

Article Overview

Micro-module computer rooms are modular, self-contained rack clusters designed with independent power, cooling, monitoring, and security systems to operate efficiently and reliably.

Definition and Structure

A micro-module is a small, functional rack cluster that can operate relatively independently within a larger data center or as a standalone unit. It typically consists of two rows of back-to-back or face-to-face IT racks, uninterruptible power supply (UPS), and near-end cooling equipment arranged in a closed aisle configuration to isolate hot and cold airflows, improving cooling efficiency and energy utilization (PUE) . The closed aisle can be either a cold aisle at the front of the racks or a hot aisle at the back, ensuring that airflow from the cooling system does not mix with the ambient room air .

Subsystems and Components

Micro-module computer rooms should include the following independent subsystems:

- o Power Supply Subsystem: Includes UPS, PDUs, and optionally high-voltage DC (HVDC) systems for reliable power delivery .
- o Cooling Subsystem: Localized cooling units near racks, supporting hot/cold aisle containment and rapid response to temperature changes .
- o Structural Subsystem: Racks, enclosures, and modular frames designed for rapid assembly and scalability .
- o Cabling Subsystem: Standardized cabling for network and power, supporting structured connections to main distribution areas (MDAs) and telecommunications rooms .
- o Management and Monitoring Subsystem: Independent monitoring for temperature, humidity, power, and security, with data upload to higher-tier monitoring systems .
- o Optional Fire Protection and Security Systems: Integrated fire suppression, access control, and surveillance for operational safety .

Design and Deployment Standards

- o Indoor Operation: Micro-modules are designed for indoor environments and can form independent environmental systems through closed aisles .
- o Modular and Prefabricated: Components can be prefabricated, factory-tested, and rapidly assembled on-site, allowing stepwise deployment of large-scale data centers .
- o Scalability: Multiple micro-modules can be deployed with minimal physical correlation, enabling modular expansion according to IT load requirements .



General Standards for Micro-Module Computer Rooms

o Compliance with Standards: Micro-modules should adhere to recognized standards such as TIA-942 for data center reliability, cabling, and thermal management, and GB50174 for availability levels and mechanical structure .

Operational Considerations

- o Independent Operation: Each micro-module should operate with minimal impact from other modules, ensuring high availability and fault tolerance .
- o Airflow Management: Proper containment of hot and cold aisles enhances cooling efficiency and reduces energy consumption .
- o Monitoring and Control: Distributed control systems manage air-conditioning, UPS, environmental sensors, and smart rack functions, maintaining operational stability even if one controller fails .
- o Power and Cooling Redundancy: Configurations such as N, N+1, or 2N are recommended to meet different availability requirements .

Applications

Micro-module computer rooms are suitable for:

- o Edge data centers and regional IT deployments
- o Small business IT environments
- o High-density computing applications requiring rapid deployment and modular scalability By following these general standards, micro-module computer rooms can achieve high reliability, energy efficiency, and modular flexibility, supporting modern IT workloads while minimizing space and operational complexity.

Suitable for the green energy saving data center with fast, flexible deployment, small number of cabinets, large single cabinet load

Starrco's computer enclosure rooms are a solid & secure way to use our modular wall systems for IT applications. Get a quote on

Cleanrooms are contamination-free environments where high-tech manufacturing and assembly takes place. They range from very

Rulemaking Background Computer Room Air Conditioners Air-cooled, Three-phase, Small Commercial Package AC and HP (<65K)

om for UPS batteries, and rooms for mechanical equipment such as air handlers. In general, these spaces have

an environmental

Log in or sign up to ChatGPT

ICT rooms need to be optimally located in the building complex. In addition to the size of the rooms, one must consider factors

Defines complete component and system management that allow failure detection and isolation (enhanced hardware platform

Definition of Data Center / Server Room For the purposes of this standard, "Data Center" or "Server Room" refers to any physical

This document aims to ensure the safe installation, use, and disposal of RAM modules in desktop computers and laptops. It has

This proprietary edition of the OOI reflects the evolving requirements for modern data centers and AI-driven demands and enables

301 Moved Permanently 301 Moved Permanently cloudflare

Global Data Centre Standards Data centres have been around since the early 1950s, when

the design process, shorten the construction period of data center and save relevant resources. The modular machine

Clean rooms are defined as specially constructed environmentally controlled enclosed spaces with respect to airborne particulates,

Hier sollte eine Beschreibung angezeigt werden, diese Seite lässt dies jedoch nicht zu.

Web: <https://millstraining.co.za>

