

Micro-module computer room construction and installation process



Overview

The rapid deployment, flexible expansion, and relatively low construction costs of micro-module data centers make them an ideal solution for localized deployment of small and medium-sized...

Key Takeaways

Micro-module computer rooms are prefabricated, modular data centers designed for rapid deployment, high-density IT equipment, and energy-efficient operation. Overview Micro-module computer rooms are compact, modular data centers that integrate IT racks, power systems, cooling units, cabling, and intelligent management systems into prefabricated units. They are designed for rapid deployment, scalability, and energy efficiency, making them suitable for edge computing, AI workloads, telecom, healthcare, and IoT applications.

These units can be transported to remote locations and assembled on-site with minimal construction time, often within 72 hours for fully prefabricated installations.

Key Components

Rack System: Supports IT equipment, provides load-bearing capacity, thermal management, dual power supply, and cable management. **Power System:** Includes UPS units, power distribution cabinets, battery systems, grounding, surge protection, and breakers.



Both AC and D

C distribution options are available. Cooling System: Uses in-row cooling, direct expansion, chilled water, or immersion liquid cooling to manage high-density racks (up to 50 kW per rack) while reducing energy consumption and PUE to as low as 1.1-1.2.

3. Cable Management: Structured cabling ensures stability and maintainability. Proper layout of power and data cables is critical for system reliability.

Intelligent Management System: Monitors power, temperature, airflow, and equipment status to optimize operations and prevent downtime.

Installation Process

Site Preparation: Ensure the site meets space, floor load, and environmental requirements. Level the floor and verify clearances for racks and cooling units.

Cabinet Placement: Position end cabinets according to the engineering layout, level them, and combine additional cabinets sequentially.

Cooling and Airflow Setup: Install in-row or rack-level cooling units, duct systems, and aisle containment to optimize airflow and thermal management.

Power and Cable Installation: Connect UPS, PDU, and rack power distribution units. Route power and data cables through cable trays or troughs, ensuring proper separation and accessibility.

System Integration: Connect IT equipment, management systems, and monitoring sensors. Verify grounding, surge protection, and redundancy features.

Commissioning: Test power, cooling, and management systems.

Adjust airflow, temperature, and load distribution to ensure optimal performance.

Advantages

Rapid Deployment: Prefabricated modules reduce construction time compared to traditional data centers. Scalability: Additional modules can be added as IT demand grows. Energy Efficiency: Advanced cooling and optimized layouts reduce operational costs.

High Density: Supports modern high-power IT equipment with single-rack densities up to 50 kW. Flexibility: Can be deployed in urban, remote, or edge locations. Micro-module computer rooms provide a cost-effective, flexible, and sustainable solution for modern IT infrastructure, combining prefabrication, intelligent management, and high-density capabilities to meet the demands of digital transformation and AI-driven workloads.

Article Content

Micro and Modular Data Center Construction

Whether you need a small-scale on-premise data center or a modular solution for rapid deployment, our expert construction and engineering services ensure

Micro-Module Data Centers: Architecture, Advantages, and ...

The rapid deployment, flexible expansion, and relatively low construction costs of micro-module data centers make them an ideal solution for localized deployment of small and medium-sized...

PROFESSIONAL DATA CENTER COMPUTER ROOM

Through high-standard design and construction, the central computer room has become a benchmark for port computer room construction, featuring green, environmental protection, intelligence and safety.

Modular Data Center Design for Rapid AI Deployment | Introl Blog

MIT's auto-deployment concept requires no on-site construction—modules self-level, self-connect, and self-commission.¹³ 3D printed modules could customize configurations on-demand.

Micro modular data center

Installation method: factory prefabricated modular components, quick on-site installation and deployment, productization and standardization of equipment in the computer room.

Micro Data Centers: A Practical Guide for Small IT Teams

Learn what a micro data center is, why it may suit your business, and how to build one without the cost and complexity of a full-scale facility.

Open_Compute_Project_Intel_Motherboard_v3

The micro-module supports the push-in deployment of the whole rack, and the computer room and transportation aisle should be barrier-free; the base can also be added under the micro-module to

The differences between the construction of micro-modular computer ...

The civil construction and IDC construction are separated and do not interfere with each other. The main structure of the building and the basic water and electricity are completed in one go,

Data Center Installation: Design, Build & Deployment Essentials

Discover key steps in data center installation, from design and cabling to power, cooling, and security, plus how to ensure reliable, scalable deployments.

A Comprehensive Analysis of KITOZER Intelligent Micro-Module Data ...

I. System Overview The KITOZER Intelligent Micro-Module Data Center Infrastructure System is a highly integrated and flexibly expandable integrated computer room solution, covering

Application Research of Integrated Prefabricated Module Computer Room ...

the design process, shorten the construction period of data center and save relevant resources. The modular machine room can synchronously start the micro-module pre-manufacturing

What is a micro-module computer room

The micro-module computer room divides the data center site into micro-modules in accordance with industry standards, that is, it divides the entire data center into several independent

IDC Micro-module data center project for China Unicom

From on-site inspection and solution confirmation, to equipment installation and commissioning, we have professional on-site service team to track the whole process, and strive for

(PDF) Design and construction of micro fabrication cleanroom for ...

With the construction of its “Micro Fabrication Cleanroom” (MFC), KUKUM has set the vision to reverse our reliance on imported technologies, as well as spearhead and support human

Computer Room Construction

PTS has streamlined the data center construction process in order to minimize the interruption to day-to-day operations, while still keeping costs in check. PTS will guide you every step of the way, from the

How to Construct a Modular Building: From Design to Construction

Discover the step-by-step process of modular building construction, from design to assembly. Learn how SteelPRO Group ensures quality, safety, and efficiency.

Cold Room Installation Guide | PDF | Refrigeration

This document provides information about cold room construction and installation. It discusses how cold rooms are made of prefabricated modular wall, ceiling, and floor panels. It also outlines the basic

Intelligent Micro-Module Data Center Overview | PDF

The document describes three intelligent micro-module data center solutions: Fit Atom single cabinet, Fit Array single-row, and Fit Atrix double-row. Fit Atom is a single cabinet solution for small spaces. Fit

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