FusionDC1000B Prefabricated Modular Data Center

Introduction

The FusionDC1000B prefabricated modular data center is mainly used as small- and medium-sized data center. It integrates civil engineering (L0) and electromechanical infrastructure (L1) with the Features of engineering productization and product modularization. The core functional area adopts modular design that the core modules are prefabricated, pre-integrated, and pre-commissioned in the factory, and LEGO assembly onsite. The construction of the auxiliary areas by engineering mode. So, it can minimize onsite workload, supports simplified, fast and green deploy. Core modules Generally include IT modules, power supply modules, and battery modules.

Application Scenarios

- Small- and medium-sized government and enterprise data centers
- Carrier-owned data centers
- Small- and medium-sized IDC

Features & Value

Simple
- Pre-integration and pre-test of devices in the factory, reducing TTM by 50%
- Easy maintenance thanks to modular design to the main components of power system and cooling system products

Green
- Building assembly rate > 95%, overall material recovery rate > 85%, and reduce construction carbon footprint by 90%.
- Huawei's intelligent uninterruptible power supply system is used to ensure high power supply efficiency.

Smart
- Digital design with BIM technology makes less design change
- Digital delivery makes less site management risks with visualized and standardized operation
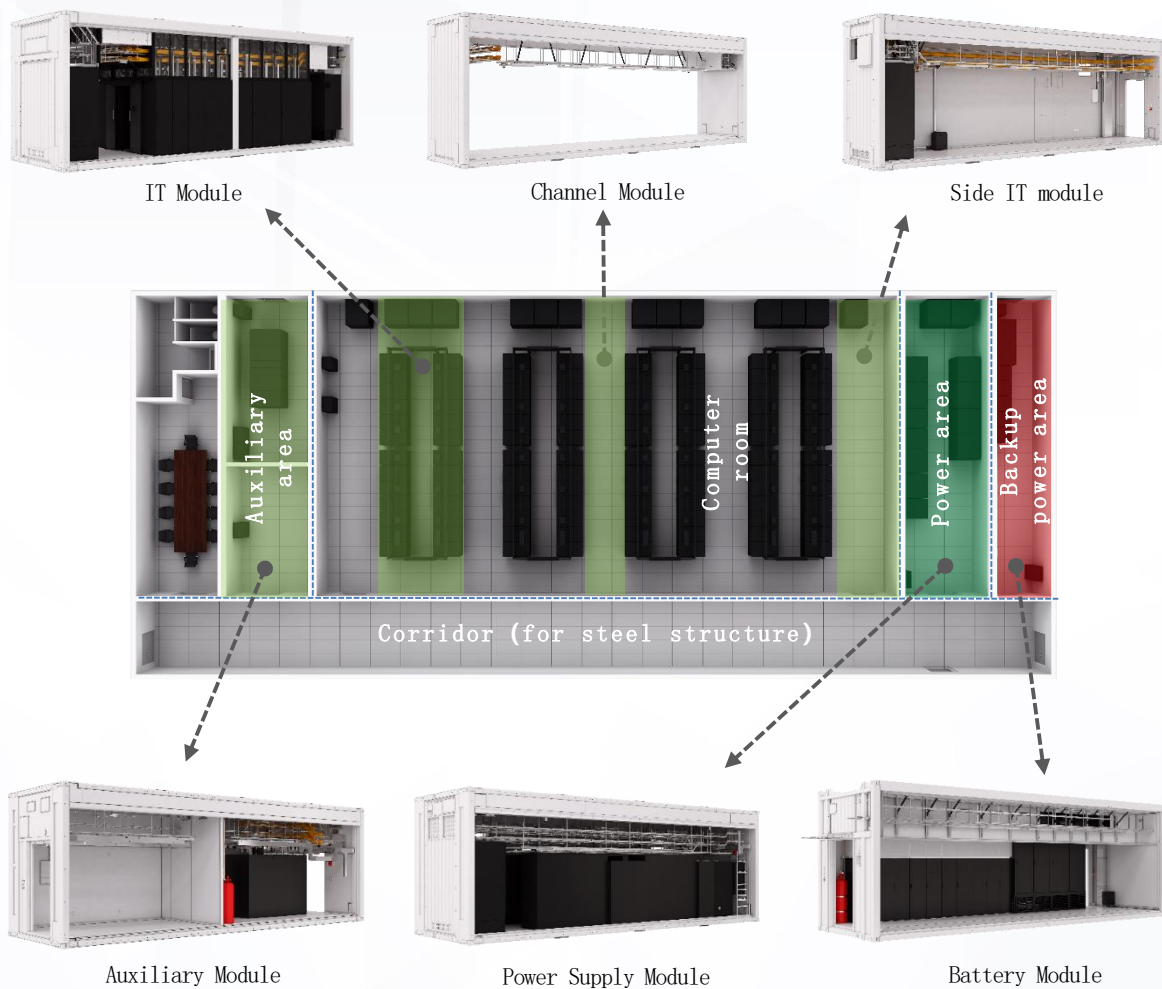- Digital Twins + AI + Cloud Enable Light-out Data Factory.

