

Delta Electronics

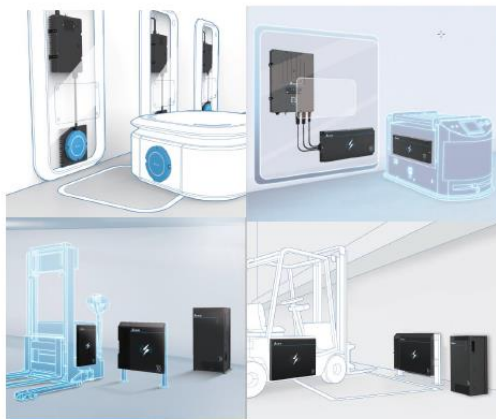
Wireless Charging Solutions



Agriculture & Industrial Segment Solutions



Wired Charger



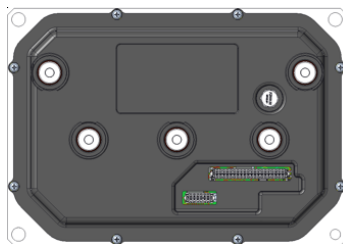
Wireless Charger



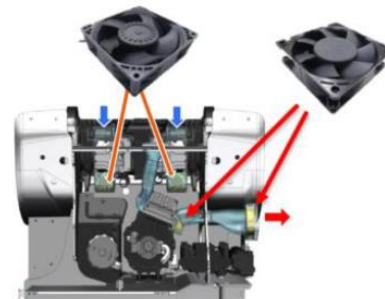
On/Off Board Charger



DCDC



Motor Drive



Fans

Wired Charging Solution

- **1.35 kW 1PH Charger**

- 4kW Cabinet
- 6.7kW Cabinet



- **3kW 3PH Charger**

- 9kW Cabinet
- 15kW Cabinet
- 30kW Cabinet



4kW ~ 30kW Cabinet

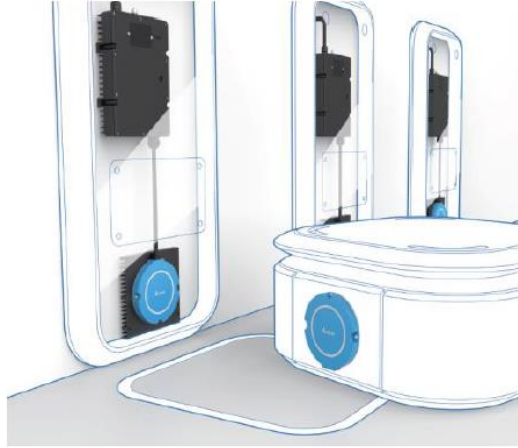
Wired Charging Solution

	1.35kW 1PH		3kW 3PH	
Output Power	4 kW(3 Bay)	6.7 kW(5 Bay)	3 kW – 30 kW	3.2 kW – 32 kW
Input range	90 – 265 Vac	180 – 265 Vac	432 – 528 Vac(US) 352 – 440 Vac(EU)	432 – 528 Vac(US) 352 – 440 Vac(EU)
Output range	24 /36 /48 V	24 /36 /48 V	24 /36 /48 V batteries (4 -70 Vdc)	72 /80 /96 V batteries (9 – 120 Vdc)
Peak Efficiency	≥ 91%	≥ 91%	≥ 92.5%	≥ 92.5%
Operating temperature	-10 ~ 55°C	-10 ~ 55°C	-10 ~ 55°C	-10 ~ 55°C
Pad IP	20	20	20	20
Sample	yes	yes	yes	yes
MP	yes	yes	yes	yes
Battery Type	<ul style="list-style-type: none"> - Lithium Ion (LFP, LNMC, LTO) - Lead acid (Wet / AGM / GEL) 			

