Integrated Energy & Mining System

HYDRO COOLING XS2400 CONTAINER PRODUCT SPECIFICATION

Detailed Technical Description

Current version V3.1	
Latest updated time	2026/03/10
Editor	Heatcore

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1. General Information

1.1 Product Overview

The XS2400 is a prefabricated hydro-cooling data center module designed for high-density cryptocurrency mining applications.

The system is integrated within a **standard 40-ft High-Cube ISO container**, providing a compact and modular infrastructure solution that enables rapid deployment and simplified transportation.

Each XS2400 unit integrates multiple subsystems including **electrical distribution systems, IT racks, Coolant Distribution Units (CDU), distribution piping systems,** as well as intelligent control and network systems into a single containerized system. Major components are factory-installed and tested prior to delivery, significantly reducing on-site installation work and commissioning time.

Each unit supports up to **240 Whatsminer® 2U server slots**, enabling high-density mining deployment within a single containerized module.

The system is designed to support an **IT load of up to 2.4 MW**, with the electrical infrastructure optimized for integration with a **3000 kVA power transformer**, providing an efficient and standardized power configuration for mining facilities.

The containerized design allows convenient transportation **by truck, rail, or sea freight**, and enables multiple XS2400 units to be rapidly deployed and assembled on site according to predefined layout configurations.

The system incorporates enhanced **leak prevention, seismic resistance, and corrosion protection**, ensuring stable long-term operation in various deployment environments. The integrated smart control system enables **centralized monitoring, automated control, and operational management** of the system.

1.2 Copyright and Confidentiality Notice

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This document shall not be used for the reproduction, reverse engineering, or manufacture of this unit or any of its components.

All specifications and descriptions contained in this document are nominal and subject to change without prior notice as part of continuous product improvement.

2. PRODUCT SPECIFICATION

2.1 Environmental Requirements

The design, manufacture, installation, testing and commissioning of the equipment described in this technical requirement must be suitable for the following climatic conditions:

1) Outdoor temperature: Normal operation at ambient temperature of -25~45℃ (when the temperature is <0℃, antifreeze is required);
2) Indoor temperature: Normal operation under ambient temperature of 5~40℃
3) Indoor relative humidity: 5%RH~95%RH (no condensation)
4) Altitude: <1000 m (derating design is required when the altitude exceeds 1000 m)
5) Transportation: 40HQ container transportation
6) Protection grade: IP44
7) Spraying anti-corrosion grade: C3 (ISO 12944-2017)

2.2 System Configuration

Item	Description
1 x 40HQ Container	The outer shell of the container is made of corten steel, with insulation layers on all sides and the top, and is coated with C3 anti-corrosion paint.
1 x Electrical distribution systems	The XS2400 power distribution system consists of two 2500A switchboard, the power cables connecting the switchgear to IT racks. The system distributes power to IT racks, CDU, and dry coolers, and includes a Class 0.5S power meter and surge protection devices (SPD).
1 x Smart Control System (SCS) / Coolant distribution unit (CDU)	SCS/CDU is an essential component in liquid cooling systems that distribute coolant or water evenly throughout the system. The CDU regulates and controls the flow of coolant, maintaining the desired temperature and flow rate. It works in conjunction with pumps, dry cooler, various sensors and control units to ensure the cooling system runs smoothly and efficiently.
12 x IT Rack	Used to install and operate hydro cooling miners (20 x miner slots). The rack integrates the network unit, manifold, and PDU.
1 x Network system	Configure access layer switches and management layer switches, factory prefabricated network cabling system.
1 x Pipeline (Indoor)	Factory prefabricated closed circuit liquid cooling piping for connecting hydro cooling rack, SCS in liquid cooling systems.Made of SS304, including IT rack inlet and outlet isolation valves, pickled and passivated.
1 x Dry Cooler (Outdoor)	Dry cooler is a type of heat exchanger used in cooling systems to dissipate heat from a fluid without the use of water. Dry coolers consist of finned tubes through which the hot fluid flows. Ambient air is forced over these tubes using fans, transferring heat from the fluid to the air. The cooled fluid then returns to the system to continue its cooling cycle.
1 x Pipeline (Outdoor)	Factory prefabricated closed circuit liquid cooling piping for connecting SCS and dry coolers in liquid cooling systems. Made of SS304, including dry cooler inlet and outlet isolation valves, pickled and passivated.

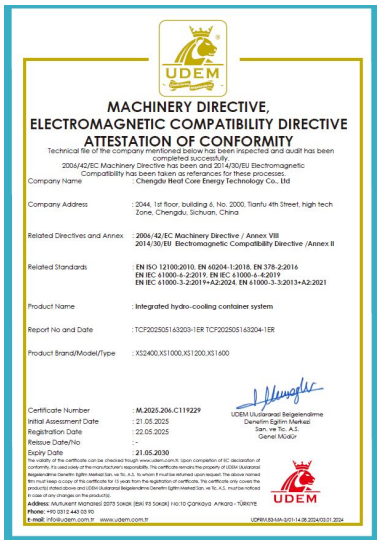
2.3 XS2400 Container Product Features

Factory Prefabrication and Rapid Deployment

- Containerize design, factory prefabrication, flexible and rapid construction using building blocks for various subsystems.
- Pre-installed piping and electrical systems
- Integrated product delivery, on-demand configuration, rapid replication, and increased flexibility.
- Easy installation, supports long-distance container transportation, plug and play on site, shortens construction period
- Safe and reliable, multiple protections
- The XS2400 system is available in different compliance configurations to meet regional regulatory requirements

  -North America Version: Electrical components are UL certified. The electrical power distribution system is designed in accordance with the National Electrical Code (NEC). The complete system is certified through CSA U.S. Field Evaluation.

  -CE Version: The system is designed to comply with applicable European Union directives. Electrical components conform to relevant EN standards and the system is eligible for CE marking.



UDEM

MACHINERY DIRECTIVE,
ELECTROMAGNETIC COMPATIBILITY DIRECTIVE
ATTESTATION OF CONFORMITY

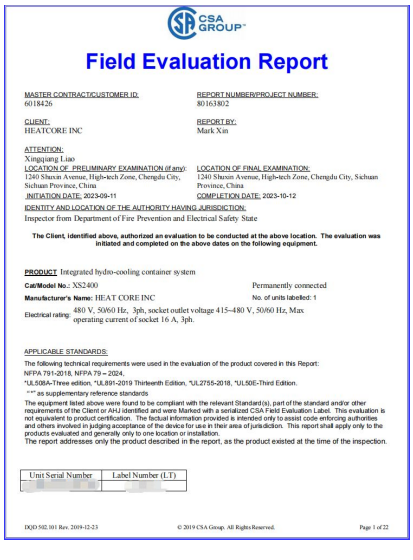
Technical file of the company mentioned below has been inspected and audit has been completed successfully.

