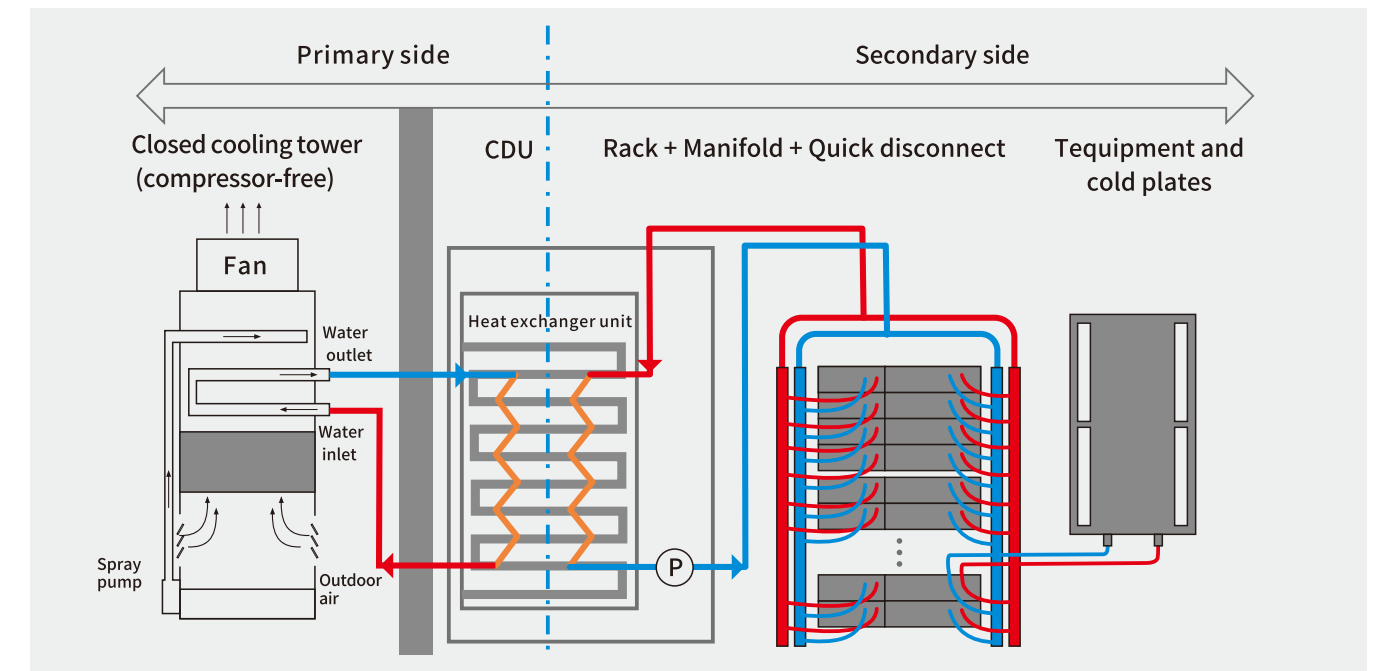


Overview of SC series cold plate liquid cooling system

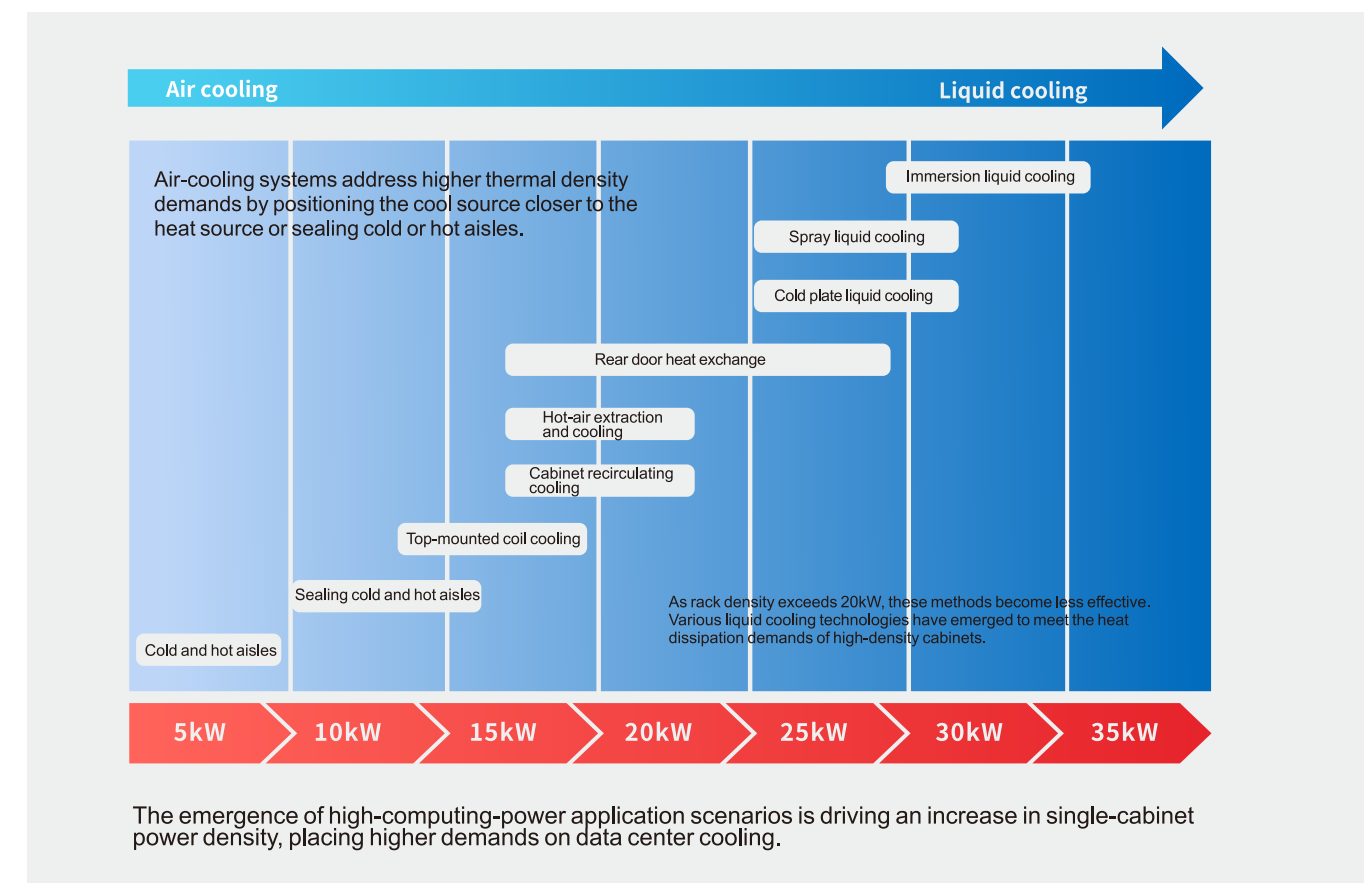
With the rapid advancement of intelligent computing centers and supercomputing centers, liquid cooling technology has emerged as the mainstream solution for managing high-density thermal loads, as a result of its high heat dissipation efficiency and low energy consumption. The SC series cold plate liquid cooling system has been developed to provide a comprehensive and integrated solution that addresses the growing demand for efficient liquid cooling.

The SC series cold plate liquid cooling solution combines the primary-side cool source, liquid cooling Coolant Distribution Unit (CDU), secondary-side ring piping network, and liquid cooled cabinet into a unified system. Driven by circulating pumps, the coolant continuously circulates through the system, absorbing heat generated by servers and other IT equipment. The absorbed heat is then transferred via the intermediate heat exchanger and ultimately discharged into the external environment through an external cool source. The system ensures the high-efficiency and reliable operation of liquid cooled servers.

