

## Engineering Specification

Job Name \_\_\_\_\_

Contractor \_\_\_\_\_

Job Location \_\_\_\_\_

Approval \_\_\_\_\_

Engineer \_\_\_\_\_

Contractor's P.O. No. \_\_\_\_\_

Approval \_\_\_\_\_

Representative \_\_\_\_\_

# SmartStream® UV 254 Nanometer Germicidal UV Disinfection Systems

## Models

WB001 WB002 WB006 WB008 WB012 WC012  
WC016 WC020 WC025 WC040 WC050 WD012  
WD016 WD020 WD025 WD040 WD050

Connection Sizes: 3/8" to 1 1/2"

Flow Rates: From 1 gpm to 50 gpm (3.8 lpm to 190 lpm)

The Watts SmartStream® line of ultraviolet (UV) disinfection systems is highly effective at providing protection against micro-biological contamination in water for residential and commercial applications with flow rates up to 50 gallons per minute.

Disinfection of water with SmartStream® is a simple, rapid physical process. When contaminated water is exposed to SmartStream's® 254 nanometer UV light, the UV light penetrates the cell walls of microorganisms and disrupts their genetic deoxyribonucleic acid (DNA) material. This quickly inactivates microorganisms by destroying their ability to replicate and infect. UV water disinfection is highly effective in disabling up to 99.9% of harmful organisms in water. SmartStream® UV systems target harmful organisms such as bacteria, cysts, protozoa, and viruses.

Watts SmartStream® UV disinfection systems are engineered with unique features for safety and energy efficiency. All systems come standard with a flow switch activated lamp dimming feature that conserves energy up to 46%. All lamps are identified by the controller via radio frequency to ensure the proper one is being used and to permanently log the life of the lamp on the lamp's micro-processor.

SmartStream® UV disinfection systems can be used as a point of entry or point of use disinfection device. They should be installed as close as possible to the treated water's point of use.

Utilizing SmartStream® for the disinfection of water does not induce chemicals into the water. This means no tastes, odors, or residual chemicals are left over in the water after the disinfection process. SmartStream® systems can be installed in a wide variety of applications such as residential drinking water and whole house disinfection for wells, rainwater catchment and municipal water. Commercial applications include water bottling, food and beverage processing, electronics, pharmaceuticals, aquaculture, laboratories, reverse osmosis pre and post treatment, as well as anywhere disinfection of water without the use of chemicals is preferred.



WITH INNOVATIVE  
SMARTKEY™ TECHNOLOGY!



Industry  
Canada

Industrie  
Canada



SmartStream® UV is certified by the Water Quality Association (WQA) to NSF/ANSI Standard 372 for lead free.

### ⚠ WARNING

**DO NOT** rely solely on this system to make water safe to drink. SmartStream® UV disinfection systems are intended to be used as part of a well designed water treatment system. Water that contains microbiological contamination should be tested regularly to ensure its quality and safety at the point of use.

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

**WATTS®**

## Features

### SmartKey™ Technology

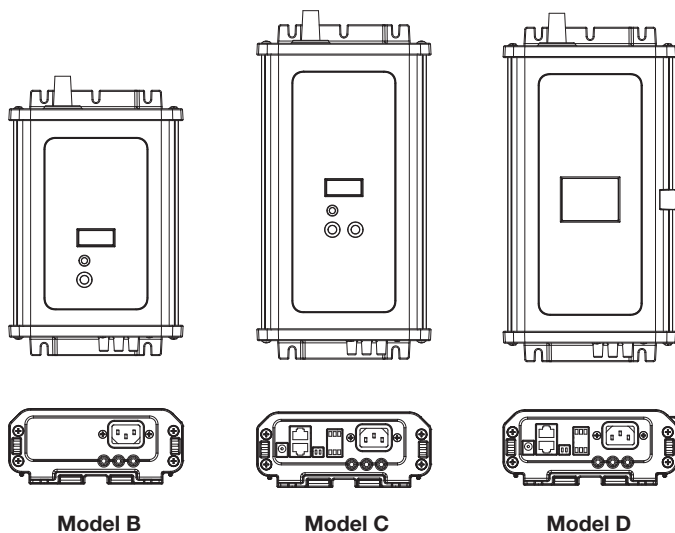
- Through Radio Frequency Identification (RFID) the controller identifies the lamps to ensure that correct replacement UV lamps are being used and that the lamp is energized properly by the controller
- The controller writes the number of days the lamp has been in service to the lamp's RFID tag so the lamp maintains a record of service
- Automatic lamp dimming reduces UV System power consumption by up to 46%
- Automatic lamp shutoff prevents accidental exposure to UVC light
- Operating hours are logged onto a microchip located within the UV lamp to prevent old lamps from exceeding their life span
- High output and high efficiency 9000 hour rated lamps
- Three different controller options available
- UV Sensor available on select models (optional)
- Universal power input 100v-240v 50/60Hz
- NPT and BSP-Tapered thread options
- Inlet and outlet connections are internally and externally threaded for convenience (12 GPM systems and larger)
- 316 highly polished stainless steel reactor chambers
- Reactor Chambers are designed using Computational Fluid Dynamics delivering a 10%-15% better UV dose
- Audible and visual alarm to indicate lamp failure
- Alarm dry contact alarm circuit and 4-20mA output on select models (optional)
- Uses environmentally friendly "green" technology
- Simple sizing & installation
- Touch screen controller with QR codes for replacement lamps and sleeves available on D Series models

