The power behind competitiveness

Delta Micro-Datacenter Catalogue

DELTA

Smarter. Greener. Together.

About Delta

Corporate Mission

To provide innovative, clean, and energy-efficient solutions for a better tomorrow.

Delta was founded in 1971. Delta offers energy efficient power products, switching power supplies with efficiency over 90%, telecom power with up to 98%, and PV inverters with up to 98.8% efficiency. We have also developed the world's first server power supply certified as 80 Plus Titanium. We regularly invest over 8% of our annual sales revenues in R&D and have worldwide R&D facilities in China, Europe, India, Japan, Singapore, and the U.S.

Delta is a frequent recipient of international awards and related recognition for innovation, design, energy management and corporate social responsibility. Since 2011, Delta has been selected each year for the prestigious Dow Jones Sustainability™ World Index (DJSI World Index). In 2020, Delta was also recognized by CDP with two "A" leadership level ratings for its substantial contribution to climate change and water security issues.
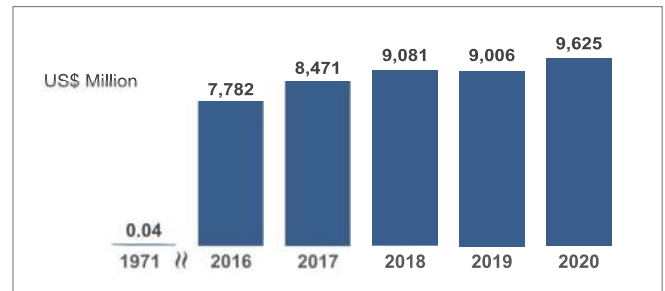
Delta continues to deliver strong and stable financial performance, achieving a compound annual growth rate of around 30.0% since 1971.

Bruce Cheng
Founder and Honorary Chairman

Yancey Hai
Chairman

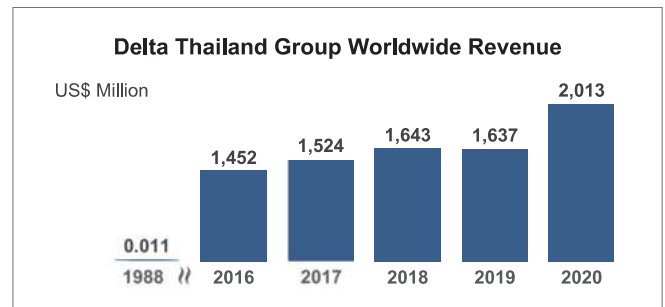| US$ Million	1971	2016	2017	2018	2019	2020
	0.04	7,782	8,471	9,081	9,006	9,625

Delta Thailand Overview

- Founded in 1988
- Thailand's largest listed electronics manufacturer
- Business management center for Southeast Asia, India and Australia/ New Zealand markets
- Product development management center for Bangkok (Thailand), Soest/ Teningen (Germany), UK, USA, India, Singapore and Bucharest (Romania).
- Manufacturing management center to synergize advanced technologies and highly efficient production across manufacturing plants in Thailand, India, Slovakia and Myanmar.
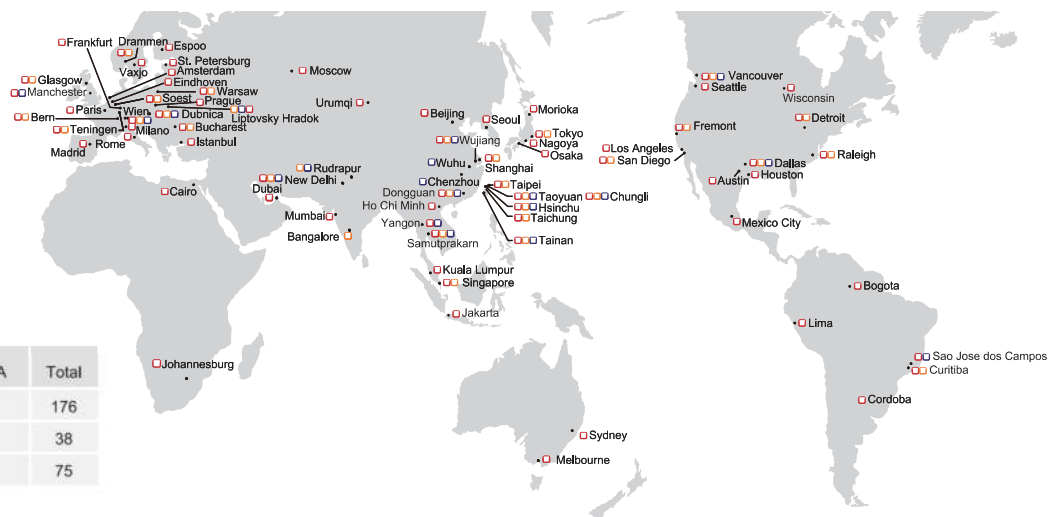
Chang Tsai-hsing (Jackie)
President

Delta Thailand Group Worldwide Revenue

US$ Million	1988	2016	2017	2018	2019	2020
	0.011	1,452	1,524	1,643	1,637	2,013

Global Operations

Delta Group has 176 sales offices, 38 plant sites, and 75 R&D centers with over 9,000 R&D engineers throughout the world.

	Asia-Pacific	Americas	EMEA	Total
Sales Offices	107	24	45	176
Plant Sites	31	4	3	38
R&D Centers	52	9	14	75

Business Categories

Power Electronics

- Components
- Embedded Power
- Fans & Thermal Management
- Automotive Electronics

- Merchant & Mobile Power
  Innergie

Automation

- Industrial Automation
- Building Automation

Infrastructure

- ICT Infrastructure
- Energy Infrastructure & Industrial Solutions
  vivitek

Green Solutions

Industrial Automation and Smart Manufacturing

Building Automation

Data Center

Delta provides integrated energy-saving solutions to build a better world for future generations.

