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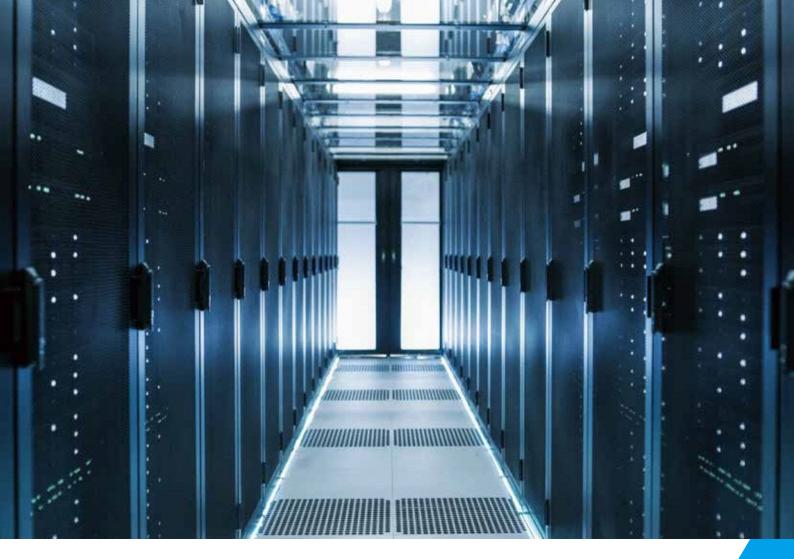
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The power behind competitiveness

# Delta InfraSuite Cast Resin Busway System

BR Series, 250A-2000A



www.deltapowersolutions.com

# 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.

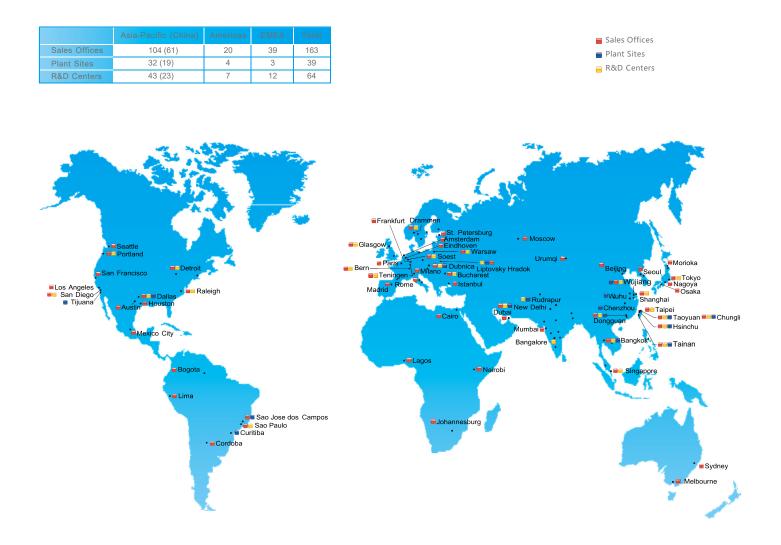
### No. 1 Supplier of Merchant Power Supplies

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 \$21,869M.

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

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

## **Global Footprint**



### 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.



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.



www.deltapowersolutions.com







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## 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.

