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The power behind competitiveness

Delta InfraSuite Cast Resin Busway System

BR Series, 250A-1600A

Delta Group

Leading expert in power management and thermal management solutions

Delta Group is the world's leading provider of power management 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, energy management, and smart green life. 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.

More information about Delta Group can be found at <http://www.deltaww.com/>

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.

No. 1 Supplier of Merchant Power Supplies

According to the IHS report, Delta Electronics remained the largest supplier of merchant power supplies with an estimated market share of 15.5% in 2016 of a global market value that was estimated to be \$21,869 M.

The Total Merchant Power Supply Market 2016 \$M Revenue		
Ranking	Company Name	Market Share
1	Delta Electronics	15.5%
2	Axxxxxn	7.5%
3	Lxxxxxx Technology	4.5 %

Source : AC-DC & DC-DC Merchant Power Supplies, IHS, 2017

Global Footprint

	Asia-Pacific (China)	Americas	EMEA	Total
Sales Offices	104 (61)	20	39	163
Plant Sites	32 (19)	4	3	39
R&D Centers	43 (23)	7	12	64



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

MEMBER OF
**Dow Jones
Sustainability Indexes**
In Collaboration with RobecoSAM

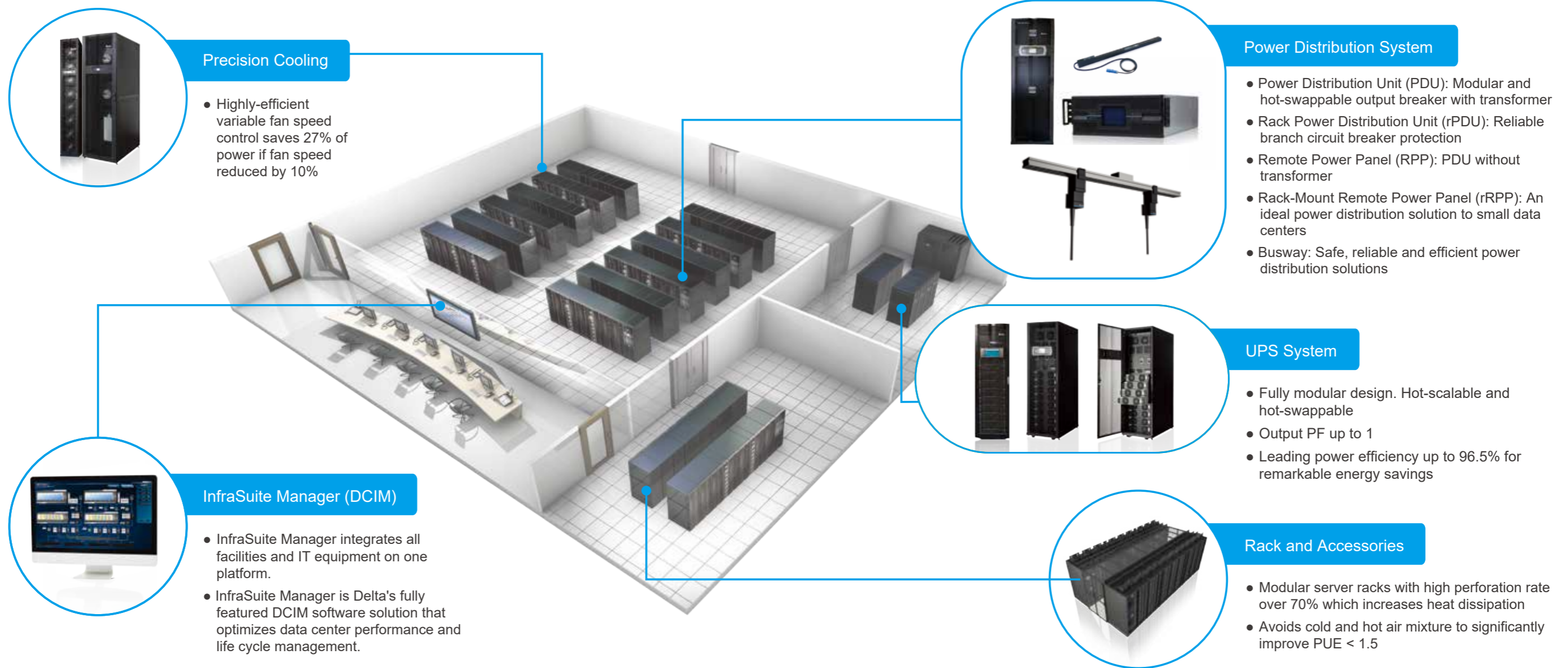
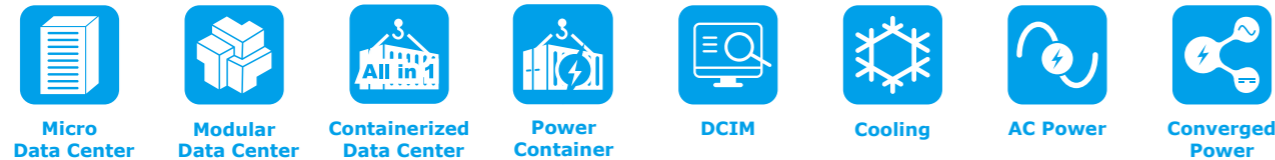
2011 - 2015
Dow Jones
Sustainability Indexes

More information about Delta Group can be found at <http://www.deltaww.com/>

Mission Critical Infrastructure Solutions (MCIS)

With its expertise and experience in power management and energy efficiency, the Mission Critical Infrastructure Solutions (MCIS) business of Delta Electronics Inc. positions itself as: "The power behind competitiveness". MCIS plays an important role in making our customers' businesses more competitive. We fulfill this role by providing highly reliable and efficient power management products and data center infrastructure solutions to ensure the continuity of our customers' mission critical operations while reducing their Total Cost of Ownership (TCO). Delta MCIS is a powerful and trustworthy partner to companies that strive to outperform the competition.