Telecom Energy

Display and Monitoring

Renewable Energy

EV Charging

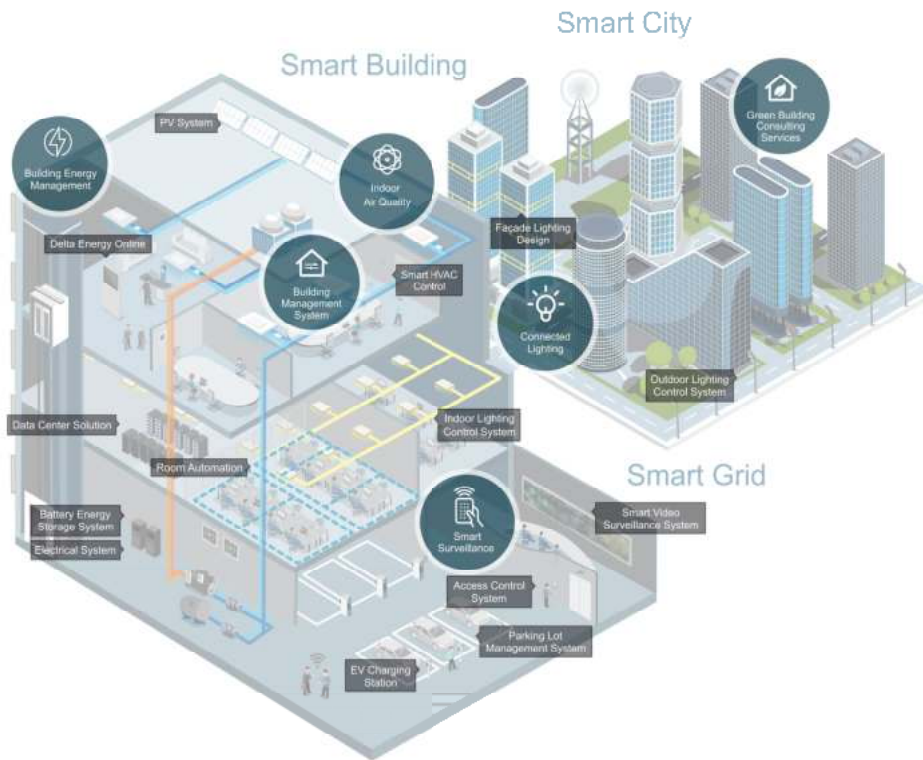# Industrial Automation and Smart Manufacturing

Industrial Automation Solution

Data Analytics & Optimization
- IIoT Cloud-based Platform — DIACloud
- Big Data Analysis
- Artificial Intelligence (Edge/Cloud)
- Modeling & Simulation

Management

DIAMMP Manufacturing Management Platform	**DIAMES** Manufacturing Execution System	**DIASPC** Statistical Process Control	**DIAPMS** Preventative Maintenance System	**DIAWMS** Warehouse Management System	**DIAAMS** Alarm Manage System

- Industrial PC
- **DIAView** Supervisory Control and Data Acquisition System (SCADA)
- **DIALink** Equipment IoT Platform
- **DIABCS** Block Control System
- **DIAMCS** Material Control System
- **DIACPC** CIM PC System
- **DIAEnergie** Industrial Energy Management System (IEMS)

Networking
- IIoT Industrial Cloud Router
- Ethernet Solution
- Industrial Fieldbus Solution

Control & Sensing

Integration Software - **DIAStudio**

PLC	Motion Control	HMI	Robot Controller	Machine Vision System	Sensor	Meter & Measurement
	PLC-Based Motion Controller				Pressure Sensor	Gas Flow Meter
	CAD/CAM Computer-Aided Design/Manufacturing				Smart Sensor	Power Meter
	CNC Controller / PC-Based Motion Controller / Motion Control Card				Encoder	Temperature Controller

Drives Motion Equipment

AC Motor Drive	Servo System (AC Servo Drive & Motor)	Planetary Gearbox	Servo Press	Industrial Robot	Robot Workstation
		Linear Stage / Industrial Power Supply			Pick & Place / Soldering / Inspection / Screw Driving

Building Automation

IoT-based Smart Building Solution

Delta's building solutions provide the best energy efficiency for a smart and sustainable building.

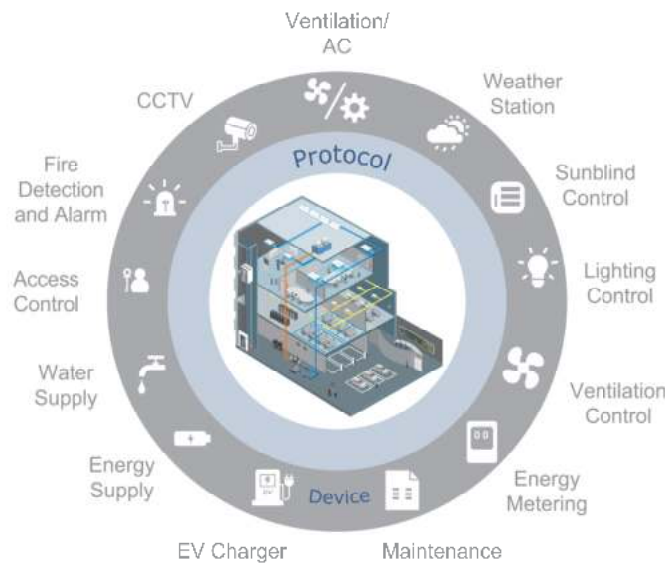Smart City
Smart Building
Smart Grid

Our Products

DELTA — Resources and Assets Mangement

LOYTEC (A Delta Group Company) — Protocols Expert

VIVOTEK — IP Surveillance

Delta Controls (A Delta Group Company) — BACnet Expert

AMECO / **amerlux** — LED Commercial Lighting

Our Offerings

Various BA Product and Solution Packs

- Smart Surveillance
- Access Control
- Lighting Control
- Energy Management
- Infrastructure
- IAQ/HVAO
- Room Automation

Our Practices

System Integration Services

HVAC

- L-INX Automation Server
- L-VIS Touch Panel
- IAQ
- Weather Information
- Chiller
- AHU

Ventilation/AC
CCTV
Weather Station
Fire Detection and Alarm
Sunblind Control
Access Control
Lighting Control
Water Supply
Ventilation Control
Energy Supply
Energy Metering
EV Charger
Maintenance
Protocol
Device

Surveillance

- L-IOB I/O Controller
- People Counting Camera
- Facial Recognition
- Fisheye Camera
- Parking Lot Management

Lighting Control

- LDALI-MS2 Multi Sensor
- L-DALI Lighting Control
- Bluetooth Lighting Control
- Philips Hue Lights

Infrastructure

- L-GATE Gateways
- PV System
- EV Charger
- Water Supply
- Fire System
- Meters
- BESS

