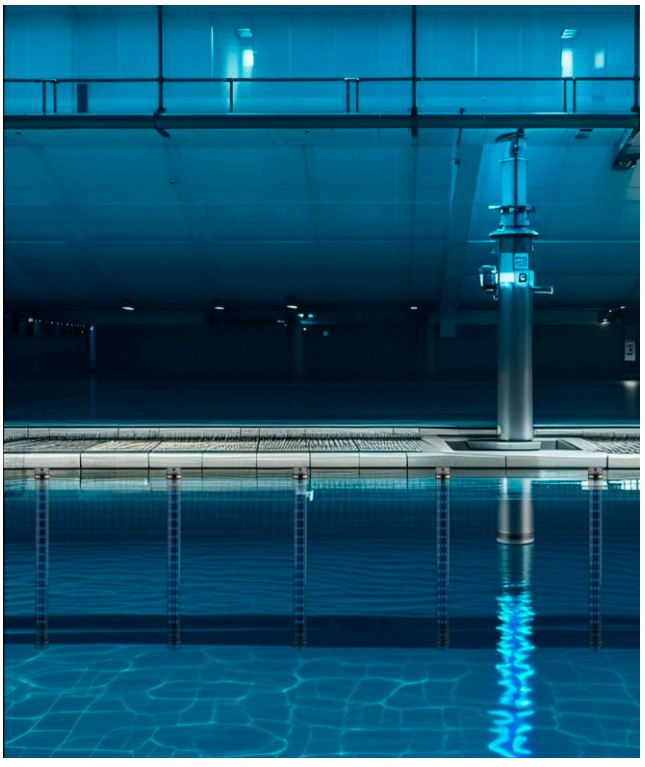
DC low–voltage version (20–50V): Suitable for solar–powered systems, enabling off–grid aquaculture operations.

Application Scenarios

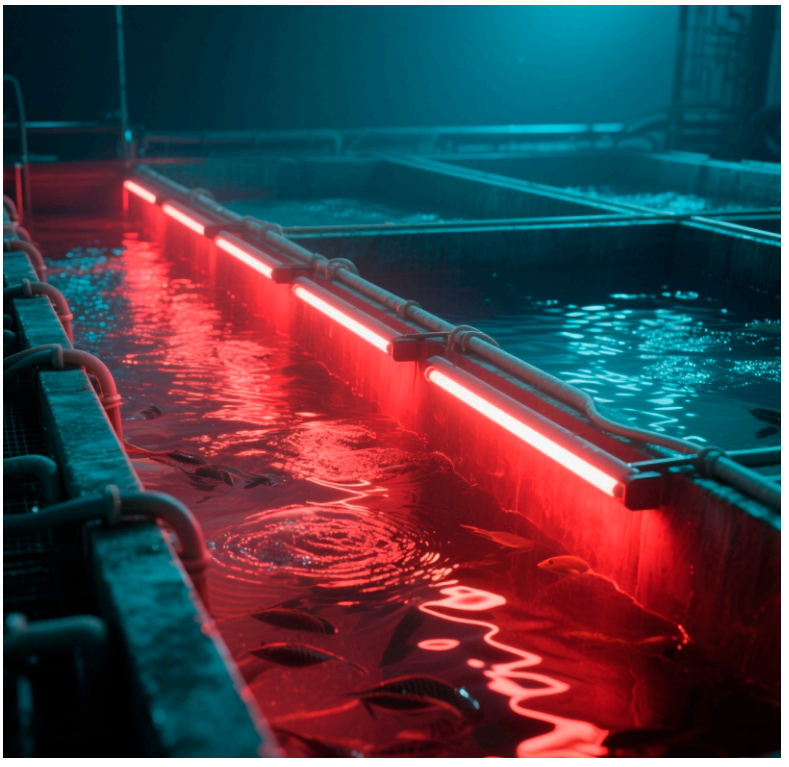


Deep–sea cage lighting:
Can be installed 50 meters underwater or on surface cages.

Algae culture ponds:
Blue light promotes the growth of microalgae and increases the yield of biological bait.



Recirculating Aquaculture Systems (RAS):
Moisture and dust resistant, providing stable support for indoor high–density aquaculture.