With more than 15 years of experience in the UPS industry, Delta Electronics is a leading brand, featuring complete professional capacities ranging from product development, design and manufacturing for all UPS product lines. Our client base covers world class enterprises in the areas of semiconductors, optoelectronics, food processing, finance, petrochemicals and telecommunications. Additionally, our UPS solutions have been adopted extensively at major Asia events in recent years, including the World Expo 2010 Shanghai, the Guangzhou Asian Games and Universiade Shenzhen, just to name a few. Delta's UPS solutions play a critical role in power management for a number of public mega projects, including One of the major transportation system in Taiwan, that has been rated number one in reliability by Nova/CoMet five years in a row since 2004, and the recently launched Target Spacecraft in China. The most competitive companies in the world choose Delta because our products are designed to enhance competitiveness.





Delta Cast Resin Busway System

A Flexible, Safe, and Reliable Low Voltage Power Distribution Solution

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:

- Successive plug-in slots are 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.

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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	None
IP Rating	The protection level is primarily IP20 for data center applications. It can reach up to IP 54 per requirement	Not specified in the general technical data
Resistance to chemical and corrosion	Excellent	Poor
Instantaneous short-circuit strength	High	Low
Overload capacity (+25% 2hrs)	High	Low in heat resistance (up to about 60°C), thus being dangerous when overloaded, leading to accelerated insulating materials aging and reduced service life
Insulation rating	High, resin insulation Class F (155°C).	Low

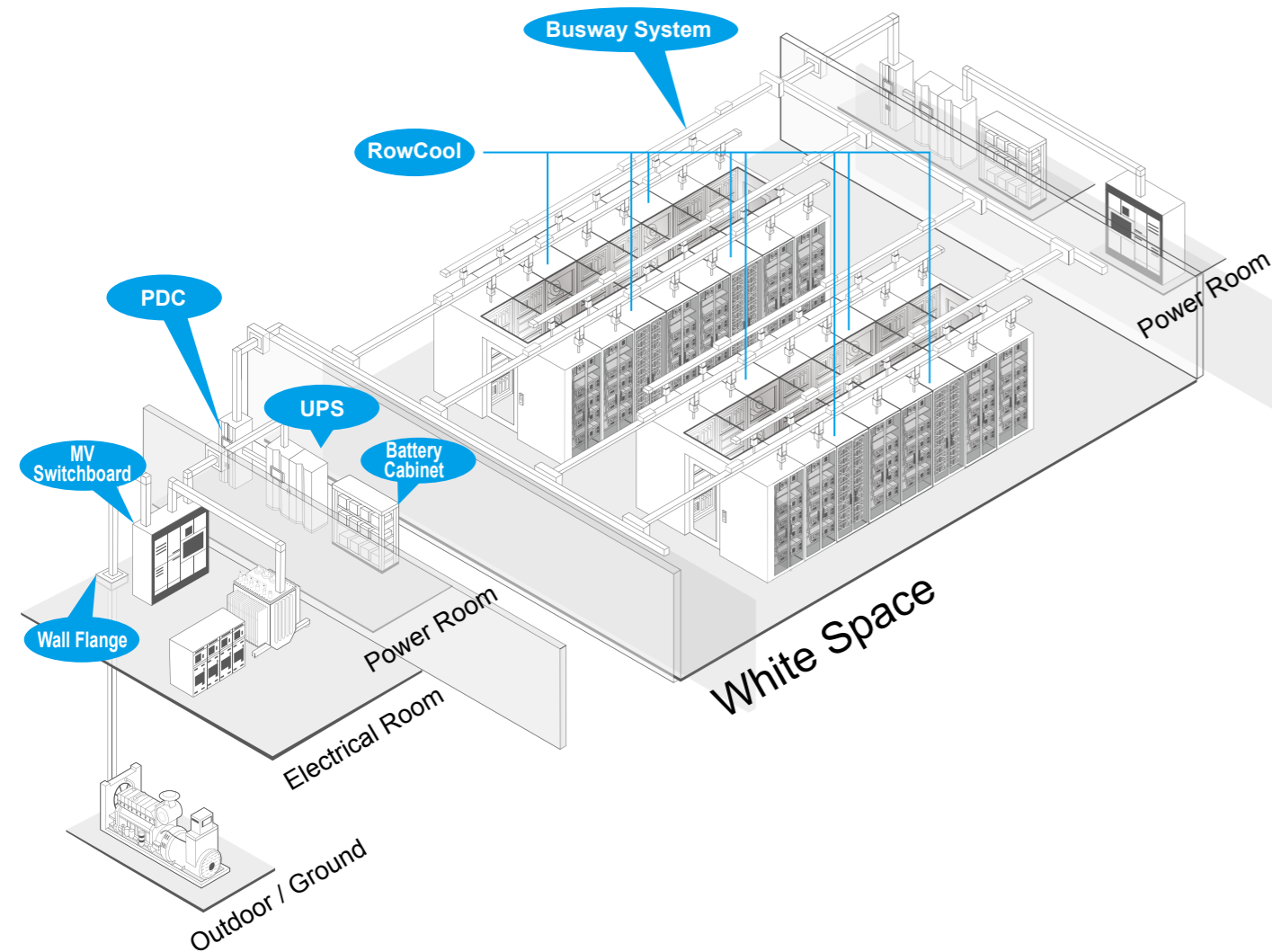
Busway for Data Center Applications

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' requirement. It is flexible for use with different power supply systems of server racks. The plug-in unit also applies the flexible successive plug-in slots 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 Data Center



Customer Benefits

Safe, Reliable, Flexible and Efficient

Safe



The IP55 protection level provides water resistance and is dustproof. The busway remains highly reliable even in harsh environmental conditions, such as high humidity and dripping water. Delta has considered all aspects of the structure design.

