

Solid State Cooling Systems

small liquid chillers, providing precise, reliable temperature control



THERMAL
MANAGEMENT

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AMS Technologies – Where Technologies Meet solutions

AMS Technologies is a leading solution provider and distributor of hightech, leading-edge components, systems and equipment, with 30 years of experience to date and currently serving more than 1000 European customers.

We specialise in both componentry and complete solutions for Optical technology, Thermal Management and Power Technology fields, with access to and long standing relationships with the most advanced manufacturers in each of those fields.

We take active involvement in the design cycle, defining and re-defining the customers specifications to provide highly specific, customized products and solutions.

AMS Technologies has ever since been delivering solutions into a variety of high-tech markets, including renewable energies, medical, defence & aerospace, telecom & datacom, research & scientific and various other industrial segments.

Our customer base consists of Europe's largest leading technology corporations, a network of universities and research institutes as well as the most promising start-ups and is serviced from a network of local offices in Germany, the UK, France, Italy, Spain and Norway, with a focussed operations and logistics centre located in Munich, Germany.

Our commitment: Identifying the best solution for your project enabling you to become your customers' first choice!
Your AMS Technologies team

Solid State Cooling Systems

Solid State Cooling Systems is a customer-centered company founded in 1994 in rural upstate New York. The company remains American owned and operated.

The original focus of the company was to utilize thermoelectric technology as the basis for its chillers and heat exchangers because thermoelectrics inherently provide reliable and precise temperature control in a very small package.

Today, customers must also focus on the cost of energy and the environmentally damaging effects of Freon's and their replacement refrigerants. Since our products reduce energy usage by up to 94 % and use no refrigerants, they have been an important part of our customer's cost-savings programs.

in-house manufacturing and development competencies

In-house manufacturing and development competencies have resulted in multiple product families with numerous patents awarded and pending. We grow both by developing new products we see are needed in our marketplace, and by developing unique products for our customer's specifications using our flexible family of variable voltage power supplies, thermoelectric heat exchangers and digital temperature controllers.

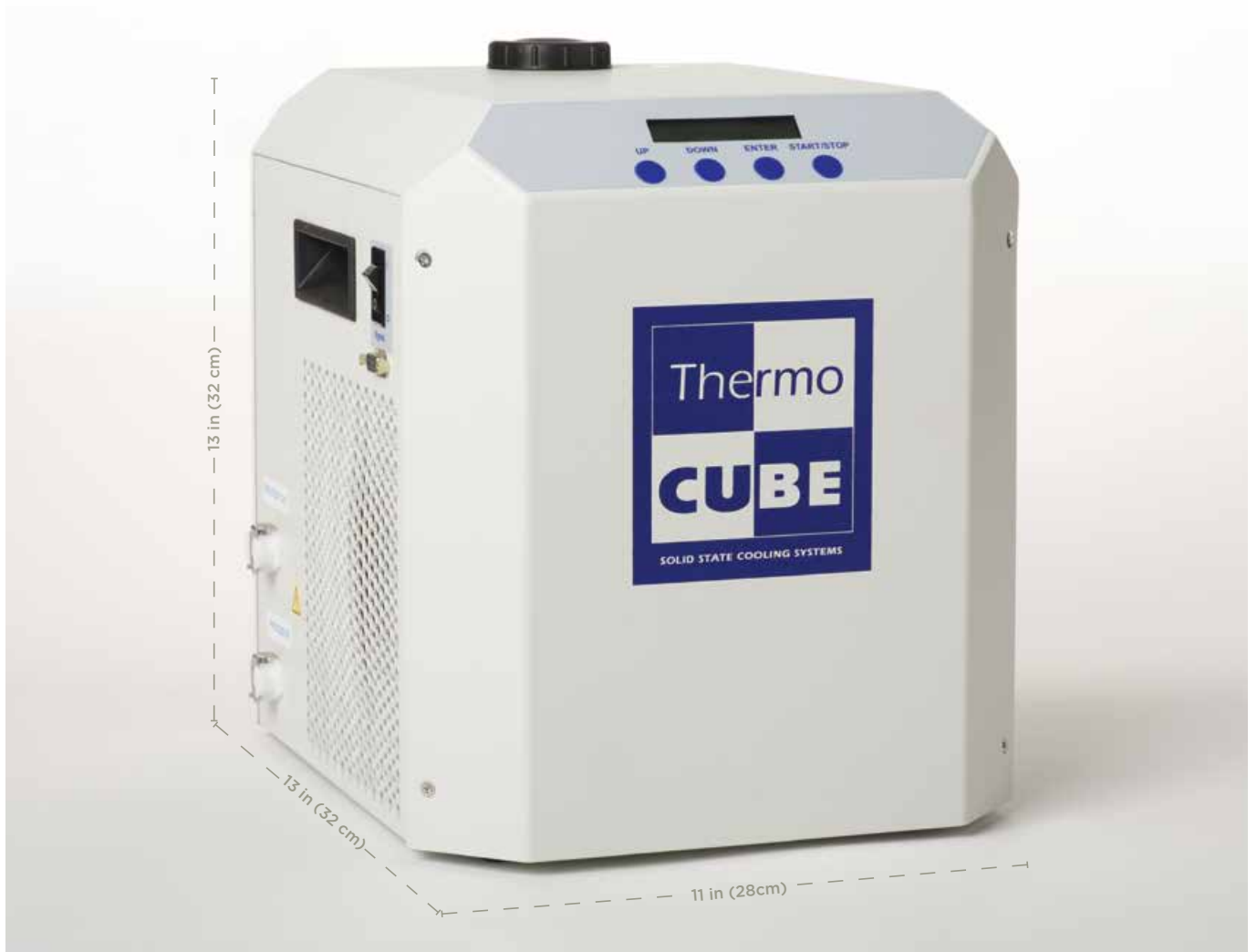
Many of our customers' names appear on the Fortune 100 list of America's most successful companies. While we have earned the respect of these large corporations, we recognize it is the individual engineers and technicians within these corporations as well as the small manufacturers and universities and laboratories that we serve.