Hatchery workshops:
Red light accelerates the sexual maturity of fry and shortens the breeding cycle.

Model Parameters of LED Tube Version

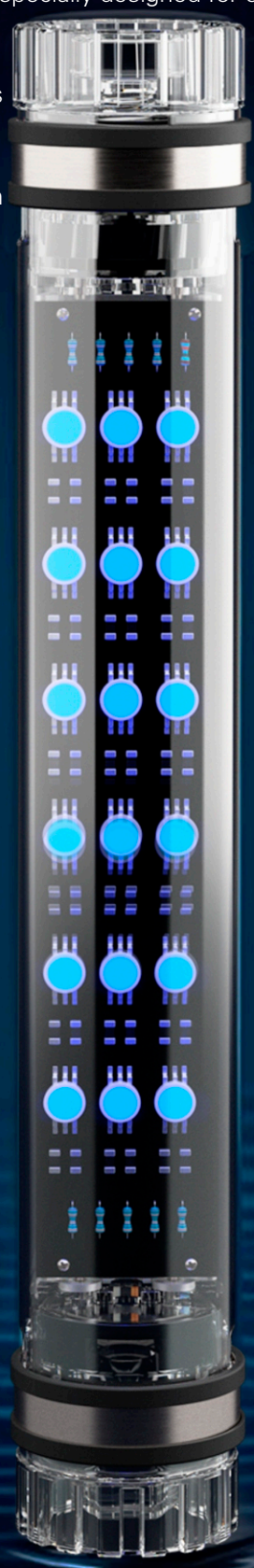
Model:	88901	88902	88903	88904	88911	88912	88913
Wattage(W)	14W	35W	70W	140W	8W/14W	14W/28W	28W/40W
Size In (mm)ø2.4", 61mm	15" (381 mm)	28.50" (724mm)	52" (1323 mm)	99" (2514 mm)	15" (381 mm)	28.50" (724mm)	52" (1323 mm)
Input Voltage	AC 100-277V				DC 20-50V		
Lumens Delivered	1820	4725	9400	18900	1080/1820	1820/3640	3640/5200
Ef ficacy	135 lm/w						
CRI	CRI >=80, Optional 90 CRI						
Beam Angle	120 degree						
Color Temperature (K)	Color Temperature (K) 3000K, 3500K, 4000K, 5000K, 6400K						
L70 Lumen maintenance	>=100,000 hours						
Power Factor	>=0.9						
MAX THD (%)	<15						
Dimming	0-10V Dimming (0-100%)				No		
DALI option	Yes				No		
Operating Temperature	-13°F to +122°F (-25°C to +50°C) except EM models For EM models: -4°F to +100°F (-20°C to +38°C)						
Warranty	10 years (LED driver with 5 years warranty)						
IP rating	IP68, 10 and 50 meter						
IK rating	IK10						
Construction	Polycarbonate Hoising with internal amuminium mounting plate						
Cord	Flex Cable H05RN-F 2x1.0mm2 or H05W-F2x1.0mm2, or SJTW/18AWGx2C/VW-1/105/600V.UL, Length: 1.5 m hardwire						
Plug	optional UL/VDE/PSE/BS/VDE/CCC/KS/SAA						
Linking connector	IP65, IP67, IP68 connectors avaialble, see linking specificaiton.						
Linking serial	140 pcs	50 pcs	25 pcs	12 pcs	<10 pcs	<10 pcs	<5 pcs
Mounting	Surface Mounts, Rail Mounts, Hanging Mounts, see mounting specifications						
Motion Sensor	Yes (see MS1 specification)						
Photocell	Yes (see PC1 specification)				No		
Emergency Battery Backup	Yes (see Emergency Battery Backup Pack specifications						
LED Color option	Optional light colors: Available in blue (450-500nm), green (500-550nm), red (600-700nm) and other wavelength bands.						
Tube Color option	White						

tLight UV-C Quartz tube germicidal lamp

An efficient solution for mariculture water treatment

Product Description:

tLight UV–C quartz tube germicidal lamp is the world's first ultraviolet disinfection equipment with IP68 waterproof rating (capable of working at a water depth of 50 meters), specially designed for extreme environments. It adopts high–purity quartz glass tube (with a UVC transmittance of over 92% at 254nm) and 316 stainless steel structure, which can efficiently inactivate pathogenic microorganisms in seawater. It is applicable to scenarios such as recirculating aquaculture systems (RAS), deep–sea cages, and nursery ponds, enabling safe disinfection without the need for chemical agents.



