Power ICT in a Smart Way

# FusionModule5000
# Smart Modular Data Center

HUAWEI TECHNOLOGIES CO., LTD.

HUAWEI

# Modular Data Center

## FusionModule5000 Smart Modular Data Center

## Introduction

HUAWEI FusionModule5000 is a new generation smart modular data center solution with complete integration of cabinets, power supply and distribution systems, cooling systems, cabling systems, management software, and other subsystems. It supports flexible deployment with single or dual row, cold or hot aisle containment. The maximum IT power can be up to 21kW/rack.

FusionModule5000 (Dual-row)

## Application Scenarios

- Maximum IT power per module can be up to 310kW, which meet the requirements of large-scale data center for industries like ISP, government, education, healthcare, finance, telecom, etc.
- Designed for chilled water cooling scenarios.

FusionModule5000 (Single-row)

## Features & Value

**Reliable**

- Single/dual power supply, Tier IV supportive, Precise monitoring of power branch temperature prevents fire caused by loose contact and overheat
- Water leakage monitoring keeps room away from flooding
- Ring network of monitoring system
- Warning of component expired, aging, damaged
- Optional aisle/cabinet-level door access keeps the data center safe

**Efficient**

- Closely coupled cooling to efficiently avoid partial hot spot, high-density deployment supportive
- Hot/cold aisle containment for isolation of hot and cold air
- Local/remote monitoring, PAD or cell phone mobile O&M

**Simple**

- Standardized devices, modular architecture, on-demand deployment
- Busway for power distribution is optional , easy installation

# Specifications

| Item | Specifications | |
|---|---|---|
| System | Dimensions | Single-row with aisle containment (L × W × H (IT cabinets)):<br>L × 2400 × 2000mm, L≤15 m<br>L × 2300 × 2000mm, L≤15 m<br>L × 2400 × 2200mm, L≤15 m |
| | | Dual-row with aisle containment (L × W × H (IT cabinets)):<br>L × 3600 × 2000mm, L≤15 m<br>L × 3400 × 2000mm, L≤15 m<br>L × 3600 × 2200mm, L≤15 m |
| | Cabinet number per module | Single row: 2-24; Dual row: 6-48 |
| | Power supply | 380/400/415Vac, 50/60Hz, 3Ph+N+PE |
| | IT power consumption per module | UPS inside: 112kW<br>UPS outside: 310kW |
| | Maximum power per rack | 21kW/R |
| | Availability | Tier II or Tier III (up to Tier IV) |
| | Altitude | 0-4000m (derating above 1000m) |
| | Installation | Installed on concrete or base support |
| Cabinet | Dimensions (H × W × D) | 2000mm × 600/800mm × 1200mm<br>2000mm × 600/800mm × 1100mm<br>2200mm × 600/800mm × 1200mm |
| | Space available | 42U/47U |
| | Protection level | IP20 |
| Chilled water In-row air conditioner | Cooling capacity | 30kW |
| | Dimensions (H × W × D) | 2000mm × 300mm × 1200mm |
| | Power supply | 200~240V (1Ph, 50/60Hz) |
| | Refrigerant | Water/Ethylene Glycol |
| Integrated UPS (UPS inside) | Input voltage | 380/400/415Vac, 50/60Hz, 3Ph+N+PE |
| | Input power factor | Full load > 0.99, Half load > 0.98 |
| | Rated capacity | 40~160kVA |
| | Efficiency | ≥ 96% |
| | AC SPD | 20kA, 8/20 μ s |
| Precision power distribution cabinet (UPS outside) | Input voltage | 380/400/415Vac, 50/60Hz, 3Ph+N+PE |
| | Rated capacity | 400/250/160A |
| | AC SPD | 20kA, 8/20 μ s |
| | Output | 16A/20A/32A/40A optional, max branches up to 144 (single phase), or 48 (three phase) |
| Smart busway (UPS outside) | Input voltage | 380/400/415Vac, 50/60Hz, 3Ph+N+PE |
| | Rated capacity | 250/160A |
| | Output | 40A/1P (6 branches in one Power Distribution Unit, can be expand with the length of cabinets) |