- Installation: Attentive foolproof designs are available for every installation step
- Operation: Tool-less design for users to easily install plug-in units
- Compliant with IEC 61439

Reliable



The busway structure is an Aluminum housing. The busway adopts epoxy cast technology, which is filled and molded into one piece. Its advantages include:

- Minimizes risk from the stronger structure during lifting and assembly on data center sites
- Shield technology ensures optimum sequencing of the conductor. The integrated composite materials reduce EMC significantly and mitigate the interference to precision devices
- No maintenance is required

Efficient



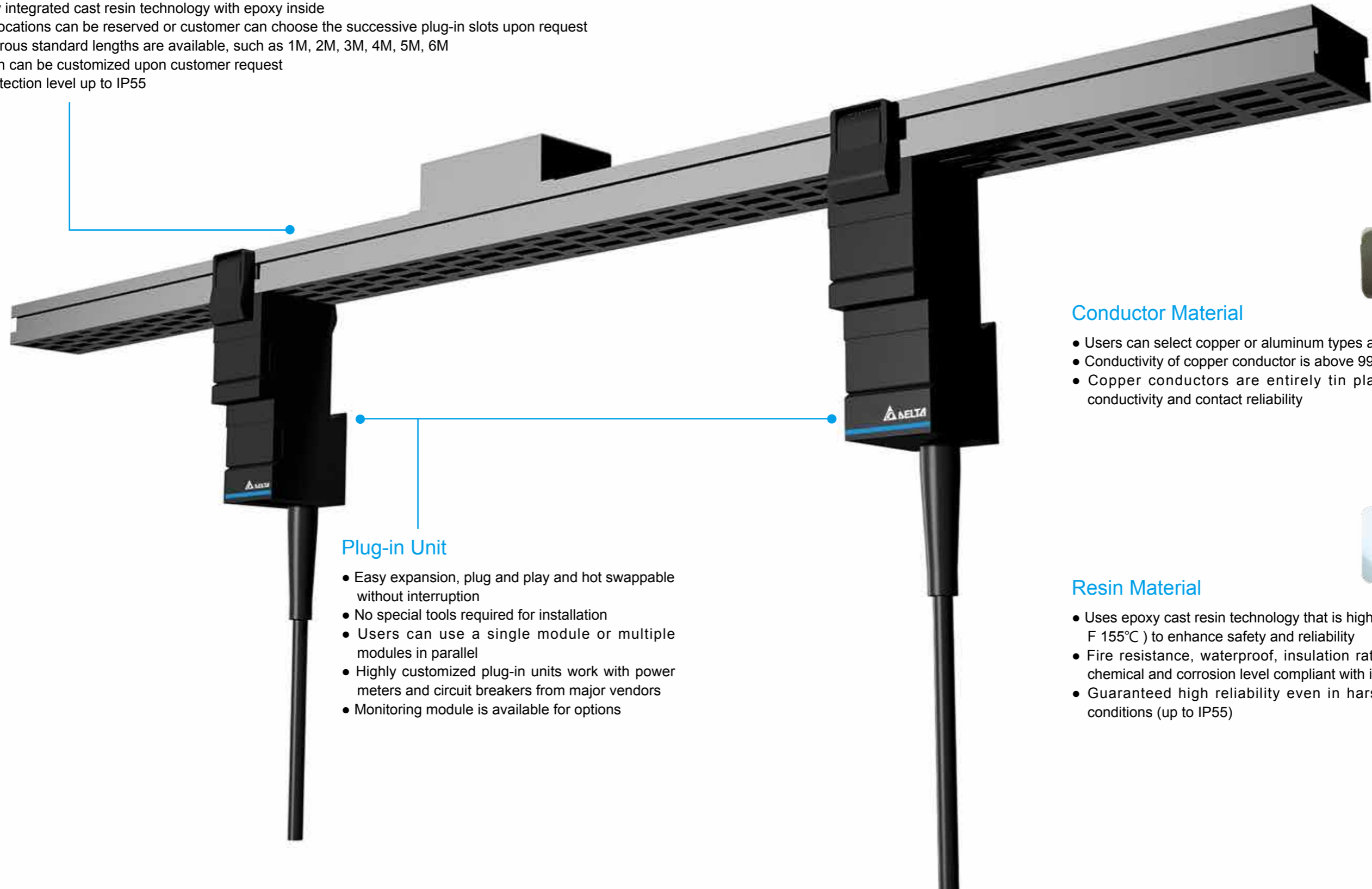
The product design and installation uses many plug-ins and modular design concepts and is easy-to-use during the installation, operation and expansion phases.

- Benefits of the successive plug-in slots and modular design are:
- Unconstrained by space or location, the busway can be designed effectively and installed without professional technicians
 - The plug-in unit adopts a modular design that can be expanded simply and quickly
 - Customers can save time on waiting for materials if there is any change in design
 - Users can save time and costs on installation, expansion, and alteration

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 customer can choose the successive plug-in slots 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 level compliant with industrial standards
- Guaranteed high reliability even in harsh environmental conditions (up to IP55)