ThermoCube Air Cooled 200, 300, 400 W

THERMOCUBE

Customizable Thermal Stability for Laser, Medical and Lab



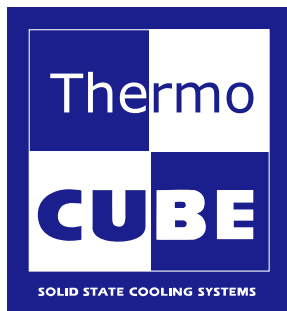
Semi-Custom Chiller for Your Unique Application

- Up to 400 Watts
- 8 pump choices
- 8 inlet/outlet fitting choices
- 3 fan choices
- 10 other standard options



The Right Temperature Without Fail

Solid State Cooling Systems

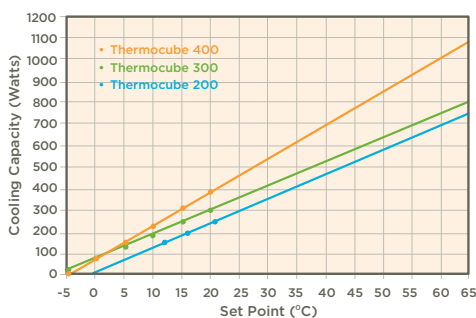


Compact, refrigerant-free and ultra-reliable thermoelectric technology

Available in 200, 300 and 400 Watt capacities, ThermoCube delivers whisper-quiet, vibration-free thermal control to ± 0.05 °C, even near ambient. Built on a core of thermoelectric modules with lifetimes exceeding 200,000 hours, it also offers worldwide power compatibility with its standard, universal power input. Our variable voltage power control means you efficiently draw power only as you need it.

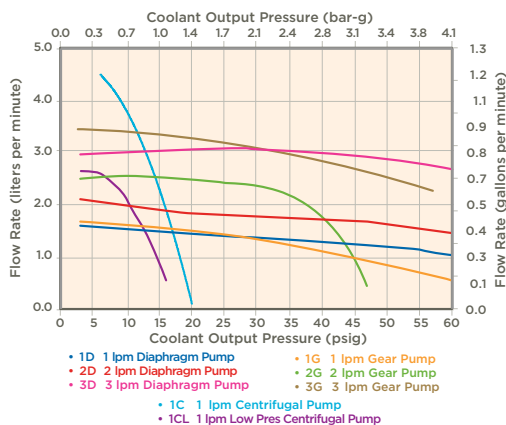
ThermoCube has many options and was designed for customization. It's air cooled, so it can operate in any lab or office.

THERMOCUBE 200/300/400 COOLING CURVES
20°C AMBIENT AIR TEMP



Note: 1 - Cooling Capacity will vary with configuration
2 - ThermoCube 400 curve measured at 208 VAC

THERMOCUBE PUMP CURVES



For complete information: sscooling.com/thermocube200

SPECIFICATIONS

Operating Range	+5 to 50 °C standard range (down to -5 °C with low temp option) (up to 65 °C with high temp option)
Ambient Temperature	10 °C to 40 °C non-condensing
Repeatability	± 0.05 °C (even near ambient)
Cooling Capacity	200, 300 or 400 Watts at 20 °C (20 °C ambient) See cooling curves
Noise (at 1 meter)	<63 dBA (60 and 49 dBA options available)
Coolant/Process Fluid	Koolance (27% propylene glycol/water mix) or 27-50% ethylene glycol/water mix. HFE or Fluorinert/Galden options available.
Process Fluid Fittings	1/4" John Guest standard, many options
Pumps	8 pump choices, see pump curves
Wetted Materials	Aluminum, stainless steel and polymers
Size (L x W x H)	13" x 11.0" x 13" (32 x 28 x 32 cm)
Weight	28 lbs. (12.7 kg) (with basic options)
Power Input	Universal: 115-230 VAC, 50/60 Hz, 7A-5A
Communications	Keypad or RS232 optional
Alarms	Temperature, fluid level, component or system failure (display and RS323 option)
Standards	TUV listed UL, CAN/CSA and EN 61010-1, CE 61010-1
Warranty	1-2 years (diaphragm pumps are 1 year)



TCube edge

TCube edge

Low Cost, High performance thermoelectric chiller optimized for lasers, optics and life sciences



Key Features

- Optimized for cost vs. performance
- Precise $\pm 0.05^{\circ}\text{C}$ temperature control
- Reliable, compact, quiet and energy efficient



The Right Temperature Without Fail

Solid State Cooling Systems

TCube edge



Precise, compact and quiet

With cooling capacities from 230 Watts to 460 Watts, the TCube edge product family of thermoelectric recirculating chillers has been designed for cost-performance with features that have been specifically optimized for the laser, optics and life sciences markets.

Building on more than twenty years of leadership in thermoelectric technology, these systems offer precise temperature control ($\pm 0.05^\circ\text{C}$ repeatability), long-life reliability, quiet operation and environmental friendliness in a compact size.

