XINKE LCS

Xinke Intelligence Technology Ltd.

whatsminer **Water-Cooled Servers**

2.5 MW INDOOR LIQUID-COOLED MODULAR HEAT DISSIPATION SOLUTION

Specifications

XINKE LCS

Product Overview

This equipment is an indoor **2.5 MW indoor liquid cooling module** designed for Whatsminer 2U water-cooled servers. It is CSA and CE certified, meeting the needs of rapid deployment in global sites. It supports single-path disconnection for each rack, intelligent power and voltage identification, data center appearance, overall constant pressure piping design, and integrated modular combination. The racks, CDUs, control system, power system, and cooling system are integrated into one unit.
The standard configuration includes the **XINKE SMART** intelligent management system, enabling 24-hour unattended operation.
1. The system can detect the power supply voltage and automatically shut down in case of overvoltage or undervoltage.
2. Supports power and energy statistics, allowing users to view cumulative power consumption and real-time power usage.
3. Visualized operating status, displaying real-time parameters such as pressure, temperature, and flow rate, with data storage and historical curve query functions for easy traceability and analysis.
4. Equipped with constant pressure control function, automatically replenishing and depressurizing according to preset parameters to ensure stable system operation.
5. The circulating pump supports dual modes: manual frequency setting or automatic frequency adjustment according to preset flow rate.
6. Equipped with leak detection; immediately alarming and shutting down upon leak detection to prevent equipment damage and safety hazards.
7. The server rack power supply uses a residual current circuit breaker, which automatically opens and closes according to the system operating status, providing reliable power supply protection.

Product Features

Classification	Key Highlights	Detailed Description
Delivery & Deployment	Integrated Delivery & Rapid Deployment	Fully integrated unit, CDU, electrical control, network, and heat dissipation; ready to use out of the box.
Operations and Maintenance Management	Integrated Delivery & Rapid Deployment	Equipped with the XINKE SMART system, featuring automatic warnings, remote control, and 7x24h safety assurance.
Scenario Adaptation	Intelligent Operation & Unmanned Operation	Compatible with multiple cooling methods and energy solutions to meet diverse needs.
Production Customization	Flexible Configuration & Global Adaptability	From functionality to appearance, designed to fully meet individual customer requirements.
Hardware Materials	In-house Production & On-Demand Customization	All piping and fittings are made of 2.0mm thick 304 stainless steel seamless tubing.
Electrical Configuration	Multiple Versions Available & Reliable Quality	Electrical components are available in domestic, UL, and CE versions, all of which have passed laboratory testing.
Performance Effects	High Efficiency, Stability, and Low Failure Rate	Achieving low failure rates, low losses, and high efficiency.

Technical Specifications

Figure 3-1-1 Module Appearance

Parameter Name	Specific Specifications	Related Instructions
Appearance	Whatsminer One-to-twelve IDC liquid cooling modules	As shown in Figure 3-1-1
External Dimensions	L:7200mm、W:3100mm、H:2600mm	As shown in Figure 3-1-2
Internal Dimensions	L:7100mm、W:3000mm、H:2500mm	
Overall Net Weight	6000KG	Excluding machine, deviation ±10%

