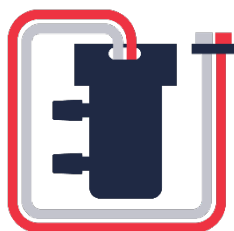




Klaran WR2 Series LED Reactor



QUALITY DISINFECTION ON-DEMAND

Capable of providing 4 Log Reduction of *pseudomonas aeruginosa* (99.99%) and 3 log reduction (99.9%) of *E. Coli* at a flow rate of 2 liters per minute



LONGER LIFE AND HIGHER RELIABILITY

On-demand Klaran UVC LEDs provide optimal useful control, lifetime, reduced energy consumption and a replacement cycle that matches your business needs



ECO-FRIENDLY AND COST-EFFECTIVE

Klaran WR is a mercury-free, chemical-free, and effluent-free solution for point-of-use water treatment systems, and ensures water quality for less than one quarter of a penny per liter dispensed. RoHS compliant and no mercury



Features

The Klaran WR is UVC LED-based water disinfection product that delivers reliable drinking water for consumer and commercial purifiers. This product offers mercury free, environmentally friendly disinfection that does not alter the taste or smell of drinking water. With the Klaran WR, OEMs can standardize their UV disinfection hardware with the flexibility for differentiated performance and features to work across product portfolios.

Model Numbers

Model	Description
WR2-24V-2U-B1	WR2 unit assembled, 24VDC power input



Klaran WR2 Series LED Reactor

Product Characteristics

	US Measurement	Metric Measurement
Size	4.09 x 2.25 in	104 x 57 mm
Weight	0.035 fl oz.	125 g
Inner Volume	0,034 fl oz.	38 cm ³
Flow Rate	0.13 – 1 Gallons per minute	0.5 – 3.8 Liters per minute
Inlet and outlet fittings	3/8" push fittings	0.953 cm push fittings
Power options	24V DC input	
Pressure loss	Max: 4 kPa	When 2L/min with 3/8" Connectors

NOTES

- 1) WR2-24V-2U-B1 includes quartz glass inside and it should be handled carefully. Do not use, if dropped.
- 2) When using WR2-24V-2U-B1 in a place where there is vibration, the customer should carry out an additional vibration test.

Electrical Characteristics

	Unit	Value	Note
Power Adapter			
Input Voltage	VAC	Min: 22.8 Typ: 24 Max: 25.2	Constant DC
Wattage	W	Typ: 8	
WR Unit Electrical Characteristics			
Unit voltage	VDC	24	
Unit amperage	A	0.4	Maximum
Power consumption (Stand-By)	mW	Typ: 3	
Power consumption (UVC LED On)	W	Min: 4.5 Typ: 8 Max: 12.5	

Mechanical Characteristics

Characteristic	Unit	Value	Note
Major Dimensions	in mm	4.11" x 2.24" in 104.4 x 57 mm	
Inlet water fitting (Tube OD)	in cm	3/8" NPT 0.953 cm NPT	
Outlet water fitting (Tube OD)	in cm	3/8" NPT 0.953 cm NPT	
Pressure drop	PSI kPA	0.145 PSI 4 kPA	At 0.528 GPM 2 LPM with 3/8" Connections
Total internal water volume	fl oz cm ³	1,285 fl. oz 38 cm ³	
Maximum Ambient Temperature	°F / °C	104°F 40°C	

Inlet Water Specifications

Characteristic	Unit	Value	Note
Flow rate range	GPM LPM	0.13 – 1 Gallons 0.5 – 3.8 Liters	
Pressure resistance	MPa	Min: 0 Max 0.7	
Maximum pressure rating	PSI kPA	100 689.476	
Minimum flow to trigger Disinfection On	GPM LPM	0.13 Gallons 0.5 Liters	
UV Transmittance	%/cm	Min: 95% Typ: 97%	260 – 270 nm
pH Range	pH	Min: 6.0 Typ: 7.0 Max: 8.5	Carbonated water can be treated at a pH under 6.0.
Water Temperature Range	°F / °C	> 41-104°F > 5-40°C	Freezing must be prevented
Relative humidity	%	Min: 40 Typ: 55 Max: 75	Non-condensing environment

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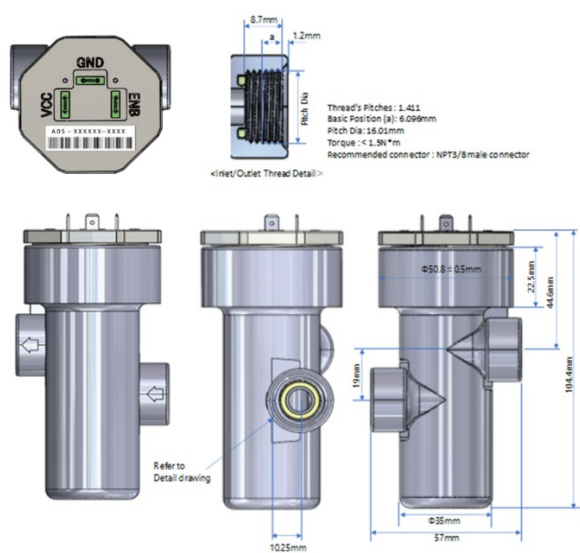
RECOMMENDED OPERATING CONDITIONS - NOTES

- 3) Pre-Filtration such as MF, UF or RO should be used before WR2-24V-2U-B1.
- 4) Flushing (2L / min, 2 minutes or more) should be performed when the WR2-24V-2U-B1 is operated for the first time. Re-priming (water exchange) is recommended after long-term no operation.
- 5) During operation, WR2-24V-2U-B1 should be filled with water.
- 6) If WR2-24V-2U-B1 turns ON without water flow, cool down duration of 30 minutes is required.