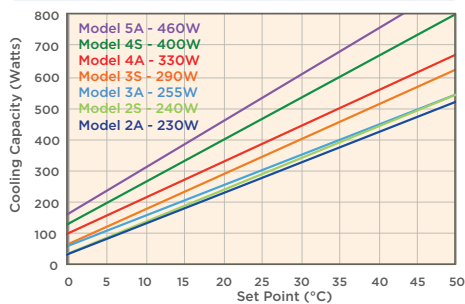
Using universal power our chillers are very energy efficient only drawing power when required.

Models are available with either aluminum or stainless steel wetted materials to ensure compatibility with the systems being controlled.

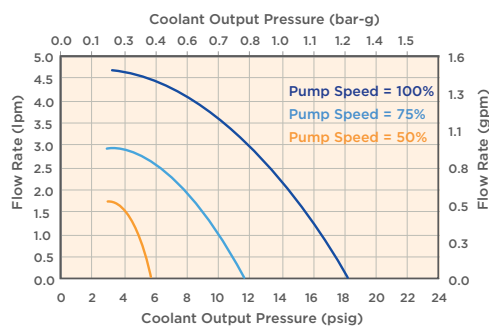
SPECIFICATIONS

Operating Range	0°C to 65°C
Ambient Temperature	10°C to 40°C non-condensing
Repeatability	$\pm 0.05^\circ\text{C}$ at constant load
Cooling Capacity ¹	230-460 Watts @ 20°C (20°C ambient) depending on model and configuration
Noise (at 1 meter)	-50 dBA at 50% load -63 dBA at 100% load
Process Fluid Fittings	1/4" valved CPC
Pump Type	Adjustable centrifugal pump
Pump Flow Rate	> 2 lpm @ 14 psig (adjustable for pressure sensitive applications)
Tank Volume	1 liter with level sensor
Wetted Materials	Aluminum or Stainless Steel cold plate with compatible materials
Size (L x W x H)	13 x 11 x 11" (33 x 28 x 28 cm)
Weight	25 lbs (11.3 kg)
Universal Power Input	Universal: 100-240 VAC, 50/60 Hz
Maximum Current	3.5/1.5A to 8.5/3.5A model dependent
Communications	Keypad, RS232 or optional Ethernet
Alarms	Temperature, fluid level, system or component failure (display, remote or optional audio alarm)
Standards	TUV listed to UL, CAN/CSA and EN 61010-1, CE 61010-1, RoHS
Warranty	2 years

TCUBE EDGE COOLING CAPACITY PERFORMANCE MEASURED AT 20°C AMBIENT TEMPERATURE



TCUBE EDGE PUMP CURVES



Note: This product is still undergoing final Beta Customer testing, so specifications are subject to change.



T-Three Precision Temperature Control

T-Three

Low Cost, Compact and Reliable Precision Temperature Control



T-Three

- Diode or semiconductor lasers
- Analytical equipment
- Low-light CCD cameras
- Rheometers
- Precise control of chemical and gas canisters
- General laboratory use



The Right Temperature Without Fail

Solid State Cooling Systems

T-Three



Quiet precision and thermoelectric reliability

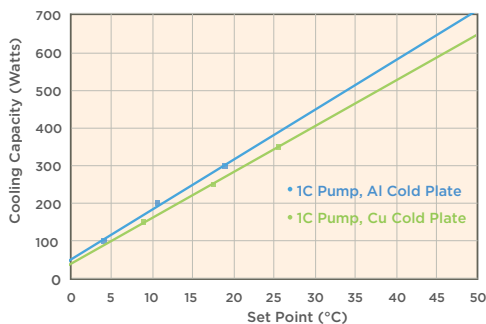
The 300 Watt T-Three delivers a cost-efficient way to optimize your equipment's performance through greater thermal stability. T-Three responds instantaneously to changes in load, achieving thermal control from 0 to 50 °C with a repeatability of ± 0.05 °C, even near ambient. The system's smooth-flow centrifugal pump keeps operation vibration free, making it an ideal solution for lasers, optics, analytical equipment or any other application requiring precise temperature control .

Utilizing thermoelectric modules with lifetimes exceeding 200,000 hours T-Three has no compressors, few moving parts and no Freon, making it highly reliable and environmentally friendly. Universal power input and our variable power control means you efficiently draw power only as you need it.

SPECIFICATIONS

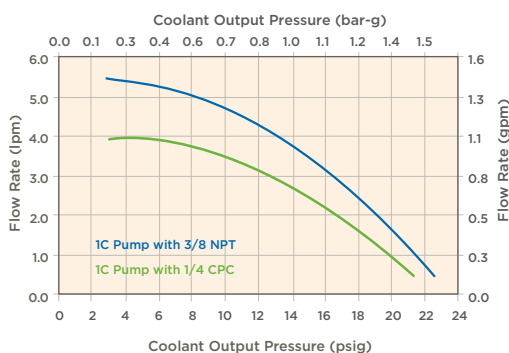
Operating Range	5 °C to 50 °C (Cu) or 0°C to 50°C (Al)
Ambient Temperature	10 °C to 40 °C non condensing
Repeatability	± 0.05 °C (even near ambient)
Cooling Capacity¹	275-330 Watts @ 20°C (20°C ambient) depending on configuration
Heating Capacity	400W @ 20 °C (20°C ambient)
Noise (at 1 meter)	<48 dBA (50% loading), <61 dBA (max load)
Coolant/Process Fluid	Koolance (27% propylene glycol/water mix) or 27-50% ethylene glycol/water mix
Process Fluid Fittings	3/8" Female NPT standard, Adaptor kits available for 1/4" or 3/8" John Guest, CPC, Swagelok or hose barb
Pump Options	1C: -4.7 lpm @10 psig centrifugall (Contact SSCS for other pump options)!
Tank Volume	800 ml with level sensor
Wetted Materials	Copper, brass and polymers or aluminum, stainless steel and polymers
Size (L x W x H)	13 x 11 x 11" (33 x 28 x 28 cm)
Weight	25 lbs (11.3 kg)
Power Input	Universal: 100-240 VAC, 50/60 Hz, 6.5-2.5A max
Communications	Keypad or USB Interface
Alarms	Temperature, fluid level, system or component failure (display and USB)
Standards	TUV listed to UL, CAN/CSA and EN 61010-1, CE 61010-1, RoHS compliant
Warranty	2 years

