Total Rack Scale Liquid Cooling Solutions

ACCELERATED TIME-TO-DELIVERY OF
PLUG-AND-PLAY LIQUID COOLED RACKS
WITH PROVEN QUALITY AND RELIABILITY

2024, Version 2

Why Supermicro Direct-to-Chip Cooling Solutions?

UP TO

40%

REDUCTION
in Electricity
Costs for Entire
Data Center

UP TO

55%

REDUCTION
in Data Center
Server Noise

UP TO

89%

REDUCTION
in Electricity
Costs for
Server Cooling
Infrastructure

- Broad range of modular cold plate designs

- Unique liquid cooled server designs to double GPU density at server and rack level

- Cabling for optimizing cooling and maintenance

- Rack scale validation of customer applications and environments to ensure the highest quality and satisfaction

- Plug-and-play data center level integration readiness

- Single-vendor total IT solution from design to delivery

Scan the QR code to learn more about
Supermicro **Immersion** and **Rear Door Heat
Exchanger** liquid cooling solutions!

World-Class Rack Manufacturing Facility

Based in Silicon Valley, complementing Supermicro's unwavering commitment to quality, sustainability and minimizing turnaround time.

Rack Capacity

5,000+/month
with 1,350/month liquid cooling capacity

Production, testing and shipping for integrated full-scale liquid cooled rack solutions

Network Speed Testing Environment

Up to
800 Gb/s

Complete testing environment for a wide range of network requirements

Mass Production Center

11MW
total capacity

designed for high efficiency, reduced greenhouse gas emissions, minimized air pollutants and reduced water use

Ready-to-Deploy Liquid Cooling Tower

Up to
6.5MW

N+1 redundancy cooling tower supports up to 136 liquid cooled racks

Power at Scale

Up to
480VAC

Including 208V, 415V, 277V/480VAC for 3-phase & 48VDC-ready

Single-Vendor Proven Solution

Supermicro provides total rack scale liquid cooling solutions from hardware to software. Supermicro delivers a completely tested solution, including servers, racks, networking and liquid cooling infrastructure which speeds up time to deployment and results in higher quality of the entire infrastructure.
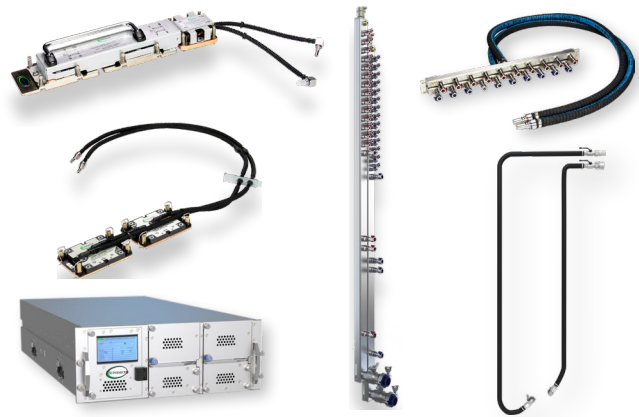

Cooling Tower

Rack Integration Service

Liquid Cooling Servers

Cooling Components

Comprehensive Software Management tool from components level to data center level.

Liquid Cooling Rack Sample Configurations

SRS-48UGPU-SKU1-L1-SMCI

Up to 8 GPU Servers (4U, 8 NVIDIA H100/ H200 GPUs per sever) per 48U Rack (64 NVIDIA H100/200 GPUs per Rack

Product	Qty.
Supermicro GPU Server SYS-421GE-TNHR2-LCC	8
Cooling Distribution Unit (CDU)	1
Vertical Cooling Distribution Manifold (CDM)	1
Horizontal CDM	8
Networking Switches	1-4

SRS-48UBTW-SKU1-L1-SMCI

Up to 76 Server Nodes / 19 Systems in a 48U Rack

Product	Qty.
BigTwin® (2U4N)	19
or	
2U Hyper	21
or	
1U Hyper (shown)	44
Cooling Distribution Unit (CDU)	1
Vertical Cooling Distribution Manifold (CDM)	1
Networking Switches	1-4

SRS-48UBLD-SKU1-L1-SMCI

Up to 80 Server Blades / 4 Enclosures in a 48U Rack

Product	Qty.
SuperBlade® Enclosure (8U20N)	4
SBI-421E-1T3N	80
Cooling Distribution Unit (CDU)	1
Vertical Cooling Distribution Manifold (CDM)	1
Horizontal CDM	8
Networking Switches	9-17