Colors



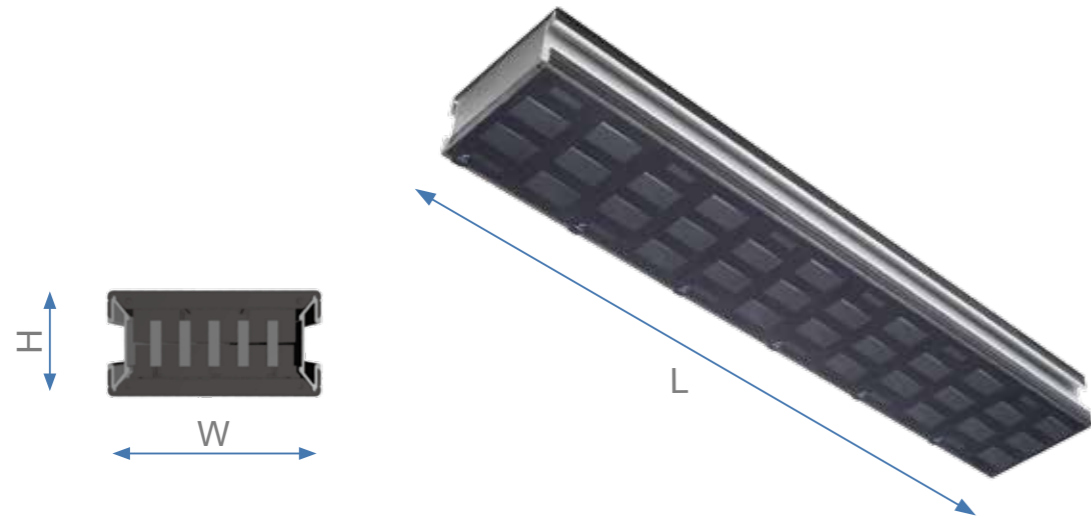
	BU	BK	RE	YE	BG	BW	GW
	Dark Blue	Black	Warm Red	Yellow	Blue Green	Bright White	Grayish White
Pantone Color	Pantone 2146C	Pantone BlackC	Pantone 7621C	Pantone YellowC	Pantone 7717C	Pantone 11-0601 TPG	Pantone 13-4104TPG
RAL Classic Color	RAL5002 Ultramarinblau	RAL9011 Graphitschwarz	RAL3000 Feuerrot	Ral1018 Zinkgelb	RAL5021 Wasserblau	RAL9003 Signalweiß	RAL7035 Lichtgrau

Technical Specification

Copper

Busway Rating	250A	400A	600A	800A	1000A	1250A	1600A
Models	BRC02	BRC04	BRC06	BRC08	BRC10	BRC12	BRC16
Rated voltage	V	1000	1000	1000	1000	1000	1000
Rated current	A	250	400	600	800	1000	1600
Frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60
Conductor	Copper purity: 99.9% Conductivity: 99.9% IACS						
Conductor plating	Tin plating (Std)						
Insulation material	Epoxy cast resin						
Insulation class	Class F (155°C)						
Enclosure/ housing	Epoxy/Aluminum						
Fire protection	UL94 V0						
Ingress protection rating	IP20 / IP55 (optional)						
Mechanical Impact	IK10						
EMC Shielding Degree	Ea,Eb,Ec	Ea,Eb,Ec	Ea,Eb,Ec	Ea,Eb,Ec	Ea,Eb,Ec	Ea,Eb,Ec	Ea,Eb,Ec
EMC Shielding Degree	mm	117x58	117x58	117x58	117x73	117x86	117x153
Weight	kg/m	16	17	18	23	32	59
Plug-in Unit							
Contact design	Plug-in type						
Configuration	Plug-in w/ MCB/ELCB/RCBO Plug-in w/ MCB/RCB + Socket-outlets Plug-in w/ MCB/RCBO + Power Meter						
Max. Rating	400A						
MCCB brands	ABB, Mitsubishi, Fuji, GE, Schneider (MG), or Customer specified						
Ingress protection rating	IP42						
Panel coating	Powder coated paint						
Color	RAL 7043						
General Data (Copper)							
Standards	IEC61439, IEC60529, IEC60331, IEC60332 CNS14286, CNS12514, CNS14165, CNS11073 CNS14286, CNS12514, CNS14165, CNS11073 ANSI/UL857, NEMA BU-1						
Ambient temperature	-20°C /+50°C avg. 35°C						
Altitude	Below 2000m from sea level						

Technical Specification



Copper

Busway Rating		250A	400A	600A	800A	1000A	1250A	1600A
Models		BRC02	BRC04	BRC06	BRC08	BRC10	BRC12	BRC16
Rated voltage (AC/DC)	V	1000	1000	1000	1000	1000	1000	1000
Rated current	A	250	400	600	800	1000	1250	1600
Frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Impedance values are for busway operating at 20/85°C temperature								
Resistance R_{20}	$\mu\Omega/m$	213.0	178.0	106.3	68.7	50.2	34.7	23.0
Resistance R_{85}	$\mu\Omega/m$	267.4	223.5	133.5	86.2	63.0	43.5	28.9
Reactance X_{50}	$\mu\Omega/m$	138.1	129.5	112.3	79.9	57.3	42.3	28.0
Impedance Z_{50}	$\mu\Omega/m$	301.0	258.3	174.5	117.5	85.2	60.7	40.2
Reactance X_{60}	$\mu\Omega/m$	165.7	155.4	134.8	95.9	68.8	50.8	33.6
Impedance Z_{60}	$\mu\Omega/m$	314.6	272.0	189.7	128.9	93.3	66.9	44.3
Conductor cross-section area								
L1,L2,L3	mm ²	72.5	100	145	232	307.4	464	696
N (100%)	mm ²	72.5	100	145	232	307.4	464	696
G (Internal)	mm ²	72.5	50	72.5	116	153.7	232	348
Busway Dimensions								
H x W	mm	58x117	58x117	58x117	73x117	86x117	113x117	153x117

