Liquid to Air Heat Exchanger WL1000
MFG Part Number: 1510.00

WL Series Liquid Cooling System

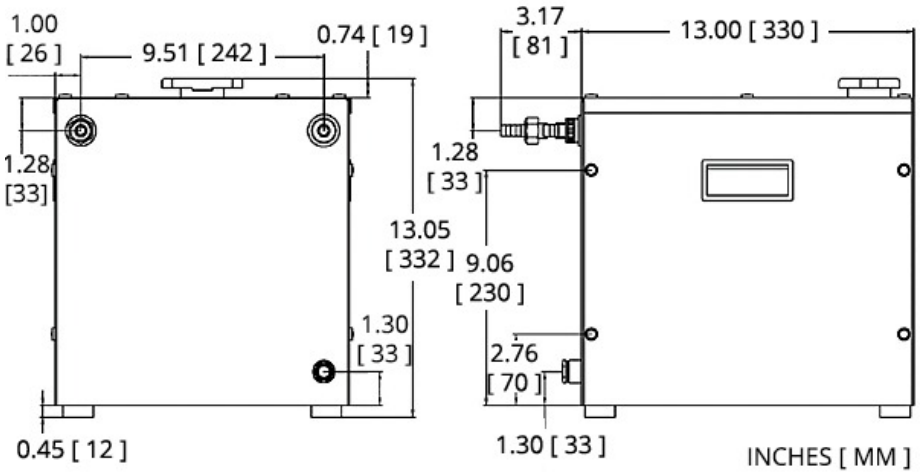
The WL1000 is a re-circulating liquid to air heat exchanger that offers dependable, compact performance by removing large amounts of heat from a liquid circuit. The coolant is re-circulated using a high-pressure pump to assure maximum flow rate. Heat from coolant is absorbed by a radiant heat exchanger 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
ΔT (Ambient-Coolant)* = 11.5 °C
ΔT (Outlet-Inlet)** @ 4.4 L/min = 3.3 °C

70/30 Water-Glycol

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

60/40 Water-Glycol

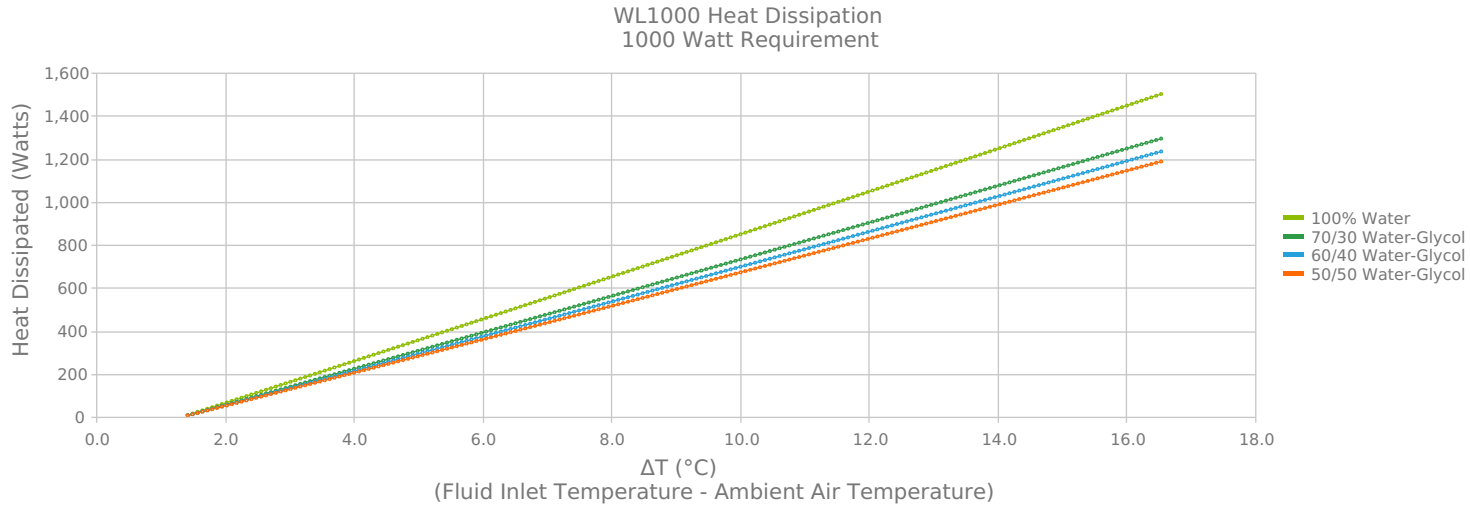
Cooling Power (Qc) = 1000 Watts
Thermal Conductance = 72.9 W/°C
ΔT (Ambient-Coolant)* = 13.7 °C
ΔT (Outlet-Inlet)** @ 4.4 L/min = 3.6 °C

