Delta InfraSuite

Data Center Infrastructure Solutions

www.deltaww.com | www.deltapowersolutions.com

The power behind competitiveness

DELTA

Smarter. Greener. Together.

About Delta Group

Leading expert in power management and thermal management solutions

Delta, founded in 1971, is a global leader in switching power supplies and thermal management products with a thriving portfolio of smart energy-saving systems and solutions in the fields of industrial automation, building automation, telecom power, data center infrastructure, EV charging, renewable energy, energy storage and display, to nurture the development of smart manufacturing and sustainable cities. As a world-class corporate citizen guided by its mission statement, “To provide innovative, clean and energy-efficient solutions for a better tomorrow,” Delta leverages its core competence in high-efficiency power electronics and its CSR-embedded business model to address key environmental issues, such as climate change. Delta serves customers through its sales offices, R&D centers and manufacturing facilities spread over close to 200 locations across 5 continents.

World’s No. 1 in Switching Power Supplies, DC Brushless Fans and Telecom Power Systems

171 sales offices and **45** manufacturing facilities worldwide

8% of annual sales revenues invested in R&D with over **9,000** engineers in **74** R&D centers worldwide

Awarded **10,119**+ patents and received **47** internationally recognized design awards including iF, Reddot, and the Taiwan Excellence awards.

Worldwide No. 1 supplier of merchant power supplies

The Total Merchant Power Supply Market 2020 Revenue		
Ranking	**Company Name**	**Sales (M/USD)**
1	Delta Electronics	$5,636
2	Schneider Electric	$3,500
3	Sungrow Power Supply	$2,715

Source: Micro-Tech Consultants, 2020

CSR Honors and Awards

Member of
Dow Jones Sustainability Indices
Powered by the S&P Global CSA

2011 – 2020
DJSI - World Index
2018-2020 Industry Leader

CDP DISCLOSURE INSIGHT ACTION
A LIST 2020
CLIMATE

2020
Climate Change
Leadership Level

CDP DISCLOSURE INSIGHT ACTION
A LIST 2020
WATER

2020
Water Security
Leadership Level

Sustainability Award
Gold Class 2021
S&P Global

2021
Sustainability Award
Gold Class

Global Footprint

	Asia-Pacific	Americas	EMEA	Total
Sales Offices	100	26	45	171
Plant Sites	38	4	3	45
R&D Centers	50	10	14	74

More information about Delta Group can be found at www.deltaww.com or www.deltapowersolutions.com

Data Center Solution Offering

Delta's InfraSuite offers a comprehensive, modular and highly integrated portfolio to support the creation of high-performance data centers. As a global leader in thermal and power management solutions, Delta has further strengthened its leading position in data center infrastructure with a complete offering of AC or DC power, cooling systems, monitoring platforms from micro and modular to containerized solutions.

Our Service and Capability

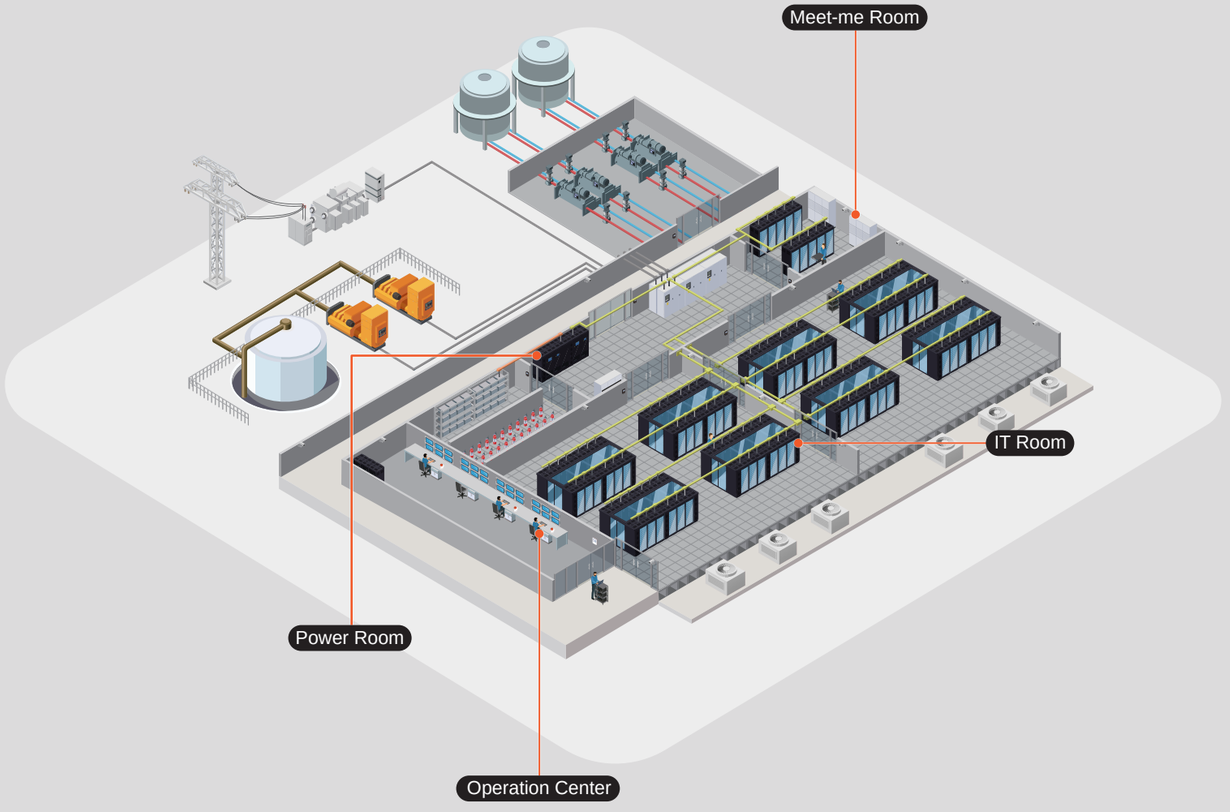
- Provides total data center life cycle services, including consulting, design, simulation, implementation and after service.
- Designs and builds data centers per customer requirements using optimal solutions.
- Offers comprehensive power supply, power distribution, cooling system, modular racks and DCIM solutions for implementation anywhere.

- Generator
- Switch Gear
- MV/LV Transfer Switch
- Large UPS
- Modular UPS
- Rack level UPS
- 12 / 48VDC System
- HDVC System
- STS/ rSTS
- PDU/ rPDU
- Busway

- Cooling Tower
- Chiller
- RowCool
- Rear Door
- Fan Wall
- Hot Aisle
- Containment System

- DCIM
- Building Automation System
- Surveillance
- Video Wall
- Lighting

- OCP Rack
- Rack
- Switch
- DCI Router



Delta UPS

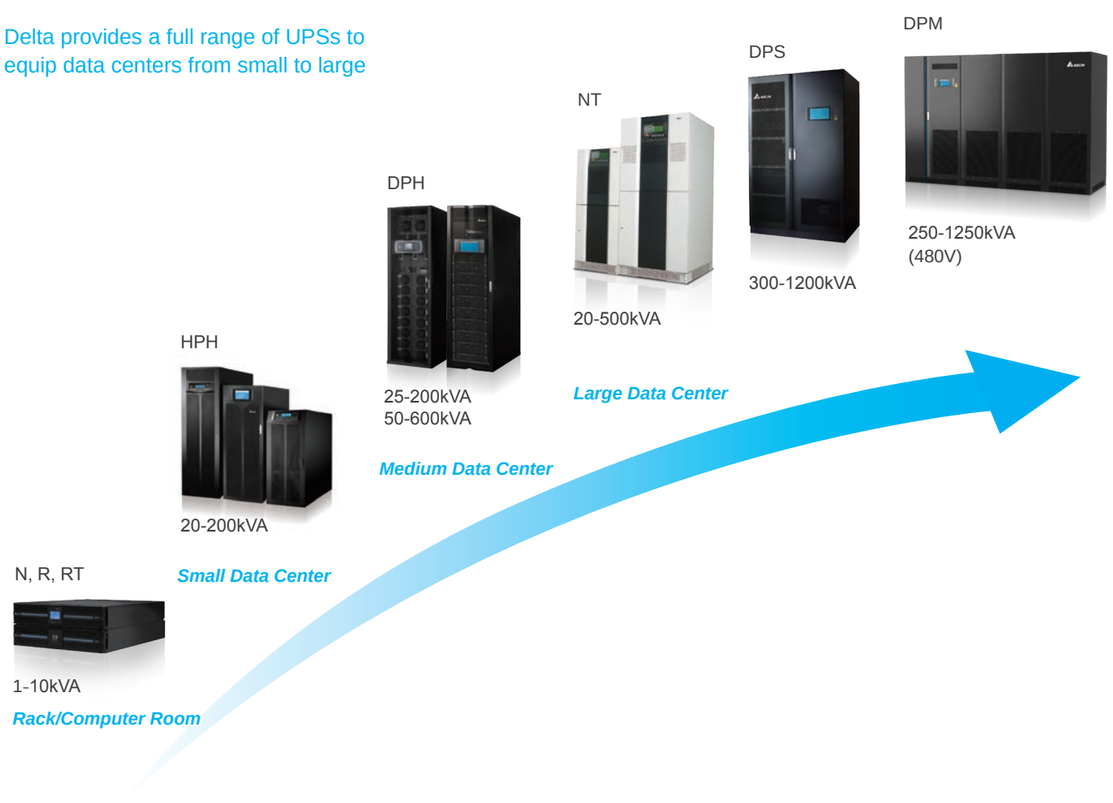
Our clients are most concerned about power issues such as power failure, power sag, power surge, under voltage or over voltage, frequency variation, harmonic distortion and line noise. Delta Electronics emphasizes the areas of redundant power supply, voltage regulation, equipment protection and adjustment and has designed and developed three UPS product families, Amplon, Ultron and Modulon. Their power range, applications and the equipment they protect are listed below:

Product Family	Power	Topology	Applications
Amplon	1kVA or higher	Single-Phase UPS	Server and Network Equipment
Ultron	10kVA or higher	Three-Phase On-Line UPS	Data centers and Industrial Equipment
Modulon	20kVA or higher	Three-Phase Modular On-Line UPS	Modular unit expansion and redundant power supply can be achieved within a single rack.

Delta UPS systems feature the following:

- Leading AC-AC efficiency
- Fully redundant design and configuration
- High input and output power factors
- Easy expansion without additional hardware
- Supports seamless operations at low level of total cost of ownership (TCO)

Delta provides a full range of UPSs to equip data centers from small to large



Product Application Matrix

	Agilon	Amplon					
	VX Series 0.6-1.5 kVA (line-interactive)	MX Series 1.1-3 kVA (line-interactive)	N Series 1-3 kVA (on-line)	N Series 6-10 kVA (on-line)	R Series 1-3 kVA (on-line)	RT Series 1-3 kVA (on-line)	RT Series 5-20 kVA (on-line)
Configuration 1:1	O	O	O	O	O	O	O
Configuration 3:1							O (15/20 kVA)
Configuration 3:3							O (15/20 kVA)
Rack mountable		O			O	O	O
Tower	O	O	O	O	O	O	O
Isolation transformer							
Battery '	I	I	I, E	E	E	I, E	E
Home and office *	O	O	O			O	
Small enterprise, IT and medical **		O	O	O	O	O	O
Medium enterprise, telecom, IT, media ***				O			O
Heavy industry, telecom, IT, Industrial ****							

	Ultron		Modulon				
	HPH Series 20-200 kVA (on-line)	NT Series 20-500 kVA (on-line)	DPS Series 300-1200 kVA (on-line)	DPM Series 250-1250 kVA (on-line)	DPH Series 25-200 kVA (on-line)	DPH Series 50-600 kVA (on-line)	
Configuration 1:1							
Configuration 3:1		O					
Configuration 3:3	O	O	O	O	O	O	
Rack mountable							
Stand-alone	O	O	O	O			
Modular					O	O	
Isolation transformer		O					
Battery '	I (BN/B), E	E	E	E	I (75K), E	E	
Home and office *							
Small enterprise, IT and medical **	O	O	O		O	O	
Medium enterprise, telecom, IT, media ***	O	O	O	O	O	O	
Heavy industry, telecom, IT, Industrial ****	O	O	O	O			

'I: internal battery, E: external battery

* PCs, laptops, modems, printers, WiFi and audio equipment
** Computers, servers, networking, medical control and diagnostics, education, banking, industrial automation
*** Telecom base stations, data centers, backbone networks, broadcasting, projection systems
**** Telecom centers, data centers, medical equipment at hospitals, government use, automatic control, oil, gas and power utilities, industrial equipment, automation and control

Delta InfraSuite Power Management

Uninterruptible Power Supply, Modulon DPH Series, 25 - 75/150/200 kVA

Ultimate Availability Without Compromising Power Efficiency

The Modulon DPH supports ultimate availability for data center operations and provides the benefit of “pay as you go” without over-sizing the UPS. While achieving ultimate availability, the Modulon DPH does not compromise on power efficiency performance. When availability, efficiency and expanding according to business needs are essential, the Modulon DPH is the ideal UPS system to provide power protection and total cost of ownership (TCO) savings.