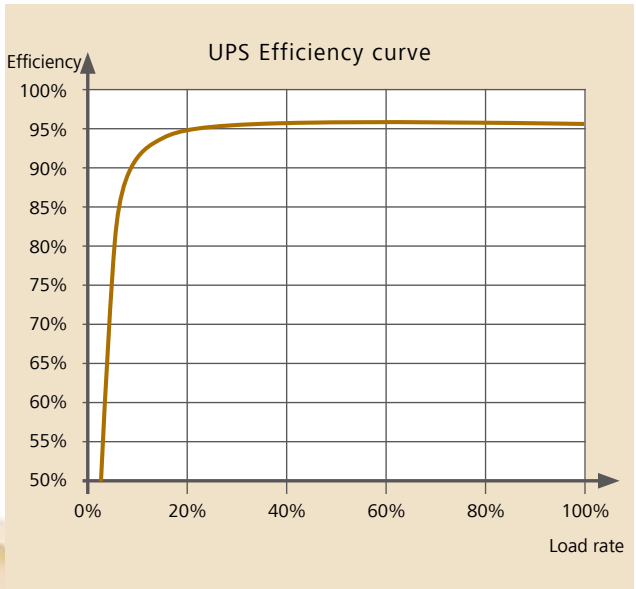
# Integrated UPS

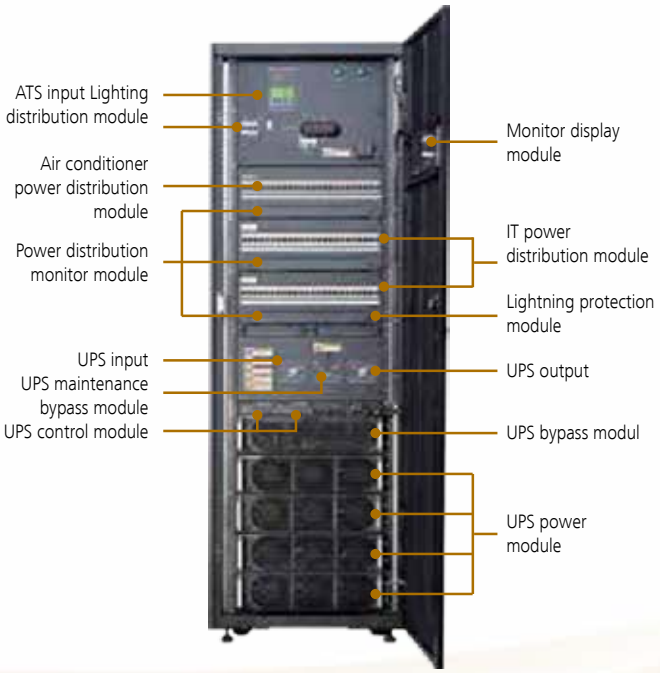
## Introduction

Integrated UPS developed by Huawei is a new generation of high integration power system in a cabinet which is suitable for modular data center. It includes UPS power, IT power distribution, air conditioner power distribution, lighting power distribution, ATS, UPS input power distribution and UPS output power distribution. And it features easy to maintenance, high reliability and high efficiency.

## Features & Value

- 160kVA integrated UPS power system, leading power density in industry
- UPS and PDF are merged in one cabinet, shorten the installation time by 50%, compact design, space saving by 1-2 IT racks
- Intelligent detection of brand circuit, improving the ability of continuous power supply
- Sensible temperature of switch wiring terminal, proactive prevention of local hot spot
- Pre-alarm of circuit breaker terminal with temperature monitoring, batteries auto-shutdown for fire protection, power-off rate reduced by 50%

