



# HUAWEI DATA CENTER FACILITIES SOLUTIONS **CATALOGUE**

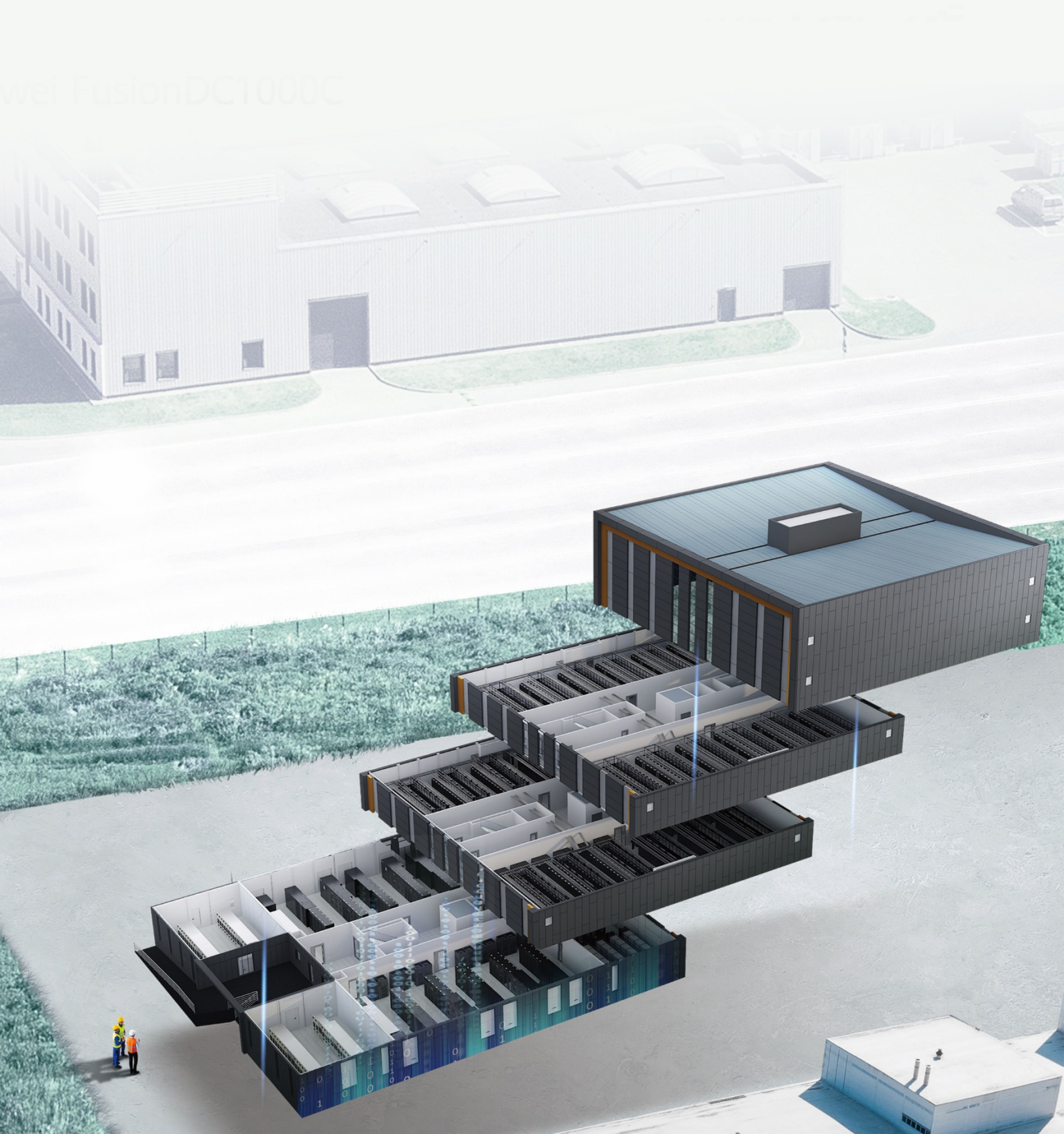




# 1. Power ICT in a Smart Way

## Smart Modular Data Center Solutions

well FusionDC1000C







# FusionModule2000

## Indoor Modular Data Center

### Introduction

Huawei FusionModule2000 is a new generation smart modular data center solution, which dedicated to providing customers with simple, efficient, and reliable data center solutions.

It's a modular-designed, highly integrated solution which comprises power supply system, cooling system, rack & structure system, cabling system, management system within a module, meeting the requirements for quick delivery and on-demand deployment.

Furthermore, the Huawei smart module uses the i<sup>3</sup> intelligent management system to comprehensively improve the reliability and efficiency of power supply and cooling systems. This significantly improves data center availability, and O&M efficiency.

### Application scenarios

- The FusionModule2000 uses an air-cooled cooling system and is mainly applicable to small- and medium-sized data centers. The solution features simple design and high building adaptability, lowering the requirements of room height and reconstruction. It meets the data center deployment requirements of various sectors such as enterprise headquarters or large branches, bank headquarters and secondary branches, governments, carriers, education, and healthcare.