Ultimate Availability

- Advanced fault tolerance design uses self redundancy to guarantee operation continuity
- Self-synchronization of power and control modules for continuous online operation even in the event of control module failure to avoid downtime caused by single point failure
- Hot-swappable key modules and components to ensure Mean Time To Repair (MTTR) close to zero without downtime risk

High Scalability

- Vertical expansion from 25kW to 75/150/200kW supports N+X redundancy in a single rack enclosure to save footprint
- Parallel expansion up to four units without requiring additional hardware
- Optional Rack-Mount power distribution cabinet (applicable for 75/150kW models) has flexibility to arrange its UPS’s output power feed according to its connected critical loads
- Optional built-in battery modules (applicable for 75kW models) at maximum four units (four battery trays each)

Excellent Power Performance and Efficiency

- Full rated power (kVA=kW) maximizes power availability
- High operating efficiency of 95% at 30% light load and 96% from 50% load results in marked energy cost savings
- Low harmonic pollution (iTHD<3%) reduces upstream investment costs and meets demanding power requirements

Easy Maintenance

- Built-in manual bypass features eliminates maintenance related downtime
- Proactive detection of fan failure and switch fault for early diagnosis of UPS malfunction
- Plug and play modularity simplifies the maintenance process

Technical Specifications

Model			DPH-75K	DPH-150K	DPH-200K
Power Rating (kVA)			25, 50, 75	25, 50, 75, 100, 125, 150	25, 50, 75, 100, 125, 150, 175, 200
Frame			75kW	150kW	200kW
Input	Nominal Voltage		380/220Vac; 400/230Vac; 415/240Vac (3 phase, 4-wire +G)		
	Voltage Range		305~478Vac (full load), 242~478Vac (60% load)		
	Current Harmonic Distortion		< 3%*		
	Power Factor		> 0.99		
	Frequency		50/60Hz**		
Output	Voltage		380/220Vac, 400/230Vac, 415/240Vac (3 phase, 4-wire +G)		
	Output Power Factor		1 (kVA=kW)		
	Voltage Harmonic Distortion		≤ 2% (linear load)		
	Voltage Regulation		±1% (static)		
	Frequency		50/60Hz		
	Frequency Regulation		±0.05Hz		
	Overload Capacity		≤ 125%: 10 minutes ; ≤ 150%: 1 minute		
Interface	Standard		System communication port x 1, LCM port x 1, Parallel port x 2, Smart slot x 2, Output dry contact x 6, Input dry contact x 2, Battery dry contact x 2, REPO		
	Optional		SNMP IPv6 card, ModBus card, Relay I/O card, Battery cabinet temperature sensor cable, Battery cabinet status detection kit		
Conformance	Safety & EMC		BSMI, CE		
Other Features	Parallel Redundancy and Expansion		Module and system redundancy ; Maximum 4 units		
	Emergency Power Off		Local and remote		
	Battery Start		Yes		
	Event Log		3000 records		
Efficiency	AC-AC		96% (Tested by TÜV)		
	ECO Mode		99%		
Environment	Operating Temperature		0~40ºC		
	Relative Humidity		0~95% (non-condensing)		
	Audible Noise (at one meter)		< 62dBA		
	IP Protection		IP20		
Physical	Dimensions (W x D x H)		600 x 1090 x 2000mm		
	Weight	UPS System	310kg	320kg	350kg
		Power Module	32kg	32kg	32kg
		Rack-Mount Power Distribution Cabinet	32kg	32kg	N/A
		Battery Module	29.5kg	N/A	N/A
System Frame	25kW Power Module		3	6	8
Maximum Capacity	Rack-Mount Power Distribution Cabinet (rPDC)		1	2	N/A
	Breaker Module (for rPDC)		6	12	N/A
	Battery Module		4	N/A	N/A

* When input vTHD is less than 1%.
** Input frequency range can be adjusted up to 40Hz to 70Hz. Delta provides configuration service.

All specifications are subject to change without prior notice.

Scalable and Hot-swappable power modules

Optional rPDC with hot-swappable breaker modules and control modules

Optional hot-swappable battery modules

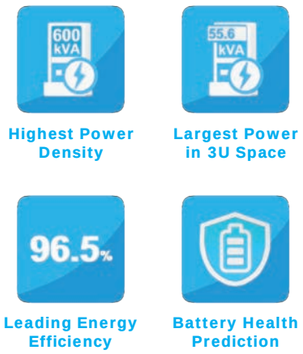
The Modulon DPH is designed with modern IT aesthetics aligned with Delta InfraSuite data center solutions.

Delta InfraSuite Power Management

Uninterruptible Power Supply, Modulon DPH Series, 50 - 300/500/600 kVA

The world's highest power density providing ultimate MW power protection with leading power performance and super reliability

In this IT intensive world with heavy data traffic driven by cloud, 4G/5G and media streaming applications, IT managers are facing the challenges of increasing rack power density and limited data center space. Delta's innovative modular UPS technologies provide the answer to customers' demands for high power density, high power performance, and ultimate availability. The brand-new Delta Modulon DPH series UPS 50-300/500/600kVA achieves the industry's leading power density of 50kW per module, offering the smallest footprint and best space utilization. The Modulon DPH Series UPS is the ideal modular power protection for MW data centers to achieve total cost of ownership (TCO) optimization.



Highest Power Density | **Largest Power in 3U Space**

Leading Energy Efficiency | **Battery Health Prediction**

Excellent Power Performance

- The industry's leading power density per module at 50kW in 3U space, and the smallest footprint for 500kVA in a single rack and 600kVA in two racks, to achieve the best utilization compared with its peers
- High AC-AC efficiency up to 96.5% and ECO mode to 99% resulting in marked energy cost savings
- Green mode featuring a load aggregation function optimizes system efficiency

Ultimate Availability

- Fully modularized design and hot-swappable key modules ensure Mean Time To Repair (MTTR) close to zero without downtime risk
- Redundant components and dual CAN bus delivers highest system availability and avoids single point of failure
- Modular UPS grows with your business by parallel expansion up to 8 units for 4.8MVA of total power capacity

High Manageability

- User-friendly 10" color touch screen enables easy local UPS management
- Environment information such as security, water, fire, and temperature can be integrated into the UPS for easy monitoring via the LCD of the UPS
- If the UPS is equipped with an external battery management system, the battery information can be integrated into the UPS and monitored via the LCD of the UPS

Technical Specifications

Model		DPH-300K	DPH-500K	DPH-600K
Power Rating	kVA	100,150,200,250,300	300,350,400,450,500*	500,550,600
	kW	100,150,200,250,300	300,350,400,450,450	500,550,600
	Power Module Quantity	Up to 6 units	Up to 9 units	Up to 12 units
Input	Nominal Voltage	220/380Vac, 230/400Vac, 240/415Vac (3-phase, 4-wire + G)		
	Voltage Range	305~478Vac (full load), 228~478Vac (70% load)		
	Current Harmonic Distortion	< 3%**		
	Power Factor	> 0.99		
	Frequency Range	40~70Hz		
Output	Voltage	220/380Vac, 230/400Vac, 240/415Vac (3-phase, 4-wire + G)		
	Voltage Harmonic Distortion	≤ 0.5% (linear load)		
	Voltage Regulation	±1% (static)		
	Frequency	50/60 ± 0.05Hz		
	Overload Capability	≤ 125% : 10 minutes; ≤ 150%: 1 minute; > 150%: 1 second		
Display		10″ color touch screen		
Interface	Standard	RS232 x 1, Parallel port x 4, USB type A x 2, USB type B x 1, MODBUS x 1, Smart slot x 1, REPO x 1, EPO x 1, Input dry contact x 4, Output dry contact x 6, External battery temperature dry contact x 4, External switch/breaker status dry contact x 4, BMS (RJ45) x 1, Ethernet x 1		
	Optional	Relay I/O card, Battery cabinet temperature sensor cable		
Conformance	Safety	CE		
Efficiency	AC-AC	Up to 96.5%		
	ECO Mode	99%		
Battery	Nominal Voltage	±240Vdc (default, ±180Vdc to ±276Vdc configurable)		
	Charge Voltage	±272V (adjustable from 204V to 312V)		
	Protection of Battery Deep Discharge	Yes		
Environment	Operating Temperature	0~40℃		
	Relative Humidity	0~90% (non-condensing)		
	Audible Noise (at one meter)	< 75dB	< 80dB	< 85dB
	IP Protection	IP20		
Others	Parallel Redundancy and Expansion	Module and system redundancy ; Maximum 8 units		
	Emergency Power Off	Remote (default) and local (optional)		
	Battery Start	Yes		
Physical	Dimensions (W x D x H)	600 x 1100 x 2000mm		1200 x 1100 x 2000mm
	Weight : UPS System (without power modules)	311kg	317kg	605kg
	Weight : 50kW Power Module (optional)	36kg		

* The power module's power rating is adjustable to either 50kVA or 55.6kVA via touch panel.
** When input vTHD is less than 1%.

All specifications are subject to change without prior notice.

50kW in 3U space

User-friendly 10" color touch screen

Fully modularized and hot-swappable design

DPH 300 system is inbuilt with four breakers for easy operation and maintenance

DPH 500-600K model is highly integrated with four built-in switches

Delta InfraSuite Power System

Rack-Mount Remote Power Panel

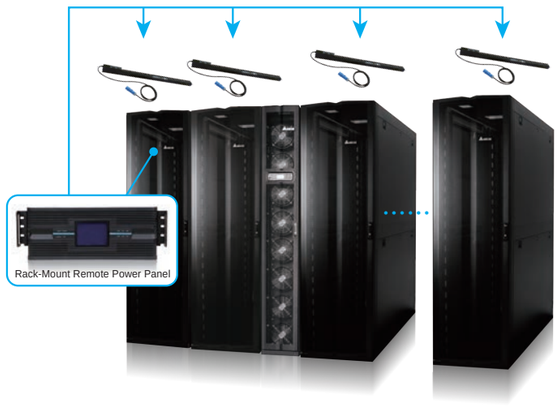
Delta's rack-mount Remote Power Panel (rRPP) is an ideal power distribution solution for small data centers up to 80kVA. Composed of a 4U cabinet, the rRPP can be perfectly integrated with standard server racks and results in saving valuable data center space. For high requirement of data center reliability, it also provides excellent branch protection and branch monitoring functions. The rRPP is a superior solution for power distribution management and reduces the total cost of ownership (TCO) of your small data center.