T-THREE COOLING CURVES
20 °C AMBIENT, PROCESS FLUID: WATER



Note: Cooling Capacity will vary with configuration

T-THREE PUMP CURVES



Ultra Compact Recirculating Chiller 160 to 190 W

UC160-190

Ultra Compact Series - The Smallest Recirculating Chiller on the Planet



160 W to 190 W

- Low-light CCD cameras
- Diode lasers
- OEM medical equipment
- Laboratory equipment
- Microtiter plate temperature control
- Point-of-use temperature control



The Right Temperature Without Fail

Solid State Cooling Systems

UC160-190

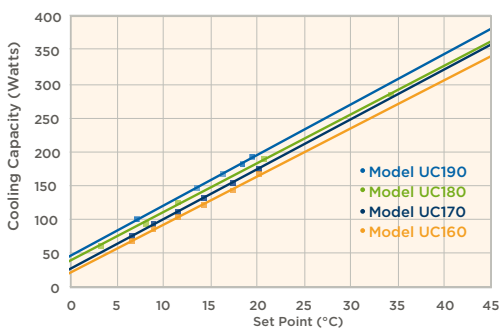


Ultra Compact, quiet operation, and precise, reliable thermoelectric technology

Available with a 160-190 Watt capacity, the UC160-190 delivers precise temperature control using ultra-reliable thermoelectric modules with lifetimes exceeding 200,000 hours. UC160-190 responds instantly to changes in load, holding to $\pm 0.1^\circ\text{C}$, even near ambient. Its universal, variable power supply only provides power when needed, making the unit very energy efficient.

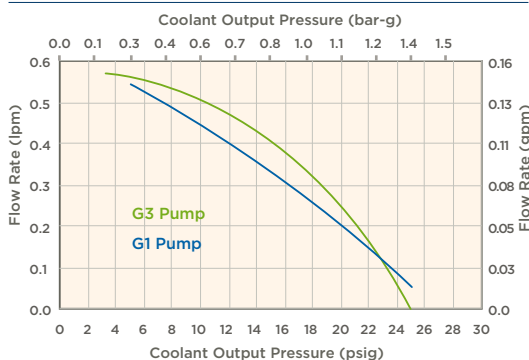
As the world's smallest, air-cooled recirculating chiller, UC160-190 fits easily inside your equipment or on your table top. And its standard RS232 interface for automatic temperature control makes UC160-190 simple to use.

UC160-190 COOLING CURVES
20 °C AMBIENT, PROCESS FLUID:
27% PROPYLENE GLYCOL/WATER (KOOLANCE)



Note: Cooling Capacity will vary with configuration

UC160-190 PUMP CURVES



SPECIFICATIONS

Operating Range	2 °C to 45 °C (160W / 180W models) 10 °C to 45 °C (170W / 190W models)
Ambient Temperature	10 °C to 40 °C non-condensing
Repeatability	± 0.1 °C (even near ambient)
Cooling Capacity	160W to 190W @ 20 °C (20 °C ambient) depending on model and configuration
Noise (at 1 meter)	<63 dBA
Coolant/Process Fluid	Koolance (27% propylene glycol/water mix) or 27-50% ethylene glycol/water mix
Process Fluid Fittings	1/8" female CPC with shut-off valve
Pump Options	G1: -0.5 lpm magnetically-coupled gear pump G3: Alternate longer life -0.5 lpm gear pump
Tank Volume	75 ml with level sensor (optional sealable cap)
Wetted Materials	Al and polymers, or Cu and polymers
Size (L x W x H)	7.5" x 5" x 7" (19 x 13 x 18 cm)
Weight	8 lbs (3.5 kg)
Power Input	Universal: 100 - 240 VAC, 50/60 Hz, 2.8A max
Power Consumption	Less than 200 Watts
Operating Voltage	13.5 VDC, 15 amps max (universal input, laptop style power supply included)
Communications	Keypad or RS232 interface
Alarms	Temperature, fluid level, component or system failure (display, RS232 and dry contact)
Standards	CE, TUV listed to CSA/UL 61010-1
Warranty	1 year



ThermoCube Liquid Cooled 400L to 600L

THERMOCUBE 400L-600L

Thermoelectric Liquid-Cooled Recirculating Chiller



Current Customer Applications

- Semiconductor fab equipment temperature control
- Laboratories with recirculating house chilled water
- Laser cooling
- Gas bottle temperature control
- Scanning electron microscopes
- and other applications