## 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 IP 55 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

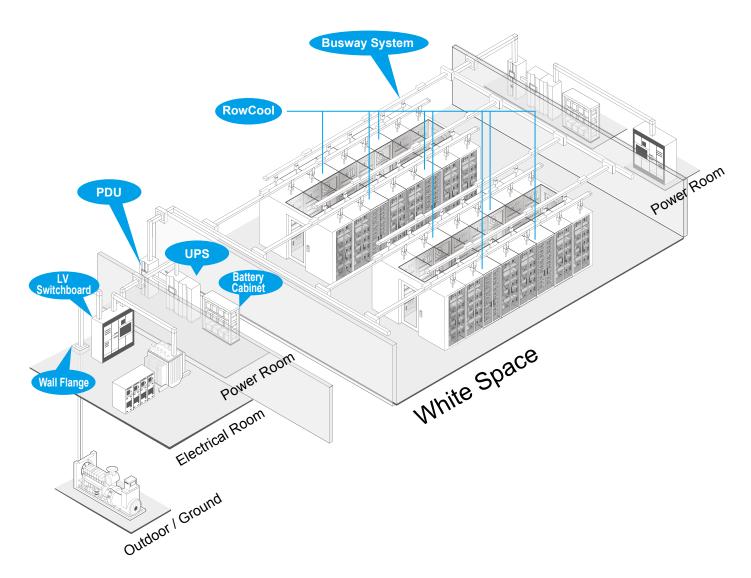


## **Busway for Data Center Applications**

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, UL857



### 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:

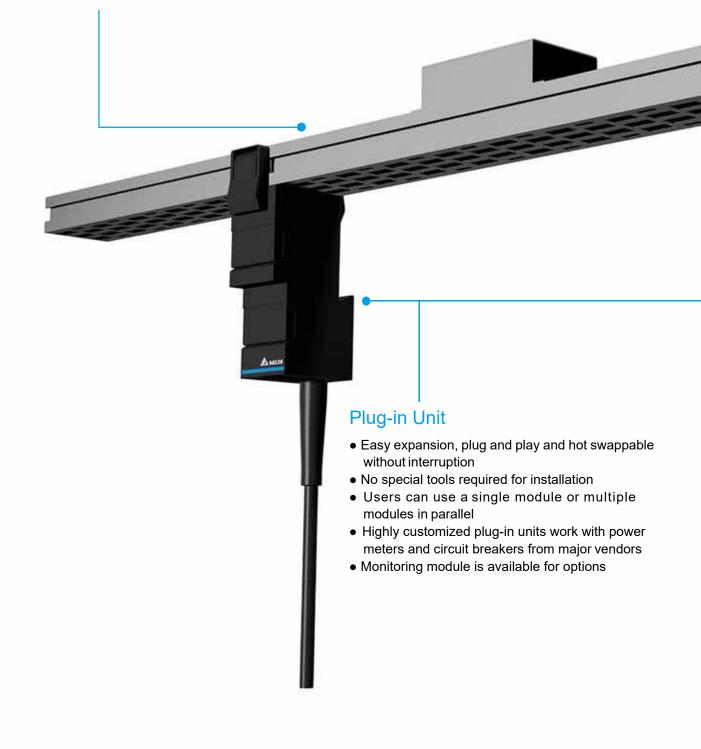
- Unconstrained by space or location, the busway can be designed effectively and installed without professional technicians
- The plug-in unit adopts a modular design that can be expanded simply and quickly
- Customers can save time on waiting for materials if there is any change in design
- Users can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



## **Product Advantages**

### **Busway Body**

- Wide power ratings ranging from 250A to 2000A
- 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
- Length can be customized upon customer request
- IP protection level up to IP55





### **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**

ADELTA

- $\bullet$  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





	Black (Std.)	Dark Blue	Light Blue	Warm Red	Yellow
Pantone Color	Pantone Black C	Pantone 2146 C	Pantone 18-4538 TPG	Pantone 7621 C	Pantone Yellow C