Core Advantages of This Product in Mariculture Applications:

1.Efficient Sterilization for Biological Health

254nm UVC wavelength:
Directly destroys the DNA/RNA of bacteria, viruses (such as Vibrio), and parasites, with an inactivation rate of >99.9% (at a dose of 30mJ/cm).

Zero chemical residues:
Avoids the toxicity of chlorine disinfection to fish, especially suitable for sensitive stages (e.g., seedling period).

2.Superior Waterproofing and Corrosion Resistance

IP68 protection:
Capable of continuous operation at a water depth of 50 meters, resistant to seawater immersion, high–pressure washing, and salt spray corrosion.

Quartz + stainless steel material:
The anti–biofilm coating reduces dirt accumulation, maintaining a long–term light transmittance of over 90%.

3.Energy Efficiency and Reduced Operational Costs

UVC LED version:
The 70W tube has a UVC output of 3.85W, saving 60% more energy than traditional mercury lamps, with a lifespan of 20,000 hours.

Instant start–stop:
0.1–second full–power startup (mercury lamps require preheating), suitable for intermittent disinfection needs.

4.Intelligent Control and Flexible Configuration

Modular series connection:
A single system can connect 50+ tubes in series, covering 100m of water (such as large aquaculture ponds or water treatment systems).

5G IoT option:
Real–time monitoring of UVC intensity and water temperature, with early warning for tube attenuation.

5.Safety Compliance and Global Certification

NSF/ANSI 2 certification:
Meets drinking water safety standards, with non–toxic materials in contact with aquaculture water.

Zero ozone emission (<0.001ppm):
Avoids harm to aquaculture organisms and operators.

www.tlight.cc

UV–C光（253.7nm）Sterilization Science Principles

1. DNA/RNA Destruction

* UV–C photons break molecular bonds in microbial DNA/RNA, forming thymine dimers.
* This disrupts replication, rendering pathogens unable to reproduce or infect.
* Effective against: Viruses (incl. SARS–CoV–2), bacteria (E. coli, Legionella), molds, and protozoa.

2. Germicidal Wavelength (253.7nm)

* Peak effectiveness at 253.7nm (mercury lamp) or 260–280nm (UV–C LEDs).
* Absorbed by microbial DNA 1,000x more than by human cells (targeted action).

3. Dose = Intensity × Time

* Critical metric: mJ/cm^2 (millijoules per square centimeter).
    * 6 mJ/cm^2 : Kills 99.9% of influenza virus.
    * 30 mJ/cm^2 : Inactivates drug–resistant bacteria (MRSA).
    * 186 mJ/cm^2 : Required for Cryptosporidium (EPA standard).