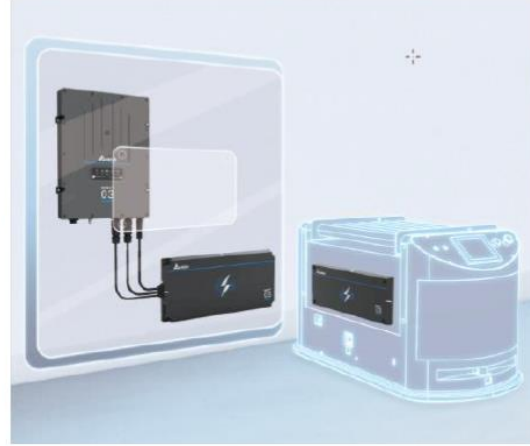
Wireless Charging Solutions



MOOV^{air} 01



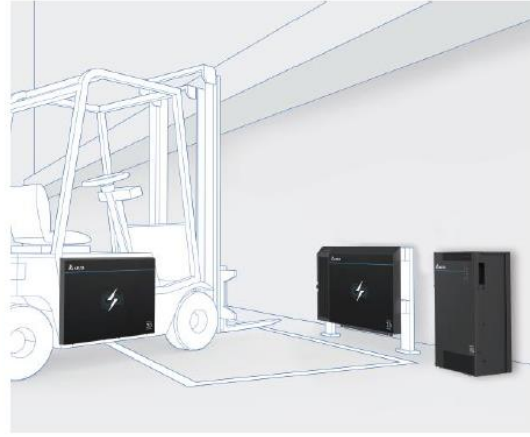
MOOV^{air} 03



MOOV^{air} 10



MOOV^{air} 30



Wireless Charging Solutions

	1 kW	3.3 kW	10kW	30 kW
Input range	85 – 265 Vac	180 – 264 Vac	342 – 528 Vac	342 – 528 Vac
Output range	12 – 60 Vdc	12 – 66 Vdc	18 – 60 Vdc	72 – 120 Vdc
Peak Efficiency	> 92%	> 92%	> 92%	>95%
Operating temperature	-20 ~ 50°C	-40 ~ 70°C	-40 ~ 70°C	-40 ~ 80°C
Pad IP	65	65	69	69
Air gap range	0-20mm	10-30mm	110-150mm	100-150mm
Parallel	yes	yes	yes	yes
Sample	yes	yes	yes	yes
MP	yes	yes	yes	yes

Wireless Charging Solutions

	1 kW	3.3 kW	10kW/30 kW
Pads	Round	Rectangular (square planned)	Rectangular
Vehicle com	CAN 2.0b (proprietary)	CANopen	CANopen
Facility com	None	Ethernet (data & control)	Ethernet (data & control)
FOD (Foreign Object Detection)	No	Planned	Planned
Charge methods	Multistage profile CAN	Multistage profile CAN Ethernet	CAN Ethernet
System parts	2 parts: Pads connected to boxes	4 parts: Pads and boxes are separate	3 parts: Separate pri pad and box Integrated sec unit
Protection	Pads and pri box: IP65 Sec box: IP40	Pads: IP67 Boxes: IP65	Pri box: IP21 Pads: IP69
Internal comms	Box to box: 2.4GHz	Pad to pad: PPL (NFC based)	Pad to pad: PPL (NFC based)

MOOV^{on} 720W On Board Chargers

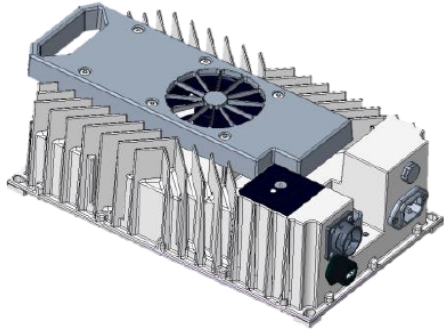
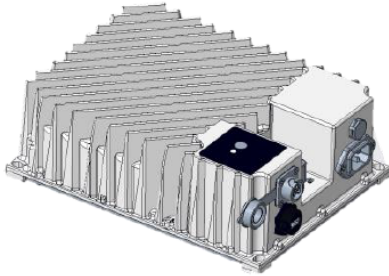
- Worldwide AC input
- Extremely robust:
 - Shock: 25g & Vibration: 5g
 - IP65
- Charge with pre-installed charge profiles or CAN
- Integrated battery temperature probe
- Vehicle inhibit



IP65
Certified

Vehicle battery	AC Input	Output voltage range	Max. output current	Max. output power	Dimensions	Weight
24 V	100 V _{AC} to 265 V _{AC}	5 V – 35 V	30 A	720 W	254 x 152 x 74 mm	3.4 kg
36 – 48 V		8 V – 70 V	15 A		274 x 152 x 74 mm	3.5 kg