Plug-in Unit

RvS-S3P32-PO.02

PRODUCT CODE
 Rv: VERTICAL BOX
 Rh: HORIZONTAL BOX
 ED: END FEED BOX

BOX CODE
 S: SINGLE BOX
 D: DOUBLE BOX
 T: TRIPLE BOX

Output Loop CODE
 S: SINGLE Loop
 D: DOUBLE Loop
 T: TRIPLE Loop

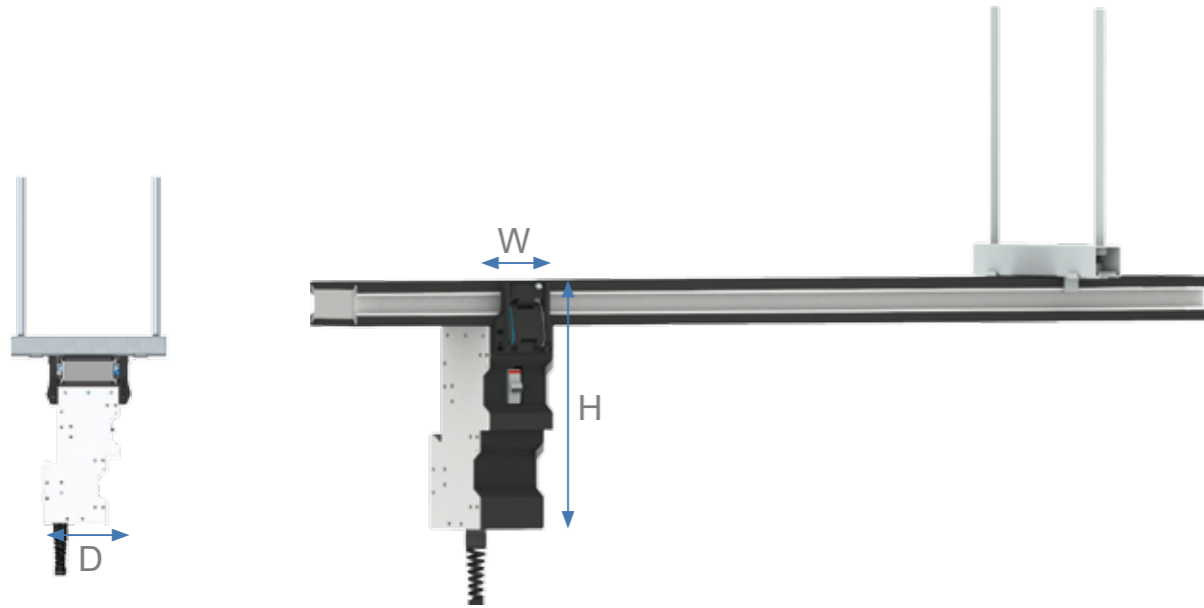
POLE NO.
 1P
 2P
 3P (L1,L2,L3)
 4P (L1,L2,L3,N)

AMPERAGE RATING
 16
 32
 63

COMPONENT
 P: POWER METER
 O: SOCKET-OUTLETS
 G: CABLE/PLUGS
 E: Earth-Leakage Circuit Breakers
 S: CAM SWITCHES

SERIAL NO.

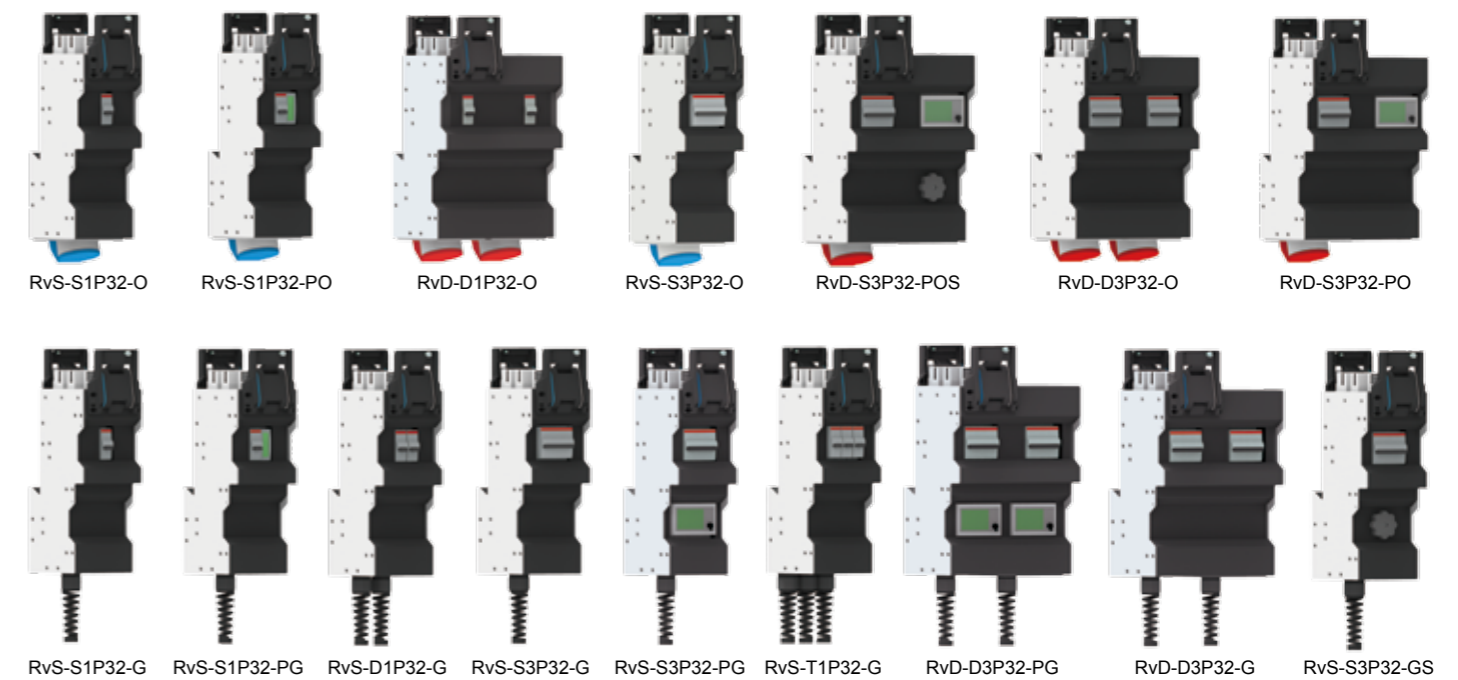
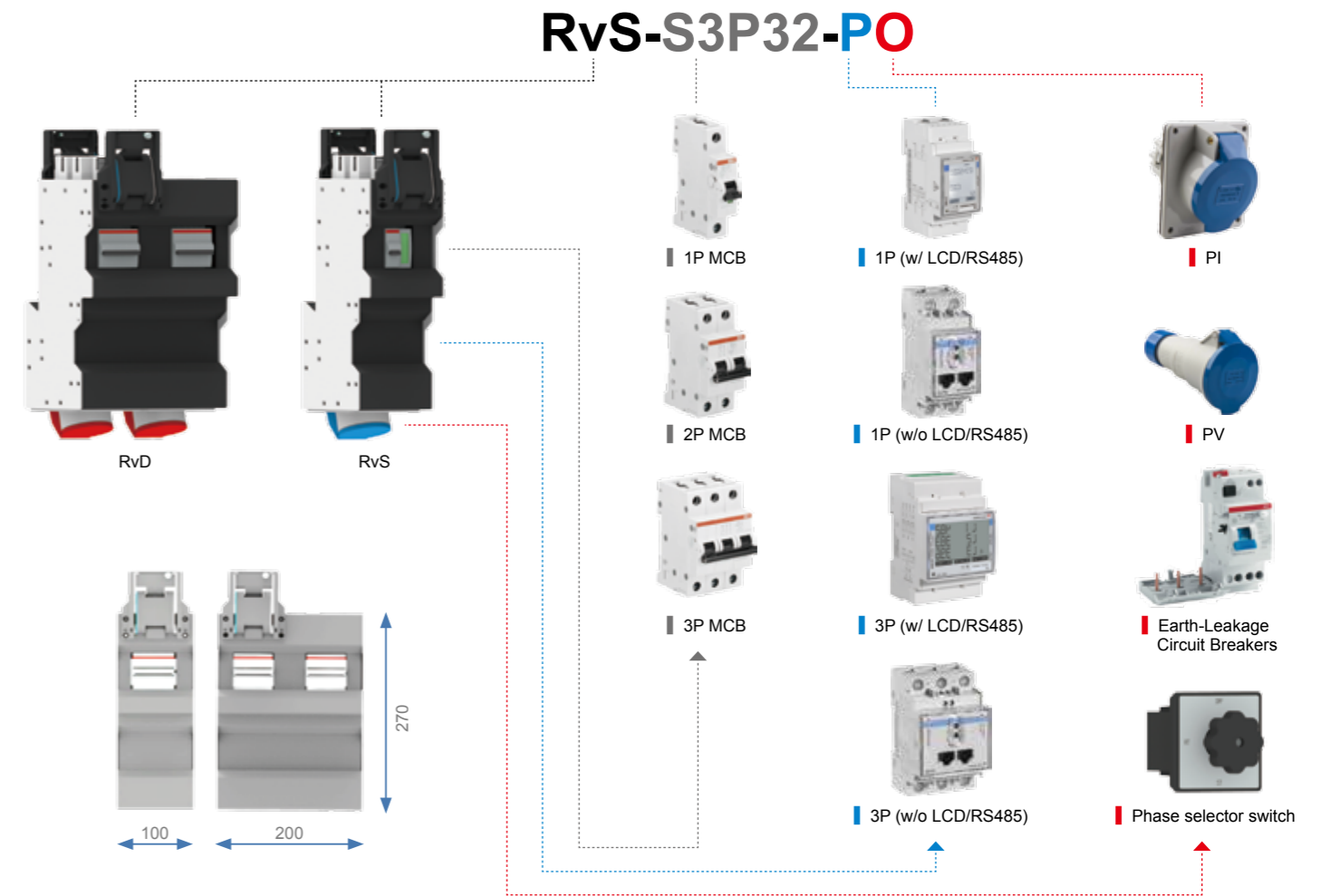
Plug-in Unit (Rv Type)