Universal GPU Family
Flexible support for NVIDIA, AMD, and Intel GPUs

HGX H100 4-GPU

SYS-221GE-TNHT-LCC
2U 4-GPU, NVIDIA HGX H100

HGX H100 8-GPU
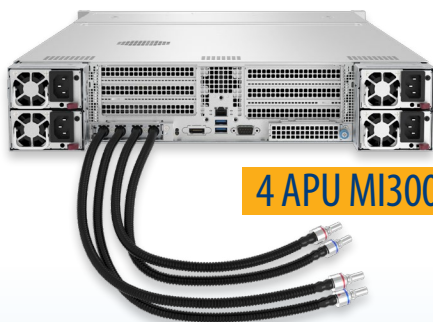
SYS-421GE-TNHR2-LCC
4U 8-GPU, NVIDIA HGX H100

NVIDIA MGX™ Family

ARS-111GL-DNHR-LCC
1U2N, NVIDIA GH200 Grace™ Hopper Superchip

1U2N GH200

AMD APU Family

AS-2145GH-TNMR
2U 4-APU, AMD Instinct™ MI300A

4 APU MI300A

4U SXM/OAM GPU

8U SXM/OAM GPU

4U PCIe GPU
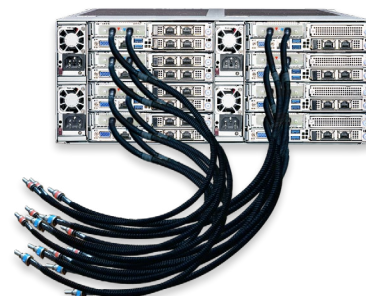

NVIDIA MGX™

2U2N / 2U4N BigTwin®

SuperBlade®

1U / 2U Hyper

4U4N / 4U8N FatTwin®

Supermicro Cooling Tower

The Supermicro Liquid Cooling Solution now includes a complete Liquid Cooling Tower solution, which is designed to efficiently remove the heat produced by today's-and tomorrow's-most powerful CPUs and GPUs, including those for AI Training and Inferencing. Supermicro's pioneer total Liquid Cooling Infrastructure enables customers to obtain everything that is required for a modern data center from a single vendor.

Supermicro Cooling Tower

Benefits & Capabilities

- Modular design available in different sizes with multiple cell configurations up to a maximum of 10MW per unit
- Each cell can be used separately, enabling cooling tower redundancy
- Closed-loop design to optimize system reliability
- High Temperature Fills (>60°C) – Higher temperature water can be returned to the cooling tower enabling higher efficiency
- Low power consumption with 6.2kW/MW of cooling
- Low water consumption with 6.2GPM/MW of cooling
- Epoxy coated stainless steel preventing corrosion and rated for 20+ years
- Quick deployments based on facility readiness

Supermicro Hose Kits

5 meter

3 meter

2 meter

1 meter
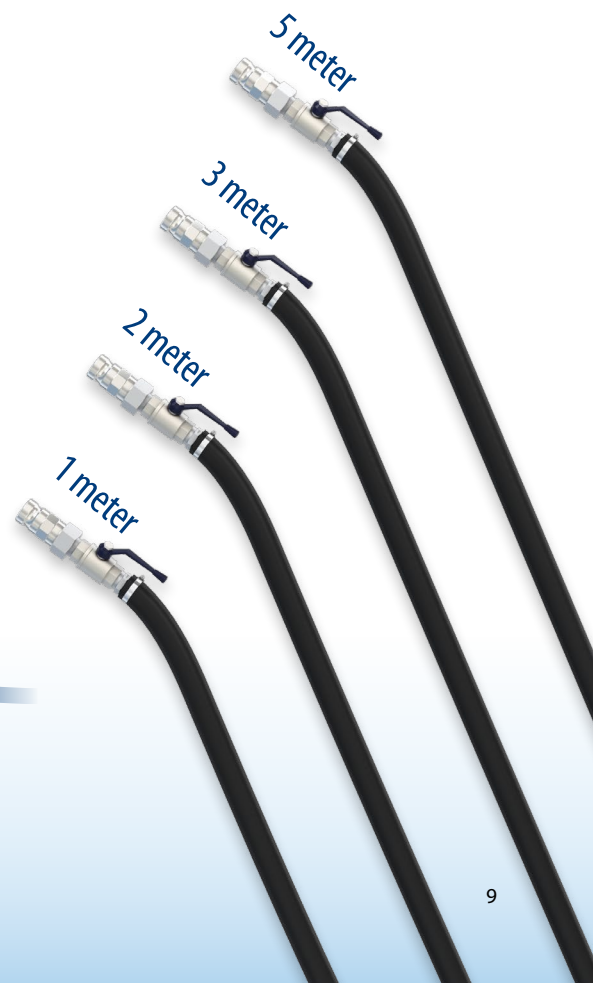
Quick connect
to data center facilities

