TTS
TARK THERMAL SOLUTIONS

Nextreme™ Value Chiller VRC4500-A1-20-BT1
MFG Part Number: 387010178

Nextreme™ Value Chiller

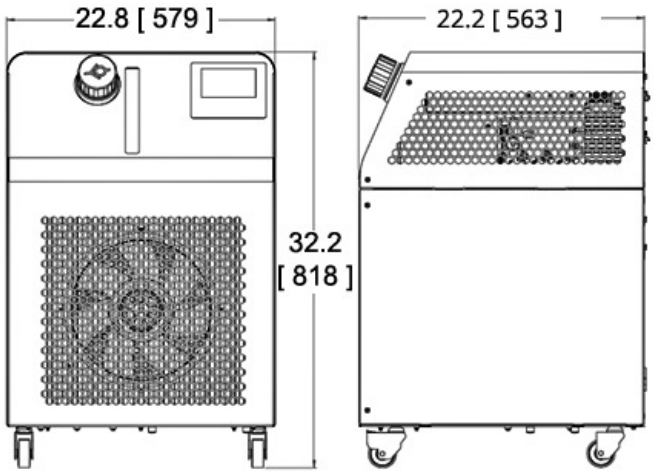
The Nextreme™ Value Chiller offers OEMs a cost-effective and reliable thermal management solution that keeps sensitive electronics in industrial and analytical equipment at the optimum temperature. Based on the Nextreme Performance Chiller Series design, the Value line offers the same ease of use, low maintenance features and high coefficient of performance (COP) as the performance chiller but at a lower cost to provide a more competitive pricing of an OEM bundled solution. Most importantly, the Value Chiller can be configured to meet unique application requirements. By using environmentally friendly R513A refrigerant, Nextreme Chillers achieve similar performance with half the Global Warming Potential (GWP) compared to traditional hydrofluorocarbon (HFC) refrigerants. Units run on universal input 230V, 50/60Hz, which means that they can operate anywhere in the world.

Features

- Economical Cooling Solution
- Reliable Performance
- Environmentally Friendly
- User-Friendly
- Application Specific Configurations

Applications

- Mass Spectrometry
- Electron Microscopes
- Medical Imaging
- Biotech
- Liquid Chromatography
- Medical Lasers
- Industrial Lasers
- Semiconductor Metrology
- Semiconductor Fabrication



INCHES
[MM]

Cooling Power Operating Points

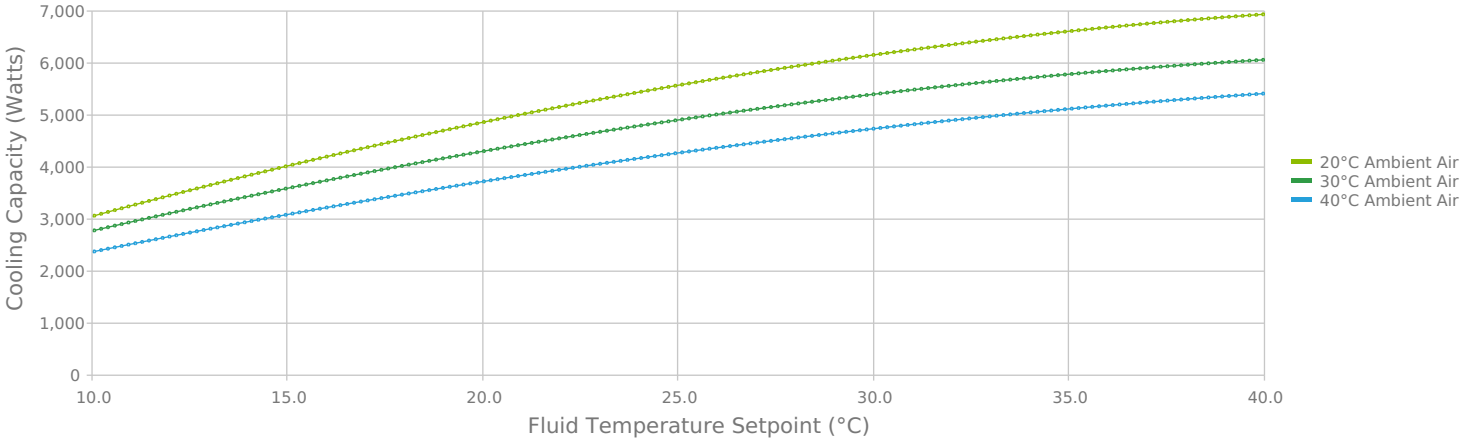
100% Water / 60Hz / 20°C Ambient Air
Cooling Power (Qc) = 4,850 Watts
Fluid Setpoint = 20 °C
Fluid ΔT @ 15.0 L/min = 4.7 °C