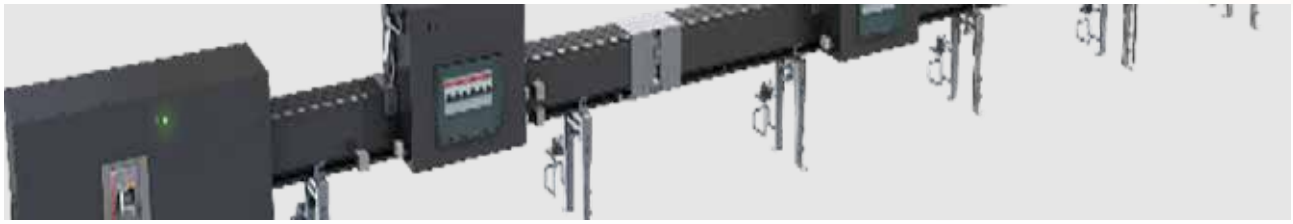


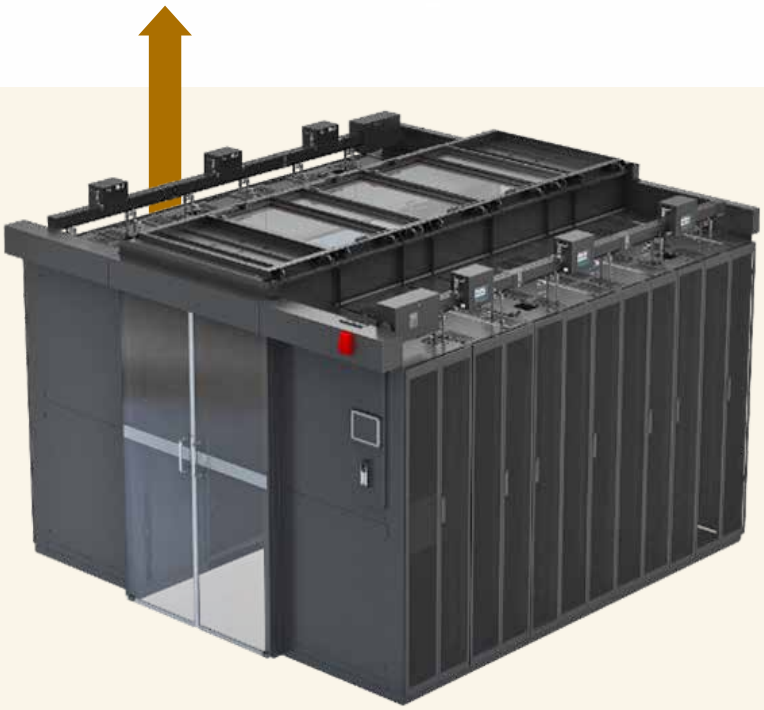
# Specifications

| Item | Specifications | |
|---|---|---|
| Input | Rated input voltage | 380/400/415Vac, 50/60Hz, 3Ph+N+PE |
| | Input voltage range | 80V AC-280V AC (single phase) (80VAC-176V AC, load linear derating) |
| | Input frequency range | 40Hz-70Hz |
| | Input power factor | Full load > 0.99, Half load > 0.98 |
| Output | Rated voltage | 380/400/415Vac, 50/60Hz, 3Ph+N+PE |
| | Voltage distortion (linear load) | THD ≤ 1% |
| | Voltage distortion (nonlinear load) | THD ≤ 4% |
| | Power factor | 1 |
| | Maximum load peak factor | 3:1 (meet IEC 62040-3) |
| System | Efficiency | ≥ 96% |
| | Module current imbalance index | Parallel current imbalance < 5% |
| | Connection mode | Upper inlet and upper outlet |
| | AC SPD | 20kA, 8/20 μ s |
| Configuration | Rated capacity | 40-160kVA |
| | Input mode | MCCB/ATS, single route or double route |
| | Input specification | 250A |
| | IT power distribution | 40A/1P × 18 × 2； 63A/1P × 6 × 2 |
| | Air conditioner power distribution | 40A/1P × 18<br>40A/1P × 24 |
| | Lighting power distribution | 10A/1P × 3 |
| Dimensions (H × W × D) | 2000mm × 600mm × 1100mm | |

## New Main Way Smart Busway



- Easy to deploy, cable installation time reduces by 60%
- Not occupy the space, can save one IT cabinet
- Reduce transmission loss, can save 1600kWh/year for a 80kW modular DC



