

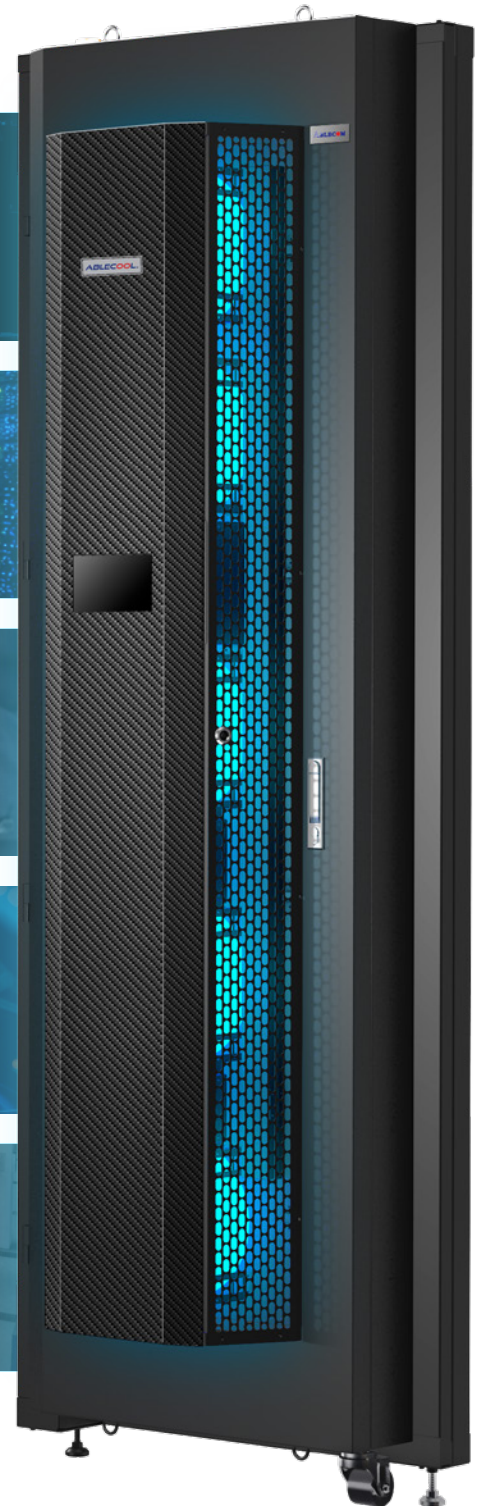
AI / Machine
Learning training clusters

HPC (High-Performance
Computing) data centers

Edge AI gateways
& GPU farms

Cloud Service Provider (CSP)
high-density server rooms

High-power 5G edge sites /
MEC equipment racks



ABLECOOL™

Built for AI. Cooled by Design

Air cooling hits its limit — don't let it become yours.

- High heat density
- Intensive computing loads
- Exceeded the capabilities of traditional air cooling

A RDHx liquid cooling system is strongly recommended for the following scenarios

Rear Door Heat Exchanger (RDHx)

Air Cooling Limits

HVAC and fan systems contribute to 40%+ of total DC energy cost	Air cooling efficiency drops significantly above 20kW per rack	Fan power increases by 25% - 40% to compensate for insufficient airflow
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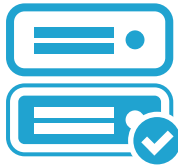
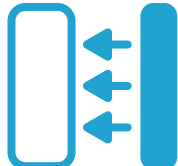
Air Cooling Limits

Needs structured hot / cold aisle layouts for effective airflow.	Modular and scalable but requires additional floor space and installation effort.	Overheating shortens hardware life, triggers throttling, and raises downtime risk
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RDHx Benefit

 Energy savings 30% energy saving: High-efficiency fans for dense loads	 High-efficiency cooling Rack-level cooling: Supports up to 65kW heat load	 Fan Energy Reduced 20% fan energy reduction with ultra-low PUE
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RDHx Benefit

 Localized cooling Control Source heat removal prevents air mixing	 Deployment Flexibility Fast integration with existing racks and cooling	 Lowers TCO Rack-mounted design saves space, ROI in 1 year
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Future-ready Solution

- Maximize cooling efficiency at the rack level
- Minimize energy costs with exceptional PUE performance
- Eliminate the need for extra cooling aisle space
- Future-ready integration with your existing infrastructure



AbleCool – Liquid-to-Air Heat Exchange

AbleCool is designed to capture and dissipate heat directly at the back of the rack, where servers and IT equipment expel the most thermal energy.

By intercepting this exhaust before it enters the white space, AbleCool ensures stable thermal conditions, enhances overall cooling efficiency, and significantly reduces the burden on CRAC system.



EC (CDR) DC (CDA) Centrifugal Fan

High static pressure

Suitable for ducted or high-resistance environments

Highly efficient

EC motor, more energy-saving

Precise speed control

supports PWM, Modbus control

Low noise and vibration

Due to smoother motor operation

Efficient Rear-Door Liquid Cooling

AbleCool is a rear-mounted liquid-to-air heat exchanger designed to cool high-density server racks without altering the rack layout.