Reliable
- Meets the anti-seismic requirements of local buildings with Solid Structure.
- Meets building-grade fire resistance, waterproof, and wind resistance requirements.
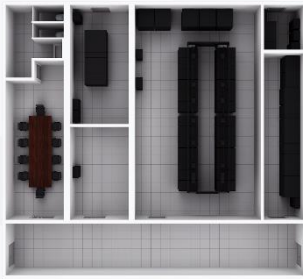
Introduction to Pre-fab. Modules

For FusionDC1000B prefabricated modular data center, modular design is adopted in areas such as the computer room, support area, and auxiliary area. For other auxiliary areas such as office area and conference rooms, steel structures are recommended for local delivery.

- Local consulting company or design institute should to confirm the requirements of local fire protection and construction code, when the application for approval and construction for FusionDC1000B is required.
- Roof and corridor need to be configured on site.
- Curtain wall is needed for multi-layer deployment.
- Only single-layer deployment is supported when the outdoor temperature is lower than -20℃.

IT Module   Channel Module   Side IT module

Auxiliary area   Computer room   Power area   Backup power area

Corridor (for steel structure)

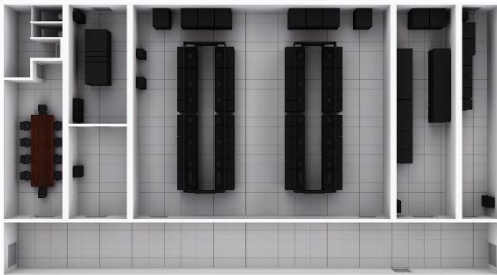Auxiliary Module   Power Supply Module   Battery Module

Reference Design

Reference Design 1

Reference Design 3

Reference Design 2

Reference Design 4

Note: The above layout is for reference only. The layout of specific project is subject to the actual design scheme.

Main parameters of the reference design (POD)