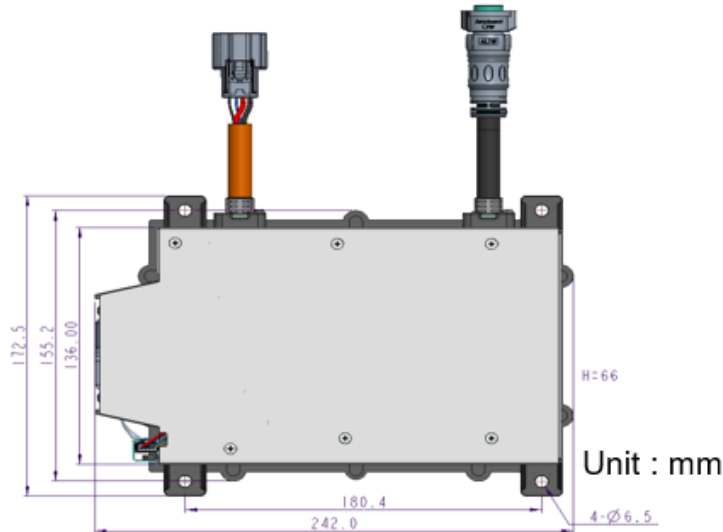
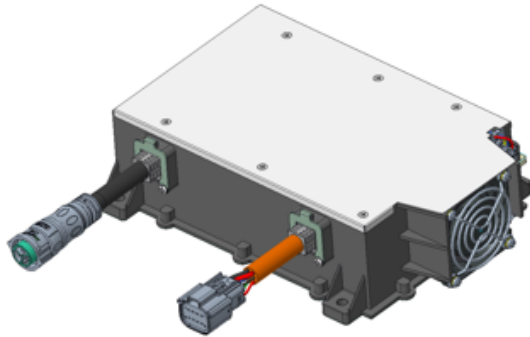
On/Off Board Charger Solutions



Constant Voltage/ Constant Current
Safety : UL1564, IEC60335-1, IEC60335-2-29
Support all lead-acid and lithium
Nature convection
Built-in LEDs indicating charging status

OBC Charger	Rated Power	800W	1200W
Input	AC Voltage	90 ~ 264Vac	90 ~ 264Vac
	Peak Efficiency	>93.5%	>93.5%
Output	Max Charging Voltage	58.8V	58.8V
	Charging Current	13.5A	20.5A
Protection	Over Voltage	V	V
	Over Current	V	V
	Over Temperature	V	V
	Over Timing	V	V
Charging Behavior		Customization Charging Curve	
Charging Mode		CC / CV	
Communication		CANBus / I2C / UART	
Waterproof		IP67	
Cooling		Natural Convection	With Fan
Dimension		252 x 179 x 80 mm	334 x 179 x 89 mm
Operation Temperature		- 40 ~ 65 °C	

1.5/3kW On Board Charger Solutions

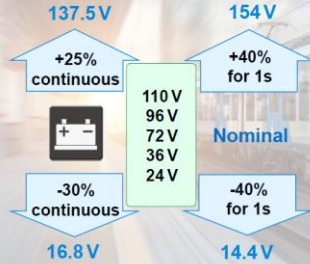


Charger	Description
Electrical	
Input	90~264Vac, 45~65Hz (max load)
Output	100Vac 25~60Vdc/ 20A 240Vac 25~60Vdc/ 25A
Efficiency	Up to 93%
Communication	CAN 2.0
Operation Interface	LED indicator
Mechanical	
Dimension	242 x 172.5 x 66(H) mm
Weight (Kg)	~3.6 kg (TBD)
AC input connector	Amphenol LTW CC-03AFMM-QL8E01 (Replaceable)
DC output connector	Molex 1600744001 (Replaceable)
Mounting holes	Ø6.5mm
Environmental	
IP Level	IP67
Shock & Vibration	ISO 16750-3
Operation Temp.	-20 ~ 55°C (>45°C, power de-rating)
Storage Temp.	-20 ~ 85°C
Regulatory	
Safety	Comply with IEC 61851-25
Design Features	<ul style="list-style-type: none"> Reverse polarity protection, OTP, OCP, OVP, Charge timeout protection Interlock (12V/2A) Soft-start, soft switching, wide range input/output

