

TROJAN **UV**3000™ PTP

TROJAN **UV**3000™ B

WASTEWATER DISINFECTION





Simple, Dependable UV Solutions

Proven, chemical-free disinfection from the industry leader

Trojan Technologies is an ISO 9001: 2000 registered company that has set the standard for proven UV technology and ongoing innovation for more than 25 years. With unmatched scientific and technical expertise, and a global network of water treatment specialists, representatives and technicians, Trojan is trusted more than any other firm as the best choice for municipal UV solutions. Trojan has the largest UV installation base – over 4,000 municipal installations worldwide.

In North America alone, almost one in five wastewater treatment plants rely on our proven, chemical-free disinfection solutions.

The TrojanUV3000™PTP (Packaged Treatment Plant) and TrojanUV3000™B are two of the reasons why. These simple, robust, and operator-friendly systems have demonstrated their effective, reliable performance in over 1,000 installations around the world. The TrojanUV3000™PTP is

pre-engineered for quick, inexpensive installation with pipe runs using pre-fabricated, flanged stainless steel channels, or into existing chlorine contact basins and effluent channels. The TrojanUV3000™B offers increased capacity and is available with a controller that enables flow pacing to maximize operating efficiency and extend lamp life. The system turns UV lamp banks on and off automatically to ensure the required dose is met using the fewest lamps and least electricity.