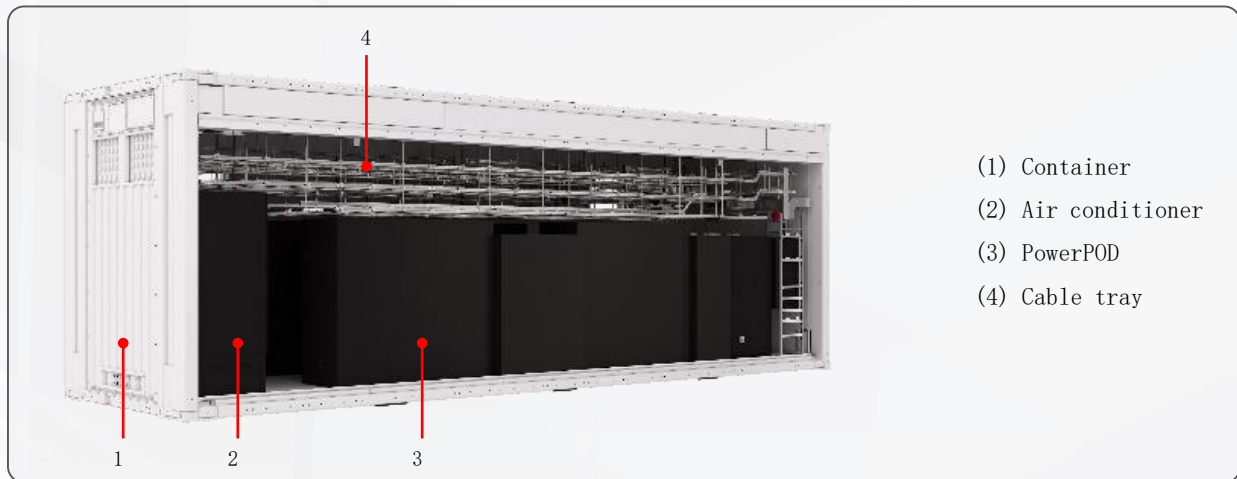| Category	Item	Reference Design
General	Altitude	≤4000m (Derating over 1000m)
	Working temperature	-40 ~ +45℃ (T1) , -5 ~ +55℃ (T3)
	Working relative humidity	5% ~ 95% RH
	Environment adaptability	Class A/B environment @ T1&T3, Class C environment @ T1
	Reliability level	Uptime TIER III
	Lifespan	Container lifespan 25-year, and system lifespan 10-year
	IT capacity	≤968kW per standard floor (The IT capacity of a specific project needs to be rechecked.)
	Number of Cabinets	≤26 Racks/module with single-side air supply, ≤22 Racks/module with dual-sides air supply
	Number of Floors	≤ 3
Load	Live load	Power supply area: 12 kN/m²; Data hall: 12 kN/m²; Backup power area: 12 kN/m² ; Ceiling: 2.4 kN/m²
	Seismic load	Ss ≤ 0.67 S1 ≤ 0.2; Soil type ≤ D Design category ≤ D
	Wind load	≤100mph
Power	Power System	380/400/415V, 50/60Hz, 3PH+N+PE (400V by default)
	Voltage range	-10% ~ +10%
	Power Architecture	2N
	Illumination	500 Lux in datahall, 300 Lux in auxiliary area
Cooling	Cooling device	NetCol8000-A055D, Cooling capacity is up to 55 kW/set
	Heat transfer coefficient of envelope	≤ 0.3 W/(m²∗K)
Monitoring	DCIM Configuration	iMaster NetEco
	Northbound protocol	SNMP/WebService/FTP
	Basic Feature	Workbench/Real-Time Monitoring/Alarm Management/Performance and Report/Security Management/Availability Management/System Management

Introduction to Core Modules (IT Module)

(1) Air conditioner
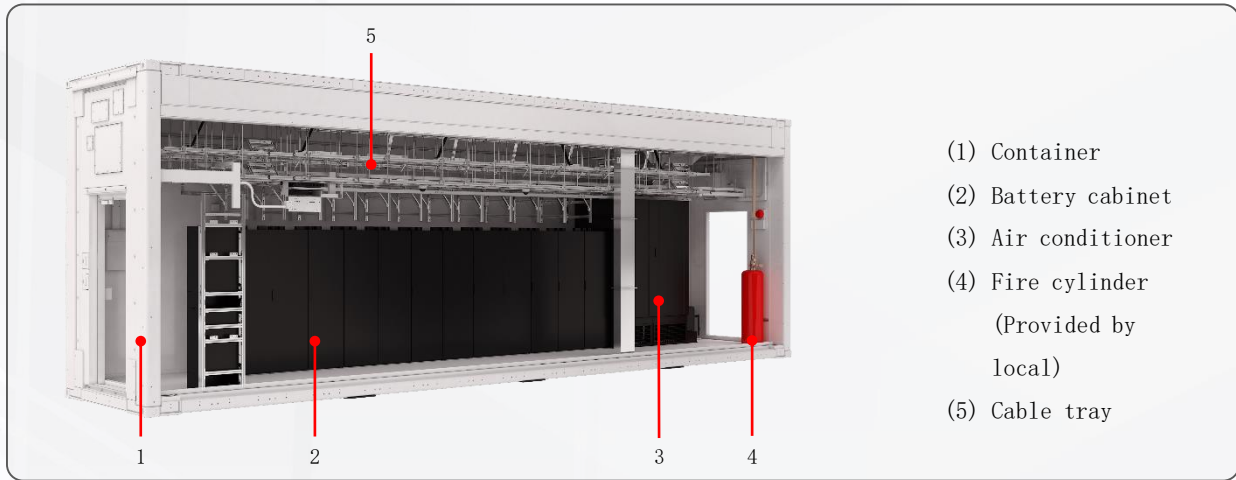(2) IT cabinet
(3) Column
(4) Cable tray
(5) Sliding window