2006/42/EC Machinery Directive has been and 2014/30/EU Electromagnetic Compatibility has been taken as references for these processes.

Company Name	: Chengdu Heat Core Energy Technology Co., Ltd
Company Address	: 2044, 1st floor, building 6, No. 2000, Tianfu 4th Street, high tech Zone, Chengdu, Sichuan, China
Related Directives and Annex	: 2006/42/EC Machinery Directive / Annex VIII 2014/30/EU Electromagnetic Compatibility Directive / Annex II
Related Standards	: EN ISO 12100:2010, EN 60204-1:2018, EN 378-2:2016 EN IEC 61000-6-2:2019, EN IEC 61000-6-4:2019 EN IEC 61000-3-2:2019+A2:2024, EN 61000-3-3:2013+A2:2021
Product Name	: Integrated hydro-cooling container system
Report No and Date	: TCF2025051632O3-1ER TCF2025051632O4-1ER
Product Brand/Model/Type	: XS2400,XS1000,XS1200,XS1600
Certificate Number	: M.2025.206.C119229
Initial Assessment Date	: 21.05.2025
Registration Date	: 22.05.2025
Reissue Date/No	: -
Expiry Date	: 21.05.2030

UDEM Uluslararası Belgelendirme Denetim Eğitim Merkezi San. ve Tic. A.Ş. Genel Müdür

UDEM



CSA GROUP

Field Evaluation Report

MASTER CONTRACT/CUSTOMER ID: 60184426
REPORT NUMBER/PROJECT NUMBER: 80163802
CLIENT: HEATCORE INC
REPORT BY: Mark Xin
ATTENTION: Xingqiang Liao
LOCATION OF PRELIMINARY EXAMINATION (if any): 1240 Shuxin Avenue, High-tech Zone, Chengdu City, Sichuan Province, China
LOCATION OF FINAL EXAMINATION: 1240 Shuxin Avenue, High-tech Zone, Chengdu City, Sichuan Province, China
INITIATION DATE: 2023-09-11
COMPLETION DATE: 2023-10-12
IDENTITY AND LOCATION OF THE AUTHORITY HAVING JURISDICTION: Inspector from Department of Fire Prevention and Electrical Safety State

The Client, identified above, authorized an evaluation to be conducted at the above location. The evaluation was initiated and completed on the above dates on the following equipment.

PRODUCT Integrated hydro-cooling container system
Cat/Model No.: XS2400 — Permanently connected
Manufacturer's Name: HEAT CORE INC — No. of units labelled: 1
Electrical rating: 480 V, 50/60 Hz, 3ph, socket outlet voltage 415–480 V, 50/60 Hz, Max. operating current of socket 16 A, 3ph.

APPLICABLE STANDARDS:
The following technical requirements were used in the evaluation of the product covered in this Report:
NFPA 791-2018, NFPA 79 – 2024,
*UL508A-Three edition, *UL891-2019 Thirteenth Edition, *UL2755-2018, *UL50E-Third Edition.
"*" as supplementary reference standards
The equipment listed above were found to be compliant with the relevant Standard(s), part of the standard and/or other requirements of the Client or AHJ identified and were Marked with a serialized CSA Field Evaluation Label. This evaluation is not equivalent to product certification. The factual information provided is intended only to assist code enforcing authorities and others involved in judging acceptance of the device for use in their area of jurisdiction. This report shall apply only to the products evaluated and generally only to one location or installation.
The report addresses only the product described in the report, as the product existed at the time of the inspection.

Unit Serial Number	Label Number (LT)

DQD 502.101 Rev. 2019-12-23 — © 2019 CSA Group. All Rights Reserved. — Page 1 of 22

- CDU has multiple safety protections, including anti-condensation protection, leakage detection function, constant pressure water filling system, and overpressure protection device
- Pump variable frequency speed control improve the stability of system operation
- Configure access layer switches and management layer switches, factory prefabricated network cabling system.