Room Control

- Projector
- L-ROC Room Controller
- Meeting Room Booking System
- L-STAT Network Thermostat

Data Center

UPS 1 - 1500 kVA   VRLA Battery and Monitoring   Lithium Battery   PDC   STS   Busway

POWER

Busway   STS   PDU

Precision Cooling   Microdatacenter

COOLING

SPACING

MONITORING

IT Rack   Containment

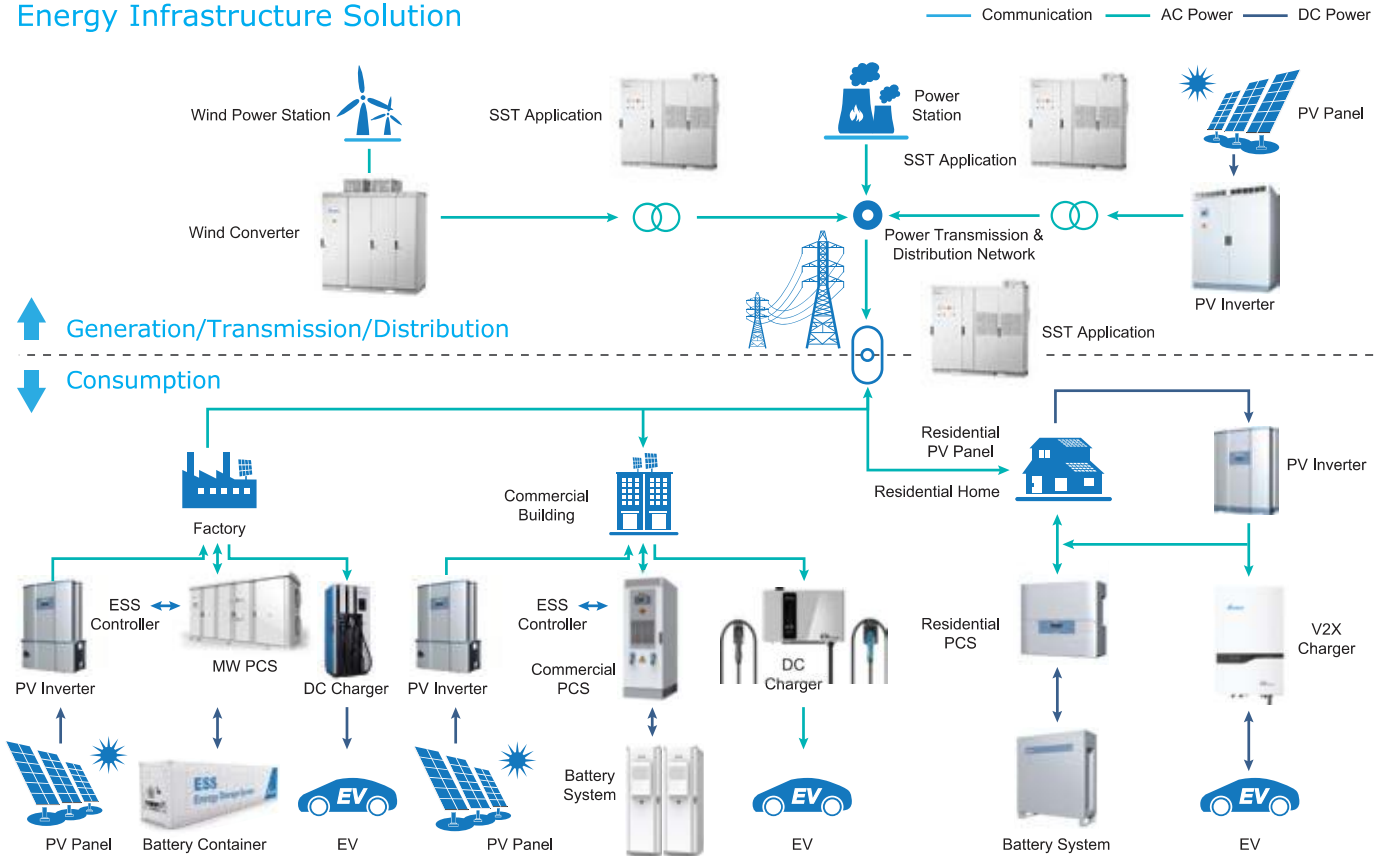CCTV   Access T/H Sensor and Interface Gateway   DCIM

Display and Monitoring

Delta's visual display applications include projection and video wall solutions. Our projection solutions fulfill a wide range of professional applications, such as multimedia interaction, large-scale auto blending projection and 3D projection mapping. For control rooms and public information display systems, Delta offers innovative laser-light source DLP slim cubes video wall and LED display solutions integrated with DVCS (Distributive Vision Control Systems) for large area video walls.

High Performance Projector

Delta's high performance projectors include the world's first 8K projector. Our projectors can customize brightness with optimal lamp/ ballast selection. The projectors come with multiple optional lenses to meet versatile installation flexibility and featured with edge blend-ing and warping capability. Delta also offers tailored colorimetry/ contrast to meet home cinema or E-cinema re-quriement, and specialty design to meet simulator partners' requirements.

Multimedia Projector

As a leading professional design and manufacturing team, we offer total system solution service in commercial and multimedia projection display world.

- Offer total system solution service in commercial and multimedia projection display world
- Projector deisgns to fuilful different kind of needs

DLP, LED and LCD Video Wall

- DLP; an extensive product portfolio with over 40 "off-the-shelf" products
- LCD; designed to deliver even the largest images with stunning clarity with its super-slim bezel
- LED; latest indoor LED products are high resolution LED display

Renewable Energy

Energy Infrastructure Solution

Communication — AC Power — DC Power

Wind Power Station

SST Application

Power Station

SST Application

PV Panel

Wind Converter

Power Transmission & Distribution Network

PV Inverter

↑ Generation/Transmission/Distribution

SST Application

↓ Consumption

Residential PV Panel

PV Inverter

Residential Home

Factory

Commercial Building

ESS Controller

ESS Controller

Residential PCS

V2X Charger

MW PCS

DC Charger

PV Inverter

Commercial PCS

DC Charger

PV Inverter

PV Panel

Battery Container

EV

PV Panel

Battery System

EV

Battery System

EV

EV Charging

EV Charging Infrastructure Solution

- Scalable and customizable solution
- Optimize CapEX and OPEX to maximize charging efficiency and profitability
- Optimize energy efficiency with smart charging and energy allocation
- Reducing peak load impact on grid

Management System

- Manage multiple energy sources
- Optimize energy consumption
- Avoid overloading

Energy Storage

- Peak shaving & load shift
- Backup power
- Bi-directional; demand-response enabled

Solar Inverter

- Provide clean energy
- Integrate with energy storage & management system

EV Charger

- Supply electricity to EVs
- Backup power for buildings

Specification
- AC Charger (7.4/ 11/ 22kW)
- DC Charger (25/ 50/ 150kW)

Delta Group

A Leading expert in power management and thermal management solutions

Delta Group is the world's leading provider of power and thermal management solutions, as well as a major source for components, visual displays, industrial automation, networking products, and renewable energy solutions. Delta Group is focused on three main businesses: Power Electronics, Automation, and Infrastructure. Delta Group has sales offices worldwide and manufacturing plants in Taiwan, China, Thailand, Japan, Mexico, India, Brazil and Europe.

