PRODUCT SPEC SHEET

NeuCool™ 2-Phase Direct-to-Chip In-Rack System (IR80)

ACCELSIUS™

PRODUCT OVERVIEW

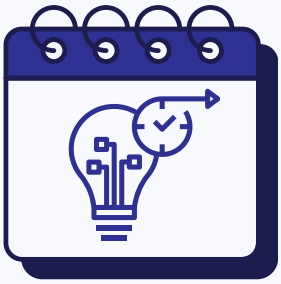
The NeuCool IR80 is a highly engineered two-phase, direct-to-chip system that delivers 80kW of liquid cooling through reliably superior heat removal for current and future generations of CPUs and GPUs.

We proudly designed a product, solution, and services program that delivers peace of mind throughout the liquid cooling journey. Basically, we've thought of everything.

WE'VE GOT YOU COVERED

Today

We make every day easy.



Tomorrow

We've thought ahead.

Always

We've got your back.

NeuCool delivers unmatched reliability with hot-swappable components in a familiar in-rack form factor. Seamlessly integrating into existing data center architecture, it requires no specialized training—most maintenance and repairs can be handled without an HVAC technician.

NeuCool's two-phase, direct-to-chip technology is built for the future, handling extreme heat densities that next-generation chips demand. Tested up to 2200W per socket, it can effortlessly remove average heat fluxes of 250W/cm^2 and hot spot heat fluxes above 500W/cm^2.

We're more than a cooling provider. With an industry-first warranty, backed by a top US insurance company, we protect you from leaks—turning potential disasters into minor inconveniences. Unlike single-phase systems, NeuCool's non-conductive fluid ensures your electronics stay safe, even when leaks occur.

SYSTEM OVERVIEW

NeuCool Reservoir

- Provides refrigerant expansion volume to **respond to fluctuations in compute power**
- Creates head pressure that **extends pump life** and **prevents flow instabilities**
- Redundant level sensors that **enable leak detection system**
- Options that mount in rack or on top of rack

NeuCool Vaporators

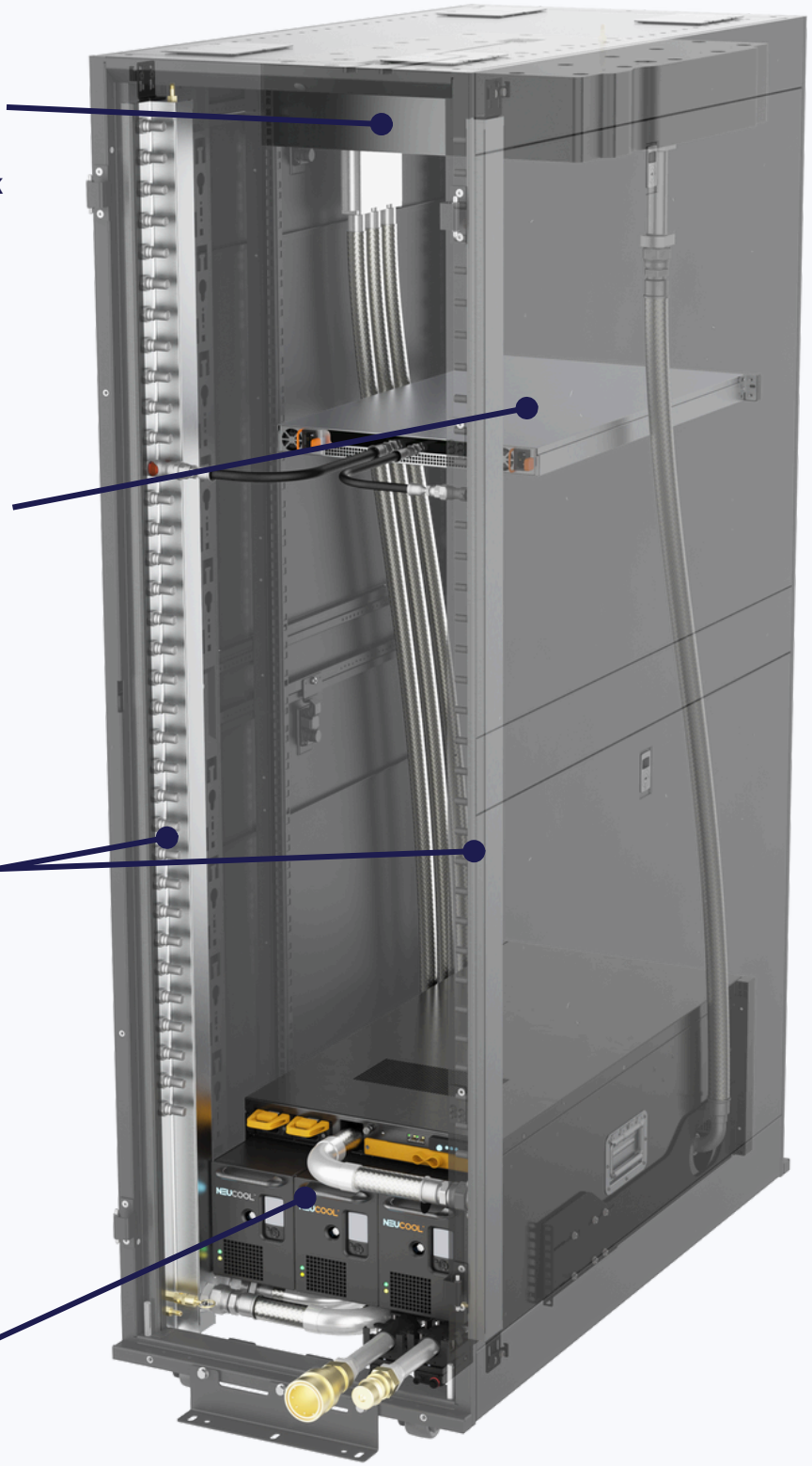
- **Direct-to-chip system** promotes nucleation (boiling) and **efficient heat removal** from CPUs & GPUs
- Capable of cooling **2200W+ per socket**
- Internal hard tubing **configured to popular high-performance OEM servers**