Intelligent Management

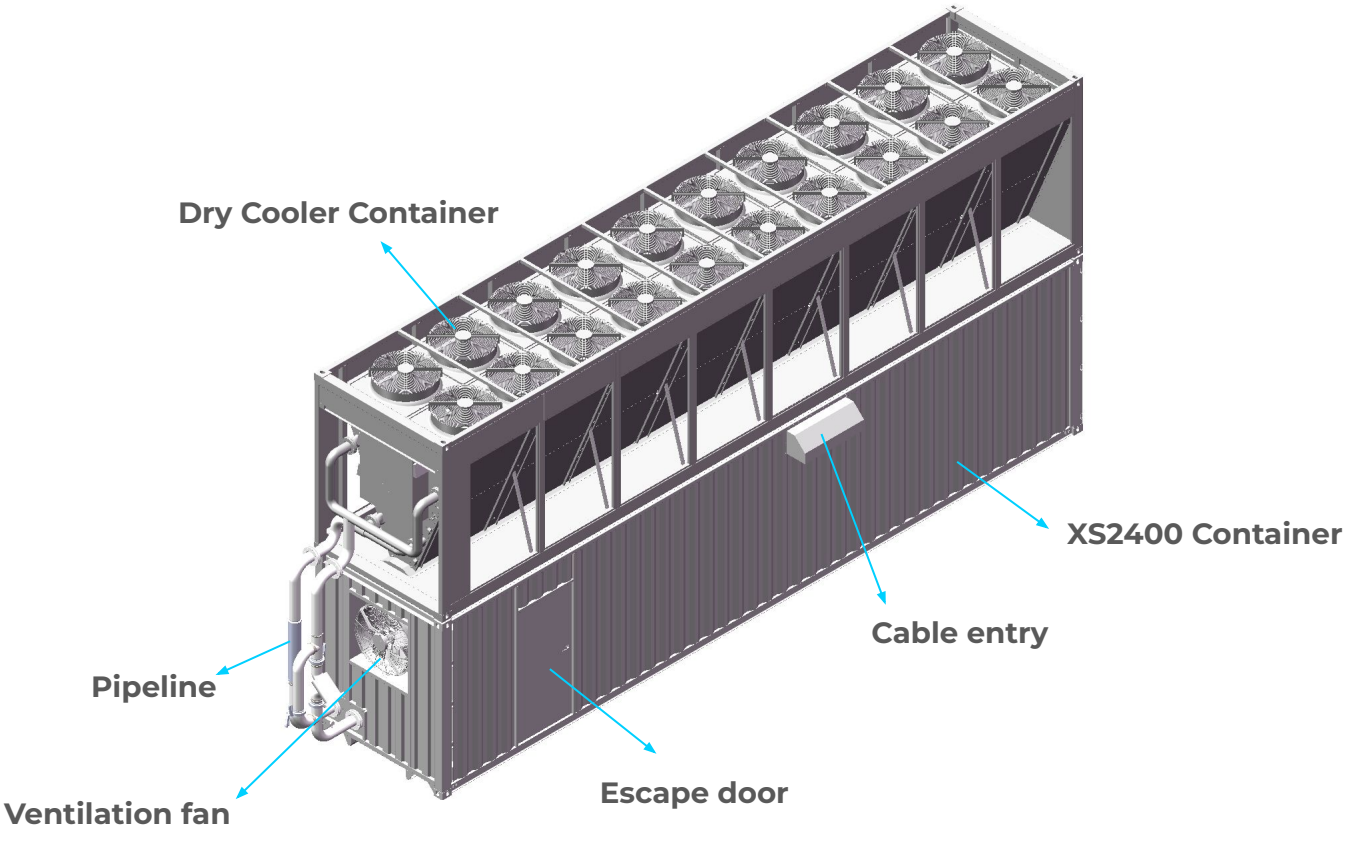
- Complete self-protection and alarm functions can effectively protect the normal operation of the miner
- Remote monitoring and management: Allows administrators to remotely monitor power usage, including power, current, voltage, and energy consumption, helping to optimize energy efficiency
- Remote control of miners: remote control and monitoring of the performance data of each miner, adjustment of miner operation mode, feedback of miner fault information, remote restart of miners, etc
- Heatcore cloud monitoring system supports data monitoring and management of miners, CDUs, dry coolers and Switchboard
- Open API, Support remote software docking and management

Flexible and efficient, green and low-carbon

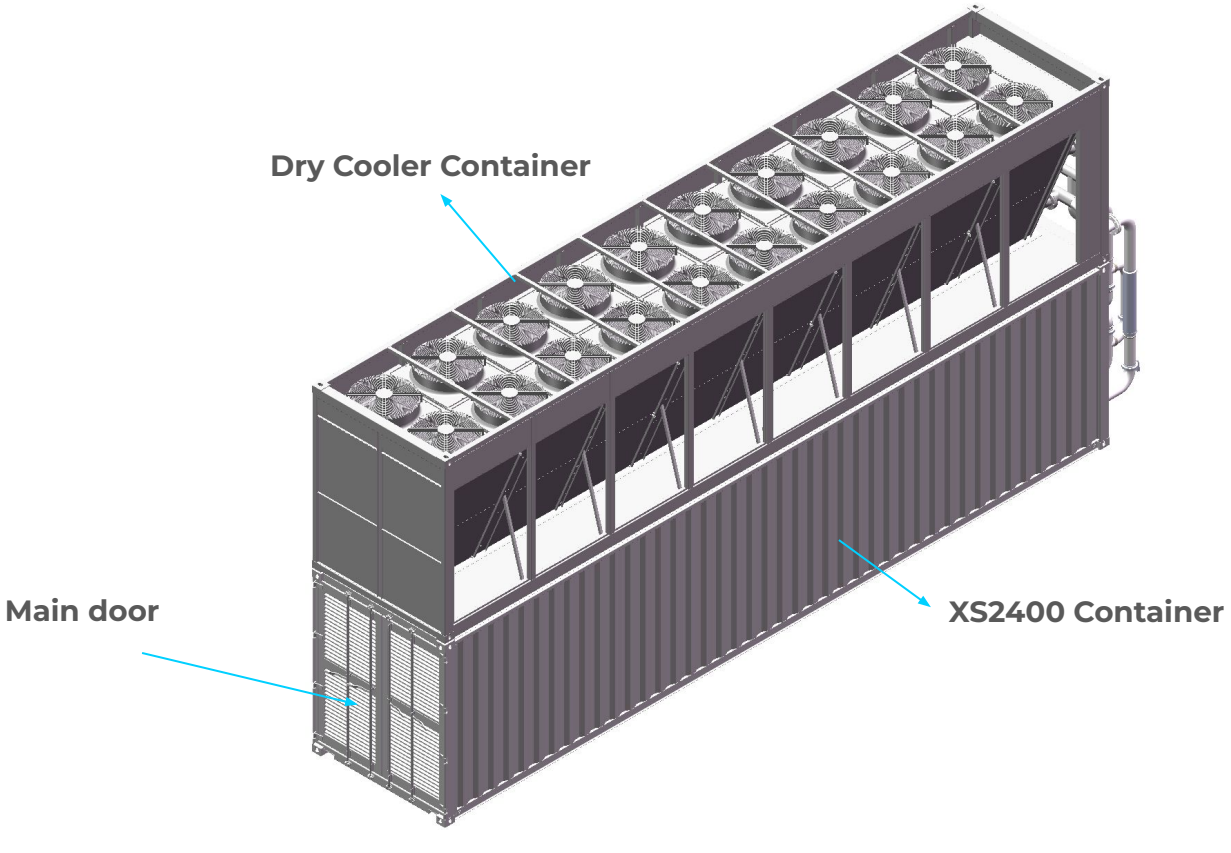
- System allow for 240 miners to be running in overclocked mode (9.5-10kW per miner)
- Full-size pipeline design allows miners to be flexibly placed in any slot on the container
- Dry cooler provides year-round natural cooling solution, zero water consumption for heat dissipation
- Total module load 2.52MW, IT load 2.4MW, annual maximum PUE of data center is less than 1.05