Installed on the back of a standard 42U~60U server rack, it captures the hot exhaust air generated by high-performance computing equipment and cools it in real time using circulating liquid coolant—typically deionized water or a glycol mixture.

The system includes coolant supply and return lines that route chilled liquid through internal coils embedded within the door. As hot air exits the server, it passes through the AbleCool where heat is transferred into the liquid circuit, resulting in significantly cooler air being released back into the room.

This passive, rack-level solution enables up to 65kW heat load dissipation per rack, reduces reliance on energy-intensive CRAC systems, and helps stabilize ambient temperatures in dense data center environments—all without internal airflow turbulence.

Primary Loop Design with Smart Monitoring

Top/bottom feed, electronic valve, and flow sensors with quick-disconnect hose support for easy commissioning.

High-Capacity Coil Heat Exchanger

Delivers up to 65kW cooling per rack, designed for high thermal loads and scalable environments.

Advanced Control System

7" touchscreen HMI, with temperature, pressure, and flowrate monitoring; SNMP, Modbus, WebUI, and Redfish API supported.

Modular Integration for 42U-60U Racks

Compatible with standard frame widths from 600mm to 800mm for seamless deployment.

Hot-Swappable Redundant EC/DC Fans

Tool-less, zero-downtime fan replacement for maximum uptime and optimized cooling performance.

LED Status Indicator

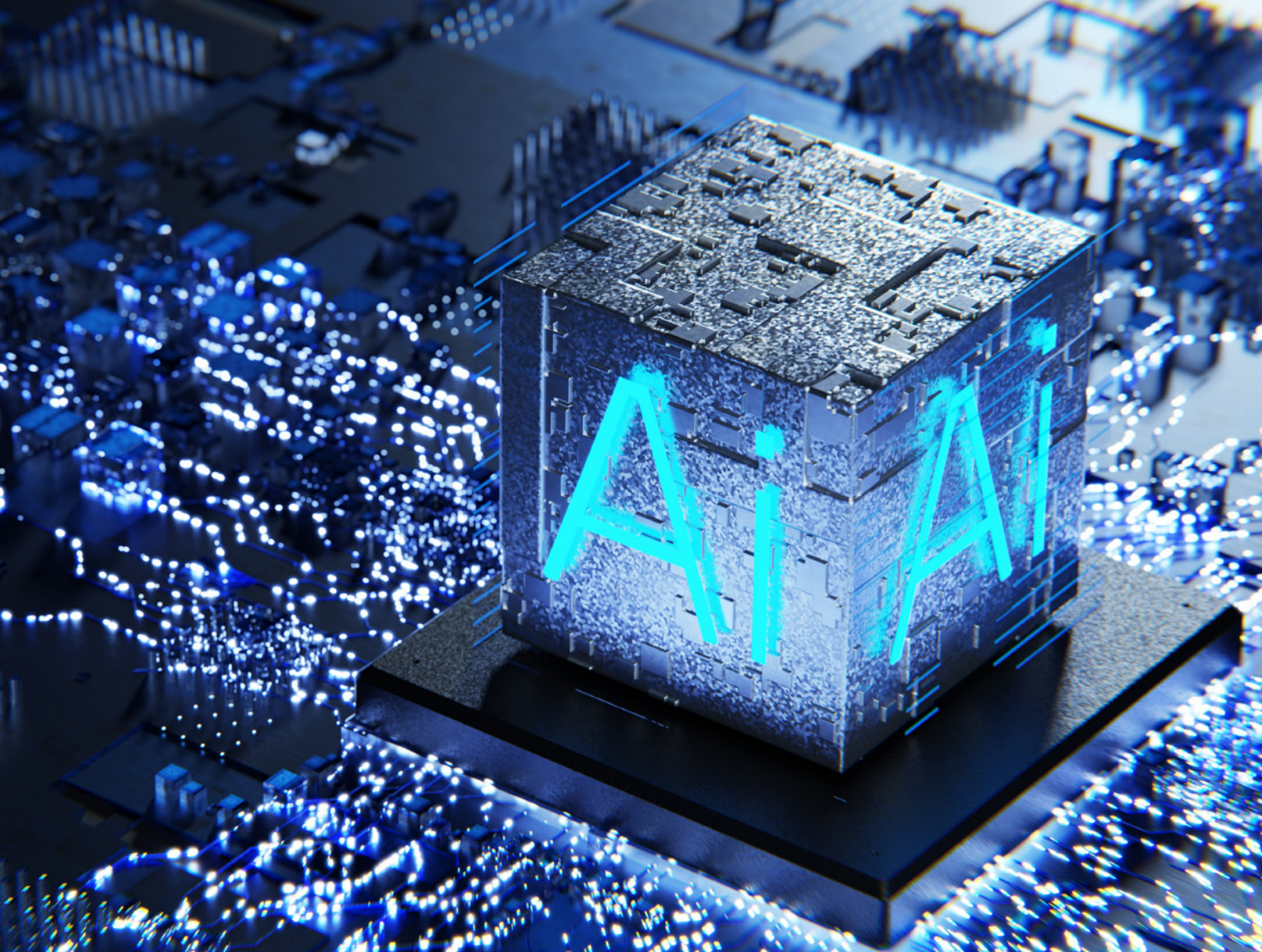
Enables clear visual feedback on system health and operational status.