Figure 3-1-2 Module Dimensions

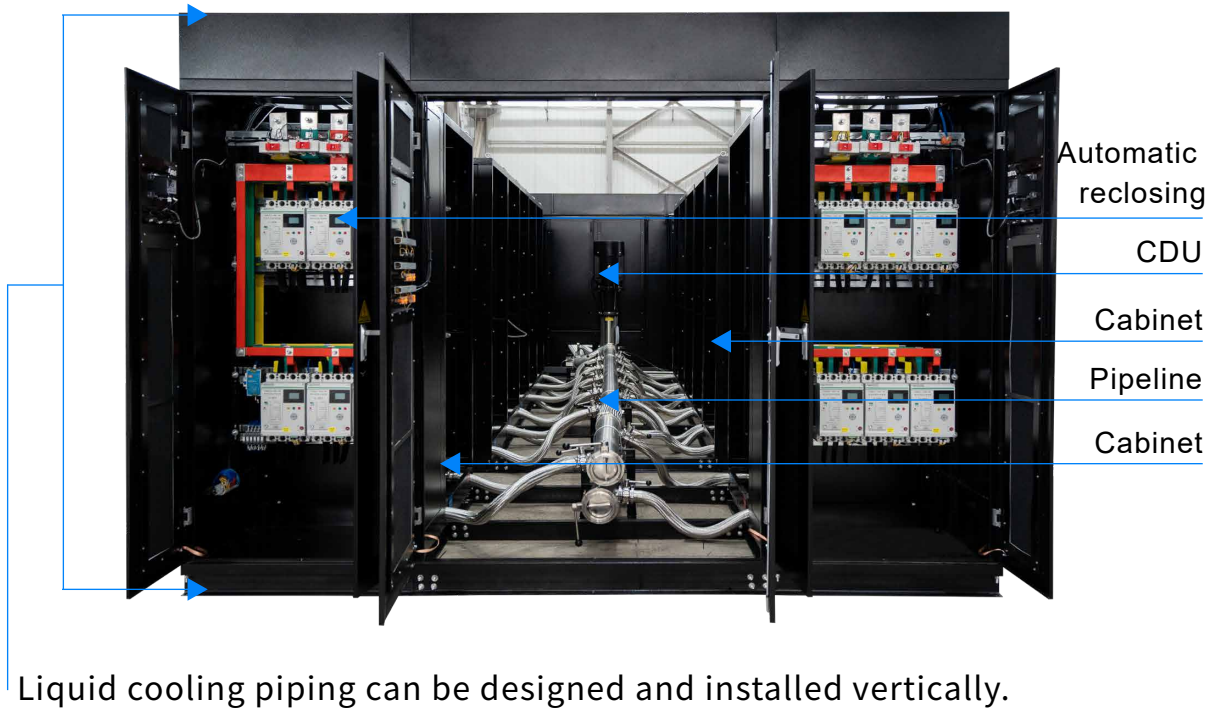

Figure 3-1-3 Internal layout of the module

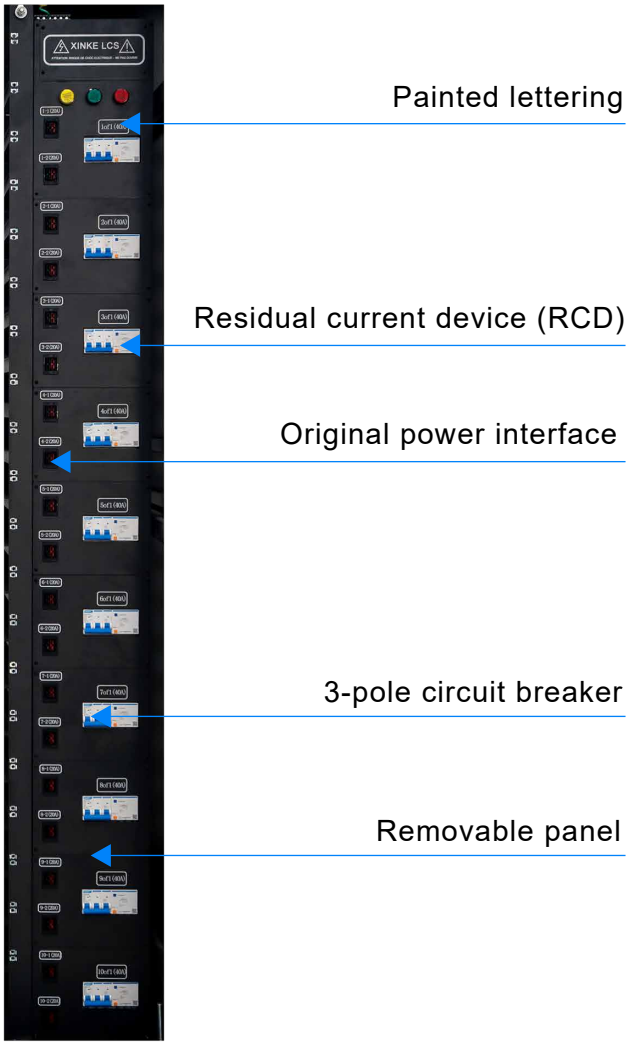

Figure 3-1-4 Detailed Explanation of PDU

Key Highlights	Detailed Description
Precise Power Distribution	Configure a 3P-40A residual current device to achieve "two machines and one control".
Intelligent Management	The circuit breaker panel and side are painted with serial numbers, supporting remote directional power on/off.
Operation and Maintenance Friendly	Power status indicator lights are provided; the panel is removable for easy maintenance and parts replacement.