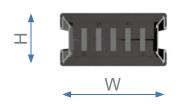


# **Technical Specification**

Busway Rating		250A	400A	600A	800A	1000A	1250A	1600A	2000A		
Models	Copper	BRC02	BRC04	BRC06	BRC08	BRC10	BRC12	BRC16	BRC20		
-	Aluminum	BRA02	BRA04	BRA06	BRA08	BRA10	BRA12	BRA16	BRA20		
Rated current	А	250	400	600	800	1000	1250	1600	2000		
Rated voltage	V	1000									
Frequency	Hz	50/60									
Conductor		Copper purity	y: 99.9% c urity: 98.8% c	onductivity: 99 onductivity: 56							
Conductor plating		Tin plating (S	Std)								
Insulation material		Epoxy cast r	esin								
Insulation class		Class F (155	э°С)								
Enclosure/ housing		Epoxy/Alumi	num								
Fire protection		UL94 V0									
Ingress protection ra	ating	IP20 ; IP55 (	optional)								
Mechanical Impact		IK10									
Earthquake test		0.8g [magnitude >7] ; Zone 4									
Plug-in Unit											
Contact design		Plug-in type									
Туре		Rv: mounted to busway section vertically Rh: mounted to busway section horizontally									
Configuration		Plug-in unit v Plug-in unit v Plug-in unit v	w/ MCB/ELCB/ w/ MCB/RCB + w/ MCB/RCBO w/ MCB + Over	RCBO Socket-outlets + Power Mete	s r	n					
Max. Rating		400A									
MCCB brands		ABB(Std.), Mitsubishi, Fuji, GE, Schneider or Customer specified									
Ingress protection ra	ating	IP20 ; IP42/55 (optional)									
Panel coating		Powder coated paint									
Color		RAL 9011/ RAL9003									
General Data											
Standards		IEC61439, IE CNS14286, 0 UL857	EC60529, IEC6 CNS12514, CN	60331, IEC603 NS14165, CNS	32 11073						
Ambient temperatur	re	-20°C /+50°C	avg. 35°C								
Altitude		Below 2000r	n from sea leve	el							



## **Technical Specification**





Copper	
Busway Rating	

Busway Rating		250A	400A	600A	800A	1000A	1250A	1600A	2000A
Models		BRC02	BRC04	BRC06	BRC08	BRC10	BRC12	BRC16	BRC20
Rated current	А	250	400	600	800	1000	1250	1600	2000
Impedance values a	are for busv	vay operating	at 20/80°C ten	nperature					
Resistance R <sub>20</sub>	μΩ/m	213.0	178.0	117.8	74.6	55.8	37.2	24.6	18.8
Resistance R <sub>80</sub>	μΩ/m	263.2	220.0	145.6	92.2	69.0	46.0	30.4	23.2
Reactance X <sub>50</sub>	μΩ/m	138.1	129.5	87.8	67.8	49.8	38.5	25.5	20.1
Impedance Z <sub>50</sub>	μΩ/m	297.2	255.3	170.0	114.4	85.1	60.0	39.7	30.7
Reactance X <sub>60</sub>	μΩ/m	165.7	155.4	105.3	81.3	59.8	46.2	30.6	24.1
Impedance Z <sub>60</sub>	μΩ/m	311.0	269.3	179.7	122.9	91.3	65.2	43.1	33.5
Conductor cross-se	ection area								
L1,L2,L3	mm <sup>2</sup>	50.0	72.5	145	232	307.4	464	696	928
N (100%)	mm <sup>2</sup>	50.0	72.5	145	232	307.4	464	696	928
G (Internal)	mm <sup>2</sup>	50.0	72.5	72.5	116	153.7	232	348	464
<b>Busway Dimension</b>	S								
W×H	mm	117x58	117x58	117x58	117x73	117x86	117x113	117x153	117x193
Weight	Kg/m	12	13	15	23	32	46	59	65

### Aluminum

Busway Rating		250A	400A	600A	800A	1000A	1250A	1600A	2000A
Models		BRA02	BRA04	BRA06	BRA08	BRA10	BRA12	BRA16	BRA20
Rated current	А	250	400	600	800	1000	1250	1600	2000
mpedance values a	re for busw	vay operating	at 20/80°C tem	nperature					
Resistance R <sub>20</sub>	μΩ/m	312.0	213.0	122.0	93.5	62.6	49.7	41.8	25.4
Resistance R <sub>80</sub>	μΩ/m	385.6	263.2	150.8	115.5	77.4	61.4	51.7	31.4
Reactance X <sub>50</sub>	μΩ/m	150.0	138.1	100.0	59.8	46.7	40.8	32.7	19.0
Impedance Z <sub>50</sub>	μΩ/m	413.7	297.2	180.9	130.1	90.3	73.8	61.1	36.7
Reactance X <sub>60</sub>	μΩ/m	180.0	165.7	120.0	71.7	56.0	49.0	39.2	22.8
Impedance Z <sub>60</sub>	μΩ/m	425.5	311.0	192.7	136.0	95.5	78.6	64.8	38.8
Conductor cross-se	ction area								
L1,L2,L3	mm <sup>2</sup>	100	145	232	307.4	464	580	696	1160
N (100%)	mm <sup>2</sup>	100	145	232	307.4	464	580	696	1160
G (Internal)	mm <sup>2</sup>	50	72.5	116	153.7	232	290	348	580
Busway Dimensions	i								
W×H	mm	117x58	117x58	117x58	117x83	117x113	117x133	117x150	117x230
Weight	Kg/m	11	12	14	21	30	42	54	59