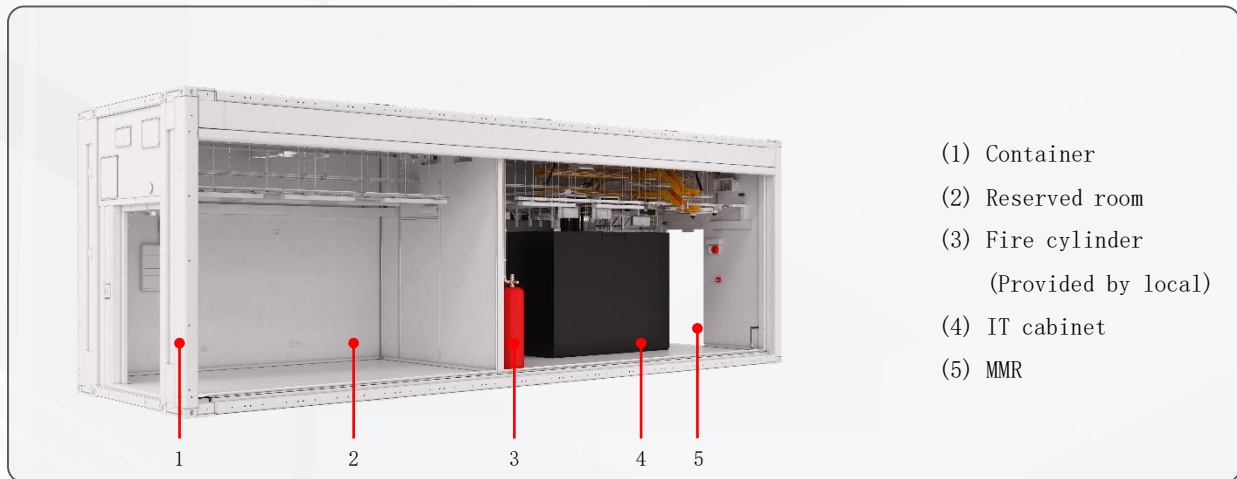| Category	Item	Specifications
System	Power density @ 45°C	Total power ≤ 169kW/Module, ≤ 6.5 kW/rack @ single-side air supply Total power ≤ 264kW/Module, ≤ 12 kW/rack @ dual-side air supply
	Cabinet dimension (H*W*D, mm)	2000*600*1200 2200*600*1200
	Number of Cabinets	≤ 26 racks/Module @ single-side air supply ≤ 22 racks/Module @ dual-side air supply
Structure	Module dimension (L*W*H, mm)	12192*3495/2438*4150
	Floor	Hot aisle containment
Power	Power system	380/400/415V±10%, 50/60Hz, three-phase four-wire + PE
	Power of IT Cabinet	Power A and B: 400A/630A busbar
	rPDU (single-side air supply)	Basic 32A rPDU which is single-phase and full-height /Monitored 32A rPDU which is single-phase and full-height
	rPDU (dual-side air supply)	Basic 32A rPDU which is single-phase and full-height /Monitored 32A rPDU which is single-phase and full-height /Basic 63A rPDU which is single-phase and full-height /Basic 32A*2 rPDU which is single-phase and half-height
Cooling	Aisle containment	Hot aisle containment
	Temperature range of cold aisles in the datahall	18 ~ 27°C (recommended) , The highest temperature should not exceed 32°C
	Range of relative humidity in the datahall	20%~80% RH
Monitoring	Power and environment monitoring system	Supported, by ECC800-Pro
	Module-level ACS	Optional
	Cabinet-level ACS	Optional
	Module-level CCTV	Optional
Fire Resistance	Exterior wall	90min
	Fireproof doors	90min