2.4 XS2400 Container Detailed Description

2.4.1 XS2400 Container Appearance



XS2400 Container & Dry Cooler - Front View

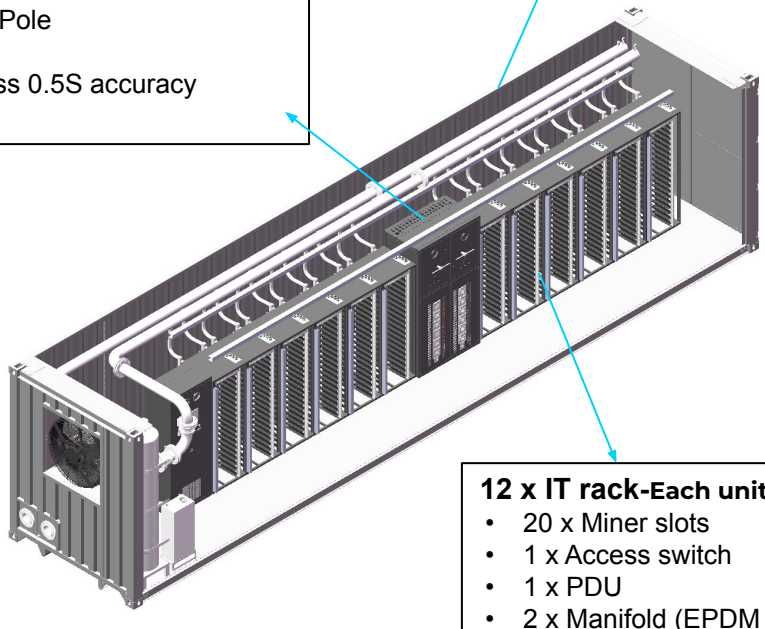


XS2400 Container & Dry Cooler - Rear View

2.4.2 XS2400 Container Internal Layout

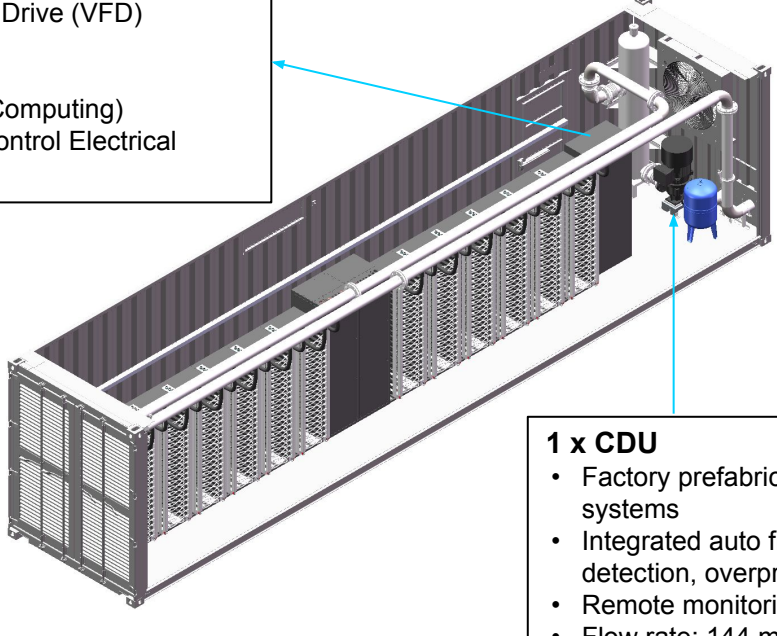
1 x 40HQ Container
- Insulated container
- CCS Certification
- Lighting system, CCTV, smoke alarm
- External emergency stop

2 x 2500A Switchboard-Each unit contains:
- 1 x Switch(2500A) 3 Pole
- 1 x SPD
- 1 x Power meter Class 0.5S accuracy
- 7 x feeder breaker



12 x IT rack-Each unit contains:
- 20 x Miner slots
- 1 x Access switch
- 1 x PDU
- 2 x Manifold (EPDM hose, air vent valve etc.)
- 40 x SS304 quick connector V3-female

1 x Control System:
- 1 x PLC
- 1 x Variable Frequency Drive (VFD)
- 1 x HMI
- 1 x Aggregation Switch
- 1 x NUC (Next Unit of Computing)
- Other Protection and Control Electrical Components



1 x CDU
- Factory prefabricated water & electrical systems
- Integrated auto filling, water leakage detection, overpressure protection
- Remote monitoring system
- Flow rate: 144 m3/h
- Usable pressure different: 100 kPa

2.4.3 Hydro Cooling System

The XS2400 hydro cooling system employs a closed-loop liquid cooling design. Coolant flows through the IT racks, absorbing heat from the servers, and is then directed to the external dry cooler for heat rejection before returning to the circulation loop.

The system is equipped with sensors to monitor temperature, pressure, and flow rate throughout the loop. The **Smart Control System** continuously adjusts pump speed and fan speed to ensure even flow distribution and stable temperatures, maintaining server operation under varying loads with consistent thermal performance, optimized efficiency, and reliable operation.

System Components:

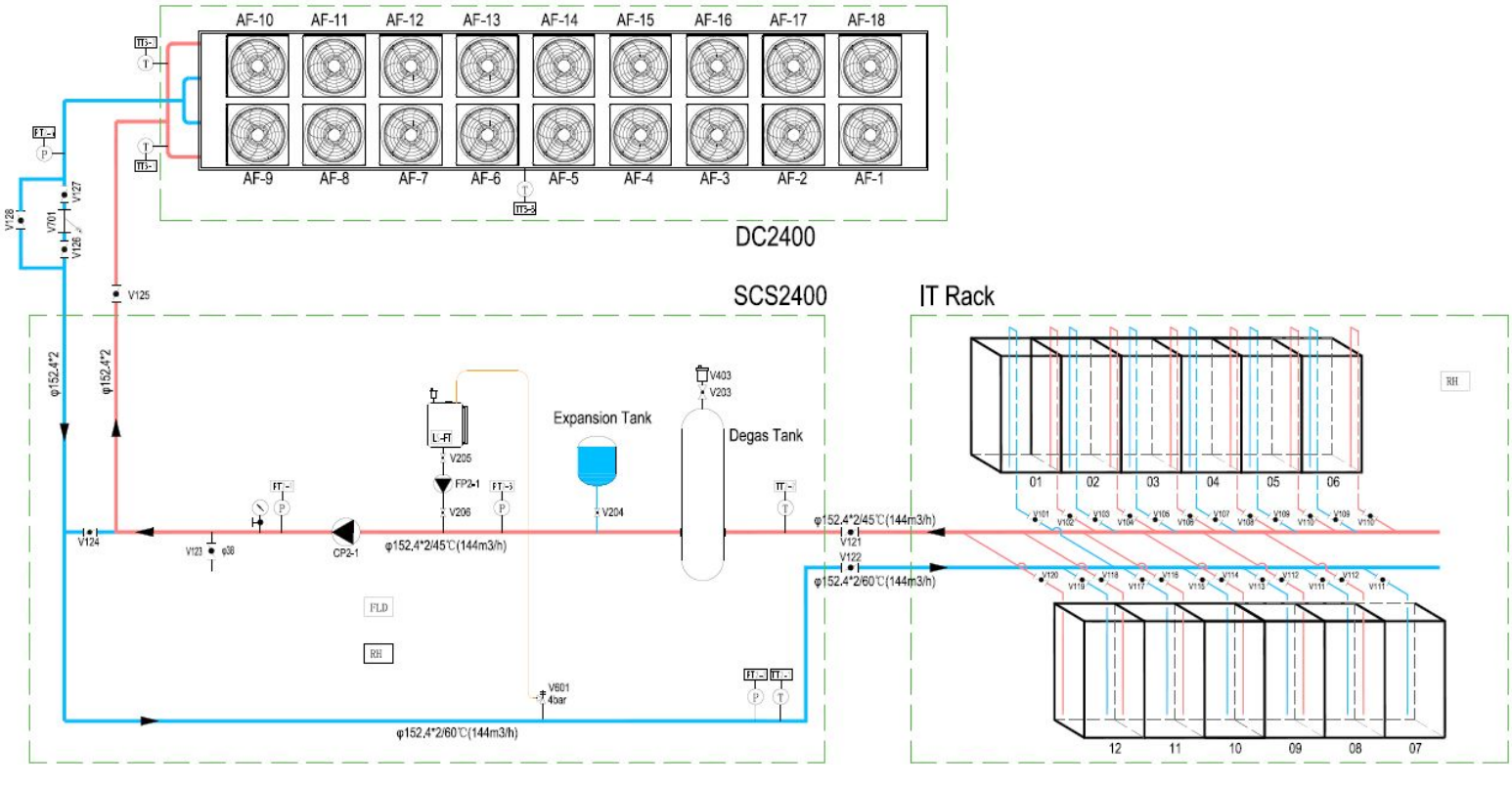
IT Racks – House mining servers and provide integrated coolant, power, and network connections.

Pump Skid – Circulates coolant throughout the loop, and includes air separation, filtration, flow control, and automatic coolant replenishment.

Distribution Piping – Delivers coolant between system components, ensuring stable flow throughout the loop.

Dry Cooler – Rejects heat from the coolant to the ambient air.

Monitoring and Control System – Sensor-based intelligent system for temperature, pressure, and flow monitoring.



XS2400 Container Process flow diagram(P&ID)

2.4.4 Electrical distribution systems

The XS2400 electrical distribution system provides reliable power for server operation and cooling. It features a modular design integrating switchgear, PDUs, power cables, and cable trays, ensuring stable operation and ease of maintenance.

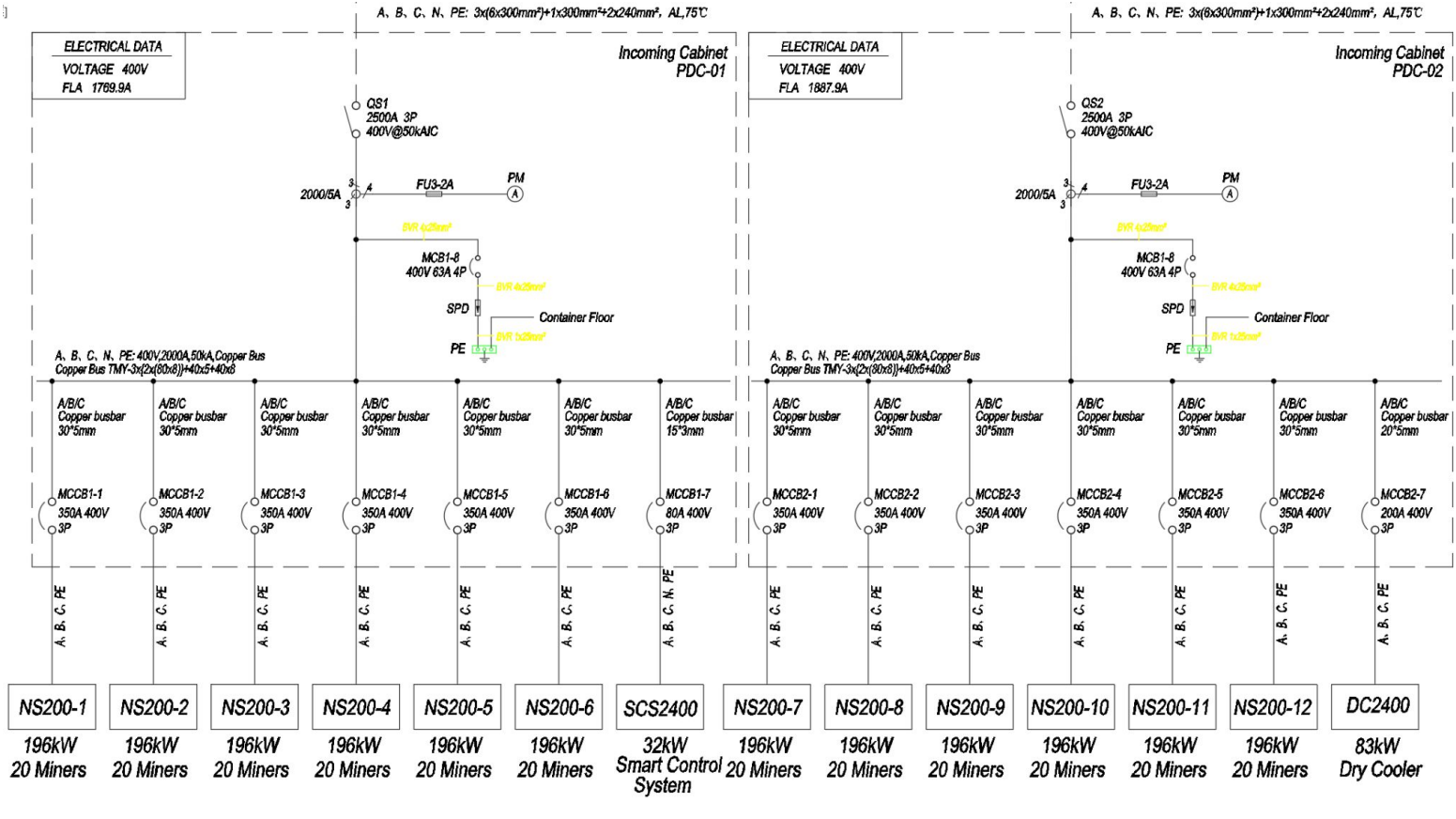
The system is equipped with intelligent electrical instruments to monitor voltage, current, and load in real time across the XS2400 hydro cooling system.