NeuCool Manifolds

- Aluminum manifolds **direct refrigerant between servers and NeuCool iCDU**
- Split design for **installation flexibility**, **optimized flow**, and **heat isolation**
- Low profile for **rear aisle serviceability**
- Aluminum dripless quick disconnects

Intelligent Coolant Distribution Unit (iCDU)

- NeuView™ delivers **OpenBMC-based Embedded Controls**
- Contains industrial condenser, N+1 pumps, system sensors, and **touchscreen control system**
- **Hot-swappable pumps**, power supplies, and core logic board
- Interface to facility water system or alternative waterless systems (e.g., dry tower)



ENGINEERED FOR EXCELLENCE

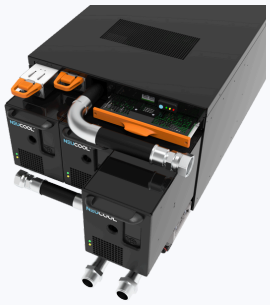
Key Features

- Tested up to 2200W per socket and heat fluxes up to 500W/cm^2
- Non-conductive, dielectric, waterless fluid with a ~1 GWP and 0 ODP
- Thermal uniformity across chip, eliminating hot spots

More Reasons to Choose NeuCool

- Multiple redundancies with hot-swappable serving
- Industrial condenser with isolated facility water loop uses warm (ASHRAE W45) or chilled water
- 7" touchscreen for monitoring and control of NeuCool system
- Multilayer nylon AC hosing from servers to manifolds
- Majority of field repairs and maintenance do not require an HVAC technician
- Standard data center compatibility means quick installation and training
- Zero risk of water coming in contact with electronics, eliminating risk to GPUs

Take A Look



PRODUCT SPECIFICATIONS

Overall System	
Cooling Capacity*	80kW+ direct per rack (100kW total) 2200W+ per socket
Targeted Heat Removal	All heat from CPUs & GPUs; 75-80% of total server heat
Typical Thermal Resistance	<0.020 °C/W (at vaporator level)
Total System Power Consumption	<1.0kW
Power Supply	120/240VAC and 480VAC at 50/60 Hz, N+1 phase redundancy
Rack/System Sizing	Compatible with 42U-52U racks, 600mm+ width x 1200mm+ depth
Reliability	Redundant power supplies, pumps, core logic, and sensors
Serviceability	Hot-swappable main power supply units (PSUs), pump PSUs, pumps, and core logic board
Plumbing	Brazed/welded stainless steel or copper tubing; industrial, 5-layer nylon braided hoses; aluminum dripless quick connects
Enterprise-Grade Services	Ascent program guides customer in journey to 2PDTC cooling; NeuGuard program offers best-in-class warranty & configurable professional services programs

NeuCool iCDU	
Purpose	Control unit for NeuCool system; monitors and regulates pressure, flow, temperatures, etc.
iCDU Placement	Bottom 7U of server rack
iCDU Dimensions	35.9"L x 19.2"W** x 12.2"H (7U) (**bezel width; chassis width is 17.4")
iCDU Weight	<200 lbs (<91 kg)
Display and Access	7" LCD touch display for local system interface, controls, and programming
Pumps	3 industrial-rated pumps with N+1 redundancy; hot-swappable
Condenser	High-performance brazed plate heat exchanger

NeuCool Vaporators	
Materials and Construction	Copper (skived) baseplate, aluminum housing
Internal Server Plumbing	Industrial-grade, rigid copper or aluminum
Fittings	Aluminum compression fittings
Compatibility	Available for most high-performance CPUs and GPUs

NeuCool Management System (NeuView™)	
Overview	Multiple system sensors deliver data, reports, alarms, and updates to NMS and DCIM
Communications and Integrations	SNMP, IPMI, Redfish, DCIM integration
Leak Detection	Multi-level leak detection and reporting (alarm, alert, or report)

NeuCool Refrigerant	
Type	IT-safe dielectric
Safety	ASHRAE A1 rating, non-toxic, non-flammable, non-conductive, non-corrosive
Sustainability	~ 1 Global Warming Potential (GWP), zero ozone depletion potential (ODP)
Volume in System	40x less refrigerant than immersion
Operating Pressure and Flow Rate	Low pressure; 4-9x less flow rate than single-phase DTC
Leak Damage Potential	Zero. Dielectric will not damage servers or IT gear in unlikely event of a leak

Facility Water (FW)	
Location	FW only enters the iCDU and passes through the condenser; can be replaced with refrigerant loop for waterless applications
Flow Controls	Characterized Control Valve (CCV) controls flow rate of FW
Temperature	Compatible with ASHRAE 45 and below, depending on kW load

**Dependent on incoming facility water temperatures ranging from ASHRAE 45 and below.*

NeuGuard™ Support & Warranty Program

Bolstered by a highly responsive network of professional service team members, our industry-first NeuGuard multi-year warranty is underwritten by one of the largest U.S. commercial property and casualty insurance companies, providing defined warranty back-up coverage during the unlikely event of a leak.

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