



Power ICT in a Smart Way

**FusionModule5000**

**Smart Modular Data Center**

HUAWEI TECHNOLOGIES CO., LTD.



# Modular Data Center

## FusionModule5000 Smart Modular Data Center

### Introduction

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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.

### Application Scenarios

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- 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.

### Features & Value

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#### 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



FusionModule5000 (Dual-row)



FusionModule5000 (Single-row)

## Specifications

Item	Specifications	
System	Dimensions	Single-row with aisle containment (L × W × H (IT cabinets)): L × 2400 × 2000mm, L≤15 m L × 2300 × 2000mm, L≤15 m L × 2400 × 2200mm, L≤15 m
		Dual-row with aisle containment (L × W × H (IT cabinets)): L × 3600 × 2000mm, L≤15 m L × 3400 × 2000mm, L≤15 m 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 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 2000mm × 600/800mm × 1100mm 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)

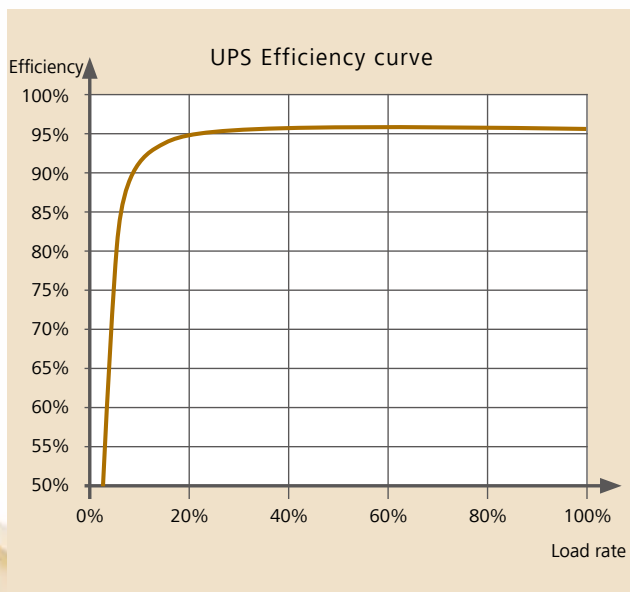
# Integrated UPS

## 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

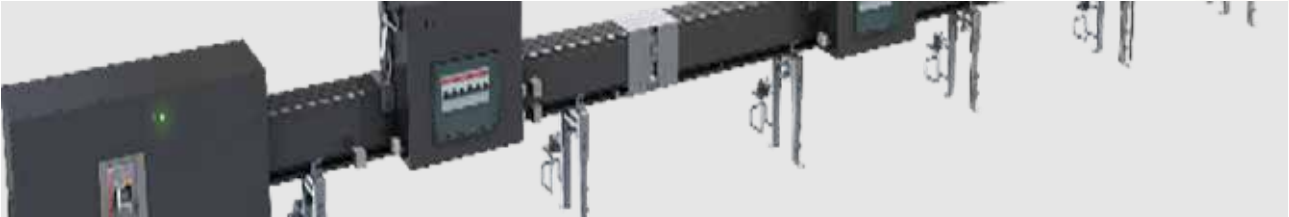
- 160kVA integrated UPS power system, leading power density in industry
- UPS and PDF are merged in one cabinet, shorten the installation time by 50%, compact design, space saving by 1-2 IT racks
- Intelligent detection of brand circuit, improving the ability of continuous power supply
- Sensible temperature 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%



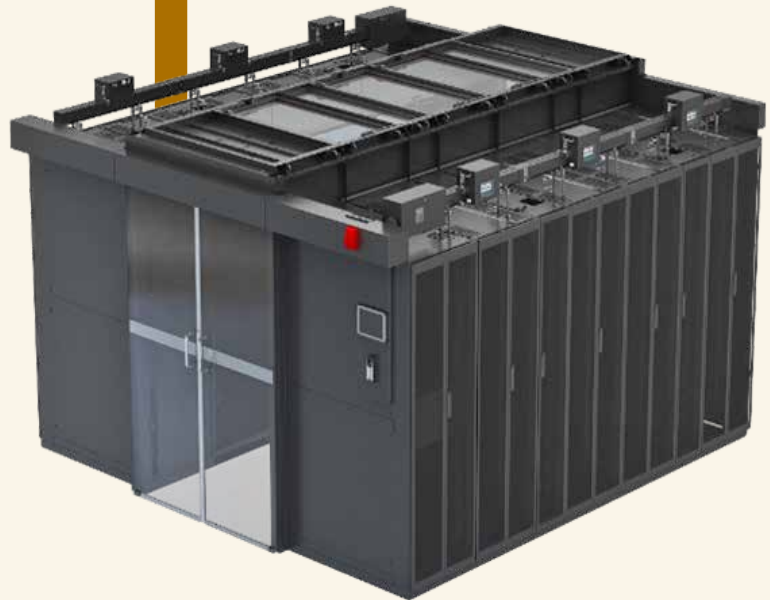
## Specifications

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 μs
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 40A/1P × 24
	Lighting power distribution	10A/1P × 3
Dimensions (H × W × D)	2000mm × 600mm × 1100mm	

## New Main Way Smart Busway



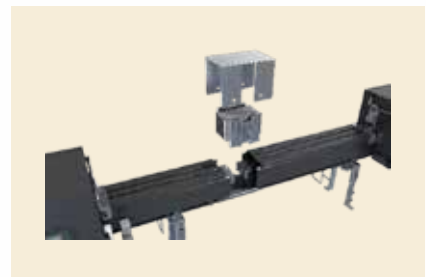
- Easy to deploy, cable installation time reduces by 60%
- Not occupy the space, can save one IT cabinet
- Reduce transmission loss, can save 1600kWh/year for a 80kW modular DC



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	$4 \times 70\text{mm}^2 + 1 \times 35\text{mm}^2$	$4 \times 95\text{mm}^2 + 1 \times 50\text{mm}^2$
	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 $\times$ 6	
	Frequency	50/60Hz	
	Protection	IP30	
	Cabling capacity	$3 \times 6\text{mm}^2$	
Transit unit	Rated current	250A	
	Protection	IP30	
	Cabling capacity	$4 \times 95\text{mm}^2 + 1 \times 50\text{mm}^2$	
	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

aisle							
Integrated UPS	Battery cabinet	IT	Air conditioner	IT	Air conditioner	IT	IT

R8 single row module typical layout

IT	IT	IT	IT	Air conditioner	IT	IT	IT	Air conditioner	IT	IT	IT	Air conditioner	IT	IT	IT
aisle															
Integrated UPS	Battery cabinet	Battery cabinet	Air conditioner	IT	IT	IT	IT	Air conditioner	IT	IT	IT	Air conditioner	IT	IT	IT

R23 dual row module typical layout

## Typical Configurations——UPS Outside



Single-row cabinet scenario



Dual-row cabinet scenario

aisle							
Integrated PD C	IT	Air conditioner	IT	Air conditioner	IT	IT	IT

R8 single row module typical layout

IT	Air conditioner	IT	IT	IT	IT	Air conditioner	IT	IT	IT	Air conditioner	IT	IT	IT	Air conditioner	IT
aisle															
Integrated PD C	IT	Air conditioner	IT	IT	IT	IT	IT	Air conditioner	IT	IT	IT	Air conditioner	IT	IT	IT

R23 dual row module Typical layout





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