System Components:

Switchboard – Integrated circuit breakers, fuses, SPDs, and electrical instruments , providing main power input, distribution, circuit protection, and data monitoring.

Power Distribution Unit (PDU) – Equipped with circuit breakers and fuses to safely distribute power to servers.

Power Cables – Deliver electricity between the switchboard, PDUs, and other loads.

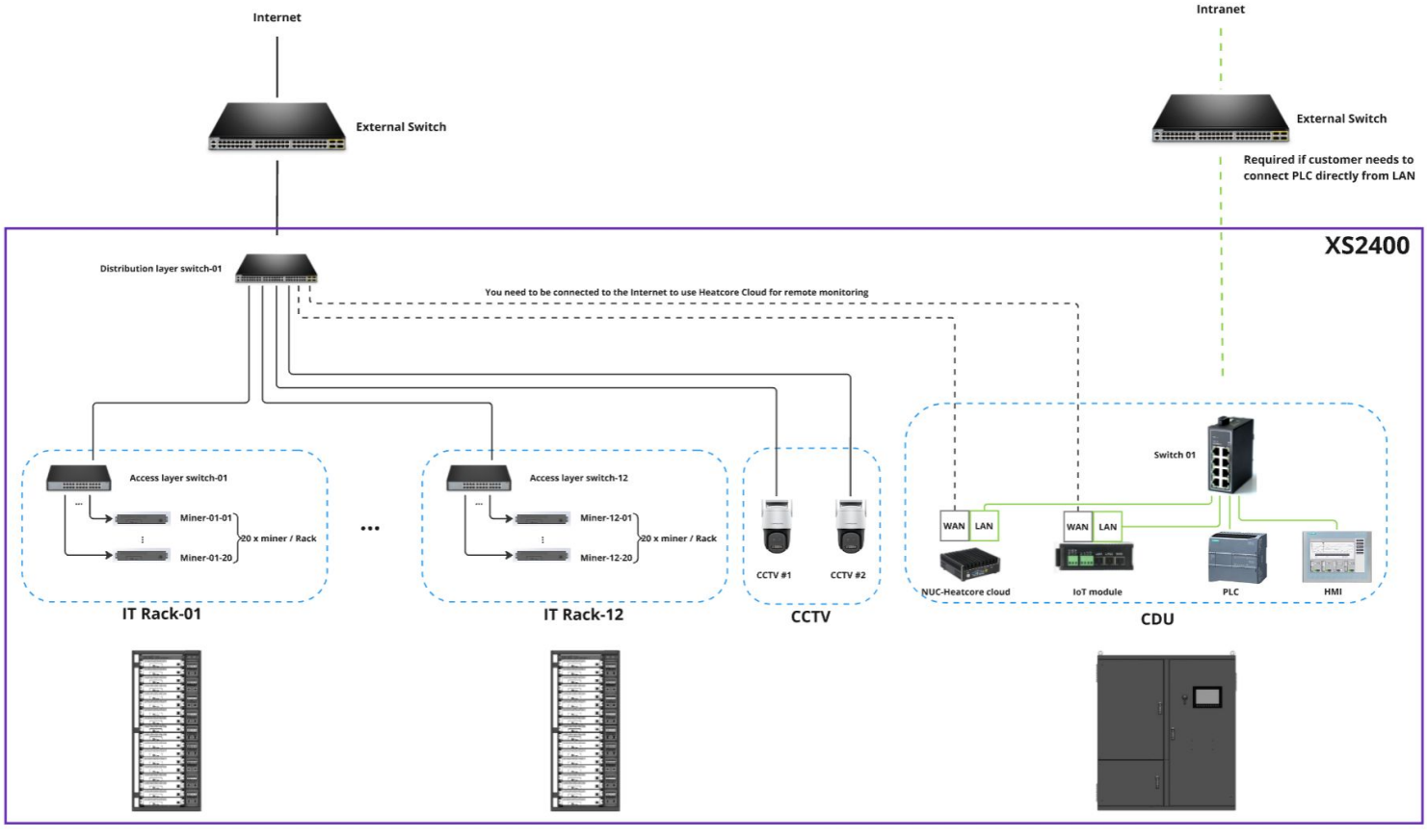


XS2400 distribution cabinet single-line diagram

2.4.5 Network system

The XS2400 network system adopts a hierarchical architecture consisting of aggregation switches and rack-level access switches, providing reliable connectivity for all mining servers.

All internal network cabling is pre-installed within the container. Only a single external network connection is required to integrate the container into the customer's network.



