

**WL Series Liquid Cooling System**

The WL1000 is a re-circulating liquid to air heat exchanger that offers dependable, compact performance by removing large amounts of heat from a liquid circuit. The coolant is re-circulated using a high-pressure pump to assure maximum flow rate. Heat from coolant is absorbed by a radiant heat exchanger and dissipated into the ambient environment using brand name fan. Manual adjustments can be made to control flow switch. Customized features are available, however, MOQ applies.

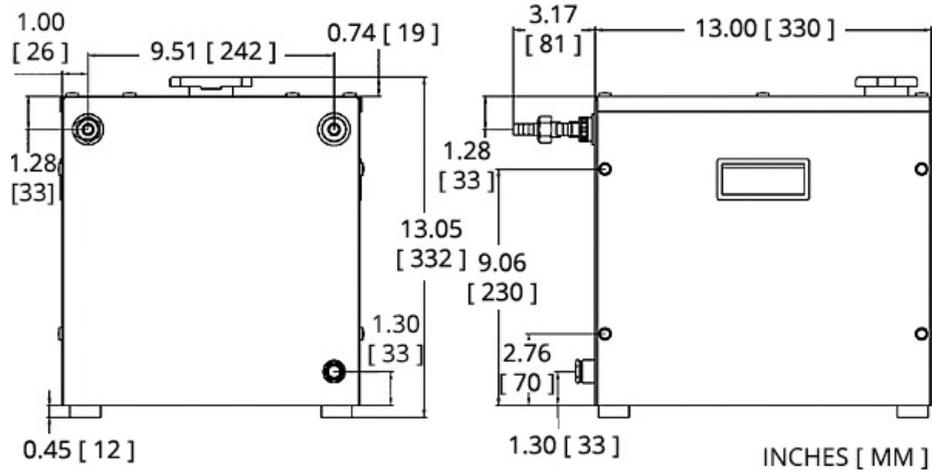


**Features**

- Cooling to ambient
- High heat pumping capacity
- Compact form factor
- Long life operation

**Applications**

- Cooling Particle Accelerators: Linear Accelerators and Cyclotrons
- Semiconductor Fabrication Equipment Cooling
- X-ray Cooling in Industrial Scanners



**Fluid Operating Points**

**100% Water**

Cooling Power (Qc) = 1000 Watts  
Thermal Conductance = 86.6 W/°C  
 $\Delta T$  (Ambient-Coolant)\* = 11.5 °C  
 $\Delta T$  (Outlet-Inlet)\*\* @ 4.4 L/min = 3.3 °C

**70/30 Water-Glycol**

Cooling Power (Qc) = 1000 Watts  
Thermal Conductance = 76.0 W/°C  
 $\Delta T$  (Ambient-Coolant)\* = 13.2 °C  
 $\Delta T$  (Outlet-Inlet)\*\* @ 4.4 L/min = 3.4 °C

**60/40 Water-Glycol**

Cooling Power (Qc) = 1000 Watts  
Thermal Conductance = 72.9 W/°C  
 $\Delta T$  (Ambient-Coolant)\* = 13.7 °C  
 $\Delta T$  (Outlet-Inlet)\*\* @ 4.4 L/min = 3.6 °C

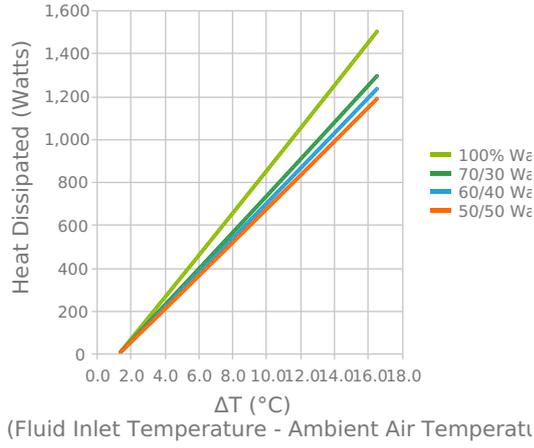
**50/50 Water-Glycol**

Cooling Power (Qc) = 1000 Watts  
Thermal Conductance = 70.4 W/°C  
 $\Delta T$  (Ambient-Coolant)\* = 14.2 °C  
 $\Delta T$  (Outlet-Inlet)\*\* @ 4.4 L/min = 3.8 °C