Introduction to Core Modules (Power Supply Module)

(1) Container
(2) Air conditioner
(3) PowerPOD
(4) Cable tray

Category	Item	Specifications
Structure	Module dimension (L×W×H, mm)	12192×3495×4150
	Floor	Without raised floor, floor-mounted
Power	Power system	380/400/415V, 50/60Hz, three-phase four-wire + PE, 400V by default
	Range of input voltage	-10% ~ +10%
	Input capacity of main PDB	630A/1000A/2000A
	IT UPS	200kVA/400kVA/600kVA per UPS
	ME UPS	200kVA/200kVA/400kVA per UPS
	Operating temperature	0 ~ 40°C (recommended: 20 ~ 30°C)
	Input power factor of UPS	0.99 @ 100% linear load
	Output power factor of UPS	1
	Output voltage distortion of UPS	THDv ≤ 1% @ linear full load THDv ≤ 4% @ non-linear full load
Cooling	Cooling type	In-room air cooled (NetCol8000-A055D)
	Refrigerant	R410A
	Range of temperature in the air intake channel	15 ~ 32°C
	Range of relative humidity in the air intake channel	5% ~ 95% RH
Monitoring	Power and environment monitoring system	Supported, by ECC800-Pro
	Room-level ACS	Optional. Interior door: IC card reader / three-in-one card reader Outdoor door: IC card reader
	Room-level CCTV	Optional
	Water detection system	Supported, non-location cable sensor
Fire Resistance	Exterior wall	90min
	Interior partition wall	120min (Battery room)
	Fireproof doors	90min

Introduction to Core Modules (Battery Module)

(1) Container
(2) Battery cabinet
(3) Air conditioner
(4) Fire cylinder
   (Provided by
   local)
(5) Cable tray

Category	Item	Specifications
Structure	Module dimension (L×W×H, mm)	12192×3495×4150
	Floor	Without raised floor, floor-mounted
Power	Power System	380/400/415V, 50/60Hz, three-phase four-wire + PE, 400V by default
	Range of input voltage	-10% ~ +10%
	Product Model	SmartLi 3.0 ST
	Battery Cell Material	LiFePO4
	Cycle Life	5000 cycles @ 50% DOD
	Number of Battery Cabinets	≤12
	Cabinet dimension (H×W×D, mm)	2000×600×850
	Power backup time	10 ~ 15min
Cooling	Cooling type	In-room air cooled (NetCol8000-A055D)
	Refrigerant	R410A
	Range of temperature in the air intake channel	15 ~ 32°C
	Range of relative humidity in the air intake channel	5% ~ 95% RH
Monitoring	Power and environment monitoring system	Supported, by ECC800-Pro
	Room-level ACS	Optional. Interior door: IC card reader / three-in-one card reader Outdoor door: IC card reader
	Room-level CCTV	Optional
	Water detection system	Supported, non-location cable sensor
Fire Resistance	Exterior wall	120min
	Fireproof doors	90min
	precaution	It is necessary to deploy lithium battery in a independent compartments and configure dry water fire extinguishing facilities such as water spray in the battery room.

Introduction to Auxiliary Modules (MMR)

(1) Container
(2) Reserved room
(3) Fire cylinder
    (Provided by local)
(4) IT cabinet
(5) MMR

Category	Item	Specifications
Structure	Module dimension (L×W×H, mm)	12192×3495×4150
	Floor	Without raised floor, floor-mounted
Cabinet	Cabinet dimension (H×W×D, mm)	2200×600×1200
	Number of Cabinets	4
Cooling	Cooling type	In-row DX cooling
	Refrigerant	R410A
	Range of temperature in the air intake channel	18 ~ 27°C (recommended) , The highest temperature should not exceed 32°C
	Range of relative humidity in the air intake channel	20% ~ 80% RH
Monitoring	Power and environment monitoring system	Supported, by ECC800-Pro
	Room-level ACS	Optional. Interior door: IC card reader / three-in-one card reader Outdoor door: IC card reader
	Room-level CCTV	Optional
	Water detection system	Supported, non-location cable sensor
Fire Resistance	Exterior wall	90min
	Interior partition wall	60min
	Fireproof doors	90min