100% Water / 60Hz / 30°C Ambient Air
Cooling Power (Qc) = 4,300 Watts
Fluid Setpoint = 20 °C
Fluid ΔT @ 15.0 L/min = 4.1 °C

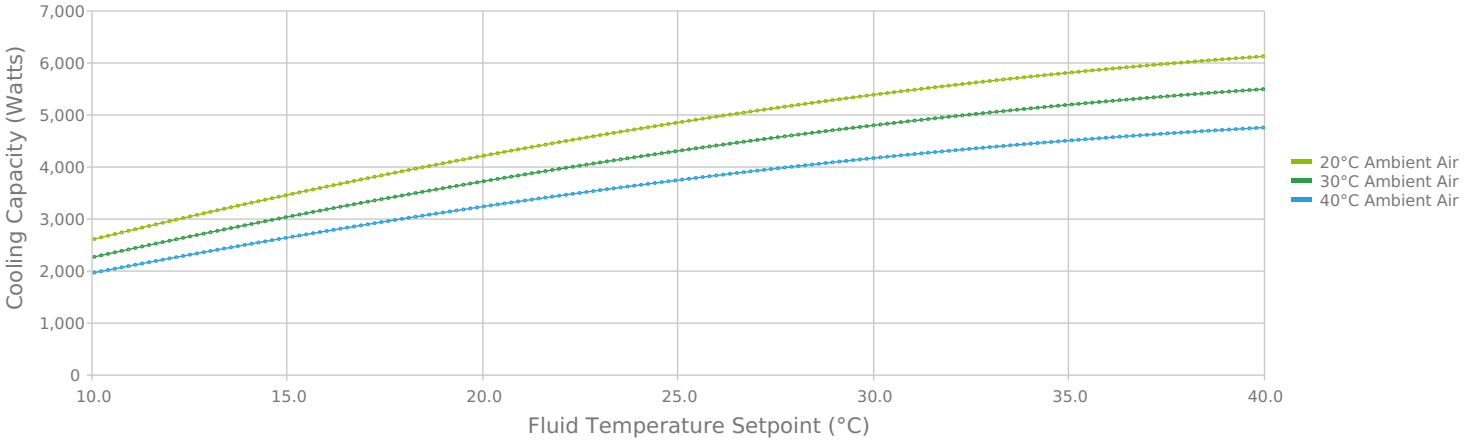
100% Water / 50Hz / 20°C Ambient Air
Cooling Power (Qc) = 4,200 Watts
Fluid Setpoint = 20 °C
Fluid ΔT @ 15.0 L/min = 4.0 °C

100% Water / 50Hz / 30°C Ambient Air
Cooling Power (Qc) = 3,700 Watts
Fluid Setpoint = 20 °C
Fluid ΔT @ 15.0 L/min = 3.6 °C