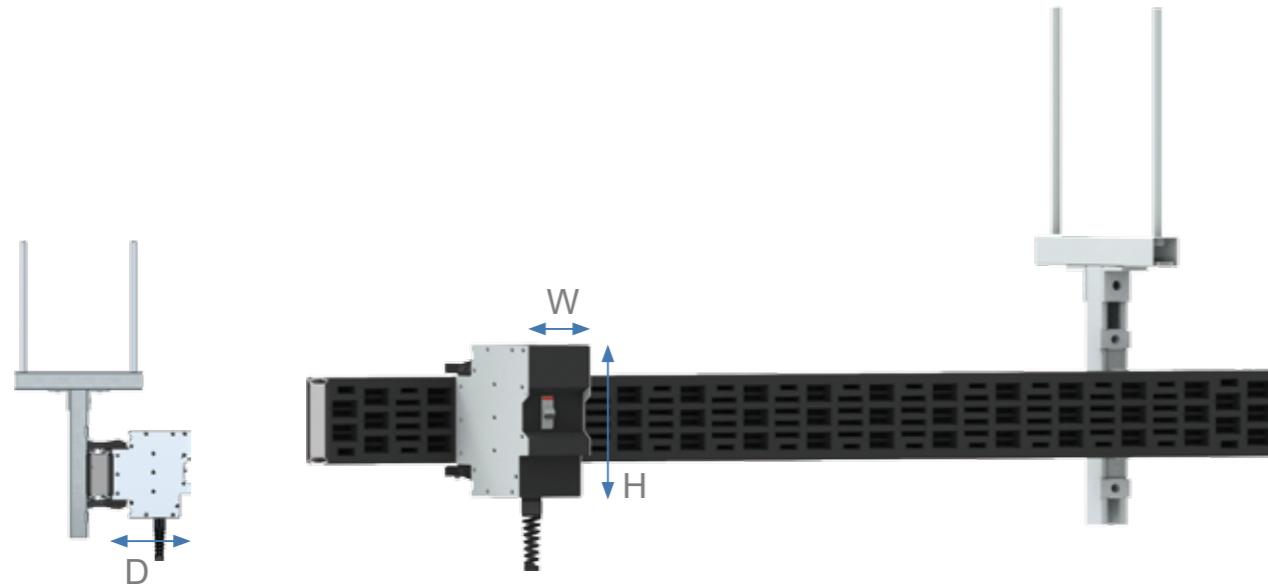
Copper

Ratings	16A	32A	63A	125A	250A	400A
Models	Rv-A3P16	Rv-A3P32	Rv-A3P63	Rv-A3P125	Rv-A3P250	Rv-A3P400
Height	mm 275	275	275	275	275	275
Depth	mm 165	165	165	165	165	165
Width	mm 100	100	100	200	300	300
IP Rating	IP42	IP42	IP42	IP42	IP42	IP42
Weight	kg 3	3	3	12	20	26