Operating principle ▼



Application scenario ▼



INVT cold plate liquid cooling data center products

In-rack CDU

Product overview ▼

INVT SC series in-rack CDU is a high-efficiency cooling solution designed based on the server rack architecture. The system adopts high-efficiency liquid cooling, with built-in circulating pumps driving the coolant through the secondary loop. A plate heat exchanger is used to transfer the heat generated by IT equipment. This provides a safe and reliable thermal management solution for high-computing-power and high-density server applications.



Application scenario ▼



Medium- and large-scale newly built intelligent computing center



Small-scale newly built or retrofit intelligent computing center



High-density, high-computing-power deployment application

Product features ▼

High efficiency and energy saving:

Compatible with ASHRAE W4 water temperature standards, enabling year-round free cooling across all regions. This design offers higher energy efficiency while reducing capital investment.

Comprehensive reliability:

- Standard dual power supply and 1+1 redundant circulating pump design ensure system redundancy. Critical component redundancy minimizes the risk of single points of failure, significantly improving the operational reliability of the liquid cooling system.
- Built-in constant-pressure make-up system automatically activates based on secondary-side loop pressure changes, ensuring safe and reliable operation of the secondary-side loop.
- Anti-condensation control technology intelligently adjusts the secondary-side supply fluid temperature to prevent condensation, ensuring a safe and reliable operating environment for both the secondary-side loop and server cold plates.

Intelligent control:

- 7-inch high-end true-color capacitive touchscreen provides comprehensive monitoring of primary and secondary side temperatures and pressures, supporting intuitive graphical status displays and temperature/pressure trend curves.
- The motorized proportional control valve regulates flow in coordination with the variable-speed circulating pump, enabling dynamic adjustment of the secondary-side supply fluid temperature according to the thermal load, with a steady-state control accuracy of up to $\pm 0.3^{\circ}\text{C}$.
- Supports group control modes for cold and hot standby, including timed cycling, fault rotation, and cascade functions, ensuring system redundancy and reliability.

High adaptability:

- The in-rack modular design enables easy installation at any position within the server cabinet, improving cabinet space utilization.
- The in-rack installation close to IT heat sources significantly reduces the secondary-side loop piping, enabling faster and more convenient on-site deployment.
- The standard connection adopts quick chucks, with multiple connection options available.

Technical specifications ▼

Type	In-rack liquid-to-liquid CDU	
Model	SCU015RL	SCU030RL
Performance specifications		
Heat exchange capacity (kW)	15	30
Unit dimensions	450×850×175 (excluding handles and connectors)	
W×D×H (mm)	482×934×175 (including handles and connectors)	
Power specifications	220V 1N~50Hz/60Hz Standard dual power supplies	
Rated power (kW)	0.4	0.5
Full-load current (A)	3.8	4.8
Net weight (kg)	40	45
Secondary-side system specifications		
Rated supply liquid temperature (°C)	40	
Rated return liquid temperature (°C)	50	
Rated circulating flow rate (m³/h)	1.4	2.8
Available pump head on secondary side outlet	≥10m	
Adjustable supply temperature range on secondary side	25~45°C	
Filter accuracy	100μm	
Circulating pump	Variable-speed circulating pump, standard configuration with 1+1 redundancy	
Circulating coolant	Deionized water, 25% ethylene glycol solution, or any compatible sensible phase liquid	
Make-up system	Built-in automatic make-up system	
Max. operating pressure	5.0 Bar	
Piping connection	Dn25 quick chuck	
Primary-side system specifications		
Rated return liquid temperature (°C)	35	
Rated supply liquid temperature (°C)	45	
Rated circulating flow rate (m³/h)	1.4	2.8
Allowed inlet liquid temperature on primary side	10~35°C	
Circulating coolant	Deionized water, 30% ethylene glycol solution, or any compatible sensible phase liquid, with flexible selection based on regional conditions	
Filter accuracy	≤270μm	
Max. pressure drop on primary side	≤80kpa	
Max. operating pressure	10.0 Bar	
Piping connection	Dn25 quick chuck	

Remarks

- 1: All air conditioning models listed in the catalog are base models. Final models are subject to the actual shipment.
- 2: The preceding technical specifications are based on testing conditions using deionized water as the primary- and secondary-side circulating coolant. Contact us for technical specifications using other coolants or not specified in the table.
- 3: For any customization needs, please feel free to contact us.