As a global leader in power electronics, Delta's mission is, "To provide innovative, clean and energy-efficient solutions for a better tomorrow." Delta is committed to environmental protection and has implemented green, lead-free production and recycling and waste management programs for many years.

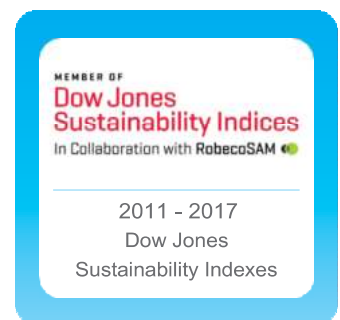**World no. 1** in Switching Power Supplies, DC Brushless Fans and Telecom Power Systems

163 sales offices and **39** manufacturing facilities worldwide

5-6% of annual sales revenues invested in R&D with over **7,000** engineers in **64** R&D centers worldwide

Awarded **7,100+** patents and received **47** internationally recognized design awards including iF, Reddot, and the Taiwan Excellence awards.

Awards

Delta Electronics outperformed 37 leading global companies in the Electronic Equipment, Instrument, and Component sector of the 2017 Dow Jones Sustainability Indexes (DJSI), and was selected for the DJSI World Index for the seventh consecutive year.

2007 - 2008 Forbes Asia's Fabulous 50	2009 Frost & Sullivan Green Excellence Award for Corporate Leadership	2014 CPLI Climate Performance Leadership Index, CPLI	2011 - 2017 Dow Jones Sustainability Indexes

More information about Delta Group can be found at https://www.deltathailand.com/

Quality and Service

Quality

- Delta's large-scale production follows comprehensive quality management to do things right the first time and deliver the best quality
- All manufacturing sites are certified with ISO 9001 and ISO 14001 and conform to the highest quality control in terms of product development and production to achieve customer satisfaction.
- With six laboratories accredited by the China National Accreditation Service for Conformity Assessment (CNAS) all of our products go through the tightest checks.

Performance

- Wide input voltage range reduces the chance of battery use and extends battery life
- High input power factor increases utilization of utilities and reduces total cost
- High output power factor provides more real power to critical loads
- Higher efficiency lowers operating costs
- Lower harmonic distortion saves on upstream investment
- Compact design saves more space for critical equipment

Service

- Up to 2-year warranty
- Service line is available on work days to answer your questions
- Customer-needs-oriented, available with comprehensive and professional service and technical support

DELTA
Smarter. Greener. Together.

Delta Micro-datacenter DSE series

Highly versatile all-in-one rack for mission critical IT equipment

Key features

Easy Deployment

Pre-manufactured and fully tested solution ensures minimal on-site engineering and installation is required to deploy you data center significantly reducing your CAPEX

Easy Management

Design once and deploy anywhere this standardized architecture and remote monitoring platform you have total visibility of critical assets, reducing risk, operational costs and improving service levels.

Easy Expansion

A stand-alone fully functional solution. You can plan and deploy your IT assets step by step as business grows. Buy small and scale to big. Invest only when necessary.

Application

- Converged or Hyper-converged IT infrastructure
- Edge computing datacenter
- Office server room

PREDICTABLE
PERFORMANCE

FASTER
DEPLOYMENT

FLEXIBILITY AND
SCALABILITY

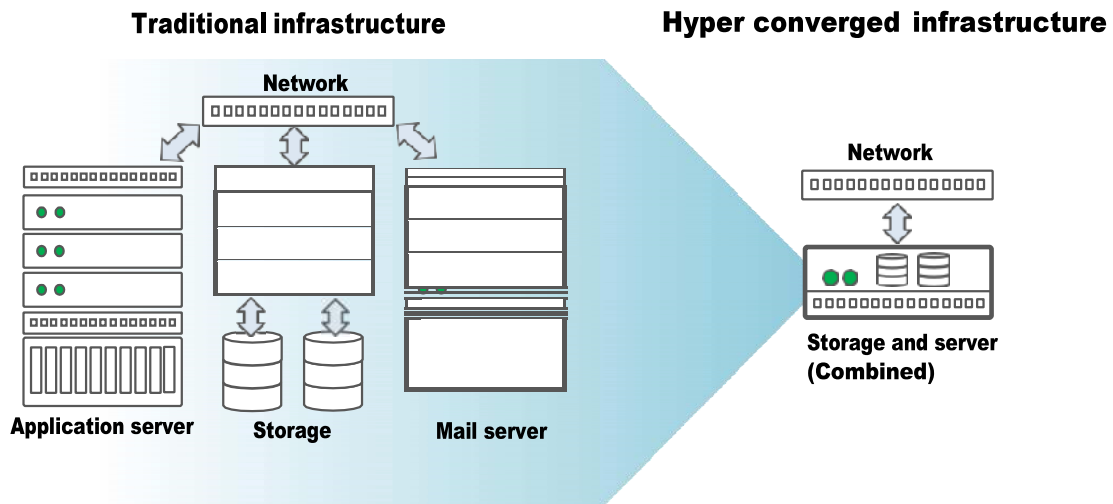Datacenter Telecom Industrial Network Banking