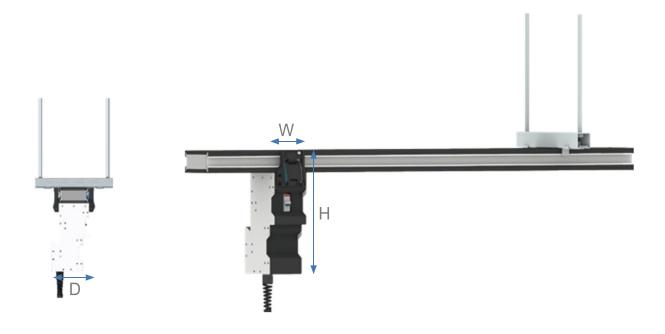
Note: Please contact Delta technician for the data of Voltage drop and Loss KW/M .

# Plug-in Unit

	<u>Rv</u> S-S <u>3P32</u> - <u>PO.02</u>
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	
<ul> <li>POLE NO.</li> <li>1P</li> <li>2P</li> <li>3P (L1,L2,L3)</li> <li>4P (L1,L2,L3,N)</li> </ul>	
AMPERAGE RATING 16 32 63	
COMPONENT P: POWER METER O: SOCKET-OUTLETS G: CABLE/PLUGS E: Earth-Leakage Circuit S: CAM SWITCHE	Breakers
SERIAL NO.	



# Plug-in Unit (Rv Type)



### Rv type

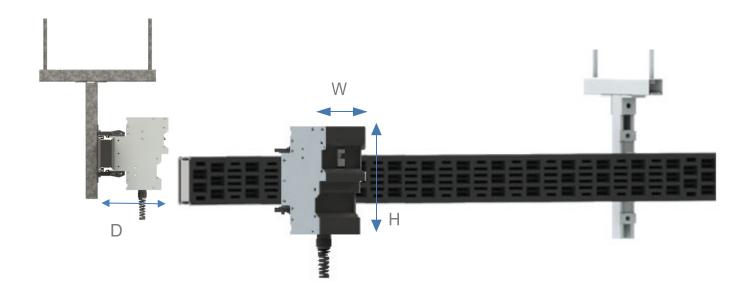
Ratings		16A	32A	63A	125A	250A	400A
Height	mm	330	330	330	330	330	330
Depth	mm	165	165	165	165	165	165
Width	mm	100	100	100	200	300	300
IP Rating		IP42	IP42	IP42	IP42	IP42	IP42
Weight	kg	3	3	5	12	20	26