Technical specifications ▼

Type	In-rack air-to-liquid CDU	
Model	SCU008RA	SCU016RA
Performance specifications		
Heat exchange capacity (kW)	8	16
Unit dimensions W×D×H (mm)	450×850×175 (excluding handles and connectors) 482×934×175 (including handles and connectors)	450×850×350 (excluding handles and connectors) 482×934×350 (including handles and connectors)
Powerspecifications	220V 1N–50Hz/60Hz Standard dual power supplies	
Rated power (kW)	0.7	1.3
Full-load current (A)	4.6	8.9
Net weight (kg)	35	50
Secondary-side system specifications		
Rated supply liquid temperature (°C)	40	
Rated return liquid temperature (°C)	50	
Rated circulating flow rate (m³/h)	0.75	1.5
Available pump head on secondary side outlet	≥10m	
Adjustable supply temperature range on secondary side	25~45°C	
Filter accuracy	100µm	
Circulating pump	Variable-speed circulating pump, standard configuration with 1+1 redundancy	
Circulating coolant	Deionized water, 25% ethylene glycol solution, or any compatible sensible phase liquid	
Make-up system	Built-in automatic make-up system	
Max. operating pressure	5.0 Bar	
Piping connection	DN20 quick chuck	Dn25 quick chuck
Primary-side system specifications		
Rated inlet air temperature (°C)	25	

Remarks

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2: The preceding technical specifications are based on testing conditions using deionized water as the primary- and secondary-side circulating coolant. Contact us for technical specifications using other coolants or not specified in the table.

3: For any customization needs, please feel free to contact us.

INVT cold plate liquid cooling data center products

In-row CDU

Product overview ▼

INVT SC series in-row CDU is a high-efficiency cooling solution designed based on the cabinet modular architecture. The system adopts high-efficiency liquid cooling, with an integrated circulating pump driving the coolant through the loop. A plate heat exchanger is used to transfer the heat generated by IT equipment. This provides a safe and reliable thermal management solution for high-computing-power and high-density server applications.



Application scenario ▼



Medium- and large-scale newly built intelligent computing center



Small-scale newly built or retrofit intelligent computing center



High-density, high-computing-power deployment application

Product features ▼

- High efficiency and energy saving:**
- Compatible with ASHRAE W4 water temperature standards, enabling year-round free cooling across all regions. This design offers higher energy efficiency while reducing capital investment.
- Comprehensive reliability:**
- Standard dual power supply and 1+1 redundant circulating pump design ensure system redundancy. Critical component redundancy minimizes the risk of single points of failure, significantly improving the operational reliability of the liquid cooling system.
 - Built-in constant-pressure make-up system automatically activates based on secondary-side loop pressure changes, ensuring safe and reliable operation of the secondary-side loop.
 - Anti-condensation control technology intelligently adjusts the secondary-side supply fluid temperature to prevent condensation, ensuring a safe and reliable operating environment for both the secondary-side loop and server cold plates.
- Intelligent control:**
- 7-inch high-end true-color capacitive touchscreen provides comprehensive monitoring of primary and secondary side temperatures and pressures, supporting intuitive graphical status displays and temperature/pressure trend curves.
 - The motorized proportional control valve regulates flow in coordination with the variable-speed circulating pump, enabling dynamic adjustment of the secondary-side supply fluid temperature according to the thermal load, with a steady-state control accuracy of up to ±0.3°C.
 - Supports group control modes for cold and hot standby, including timed cycling, fault rotation, and cascade functions, ensuring system redundancy and reliability.
- High adaptability:**
- The in-rack modular design enables easy installation at any position within the server cabinet, improving cabinet space utilization.
 - The in-rack installation close to IT heat sources significantly reduces the secondary-side loop piping, enabling faster and more convenient on-site deployment.
 - The standard connection adopts quick chucks, with multiple connection options available.