4. No Chemical Residues

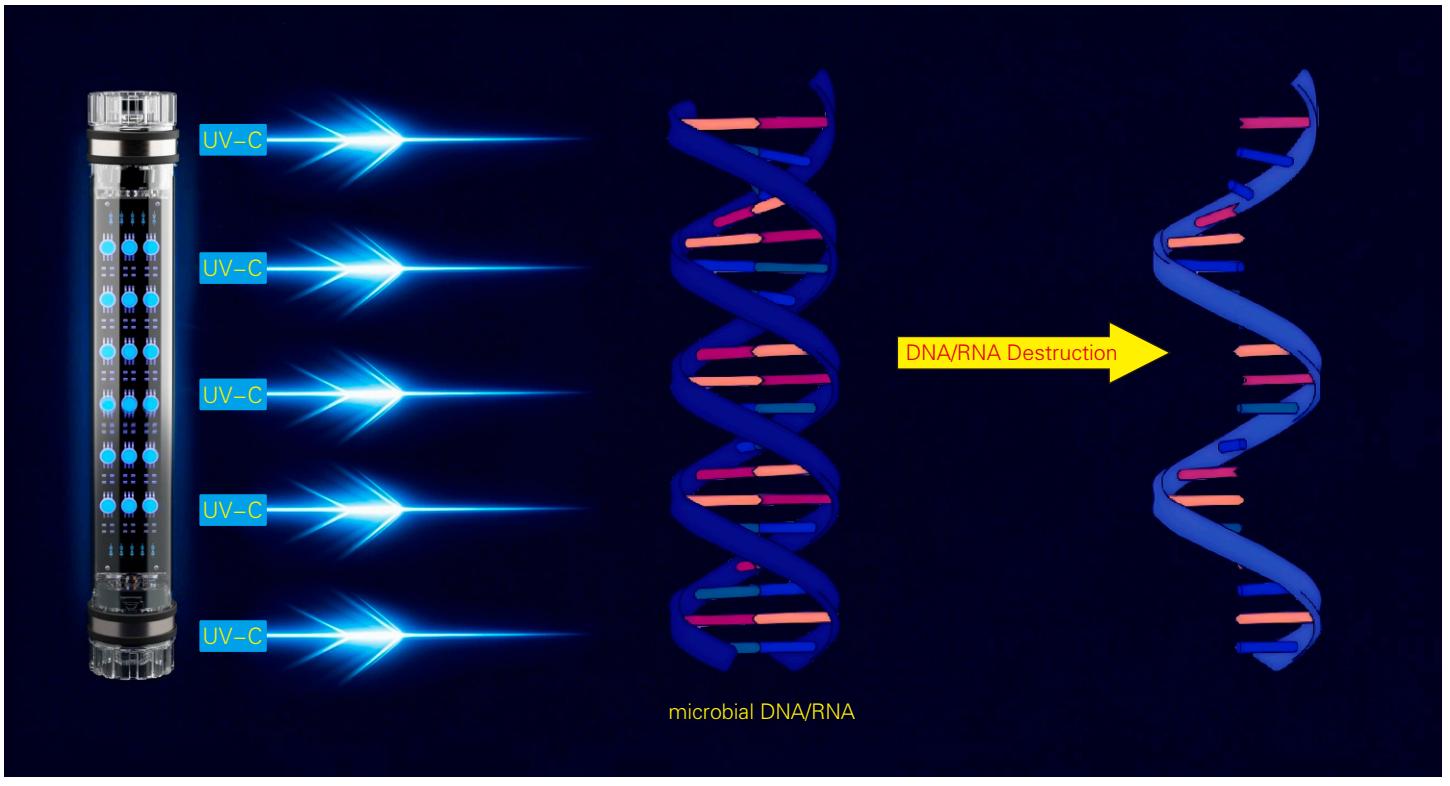
* Unlike chlorine, UV–C leaves no byproducts–ideal for food, Pharma, and sensitive environments.

5. Limitations

* Shadow areas: Requires direct line–of–sight exposure.
* Material compatibility: Can degrade plastics/elastomers over time.

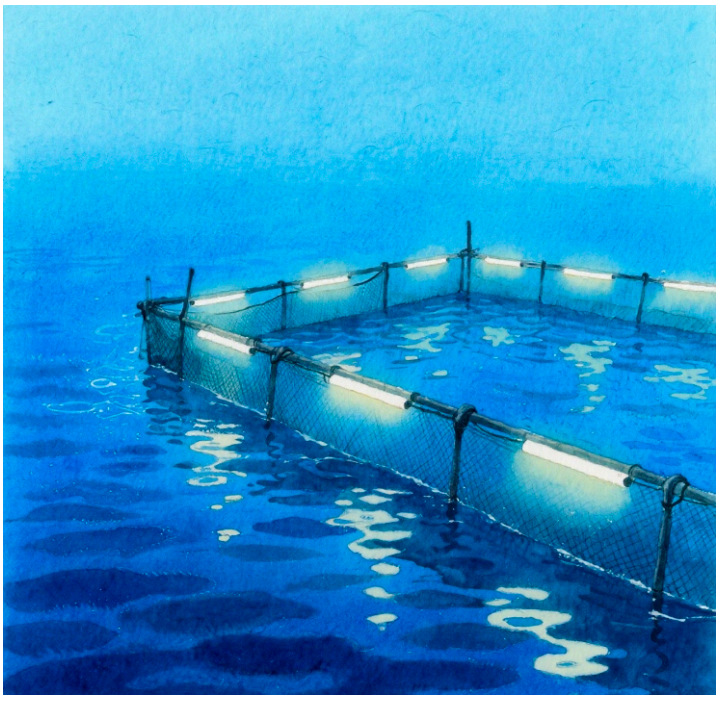
Did You Know?