Security Lab Medical Metro

3

Smarter. Greener. Together.
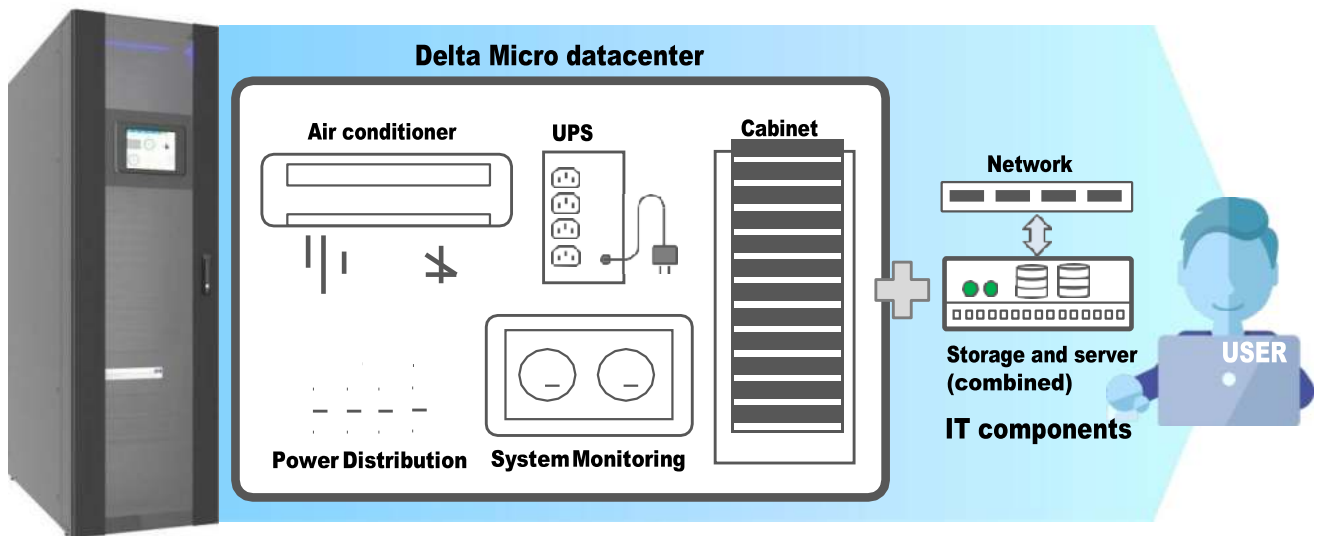
Delta Micro-datacenter DSE series

Ready for the era of converged infrastructure

Ending the traditional ways of implementing IT infrastructure by dedicated server which consumes lot of space, power consumption and hardly maintain. Converged infrastructure has rapidly growth due to merit virtualization technology. Further moving forward to hyper-converge eventually obtains super flexibility from all software defined elements, shrink down system size, cost and maintenance complexity. Virtualized and clustering, furthermore, improves system reliability.

Pre-fabricated all-in-one datacenter and ready to move in

Delta's micro datacenter provides all necessaries components in one package so that eases to implement converged or hyper-converged IT infrastructure. All pre-fabricated ensures high quality and rapid deploy of IT infrastructure to be right on time.
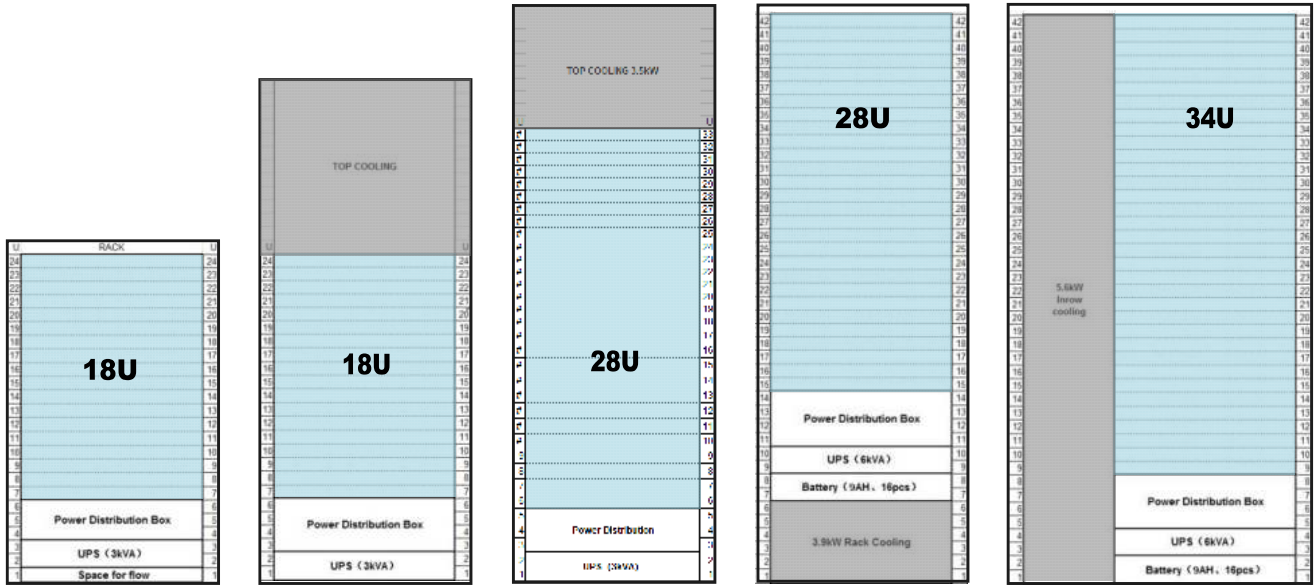
Multiple choices of model, flexible configuration to exactly fit your requirement.

Delta's offers range of micro-datacenter product, various configuration from fan ventilation cooling type, all-in-one packed cooling up to row cooling providing most flexibility and choices to exactly match IT infrastructure requirement.