DCDC Solutions

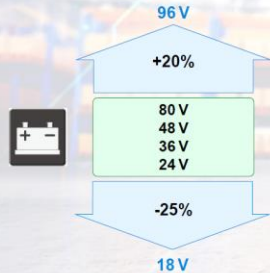
Voltages Variations in Industrial Devices

Railway Standard EN 50155



Battery Voltage Variations in Electric Vehicles

Railway Standard EN50155



Delta Ultra-Wide Input Voltage 16.8 ~ 137.5V

137.5V

110V
96V
72V
36V
24V

16.8V



DC/DC Half-Brick
Power: 100 ~ 200W
Vin: 16.8 ~ 137.5V (14.4V ~ 200V 1s)
Vout: 12V, 15V, 24V, 48V, 54V
H80SV Series

Efficiency: 85 ~ 90%
Isolation: 4,242V_{DC}
Conducted Cooling: -40 ~ 100°C baseplate temp.
Features: Trim, Sense, OVP, OCP, OTP
Options: Remote ON/OFF, M3 screw threads

- 54V Video Surveillance PoE, Wi-Fi
- 48V Signaling Communication Event Recorder
- 24V Cabin Equipment Air Conditioning Audio Amplifier
- 24V Door Control Board Computer
- 24V Internal & External Lighting
- 15V Motor Drive & Brake Controller
- 12V Passenger Information Displays

BOX TYPE IP67

Ultra-Wide Input Voltage 32 ~ 96V



+20%

80V
48V

-30%



(Trim Range)

24V
13.7V
12V

- Lights
- Wipers
- Computer
- Display
- Scanner
- Printer
- Cameras
- Heater
- Radio

DC/DC Box Type IP67
Power: 500W
Vin: 32 ~ 96V
Vout: 12.4V, 13.7V, 24.5V
B70SP series

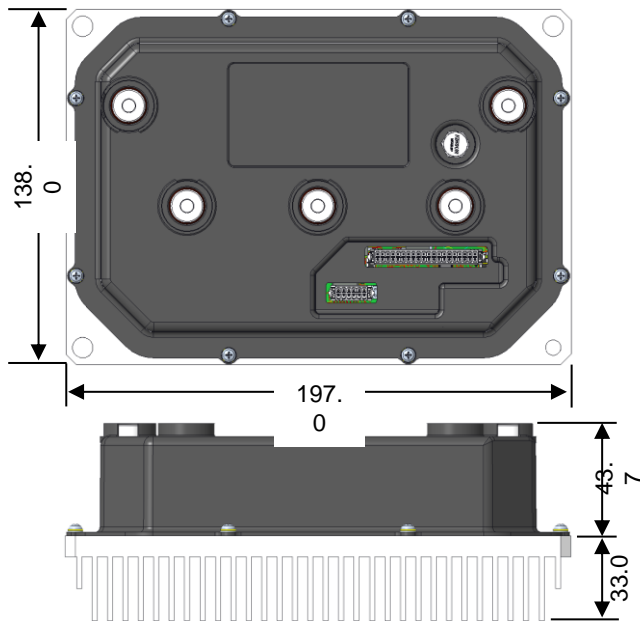
Efficiency: 91.5%
Isolation: 2,250V_{DC}
Conducted Cooling: -40 ~ 75°C ambient temp.
Features: Parallel Connection, Input Reverse Polarity Protection, OVP, OCP, OTP
Options: External Fuse, Remote ON/OFF, Sealed Connector

Box Type products (Non-Automotive Transportation)

Power	Part No.	Output	Input	Features
110W	B83SR12409	12.4V	18~150V	<ul style="list-style-type: none"> Hotswap/inrush limit Reverse polarity protection EN12895 compliance Optional IP67 protection
300W (200W @Vin <27V)	B40SR series	12.4V	18~60V	
	B62SR series	12.4/13.7/24V	18~106V	
	UDV	12.4/13.7/24V	33.6~160V	
360W (200W @Vin <27V)	B62SR24015	24V	18~106V	
500W	UDV	12.4/13.7/24V	32~96V	
400W/600W	Series	13/24V	24V~96V	<ul style="list-style-type: none"> IP69k fan less design 800k pcs sold since 2018