TROJAN UV3000™PTP | TROJAN UV3000™B

Robust, operator-friendly solutions designed for economical disinfection

System Monitor/Control Center



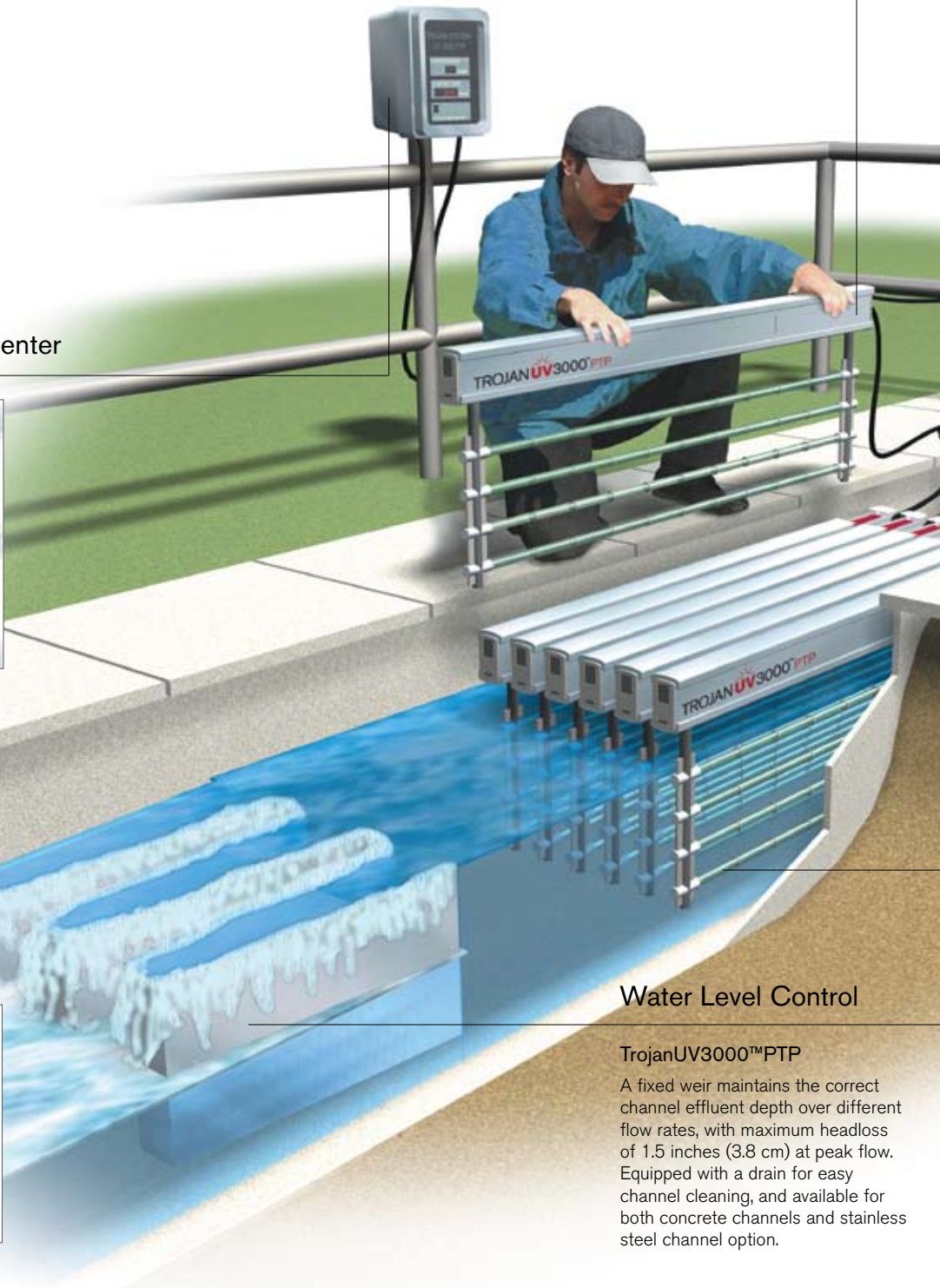
TrojanUV3000™PTP – Optional

The optional System Monitor includes a submersible UV sensor, and provides digital output of UV intensity at each bank. Elapsed time display provides continuous readout of actual hours of operation (lamp hours). A dry contact enables a remote low UV intensity alarm.



TrojanUV3000™B

The System Control Center (SCC) provides control of all UV functions, tracks lamp hours, and uses a submersible UV sensor (one per bank) to monitor UV intensity. The SCC is capable of "flow pacing" – automatically turning banks of UV lamps off or on in response to changes in the flow rate in order to conserve power and prolong lamp life.



Water Level Control

TrojanUV3000™PTP

A fixed weir maintains the correct channel effluent depth over different flow rates, with maximum headloss of 1.5 inches (3.8 cm) at peak flow. Equipped with a drain for easy channel cleaning, and available for both concrete channels and stainless steel channel option.

Electronic Ballast



TrojanUV3000™PTP/B

The electronic ballast is mounted within its own TYPE 4X (IP65)-rated watertight enclosure within the module frame, and is cooled by convection.

Power Distribution



TrojanUV3000™PTP

Each Power Distribution Receptacle (PDR) powers two (2) UV modules and allows for quick and safe electrical disconnect. The duplex ground fault interrupter receptacles ensure operator safety, and are mounted inside Type 3R rain shield boxes.



TrojanUV3000™B

The Power Distribution Center (PDC) is constructed of fiberglass and is mounted across the channel. The PDC distributes power to individual modules and allows electrical isolation of each module for easy service.

UV Modules

TrojanUV3000™PTP/B

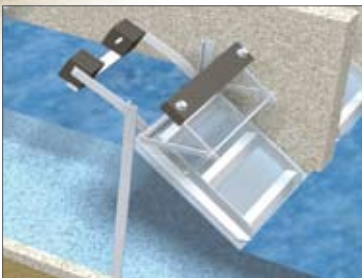
UV lamps are mounted on stainless steel frames. Lamps are enclosed in quartz sleeves, and submerged horizontally and parallel to water flow. A bank is made up of multiple modules placed in parallel positions. All wiring, from ballasts to lamps, runs inside the module frame. A display showing individual lamp status is provided on top of each module.

Stainless Steel Effluent Channel



TrojanUV3000™PTP - Optional

An optional Type 304 stainless steel channel, complete with UV Module Support Rack, can be used. Channel can be installed as a freestanding structure connected to flanged pipes using the optional transition boxes.



TrojanUV3000™B

Available with a fixed weir or Automatic Level Control (ALC) gate in the channel to maintain the appropriate water level over the lamps. Trojan engineers will work with you to select the appropriate level control device for your application.

Key Benefits

TrojanUV3000™PTP / TrojanUV3000™B

Increased operator, community and environmental safety.

The TrojanUV3000™PTP and TrojanUV3000™B use environmentally friendly ultraviolet light – the safest alternative for wastewater disinfection. No disinfection by-products are created, and no chlorine compounds must be transported, stored or handled by plant staff.

Proven disinfection based on actual dose delivery testing (bioassay validation), and over 1,000 TrojanUV3000™PTP and TrojanUV3000™B installations worldwide. Verified field performance data eliminates sizing assumptions resulting from theoretical dose calculations.

Reduced engineering and installation costs. The TrojanUV3000™PTP can be equipped with pre-fabricated stainless steel channels and transition boxes for in-line integration with existing flanged piping – thus minimizing engineering and installation costs. Both systems can be easily retrofitted into existing chlorine contact tanks and effluent channels, and come pre-tested, pre-assembled and pre-wired to minimize installation costs.