Plug-And-Play Flexible Hose Kits

The Supermicro liquid cooling rack solution includes standard 1.25-inch CDU hose kit connections. The hose kit design makes it easy to connect racks directly to data center primary water supply or cooling tower. The Hose Kit ensures seamless integration with existing facility piping and provides the flexibility for future expansion to potentially lower data center upfront investment costs.
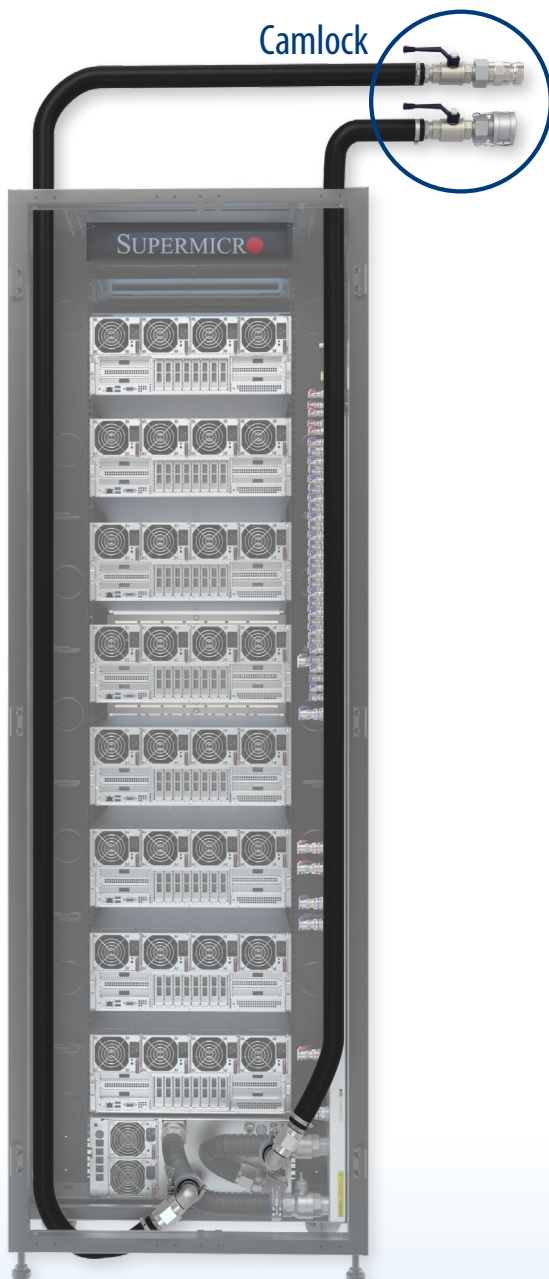
Camlock

Benefits & Advantages

- Flexible length design to fit different rack and data center placements
- High liquid pressure tolerance with 10-bar rate
- Ball valve connection prevents liquid from drying out
- Universal camlock for seamless integration with existing facility piping
- Dummy-proof camlock design with one female and one male connector
- Preinstalled Hose Kit in rack for plug-and-play toolless deployment

High Performance, User-Friendly CDU

Supermicro 4U Cooling Distribution Unit (CDU) contains the pumping system that circulates coolant to the cold plates, which carry heat away from CPUs, GPUs, and DIMMs.