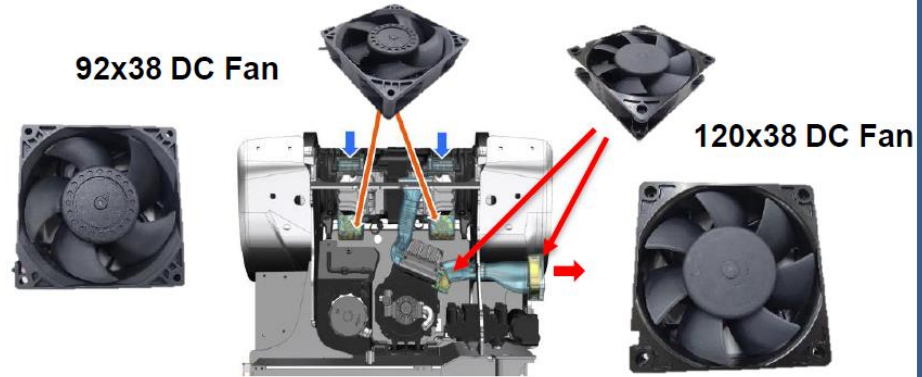
6kW/8kW Motor Drive



Motor controller	Description
Electrical	
Input	29Vdc~60Vdc, DC Input
Output	200Arms, 1min
	125Arms, continue 6000W
Efficiency	Up to 95%
Operation Interface	CAN
Mechanical	
Dimension	197x138x77(H)mm
Weight (Kg)	4kg
Environmental	
IP Level	IP67
Shock & Vibration	TBD
Operation Temp.	-10 ~ 60°C
Storage Temp.	-30 ~ 80°C
Regulatory	
Design Features	<ul style="list-style-type: none"> ● Input Protection : OVP, UVP, reverse battery ● Output Protection : OCP, OVP, SCP, OTP, ● -10200rpm~+10200rpm ● Hal sensor/Encoder/Resolver

Fans Solutions for Industrial Solutions

- Forklift
- Utility Vehicle
- AGV (Automated Guided Vehicle)
- High Vibration / Shock Source Application



Features:

- Outstanding reliability, Structural strength
- High IP Grade (IP68)
- Oil proof fan structure
- High vibration / shock / impact resistance
- High Temperature shock resistance
- Excellent EMC / ESD protection



Fans Solutions for Industrial Solutions

New Product

New DC Fan 92x38 mm



New DC Fan 120x38 mm

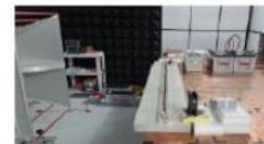
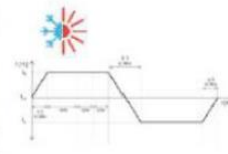


Used in:
Forklift, AGV, ...

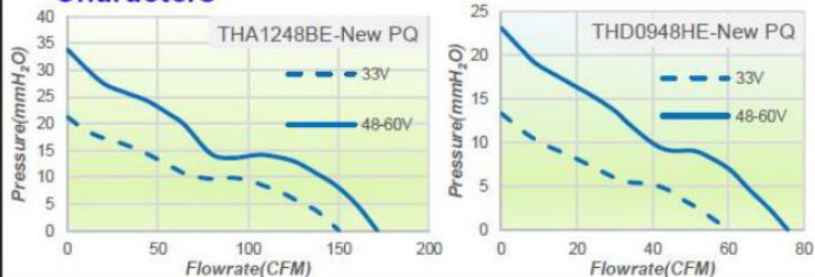
High Reliability

- Outstanding reliability, Structural strength

Design	Vibration Resistance	Oil proof	Temperature shock	EMC/ ESD	Conclusion
Original	5G / 2hrs per axis Power Off	N/A	-25 ~ 85°C Transfer rate : 1°C/min 12 Cycle	IEC 61000-4-3/ ESD 18KV Air	Normal
THD0948HE-New THA1248BE-New	10G / 9hrs per axis Power On	Oil Resistance	-40 ~ 85°C Transfer rate : 5°C/min 84 Cycle	ISO 16750-2 ISO 11452-8 ISO 7637-2/ ESD 25KV Air	Robust



Characters



Model	Speed (RPM)	Max. Flowrate (CFM)	Max. Pressure (mmH ₂ O)	Power (Watt)	Noise (dB-A)
THD0948HE-New	5600	76	23	4.80	52.5
THA1248BE-New	5000	172	34	18.24	60.0



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