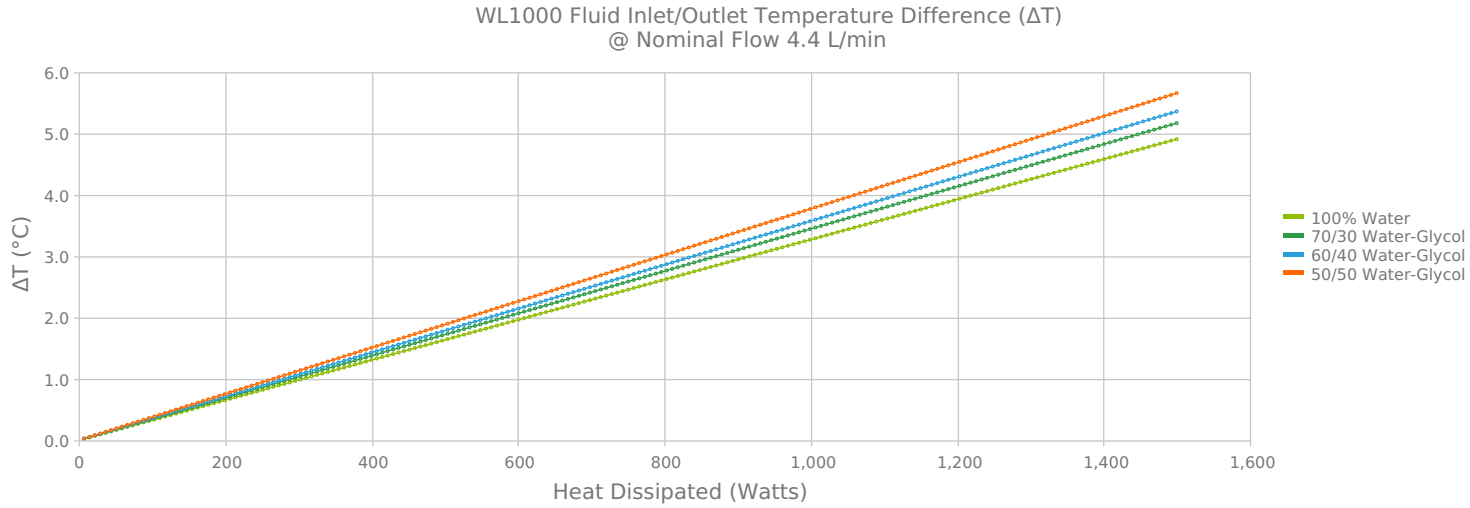
50/50 Water-Glycol

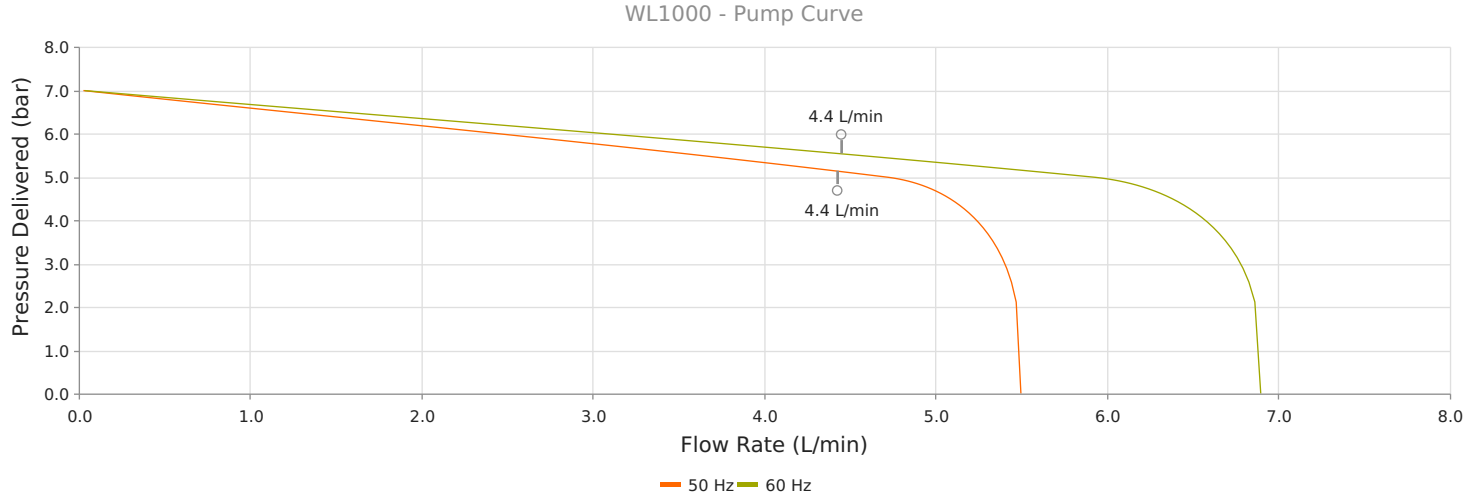
Cooling Power (Qc) = 1000 Watts
Thermal Conductance = 70.4 W/°C
ΔT (Ambient-Coolant)* = 14.2°C
ΔT (Outlet-Inlet)** @ 4.4 L/min = 3.8 °C

* ΔT (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.

** ΔT (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 ΔT.


WL1000 Heat Dissipation
1000 Watt Requirement
Heat Dissipated (Watts)
1,600
1,400
1,200
1,000
800
600
400
200
0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
ΔT (°C)
(Fluid Inlet Temperature - Ambient Air Temperature)
100% Water
70/30 Water-Glycol
60/40 Water-Glycol
50/50 Water-Glycol


WL1000 Fluid Inlet/Outlet Temperature Difference (ΔT)
@ Nominal Flow 4.4 L/min
ΔT (°C)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0
200
400
600
800
1,000
1,200
1,400
1,600
Heat Dissipated (Watts)
100% Water
70/30 Water-Glycol
60/40 Water-Glycol
50/50 Water-Glycol


WL1000 - Pump Curve
Pressure Delivered (bar)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
4.4 L/min
4.4 L/min
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Flow Rate (L/min)
50 Hz
60 Hz

Laird THERMAL SYSTEMS

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TECHNICAL SPECIFICATIONS

Performance

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

Operation

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

Physical

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

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

NOTES

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

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