

In-Rack CDU

❖ Overview 概述

The Cooling Distribution Unit (CDU) serves as the core of a liquid cooling system. Rack-mounted CDUs are installed inside server cabinets and engineered for ultimate performance. They consist of heat dissipation modules, pump drive modules, pressure stabilization modules, control modules, and other components. 冷量分配单元 CDU 是液冷系统的核心，机架式 CDU 安装于机柜内部，专为实现极致性能而设计，其构成可分为散热模块、泵驱模块、稳压模块、控制模块等。

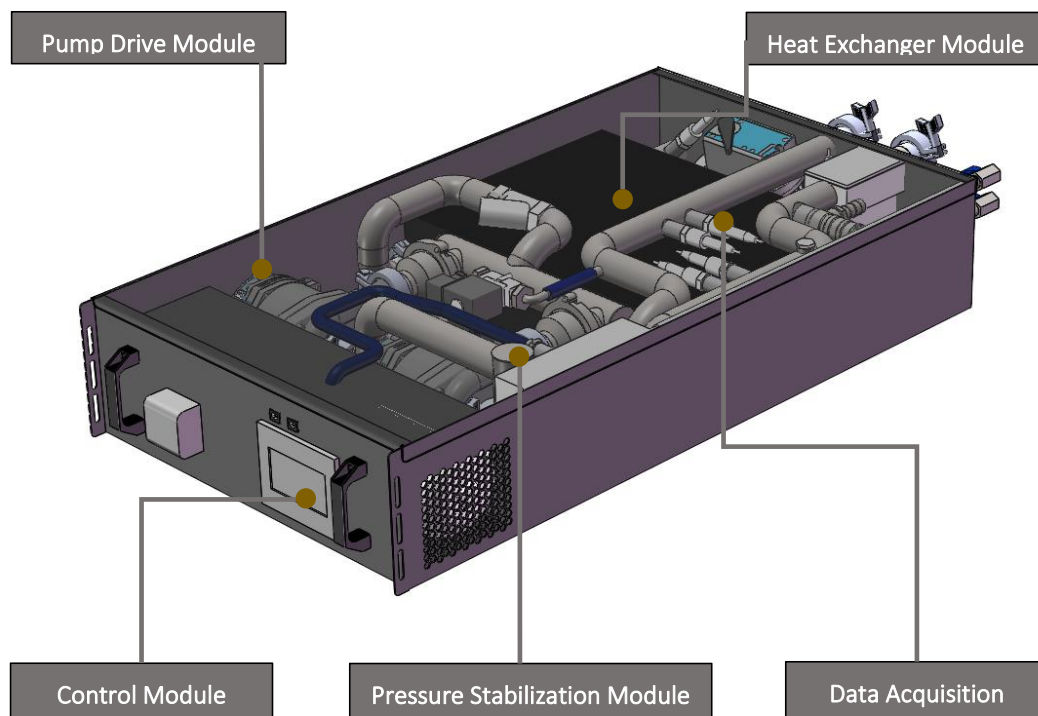
This unit supports real-time online monitoring of parameters including pressure, temperature, flow rate, and humidity. Equipped with N+1 redundant high-efficiency water pumps, a closed storage water tank, and a closed-loop circulation system, it delivers an ultra-clean, highly reliable circuit for the secondary cooling fluid. Housed within a compact 4U form factor, the equipment efficiently handles thermal loads exceeding 150 kW at an ATD of 4°C. It is ideal for high-density computing applications such as Artificial Intelligence (AI) and High-Performance Computing (HPC). 具备压力、温度、流量、湿度等参数在线监测，N+1 高效水泵冗余，闭式储水箱及闭式循环系统等为二次侧冷却介质提供高洁净、高可靠性的回路。设备能在仅 4U 空间内高效处理超过 150kW(ATD=4°C)的热负荷，适用于人工智能（AI）及高性能计算（HPC）等高密度算力场景。



❖ Technical Specifications 技术参数

DLC		150 L2L
Power Supply Standard 电源制式	[--]	DC48V
Cooling Capacity (ATD=4°C)冷却能力 (ATD=4°C)	[kW]	150
	[1000 Btu/h]	511.8
Cooling Capacity (ATD=6°C)冷却能力 (ATD=6°C)	[kW]	193
	[1000 Btu/h]	658.5
Nominal Power 名义功率	[kW]	1.6
	[HP]	2.1
Operating Pressure 工作压力	[bar]	8
	[psi]	116.03
External Residual Pressure 机外余压	[bar]	1.2
	[psi]	17.4
Primary Side Working Condition 一次侧工况	[°C]	36°C/48°C
	[°F]	96.8/118.4
Secondary Side Working Condition 二次侧工况	[°C]	40°C/52°C
	[°F]	104/125.6
Primary Side Flow （25%EG） 一次侧流量	[m3/h]	10.9
	[GPM]	48
Secondary Side Flow （25%EG）二次侧流量	[m3/h]	11.4
	[GPM]	50.2
Primary Side Connections 一次侧接口	["]	1
Secondary Side Connections 二次侧接口	["]	1
Primary Side Fluid 一次侧介质	[--]	冷却水
Secondary Side Fluid 二次侧介质	[--]	PG25, EG25
Dimensions 尺寸	[mm]	536*950*177
	["]	21.1*37.4*7

❖ System Composition 系统组成



❖ Main Features 特点

- Compatible with 21-inch racks. Quick-mount chucks and quick-disconnect fittings are adopted for external ports to enable rapid deployment. 适配 21 英寸机柜，外部接口采用快装卡盘/快速接头等形式，可实现快速部署。
- Rated heat transfer capacity of 150 kW @ 4°C ATD with a compact 4U rack footprint. Integrated sensors monitor operating metrics including temperature, pressure, humidity, flow rate and liquid leakage. 额定换热能力 150kW@ATD4°C，仅占用 4U 机架空间，集成温度、压力、湿度、流量、漏液等运行参数检测。
- High-efficiency plate heat exchangers isolate the primary and secondary loops to maintain high cleanliness of the secondary cooling fluid. 高效板式换热器将一次侧、二次侧隔离，保证二次侧冷却介质的高洁净度。
- Secondary loop liquid temperature is controlled within $\pm 1^{\circ}\text{C}$ to sustain stable cooling under variable thermal loads. 二次侧液体温度控制在 $\pm 1^{\circ}\text{C}$ 范围内，以实现可变热负荷下的冷却稳定性。
- Fully variable-speed high-efficiency water pumps automatically adjust rotation speed based on cooling demand. 全变频高效水泵，根据冷却需求自动调节转速。
- N+1 redundant pump drive design delivers superior reliability and extended service life. N+1 冗余泵驱，可靠性高，使用寿命长。
- High-precision filters equipped on the secondary loop to guarantee cooling fluid cleanliness. 二次侧配置高精度过滤器，保证冷却介质洁净度。
- Local touchscreen control is available alongside remote communication access, with visual display of multiple operating parameters. 支持触控屏就地控制，远程通讯读取，多种参数可视化。
- The secondary loop comes with a closed expansion tank, automatic fluid makeup system and pressure stabilization tank. 二次侧配置闭式储水箱，自动补液系统，稳压罐。
- Dual power supply support ensures uninterrupted stable operation and enhanced system reliability. 支持双电源供电，不间断稳定运行，可靠性更高。
- Compatible with remote communication protocols including Modbus-RTU/TCP and SNMP. 支持 Modbus-RTU/TCP、SNMP 远程通讯。