### Features

#### Simple

- Modular design, one module one DC, on-demand deployment and flexible expansion

#### Green

- iCooling intelligent optimization\*, reducing the energy consumption of cooling system by 8% to 15%
- SmartLi Inside\* supports Huawei smart lithium batteries deployed in the module. Compared with traditional lead-acid batteries, footprint is reduced by 70% under the same load and same backup time
- Wet film humidification\*: Compared with traditional electrode humidifiers, wet film humidifiers reduce energy consumption by 95%
- Industry's first air-cooled smart modular DC PUE test and certification, The annual average PUE is as low as 1.245 @Beijing

#### Smart

- iManager: Space, Power, Cooling (SPC) visualization, automatic asset management simplified O&M.
- 3D view\* clear display of key information and alarms about power distribution and cooling system, automatic management of assets\*, automatic asset tracking, and no manual counting.
- Local 43-inch smart screen \* intuitive display of intelligent features,
- simplifying O&M

#### Reliable

- iPower: Visualization of power supply chain, fault auto-locating and auto shutdown for proactive protection;
- SmartLi Inside\*: Three-layer BMS ensure the reliability of lithium batteries.
- Innovative intelligent refrigerant leakage detection prevents cooling capacity decrease or air conditioner breakdown.



Standard Dual- row



Standard Dual-row  
Smart Screen  
Version\*



Simplified Single-row

\*Optional Features

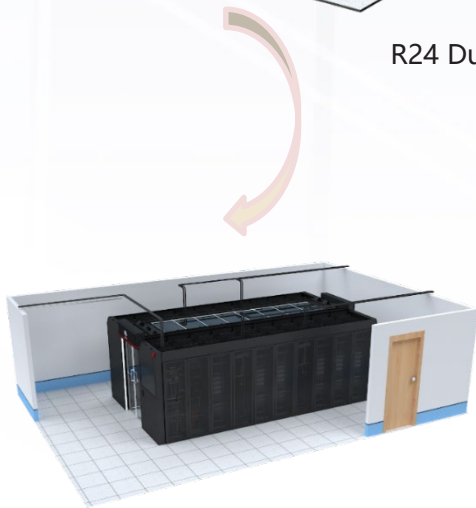
# Specifications

| Item  | Specifications                     |   |
|---|------------------------------------|---|
| Micro Module  | Dimensions                         | Single row (with aisle containment) (L×W×H):<br>L×2400×2410mm; L×1350×2410mm; L×1600×2300mm<br><br>Dual row (with aisle containment) (L×W×H): L×3600×2410mm; L×3400×2410mm;<br>L×3600×2610mm        |
|   | Cabinets per module                | Single row≤24 cabinets; dual row: ≤48 cabinets  |
|   | Power supply                       | 380/400/415Vac, 50/60Hz, 3Ph+N+PE   |
|   | Max IT load per module             | 125kW (with integrated UPS)/ 145kW (with integrated PDC)/ 310kW (with New main way)/<br>235kW (with precision PDC)  |
|   | Operation condition                | Ultra low temperature condition: -40°C to 45°C(Need low-temp kit)<br>T1 condition: -20°C to 45°C; T3 condition: -5°C to 55°C(Need T3 outdoor unit)  |
|   | Cable routing                      | Routed in/out through the top of cabinets   |
|   | Installation                       | Installing on concrete floor or raised floor  |
| Cabinet   | Dimensions (H×W×D)                 | 2000mm×600/800mm×1200mm; 2000mm×600mm×1100mm;<br>2200mm×600/800mm×1200mm  |
|   | Space available                    | 42U/47U   |
|   | Cabinet Porosity                   | Front and rear doors: hexagonal mesh door design, porosity rate ≥ 75%   |
|   | Protection level                   | IP20  |
| Air-cooled In-row air conditioner                   | Cooling capacity                   | 25kW/35kW/46kW  |
|   | Dimensions (H×W×D)                 | 25kW:2000mm×300mm×1100mm;<br>35kW:2000mm×600mm×1200mm;<br>46kW:2000mm×600mm×1200mm; (Simplified Single-row can only support 46kW)   |
|   | Power supply                       | 380V AC~415V AC 50/60Hz, 3Ph+N+PE   |
|   | Refrigerant                        | R410A   |
| Integrated UPS (UPS inside)                         | Input voltage                      | 380/400/415Vac, 50/60Hz, 3Ph+N+PE   |
|   | Input                              | 250/400A MCCB (single input); 250A/400A ATS (dual input)  |
|   | Input power factor                 | Full load > 0.99, Half load > 0.98  |
|   | Output power factor                | 1.0   |
|   | Rated capacity                     | 30~125kVA:<br>IT Load ≤ 120 kW, power modules ≤ 4, the capacity of a single power module is 30kVA<br>IT Load > 120 kW, power modules ≥ 5, the capacity of a single power module is derated to 25kVA |
|   | Output                             | IT: 40A/1P×24×2; A/C: 40A or 63A/3P×8; lighting: 10A/1P×3   |
|   | Efficiency                         | ≥ 96% (Linear Load)   |
|   | AC SPD                             | 5kA, 8/20μs   |
| Integrated power distribution cabinet (UPS outside) | Input voltage                      | 380/400/415Vac, 50/60Hz, 3Ph+N+PE   |
|   | Input                              | IT: 160/250A MCCB; A/C: 160/250A MCCB (single/dual input)   |
|   | Rated input current                | IT: 160A/250A, Air conditioner: 160A/250A   |
|   | Output                             | IT: 40A/1P×24×2; A/C: 63A/3P×16; lighting: 10A/1P×3   |
|   | AC SPD                             | 20kA, 8/20μs  |
| Precision power distribution cabinet (UPS outside)  | Input voltage                      | 380/400/415Vac,50/60Hz,3Ph+N+PE   |
|   | Input                              | 160/250/400A MCCB (single/dual input)   |
|   | Output                             | 40A/1P, max 144 routes  |
| Smart busway (UPS outside)                          | Input voltage                      | 380/400/415Vac,50/60Hz,3Ph+N+PE   |
|   | Input                              | 250/400A MCCB (single input)  |
|   | Output                             | 40/63A 1P (6 branches in one Power Distribution Unit, can be expanded with the length of cabinet)   |
| SmartLi Inside                                      | Single Lithium battery cabinet     | Contains 16 battery modules. Two battery strings are connected in parallel, and each battery string contains eight battery modules connected in series.   |
|   | Number of Lithium battery cabinets | 2N scenario: ≤ 4 battery cabinets; N+1 scenario: ≤ 2 battery cabinets   |
|   | Typical backup time                | The backup time can be 15 minutes, 30 minutes, or 1 hour  |