The Right Temperature Without Fail

Solid State Cooling Systems



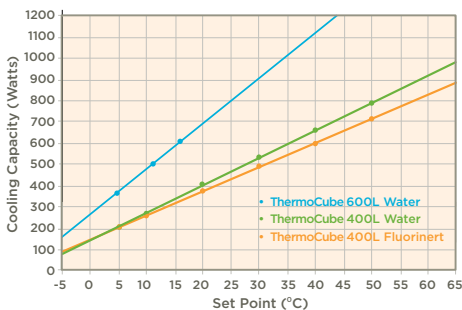
Compact, refrigerant-free and ultra-reliable

Available in 400 or 600 Watts, ThermoCube 400L- 600L delivers whisper-quiet, vibration-free thermal control to ± 0.05 °C, even near ambient. Built on a core of thermoelectric modules with lifetimes exceeding 200,000 hours, it offers worldwide power compatibility, and its variable voltage power control means you draw power only as you need it.

ThermoCube 400L and 600L can be used with glycol/water solutions or industrial water. Our standard pump is capable of delivering up to 50 psi for laser diode and other high-pressure applications. Low-pressure pumps are also available.

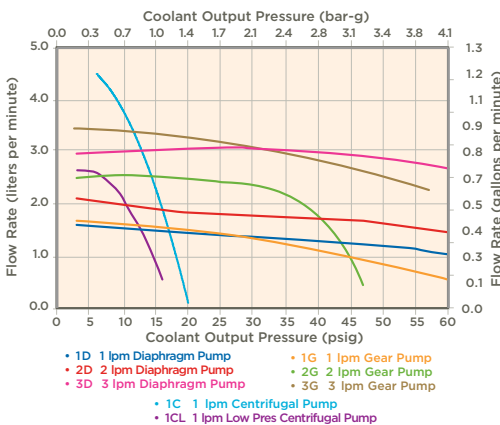
For complete information: sscooling.com/thermocube400

THERMOCUBE 400L/600L COOLING CAPACITY
20°C AMBIENT, 20°C FACILITY WATER



Note: Cooling Capacity will vary with configuration

THERMOCUBE PUMP CURVES



SPECIFICATIONS

Operating Range	5 to 50 °C (down to -10 °C with low temp option; up to 65 °C with high temp option)
Ambient Temperature	10°C to 40°C non-condensing
Repeatability	± 0.05 °C, even near ambient
Cooling Capacity	400 or 600W at 20 °C (with 20°C facility chilled water)
Noise (at 1 meter)	< 48 dBA (pump dependent)
Coolant/Process Fluid	Koolance (27% propylene glycol/water mix) or 27-50% ethylene glycol/water mix; Fluorinert/Galden or HFE options available
Process Fluid Fittings	John Guest std. CPC or Swagelok optional
Pumps	8 pump choices (see pump curves)
Tank Volume	300 ml with level sensor
Wetted Materials	Aluminum, stainless steel and polymers
Filter	Optional 5 μ m external fluid filter
Facility Water	1 gpm recirculated, filtered, treated industrial water, 10 to 25 °C
Facility Fittings	Match coolant fittings (others on request)
Size (L x W x H)	13" x 11" x 13" (32 x 28 x 32 cm)
Weight	28 lbs. (13 kg) (with basic options)
Power Input	Universal: 115-230 VAC, 50/60 Hz, 7-5A max
Communications	Keypad or optional RS232 Interface
Alarms	Temperature, fluid level, component or system failure (display and RS232 option)
Standards	TUV listed to UL, CAN/CSA and EN 61010-1, CE 61010-1
Warranty	1-2 years (pump dependent)



ThermoCube PAO chiller 275 W

THERMOCUBE PAO

Thermoelectric Chiller for Leak-Free Temperature Control of Aircraft Hydraulic Fluid (PAO)



Current Customer Applications

- Avionics bench testing
- Airborne cooling
- Power supply cooling
- Other point-of-use temperature control applications



The Right Temperature Without Fail

Solid State Cooling Systems



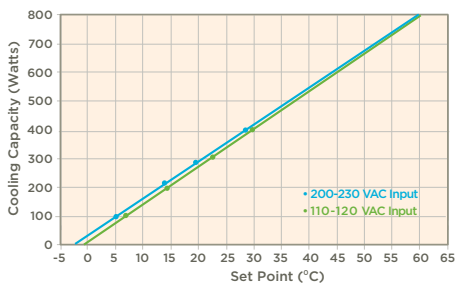
Compact, refrigerant-free and ultra-reliable thermoelectric technology

Available with a 275 Watt capacity, ThermoCube PAO delivers vibration-free thermal control to ± 0.1 °C, even near ambient. Built on a core of thermoelectric modules with lifetimes exceeding 200,000 hours, ThermoCube PAO also offers worldwide power compatibility with its standard universal power input, and its variable voltage power control means you efficiently draw power only as needed.

ThermoCube PAO is built with an all stainless steel tank and plumbing with Swagelok fittings for leak-free operation. It can work with either aircraft hydraulic fluid (PAO) or Fluorinert, and it is air cooled, so it needs no house or facility chilled water. The standard pumps are capable of delivering up to 45 psig for avionics and other high pressure applications.