## System Specifications

SmartStream® UV System Part Number Identification Key						
Prefix "W"	"Controller Series"	"GPM"	"Connection Type"	"Pipe Size"	"Plug"	"Accessories"
Watts	Controller Type B: Controller B C: Controller C D: Controller D	GPM of System (3-Digits)	Connection Port Types: A: NPT B: BSP-Tapered	Pipe Size B: 3/8" C: 1/2" D: 3/4" E: 1" F: 3/4" Female X 1" Male Combination Fitting G: 1" Female X 1 1/2" Male Combination Fitting	A: North American B: European C: British U.K. D: Australian	Accessories X: No Accessories (Accessories only available for systems using the C and D type controllers.) A: UV Sensor

## Controller Features

Three different controllers are available on various SmartStream® UV systems. The controllers are identified as "B" "C" or "D" series. Each controller has unique features and are outlined as follows:



B- Basic controller with lamp dimming, flow switch, lamp out audible alarm, multicolor LED system status indicator, glow cap lamp indicator, lamp life timer with 3 digit LED display, radio frequency communication to lamps to verify correct lamps and remaining life of the lamp. Lamp life timer resets when a new lamp is inserted.

C- All features of the of the B controller plus alarm output for solenoid valve, UV sensor input, 4-20 milliamp output for UV Intensity (When UV Sensor is used).

D- All features of the C controller. The display changes from a 3 digit LED display to a graphic touch screen. Total system hours are displayed along with key operational data.

## Product Specifications Table

MODEL		WB001	WB002	WB006	WB008	WB012
FLOW RATE @ 16mJ (95%UVT @ EOL) (may be hydraulically limited)	usgpm liters/min	2.8 gpm 10.6 lpm	4.7 gpm 17.8 lpm	11.4 gpm 43.1 lpm	15.0 gpm 56.8 lpm	23.4 gpm 88.6 lpm
FLOW RATE @ 30mJ (95%UVT @ EOL)	usgpm liters/min	1.5 gpm 5.7 lpm	2.5 gpm 9.5 lpm	6.1 gpm 23.1 lpm	8.0 gpm 30.3 lpm	12.5 gpm 47.3 lpm
FLOW RATE @ 40mJ (95%UVT @ EOL)	usgpm liters/min	1.1 gpm 4.2 lpm	1.9 gpm 7.2 lpm	4.6 gpm 17.4 lpm	6.0 gpm 22.7 lpm	9.4 gpm 35.6 lpm
STANDARD NPT INLET / OUTLET PORTS		3/8"NPT-M		3/4"NPT-M		1" NPT-M / 3/4" NPT-F Combo Ports
OPTIONAL BSP-T INLET / OUTLET PORTS		3/8"BSP-M		3/4"BSP-M		1" BSP-M / 3/4" BSP-F Combo Ports
CHAMBER MATERIAL		316L SS				
CONTROLLER MOUNTING		Remote from chamber		On chamber bracket or remote from chamber		
INPUT VOLTAGE		100 to 240VAC 50/60Hz				
SYSTEM MAX NOMINAL INPUT POWER (Watts)		11	15	26	34	34
LAMP NOMINAL MAX ELECTRICAL POWER (Watts)		10	14	25	32	32
LAMP TECHNOLOGY		Quartz glass low pressure lamp / ozone free / true pre-heat starting / glow-cap indicator				
WIRELESS LAMP KEY		Standard				
LAMP DIMMING / FLOW SWITCH		Standard				
CHAMBER COOLING FAN		Not Applicable				
SYSTEM DISPLAY TYPE		Seven segment three digit LED				
LAMP LIFE MONITOR		3-digit LED Display, auto-reset with new lamp				
UV SENSOR		Not Applicable				
4-20mA OUTPUT		Not Applicable				
VISUAL ALARM		Multi-color status LED				
AUDIBLE ALARM		Yes				
AUDIBLE ALARM MUTE		Yes				
ALARM RELAY / SOLENOID CONTACTS		Not Applicable				
ALARM RELAY MANUAL OVER-RIDE		Not Applicable				
MAXIMUM AMBIENT AIR TEMPERATURE / HUMIDITY		50°C ( 122°F) / 95% RH (non-condensing)				
INLET WATER TEMPERATURE RANGE		34°F ( 1°C) to 113°F ( 45°C)				
MAX WATER PRESSURE		125psi (861 kPa)				
SHIPPING WEIGHT		11LB (5KG)	11LB (5KG)	17LB (8KG)	18LB (8KG)	19LB (9KG)