## Recommended Configurations—UPS Inside the Module



R24 Dual-Row Module with Lithium Batteries in Row



Dual-Row Cabinet Scenario

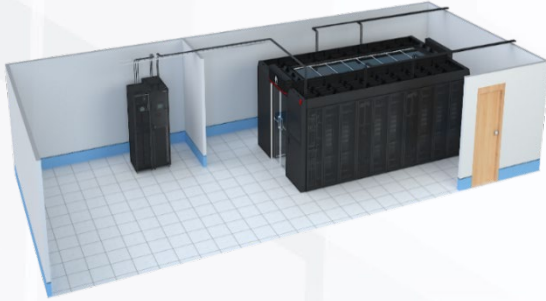
|                   |                 |                 |    |               |    |    |    |               |    |    |    |               |    |    |    |
|-------------------|-----------------|-----------------|----|---------------|----|----|----|---------------|----|----|----|---------------|----|----|----|
| IT                | IT              | IT              | IT | Smart Cooling | IT | IT | IT | Smart Cooling | IT | IT | IT | Smart Cooling | IT | IT | IT |
| Aisle Containment |                 |                 |    |               |    |    |    |               |    |    |    |               |    |    |    |
| Integrated UPS    | Battery cabinet | Battery cabinet | IT | Smart Cooling | IT | IT | IT | IT            | IT | IT | IT | Smart Cooling | IT | IT | IT |

R24 Typical Layout of the UPS and Lithium Batteries in Row

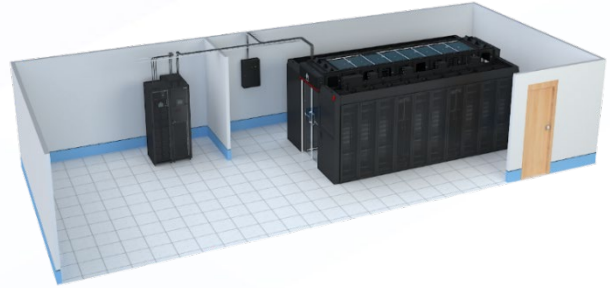
| IT Load (kW) | Power Supply   | Redundancy | A/C Configuration | Battery                                       |
|--------------|----------------|------------|-------------------|---|
| 30           | Integrated UPS | N+ 1/ 2N   | 25kW×2            | In-row (Battery cabinet)/Outside Installation |
| 40           |                |            | 25kW×3            |   |
| 60           |                |            | 35kW×3            |   |
| 80           |                |            | 35kW×4            |   |
| 100          |                |            | 46kW×4            |   |
| 125          |                |            | 46kW×5            |   |



## Recommended Configurations——UPS Outside the Module



UPS Outside the Module(Precision PDC)



UPS Inside the Module(Smart Busway)

|                      |    |               |    |    |    |    |    |    |    |    |               |    |    |               |
|----------------------|----|---------------|----|----|----|----|----|----|----|----|---------------|----|----|---------------|
| IT                   | IT | Smart Cooling | IT | IT | IT | IT | IT | IT | IT | IT | Smart Cooling | IT | IT | IT            |
| R24-140kW<br>(aisle) |    |               |    |    |    |    |    |    |    |    |               |    |    |               |
| IT                   | IT | Smart Cooling | IT | IT | IT | IT | IT | IT | IT | IT | Smart Cooling | IT | IT | Precision PDC |

R24 Typical Layout of Dual-Row (Precision PDC)

|                      |    |               |    |    |    |    |               |    |    |    |    |               |    |    |
|----------------------|----|---------------|----|----|----|----|---------------|----|----|----|----|---------------|----|----|
| IT                   | IT | Smart Cooling | IT | IT | IT | IT | Smart Cooling | IT | IT | IT | IT | Smart Cooling | IT | IT |
| R24-140kW<br>(aisle) |    |               |    |    |    |    |               |    |    |    |    |               |    |    |
| IT                   | IT | Smart Cooling | IT | IT | IT | IT | Smart Cooling | IT | IT | IT | IT | Smart Cooling | IT | IT |

R24 Typical Layout of Dual-Row (Smart Busway)

| IT Load (kW) | IT Power Supply                               | AC Power Supply                           | Redundancy | AC Configuration |
|--------------|---|---|------------|------------------|
| 20           | Integrated PDC/<br>Precision PDC/Smart Busway | Integrated PDC/<br>Power Distribution Box | N+1/2N     | 25kW×2           |
| 30           |   |   |            | 35kW×2           |
| 40           |   |   |            | 25kW×3           |
| 60           |   |   |            | 35kW×3           |
| 90           |   |   |            | 35kW×4           |
| 120          |   |   |            | 46kW×4           |
| 145          | Smart Busway/Pre<br>cision PDC                | Power Distribution Box                    |            | 46kW×5           |
| 160          |   |   |            | 46kW×6           |
| 198          |   |   |            | 46kW×6           |
| 235          | Precision PDC                                 |   |            | 46kW×7           |

# FusionModule2000-S

## Row Smart Modular Data Center Solution

### Introduction

FusionModule2000-S is a new generation smart modular data center solution, which dedicated to providing customers with simple, efficient, and reliable data center solutions.