Power distribution unit can be hot-swap

Smart monitor, parameters can be visualized

Easy to install and fast deployment

## Parameters

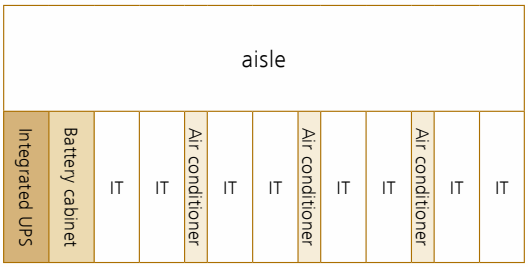
| Part | Items | Technical description | |
|---|---|---|---|
| General input unit | System type | Three phase four line+PE | |
| | Input voltage | 380/400/415VAC | |
| | Rated current | 160A | 250A |
| | Input | 160A/3P MCCB | 250A/3P MCCB |
| | Frequency | 50/60Hz | |
| | Protection | IP30 | |
| | Cabling capacity | $4 \times 70mm^2+1 \times 35mm^2$ | $4 \times 95mm^2+1 \times 50mm^2$ |
| | Operation way | front | |
| Main way unit | Rated current | 250A | |
| | Maintenance way | Maintenance on the top | |
| Power distribution unit | Rated current | 63A | |
| | Output | MCB 40A/1P × 6 | |
| | Frequency | 50/60Hz | |
| | Protection | IP30 | |
| | Cabling capacity | $3 \times 6mm^2$ | |
| Transit unit | Rated current | 250A | |
| | Protection | IP30 | |
| | Cabling capacity | $4 \times 95mm^2+1 \times 50mm^2$ | |
| | Installation scenario | Used for round column or two rows of busbar jumper | |

- Easy expansion, can increase power distribution unit directly
- High reliability, anti-seismic ability up to 9-degree Mecalli-scale
- FE interface, simple network, configuration, realize the remote communication, measurement, and adjustment
- Flexible management, realize PUE, maintenance and management monitoring
- Quantifiable monitoring of power, current, voltage, power factor, total active power, apparent power, reactive power, N line current

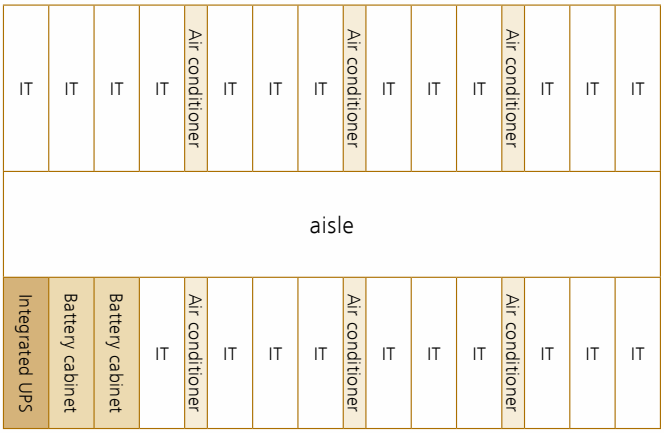
## Typical Configurations——UPS Inside

Single-row cabinet scenario

Dual-row cabinet scenario




R8 single row module typical layout

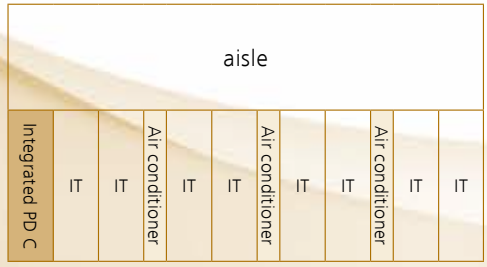



R23 dual row module typical layout

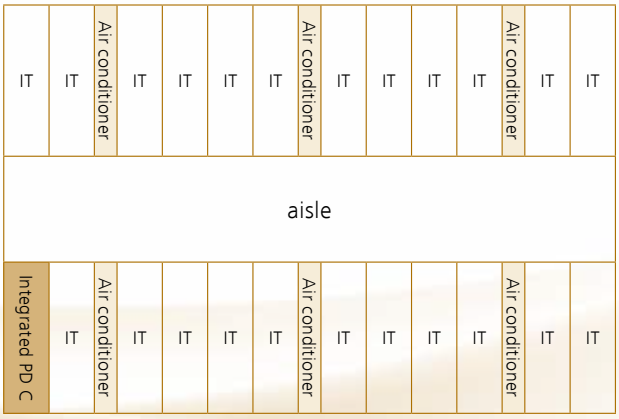
## Typical Configurations——UPS Outside

Single-row cabinet scenario

Dual-row cabinet scenario




R8 single row module typical layout




R23 dual row module Typical layout



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