

 **ANTMINER** Water-Cooled Servers

420-POSITION 40HQ CONTAINER INTEGRATED COOLING SOLUTION

Specifications

Product Overview

This product is customized for Antminer water-cooler servers and is the first **420-position** liquid cooling container in the industry. It adopts highly integrated modular design, integrating CDU, power, control and other systems into one, realizing rapid deployment and global certification. The original “dual circulation, dual CDU” architecture supports independent operation on the left and right sides, which not only ensure the maximum installed capacity of a single container, but also makes the operation more energy-saving and control more flexible, and can be used immediately after arrival.

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 . |
| Certification Standards | Complete Compliance Certifications | The overall container design complies with factory-level classification society certifications, meeting global sea and rail transport requirements . |
| 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



| Parameter Name | Specific Specifications | Related Instructions |
|---------------------|--|---|
| Appearance | Antminer 420-position liquid cooling container | As shown in Figure 3-1-1 |
| External Dimensions | L:12192mm、 W:2438mm、 H:2896mm | As shown in Figure 3-1-2 |
| Internal Dimensions | L:12000mm、 W:2230mm、 H:2660mm | |
| Overall Net Weight | 9200KG | Excluding machine, deviation $\pm 10\%$ |



Figure 3-1-1 Appearance of the container



Figure 3-1-2 Container dimensions

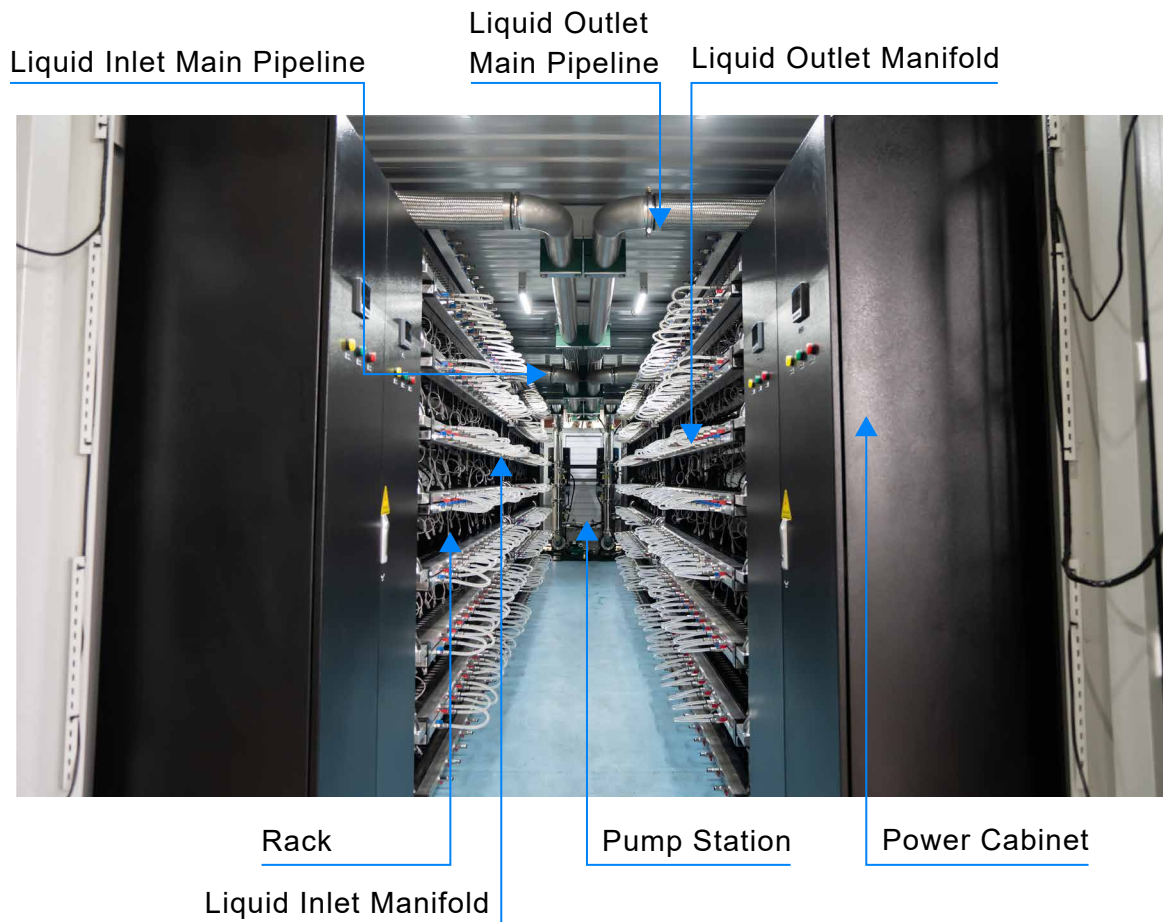


Figure 3-1-3 Interior layout of the container

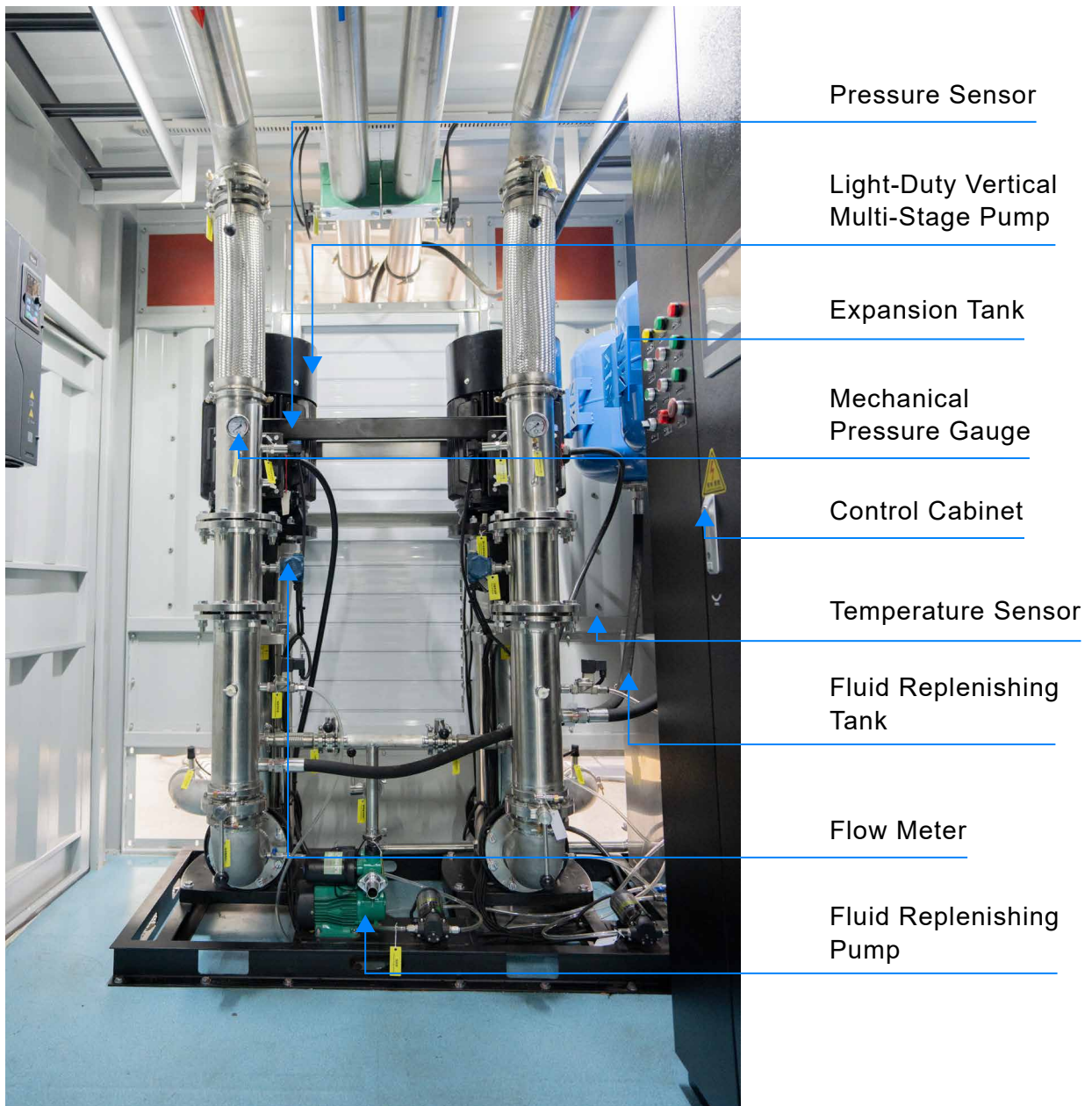


Figure 3-1-4 Components of the pump station

Note: In order to ensure the continuous and stable operation of the equipment, the container is designed with an efficient through-type ventilation system. Through the coordinated operation of multiple sets of electric louvers and high-power fans in the front and rear, a powerful heat dissipation air duct is formed, and it is equipped with dust-proof filtration, which makes it always guard the safety of the equipment.