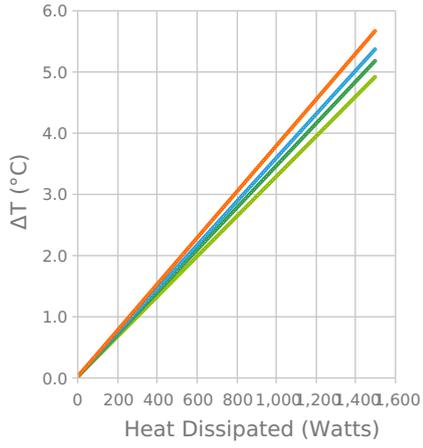
\*  $\Delta T$  (Ambient-Coolant) is the temperature difference between the ambient temperature and the coolant temperature that is at the outlet of the heat exchanger during steady-state operation. This temperature difference would initially be 0 and increase to the steady state value under load. This would also be the temperature at the inlet to the application.

\*\*  $\Delta T$  (Outlet-Inlet) is the temperature difference between the inlet temperature and the outlet temperature of the application at the nominal coolant flow. More flow (application pressure drop less than nominal) would necessarily mean a smaller  $\Delta T$ .

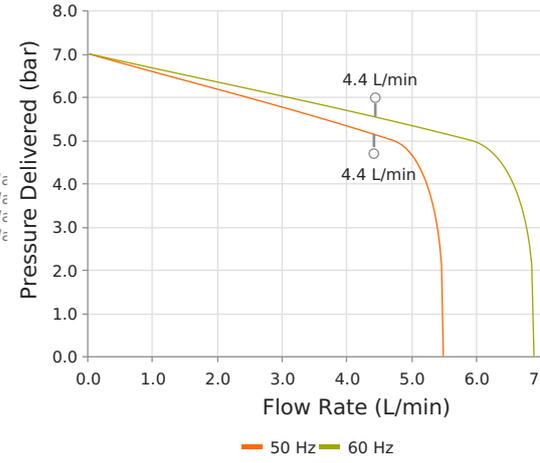
WL1000 Heat Dissipation  
1000 Watt Requirement



WL1000 Fluid Inlet/Outlet Temperature Differ  
@ Nominal Flow 4.4 L/min



WL1000 - Pump Curve



# Technical Specifications

## Performance

<b>Nominal Cooling Capacity</b>	1,000 W
<b>Nominal Operating Flowrate (60 Hz)</b>	4.4 L/min @ 5.5 Bar
<b>Nominal Operating Flowrate (50 Hz)</b>	4.4 L/min @ 5.1 Bar

## Operation

<b>Coolant</b>	Water or Water/Glycol
<b>Operating Temperature</b>	10°C to 40°C
<b>Storage temperature range (w/o coolant)</b>	-40°C to 70°C
<b>Humidity range</b>	20% to 80%
<b>Storage Humidity range</b>	5% to 95%, non-condensing
<b>Input Voltage</b>	230 VAC
<b>Frequency</b>	50/60 Hz
<b>Current</b>	< 2 Amps
<b>Noise</b>	< 70 dB(A)
<b>Flow Switch Open</b>	≤ 4 L/min
<b>Input Power Connection</b>	Terminal Block
<b>Maximum Forward Pressure</b>	6 Bar

## Physical

<b>Height</b>	300 mm
<b>Length</b>	330 mm
<b>Width</b>	292 mm
<b>Weight</b>	21.5 kg
<b>Coolant Capacity</b>	1.5 Liters
<b>Couplings</b>	Press fit (12 mm ID hose)

<b>Features</b>	<b>Applications</b>
<b>Compact design</b>	Medical imaging systems
<b>Reliable operation</b>	Photonics laser systems
<b>Adjustable flow switch</b>	X-Ray scanning systems
<b>Bypass valve protection</b>	Semiconductor fabrication

## Notes

Check coolant level regularly. For optimal cooling performance, coolant level should always be above radiator fins.  
Hose selection should be of material and thickness to support pressure resistance and coolant type.  
Manual adjustments can be made to control pressure and flow rate.  
Check coolant filter periodically for replacement.

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