Biofilm Control Feature

Klaran validated UV pulsing protocol: Disinfection ON enabled for 2 minutes after 12 hours of continuous Stand-By time.

Mechanical Dimensions

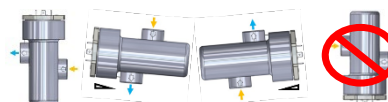


All dimensions have a tolerance of ± 0.002 in | 0.05 mm.

Installation Orientation

The disinfection performance was confirmed with the head upside. To ensure the air bleeding inside the module, it is recommended to install the module with the head upside for vertical installation or the head tilted up at least 5 degrees for horizontal installation.

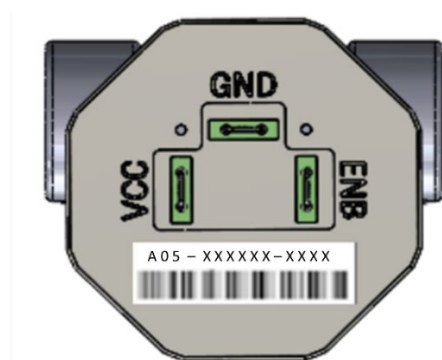
If the module is installed with the head down, the air inside the module will not escape and the performance will get down.





Klaran WR2 Series LED Reactor

Electrical Connections Diagram



Input terminal names and functions

Terminal	Symbol	Unit	Value	Note
Voltage Common Collector	VCC	DC V	Min: 22.8 Typ: 24 Max: 25.2	
Ground	GND	DC V	Typ: 0	GND = 0V (Reference Potential)
Enable	ENB	DC V	Min: 2.5 Typ: 3.3 Max: 5.0	H= 3.3 V (Typ), L= GND = 0V (Typ) – Utilized as Indicator: H: LED ON, L: LED OFF

Absolute Maximum Ratings

Terminal		Unit	Value	Note
Input voltage (VCC)		V	Min: -0.3 Max: 45	
Enable voltage		V	Min: -0.3 Max: 5.5	
pH		pH	Min: 5.8 Max: 8.6	Carbonated water can be treated at a pH under 6.0.
Ambient temperature	LED ON	°F/°C	33.8-122°F 1-50°C	Prevention of frozen and boiling water is required.
	LED OFF	°F/°C	33.8-176°F 1-80°C	
Water temperature	LED ON	°F/°C	33.8-113°F 1-45°C	
	LED OFF	°F/°C	33.8-212°F 1-100°C	

NOTES

- Absolute maximum ratings should not be exceeded at any time, otherwise deterioration or destruction of the module may happen. Any defect because of the excess of absolute maximum ratings is out of warranty.

Packaging Contents

1 x Klaran WR2 Unit
1 x Product Manual
1 x Klaran Sticker

Packaging Dimensions

Contact Crystal IS for package, case, and pallet specifications



Klaran WR2 Series LED Reactor

Handling and Operation Precautions

The Klaran WR is available for purchase, installation, and service by professional providers of water conditioning and plumbing systems and services. Klaran WS is not for consumer or stand-alone use and must be installed into a properly installed and operating water conditioning or plumbing system.

- The Klaran WR2 contains microelectronic components sensitive to shock, moisture, and operation in conditions beyond stated maximums. Care should be taken in handling the Klaran WS during shipping, handling, installation and operation.
- The Klaran WR2 is ESD (electrostatic discharge) sensitive; static electricity and surge voltages seriously damage internal components and can result in product failure.
- Use proper ESD protection, including grounded wrist straps, ESD footwear and clothes when handling the Klaran WR2.
- Ensure that tools, jigs and machines being used are properly grounded and do not exert excessive force upon the Klaran WR2.
- Dropping the product may cause damage. Drops from over 11.8in | 30 cm will cause permanent damage
- Pre-filtration should be used before the Klaran WR2 that can assure inlet water is of sufficient quality to meet required specifications. Operating without pre-filtration may lead to a reduction of disinfection performance or damage to the Klaran WR2.
- The Klaran WR2 should be filled with water during LED ON operation. Operating the Klaran WR dry for extended periods may cause permanent damage.
- The Klaran WR2 should be flushed with flowing water for a minimum of two minutes before use after initial installation or for any occurrences of electrical power loss longer than 12 hours.
- The Klaran WR should not be modified or disassembled in any way. Doing so may result in damage, hazardous operation conditions, and Ultraviolet (UV) light exposure hazards.
- Ensure circuit power is off before connecting Klaran WR2.

DISCLAIMER

The specifications, characteristics, and technical data presented in the datasheet are subject to change without prior notice. It is recommended that the most updated specifications, characteristics, and technical data be used in your application.

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Crystal IS, Inc., an Asahi Kasei Company

70 Cohoes Avenue, Green Island, NY 12183

518.271.7375 | www.cisuvc.com | sales@cisuvc.com