XS2400 Container Network Topology Diagram

2.4.6 XS2400 Container Specification

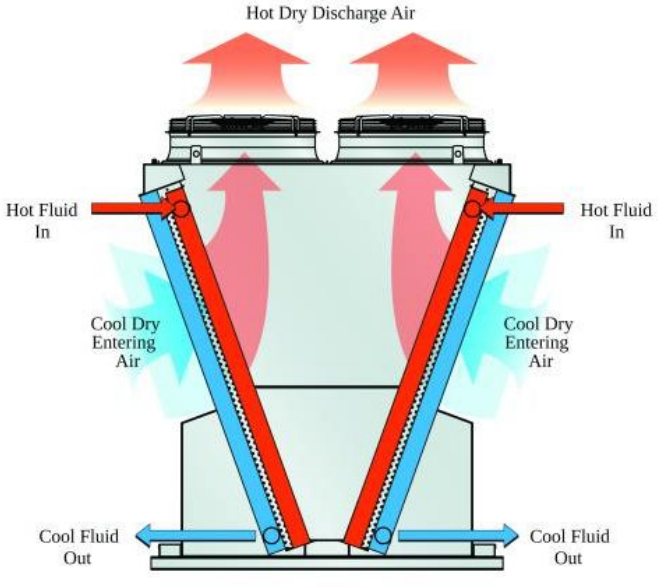
Physical		
Model	XS2400	
Type	Rack+CDU+Switchboard	
Server Capacity	240 units	
Dimensions (L x W x H)	12192 x 2438 x 2896 (mm) 40' HQ Container	
Weight Net/Operation	8650 kg/15250 kg	
Container Certification	China Classification Society Certification	
Electrical		
Regional Applicability	IEC Standard Regions	NEC Standard Regions
Max. Operation Power	2515 kW	
Max. IT Power	2400 kW	
CDU Rated power	32 kW	
Dry Cooler Rated power	83 kW	
Rated Voltage	3Ph+N+PE 400V 50Hz	3Ph+N+PE 415V-480V 60Hz
FLA(full load amps)	3658 A	3499 A
Cable Specification* (Each switchboard)	L1: 6×300 mm² AL L2:6×300 mm² AL L3:6×300 mm² AL N:1×300 mm² AL PE: 2×240 mm² AL	L1: 6×600 MCM AL L2:6×600 MCM AL L3:6×600 MCM AL N:1×600 MCM AL PE: 1×350 MCM AL
Fluid		
Coolant	Distilled water + antifreeze + corrosion inhibitor	
Max. Operating Pressure	4 bar	
Supply and return liquid temperature	45/60 C @ Water	
Rated flow	144m3/h @ water (Flow rate adjustable)	
Expansion Tank Volume	100L	
Wetted Parts Material	Stainless Steel/EPDM	
Manifold Material	Stainless Steel/Aluminum Alloy	

2.5 Dry Cooler

The XS2400 hydro cooling system uses dry coolers as the primary heat rejection equipment. Cooling capacity is designed based on site ambient temperature conditions. Each container module is equipped with an independent dry cooler unit to improve system reliability and reduce the impact of potential failures.

Operating Principle

Warm coolant flows through finned tubes in the dry cooler while axial fans draw ambient air across the heat exchanger, transferring heat to the surrounding air. The cooled fluid is then returned to the circulation system to maintain stable operating temperatures.

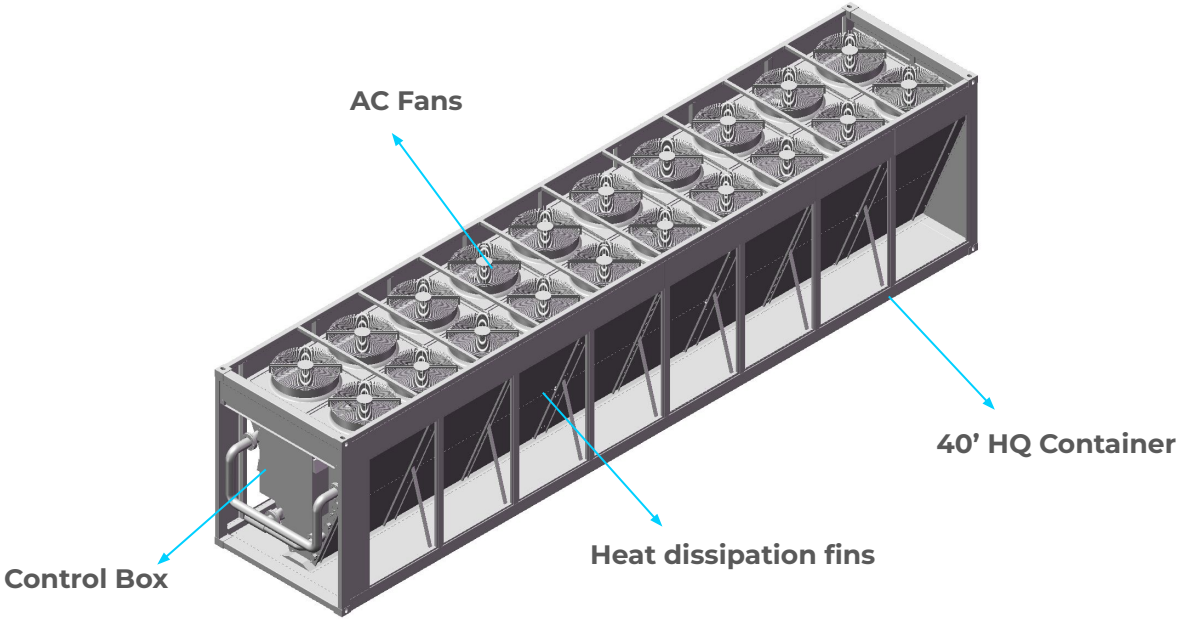


Key Advantages

Water-Free Operation: No continuous water supply required.

High Reliability: Modular configuration with industrial-grade components.