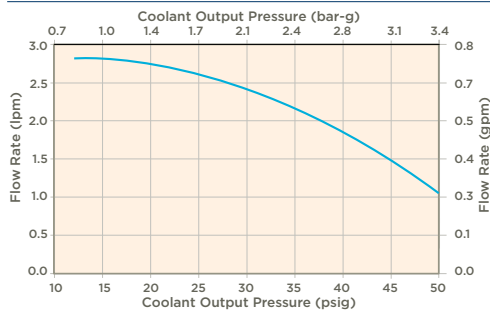
For complete information: sscooling.com/thermocubepao

THERMOCUBE PAO PERFORMANCE CURVE
20°C AMBIENT



Note: Cooling Capacity will vary with configuration

THERMOCUBE PAO PUMP CURVE
2 LPM MAGNETICALLY-COUPLED GEAR PUMP



SPECIFICATIONS

Operating Range	0 °C to +65 °C
Ambient Temperature	10°C to 40°C non-condensing
Repeatability	± 0.1 °C (even near ambient)
Cooling Capacity	275 W at 20 °C (20 °C ambient)
Noise (at 1 meter)	< 63 dBA
Process Fluid	PAO (Poly-Alpha-Olefin), Options available for Fluorinert / Galden or HFE
Process Fluid Fittings	1/4" CPC metal
Pumps	1, 2 and 3 lpm at 30 psig magnetically coupled gear pump
Tank Volume	900 ml stainless steel tank with level sensor
Wetted Materials	Al, stainless steel and polymers
Fluid Filter	5 μ m external filter with grounding strap
Size (L x W x H)	13" x 11" x 13" (32 x 28 x 32 cm) w/o filter
Weight	34 lbs. (15.4 kg)
Power Input	Universal: 115-230 VAC, 50/60 Hz, 7-5A max
Communications	Keypad or RS232 Interface
Alarms	Temperature, fluid level, component or system failure (display, RS232 and dry contact)
Standards	TUV listed to UL, CAN/CSA and EN 61010-1, CE 61010-1
Warranty	2 years



ThermoRack 401 Temperature Control for Laser Applications

THERMORACK 401

Precision Thermal Control for Optimal Laser Performance and Stability



400 Watts

- Laser and industrial applications
- 4U standard 19" rack mount
- 5 to 45 °C heat or cool
- Refrigerant free
- Energy efficient
- Quiet and vibration free



The Right Temperature Without Fail

Solid State Cooling Systems



400 Watt thermoelectric reliability optimized for modest heat loads

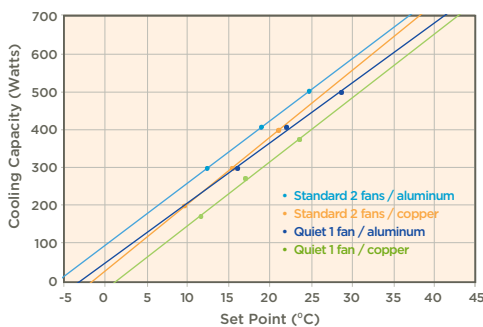
The ThermoRack 401 delivers precision temperature control to $\pm 0.05^\circ\text{C}$, even near ambient. With only two moving parts and standard variable speed fan it is whisper quiet and vibration free for advanced optics and laser applications.

Optimized for laser and industrial applications, ThermoRack 401 operates within the most energy-efficient range of a core of thermoelectric modules with lifetimes exceeding 200,000 hours. And our variable voltage power control means even greater efficiency, drawing power only as you need it.

ThermoRack 401 comes with a universal power supply standard so it can be operated worldwide by changing the power cord.

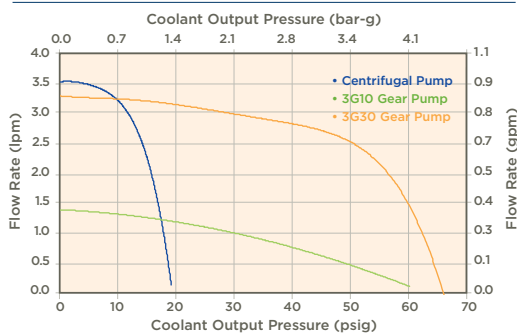
For complete information: sscooling.com/thermorack401

THERMORACK 401 COOLING CURVE
20 °C AMBIENT, PROCESS FLUID WATER



Note: Cooling Capacity will vary with configuration

THERMORACK 401 PUMP CURVE



SPECIFICATIONS

Operating Range	5 °C to 45 °C standard
Ambient Temperature	10 °C to 40 °C non-condensing
Repeatability	± 0.05 °C, even near ambient
Cooling Capacity	315-420W @ 20°C (20°C ambient) depending on configuration
Noise (at 1 meter)	2 Fan: < 55 dBA at 50%, < 68 dBA at max Quiet: < 48 dBA at 50%, < 58 dBA at max
Coolant/Process Fluid	Koolance (27% propylene glycol/water mix) or 27-50% ethylene glycol/water mix
Process Fluid Fittings	1/4" CPC with shut off valves
Pump	2 lpm @ 15 psig centrifugal pump or 3 lpm configurable gear pump
Tank Volume	1 liter with level sensor
Wetted Materials	Aluminum, stainless steel and polymers or Copper, stainless steel, brass, and polymers
Size (L x W x H)	19" x 21" x 7" 4U (48 x 53 x 18 cm)
Weight	39 lbs (18 kg)
Power Input	Universal: 100-240 VAC, 50/60 Hz, 9-4A max
Communications	Keypad or USB interface
Alarms	Temperature, fluid level, component or system failure (display and USB option)
Standards	TUV listed to UL, CAN/CSA and EN 61010-1, CE 61010-1, RoHS compliant
Warranty	2 years