High Flexibility

- Provides three different rated power levels, 30kVA, 50kVA and 80kVA, for your selection
- The highly scalable design allows installation of at maximum six hot-swappable breaker modules (optional), which means that it can connect at maximum 18 branches
- Various accessories are available for options such as TVSS module, main input breaker and SNMP IPv6 card

High Reliability

- Detects any hot-swappable breaker module's branch current
- Provides abnormal voltage and phase-lack alarms
- Provides system and each branch's current monitoring and alarm functions
- Intelligently judges the specifications of each hot-swappable breaker module installed
- Smartly monitors whether each latch is closed or open, each branch's status and the optional main input breaker's status
- Provides REPO function



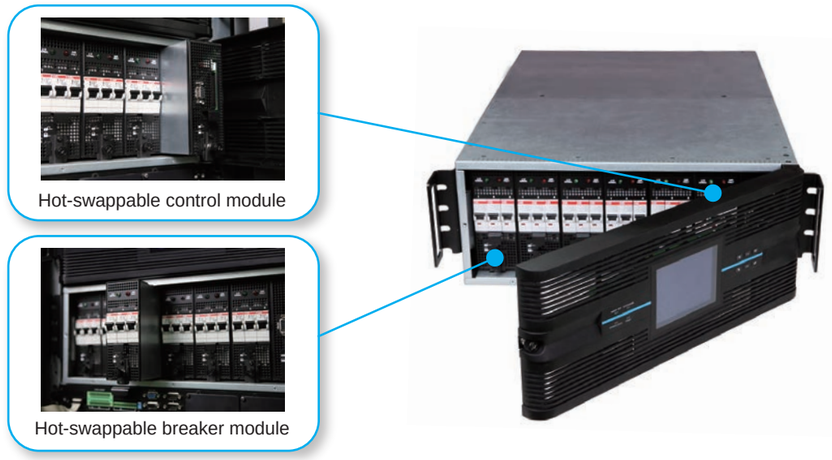
Convenience

- User-friendly 4.9-inch LCD interface
- Built-in RS-232 port and smart slot allow remote monitoring
- Records at a maximum 2000 event logs
- Provides 6 sets of output dry contacts

Technical Specifications

Model		Rack-Mount RPP
Input	Nominal Voltage	220/380V; 230/400V; 240/415V (3-phase, 4-wire + G)
	Voltage Range	220/380V ±15%
	Frequency Range	50/60Hz ± 5%
	Main Input Breaker	63/100/160 A
Output	Full Load Rating	30/50/80kVA
	Nominal Voltage	220/380V; 230/400V; 240/415V
LCD Display		Total output: Current, load (%), kVA, kW, kW.h and temperature Each branch: Load (%), current and kW.h
Interface	Standard	RS-232 port x 1, CAN Bus port x 1, Smart slot x 1, Output dry contact x 6, REPO x 1
Environment	Operating Temperature	0~40ºC
	Relative Humidity	90% (non-condensing)
	Audible Noise	< 70dBA in normal mode (at a distance of 1 meter in front of the Rack-Mount Remote Power Panel)
	Protection (IP Degree)	IP20
Others	Parallel Redundancy	N/A
	Emergency Power Off	Yes (Remote)
Physical	Dimensions (W x D x H)	430 x 665 x 173mm
	Weight	38kg (Max.)
	Hot-Swappable Breaker Module	1~6 (at maximum 18-pole supported)

All specifications are subject to change without prior notice.



Delta InfraSuite Power Management

Delta Cast Resin Busway System

With the brand vision “Smarter, Greener, Together,” Delta has utilized its industry-leading power electronics technology to develop the Busway BR Series for data center applications. Different from a conventional power cable system or sandwich busway solutions, Delta has adopted epoxy cast resin technology to significantly increase IP protection level, safety, and reliability. Delta's solution is ideal for use in a variety of industries and climate conditions. The superior electrical and mechanical characteristics of resin minimize the Busway BR Series' dimensions and simplify its structure. The Busway BR Series also has an extended product life cycle, increased reusability, and achieves significant energy savings for customers.

Customer Value

The Busway BR Series features:

- Continuous plug-in core technologies available for expansion and power distribution. Data centers can use them freely
- Ultra safe solution that satisfies the requirements of data centers
- Conforms to different standards, depending on market or customer needs, such as IEC, CNS and GB
- Space-saving and weight-saving solution that overcomes space and loading problems of the data center
- Highly integrated composite materials that significantly reduce EMC and protect precision devices in the data center, and are safe for human health

Delta's Busways vs, Traditional Cable

Delta’s Busways excel over traditional cables in terms of safety, electrical properties, reliability, and scalability, making them the best choice for companies looking at optimum TCO.

	Cast Resin Busway System	Typical Power Distribution by Cables
System Flexibility	Easily detaching joints, replaceable, re-usable and highly adaptable to system design changes	Need re-wiring in case of system changes
Installation and Configuration	Quick installation and configuration	Wiring over premises, costly and time-consuming
Space Use Efficiency	Only 30% of traditional cable wiring, effective in saving installation space	Power distribution by cable needs PDU or RPP that occupies white space
Appearance	Easy to identify and manage at a glance	Messy power wiring, complicated looks
Fire Resistance	High, IEC60331, BS6387	None
IP Rating	The protection level is primarily IP20 for data center applications. It can reach up to IP55 per requirement	Not specified in the general technical data
Resistance to Chemicals and Corrosion	Excellent	Poor
Instantaneous Short-circuit Strength	High	Low
Overload Capacity (+25% 2hrs)	High	Low in heat resistance (up to about 60℃), thus being dangerous when overloaded, leading to accelerated insulating materials aging and reduced service life
Insulation Rating	High, resin insulation Class F (155℃)	Low

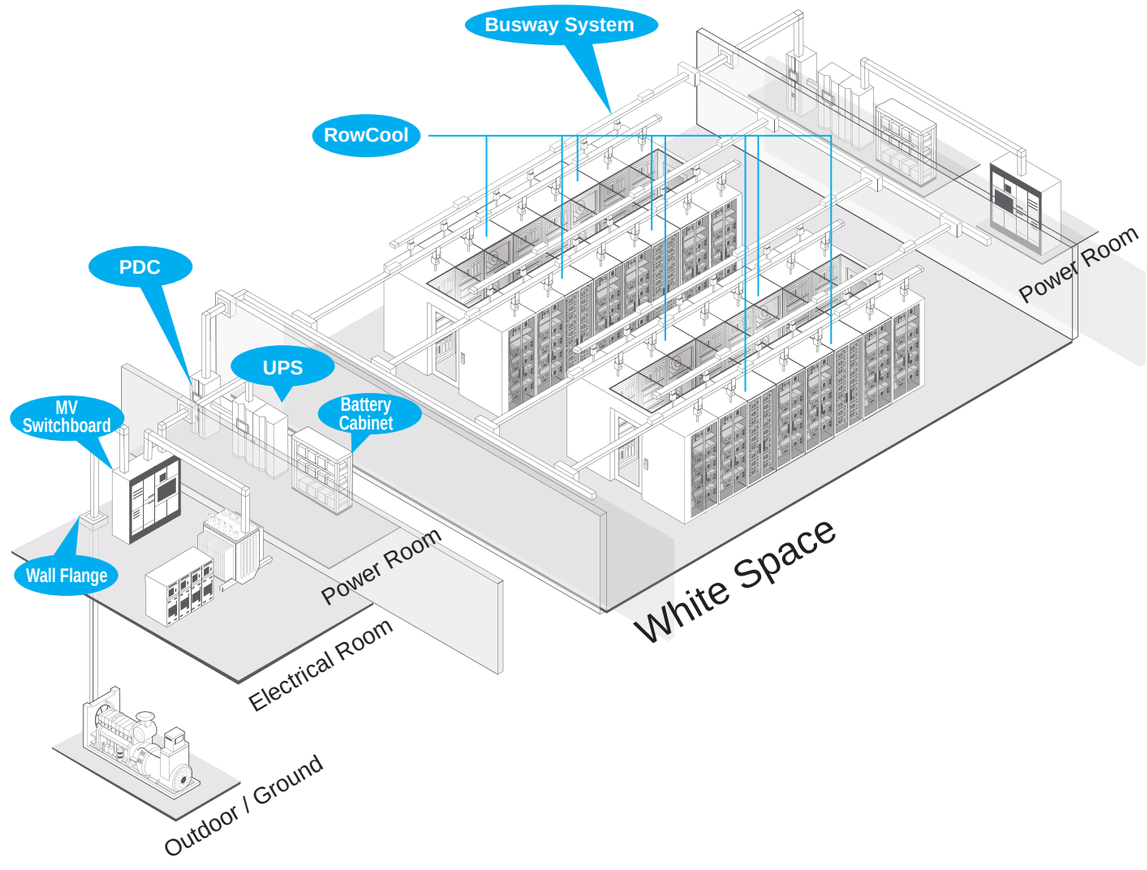
Busway for Data Center Applications

With the recent wave of Big Data and IoT, data centers are responsible for more computing, communication and storage functions. In addition to the increase of their scope, the power density of a single rack cabinet has gradually increased. Effective space utilization is a great challenge for data center construction.

The Delta Cast Resin Busway System BR Series is exclusive for data center applications. Thanks to the epoxy insulation technology, it has a compact structure and size, as well as low EMC that allows it to overcome space limitations in server rooms. Data center designers can easily do wiring construction close to data cables without fear of an impact on their health due to low electromagnetic radiation.

In addition, the plug-in unit can be customized per customers’ requirements. It is flexible for use with different power supply systems of server racks. The plug-in unit also applies the flexible “Continuous Plug-In” core technology and is hot swappable. Therefore, it is not constrained by data center space. Customers can carry out expansion or distribution anywhere, which is very flexible.

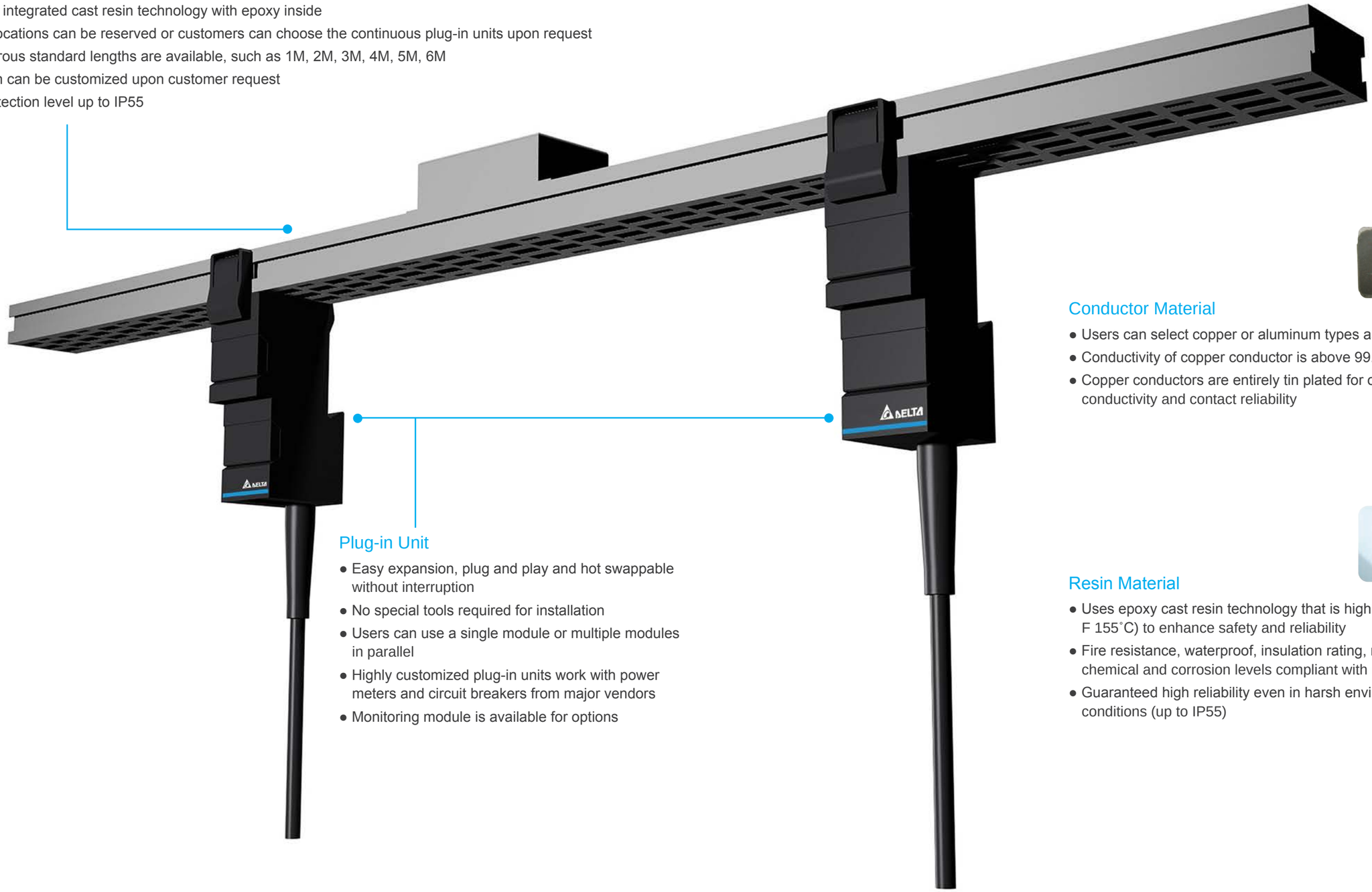
Busway Systems in the Data Center



Product Advantages

Busway Body

- Wide power ratings ranging from 250A to 1600A
- Up to 200% neutral
- Highly integrated cast resin technology with epoxy inside
- Pole locations can be reserved or customers can choose the continuous plug-in units upon request
- Numerous standard lengths are available, such as 1M, 2M, 3M, 4M, 5M, 6M
- Length can be customized upon customer request
- IP protection level up to IP55