Fast Connectivity	Equipped with aviation-grade female connectors and dual male power cables, improving server access and maintenance efficiency.

Figure 3-1-5 CDU Dimensions and Layout

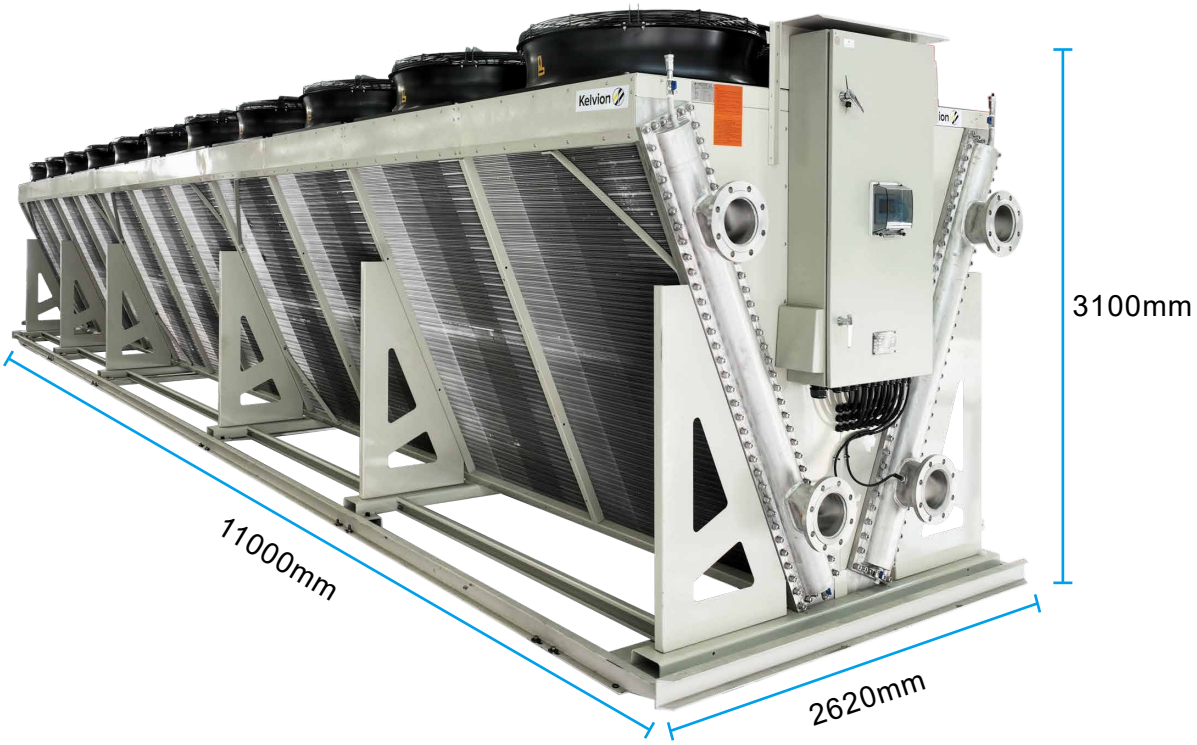

Figure 3-1-6 Dimensions of a dry cooling tower

Parameter Name	Specific Specifications	Related Instructions
Appearance	Dry cooling tower	
External Dimensions	L:11000mm、W:2620mm、H:3100mm	As shown in Figure 3-1-6
Overall Net Weight	8000KG	Deviation ±10%

Note: The Whatsminer 2.5 MW indoor liquid cooling module requires one dry cooling tower.