## Product Specifications Table

MODEL		WC012	WC016	WC020	WC025	WC040	WC050
FLOW RATE @ 16mJ (95%UVT @ EOL) (may be hydraulically limited)	usgpm liters/min	24.0 gpm 90.8 lpm	31.5 gpm 119.2 lpm	39.0 gpm 147.6 lpm	46.9 gpm 177.5 lpm	75.0 gpm 283.9 lpm	93.8 gpm 355.0 lpm
FLOW RATE @ 30mJ (95%UVT @ EOL)	usgpm liters/min	12.8 gpm 48.4 lpm	16.8 gpm 63.6 lpm	20.8 gpm 78.7 lpm	25.0 gpm 94.6 lpm	40.0 gpm 151.4 lpm	50.0 gpm 189.3 lpm
FLOW RATE @ 40mJ (95%UVT @ EOL)	usgpm liters/min	9.6 gpm 36.3 lpm	12.6 gpm 47.7 lpm	15.6 gpm 59.0 lpm	18.8 gpm 71.2 lpm	30.0 gpm 113.6 lpm	37.5 gpm 141.9 lpm
STANDARD NPT INLET / OUTLET PORTS		1"NPT-M / 3/4"NPT-F Combo Ports			1.5"NPT-M / 1"NPT-F Combo Ports		
OPTIONAL BSP-T INLET / OUTLET PORTS		1"BSP-M / 3/4"BSP-F Combo Ports			1.5"BSP-M / 1"BSP-F Combo Ports		
CHAMBER MATERIAL		316L SS					
CONTROLLER MOUNTING		On chamber bracket or remote from chamber					
INPUT VOLTAGE		100 to 240VAC 50/60Hz					
SYSTEM MAX NOMINAL INPUT POWER (Watts)		47	58	67	67	100	118
LAMP MAX NOMINAL ELECTRICAL POWER (Watts)		45	55	64	64	95	112
LAMP TECHNOLOGY		Quartz glass low pressure lamp / ozone free / true pre-heat starting / glow-cap indicator					
WIRELESS LAMP KEY		Standard					
LAMP DIMMING / FLOW SWITCH		Standard					
CHAMBER COOLING FAN		Applicable Option					
SYSTEM DISPLAY TYPE		Seven segment three digit LED					
LAMP LIFE MONITOR		3-digit LED Display, auto-reset with new lamp					
UV SENSOR		Available Option					
4-20mA OUTPUT		With UV Sensor Option					
VISUAL ALARM		Multi-color status LED					
AUDIBLE ALARM		Yes					
AUDIBLE ALARM MUTE		Yes					
ALARM RELAY / SOLENOID CONTACTS		Yes - 24V 5 Amp Maximum					
ALARM RELAY MANUAL OVER-RIDE		Yes					
MAXIMUM AMBIENT AIR TEMPERATURE / HUMIDITY		50°C ( 122°F) / 95% RH (non-condensing)					
INLET WATER TEMPERATURE RANGE		34°F ( 1°C) to 113°F ( 45°C)					
MAX WATER PRESSURE		125psi (861 kPa)					
SHIPPING WEIGHT		19LB (9KG)	19LB (9KG)	20LB (9KG)	25LB (11KG)	27LB (12KG)	29LB (13KG)