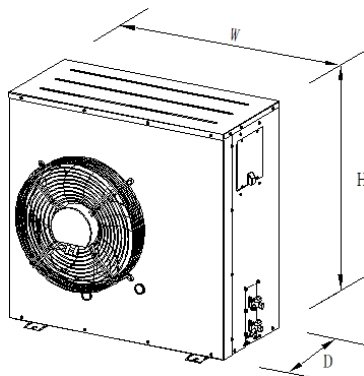### Available U-space

| DSE-E1 | DSE-E2.2 | DSE-E2.3 | DSE-E3 | DSE-E4/5 |

Technical Specification

Model	DSE-E1	DSE-E2.2	DSE-E2.3	DSE-E3	DSE-E4	DSE-E5
Mechanical Specification						
Available U space	18	18	28	28	34	34
Width-mm	600	600	600	600	600	600
Depth-mm	1000	1100	1400	1400	1400	1400
Height-mm	1200	1590	2000	2000	2000	2000
Weight-kg	152	190	240	374	521	525
Electrical Specification						
Input Voltage	230V/50Hz					
UPS-kVA/kW		3/2.7		6/5.4	6/5.4	10/9
Cooling Specification						
Type	Ventilation	Packaged DX		Split DX	Split DX Inrow	
Refrigerant		R410A		R410A	R410A	
Mount Type	Top	Top		Rack	Row	
Capacity-kw		2.5	3.5	3.9	5.6	7.6
SHR-%		100		95	100	100
Air Volume-m³/hr		800		700	2000	2250
Monitoring						
Control	10" Touch Screen					
Sensors	Temp. & Hum./Smoke/Leakage/Door status					
Management	UPS/Cooling/Environment Sensor					
Price (Bath)	Ask for price	257,000.00	275,000.00	355,000.00	Ask for price	Ask for price

Note: The price is exclude delivery fee and Vat.
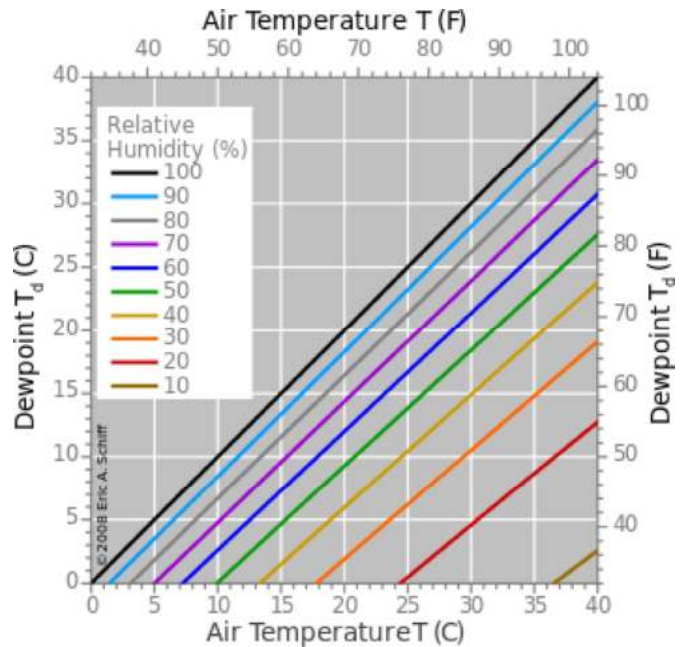

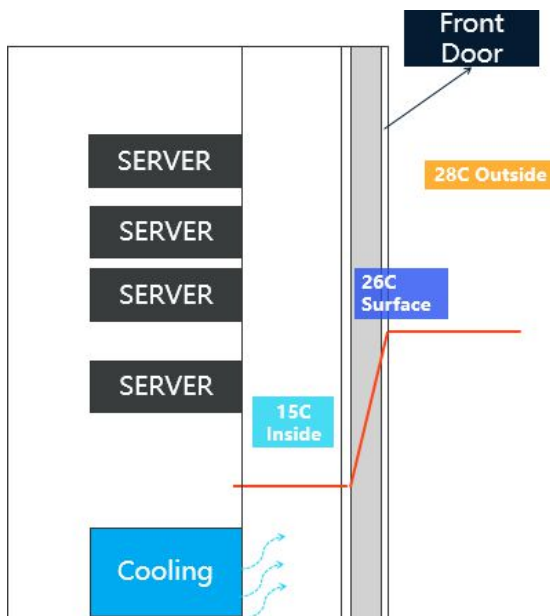## DSE E3/E4/E5 Outdoor unit specification

Model	E3	E4	E5
D-mm	395	480	480
W-mm	800	800	800
H1-mm	632	790	790
Input Power	220V/50-60Hz/1Ph		
Weight (kg)	35	25	4

Delta Micro-datacenter DSE series

No more condensation

Hot moisture air cooled by cold object whose temperature lower than dew point then form condensate on the surface.
Delta's MDC is specially designed to prevent by using transparent thermal insulation material in addition to glass front door. This helps to keep front glass door temperature above dew point so that condensation is avoided.

Heat Transfer Basic
Adopt double layer front door and thermal insulation improving external door temperature to prevent condensate.

Cooling System Design
- Control supply air temperature no less than dew point temperature.
- Capacity modulating means flexibility with supply temperature adjusting and same time cooling effect reached.

Delta Micro-datacenter DSE series

Highly Flexible for Future Expansion

Additional 42U rack add-on is applicable to increase available U-space* of Delta's micro datacenter obtaining extremely flexibility for future IT infrastructure expansion. 600mm and 800mm additional rack is available option to serve IT requirements.

* However remain cooling capacity of cooling unit must be considered.

Excellence Cooling Performance

- Closed Cold/Hot Aisle and highly efficient
- Fully closed system is dust proof and noise canceling
- Double door and supply temperature control to prevent condensate

8

Delta Micro-datacenter DSE series

Comprehensive built-in DCIM like monitoring system

Temperature and Humidity

UPS

Air conditioner

Water Leakage

Smoke

Overall operation dashboard	Power consumption and PUE	Event log

Critical component status: Cooling	Critical component status: UPS	Critical component status: Hot & Cold isle