Designed for simplicity and reliability. Using Trojan's most proven, modular design and robust components, including low-pressure lamps, these systems are straightforward to operate and require minimal operator involvement.

Operator-friendly maintenance. Trojan lamps are guaranteed for 12,000 hours (15 months) of operation, and can be replaced, without tools, in less than three minutes per lamp. Modules are electrically separate, allowing a single module to be removed without disrupting flow or taking the system off-line.

Outdoor installation flexibility. All components of the TrojanUV3000™PTP and TrojanUV3000™B systems can be installed outdoors, eliminating the need and costs of a building, shelter, and air conditioning for ballast cooling.

Well suited to changing regulations. Trojan UV systems do not have any negative impact on receiving waters, making them a strategic, long-term choice as regulations become increasingly stringent.

Guaranteed performance and comprehensive warranty. Trojan UV systems include a Lifetime Disinfection Performance Guarantee, the best lamp warranty in the industry, and offer lamps from multiple approved suppliers. Ask for details.

Advanced, Self-Contained UV Modules

Compact footprint simplifies installation and eliminates air conditioning costs

Benefits:

- Space-saving, electronic ballasts are housed right in the modules, not in separate external cabinets, to minimize footprint size, installation time and costs
- Convection cooling of the ballast eliminates costs associated with air conditioning or forced-air cooling
- Lamps are protected in a fully-submersible, Type 316 stainless steel frame
- All wiring and cables are safely enclosed inside the waterproof module frame – fully protecting them from effluent and UV light
- Modules are electrically separated from each other, allowing them to be individually removed for maintenance and a spare module quickly inserted to maintain maximum performance



The advanced, self-contained modules of the TrojanUV3000™PTP and TrojanUV3000™B incorporate convection-cooled ballasts and feature a UV lamp status indicator (below) for at-a-glance confirmation that all lamps are operating.

- Streamlined module minimizes headloss and prevents build-up of debris on the lamps
- All module wiring is pre-installed and factory-tested



Trojan's Innovative Ballasts and Enclosures Provide Significant Advantages

Module-Mounted Ballasts	<ul style="list-style-type: none"> ▪ Take up less space and reduce footprint, minimizing installation time and costs
Convection Cooling	<ul style="list-style-type: none"> ▪ Housing the ballasts in the module allows for natural convection cooling to dissipate the heat of the ballasts into the air ▪ The ballasts are kept sealed and protected ▪ No air conditioning or forced-air cooling required
Clean, Water-Tight Protection	<ul style="list-style-type: none"> ▪ Some suppliers use external cabinets with forced-air cooling. This introduces dust and moisture onto circuit boards and other electronic components, greatly reducing the life of these components ▪ Internal housing in Trojan's sealed module keeps all components dry and clean
Internal Cabling	<ul style="list-style-type: none"> ▪ All lamp-ballast wiring is contained within the module frame. This configuration protects wires and cables from exposure to effluent, debris fouling and UV light ▪ Internal cabling allows all electrical connections within the module to be factory-tested

Proven Performance, Components and Design

Validated through regulatory-endorsed bioassay testing and over 1,000 installations worldwide

Benefits:

- Performance data is generated from actual field testing (bioassay validation) over a range of flow rates, effluent quality and UVTs
- Provides regulatory-endorsed, physical verification that systems will perform as expected – ensuring public and environmental safety
- Most accurate assessment of system sizing needs
- Low-pressure lamps and ballasts have proven their outstanding reliability in thousands of installations
- Open-channel design allows cost-effective installation into existing effluent channels & chlorine contact basins
- Systems can be installed outdoors to reduce building capital costs
- Modular design is scalable for precise sizing, and expandable to meet new regulatory or capacity requirements



The TrojanUV3000™PTP and TrojanUV3000™B feature a gravity-fed, open-channel design that delivers cost savings at installation through simple retrofits into existing effluent channels and chlorine contact tanks. Rugged, proven components make operation and maintenance extremely cost-effective.

Designed & Built for Easy Maintenance

User-friendly design requires minimal service and operator involvement

Benefits:

- Trojan lamps are warranted for 12,000 hours (15 months)
- Routine maintenance can be scheduled and completed without disrupting disinfection
- Replacement of UV lamps can be completed without tools and requires less than 3 minutes per lamp



Lightweight, self-contained modules are operator-friendly and make routine maintenance quick and easy. Modules can be individually removed for periodic sleeve cleaning and lamp replacement after 12,000 hours (15 months). An optional, mobile cleaning rack simplifies maintenance procedures.