CDR52 (EC fan)	CDR42 (EC fan)	CDA42 (DC fan)
		

Model	CDR52 (EC)	CDR42 (EC)	CDA42 (DC)
Form Factor	48U - 52U	42U - 52U	42U - 52U
Dimension (Width)	750 - 800 mm (29.53″ - 31.50″)	600 - 800 mm (23.62″ - 31.50″)	600 - 800 mm (23.62″ - 31.50″)
Dimension (Depth, excluding frame)	390 mm (15.35″)	337 mm (13.3″)	235 mm (9.25″)
Cooling Capability*	58kW / (80kW @ATD = 15°C)	38kW (50 kW @ATD = 15°C)	35kW (50 kW @ATD = 15°C)
Fan Quantity	5 pcs	4 pcs	5 pcs
Air Flow** ***	5030 CFM (142 CMM)	3900 CFM (110 CMM)	2500 CFM (70 CMM)
Design Water Flow	Max : 100 LPM (26.4 GPM)	Max : 70 LPM (18.5 GPM)	Max : 70 LPM (18.5 GPM)
Pressure Drop	38.2 KPa (5.6 PSI)	34.5 KPa (5.0 PSI)	
Water Fluid Quality	ASHRAE D-90564		
Max Power Consumption	2.1 KW	1.7 KW	1.2 KW
Power Supply Voltage (AC)	200 – 240 V (1+1)	200 – 240V (1+1)	DC 48V
Internal Sensor Detection	Temp. , Diff. Pressure, Condensation, Leakage		
Communication	SNMP, Modbus, Redfish API		
Monitor control	Touch Panel, Web UI		
Operating Ambient Temperature	15°C ~ 45°C(59°F ~ 113°F)		
Operating Relative Humidity	8 ~ 80% RH (No Condensing)		
Operating Attitude	0 ~ 3,048m (0 ~ 10,000 ft)		
Water Connection	Quick Dry Connector (FD83)		
Shipping Weight	277 kg (610.7 Lbs)	252 kg (555.6 Lbs)	252 kg (555.6 Lbs)
Dry weight	136 kg (299.8 Lbs)	114 kg (251.3 Lbs)	114 kg (251.3 Lbs)
Wet Weight	155 kg (341.7 Lbs)	130 kg (286.6 Lbs)	130 kg (286.6 Lbs)

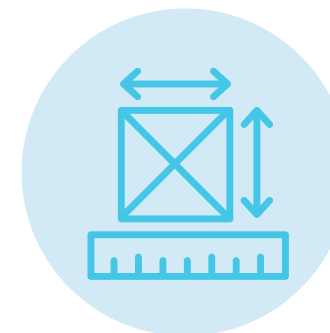
*Test condition: 23.9°C (75°F) Room Temperature, 45%RH, Supply Water at 12.8°C (55°F).
** Test condition: All the RDHx fan modules operation by 100% speed in the wind tunnel.
*** Max air flow supply from rack systems to RDHx: 52RD model: 8000+CFM ; 42RDmodel: 7000+CFM.



Customizable Rear Door Solutions Tailored to Your Infrastructure

At Ablecom, we understand that no two data centers are alike. That's why our RDHx solutions are fully customizable to meet your specific thermal, mechanical, and operational requirements.

We offer :



Tailored Dimensions

Support for non-standard rack heights, widths, or legacy enclosures.



Coolant Compatibility

Options for different coolant types including DI water, glycol mixtures, or custom-er-specified fluids.



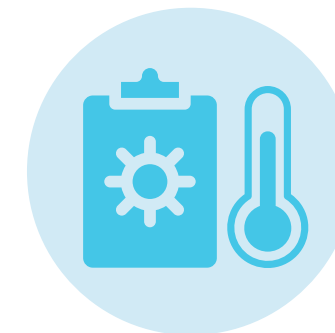
Interface & Connector Customization

Quick-connect fitting types, hose placement, and valve integration according to your facility's cooling layout.



Exterior Finish & Panel Design

Branding-ready panel colors, powder coating, or ventilation patterns tailored to your environment.



Thermal Load Planning

Engineering support to match RDHx capacity to your rack-level heat output (30-50kW+).



Integration with Existing CDU Systems

Ensuring compatibility with your facility's liquid cooling infrastructure, including pressure and flow testing.

AI-Ready Intelligent Control System for Adaptive Thermal Response

Intelligent Hardware Control System

AbleCool integrates an advanced control logic that dynamically adjusts fan performance based on **real-time differential pressure** or **temperature readings**, ensuring precision cooling under vary-ing workloads. The control system development includes:

- Implementation of **preliminary fan control** algorithms tailored to thermal response
- Coordination with suppliers to finalize base board design
- Sequential initiation of **interposer board development**

From design to deployment, our team works closely with customers to co-engineer RDHx systems that enhance efficiency, simplify maintenance, and align with long-term cooling strategies.