Plug-in Unit

- Easy expansion, plug and play and hot swappable without interruption
- No special tools required for installation
- Users can use a single module or multiple modules in parallel
- Highly customized plug-in units work with power meters and circuit breakers from major vendors
- Monitoring module is available for options

Conductor Material

- Users can select copper or aluminum types as needed
- Conductivity of copper conductor is above 99.9%
- Copper conductors are entirely tin plated for optimum conductivity and contact reliability

Resin Material

- Uses epoxy cast resin technology that is highly insulating (Class F 155˚C) to enhance safety and reliability
- Fire resistance, waterproof, insulation rating, resistance to chemical and corrosion levels compliant with industrial standards
- Guaranteed high reliability even in harsh environmental conditions (up to IP55)

Delta InfraSuite Power Management

Rack Power Distribution Unit

Delta's rack power distribution units (rPDUs) provide optimal power distribution for devices inside a rack. In addition to easily distributing power to equipment, rPDUs also provide complete power protection. Delta offers a range of basic and metered rPDUs that you can install vertically or horizontally inside a rack. It makes establishing a data center more efficient.

LED Current Display and Indicators

■ Metered Rack PDU

Availability

- Tool-less installation in Delta's standard rack cabinets
- Brackets included for mounting in other brands' rack cabinets
- Zero-U installation saving valuable rack space
- Single or three phase input voltage available

Safety

- LED current (rms value) display and overload warning indicator
- Branch circuit breaker protection
- International standards for cables and power plugs/ receptacle

Management

- Upgradable firmware for maintaining optimal function
- Integrated with the InfraSuite management software
- Optional SNMP card for remote monitoring

■ Basic Rack PDU

Availability

- Tool-less installation in Delta's standard rack cabinets
- Brackets included for mounting in other brands' rack cabinets
- Vertical or horizontal mounting method, saving valuable rack space
- Single phase or three phase input voltage available

Safety

- Branch circuit breaker protection
- International standards for cables and power plugs/ receptacle

Interface

Interface for metered rack PDU	Function
RS232-1	Connect to a PC for remote operation or a firmware upgrade
RS232-2	Connect to an SNMP card or to another rPDUs

Environment

	Operating	Storage
Temperature	0~45/50˚C (50˚C only available for model AD-XXX/XXX)	-20~65˚C
Relative Humidity	5~95%	
Elevation	0~2000m	0~15000m

Technical Specifications

Nominal Input Voltage	Input Phase	Input Current	Plug Type	Output Voltage / Phase	Number of Output Circuit Breakers	Outputs (Number)	LED	SNMP Card	Dimensions (W x H x D)	Weight	Conformance	Model
Basic Rack PDU												
100-120Vac	1	16A	NEMA L5-20P	100-120Vac / 1	20A/1P One	NEMA 5-15/20R (8)	-	-	440 x 44 x 55mm	1.56kg	UL/cUL	PDU7111
		24A	NEMA L5-30P	100-120Vac / 1	20A/1P Two	NEMA 5-15/20R (24)	-	-	48 x 1250 x 50/90mm	4.88kg	UL/cUL	PDU5113
200-240Vac	1	16A	NEMA L6-20P	200-240Vac / 1	20A/1P One	IEC320 C13 (12)	-	-	440 x 44 x 55mm	1.64kg	UL/cUL	PDU7211
			IEC309-16A-3W	200-240Vac / 1	20A/1P One	IEC320 C13 (12)	-	-	440 x 44 x 55mm	1.48kg	CE, CCC	PDU7311
		24A	NEMA L6-30P	200-240Vac / 1	20A/2P Two	IEC320 C13 (24)	-	-	48 x 1250 x 50/90mm	4.92kg	UL/cUL	PDU5213
		32A	IEC309-32A-3W	200-240Vac / 1	20A/1P Two	IEC320 C19 (4) IEC320 C13 (24)	-	-	48 x 1250 x 50/90mm	4.90kg	CE, CCC	PDU5315
	3Δ	40A	CS8365C	200-240Vac / 1	20A/2P Six	IEC320 C13 (12)	-	-	55 x 1000 x 60/90mm	9.50kg	UL/cUL	PDUD526
346-415Vac	3Y	32A	IEC309-32A-5W	200-240Vac / 1	20A/1P Six	IEC320 C19 (6)	-	-	440 x 44 x 250mm	4.80kg	CE, CCC	PDU7425
Metered Rack PDU												
100-120Vac	1	24A	NEMA L5-30P	100-120Vac / 1	20A/2P Two	NEMA 5-15/20R (24)	Yes	Option	48 x 1250 x 50/90mm	5.34kg	UL/cUL	PDU1113
200-240Vac	1	16A	IEC309-16A-3W	200-240Vac / 1	20A/2P One	IEC320 C19 (3) IEC320 C13 (24)	Yes	Option	48 x 1250 x 50/90mm	4.56kg	CE, CCC	PDU1311
			IEC309-20A-3W	200-240Vac / 1	20A/1P Two	IEC320 C13 (24)	Yes	Option	48 x 1250 x 50/90mm	4.60kg	UL/cUL	PDU1211B
		24A	NEMA L6-30P	200-240Vac / 1	20A/2P Two	IEC320 C13 (24)	Yes	Option	48 x 1250 x 50/90mm	5.24kg	UL/cUL	PDU1213
						IEC320 C19 (6) IEC320 C13 (36)	Yes	Built-In	55 x 1708 x 55/70mm	6.40kg	PSE	AD-240/30A-B
											UL/cUL	AD-240/30A-C
			IEC309-30A-3W	200-240Vac / 1	20A/1P Two	IEC320 C19 (4) IEC320 C13 (24)	Yes	Option	48 x 1250 x 50/90mm	5.12kg	UL/cUL	PDU1313B
		32A	IEC309-32A-3W	200-240Vac / 1	20A/2P Two	IEC320 C19 (4) IEC320 C13 (24)	Yes	Option	48 x 1250 x 50/90mm	5.44kg	CE, CCC	PDU1315
					20A/1P Two	IEC320 C19 (6) IEC320 C13 (36)	Yes	Built-In	55 x 1708 x 55mm	5.90kg	CE	AD-240/32M
		40A	IEC309-60A-3W	200-240Vac / 1	20A/1P Three	IEC320 C19 (3) IEC320 C13 (36)	Yes	Option	48 x 1560 x 50/90mm	7.94kg	UL/cUL	PDU2316B
	3Δ	28A	CS8365C	200-240Vac / 1	20A/2P Three	IEC320 C19 (6) IEC320 C13 (30)	Yes	Built-In	55 x 1708 x 55mm	8.20kg	UL/cUL	AD-208/50B-B
		32A	CS8365C	200-240Vac / 1	20A/2P Three	IEC320 C19 (6) IEC320 C13 (30)	Yes	Option	48 x 1780 x 50/100mm	9.00kg	UL/cUL	PDUE525
						IEC320 C13 (36)	Yes	Option	48 x 1560 x 50/100mm	8.00kg	UL/cUL	PDU2525
		55A	IEC309-63A-4W	200-240Vac / 1	20A/2P Six	IEC320 C19 (12) IEC320 C13 (12)	Yes	Built-In	58 x 1750 x 60/100mm	12.80kg	CE	PDUE928
346-415Vac	3Y	16A	IEC309-16A-5W	200-240Vac / 1	20A/2P Three	IEC320 C19 (3) IEC320 C13 (36)	Yes	Option	48 x 1560 x 50/90mm	6.06kg	CE, CCC	PDU2421
			IEC309-20A-5W	200-240Vac / 1	20A/1P Three	IEC320 C19 (3) IEC320 C13 (36)	Yes	Built-In	58 x 1750 x 60/100mm	6.86kg	UL/cUL	PDUE421B
		24A	IEC309-30A-5W	200-240Vac / 1	20A/1P Six	IEC320 C19 (18) IEC320 C13 (6)	Yes	Built-In	58 x 1750 x 60/100mm	8.30kg	UL/cUL	PDUE423B
		32A	IEC309-32A-5W	200-240Vac / 1	35A/2P Three	IEC320 C19 (9) IEC320 C13 (3)	Yes	Option	48 x 1250 x 50/100mm	6.45kg	CE, CCC	PDU1425
						IEC320 C19 (15) IEC320 C13 (3)	Yes	Option	48 x 1560 x 50/100mm	7.22kg	CE	PDU1425-T
						IEC320 C19 (3) IEC320 C13 (36)	Yes	Option	48 x 1660 x 50/100mm	8.30kg	CE	PDU4425
					35A/1P Three	IEC320 C19 (3) IEC320 C13 (24)	Yes	Option	48 x 1535 x 50/100mm	7.10kg	CE	PDU4425-M
		32A (UL 24A)	IEC309-32A-5W	200-240Vac / 1	20A/1P Six	IEC320 C19 (6) IEC320 C13 (30)	Yes	Built-In	55 x 1708 x 55/70mm	8.00kg	UL/cUL, CE	AD-240/32J
		48A	IEC309-63A-5W	200-240Vac / 1	20A/1P Nine	IEC320 C19 (18) IEC320 C13 (6)	Yes	Built-In	58 x 1750 x 60/100mm	13.40kg	CE	PDUE428
						IEC320 C19 (18) IEC320 C13 (36)	Yes	Built-In	56 x 2325 x 60/100mm	15.10kg	CE	PDUE428II

All specifications are subject to change without prior notice.

Delta InfraSuite Power Management

Rack-Mount Static Transfer Switch

The Rack-Mount Static Transfer Switch (rSTS) safeguards the uninterrupted operation of mission critical IT equipment. Powered by two independent power sources, the rSTS rapidly switches from one source to the other automatically when the power supply used to power its connected load fails. For datacenter applications the rSTS allows power drop risk to be shared or distributed to each rack to prevent power loss for the whole system. The rSTS offers an efficient and reliable switch that supports the high redundancy requirements of mission critical power systems.

Availability

- Adopts SCR with a relay in parallel as a switching device to increase reliability without sacrificing efficiency.
- Supports power redundant configurations for high reliability
- Monitors the health of the power source and performs the transfer automatically

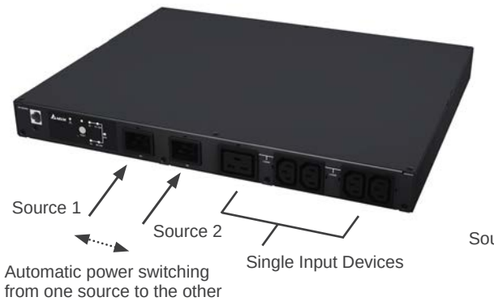
Convenience

- Rack-mounted type with 1U size for easy installation and relocation
- Built-in SNMP for remote management
- LED indicators show power flow
- Self-test function

Safety

- Break before make prevents short circuits between two sources

rSTS 16A



rSTS 30A

▲ Supports power redundant configurations for high reliability

Technical Specifications

Model	STS16002SR	STS30002SR
Rated Current	16A	30A*
Regulatory	CE / UL 62368	CE
Nominal Voltage	200/208/220/230/240Vac	
Display	LED	
Connection	Input: C20 x 2 pcs Output: C13 x 4 + C19 x 1 pcs	Input: IEC309 / Hardwired Output: IEC309 / Hardwired
Communication	SNMP	
Operating Temperature	0~40˚C	
Storage Temperature	-15~50˚C	
Humidity	0~95% RH (non-condensing)	
Audible Noise (at one meter)	< 40dB	
Physical Dimensions (H x W x D)	43 x 440 x 385mm	43 x 440 x 385mm / 43 x 440 x 390mm
Weight	4.85kg	7.6kg / 6.2kg

* Under the condition of 35˚C; if the environment temperature is 36-40˚C, the product should be de-rated to 25.6A.