Figure 3-1-7 Dimensions of a Closed-Circuit Cooling Tower

Parameter Name	Specific Specifications	Related Instructions
Appearance	Closed cooling tower	
External Dimensions	L:6500mm、W:3000mm、H:3400mm	As shown in Figure 3-1-7
Overall Net Weight	5000KG	Deviation ±10%

Note: The Whatsminer 2.5 MW indoor liquid cooling module requires one Closed cooling tower.

Main Technical Parameters

	Parameters of Standard Accessories			Basic Parameters of System Operation		
Item		Value	Unit		Value	Unit
1	Installed capacity	240	PCS	System pipeline pressure	0.2-0.4	MPA
2	Installed powerload	2400	KW	Operating temperature range of the system	0-50	℃
3	Power of the light-duty vertical multistage pump	30	KW	Coolant circulation demand of a single machine	≥0.6	m³/h
4	Power of the fluid replenishing pump	0.2	KW	Total demand for circulating coolant within the system	≥0.25	m³
5	Total power of the dry cooling tower fan	58.1	KW	**Main Parameters of the Power System**		
6	Total power of the closed cooling tower fan	22.5	KW	Molded Case Circuit Breaker	———	A
7	Total power of the closed cooling tower spray pump	7.5	KW	Residual Current Circuit Breaker	400	A
8	**Optional Parameters**			Contactor	9	A
9	Electromagnetic heating power	———	KW	Intermediate relay	24	V
10	Power of the plate heat exchanger circulation pump	———	KW	CUL certified frequency converter	380	V

Operating System Overview

Parameter Name	Specific Specifications/Details	Related Information
Intelligent System	XINKE SMART System	Silicon Technologies independently developeda fully intelligent liquid-cooled platform.
System Composition	Server containers, liquid cooling circulation units, liquid cooling heat dissipation units	Data is collected through sensors, and the PLC executes automatic operation.
Operating Mode	Automatic Mode, Manual Mode	Automatic mode allows one-button start; manual mode allows individual start and stop of each device.
Operation Monitoring	Touchscreen Local Monitoring, Remote Client Monitoring	It can monitor pipeline pressure, temperature, and other operating statuses.
Alarm Function	Local Buzzer Alarm, Touchscreen Display, Remote Warning Push	Automatic protection and adjustment commands are executed in case of abnormalities.
Automatic Mode Flow	Automatic startup → Self-test → After the self-test is successful, turn on the server power in sequence.	Preset parameters can be modified to ensure stable operation under harsh conditions.

Comparison table of operating modes of different cooling systems

Comparison Items	Dry cooling tower cooling	Plate heat exchanger cooling	Closed cooling tower / surface cooler cooling
Core Control Components	Fan	Secondary cooling pump for plate heat exchanger	Electric Actuator
Control Logic	Start and stop automatically based on the set parameters	Adjust cooling pump operating frequency	Adjusts the opening and closing angle (stroke) to control the container return liquid flow rate.
Temperature Control Target	The supply liquid temperature is maintained within the specified range.	Maintain liquid supply temperature at a fixed value (with some fluctuation).	Maintains the supply liquid temperature at a fixed value (with fluctuations possible).
Special Notes	None	None	1. Upon initial system power-on, the electric actuator first fully opens and then fully closes for self-testing, unaffected by system control; 2. If the system is not started, the actuator is fully closed, and the return liquid goes directly back to the degassing and replenishment tank without cooling; 3. With the actuator fully open, all return liquid is cooled by the coil before returning to the degassing and replenish-ment tank.

Equipment Preparation and Inspection Guidelines

Note: To ensure the safe and stable operation of the system, please have a professional technician complete the following preparations before first use.