Standard Configurations for Plug-In Unit (Rv series)

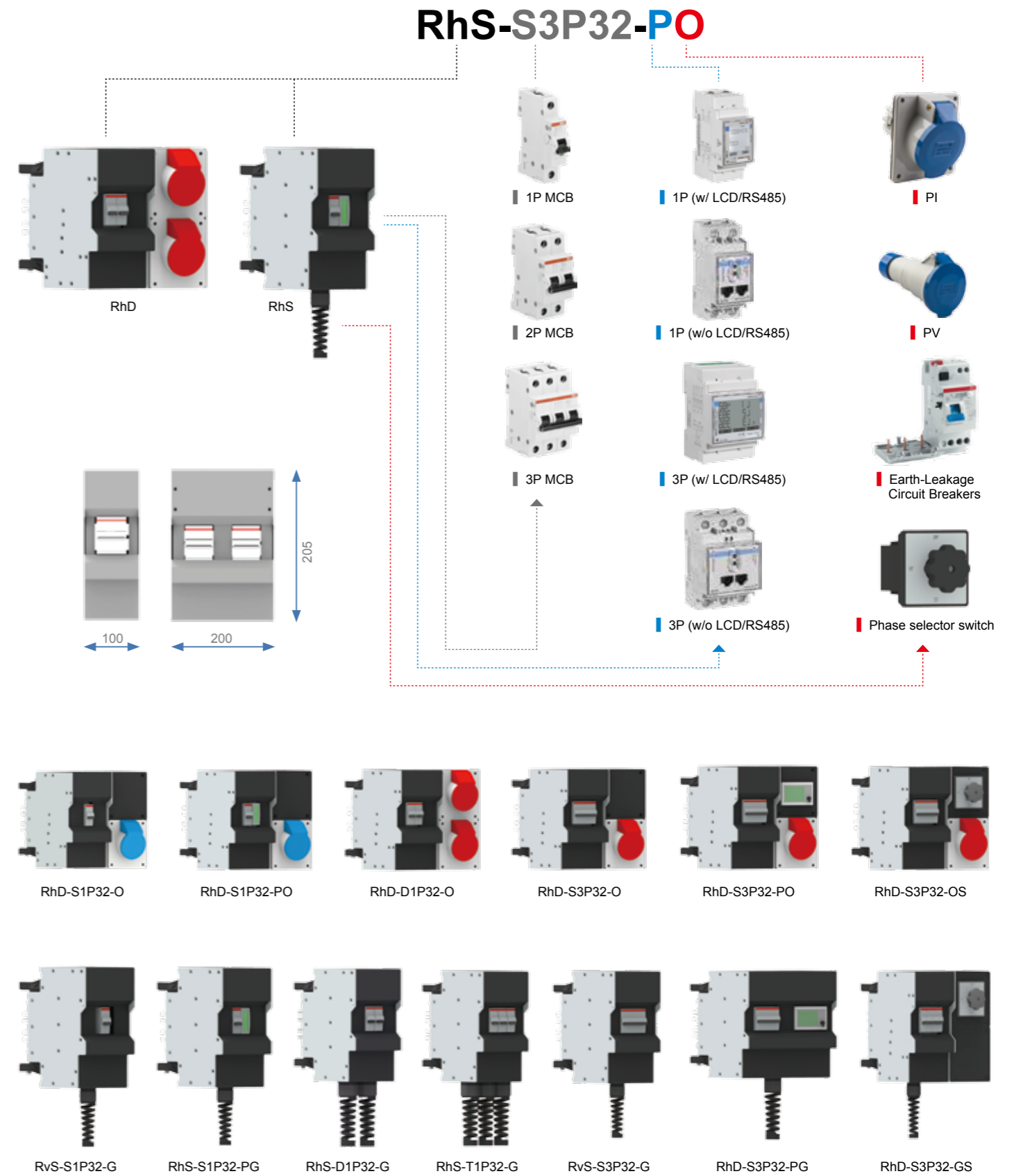


Plug-in Unit (Rh Type)



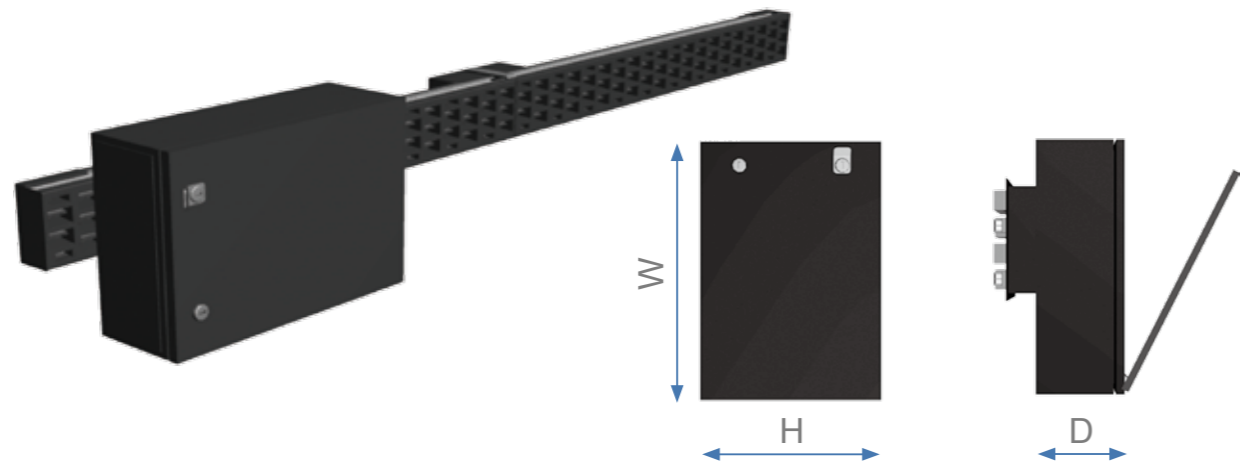
Ratings		16A	32A	63A	125A	250A	400A
Models		Rh-A3P16	Rh-A3P32	Rh-A3P63	Rh-A3P125	Rh-A3P250	Rh-A3P400
Height	mm	250	250	250	250	250	250
Depth	mm	185	185	185	185	185	185
Width	mm	100	100	100	200	300	300
IP Rating		IP42	IP42	IP42	IP42	IP42	IP42
Weight	kg	3	3	3	12	20	26