# Standard Configurations for Plug-In Unit (Rv series)





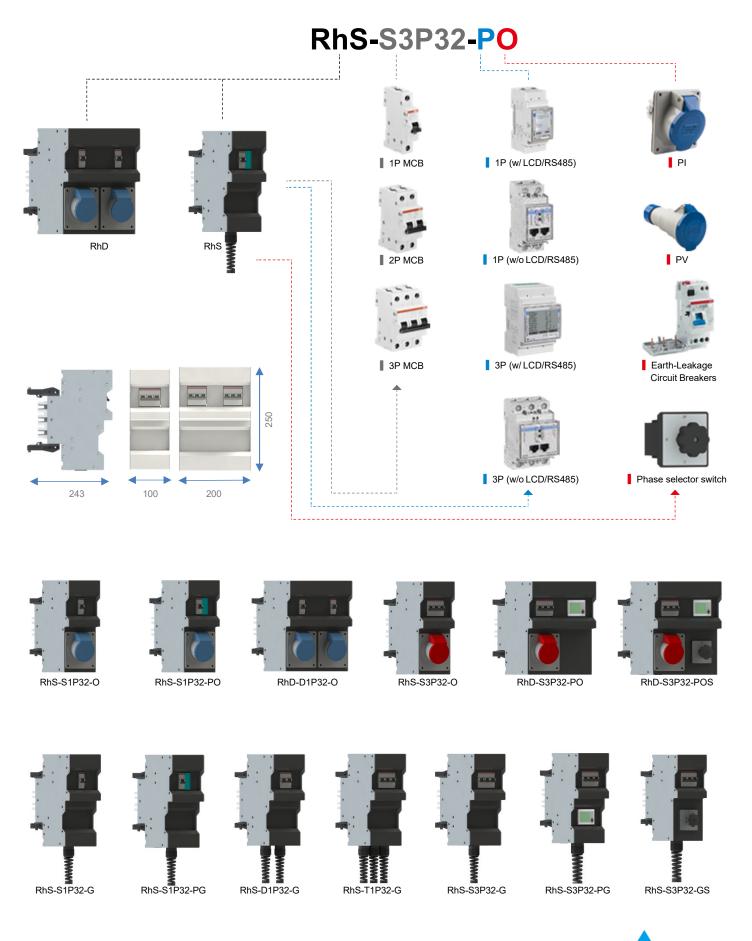
# Plug-in Unit (Rh Type)



### Rh type

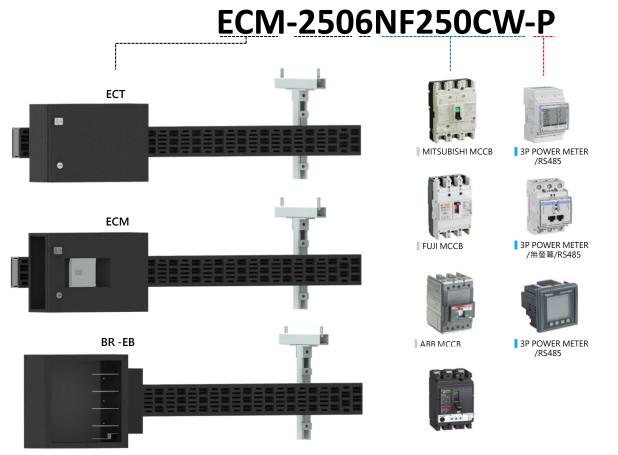
Ratings		16A	32A	63A	125A	250A	400A
Height	mm	250	250	250	250	250	250
Depth	mm	243	243	243	243	243	243
Width	mm	100	100	100	200	300	300
IP Rating		IP42	IP42	IP42	IP42	IP42	IP42
Weight	kg	3	3	5	12	20	26

# Standard Configurations for Plug-In Unit (Rh series)





### End Feed Box / End Cable Box



SCHNEIDER MCCB

W

D

Ratings		25	0A	40	0A	63	0A	800A	1000A	1250A	1600A	2000A
Model (Typ	be)	ECM-250 MCCB	ECT-250 Terminal	ECM-400 MCCB	ECT-400 Terminal	ECM-630 MCCB	ECT-630 Terminal	BRC086EB Terminal	BRC106EB Terminal	BRC126EB Terminal	BRC166EB Terminal	BRC206EB Terminal
W	mm	480	430	480	430	480	430	500	500	500	500	500
Н	mm	300	300	300	300	300	300	650	650	650	650	650
D	mm	240	160	240	160	240	160	220	233	260	300	340
IP Rating		IP42	IP42	IP42	IP42	IP42	IP42	IP42	IP42	IP42	IP42	IP42
Weight	Kg	17	15	19	15	20	17	35	38	45	55	65
Front and Sid View	de	н	8		C C			н	·			

D

W

# **Busway Configuration**



Feeder section



Flatwise Tee



Flat to Edge Elbow



Flatwise Tee



Flange End w/ Edgewise Elbow



Plug-in section



Edgewise Tee



Edge to Flat Elbow



Edgewise Tee



Flange End w/ Flatwise Elbow



Flatwise elbow



Flatwise Offset



BL-BR plug-in section



Slot Cover



Spring Hanger



Edgewise elbow



Edgewise Offset



BL-BR Plug-in section w/ PIU



Flange End



Wall/ Floor flange





## **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.