FusionModule2000-S adopts a modular design and integrates power supply, temperature control, cabinet, aisle, cabling, and monitoring system in a single row of aisles, meeting the requirements for quick delivery and on-demand deployment.

In addition, FusionModule2000-S uses i3 to build intelligent core subsystems and introduces AI technologies to implement intelligent linkage control of power supply and cooling, and automatically manages equipment room assets, significantly improving data center reliability, availability, and O&M efficiency.

### Application scenarios

- High-density HPC supercomputing: 1600mm deep cold and hot aisle containment. Supports a maximum of 30 kW/R cabinet. A 900 mm deep server can be installed, It can be used in supercomputing applications in universities and research institutes.
- Simplified MDC: 1350 mm deep hot aisle containment, simplified design, aisle-free design, strong building adaptability, and applicable to most equipment rooms in harsh conditions such as small space and low floor height.

### Features

#### Simple

- All-in-one design, one-stop fast deployment, flexible expansion
- The minimum deployment height is only 2.3 m.
- The 1350 mm deep aisle can be contained in the hot aisle, and the 1600 mm deep aisle can be contained in the cold and hot aisle.

#### Green

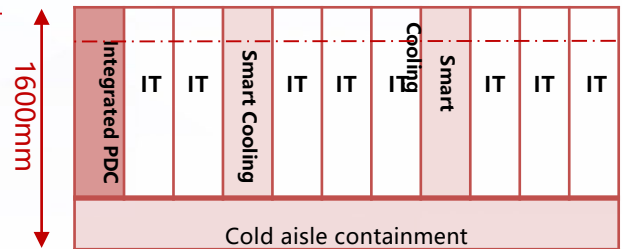
- Integrated cooling, power supply, and monitoring, SmartLi Inside\* supports Huawei smart lithium batteries deployed in the module. saving 50%+ footprint compared with traditional solution.
- Cold and hot aisle containment ,high environment adaptability.
- Low PUE: 30% lower PUE compared with the traditional DC

#### Smart

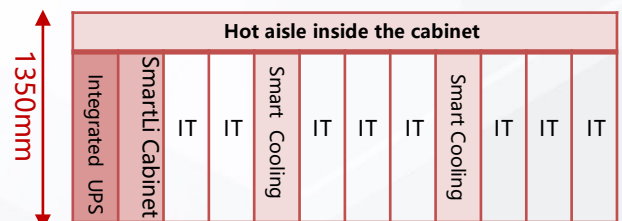
- Vertical intelligent partitioning, precisely matching the heat dissipation of the IT equipment. Intelligent follow-up of air volume and cooling capacity, stable running without hot spots

#### Reliable

- Support N+1 cooling system backup and 2N power backup, providing highly reliable power supply and cooling.
- Cold and hot aisle containment, automatic door opening in emergency, ensuring emergency heat dissipation..



Typical layout of the HPC scenario



Typical layout of the simplified MDC scenario



## Specifications

| Item   | Specifications              |  |
|--|-----------------------------|--|
| Cabinet and Aisle                            | Dimesions (L×W×H)           | L×1350mm×2000mm (with hot aisle containment)<br>L×1600mm×2000mm (with hot and cold aisle containment)                      |
|  | Power supply                | 380/400/415Vac, 50/60Hz, 3Ph+N+PE  |
|  | Cabinets per module         | ≤24 cabinets (Including power supply, cooling and battery cabinets)  |
|  | Operation condition         | Ultra low temperature condition: -40°C to 45°C Need low-temp kit)<br>T1 condition: -20°C to 45°C;                          |
|  | Cable routing               | Routed in/out through the top of cabinets  |
|  | Maintenance space           | ≥1350mm(front), ≥900mm(rear)   |
|  | Installation mode           | Installing on concrete floor or raised floor   |
| Air-cooled In-row air conditioner            | Cooling capacity            | 46kW   |
|  | Dimensions(W×D×H)           | 600mm×1350mm×2000mm  |
|  | Power supply                | 380V AC~415V AC 50/60Hz 3Ph+N+PE   |
|  | Recommended circuit breaker | 63A/3P   |
|  | Power supply mode           | Supports dual power supplies,<br>Supports UPS power supply in HPC scenarios.   |
|  | AC configuration            | N+1  |
|  | Air volume                  | 9000m³/h@46kW  |
|  | Length of water sensor      | Standard 5 m (can be extended to 50 m)   |
|  | Refrigerant                 | R410A  |
| Air-cooled outdoor unit@T1 working condition | Power supply                | 380V~415V AC, 3PH/N/PE, 50Hz/60Hz  |
|  | Dimension(W×D×H)            | 1356mm×1094mm×1107mm   |
|  | Net/gross weight (kg)       | 122/169  |
|  | Air volume                  | 12000m³  |
|  | height deviation            | -8~30m (If the outdoor unit is lower than the indoor unit, the value is negative.)   |
|  | Length of the pipe          | 0~100m (between ondoor and outdoor units)  |
| Monitoring/management system                 | Management system           | ECC800-Pro   |
|  | Power supply mode           | Single/Dual  |
|  | Water leakage sensor        | Standard configuration   |
|  | Smoke sensor                | Standard configuration   |
|  | Access control              | Intelligent electronic lock, fire extinguishing linkage, and automatic spring door   |
|  | Temperature sensor          | Configure 1 PCS for each air conditioner, Cabinet-level temperature map is optional.                                       |
| Integrated UPS                               | Rated capacity              | 60kW/125kW   |
|  | Input                       | 250/400A MCCB (single input); 250A/400A ATS (dual input)   |
|  | Output                      | IT: 2×24×40A/1P, A/C: 8×40A/3P or 8×63A/3P, Lighting: 3×10A/1P   |
| Integrated power distribution cabinet        | Rated capacity              | 95kW/145kW   |
|  | Input                       | IT: 160/250A MCCB; A/C: 160/250A MCCB (single/dual input)  |
|  | Output                      | IT: 40A/1P×24×2; 63A/1P×24×2; 40A/3P×8×2; A/C: 63A/3P×8 or 40A/3P×8 ; lighting: 10A/1P×3                                   |
| Precision power distribution cabinet         | Rated capacity              | 95/148.5/235/310kW   |
|  | Input                       | 160/250/400A MCCB (single/dual input), 630A MCCB (single input)  |
|  | Output                      | 40A/1P, 63A/1P, 40A/3P, 63A/3P, max 144 routes per rack  |
| New main way                                 | Rated capacity              | 161kW@415VAC, 148kW@380VAC @ 250A MCCB<br>258kW@415VAC, 236kW@380VAC @ 400A MCCB<br>339kW@415VAC, 310kW@380VAC @ 630A MCCB |
|  | Input                       | 250A/400A/630A MCCB  |
|  | Output                      | 40A,63A/1P x6 or 63A,40A/3P x 2  |