Fast Maintenance & Advantages

- Automatic anti-condensation control
- Supports up to 45°C facility water
- Cooling capacity up to 100kW
- Maximum uptime and redundancy
- Peak operating efficiency
- N+1 hot-swappable pumps and PSUs
- Replace pumps in 2 minutes
- Replace PSU in 1 minute

Dedicated Management & Advantages

- Intelligent CDU monitoring and control
- CDU physical assets information detection such as coolant pressure, flow rate and leakage
- Flexible CDU touch panel and remote access
- Fully integrated with Supermicro SuperCloud Composer software
- Real-time sensor reading
- Historical data available

CDM

Supplies cold coolant to each server and returns warm coolant back to the CDU. Supermicro offers vertical and horizontal CDMs for maximum configuration flexibility.
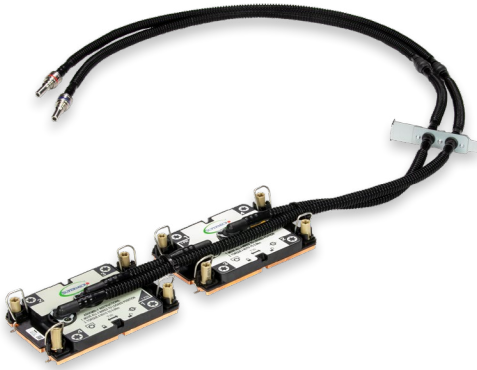

Benefits & Advantages

- Optimized flow distribution
- Supports 42U and 48U rack configurations with customizable spacing and size Quick Disconnect Couplings (QDC)
- One-handed QDC operation
- Liquid level and air pressure sensors with sight glass
- Easy maintenance facilitated by user-friendly mounts
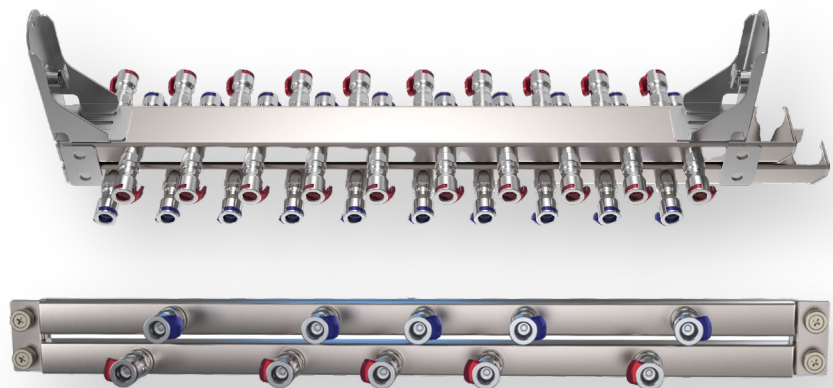
Modular Design Cold Plates

CPU and GPU cold plates designed for exceptional thermal performance and minimal pressure drop
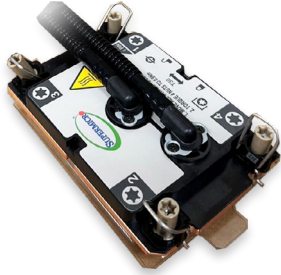
CPU Cold Plate

Benefits & Advantages

- Lower thermal resistance compared to industry-standard thermal mechanism specifications and design guidelines

- GPU cold plate also helps cool other related components that require liquid cooling, such as GPU switches

- Advanced heat dissipation efficiency with micro-sized channels thinner than a human hair