All specifications are subject to change without prior notice.

rSTS 16A

Front

Rear

rSTS 30A

Front

Rear

Product only available for: EMEA, South America, SEA, India, Taiwan, South Korea.

Delta InfraSuite Rack & Accessories

Modular Rack

The modular rack is essential gear for data centers. Delta has developed a modular rack that increases space utilization and heat dissipation via 70% perforation to meet high density IT room requirements.

Convenience

- Tool-less installing and removing & reversing front and rear doors
- Removable power trough on the roof neatly manages power, network and optic cables
- Tool-less removable roof cable ports for easier cable access and management
- Removable bottom cover allows cable access through raised floor
- Casters for convenient moving
- Front and rear U-position numbers for easy installation
- Easy to join racks in a row for a clean and secure data room
- Front and rear doors open up to 130º for convenient installation and repair
- Full range of accessories supports a well-managed and organized data room

Flexibility

- Split rear doors reduces space required for hot aisles and simplifying maintenance
- Adjustable mounting rails with numbered guides helps adjust depth for different installation needs
- Four multipurpose mounting bays for installing 0U PDU or vertical cable trough
- Fully meets industry-standard EIA-310 rack requirements

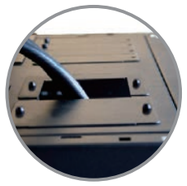
Safety

- Supports up to 1420kg static weight
- IP20 environment protection rating
- Adjustable leveling feet for stability and security
- Front and rear doors grounded to the rack
- Front and rear doors with locks

Roof Cable Trough

Vertical Position Marks

4 Universal Mounting Brackets



Roof Cable Ports & Covers

Conformance

Protection Rating	IP20
Rack Standards	EIA-310-D
Safe Grounding	UL 60950 (max. 63A)
Environmental	RoHS

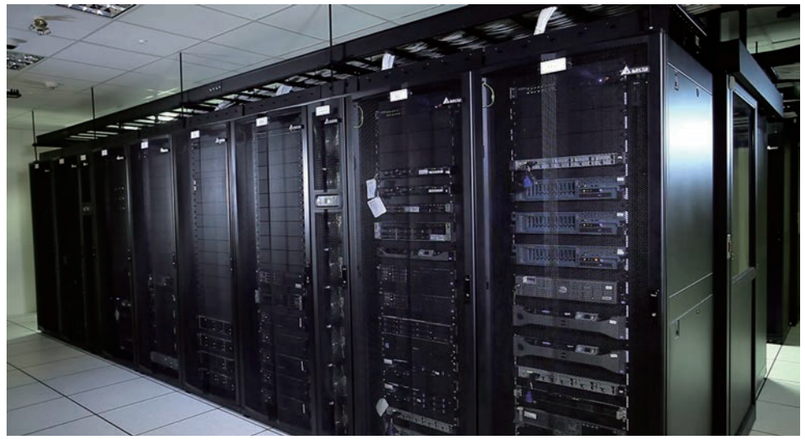
Environment

Temperature	Operating: 0~40˚C Storage: -15~50˚C
Relative Humidity	Operating: 0~95%
Elevation	Operating: 0~3000m

Physical

Item	Model	W (mm)	H (mm)	D (mm)	Packing Dimensions (W x H x D)	Net Weight
1	SR3110	800 (19”)	2000	1100	830 x 1160 x 2156mm	150kg
2	SR1110	600	2000	1100	630 x 1160 x 2156mm	137kg
3	SR3160	800 (19”)	2000	1200	830 x 1260 x 2156mm	131kg
4	SR1160	600	2000	1200	630 x 1260 x 2156mm	143kg

These specifications are subject to change without notice. Please contact us or our distributors in your region for the latest specs.



Delta InfraSuite Rack & Accessories

Rack Accessories

1U Fixed Shelf

Model	SR9004
Load Capacity	60kg
Dimensions (W x D x H)	480.5 x 664 x 44mm

1U Sliding Shelf

Model	SR9005
Load Capacity	40kg
Dimensions (W x D x H)	482 x 718 x 44mm

Bottom Cover

Model	SR9003 / SR8003
Dimensions (W x D x H)	538 x 834.6 x 39mm / 738 x 834.6 x 39mm

Cable Ladder

Model	SR7003
Dimensions (W x D x H)	300 x 50 x 1560mm

1U Blanking Panel

Model	SR9006 (10pcs / per box)
Dimensions (W x H x T)	482.6 x 43.7 x 1.0mm

2U Blanking Panel

Model	SR9007 (10pcs / per box)
Dimensions (W x H x T)	482.6 x 88 x 1.0mm

Power Cable Trough with Through Hole

Model	SR9001 / SR8001
Dimensions (W x D x H)	580 x 316 x 192mm / 780 x 316 x 192mm

Ring Type Wire Holder

Model	SR7004 (10pcs)
Dimensions (W x D x H)	45 x 85 x 5mm

Cable Trough with Through Hole

Model	SR9002 / SR8002
Dimensions (W x D x H)	592 x 75 x 125mm / 792 x 75 x 125mm

Vertical Cable Management Channel

Model	SR7002 (2pcs)
Dimensions (W x D x H)	53 x 63 x 888mm

1U Horizontal Cable Management Channel

Model	SR7001
Dimensions (W x D x H)	482 x 50 x 44mm

Accessory List

Model	Description	SR1110 / SR1160	SR3110 / SR3160
SR7001	1U HORIZONTAL CABLE MANAGEMENT	●	●
SR7002	VERTICAL CABLE MANAGEMENT CHANNEL	●	●
SR7003	CABLE LADDER, 300 mm	●	●
SR7004	RING TYPE WIRE HOLDER (10pcs / per box)	●	●
SR8001	POWER CABLE TROUGH WITH THROUGH-HOLE, 800 mm		●
SR8002	CABLE TROUGH WITH TROUGH-HOLE, 800 mm		●
SR8003	BOTTOM COVER FOR W800 x D1100 RACK CABINET		● (only for SR3110)
SR9001	POWER CABLE TROUGH WITH THROUGH-HOLE, 600 mm	●	
SR9002	CABLE TROUGH WITH TROUGH-HOLE, 600 mm	●	
SR9003	BOTTOM COVER FOR W600 x D1100 RACK CABINET	● (only for SR1110)	
SR9004	1U FIXED SHELF	●	●
SR9005	1U SLIDING SHELF	●	●
SR9006	1U BLANKING PANEL (10pcs / per box)	●	●
SR9007	2U BLANKING PANEL (10pcs / per box)	●	●

These specifications are subject to change without notice. Please contact us or our distributors in your region for the latest specs.

Delta InfraSuite Management System

InfraSuite Manager - Data Center Infrastructure Management (DCIM)

"Due to rapid technology advances, enterprises are demanding centralization of management processes and also a consolidation of infrastructure into a centralized location; limited availability of computing resources, power and space has led to an increasing demand for DCIM (Data Center Infrastructure Management) solutions."

- Global Data Center Infrastructure Management Market

The velocity of its growth, coupled with its real and tangible benefits makes understanding DCIM important not just for facility managers, but also for CIOs and IT managers. Delta InfraSuite Manager is the fully featured DCIM software solution to deliver automation and visibility into the data center and increase the ease of management on a comprehensive platform. InfraSuite Manager optimizes the performance and life cycle management of the data center.

Benefits of InfraSuite Manager

Central View from One Platform
InfraSuite Manager provides users a central view to observe all of the critical information for a data center based on a single real-time platform.

Increased Availability
By viewing critical information in the data center, the availability of the data center has been increased. InfraSuite Manager offers advanced alert algorithms across the infrastructure. It helps the data center mitigate the risk of downtime.

Cost Effective
Organizations with corporate operation of cost efficiency initiatives can also look to DCIM to better manage and optimize resource use across their entire infrastructure, as well as help lower their impact on the environment. PUE (Power Usage Effectiveness) is improved and costs are reduced accordingly.

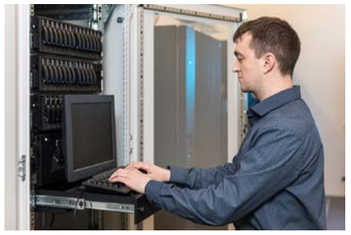
Sustainability Management
Having insight into the future of the data center's day-to-day operations, and understanding how to optimize the data center's resource allocation is invaluable to a business. InfraSuite Manager not only enhances capacity and asset management but also improves overall productivity, which can extend the data center life cycle.

Empower your data center

For Facilities Managers

- Overall layout of your data center
- Overall environment mapping or profile of your data center
- All equipment status
- Chiller plant status and profile
- Power diagrams
- Alarm notification and reporting

For IT Managers

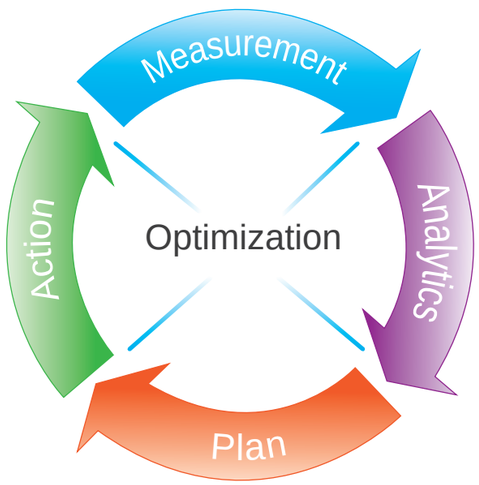


- Access control and surveillance
- Asset management
- Rack utilization, rack U-space, weight, power load and network port for each rack
- Multiple site management
- Alarm notification, reporting and schedule
- IPMI

For Chief Information Officers CIOs

- Real time and historical PUE
- Electricity cost and billing
- Overall capacity utilization
- Work order progress and approval process
- Alarm notification and reporting

Management Philosophy for Data Center Optimization



Measurement
Measure and monitor the overall data center environment in real-time from a central dashboard

Analytics
Create a virtual model of the infrastructure to digitally map the relationships between all these components

Plan
Manage the data center better based on insightful historical information and trend analysis with well-grounded planning

Action
Define actionable solutions and configurations to execute

Product Features

Operation | **Incident** | **PUE Energy** | **Asset** | **Capacity** | **Work Order** | **Analytics**

Operation Platform (Base Model)

The operation platform of the InfraSuite Manager provides real-time critical information for a data center across floors or locations. It also gives recommendations on how to resolve issues, and offers a built-in report generator tool and template that provide device information and trend charts in the reports. The base model is the fundamental monitoring platform and extensional function modules can be added according to the demands of enterprises or organizations. The communication architecture of InfraSuite Manager uses Master/Slave and Browser/Server architecture for the Windows client and web browser user interface.

FIGURE 1. Overview of Data Center - Temperature

Incident Module

The Incident Management functional module is a management platform that developed based on ITIL-defined processes and stages. It helps users to quickly record and classify incidents that occur in the data center, assigning tasks to appropriate handlers and increasing failure elimination efficiency. The graphs and trend charts make it more efficient to track the incident/ failure elimination status. The historical records of these processes can be referenced if there is a similar incident/ failure that occurs again in the future.