# FusionModule800

## Introduction

FusionModule800 Smart Small Data Center is a new-generation data center solution. It is integrated with PDU, UPS, monitoring, cooling and rack system in a comprehensive rack in order to save space. IT racks can be deployed flexibly on both sides. A single module can support maximum 12 racks and 25kW IT load (T3: IT Load  $\leq 21\text{kW}$ ), the maximum power density for each rack is 7kW/ R (T3:  $\leq 6\text{kW}$ ). Cold and hot aisle containment to saving Energy and reduce noise.

## Application Scenarios

- Finance, Education, Health Care, Public Security, SMEs, Retailing & Merchandising, Edge DC, etc.

## Features

### Simple

- All components are prefabricated in factories. only need to be combined onsite, hardware are installed in 4 hours, 2 days business on line.
- Fire fighting module inside\*, on need reconstruction
- Real-time monitoring of mobile apps, centralized monitoring of multiple sits\*.

### Green

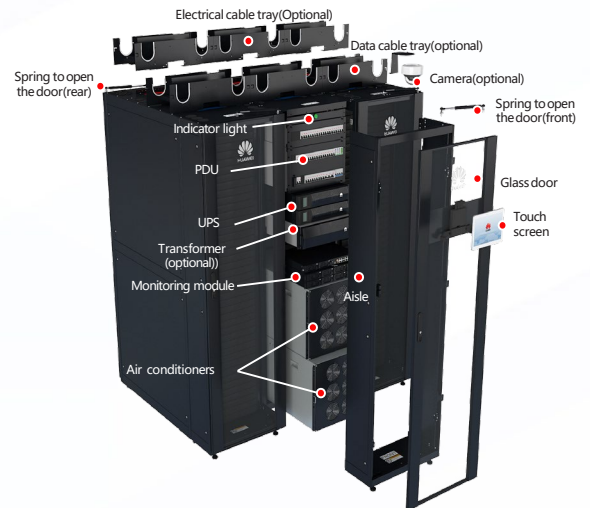
- High integrated design + lithium battery, Saves 2 to 3 cabinets footprint.
- containment, dustproof and noise reduction, and Higher efficiency of cooling system

### Smart

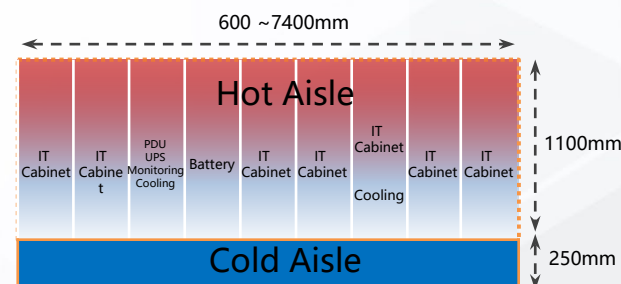
- Facial recognition, password-free login, and key-free door opening
- Intelligent O&M, unified management of multiple data centers\*

### Reliable

- Reliable dehumidification at low load to avoid condensation in the data center
- Highly stable LFP battery cell, no fire risk and more reliable
- \*Optional: doors automatically in case of cooling system failure and the temperature exceeds the limit