Technical specifications table ▼

Type	In-cabinet liquid-to-liquid CDU				
Model	SCU060CL	SCU100CL	SCU150CL	SCU300CL	SCU600CL
Performance specifications					
Heat exchange capacity (kW)	60	100	150	300	600
Unit dimensions W×D×H (mm)	600×1200×2000				1200×1200×2000
Power specifications	380V 3N–50Hz/60Hz Standard dual power supplies				
Rated power (kW)	0.7	1.5	1.75	3.7	7.7
Full-load current (A)	2.5	7.1	7.3	13.5	16.3
Net weight (kg)	235	283	293	372	632
Secondary-side system specifications					
Rated supply liquid temperature (°C)	40				
Rated return liquid temperature (°C)	50				
Rated circulating flow rate (m³/h)	5.5	9.1	13.7	27.3	54.6
Available pump head on secondary side outlet	≥12m≥15m				
Adjustable supply temperature range on secondary side	25~45°C				
Filter accuracy	100μm				
Circulating pump	Variable-frequency control, single pump as standard, 1+1 redundancy optional				
Circulating coolant	Deionized water, 25% ethylene glycol solution, or any compatible sensible phase liquid				
Make-up system	Built-in automatic make-up system				
Max. operating pressure	5.0 Bar				
Piping connectione	DN32 quick chuck	DN50 quick chuck	DN50 quick chuck	DN65 quick chuck	DN80 quick chuck
Primary-side system specifications					
Rated return liquid temperature (°C)	35				
Rated supply liquid temperature (°C)	45				
Rated circulating flow rate (m³/h)	5.5	9.1	13.7	27.3	54.6
Allowed inlet liquid temperature on primary side	10~35°C				
Circulating coolant	Deionized water, 30% ethylene glycol solution, or any compatible sensible phase liquid, with flexible selection based on regional conditions				
Filter accuracy	≤270μm				
Max. pressure drop on primary side	≤80kpa				
Max. operating pressure	10.0 Bar				
Piping connection	DN32 quick chuck	DN50 quick chuck	DN50 quick chuck	DN50 quick chuck	DN65 quick chuck

Remarks

1: All air conditioner models listed in the catalog are base models. Final models are subject to the actual shipment.

2: The preceding technical specifications are based on testing conditions using deionized water as the primary- and secondary-side circulating coolant.

Contact us for technical specifications using other coolants or not specified in the table.

3: For any customization needs, please feel free to contact us.

Technical specifications table ▼

Type	In-cabinet air-to-liquid CDU	
Model	SCU030CA	SCU060CA
Performance specifications		
Heat exchange capacity (kW)	30	60
Unit dimensions W×D×H (mm)	600×1200×2000	
Power specifications	220V 1N–50Hz/60Hz Standard dual power supplies	
Rated power (kW)	2.9	3.8
Full-load current (A)	25.5	34.2
Net weight (kg)	310	421
Secondary-side system specifications		
Rated supply liquid temperature (°C)	40	
Rated return liquid temperature (°C)	50	
Rated circulating flow rate (m³/h)	2.8	5.5
Available pump head on secondary side outlet	≥10m	
Adjustable supply temperature range on secondary side	25~45°C	
Filter accuracy	100μm	
Circulating pump	Variable-speed circulating pump, standard configuration with 1+1 redundancy	
Circulating coolant	Deionized water, 25% ethylene glycol solution, or any compatible sensible phase liquid	
Make-up system	Built-in automatic make-up system	
Max. operating pressure	5.0 Bar	
Piping connection	DN20 quick chuck	Dn25 quick chuck
Primary-side system specifications		
Rated inlet air temperature (°C)	25	

Remarks

1: All air conditioner models listed in the catalog are base models. Final models are subject to the actual shipment.

2: The preceding technical specifications are based on testing conditions using deionized water as the primary- and secondary-side circulating coolant. Contact us for technical specifications using other coolants or not specified in the table.