ThermoRack 800 Temperature Control for laser Applications

THERMORACK 800

Precision Thermal Control for Optimal Laser Performance and Stability



Thermorack 800 W improves

- Laser beam stability
- Beam pointing precision
- Beam shape control
- Pulse width control
- Wavelength control

Other Benefits

- Rapid temperature control response
- Refrigerant free and energy efficient
- Quiet and vibration free
- 6U standard 19" rack mount



The Right Temperature Without Fail

Solid State Cooling Systems



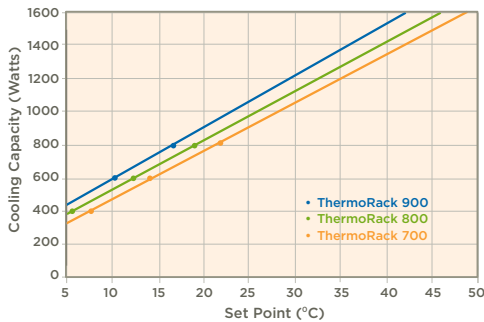
800 Watt thermoelectric reliability for laser and industrial applications

ThermoRack 800 delivers precision thermal control to $\pm 0.05^\circ\text{C}$, even near ambient. With only two moving parts and standard variable speed fan, it is quiet and vibration free. Its universal input power supply and centrifugal pump system are designed to deliver 30 psig at 1 gpm for laser diode and other applications.

ThermoRack is designed around a core of thermoelectric modules with lifetimes exceeding 200,000 hours for high reliability. And, for energy-efficiency, our variable power control only draws power as you need it.

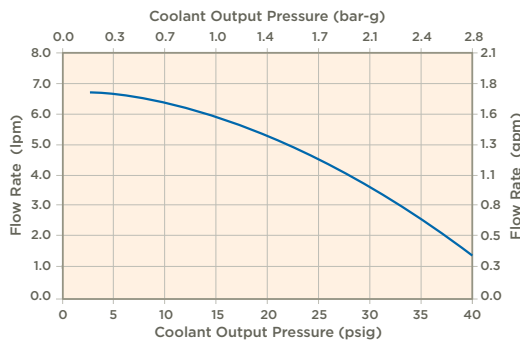
For complete information: sscooling.com/thermorack800

THERMORACK 800 COOLING CURVES
20 °C AMBIENT, PROCESS FLUID: WATER



Note: Cooling capacity will vary with configuration

THERMORACK 800 PUMP CURVE
(WATER/OPTISHIELD)



SPECIFICATIONS

Operating Range	5 °C to 50 °C standard
Ambient Temperature	10°C to 40°C non-condensing
Stability/Repeatability	$\pm 0.05^\circ\text{C}$, even near ambient
Cooling Capacity	Configurable from 700 W to 900 W at 20 °C (20 °C ambient)
Noise	< 63 dBA (50% load), < 75 dBA (max load)
Coolant/Process Fluid	Koolance (27% propylene glycol/water mix) or 27-50% ethylene glycol/water mix
Process Fluid Fittings	3/8" female NPT
Pump	3.5 lpm (0.9 gpm) @ 30 psig
Tank Volume	800 ml with level sensor
Wetted Materials	Al, stainless steel and polymers, or Cu, stainless steel, brass, and polymers
Size (W x D x H)	19" x 20" x 11" 6U (48 x 51 x 27 cm)
Weight	55 lbs (24.5 kg)
Power Input	200-240 VAC 1p, 50/60 Hz, 8A max 100-240 VAC, 50/60 Hz, 16-8A max (700W model only)
Communications	Keypad or optional USB interface
Standards	TUV listed to UL, CAN/CSA and EN 61010-1, CE 61010-1, RoHS compliant
Warranty	2 years



ThermoCube 300A Compressed Gas Chiller

THERMOCUBE 300A

Thermoelectric Chiller for Compressed Inert Gases



Point-of-Use Compressed Gas Temperature Control for Low Thermal Mass Applications:

- Inert gas temperature control
- Laboratory
- Optics benches
- Microenvironment temperature control
- Lens temperature control
- Kinetics experiments



The Right Temperature Without Fail

Solid State Cooling Systems



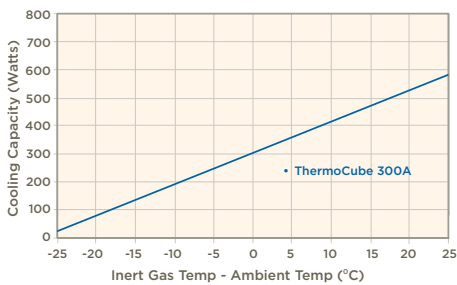
Compact, refrigerant-free and ultra-reliable thermoelectric technology

Available with a 300 Watt capacity for up to 300 slpm gas flows, ThermoCube 300A delivers whisper-quiet, vibration-free thermal control to ± 0.2 °C, even near ambient. Built on a core of thermoelectric modules with lifetimes exceeding 200,000 hours, it offers worldwide power compatibility with our standard universal power input, and its variable voltage power control means you efficiently draw power only as you need it.

ThermoCube 300A is available with four fan options and sound-dampening insulation. The quietest model runs at 49 dBA.