GPU Cold Plate

CPU Cold Plate

Latest Intel® Xeon® Processors

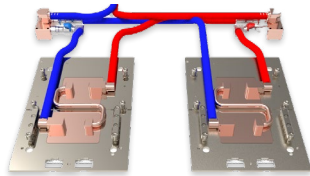**Latest AMD EPYC™ Processors**

GPU Cold Plate

NVIDIA HGX H100 8-GPU

NVIDIA HGX H100 4-GPU

AMD Instinct™ MI300X

NVIDIA GH200 Grace™ Hopper Superchip
for illustration purposes only


Intel® Data Center GPU Max 1550

Memory Cold Plate

DIMM Module

SuperCloud Composer Software Management

The Supermicro SuperCloud Composer's LCCM (Liquid Cooling Consult Module) is a powerful tool to collect vital information on physical assets and sensor data from a CDU (Cooling Distribution Unit), including pressure, humidity, pump and valve status, and more. CDU data is presented in real-time, enabling users to monitor operating efficiency of their liquid cooled racks. In addition to providing insights, SuperCloud Composer (SCC) helps user to set up alerts, manage firmware updates, and more.
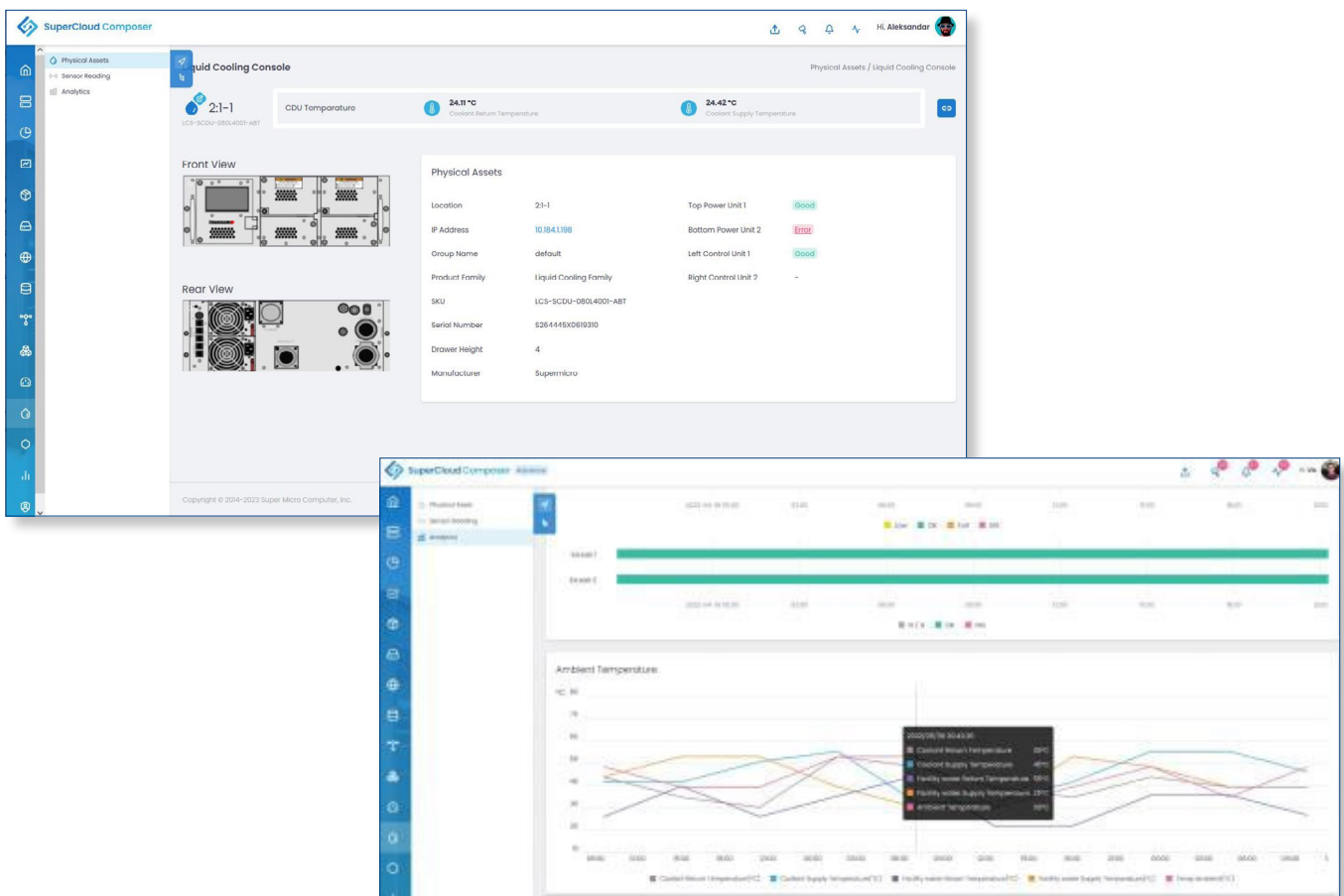
Scan to schedule
online demo!

Total Rack Scale Liquid Cooling Solutions
Rack Plug-And-Play

- Industry's broadest portfolio of workload-optimized servers

- Rack scale plug-and-play service delivers complete, validated solutions within weeks

- Liquid cooling rack production capacity up to 1,350 racks per month worldwide

- Made in the USA program

- Industry standard compliance for attestation of components throughout the entire supply chain

Rack Scale Solutions / Design / Production / Validation / Logistics and Service with 5,000+ Integrated Rack Solution Capacity per Month.

Flexible AC Power (120/208/230/480VAC, Single/3-phase) 48VDC Power

10/25/40/100/200/400/800 Gb/s Network Testing Environments

Air Cooling / Free Air Cooling / Liquid Cooling

Turnkey Data Center Solutions Within Two Weeks

www.supermicro.com