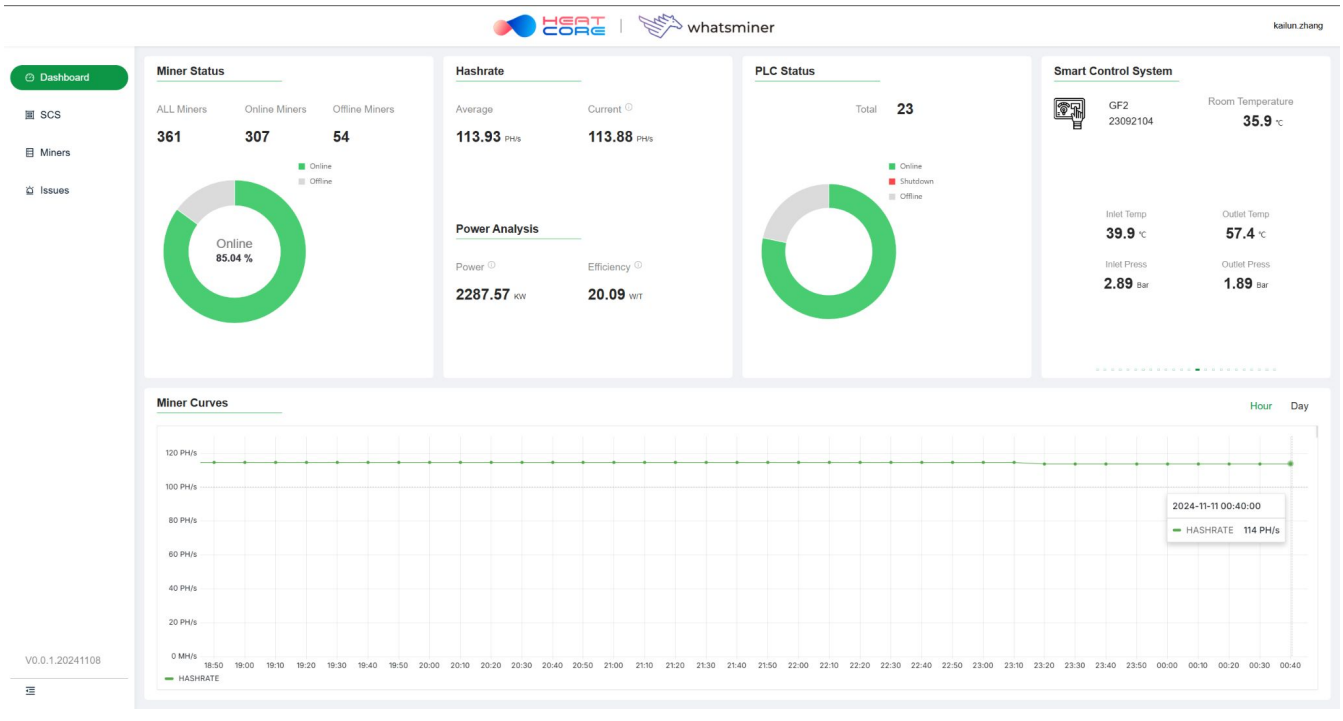
Low Maintenance: Simple structure with minimal maintenance requirements.

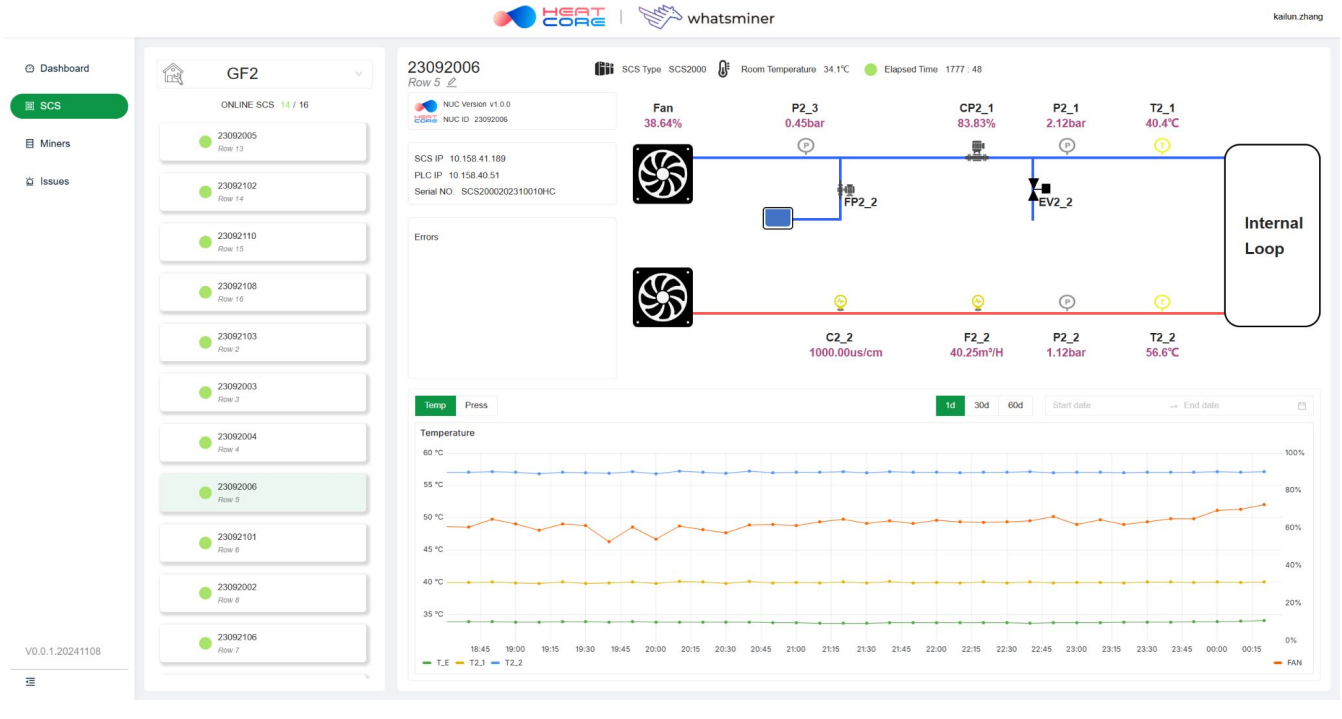


2.5.1 Dry Cooler Specification

Physical		
Dimensions (L x W x H)	12192 x 2438 x 2896 (mm) 40' HQ Container	
Weight Net/Operation	8650 kg/15250 kg	
Container Certification	China Classification Society Certification	
Number of Fans	20	
Electrical		
Regional Applicability	IEC Standard Regions	NEC Standard Regions
Max. Operation Power	83 kW	
Rated Voltage	3Ph/PE 400V 50Hz	3Ph/PE 415V-480V 60Hz
Max. Operating Amp.	159 A	153 A
Cable Specification* (Each switchboard)	L1: 1 x 95 mm2 copper L2: 1 x 95 mmz copper L3: 1 x 95 mm2 copper PE: 1 x 50 mm2 copper	L1: 1 x 3/0 AWG copper L2: 1 x 3/0 AWG copper L3: 1 x 3/0 AWG copper PE: 1 x 6 AWG copper
Fluid		
Coolant	Distilled water + antifreeze + corrosion inhibitor	
Max. Operating Pressure	4 bar	
Rated flow	144m3/h @ water (Flow rate adjustable)	
Heat dissipation capacity		
Cooling Capacity	2400 kW Ambient temperature: 35C	
Approach Temperature	15°C	

2.6 Heatcore Cloud Monitoring





Heatcore Cloud Monitoring Platform enables remote monitoring and automated management of miner systems and hydro cooling systems.

- Track record executing ERCOT curtailment strategies
- The operational status of miners can be controlled remotely via API
- Remotely monitor the operating status of the hydro cooling system and perform remote maintenance via API

Enter a New Era of Zero Carbon Emission Mining

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