NASA uses UV–C to sterilize spacecraft (like Mars rovers) to prevent interplanetary contamination!



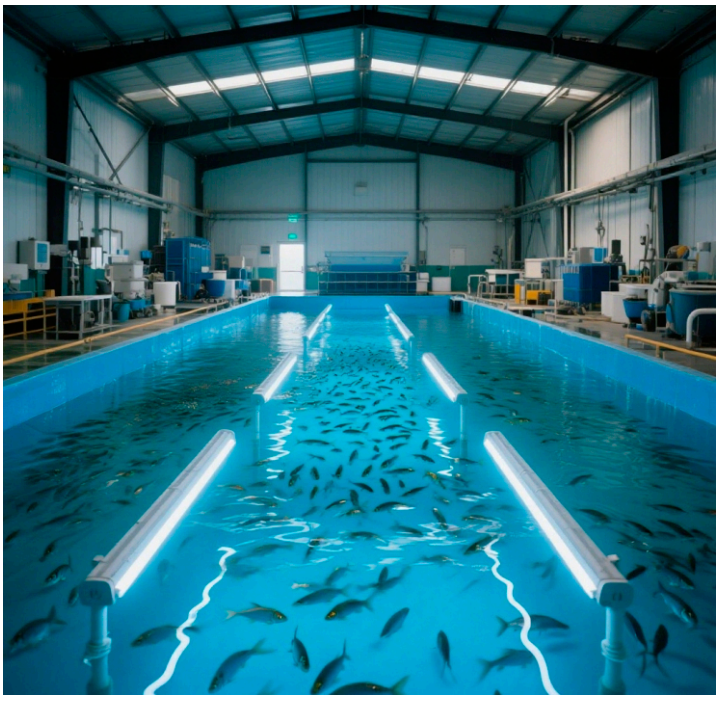
Application Scenarios

Bait culture ponds:
Inhibit harmful microorganisms in algae and ensure the safety of biological bait.



Deep–sea cages:
Installed directly on the cage framework to continuously disinfect the surrounding water.

Recirculating Aquaculture Systems (RAS):
Inactivate pathogens in recycled water and reduce the use of antibiotics.



Hatchery workshop:
Controls saprolegniasis and bacterial infections, improving the survival rate of seedlings.

Recommended Product Series

Model	Power	UV–C Output	Applicable Scenarios
88370	70W	3.85W	Large–scale RAS systems, deep–sea cages
88150	50W	14.4W	Medium–sized breeding ponds, seedling nurseries
88275	75W	24.8W	Water treatment for high–density industrial aquaculture

Why choose tLight UV–C tubes?

*** Deep–water protection:**

The only UVC disinfection equipment that supports a water depth of 50 meters.

*** Plug–and–play:**

316 stainless steel bracket, installation completed in 5 minutes.

*** Long lifespan and low maintenance:**

Self–cleaning coating, 5–year warranty.

*** Customized services:**

Provide flexible configuration of spectrum, power and installation methods.

*** Global certifications:**

ETL, CB, CE and other certifications, in line with international safety standards.

*** Customized services:**

Provide flexible configuration of spectrum, power and size.

*** Lower lifetime cost:**

Energy–saving + maintenance–free, with an overall cost more than 50% lower than traditional lamps.

Technical Support

If you need a customized lighting solution for your mariculture project, please contact the Tlight team:

info@tlight.cc | www.tlight.cc | 中国：+86 769 8293 2282

nfuse the power of "light" into your aquaculture industry to achieve efficient and sustainable production!