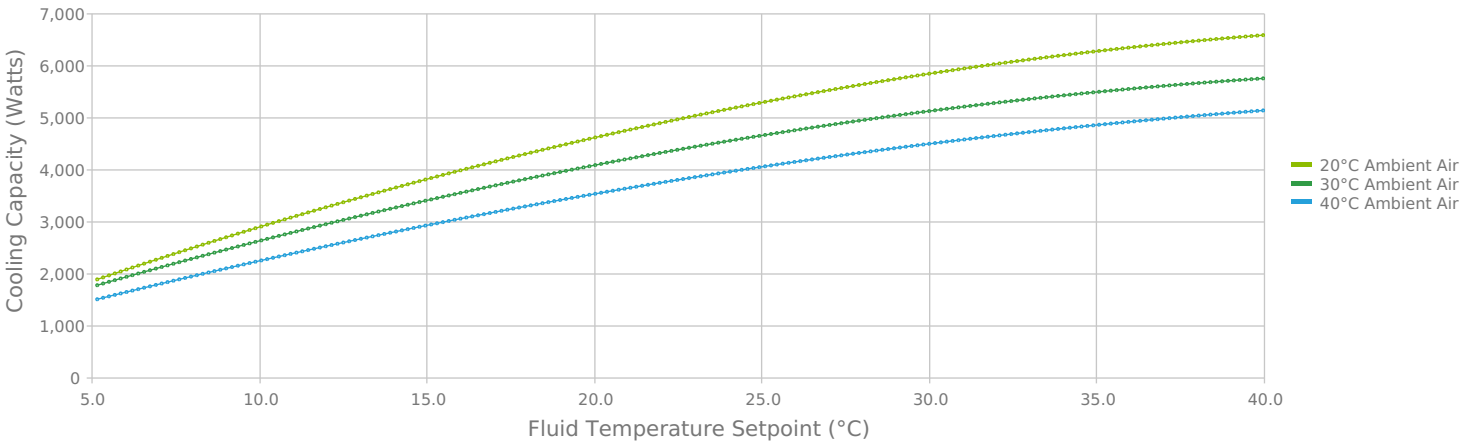
VRC4500-A1-20-BT1 Cooling Capacity - 60Hz
100% Water Flow = 15 L/min