Delta Micro-datacenter DSE series

Optional Component to Enhance your Micro-datacenter

Rack Access Control

Biometric type rack access control, provides completely security control of micro- datacenter as security control become more crucial for IT infrastructure security standard.
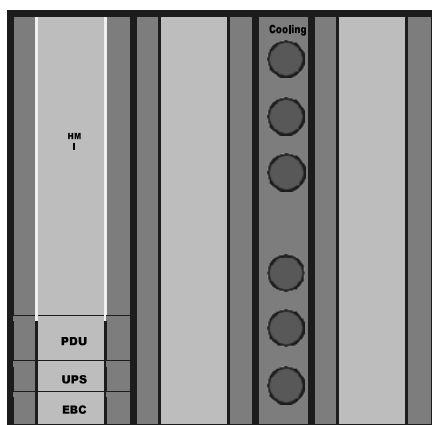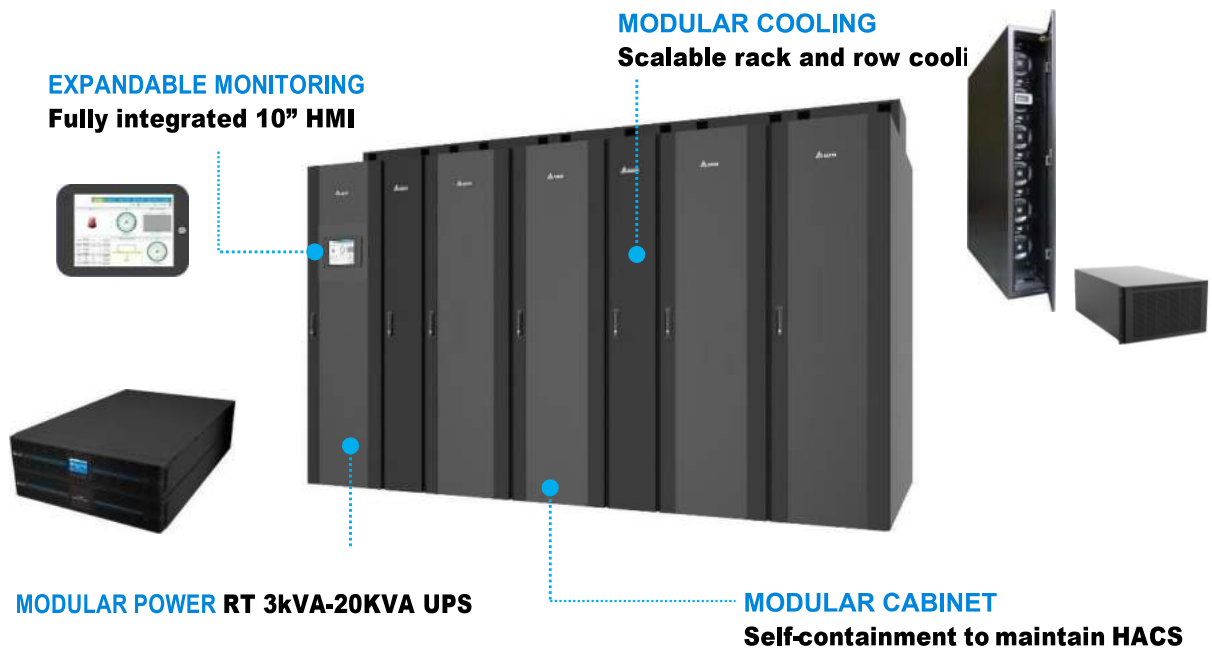

Rack Mount Fire Suppression System

Delta provides an optional 3U in-rack fire suppression system strengthens fire protection capability into the rack level. This is to enhance safety and reliability without relying on springer of building protection nor additional dedicated fire protection system just for a rack, yet lower cost of ownership.
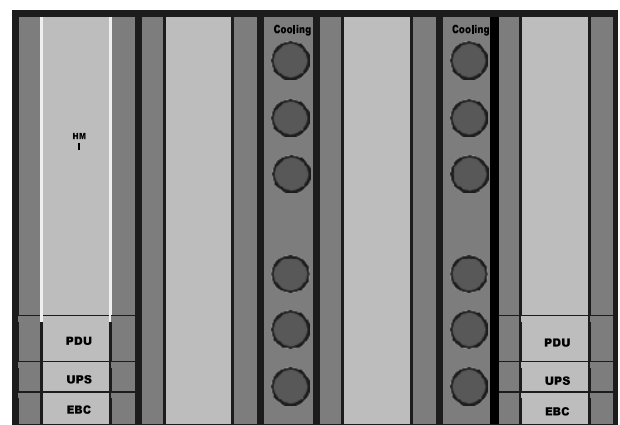

10

Delta Micro-datacenter DSE series

Vari°Row ® Configurable Micro-datacenter

Delta micro-datacenter is designed and engineered with expansion in mind. It allows IT professionals to smoothly, plan, grow and manage critical assets as they expand their infrastructure.

MODULAR COOLING
Scalable rack and row cooli

EXPANDABLE MONITORING
Fully integrated 10" HMI

MODULAR POWER RT 3kVA-20KVA UPS

MODULAR CABINET
Self-containment to maintain HACS

BASIC N-CONFIGURATION
- Single UPS from 3kVA up to 30kVA.
- Single Row Cooling 5.6kW up to 30kW.
- Single PDU with bypass function.
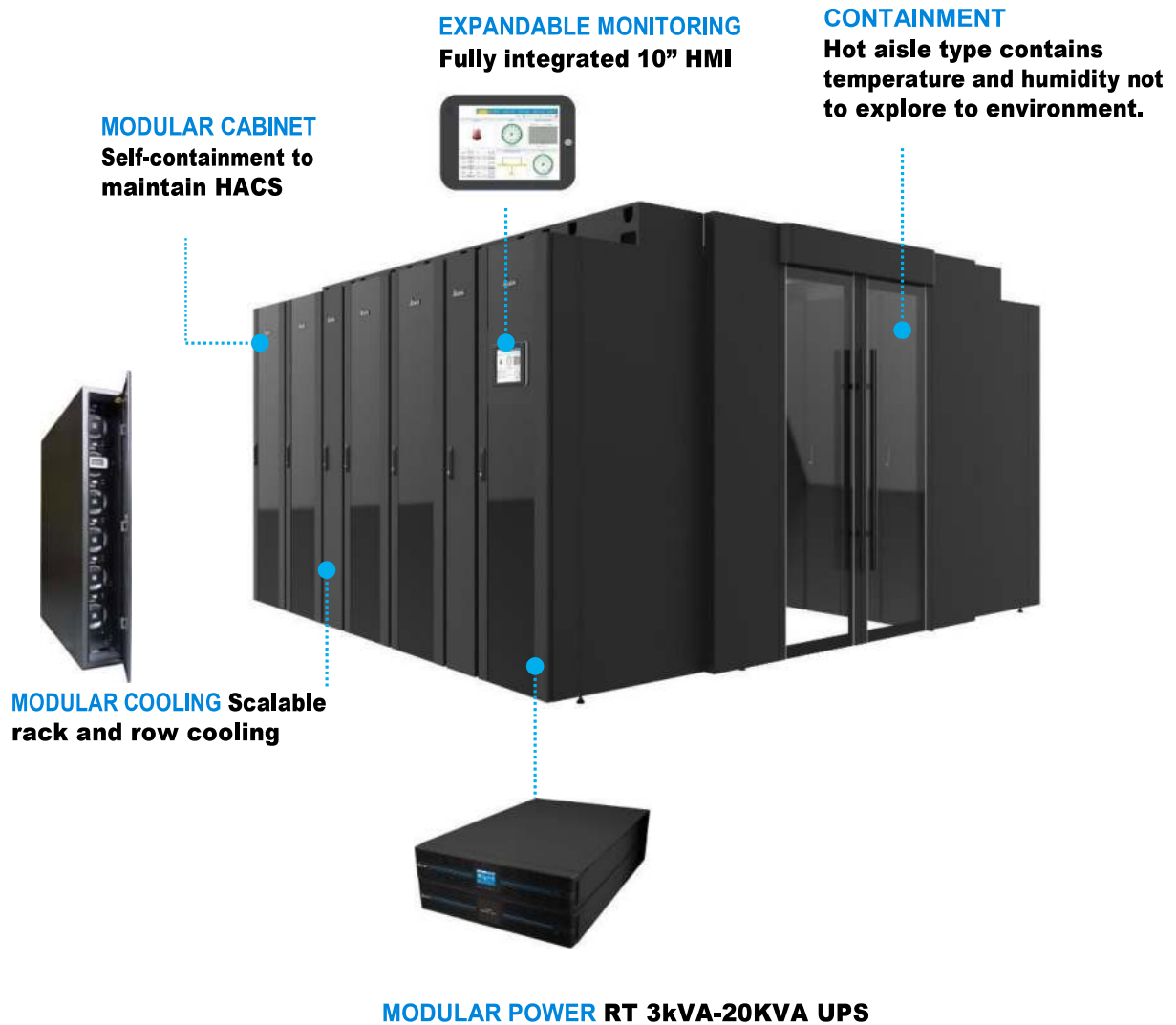
N+1 OR 2N -CONFIGURATION
- Dual UPS from 3kVA up to 30kVA.
- Dual Row Cooling 5.6kW up to 30kW with N+1 or 2N configuration.
- Single PDU with N+1 or Dual PDU to support dual feeder configuration.