FusionModule800 Architecture



## Specifications

| Item               | Description              | Specification   |
|--------------------|--------------------------|---|
| Overall Parameters | Power system             | 380/400/415Vac, 50Hz, 3Ph+N+PE  |
|                    | Aisle containment        | Cold and hot aisle containment  |
|                    | System protection level  | IP20  |
|                    | Ambient temperature      | T1*: -20°C~+45°C; T3*: -10°C~+55°C; LT*: -40°C~+45°C  |
|                    | Maximum cabinet quantity | 12  |
|                    | Quantity of IT cabinets  | 0~10  |
|                    | Maximum IT load          | 25kW (T1* & LT*); 21kW (T3*)  |
|                    | Max power density /Rack  | 7kW (T1* & LT*); 6kW (T3*)  |
|                    | IT cabinet weight        | Static load 1500kg, Dynamic load 1000kg   |
|                    | Total Dimensions         | 2000×(600-7400)×1350(H×W×D mm)  |
| Cooling system     | Cooling capacity         | 12.5kW*   |
|                    | Configuration            | N, N+1  |
|                    | Cooling mode             | Direct expansion air-cooled   |
|                    | Installation             | Rack- mounted   |
|                    | Air volume               | 2600m³/h  |
|                    | Air supply mode          | Front supply, rear return   |
| Power System       | SPD                      | CLASSII/C, In 20kA, I <sub>max</sub> 40kA, 8/20us   |
|                    | Input power              | Single or dual inputs   |
|                    | UPS capacity             | 10kVA   |
|                    | UPS configuration        | N, N+1  |
|                    | UPS input voltage range  | 80~280Vac, 40-70Hz, 1Ph+N+PE  |
|                    | UPS output power factor  | 1   |
|                    | UPS efficiency           | Up to 96%   |
|                    | Battery type             | Lithium battery   |
|                    | Battery capacity         | 100Ah @ 0.2C, 35°C (4800Wh @ 0.2C, 35°C)  |
|                    | Backup time              | 60min~240min  |
| Monitoring system  | rPDU (Optional)          | No-Intelligent rPDU: IEC or GB, on site installation<br>Intelligent rPDU: IEC, on site installation |
|                    | Maintenance bypass       | Standard  |
|                    | Function                 | Remote web page access and unified management of multiple branches                                  |
|                    | Local monitoring         | 10-inch tablet screen, supporting facial recognition login and keyless door opening                 |
|                    | Standard functions       | Smoke sensor, T&H sensor, intelligent lock, 10-inch PAD, SMS/email alarm, and local app O&M         |
|                    | Optional functions       | Video surveillance, water leakage sensor, and mobile O&M  |

**Note:**

1, The cooling capacity 12.5kW is obtained when the indoor dry bulb temperature is 37.8°C, and outdoor dry bulb temperature is 35°C, relative humidity 20%.

2, ATS is optional and can be installed on site

3, T1: -20°C~ +45°C, LT: -40°C~ +45°C; T3: -10°C~ +55°C

4, The Converged cabinet part number don't include cooling out door unit. Three type of outdoor unites are freely configured with the converged cabinet.



# FusionModule500

## (Integrated Cooling Solution)

### Introduction

Huawei FusionModule500 is a new-generation edge data center solution, which integrates the UPS, PDU, cooling, monitoring, power backup, and fire extinguishing system\* in one cabinet, it can support a maximum of 3kW IT&CT loads. FusionModule500 is pre-tested, pre-installed, and pre-commissioning before delivery, enabling quick deployment on site. The remote web-based monitoring function enables remote O&M for a single site. In addition, with Huawei data center management system, It can also implement centralized management of multiple branches.

### Application scenarios

- Finance, Education, Health Care, Public Security, SMEs, Retailing & Merchandising, Edge DC, etc.

### Features

#### Simple

- All-in-one design and integrated cooling unit inside, quick deployment within 2 hours
- Fire fighting module inside\*, on need reconstruction

#### Green

- Highly integrated design, space saving by 50%
- Hot and cold aisle containment to improve the cooling efficiency and reduce noise
- SmartLi inside, smaller size with longer lifecycle

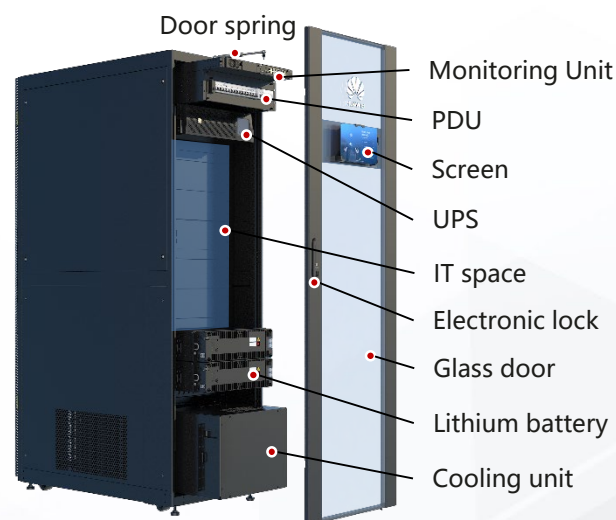
#### Smart

- Facial recognition, password-free login, and key-free door opening
- Intelligent O&M, unified management of multiple data centers\*

#### Reliable

- Highly stable LFP battery cell, no fire risk and more reliable
- Open rack doors automatically in case of cooling system failure and the temperature exceeds the limit