## Product Specifications Table

MODEL		WD012	WD016	WD020	WD025	WD040	WD050
FLOW RATE @ 16mJ (95%UVT @ EOL) (may be hydraulically limited)	usgpm liters/min	24.0 gpm 90.8 lpm	31.5 gpm 119.2 lpm	39.0 gpm 147.6 lpm	46.9 gpm 177.5 lpm	75.0 gpm 283.9 lpm	93.8 gpm 355.0 lpm
FLOW RATE @ 30mJ (95%UVT @ EOL)	usgpm liters/min	12.8 gpm 48.4 lpm	16.8 gpm 63.6 lpm	20.8 gpm 78.7 lpm	25.0 gpm 94.6 lpm	40.0 gpm 151.4 lpm	50.0 gpm 189.3 lpm
FLOW RATE @ 40mJ (95%UVT @ EOL)	usgpm liters/min	9.6 gpm 36.3 lpm	12.6 gpm 47.7 lpm	15.6 gpm 59.0 lpm	18.8 gpm 71.2 lpm	30.0 gpm 113.6 lpm	37.5 gpm 141.9 lpm
STANDARD NPT INLET / OUTLET PORTS		1"NPT-M / 3/4"NPT-F Combo Ports			1.5"NPT-M / 1"NPT-F Combo Ports		
OPTIONAL BSP INLET / OUTLET PORTS		1"BSP-M / 3/4"BSP-F Combo Ports			1.5"BSP-M / 1"BSP-F Combo Ports		
CHAMBER MATERIAL		316L SS					
CONTROLLER MOUNTING		On chamber bracket or remote from chamber					
INPUT VOLTAGE		100 to 240VAC 50/60Hz					
SYSTEM MAX NOMINAL INPUT POWER (Watts)		47	58	67	67	100	118
LAMP MAX NOMINAL ELECTRICAL POWER (Watts)		45	55	64	64	95	112
LAMP TECHNOLOGY		Quartz glass low pressure lamp / ozone free / true pre-heat starting / glow-cap indicator					
WIRELESS LAMP KEY		Standard					
LAMP DIMMING / FLOW SWITCH		Standard					
CHAMBER COOLING FAN		Available Option					
SYSTEM DISPLAY TYPE		Color Touch Screen with multiple languages, intuitive screen navigation, detailed system status messages, maintenance/diagnostic, and dealer programmable with website/contact information/QR codes					
LAMP LIFE MONITOR		Display on graphic touch screen, auto-reset with new lamp					
UV SENSOR		Available Option					
4-20mA OUTPUT		With UV Sensor Option					
VISUAL ALARM		Animated icons and text messages on graphic display					
AUDIBLE ALARM		Yes					
AUDIBLE ALARM MUTE		Yes					
ALARM RELAY / SOLENOID CONTACTS		Yes - 24V 5 Amp Maximum					
ALARM RELAY MANUAL OVER-RIDE		Yes					
MAXIMUM AMBIENT AIR TEMPERATURE / HUMIDITY		50°C ( 122°F) / 95% RH (non-condensing)					
INLET WATER TEMPERATURE RANGE		34°F ( 1°C) to 113°F ( 45°C)					
MAX WATER PRESSURE		125psi (861 kPa)					
SHIPPING WEIGHT		19LB (9KG)	19LB (9KG)	20LB (9KG)	25LB (11KG)	27LB (12KG)	29LB (13KG)

### ACCESSORIES

Part Number	Description
T7401001	1" FNPT Solenoid Valve Kit 24VDC With Plug Adaptors for North America, China, United Kingdom, Europe, and Australia
T7401002	1 1/2" FNPT Solenoid Valve Kit 24VDC With Plug Adaptors for North America, China, United Kingdom, Europe, and Australia

## Specifications

A Watts SmartStream® ultraviolet disinfection system shall be installed on the main water service pipe just after it enters the building, but after other whole building water safety devices (backflow preventers or pressure reducing valves), to effectively address microbiological concerns. A system may also be installed further downstream to protect specific point of use applications. The system must be equipped with a flow switch that signals the lamp to dim to reduce heat and conserve electricity up to 46%. The system must have the ability to communicate with the lamp through radio frequency to identify that the correct lamps are being used and to log the hours of operation that the lamp has been in service. A properly sized 5 micron cartridge type prefilter must be installed just before the inlet to the system to reduce sediment. The installation area should be suitable in size for mounting of the system and have enough end clearance for replacing lamps and quartz sleeves.

## Feed Water Requirements

Please review operating pressures, temperatures and water chemistry limitations to ensure compatibility.

Hardness (maximum)	7 Grains (120 mg/L as CaCO <sub>3</sub> )
Water Pressure	5psi to 125psi (34.5 kPa to 8.6 bar)
Water Temperature	34°F ( 1°C) to 113°F ( 45°C)
Turbidity	<5 Nephelometric Turbidity Units (NTU)
Total Suspended Solids	<10 mg/L
Iron (maximum)	0.3 mg/l
Manganese (maximum)	0.05 mg/l
Maximum Ambient Atmospheric Conditions	122°F / 50°C 95% Relative Humidity (Non-condensing)
Oil & H <sub>2</sub> S	None allowed

### NOTICE

Water that does not meet the above guidelines will require additional pretreatment. Do not install this system higher in elevation than 10,000 feet above sea level.