Standard Configurations for Plug-In Unit (Rh series)



End Feed Box(Plug-in)

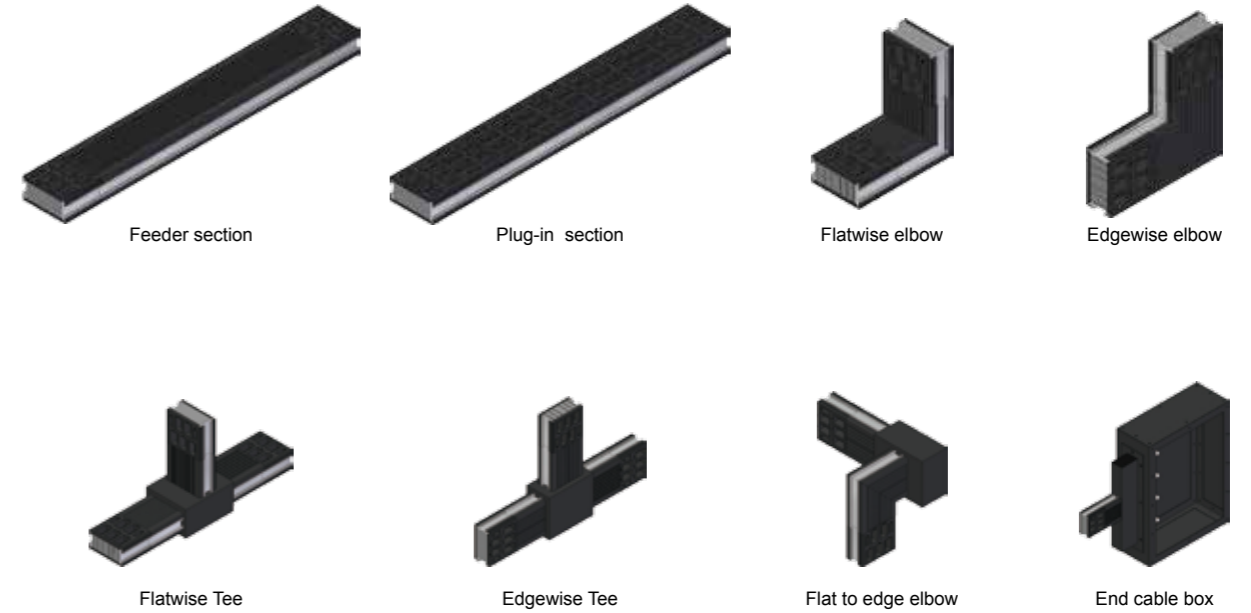
The end feed box allows power connection for the busway that is not included in the switchboard.



PI	M	630	6	NF630SW	1P	01
	M MCCB T Terminals	Amp. Ratings 250A-1600A	3 3φ3W 100%G 4 3φ3W 50%G 5 3φ4W 100%G 6 3φ4W 50%G 7 3φ4W 0%G 8 3φ4W 50%N 0%G 9 3φ3W 0%G 10 3φ4W 50%N 50%G 11 3φ4W 200%N 100%G 12 3φ4W 200%N 50%G 13 2φ4W ++ -- DC	MCCB type	1Pole 2Pole 3Pole 4Pole	Serial number: 01~99

Plug-in Amp. Ratings	250A	400A	630A	1250A	1600A
Catalogue number	Rt-3P250	Rt-3P400	Rt-3P630	Rt-3P1250	Rt-3P1600
W	mm 160	160	160	250	250
H	mm 300	300	300	300	300
D	mm 430	430	430	430	430
Color	RAL7043	RAL7043	RAL7043	RAL7043	RAL7043
IP Rating	IP42	IP42	IP42	IP42	IP42
Weight	kg 15	15	17	21	28

Busway Configuration



BR	C	08	6	SS	Dimension	Color
	C Cu A Al	02 250A 04 400A 06 600A 08 800A 10 1000A 12 1250A 16 1600A	3 3φ3W 100%G 4 3φ3W 50%G 5 3φ4W 100%G 6 3φ4W 50%G 7 3φ4W 0%G 8 3φ4W 50%N 0%G 9 3φ3W 0%G 10 3φ4W 50%N 50%G 11 3φ4W 200%N 100%G 12 3φ4W 200%N 50%G 13 2φ4W ++ -- DC	SS Feeder section SP Plug-in section LV Edgewise elbow LH Flatwise elbow CH Flat to Edge CV Edge to Flat TV Edgewise Tee TH Flatwise Tee FS Flange end SE Feeder end FRJ Joint	BU Blue BK Black RE Red YE Yellow BG Blue Green BW Bright White GW Gray White	

Monitoring Module

The plug-in unit can fit within the monitoring module. The power information can be displayed or transmitted to the monitoring system via RS485.



InfraSuite Manager

Data Center Infrastructure Management (DCIM)

Delta InfraSuite Manager is the fully featured Data Center Infrastructure Management (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.



Base Model (Operation)



Energy



Slide Show



Asset



Capacity



Work Order



Asset Inspection