\*: Optional



FusionModule500 Architecture

## Specifications

| Item              |                  | Description              | Specification   |
|-------------------|------------------|--------------------------|---|
| System features   |                  | Power system             | 220/230/240V AC, 1Ph+N+PE, 50/60Hz  |
|                   |                  | Aisle containment        | Cold and hot aisle containment  |
|                   |                  | Installation mode        | Concrete floor or raised floor  |
|                   |                  | Cable route              | From the top  |
|                   |                  | Humidity and temperature | 0°C~40°C, 5~95%   |
|                   |                  | Altitude                 | 0~1000m (when the altitude is greater than 1000m, the capacity is derated)                  |
|                   |                  | Maximum ICT load         | 3kW   |
|                   |                  | Total dimensions         | 600mm×2000mm×1100mm (W×H×D mm)  |
|                   |                  | ICT space                | ≤22U <sup>a</sup>   |
|                   |                  | Protection level         | IP20  |
|                   |                  | Weight                   | 360KG (@3kW, 1h battery backup)   |
| Power system      | Input and output | Input                    | 220/230/240V AC, 1Ph+N+PE, 50/60Hz, 63A, Single or dual inputs                              |
|                   |                  | Output                   | 220V AC, 48V DC (48V output power ≤ 1500 W)   |
|                   | UPS              | Capacity                 | 6kVA  |
|                   |                  | Configuration            | Single UPS  |
|                   |                  | Voltage input range      | 80~280Vac, 40~70Hz, 1Ph+N+PE  |
|                   |                  | Power factor             | 1   |
|                   |                  | Efficiency               | Up to 96%   |
|                   | Battery          | Battery capacity         | 48V DC, 100Ah @ 0.2C  |
|                   |                  | Dimension                | 442mm×130mm×396mm (W×H×D mm)  |
|                   |                  | Backup time              | 1h~4h <sup>b</sup>  |
| Cooling system    |                  | Cooling capacity         | 3.5kW   |
|                   |                  | Cooling mode             | Direct expansion air-cooled   |
|                   |                  | Air supply               | Front air supply and rear air return  |
|                   |                  | Installation             | Rack-mounted installation   |
| Monitoring system |                  | Function                 | Remote web page access and unified management of multiple branches <sup>c</sup>             |
|                   |                  | Local monitoring         | 10-inch tablet screen , supporting facial recognition login and keyless door opening        |
|                   |                  | Standard functions       | Smoke sensor, T&H sensor, intelligent lock, 10-inch PAD, SMS/email alarm, and local app O&M |
|                   |                  | Optional functions       | Video surveillance, water leakage sensor, and mobile O&M                                    |

REMARK:

a) ICT space = 22U is calculated based on 3kW and 1h backup time without fire extinguish module. The actual available space depends on specific configuration.

b) FusionModule500 supports up to 4h battery backup, and the actual backup time depends on the number of battery modules;

c) The cooling capacity is obtained when the indoor dry bulb temperature is 37°C, the indoor wet bulb temperature is 24°C, and the outdoor dry bulb temperature is 35°C. The actual cooling capacity varies depending on the indoor and outdoor ambient temperatures and relative humidity.

d) Unified management of multiple branches requires Huawei intelligent data center management system;

e) Water leakage detection is an optional function, and the dot-type/rope-type detection sensor can be selected.

f) The SMS/email alarm function needs to be used with the SIM card/network. The mobile O&M app needs to be used with Huawei intelligent data center management system.

## Main parameters of the reference design(POD)

| Category            | Item  | FanWall Cooling solution  | Indirect evaporative cooling scenario  |
|---------------------|---|---|--|
| General             | Altitude  | Altitudes≤4000m <sup>①</sup>  |  |
|                     | Environment adaptability                                  | Class A/B/C environment: Class C environment is 500m~3700m away from strong corrosive environments (such as seaside, garbage pileup, and heavily polluted chemical plants) <sup>②</sup> .             | Class A/B/C environment: Class B environment is at least 3,700m away from strong corrosive environments (such as seaside, garbage pileup, and heavily polluted chemical plants) <sup>②</sup> . |
|                     | Operating temperature                                     | -5~+55° C, -40~+45° C(if the temperature is lower than -5° C, perform external wall insulation)   | -40~+45° C(if the temperature is lower than -5° C, perform external wall insulation)   |
|                     | Working humidity  | 5%RH~95%RH  |  |
|                     | Tier Level  | TIER III, 2N  |  |
|                     | Stack Layers  | ≤5 layers   |  |
|                     | Prefab module life  | 25-year standard, 50-year customization for specific environments <sup>③</sup>  |  |
|                     | Total IT capacity   | ≤2016kW@336R/layer  | ≤1344kW@336R/layer   |
|                     | Average power per cabinet                                 | ≤12kW(Up to 15 kW per cabinet)  | ≤8kW(Up to 15 kW per cabinet)  |
|                     | W x D x H   | 600mm X 1200mm X 2000mm/2200mm <sup>④</sup>   |  |
| load design         | live load   | Power supply area: 15 kN/m <sup>2</sup> ; equipment area: 12 kN/m <sup>2</sup> ; corridors and public areas: 5 kN/m <sup>2</sup> ; ceilings: 2.4 kN/m <sup>2</sup> ; rooftops: 0.75 kN/m <sup>2</sup> |  |
|                     | Seismic load  | Ss≤0.67 S1≤0.2; Soil types≤D Design category≤D  |  |
|                     | Other payloads  | Wind load ≤1,000 mph  |  |
|                     | load combination  | ASCE7-10, EN1990, GB 50009  |  |
| Electrical          | Power System  | 380/400/415V 50/60Hz 3P+N+PE  |  |
|                     | UPS   | 2x1200kVA   | 2x1600kVA  |
|                     | Backup time   | SmartLi 10 minutes@full load  |  |
| Temperature control | Cooling redundancy  | N+1, 10 minutes continuous cooling @ full load  |  |
|                     | Temperature and humidity range of the IT device area      | 18-27°C; 20%RH~80%RH  |  |
|                     | heat transfer coefficient of envelope                     | Total heat transfer coefficient ≤0.3 W/(m <sup>2</sup> *K)  |  |
| Monitoring          | DCIM Configuration  | iManager NetEco   |  |
|                     | Optional Features   | Work order management, energy efficiency management, temperature map, mobile app O&M, asset capacity management, iCooling, and third-party southbound access  |  |
|                     | Northbound access   | SNMP NBI, WebService NBI, CTCC C NBI, and FTP NBI   |  |
|                     | Power and environment monitoring system                   | Yes, collected by the ECC   |  |
|                     | In-room access control system - security                  | Yes, three-in-one card reader, third-party security platform  |  |
|                     | Modular Access Control System - Operation                 | Yes, three-in-one card reader, managed by the ECC800  |  |
|                     | CCTV  | Including room-level and module-level, and the default storage duration is 90 days.   |  |
|                     | Hydrogen detection  | Optional  |  |
|                     | Water immersion system                                    | Yes, addressable  |  |
|                     | Intelligent lighting                                      | Optional  |  |
| Fire protection     | SMS alarm   | Optional  |  |
|                     | Fire extinguishing system                                 | Including gas fire extinguishing in equipment areas, water spray in non-equipment areas, non-addressable (customized addressing type)   |  |
|                     | Fire resistance time of bearing beam and column           | 120 minutes   |  |
|                     | Fire resistance time of the external protective structure | Standard: the external wall 90 minutes and the internal wall 60 minutes<br>customizable: 120 minutes (By adding a fireproof board)  |  |
|                     | Fire resistance time of the fire door                     | 90 minutes  |  |
|                     | Fire Extinguishing Agent and Detector                     | HFC227-ea, equipped with ASD  |  |