Delta Micro-datacenter DSE series

Vari°POD® Configurable Micro-datacenter

Delta micro-datacenter is designed and engineered with expansion in mind. It allows IT professionals to smoothly, plan, grow and manage critical assets as they expand their infrastructure.

EXPANDABLE MONITORING
Fully integrated 10" HMI

CONTAINMENT
Hot aisle type contains
temperature and humidity not
to explore to environment.

MODULAR CABINET
Self-containment to
maintain HACS

MODULAR COOLING Scalable
rack and row cooling

MODULAR POWER RT 3kVA-20KVA UPS

Delta Micro-datacenter DSE series

X°Edge Micro-datacenter, Readiness for Hash Environment

Edge is to close to user access. Delta understands an application of Edge computing well. An optional outdoor enclosure are offered for Micro-datacenter thus it can be deployed at anywhere without limitation of environmental impact. This also help to reduce CAPEX of implementation due to eliminating of shelter or concrete housing investment.
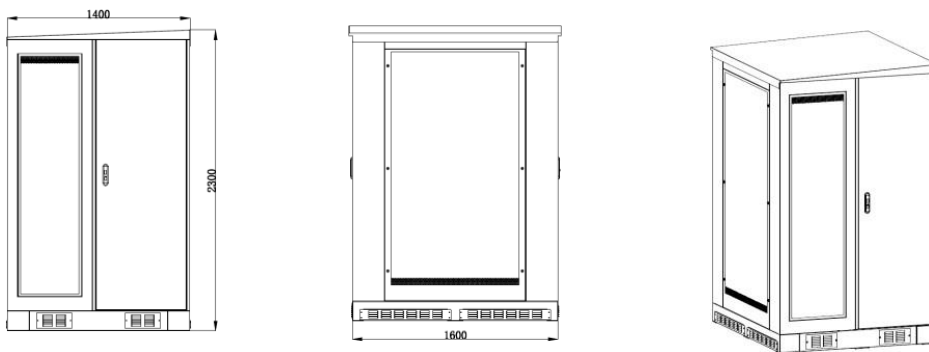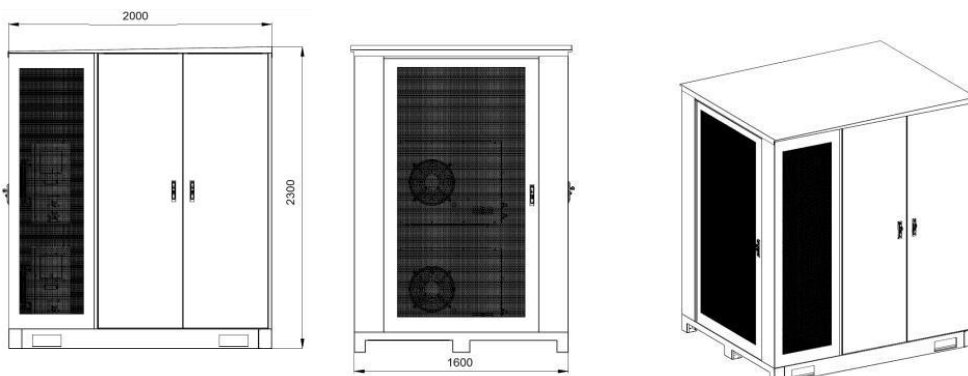

DSE-XE3

DSE-XE4/5

Technical Specification

Model	DSE-XE3	DSE-XE6
Mechanical Specification		
IP rate	IP55	
Weight-kg	630	850
Available U space	28	56
Internal rack width-mm	600	1200
Internal rack depth-mm	1100	1100
Internal rack height-mm	2000	2000
Electrical Specification		
Input Voltage	230V/50Hz	
UPS-kVA/kW	5/5	6/6
Cooling Specification		
Type	Split DX	Split DX Inrow
Refrigerant	R410A	R410A
Mount Type	Rack	Rack
Capacity-kw	3.9	7.8
SHR-%	95	95
Air Volume-m^3/hr	700	1400
Monitoring		
Sensors	Temp. & Hum./Smoke/Leakage/Door status	
Management	UPS/Cooling/Environment Sensor	

DSE-XE3 External Dimension

DSE-XE6 External Dimension

14

www.onesmartfactory.com

@onesmartfactory

Facebook