TTS
TARK THERMAL SOLUTIONS

Liquid to Air Heat Exchanger WL500
MFG Part Number: 1505.00

WL Series Liquid Cooling System

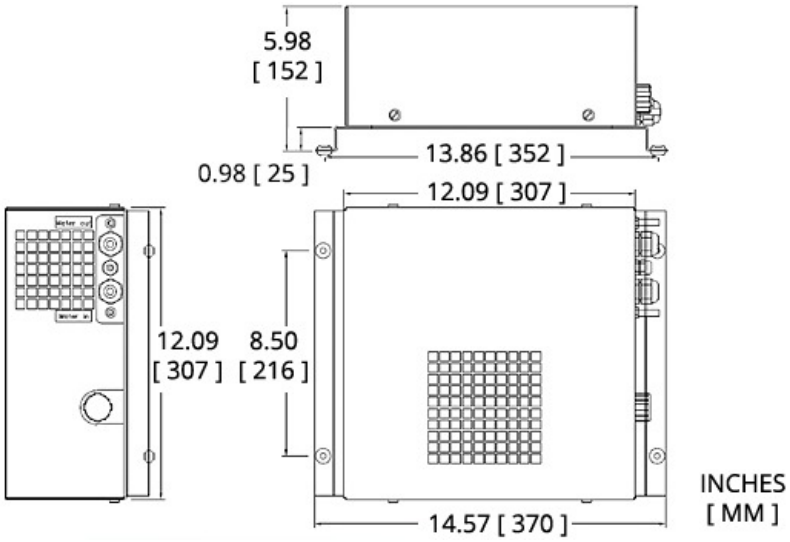
The WL500 is a re-circulating liquid to air heat exchanger that offers dependable, compact performance by removing large amounts of heat from a liquid circuit. The coolant is re-circulated using a high pressure pump to assure maximum flow rate. Heat from coolant is absorbed by a radiant heat exchanger 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) = 500 Watts
Thermal Conductance = 36.1 W/°C
ΔT (Ambient-Coolant)* = 13.9 °C
ΔT (Outlet-Inlet)** @ 2.3 L/min = 3.1 °C

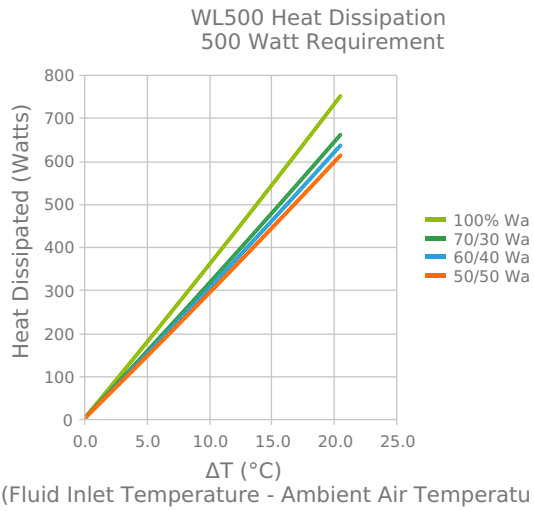
70/30 Water-Glycol
Cooling Power (Qc) = 500 Watts
Thermal Conductance = 31.8 W/°C
ΔT (Ambient-Coolant)* = 15.7 °C
ΔT (Outlet-Inlet)** @ 2.3 L/min = 3.3 °C

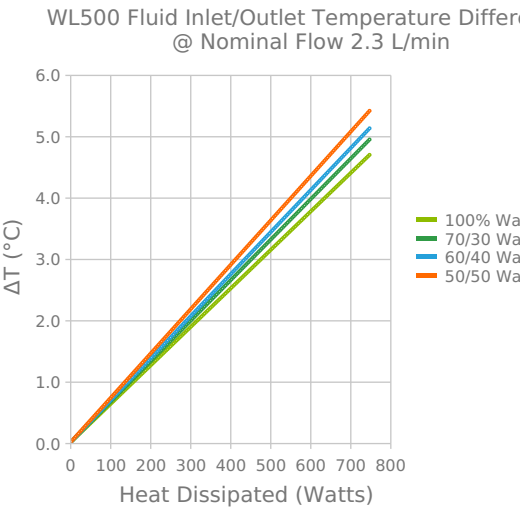
60/40 Water-Glycol
Cooling Power (Qc) = 500 Watts
Thermal Conductance = 30.7 W/°C
ΔT (Ambient-Coolant)* = 16.3 °C
ΔT (Outlet-Inlet)** @ 2.3 L/min = 3.4 °C

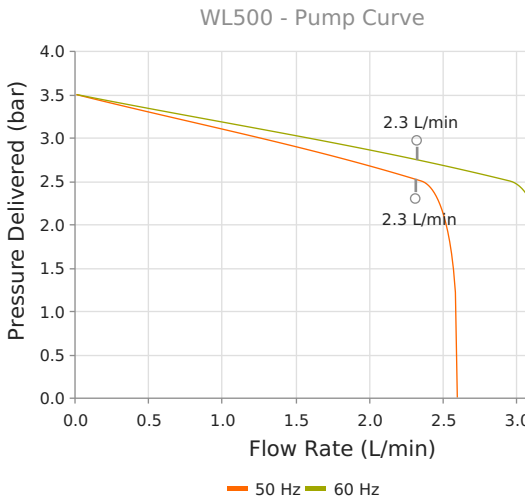
50/50 Water-Glycol
Cooling Power (Qc) = 500 Watts
Thermal Conductance = 29.6 W/°C
ΔT (Ambient-Coolant)* = 16.9°C
ΔT (Outlet-Inlet)** @ 2.3 L/min = 3.6 °C

* 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.


WL500 Heat Dissipation
500 Watt Requirement
Heat Dissipated (Watts)
800
700
600
500
400
300
200
100
0
0.0
5.0
10.0
15.0
20.0
25.0
ΔT (°C)
(Fluid Inlet Temperature - Ambient Air Temperatu
100% Wa
70/30 Wa
60/40 Wa
50/50 Wa


WL500 Fluid Inlet/Outlet Temperature Differ
@ Nominal Flow 2.3 L/min
ΔT (°C)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0
100
200
300
400
500
600
700
800
Heat Dissipated (Watts)
100% Wa
70/30 Wa
60/40 Wa
50/50 Wa


WL500 - Pump Curve
Pressure Delivered (bar)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Flow Rate (L/min)
2.3 L/min
2.3 L/min
50 Hz
60 Hz

Technical Specifications

Performance

Nominal Cooling Capacity	500 W
Nominal Operating Flowrate (60 Hz)	2.3 L/min @ 2.7 Bar
Nominal Operating Flowrate (50 Hz)	2.3 L/min @ 2.5 Bar

Operation

Coolant	Water or Water/Glycol
Operating Temperature	5°C to 40°C
Storage temperature range (w/o coolant)	-25°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	< 1.2 Amps
Noise	< 60 dB(A)
Flow Switch Open	≤ 0.9 L/min
Input Power Connection	Terminal Block
Maximum Forward Pressure	3 Bar

Physical

Height	151 mm
Length	370 mm
Width	307 mm
Weight	11 kg
Coolant Capacity	1.7 Liters
Couplings	Press fit (8 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 MIN fill level.
2. Hose selection should be of material and thickness to support pressure resistance and coolant type.
3. Wall mountable. Four mounting holes are available to accommodate S6 fixing and 5 X 40 mm machine screws.
4. Multiple cord plug options available to accommodate regional socket outlet requirements. Consult Tark Thermal Solutions on cord plug selection.

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