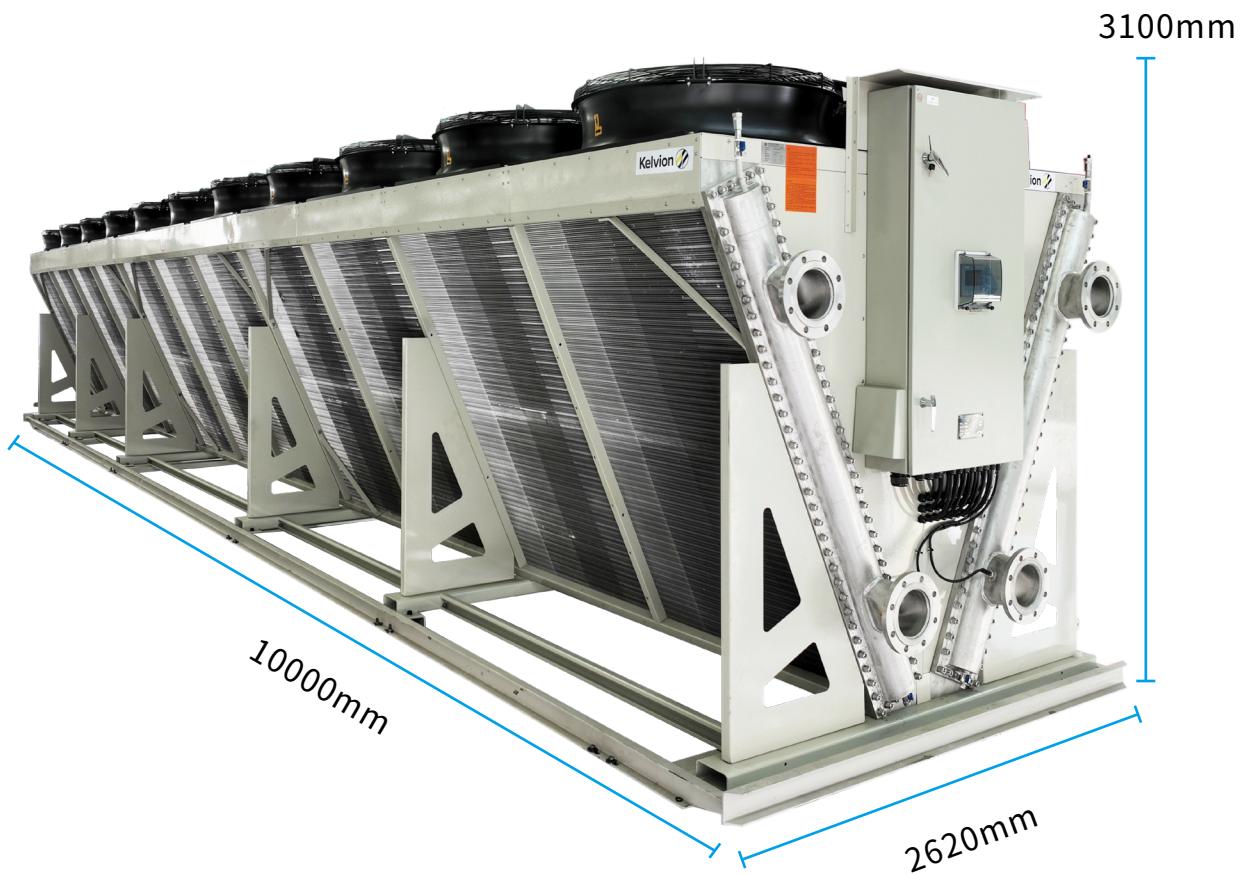


Figure 3-1-5 Dimension of the dry cooling tower

| Parameter Name | Specific Specifications | Related Instructions |
|---------------------|-----------------------------|--|
| Appearance | Dry cooling tower | Separate unit type / Container-integrated type |
| External Dimensions | L:10000mm、W:2620mm、H:3100mm | As shown in Figure 3-1-5 |
| Overall Net Weight | 7000KG | Deviation $\pm 10\%$ |

Note:The Antminer 420-position liquid cooling container needs to be equipped with two dry cooling towers.

Water consumption: 70 tons



Figure 3-1-6 Dimension of the closed cooling tower

| Parameter Name | Specific Specifications | Related Instructions |
|---------------------|----------------------------|--|
| Appearance | Closed cooling tower | Separate unit type / Container-integrated type |
| External Dimensions | L:6500mm、W:2500mm、H:3500mm | As shown in Figure 3-1-6 |
| Overall Net Weight | 4900KG | Deviation $\pm 10\%$ |

Note:The Antminer 420-position liquid cooling container needs to be equipped with two closed cooling towers.

Main Technical Parameters

| Parameters of Standard Accessories | | | | Basic Parameters of System Operation | | |
|------------------------------------|--|-------|------|--|---------|-------------------|
| Item | | Value | Unit | | Value | Unit |
| 1 | Installed capacity | 420 | Seat | System pipeline pressure | 0.2-0.4 | MPA |
| 2 | Installed powerload | 2310 | KW | Operating temperature range of the system | 22-42 | ℃ |
| 3 | Power of the light-duty vertical multistage pump | 30 | KW | Coolant circulation demand of a single machine | ≥0.5 | m ³ /h |
| 4 | Power of the fluid replenishing pump | 0.2 | KW | Total demand for circulating coolant within the system | ≥2.2 | m ³ |
| 5 | Total power of the dry cooling tower fan | 99.6 | KW | Main Parameters of the Power System | | |
| 6 | Total power of the closed cooling tower fan | 33 | KW | Molded Case Circuit Breaker | 250 | A |
| 7 | Total power of the closed cooling tower spray pump | 8 | KW | Residual Current Circuit Breaker | 630 | A |
| 8 | Optional Parameters | | | Contactactor | 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 developed a 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 replenishment 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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