Highly Flexible Installation Configurations

TrojanUV3000™PTP is pre-engineered for cost-effective integration with piping or channels

Benefits:

- Systems are pre-designed to meet disinfection requirements with minimal engineering costs
- Systems can be installed in series to treat higher flows or provide additional redundancy
- Pre-engineered stainless steel channels with built-in weirs are installed as a freestanding structure
- Stainless steel channels are easily integrated with existing flanged piping using Trojan's highly flexible transition boxes (Figure 1)
- Optional turn boxes minimize system footprint by connecting stainless steel channels and allowing two banks in series to be installed side-by-side (Figure 2)
- Transition boxes allow flanged pipe connection on any of three sides for flexible integration (Figure 3)



Figure 1: Banks in Series – Side View

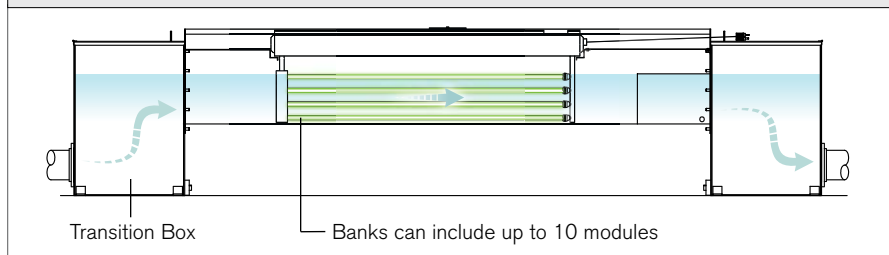


Figure 2: Banks in Series With Turn Box – Overhead View

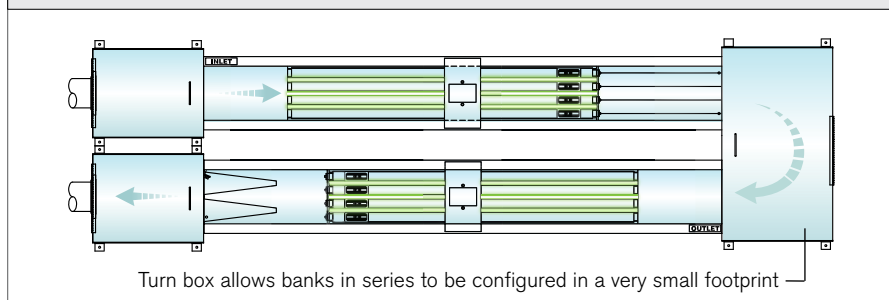
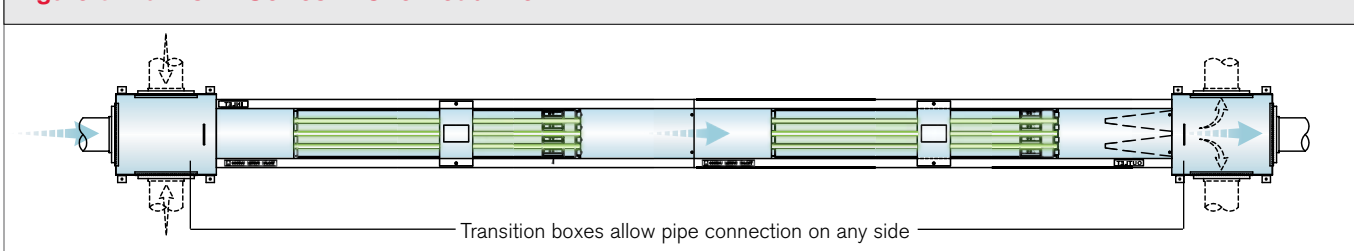


Figure 3: Banks in Series – Overhead View



The TrojanUV3000™PTP is pre-engineered for simple, effective, low cost wastewater disinfection. The optional 304 stainless steel channels feature a UV module support rack, and can be installed as a freestanding unit. Trojan turn boxes and transition boxes allow systems to be incorporated with maximum flexibility and minimal footprint.