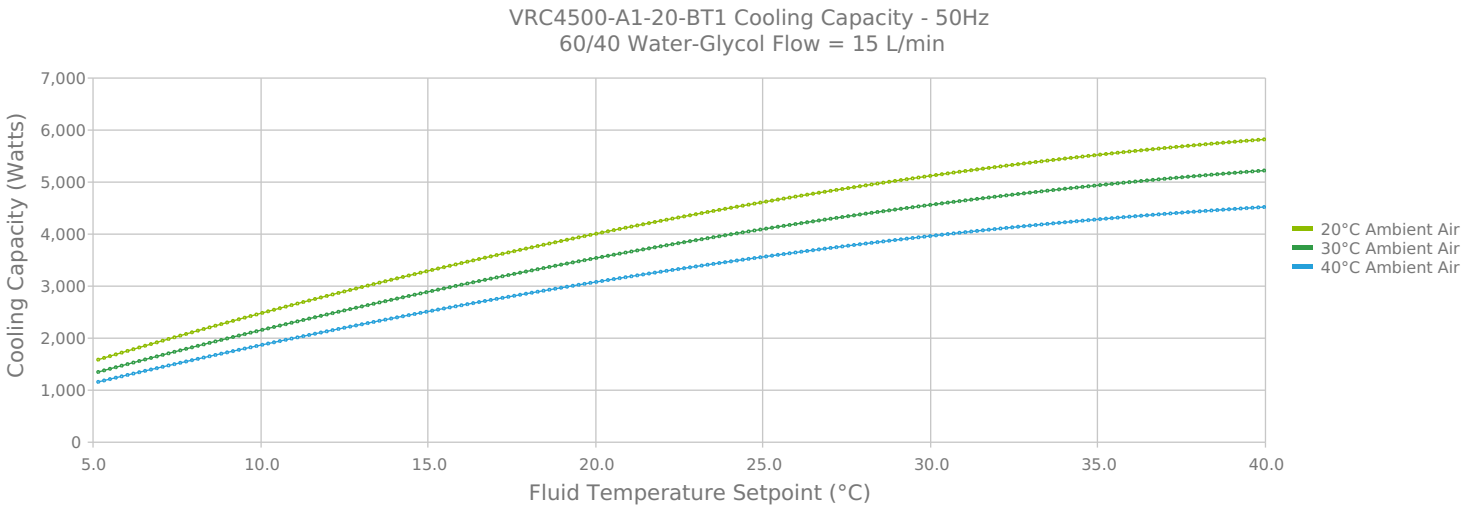


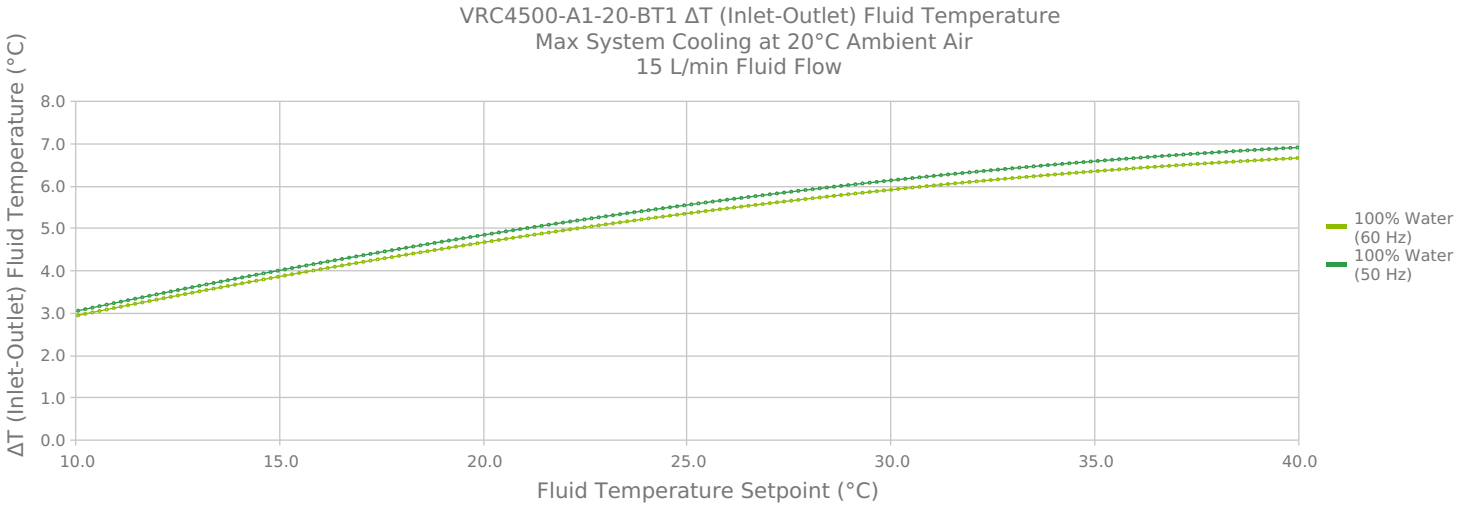
VRC4500-A1-20-BT1 Cooling Capacity - 50Hz
100% Water Flow = 15 L/min