For complete information: sscooling.com/thermocube300A

THERMOCUBE 300A PERFORMANCE CURVE



SPECIFICATIONS

Operating Range	-10 to +50 °C std. (-5 to 65 °C optional)
Repeatability	± 0.2 °C, even near ambient
Cooling Capacity	300 W at 25 °C (25 °C ambient)
Modes	Fixed setpoint, cycling
Noise	63 dBA at 3 feet (60 or 49 dBA optional)
Coolant	Ambient air, N ₂ , CDA, Argon
Coolant Fittings	1/4" John Guest standard Optional CPC or Swagelok
Size (L x W x H)	12.75 x 11.0 x 12.75" (32.4 x 28 x 32.4 cm)
Weight	28 lbs. (12.7 kg)
Power	100-240 VAC, 50 or 60 Hz, 7A-3.5 A
Standards	CE, TUV listed to CSA/UL 61010-1
Alarms	TTL (temp and system failure), dry contacts optional
Communications	RS232 optional
Warranty	2 years



Cleanstream 550-H1500

Wide Range Chemical Bath Temperature Control System

CLEANSTREAM 550 - H1500

Wide Range Temperature Control for R+D Chemical Baths



Cleanstream 550-H1500 Patented Liquid-to-Liquid Thermoelectric Heat Exchanger

Equivalent to 1250 Watt chiller or 1500 Watt heater for

- Low power direct heating and cooling for 2-40 liters semiconductor chemical baths

Designed to fit inside most wet bench designs, the Cleanstream 550-H1500 maintains temperature control at an ultra-precise ± 0.05 °C from 10-90 °C, and can do so at 10X the response time while consuming 80% less power than Freon-based chillers in near ambient applications.

Cleanstream offers a triple moisture seal for low temperature operation and PFA Teflon® surfaces on process side for ultra-high purity or corrosive fluids. And it uses ISO 14001 enabling thermoelectric technology, so no moving parts, no noise, no vibration, and no maintenance — with an MTBF greater than 80,000 hours. Two-year warranty standard.

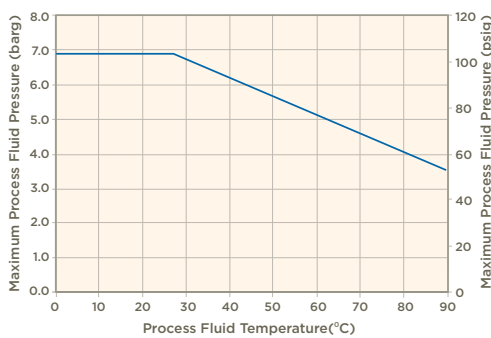
A complete Cleanstream 550-H1500 package is available including:

- Cleanstream 550-H1500
- Switchback 6600 CE bipolar power supply or power supply/ temperature control unit with Yokagawa UT 55A controller
- Two 4:1 PTFE fittings
- One power cable with over-temp interlock

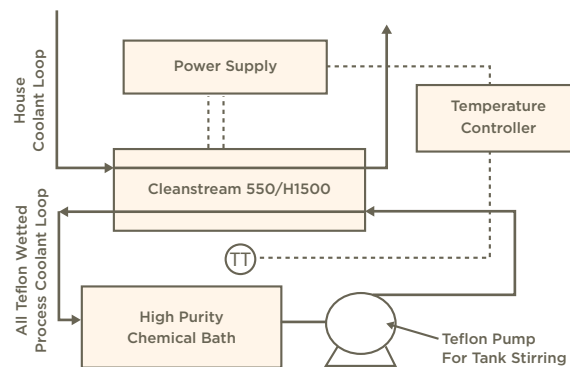
The Right Temperature Without Fail

Solid State Cooling Systems

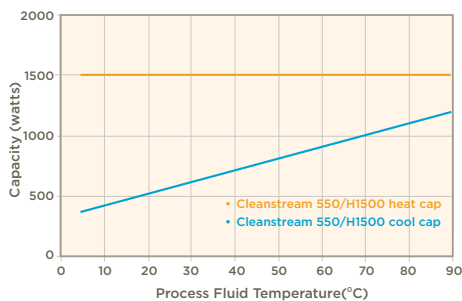
CLEANSTREAM PROCESS FLUID PRESSURE RATING (ALL MODELS)



CLEANSTREAM POSITIONING SCHEMATIC



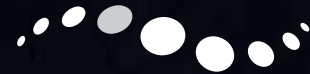
CLEANSTREAM 550/H1500 COOLING AND HEATING CAPACITY



SPECIFICATIONS

Operating Range	10 to +90 °C
Cooling Capacity	550 watts at 25 °C
Heating Capacity	1500 watts
House Fluid	Filtered treated industrial water
Process Fluid	Up to 50% HF solution, SC1 and SC2 solution, organic solvents, other PFA Teflon-compatible fluids
Flow Rate	0.5-2 or 4-10 gpm (2-8 lpm or 15-38 lpm) in process plates, 4-8 gpm (15-30 lpm) in house plate
Maximum Pressure	100 psig on house. Process fluid pressure depends upon temperature (see graph)
Teflon Fitting Choices	3/4" or 1" Flaretek, or Teflon tube stub
Size (L x W x H)	16 x 9.75 x 3.1" (41 x 25 x 8 cm)
Weight	38 lbs. (17 kg)
Power Requirements	200-240 VAC, 3Ø, 6A to Switchback 6600 CE set at: 0-144 VDC, 0-12 Amps
Material	House cooling water flows through 6063 aluminum T6 hardened with Nickel-coated interior or optional Teflon-impregnated anodized aluminum; process fluid flows through HDPFA Teflon tubing only





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enabling your ideas.

Optical, Power and Thermal Management Technologies

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