Inspection Categories	Inspection Items	Specific Operating Requirements
I. Wiring and Piping Connections	Electrical Connections	Reliably connect the system power cord to the upper wiring port of the power cabinet's automatic circuit breaker or the designated copper busbar.
	Control and Communication	Ensure that the communication cables and data cables of the external equipment of the control cabinet have the correct wire numbers and are securely connected; ensure the system's self-test upon startup is normal.
	Liquid Cooling Piping	Check all liquid cooling pipe interfaces, confirming that the connections are correct and there are no leaks.
	Cooling Tower Connection Cables	Accurately connect the cooling tower data cable to the corresponding connector base according to the markings.
II. Coolant Filling	Cooling Medium	Closed-circuit cooling towers must be filled with sufficient cooling water as specified.
III. Power-On Check	Power-on Prerequisites	Power on the control cabinet only after completing the checks on the wiring, piping, and cooling medium.
	L1, L2, L3 Power Supply Normal	1. Check if the phase sequence of the external power supply is correct. 2. Verify that the input voltage meets the equipment requirements.

Add coolant

Coolant Filling Operation Guide **(Manual Mode)**

Steps	Operating Procedures	Key Notes
Preparation	Ensure the system is switched to manual control mode.	Must be performed before operation to avoid misoperation.
1	Exhaust operation: Open each vent valve in the pipeline sequentially and observe the liquid flow status.	Operate in an orderly manner to avoid omitting the vent valve.
2	Start the equipment: Manually close the circuit breaker of the replenishment pump (optional) for the small cabinet; start the replenishment pump via the touchscreen interface for the containerized system.	Select the appropriate start-up method according to equipment type.
3	Establish circulation: Start the system circulation pump and set its operating frequency to 20Hz.	Frequency must be set accurately to lay the foundation for venting.
4	Complete filling: When there is a stable flow of coolant from all vent valves and no bubbles are generated, close all vent valves sequentially.	No air bubbles are a key indicator of successful filling.
5	Stop the equipment: Turn off the replenishment pump and circulation pump; the filling process is complete.	Shut down the equipment promptly after operation to ensure safety.
Remarks	Maintaining a 20Hz circulation throughout the process is crucial to ensuring complete venting of gases.	Pay special attention to avoid gas residue.

Important Notes (**Please read carefully!**)

Serial Number	Precautions
1	Equipment must not be operated without water.
2	The main water pump must be purged upon first use.
3	The circulating fluid in the equipment must be filled with ethylene glycol coolant or pure water.
4	Check the equipment cables for safety hazards.
5	Regularly check the pipe filters.
6	Ensure the equipment is effectively grounded.
7	The server rack water distributor inlet and outlet ports (red and blue) must be connected via pipes and kept open when no server is in use.
8	Do not plug or unplug the server power cord while it is powered on.
9	Ensure the liquid level in the storage tank is normal.
10	Use in humid environments is strictly prohibited.
11	The cooling tower must be placed outdoors for operation.
12	Ensure the server water distributor hoses are securely connected and the equipment is effectively connected.

Service and Support

Parameter Name	Service Details
Pre-sales One-on-One Service	We provide customized solutions, design drawings, and cost budgets tailored to customer needs.
Sales Service	Dedicated order tracking ensures accuracy and timeliness; products undergo pre-shipment inspection by our staff to guarantee compliance with national and industry standards.
After-sales Service	24-hour online consultation service to resolve any issues encountered during product use, ensuring smooth operation.
New Equipment Installation and Commissioning	Free on-site service for new equipment orders, providing professional installation and commissioning to ensure normal product operation.
Warranty Service	**The production equipment is guaranteed for two years from the date of receipt,** provided it is used correctly according to our equipment instructions.
Domestic On-site After-sales Service	Domestic after-sales support includes 48-hour on-site service.
Technical Service Support	Back-end installation, commissioning, maintenance, and regular monitoring.
Post-Warranty Service	Free guidance is provided by our professional technical team after the warranty period.

Note: Free guidance will be provided by our professional technical team after the warranty period.

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