Flow Pacing Reduces O&M Costs

TrojanUV3000™B system controller offers flow-pacing for increased operating efficiency

Benefits:

- The System Control Center (SCC) provides monitoring and control of all UV functions
- The SCC provides digital display of bank status, lamp hours, and UV intensity (mW/cm^2)
- The SCC allows the TrojanUV3000™B to be flow paced – meaning the UV lamps of individual banks are turned on and off automatically in response to variations in flow rate (based on a flow meter signal)
- Flow pacing maximizes operating efficiency by matching UV output to disinfection requirements, and reducing electrical consumption during periods of low flow by turning lamps off (Figures 1 & 2)
- Flow pacing also increases the operating life of UV lamps, thereby reducing the frequency, expense and labor required for lamp replacement



The System Control Center of the TrojanUV3000™B monitors lamp hours and uses a submerged UV Sensor to feed accurate data on UV intensity for at-a-glance system status. The SCC also allows flow pacing to minimize operating and maintenance costs by turning banks on and off based on flow requirements

Flow Pacing Optimizes System Efficiency

Figure 1: Operation During Periods of High Flow

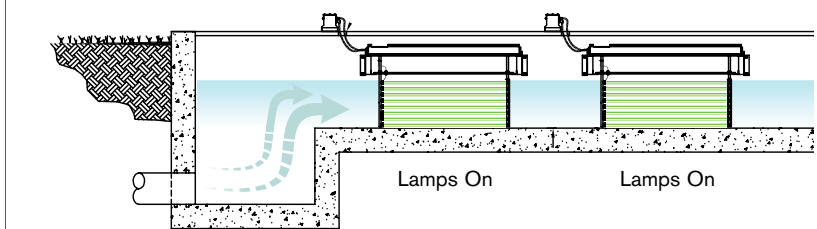
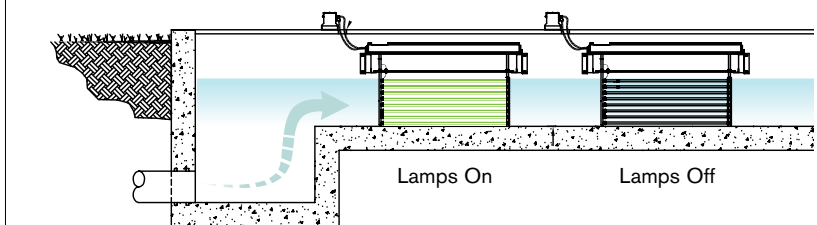


Figure 2: Operation During Periods of Low Flow



System Specifications		
System Characteristics	TrojanUV3000™PTP	TrojanUV3000™B
Typical Applications	Up to 3 MGD (473 m ³ /hr)	1 – 5 MGD (158 – 789 m ³ /hr)
Lamp Type	Low-pressure	
Ballast Type	Electronic; non-variable	
Input Power Per Lamp	45 or 87.5 Watts	87.5 Watts
Lamp Configuration	Horizontal, parallel to flow	
Module Configuration	2 or 4 lamps per module	4, 6 or 8 lamps per module
Bank Configuration	Up to 10 modules per bank	Up to 20 modules per bank
Channel Configurations		
Lamp Banks in Series	Up to 2	Up to 3
Channel Options	Stainless Steel (Trojan option) or Concrete (by others)	Concrete (by others)
Flanged Transition Connections	Optional for stainless steel channels	—
U-Turn Connector Box	Optional for stainless steel channels	—
Level Control Device Options	Fixed weir	ALC gate or fixed weir
Enclosure Ratings		
System Monitor/Control Center	Fiberglass (3R)	
Ballast Enclosure	TYPE 4X (IP65)	
Ballast Cooling Method	Convection; no air conditioning or forced air required	
Installation Location	Indoor or outdoor	
System Monitoring & Controls		
Controller	Optional; Monitoring only	Monitoring and bank control
UV Intensity Monitoring	Optional	Optional
Flow Pacing	—	Optional
Inputs Required	None	4-20 mA flow signal for Flow Pacing
Local Status Indication	Lamp Age (hours) UV Intensity (mW/cm ²) Bank Status (on/off) Low Intensity Alarm Lamp Failure Alarm	
Remote Alarms	UV Intensity (4-20 mA) Common Alarm (discrete)	
Location	Indoor or outdoor	
Maximum Distance from UV Channel	15 ft. (4.5 m)	20 ft. (6 m)
Electrical Requirements		
Power Distribution	Individual GFI Receptacles	Power Distribution Centre
Quantity Required	1 receptacle per 2 modules	1 PDC per bank
Power Input	120V, single phase	120V, single phase 208V, 3-phase 240V, single phase

Find out how your wastewater treatment plant can benefit from the TrojanUV3000™PTP or TrojanUV3000™B – call us today.

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Products in this brochure may be covered by one or more of the following patents:

U.S. 4,872,980; 5,006,244; 5,418,370; RE 36,896; 6,342,188; 6,635,613; 6,646,269; 6,663,318; 6,719,491; 6,830,697; 7,018,975
Can. 1,327,877; 2,117,040; 2,239,925; 2,286,309; 2,371,870; 2,383,686

Other patents pending.