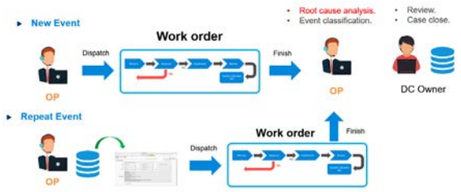


FIGURE 2. User Scenarios of Incident Module

PUE Energy Module

The Energy Module contains the functions of energy measurement, PUE calculation, electricity tariff formula, and historical data analysis. In addition, it includes organizational energy classification and management mechanisms. With time and experience operating this system, datacenter managers develop greater agility for managing energy consumption. This module can transform energy consumption data collected from power meters, UPS (Uninterruptible Power Supply), PDU (Power Distribution Unit) and environment detectors into dynamic charts and graphs, including line charts, bar charts, and pie charts based on user preference.

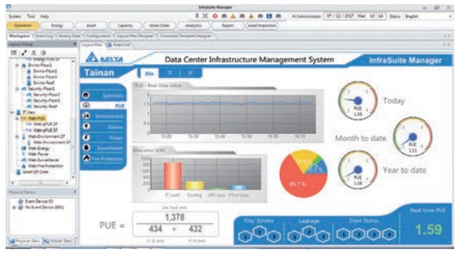


FIGURE 3. Dashboard of PUE

Asset Module

Asset Module offers graphical views of assets in every single rack in the data center. This makes it easy to quickly identify the power path and network topology map. In the case of assets without proper management, it often leads to a higher mean time to repair (MTTR) and lowering the availability of the data center's equipment.

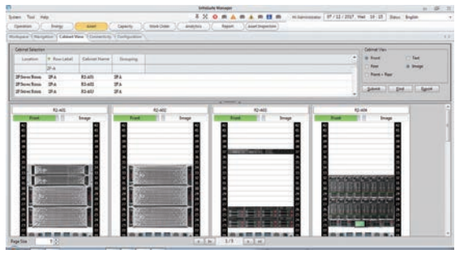


FIGURE 4. Asset Module - Rack Management

Capacity Module

The Capacity Module allows data center managers to plan for the future more effectively through the use of detailed data on rack space, weight, network, power and cooling capacity in the data center. For example, Capacity Module helps data center managers evaluate resource consumption, making it easier for them to plan and decide on the future allocation and most suitable installation locations for IT devices.

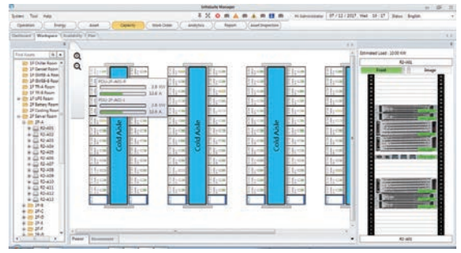


FIGURE 5. Automatic Availability Calculation

Work Order Module

The Work Order Module provides a highly customizable platform that enables users to design work order templates for different management purposes. Different variables such as names, types, priority, schedule, roles of tasks can then be set by the administrator. This helps users not only simplify and integrate the process of change management, but also extends the life cycle of data center operation.

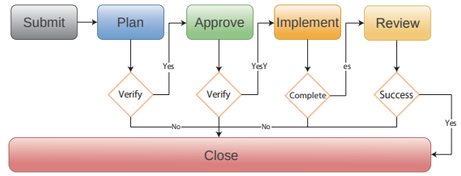


FIGURE 6. The Process of Change Management

Asset Inspection Module

The Asset Inspection Module is used with a user-friendly mobile app which makes it smarter and more efficient for the inspector to complete his/her inspection process. Customizable templates can be designed for different types of assets. Users can also upload photos of the inspected assets to InfraSuite Manager. Unique QR codes of each asset can be generated by the system, making the tasks more intuitive.

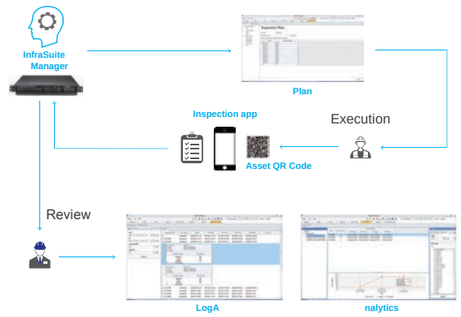


FIGURE 7. The flow of Inspection Execution and Review

Analysis Module

Analytics Module is not just for a single site but for the entire organization. The electricity tariff formula can be customized for each department. In terms of detailed energy analysis, Delta offers diverse scenario analyses, including energy usage KPI, comparison, energy combination analysis, abnormal energy usage ranking, and energy usage estimation.

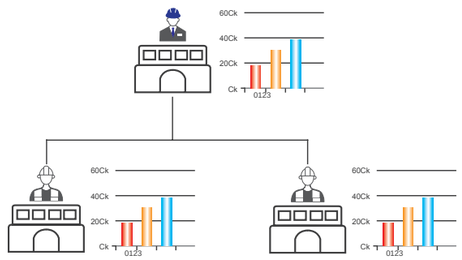


FIGURE 8. The Hierarchy of Energy Analysis

System Requirements

	InfraSuite Manager (Server)	InfraSuite Manager (Windows Application UI)	InfraSuite Manager (Web Monitor UI)
Hardware	CPU: > 2GHz	CPU: > 2GHz	CPU: > 2GHz
	Memory: ≥ 8G Free HD Space: 500G mirrored	Memory: ≥ 4G	Memory: ≥ 4G
Software	Supported OS: Windows 7, 8, 10, Windows Server 2008, 2012, 2016	Supported OS: Windows 7, 8, 10, Windows Server 2008, 2012, 2016	Recommended Web Browser: Microsoft Internet Explorer v11, Google Chrome v30, Mozilla Firefox v23 and Safari v5.

Delta InfraSuite Management System

InfraSuite Device Master

InfraSuite Device Master provides a rich set of capabilities that simplify and automate critical device monitoring. It allows users to observe the status of all devices, query event logs or history data, and assists users in taking appropriate action. With cost effective deployment, this software solution is scalable to match your business growth.

Benefits of InfraSuite Device Master

Free to Download
InfraSuite Device Master is free to download with 5 nodes by default for monitoring your devices. Various infrastructure facilities such as power and cooling in a data center can be monitored.

Real-Time Monitoring
Users can gather the latest status of critical facilities in a data center through the system screens of InfraSuite Device Master. InfraSuite Device Master also lets you view all of a site's device information, query history and events at the same time, even for multiple sites in different countries.

Easy to Deploy
The download file is ready on the Delta Software website. InfraSuite Device Master is easy to install on your server or PC, with software designed for quick installation and implementation.

Migration to InfraSuite Manager (DCIM)
If you are not only looking for device monitoring but also a complete DCIM solution, InfraSuite Device Master is the easiest way of migrating to InfraSuite Manager, which is Delta's fully featured DCIM software solution.

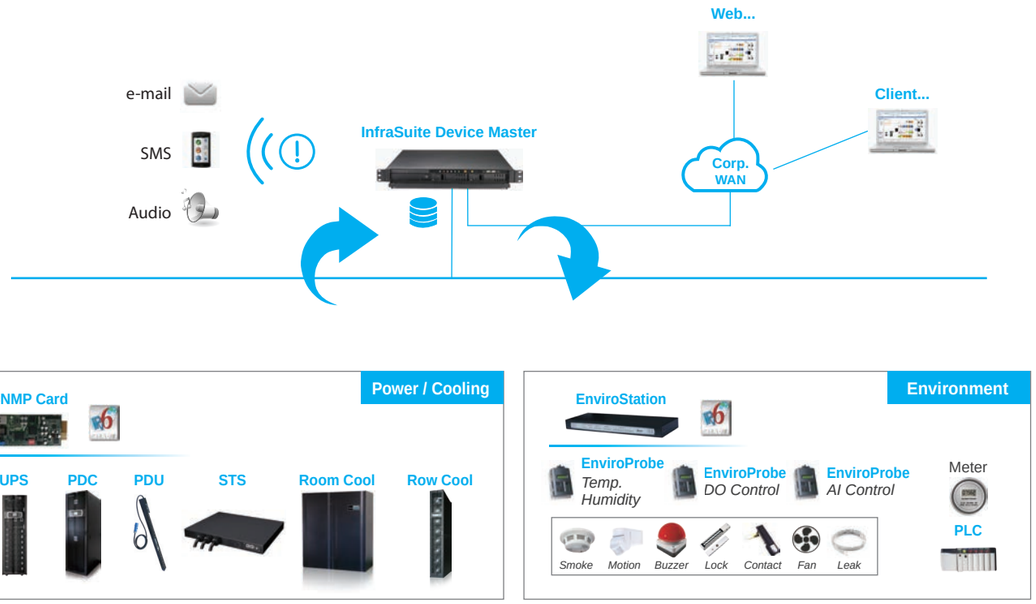


FIGURE 1. Delta InfraSuite Device Master Monitoring Application

Free Download

To try the lite version of DCIM (InfraSuite Device Master), please go to:
http://www.deltapowersolutions.com/en/mcis/data-center-infrasuite-device-master.php

Product Features

Navigational Graphics
Navigational graphics of the InfraSuite Device Master are customizable. Users can design a floor layout using the provided components.

FIGURE 2. Navigational Graphics

Multiple Protocol Support
InfraSuite Device Master supports multiple device protocols, such as Modbus, SNMP and OPC.

Proactive Notification
Proactive notifications provide automated, personalized email, short messages, and audio to users.

User Account Management
Users can be classified into groups based on privilege levels. The job scope of each privilege level is defined by administrators. The jobs include the level of visible access to layout plans, device control and system operation.

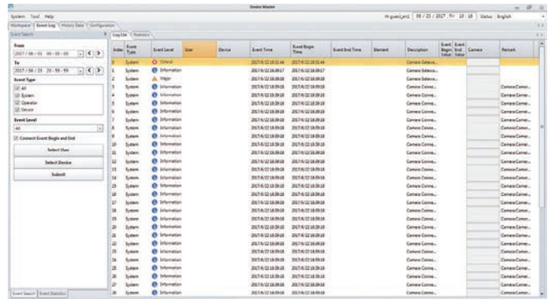


FIGURE 3. Event Log List

Event Management
InfraSuite Device Master has categorized event levels with 16 levels to help users take appropriate action accordingly. Besides, events can be queried by time, type, level and devices. InfraSuite Device Master records the system, operator and device events in its database where the user can review the events' status.

Data Storage and Backup
InfraSuite Device Master stores all history events and data into its database. Users may use this data for analysis. In addition, the database can be backed up automatically based on user preference.

System Requirements

	InfraSuite Device Master (Server)	InfraSuite Device Master (Windows Application UI)	InfraSuite Device Master (Web Monitor UI)
Hardware	CPU: > 2GHz	CPU: > 2GHz	CPU: > 2GHz
	Memory: ≥ 4G Free HD Space: ≥ 50 G	Memory: ≥ 4G	Memory: ≥ 4G
Software	Supported OS: Windows 7, 8, 10, Windows Server 2008, 2012, 2016	Supported OS: Windows 7, 8, 10, Windows Server 2008, 2012, 2016	Recommended Browser: Microsoft Internet Explorer v11, Google Chrome v30, Mozilla Firefox v23 and Safari v5.

Delta InfraSuite Management System

EnviroStation

Delta's Environmental Management System (EMS) monitors the environment and conditions in the data center, including temperature, humidity, water leakage, and alarms for fire, smoke, and unauthorized entry.

The EMS offers IT managers an integrated platform for more convenient monitoring of today's data center.

EnviroStation integrates the monitoring of the data center's environment and other conditions, and sends the data to a central manager via network. User-defined alarms ensure the data center's security.