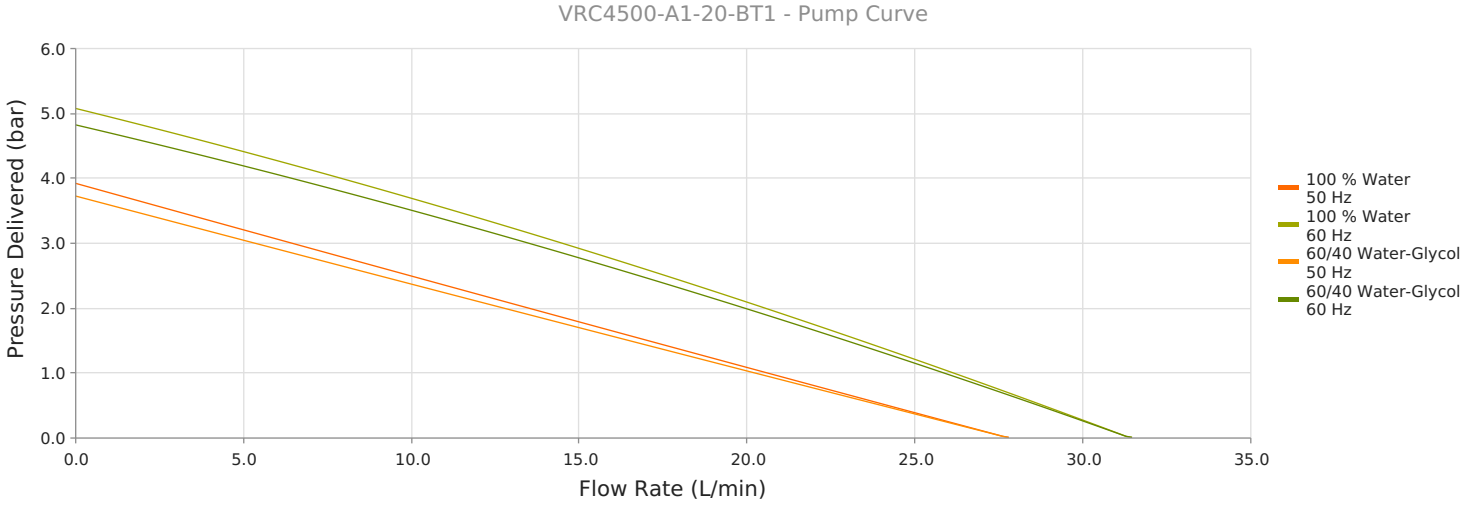


VRC4500-A1-20-BT1 Cooling Capacity - 60Hz
60/40 Water-Glycol Flow = 15 L/min




VRC4500-A1-20-BT1 Cooling Capacity - 50Hz
60/40 Water-Glycol Flow = 15 L/min
Cooling Capacity (Watts)
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
Fluid Temperature Setpoint (°C)
20°C Ambient Air
30°C Ambient Air
40°C Ambient Air


VRC4500-A1-20-BT1 ΔT (Inlet-Outlet) Fluid Temperature
Max System Cooling at 20°C Ambient Air
15 L/min Fluid Flow
ΔT (Inlet-Outlet) Fluid Temperature (°C)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
Fluid Temperature Setpoint (°C)
100% Water (60 Hz)
100% Water (50 Hz)


VRC4500-A1-20-BT1 - Pump Curve
Pressure Delivered (bar)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
Flow Rate (L/min)
100 % Water 50 Hz
100 % Water 60 Hz
60/40 Water-Glycol 50 Hz
60/40 Water-Glycol 60 Hz

Technical Specifications

Performance

Nominal Cooling Capacity[1]	4,850 W
Setpoint Range	5°C to 40°C
Temperature Stability	±0.5°C
Nominal Operating Flowrate (60 Hz)	15.0 L/min @ 2.9 Bar
Nominal Operating Flowrate (50 Hz)	15.0 L/min @ 1.8 Bar
Refrigerant	R 513A
Refrigerant Charge	650 g

Operation

Coolant	Water or Water/Glycol
Operating Temperature[2]	15°C to 40°C
Storage temperature range (w/o coolant)	-25°C to 70°C
Humidity range	30% to 80%
Storage Humidity range	5% to 95%, non-condensing
Altitude	< 2,000 meters
Input Voltage	230 VAC
Frequency	50/60 Hz
Current	< 13.2 Amps
Input Power Connection	C19 Receptacle
Maximum Forward Pressure	5 Bar
Compliance	ANSI / UL / CSA / IEC EN 61010-1 Edition 3

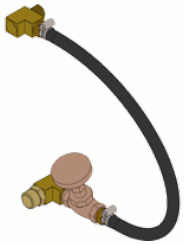
Physical

Height	818 mm
Length	563 mm
Width	579 mm
Weight	67 kg
Coolant Capacity	5 Liters
Couplings	1/2 in NPT

Standard Features

Color Touch Screen Display	Simple user interface and detailed communication of system status without the need for alarm codes or symbols.
Semi-Closed Fluid System	Sealed fluid system with breathable reservoir cap (similar to an automobile). This prevents evaporative loses, introduction of bacteria, and the need for components to prevent fluid from draining back into the system when installed below the application.
Optical Fluid Level Switch	Fluid level sensing with no moving parts.
RS-232 Communications	Complete control integration of chiller into higher level assembly control system.