## Lamp and Quartz Sleeve Replacement

Lamps should be replaced annually. Quartz sleeves should be cleaned as needed and replaced every 3 years minimum.

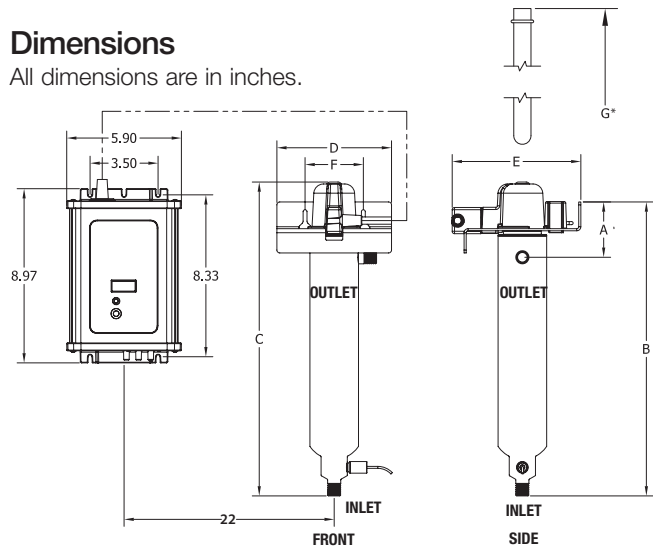
For additional installation information see Watts SmartStream® Installation document IOM-WQ-SmartStream.

### NOTICE

The information contained herein is not intended to replace the full product and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

## Dimensions

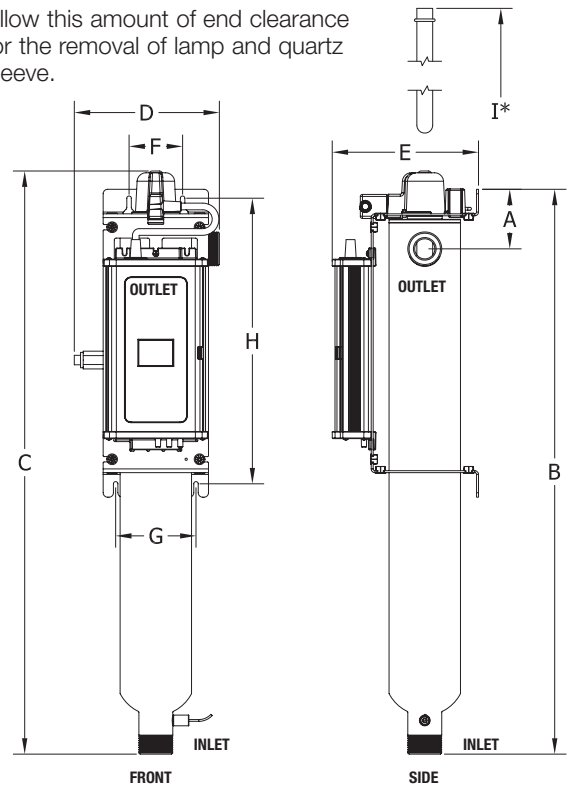
All dimensions are in inches.



Remote Mounted Controller- 1 and 2 GPM Systems

GPM	A	B	C	D	E	F	G
1	2.85	15.13	16.15	5.90	6.62	3.00	14.00
2	2.85	18.47	19.49	5.90	6.62	3.00	18.00

\*Allow this amount of end clearance for the removal of lamp and quartz sleeve.



Controller Mounted on Chamber- 6 to 50 GPM

GPM	A	B	C	D	E	F	G	H	I
6	2.85	27.75	28.77	5.90	8.29	3.00	4.50	13.67	27.00
8	2.85	32.87	33.89	5.90	8.29	3.00	4.50	13.67	32.00
12 (B)	3.34	33.37	34.40	5.90	8.29	3.00	4.50	16.00	32.00
12 (C&D)	3.34	23.92	24.95	7.63	8.29	3.00	4.50	16.00	22.00
16	3.34	27.86	28.89	7.63	8.29	3.00	4.50	16.00	26.00
20	3.34	31.40	32.43	7.63	8.29	3.00	4.50	16.00	30.00
25	3.34	31.64	32.67	8.13	8.29	3.00	4.50	16.00	30.00
40	3.34	43.02	44.05	8.13	8.29	3.00	4.50	16.00	41.00
50	3.34	50.14	51.17	8.13	8.29	3.00	4.50	16.00	48.00

\*Allow this amount of end clearance for the removal of lamp and quartz sleeve.