Easy to Manage

- Assess and collect key data center information for enhanced management
- Real-time notification provides faster management response and more effective operations
- Setting manager password for higher security
- SNMP allows easy integration with any enterprise management system

Convenience

- Monitoring via internet browser
- InfraSuite Manager remote monitoring software providies prompt handling of any data center situation
- Graphical interface and historical data records for more effective management
- Real-time alarm notifications shortens management response time

Flexibility

- Supports SNMP communication protocol
- Sets each alarm value based on actual requirements

Technical Specifications

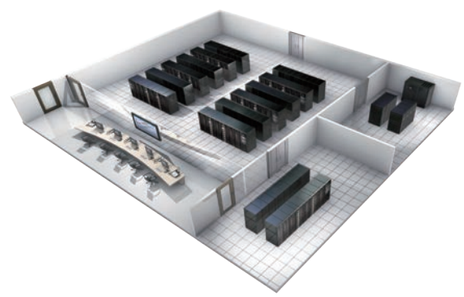
Model		EMS2000
Input	Power	100~240Vac, 50/60Hz
	Digital Input	Wet Contact Signal • Alarm Voltage 5~24Vdc, 1~9mA Dry Contact Signal • Normal: Off (open circuit) • Alarm: On (short circuit)
	Analog Input	Voltage: 0~10Vdc Current: 4~20mA
	RTD	Range: 0~50°C Accuracy: ±1°C with 3-wire PT100
	Resistance Temperature Detection (x1)	Supports 2-wire or 3-wire resistance
	Leakage	Detect Voltage: < 1V (alarm signal with S-1FP leak sensor)
Output	Sensor HUB	For connection with sensor devices (such as smoke detectors, fire detectors, or door sensors, etc) and support: +12V, 0.8A (max) +24V, 1.0A (max) One port limit 0.6A
	Delta Bus	+12V, 0.8A (max)
	Relay Output	26Vdc (max), 0.8A (max)
Alert	Warning Light (x1)	Included in the package and can connect to EMS2000 via a Sensor Hub converter (through Port 1 or Port 2) to alert for abnormal conditions.
Network Connection	RJ45 (x1)	10/100 Base-T
	RS485 (x2)	Standard ModBus
	Console (x1)	Connect to PC via RJ-45 to DB9 cable (cable is included in the package) A configuration port is available for the console mode.
Environment	Operating Temperature	0~45°C
	Storage Temperature	-20~60°C
	Operating Humidity	0~90% RH (non-condensing)
Dimensions	Product (W x D x H)	440 x 157 x 44mm
	Package (W x D x H)	510 x 410 x 150mm
Weight	Product	2.4kg
	Package	5kg

These specifications are subject to change without notice.

InfraSuite Manager - Data Center Infrastructure Management (DCIM)

Have the entire data center at your fingertips!

InfraSuite Manager Function Modules



Delta InfraSuite Management System

EnviroProbe

EnviroProbe monitors temperature and humidity in a single cabinet or area and transmits signals from environment sensor devices in the data center (e.g. door sensors, smoke detectors, fire detectors, water-leakage detectors and others) to management via network. EnviroProbe also controls its connected devices when equipped with digital and analog outputs, keeping the IT manager promptly informed of all environmental changes by giving alarms, controlling the activation and deactivation of an external device (e.g. a magnetic lock), or by giving a sound alert using its own built-in buzzer upon detection of water leakage.

Easy to Manage

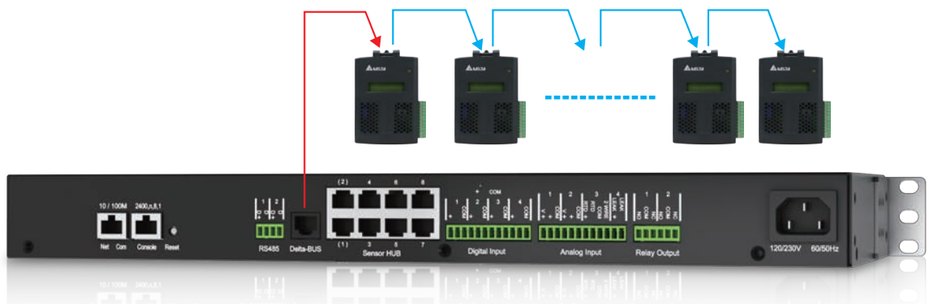
- Monitors temperature, humidity of the environment
- Backlight LCD display
- Digital/analog inputs and outputs

Convenience

- Works with EnviroStation(EMS2000) to monitor via internet browser
- InfraSuite Manager software for remote monitoring and recording

Flexibility

- Works with EnviroStation(EMS2000) to support SNMP communication protocol

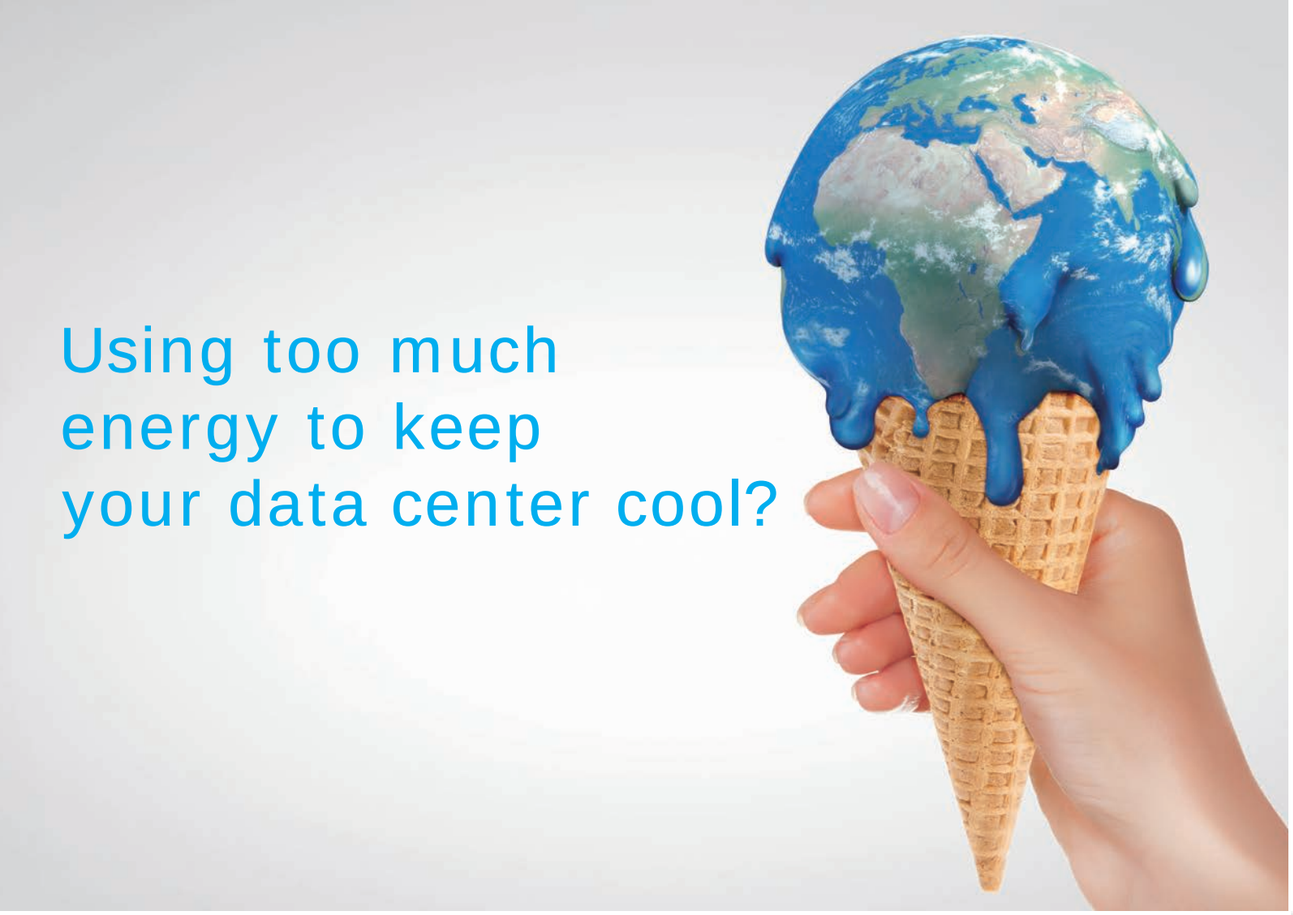


▲ Connecting EnviroProbes with EnviroStation can expand the scope of the monitored area.

Technical Specifications

Model		EMS1000	EMS1100	EMS1200
Input Voltage		EMS2000 Delta-BUS or SNMP Card: 12Vdc (pin 1 & 4) PDU SNMP card: 5Vdc (Pin 2 & 4)		
Purpose		To collect data from connected devices (temperature & humidity)	To control connected devices	To collect data from and control connected devices
Input/Output Contacts		4 dry/wet contact inputs	4 digital outputs	2 analog inputs, 1 analog output, 1 water-leakage detection (built-in buzzer)
		Connect to EnviroStation (EMS2000) or SNMP IPv6 card		Connect to EnviroStation (EMS2000)
Input		Wet Contacts:5~24Vdc, 1~8mA; Dry Contacts: Open/Short Status	N/A	Voltage: 0~10Vdc (12bit) Current: 0~20mA (12bit)
Output		N/A	Contact voltage / Contact current / Contact tolerance 60Vdc / 1A/60W; 30Vac / 2.08A / 62.5VA	Voltage: 0~10Vdc (12bit) Current: 4~20mA (12bit)
Cascade Number to EMS2000		Up to 16 units	Up to 4 units	Up to 5 units
Dimensions (W x D x H)		Product: 66 x 33 x 103mm Package: 91 x 42 x 133mm		
Weight		Net Weight: 120g	130g	
		Gross Weight: 140g	150g	
Environment	Temperature	Operation: 0~60ºC		
		Storage: -30~80ºC	Storage: 0~60ºC	
		Accuracy: ±0.4ºC & 0~60ºC	N/A	
	Humidity	Operation: 0~90% RH (no condensation)		
		Storage: 0~100% RH (no condensation)		
		Accuracy: ±3ºC & 0~80ºC	N/A	
	Altitude	0~10,000 feet		
Conformance		CE		
		EN55022 (CISPR 22) Class B		
		EN55024 (Level 3 @Air 8KV / contact 4KV)		

These specifications are subject to change without notice.



Using too much energy to keep your data center cool?

Delta InfraSuite Precision Cooling

Modern data centers have implemented a high-density model, mainly based on blade servers, to increase space utilization and accommodate the rapid expansion of new IT equipment. This model requires a higher power supply density and creates bigger heat dissipation problems, where increased power consumption for air conditioning can account for 45% of total data center electricity expenses. With this in mind, heat dissipation and electricity expenses are important indices against which operational expenditures of the data center can be measured.

As a leading global manufacturer of fans and a specialist in power management, Delta Electronics was perfectly positioned to develop Delta InfraSuite Precision Cooling solutions in order to provide practical, optimized, innovative methods for data center cooling. Delta InfraSuite Precision Cooling solutions employ either chilled water or direct expansion types to remove the heat produced by the hardware within the data center. Delta provides various cooling solutions, including RowCool chilled water type, RowCool direct expansion type and RoomCool series direct expansion type, to fulfill customers' diverse requirements. Applicable sectors cover cloud, colocation, telecommunication, semiconductor, precision manufacturing, enterprises, education, and more.

Various design options can also be implemented for optimal solutions. Delta's comprehensive offerings include hot aisle or cold aisle containment, chilled water temperature setting, free cooling technology, and more. These flexible cooling configurations and designs play an important role for data centers to achieve target PUE for more energy savings.

Delta InfraSuite Precision Cooling

The most reliable and efficient cooling solutions

Power consumption for air conditioning can account for 45% of a data center's total electricity expenses. Delta's InfraSuite Precision Cooling is designed with smart cooling technology to effectively solve thermal issues and reduce the electricity required for cooling. It provides the best cooling solution to meet 24 hours × 365 days of continuous operation requirements for a constant temperature and humidity in a critical equipment environment, such as for:

- Data centers for small to medium enterprises
- Cloud data center
- Colocation data center
- Prefabricated data center
- Medical equipment room
- Research laboratory
- Precision manufacturing equipment room

Delta InfraSuite Precision Cooling

RowCool Series 29/43/70/95kW, Chilled Water

Delta's RowCool CW offers outstanding performance in high temperature chilled water applications via the optimized design of its heat exchanger. With industry-leading high cooling capabilities, the RowCool CW increases the overall cooling efficiency of data center precision cooling systems. The cooling capacity of a single unit can reach up to 260kW. The RowCool CW provides the best cooling solutions for data centers over hundreds of kW, focusing on both high efficiency and high density.