① The power supply and distribution capability derating is according to EN/IEC 62040-3 when the altitude exceeds 1000m. For details about the cooling parameters, see Huawei smart cooling product data sheet. The overall derating is the one with the larger derating coefficient.

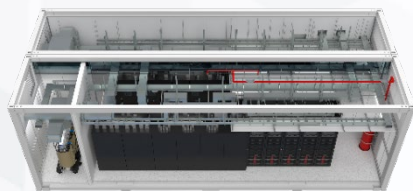
② For the definition of class 2A/B/C environments refer to Huawei enterprise standards. The corresponding ISO9223/12944 environment classification is C1/C2/C3/C4.

③ According to ISO12944-2/ISO12944-1, the equivalent service life of a 1440-hour salt spray test in a C4-High environment is 25 years. 50 years in the C3 environment and 40 years in the C4/C5 environment (A third-party certification report can be provided.)

④ Cabinets are not defaulted, only showing the dimension limitation.



## Introduction to Core Modules



Power Module

- 380/400/415V 50/60Hz; 3P, four-wire+PE, UPS: 2\*1,200 kW, input power factor 0.99
- SmartLi-512V-80Ah, Backup 10min@ full load
- Dimensions (mm): 12,192 (40ft) (L) \* (2\*2,438)(W)\*4,150(H)
- Busbar connection
- 10min@ full load under continuous refrigeration



MEP Module  
(intelligent Fan wall)

- 3\* FusionCol8000-C210 (210kW/unit), total cooling capacity of 630 kW
- Dimensions(mm): 9,827 (L)\*3,495 (W)\*4,150 (H)
- Inlet/return water temperatures: 20°C/28°C
- Cold aisle temperature control: 24°C / 36°C
- 10min continuous cooling@full load



MEP Module  
(indirect evaporative cooling)

- 1\* FusionCol8000-E240 (240kW/unit), air volume: 55,000 m³/h; supplementary cooling capacity : 10%~55%
- Supply air temperature (°C)/Humidity (%): 25°C/50%
- Return air temperature (°C)/Humidity (%): 38°C/25%
- Dimensions: 6,058(L)\*2,438(W)\*4,150(H)
- Net weight/Gross weight: 11000kg/11500kg



Equipment Module

- 28 IT cabinets ① : 336 kW (a single cabinet supports a maximum of 15 kW)
- Dimensions (mm): 12,192 (40 ft)(L)\*3,495/2,438 (W)\*4,150(H)
- Support cabinet dimensions (mm): 600(W)\*1,200(D)- 2,000/2,200(H)
- With aisle containment
- 250A/400A busway, A/B dual power supply for each row
- 2 pcs 3P/32A rPDUs for each cabinet
- No raised floor, floor-mounted

① Only the device installation space is provided by default.

## Design Specifications

| Item                                 | Standards compliance of the Chinese version   |
|--------------------------------------|---|
| System Design                        | GB 50174-2017 Code for design of data centers   |
| Structural System                    | GB 50068-2018 Unified standard for reliability design of building structures; GB 50223-2008 Standard for classification of seismic protection of building constructions; GB 50009-2012 Load code for the design of building structures; GB 50011-2010 Code for seismic design of buildings; GB 50017-2014 Standard for design of steel structures   |
| Fire extinguishing system            | GB 50016-2014 Code for fire protection design of buildings; CECS 200-2006 Technical code for fire safety of steel structure in buildings; GB50116-2013 Code for design of automatic fire alarm system; GB50370-2005 Code for design of gas fire extinguishing systems   |
| Power supply and distribution system | GB50052-2009 Code for design of electric power supply systems; GB50054-2011 Code for design of low voltage electrical installations; GB50034-2013 Standard for lighting design of buildings; GB50217-2018 Standard for design of cable of electric power engineering; JGJ16-2016 Code for electrical design of civil buildings; GB50057-2010 Design code for protection of Structures against lightning; GB 50343-2012 Technical code for protection of building electronic information system against lightning. |
| HVAC system                          | GB50019-2003 Code for design of heating ventilation and air conditioning; GB50015-2009 Code for design of building water supply and drainage.   |
| Monitoring System                    | GB50395-2007 Code of design for video monitoring system; GB50348-2018 Technical Code for Engineering of Security & Protection System.   |



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