Accessory Kits

	Feature	Kit Part Number	Description
	Flow Control Valve and Flow Sensing Kit	387004277	This externally installed valve is for reducing the overall flow to the application. Full flow continues through the chiller to maintain high heat transfer rates and temperature stability. The flow meter is for measuring coolant flow rate and is installed externally to the chiller with both a local display (GPM) and connectivity to the chiller LCD display.
	Water Filter Kit	387004279	Hot swappable, 5-micron water filter for filtering particulates from the coolant circuit.
	Flow Bypass Kit	387010608	This externally installed valve is for reducing the overall flow to the application. Full flow continues through the chiller to maintain high heat transfer rates and temperature stability. This kit does not contain a flow meter.
	Pressure Bypass Kit	387010420	This pressure bypass kit prevents high pressure operation and can either operate partially open or open when there is a change in operation (e.g., flow to application stopped). It can be used for flow control but operates with less precision. This pressure bypass maintains full flow through the chiller heat exchanger.

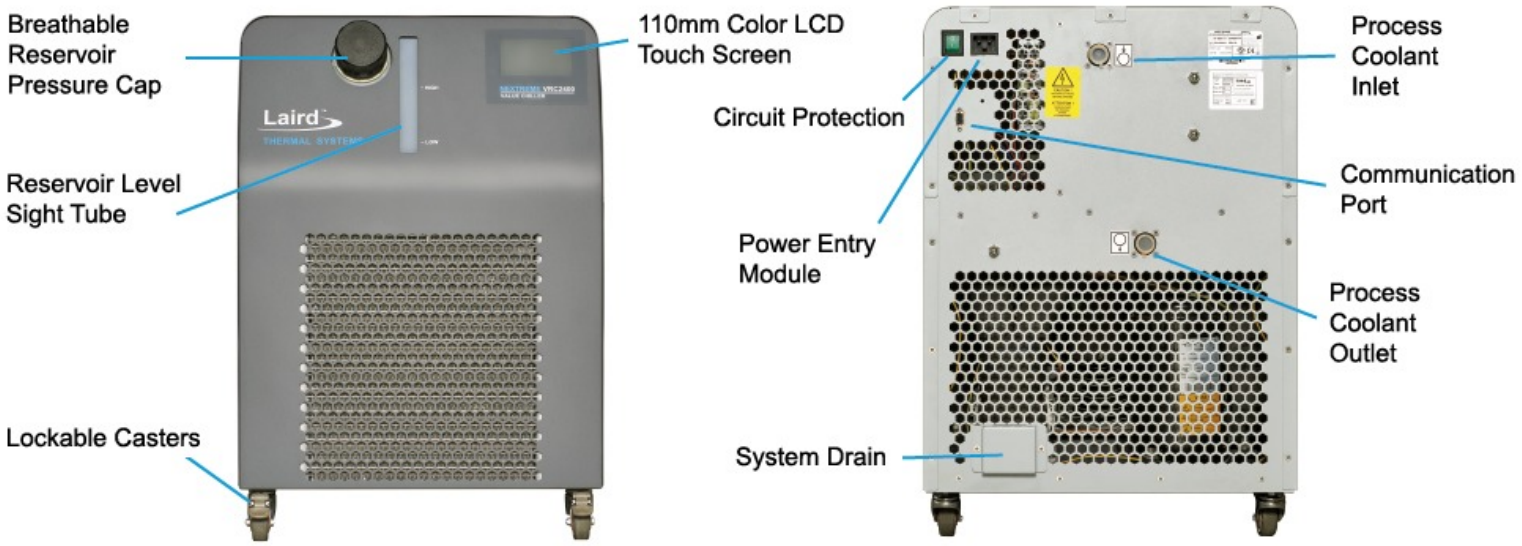
Cord Options

These power cords have been tested and validated on Nextreme devices.

Power cord is not supplied with the unit and must be ordered separately.

MFG Part Number	Plug Type	Standard	Style	Cable Length	Rating	Color	Connector
387005324	Universal	None	Flying Leads	2.0 m	250VAC, 16A* / 20A**	Black	C19

* IEC ** UL



Notes

Nominal capacity rating is given at a 20°C setpoint, 20°C ambient temperature, sea level, and 60Hz operation
For ambient conditions outside this range, please contact Laird Thermal Systems.

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