High Efficiency

- Optimized for high temperature chilled water applications, the heat exchanger design increases the overall efficiency of precision cooling systems.
- The Electronically Commuted (EC) Fans design provides variable fan speed control for optimal speeds in real-time according to load changes, avoiding unnecessary power waste.
- Closely couples to IT heat loads and quickly adapts to load changes for direct and effective heat removal.

High Availability

- Supports dual power feed input and is suitable for any tier level of power reliability architectures.
- Thanks to the inherent redundancy design of the fan system, other fans automatically increase fan speeds to make up for the required airflow if one of the fans malfunctions.
- 1+1 redundant design of the power modules increases reliability (applicable to some models).
- Hot-swappable power module and fan design allows replacement without the need of a power shut down while malfunctioning.
- The smart group control function is equipped with rotation, back up, competition free, and soft start functions.
- Comprehensive operation monitoring such as chilled water flow and leakage detection allows full control of machine operations and the ability to take necessary troubleshooting measures in real-time.

High Flexibility

- Top or bottom piping and wiring options are available to satisfy the pipeline design needs for different data center requirements.
- Multiple communication interfaces satisfy the surveillance and communication needs of a variety of data centers.
- High efficiency filter (MERV 8) or washable filters (MERV 1) are available for users to choose according to their needs.
- Equipped with casters for easy movement and positioning during installation without the need for additional handling tools.
- 2.4-meter-high models using the 52U rack are also available to customers. (For special height requirements, please contact your local Delta office)

Technical Specifications

Model		CW 29kW HCH1850	CW 43kW HCH1870
Power	Input	1-phase 220~240V, 50/60Hz	
Capacity	Total Capacity *1	30.8kW	43.4kW
	Sensible Capacity *1	30.2kW	43kW
	Total Capacity *2	37.1kW	50.4 kW
	Sensible Capacity *2	37.1kW	50.4kW
	Total Capacity (*3)	28.8kW	36kW
	Sensible Capacity *3	28.8kW	36kW
Fan Type		EC	
Piping Connection		Top / Bottom	
Conformance		CE	
Communication		RS-485 x 1, Input dry contact x 2, Output dry contact x 2, SNMP slot x 1	
Dimensions (W x D x H)		300 x 1090 x 2000mm	
Weight		185kg	187 kg

*1. Rating capacity is measured at 40.6℃ DB / 21.6℃ WB / Inlet water temperature 7℃.
*2. Maximum capacity is measured at 48.9℃ DB / 23.9℃ WB / Inlet water temperature 7℃.
*3. High temperature water capacity is measured at 40.6℃ DB / 21.6℃ WB / Inlet water temperature 12℃ / Outlet water temperature 20℃.

Model		CW 70kW HCH1CB0	CW 70kW HCH1CB0 Humidity Control	CW 95kW HCH1CD0	CW 95kW HCH1CD0 Humidity Control
Power	Input	3-phase 380~415V, 50/60Hz			
Capacity	Total Capacity *1	69.3kW		92.6kW	
	Sensible Capacity *1	69.3kW		91.6kW	
	Total Capacity *2	83.1kW		110.7kW	
	Sensible Capacity *2	83.1kW		110.7kW	
	Total Capacity *3	57.4kW		79.4kW	
	Sensible Capacity *3	57.3kW		79.4kW	
Fan Type		EC			
Heater Type		None	Finned tube reheater	None	Finned tube reheater
Humidifier Type		None	Electrode	None	Electrode
Piping Connection		Top / Bottom			
Conformance		CE			
Communication		RS-485 x 1, Input dry contact x 2, Output dry contact x 2, SNMP slot x 1			
Dimensions (W x D x H)		600 x 1090 x 2000mm		600 x 1090 *4 x 2000 mm	
Weight		368kg	375kg	415kg	422kg

*1. Rating capacity is measured at 40.6℃ DB / 21.6℃ WB / Inlet water temperature 7℃.
*2. Maximum capacity is measured at 48.9℃ DB / 23.9℃ WB / Inlet water temperature 7℃.
*3. High temperature water capacity is measured at 40.6℃ DB / 21.6℃ WB / Inlet water temperature 12℃ / Outlet water temperature 20℃.
*4. Depth is 1200 mm for top piping model.

All specifications are subject to change without prior notice.

Product only available for: EMEA, SEA, China, Taiwan, South Korea.

Delta InfraSuite Precision Cooling

RowCool R Series 30/45 kW, Direct Expansion

Delta's R series uses high-efficiency DC inverter compressors and electronically Commuted (EC) Fans. Using Delta's best fuzzy control mode, the R series is a highly efficient, outstanding direct expansion (DX) type cooling product. Improving the high efficiency and power density of medium or small sized data centers, and offering both convenience and easy maintenance, Delta's R series is the best choice for optimizing the total cost of ownership (TCO).

Technical Specifications

Model		R30	R45
Input Power		3-phase 380~415V, 50/60Hz	
Capacity*	Total Capacity	30kW	45.6kW
	Sensible Capacity	30kW	45.5kW
Rating Input Power		10.3kW	15kW
Fan Type		EC	
Reheater	Type	PTC	
	Capacity	3kW	6kW
Humidifier	Type	Electrode	
	Capacity	3kg/hr	3kg/hr
Connection		Top / Bottom	Top / Bottom
Communication		RS-485 x 1, FE port, USB port, Dry contact	
Dimensions (W × H × D)		300 x 2000 x 1090mm	600 x 2000 x 1090mm
User Interface		10″ Touch panel	
Safety Certification		CE, RCM	

* Capacity is measured at 40.6°C return air dry bulb, 21.6°C wet bulb and 35°C outdoor temperature.

Outdoor Unit

Model		R30 Condenser	R45 Condenser
Input Power		3-phase 380~415V, 50/60Hz	3-phase 380-415V, 50/60 Hz
Fan	Type	Variable fan speed	Variable fan speed
	No.	1	1
Dimensions (W × H × D) (up flow)		1725 x 1120 x 1100mm	1725 x 1120 x 1100mm

All specifications are subject to change without prior notice.

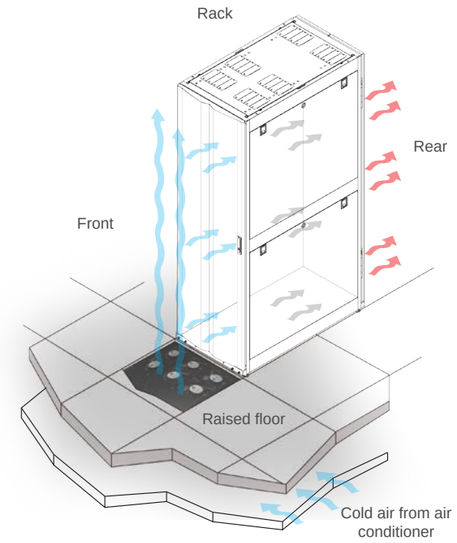
Product only available for: SEA, China, Taiwan.

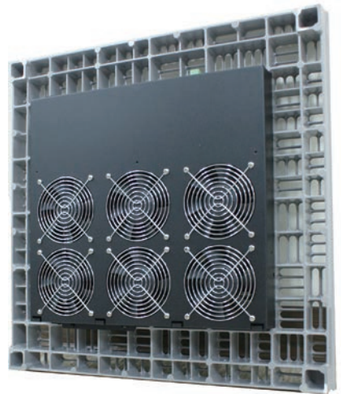
Delta InfraSuite Precision Cooling

Air Distribution Unit

For data centers with raised floors, the space beneath the floors is usually used as the cold aisle to deliver cold air to the IT racks. In data centers with this type of architecture, the amount of cold air that can be received by each IT rack depends on the static pressure of the cold aisle, the opening areas on floors as well as the suction capability of the racks. If any of these three criteria are insufficient, the rack will face the problem of insufficient supply of cold air and result in overheating.

The Delta ADU provides data centers with a simple solution for hot spots at the end of an aisle or for overheated high power density racks. Delta's ADU installs under the original openings of a raised floor where it detects the temperature inside a target rack or hot spot. The ADU automatically adjusts the rotation speed of its electronically commuted (EC) fan to provide the cool air needed by the target rack or hot spots.





Features and Benefits

- Maximum airflow above 1000 CFM.
- Inherent redundancy design if a fan malfunctions, other fans automatically increase in speed to make up the required airflow.
- The EC fan uses internal temperature data feedback of the target rack to automatically adjust fan speed and achieve the required rack temperature.
- Installs directly under raised floors with common openings - no need for special raised floors.
- Four dry contact outputs and one input for administrators to monitor and control.

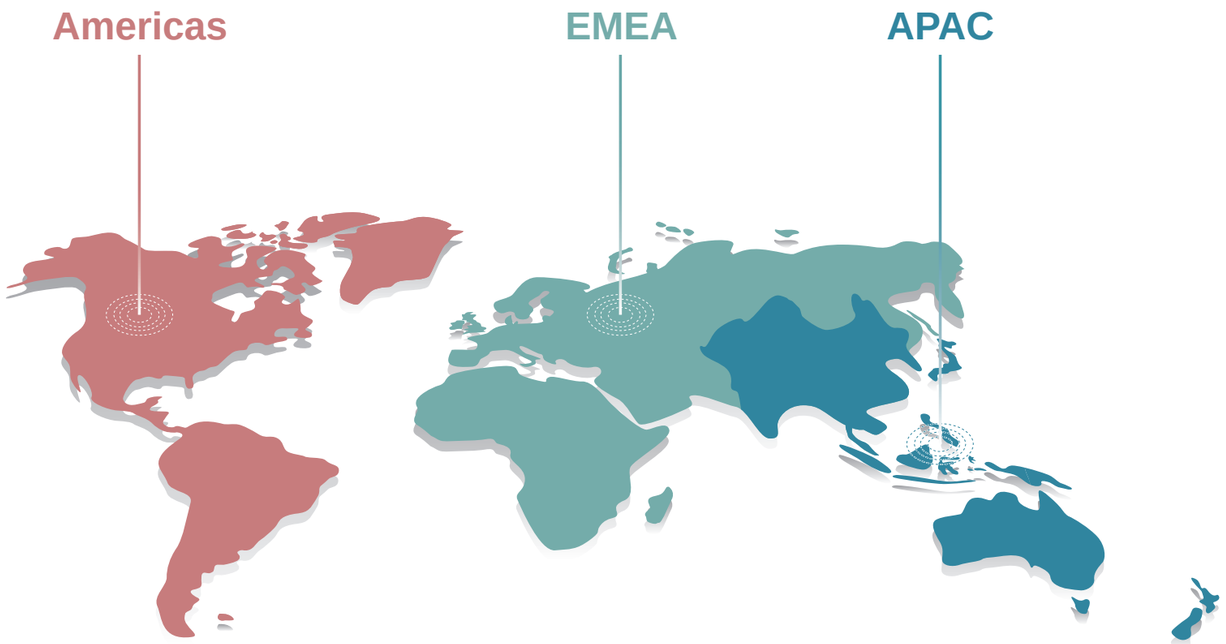
Technical Specifications

Model		HC5990
Power	Rated Voltage	1-phase 100~240Vac
Fan	Type	EC
	Communication	Dry contact x 4
Conformance		CE, EN55022 Class A
Dimensions (W x H x D)		430 x 400 x 54mm
Weight		5.6kg

All specifications are subject to change without prior notice.

Product only available for: Russia & CIS, SEA, China, Taiwan, South Korea.

Data Center Footprints



U.S

Power Protection for the
“Grab & Go” Shopping
Store 1.8 MW

Russia

Government Data Center
1.6 MW

China

Lin Kong Port Data Center 26 MW
Internet Data Center 5 MW

Vietnam

HTC-ITC, TCCF TIER III-Certified Data
Center 750 kW

Brazil

Power Protection for the
Largest Private Sector Bank
1.6 MW

Spain

Atos Data Center 200 kW

Taiwan

National Data Center 5.5 MW
Formosa Plastics Data Center 750kW

India

NetMagic Data Center 22 MW
Yotta Corp, Colocation 1 MW

South Africa

University Data Center 150 kW

Netherland

Bytesnet, Colocation 6 MW

Thailand

Telecom Data Center 5.2 MW

Australia

Prefabricated Modular Data Center
100MW+

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Delta Group

Delta Power Solutions

Smarter. Greener. Together.

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