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INVT cold plate liquid cooling data center products

Liquid cooled cabinet

Product overview ▼

Consists of data center cabinet, manifold (distribution and collection units), quick disconnect, power distribution system, and internal equipment. Serving as the carrier for liquid cooling, each liquid cooled device is connected to the liquid cooling CDU or secondary-side ring piping network through the dedicated liquid cooling hose, quick disconnect, and manifold.



Product features ▼

High adaptability:

- The liquid cooled cabinet dimensions are compatible with most 19-inch liquid-cooled servers on the market.

Comprehensive reliability:

- A drip tray with a drainage outlet is installed at the cabinet bottom to reduce the risk of leak spreading.
- Equipped with leak detection sensors for rapid identification of leak faults.
- The high-strength frame meets the heavy load requirements of liquid cooling systems.

Technical specifications ▼

Type	Liquid cooling integrated cabinet		
Model	SCCA	SCCB	SCCC
Specifications			
Unit dimension (Width, mm)	600		
Unit dimension (Depth, mm)	1200		
Unit dimension (Width, mm)	2000	2200	2500
Cabinet available space (1U=44.45mm)	42U	47U	54U
Compatible IT equipment specifications	19-inch		
Power supply method	Pre-installed PDU		
Manifold	Customizable upon request, pre-installation optional		
In-rack CDU	INVT SC series in-rack CDU available for selection		
Leak detection sensor	Standard		
Water-cooled rear door	Customizable upon request, optional		

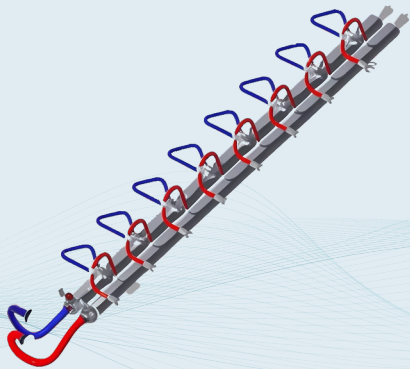
Remarks:
For any non-standard customization needs, please feel free to contact us.

INVT cold plate liquid cooling data center products

Manifold

Product overview ▼

A manifold is used to connect the supply and return hoses of liquid-cooled servers, consisting of quick disconnects, main pipes, and branch hoses. Depending on the liquid supply and return method, a main pipe is classified as either a distributor or a collector. The distributor efficiently and evenly distributes the coolant to each server or device requiring cooling through a specially designed piping structure.



Product features ▼

- Delivers balanced flow distribution with high flow uniformity.
- Equipped with the automatic air release function, allowing online maintenance of automatic air release valve.
- Multiple quick disconnect options are available; they are easy to operate and leak-tight, compatible with existing cold plate equipment.
- Offers various connection options to meet different CDU connection requirements.
- Uses universal mounting methods, compatible with other liquid-cooled cabinet accessories.
- The length, color, and dimensions of branch hoses support diversified customization.

Technical specifications ▼

Type	Manifold		
Model	SCMS30	SCMS40	SCMS50
Specifications			
Pipe size (mm)	Square pipe, 30×30	Square pipe, 40×40	Square pipe, 50×50
Material	SUS304 stainless steel		
Working coolant	Deionized water, 25% ethylene glycol solution, or any compatible sensible phase liquid		
Compatible liquid-cooled cabinet height (mm)	Compatible with cabinet heights of 2000mm, 2200mm, and 2500mm		
Automatic air release valve	Standard		
Manifold port	Clamp connection, interlock ball valve, or other customized options		
Manifold hose length	Customized design upon request		
Quick disconnect type	Select socket or plug according to liquid cold plate interface type		
Nominal size of quick disconnect	UQD04 or UQD06, specifications/quantity customizable		
Color coding of quick disconnect	Red, green, blue, yellow, or other customizable requirements		
Number of branch hoses	Customized design upon request		
Branch hose length	Customized design upon request		
Hose color	Red and blue or other customizable requirements		

Remarks:
For any non-standard customization needs, please feel free to contact us.