

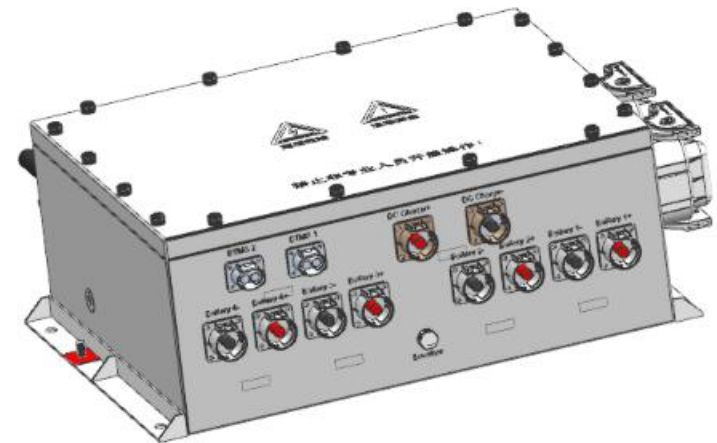
# PDU & BDU Introduction

The high voltage junction box is power distribution unit for all electric vehicles or plug-in hybrid electric vehicles.

### **Features:**

- Adopting centralized power distribution solution
- Convenient busbar layout and easily for maintenance
- Aluminum enclosure and connector are adopted with IP67&IP69K protection
- Have the functions of voltage acquisition
- Real-time monitoring of high-voltage connection
- Manage high-voltage safety, with over-current, over-pressure protection
- Have the function of cutting off the high voltage when the box opened or connector disconnected.
- LV CAN signal communication with contactor welded detection.

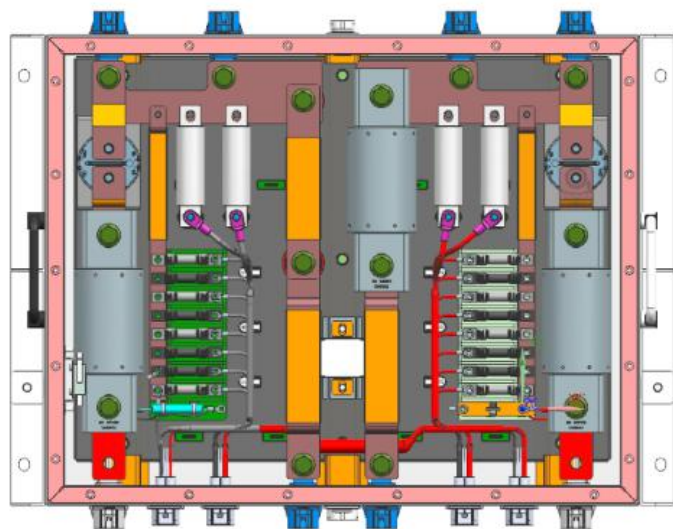
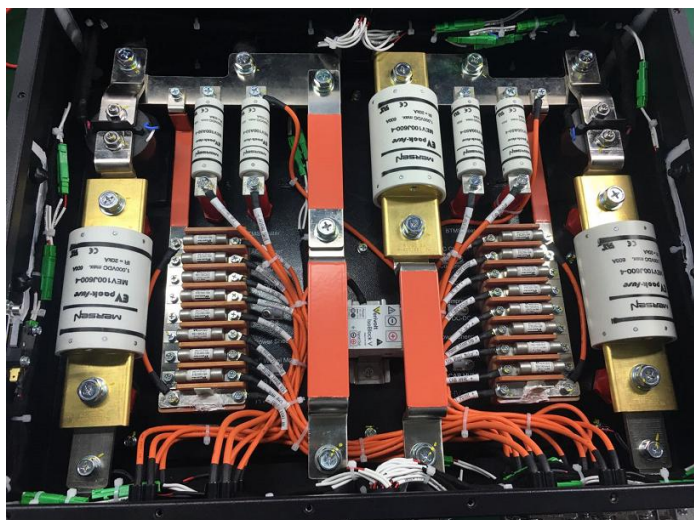
## PDU for China customer



## PDU Description:

- Application: Fuel cell tractor
- Operating voltage : 657 V DC
- Max current: 410A
- Contact driving voltage: 12V
- Temperature range : -40 °C~85 °C
- shielding : Yes
- IP Class: IP67
- Housing material: Steel plate
- Salt spray test: 96h
- Insulated resistance: 1000VDC, ≥100MΩ
- Withstand voltage: 2500V AC 60s, Leakage current ≤3mA;
- Contactor: Gigavac;
- Connector: Amphenol;
- Fuse: Mersen

## PDU for US customer



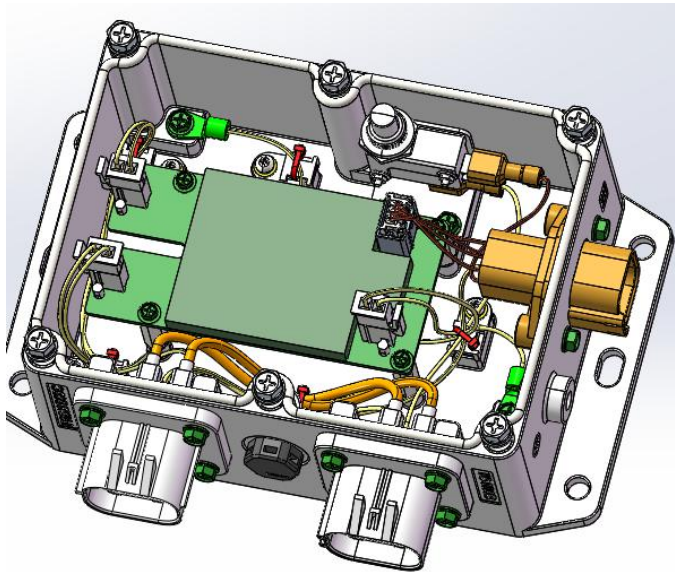
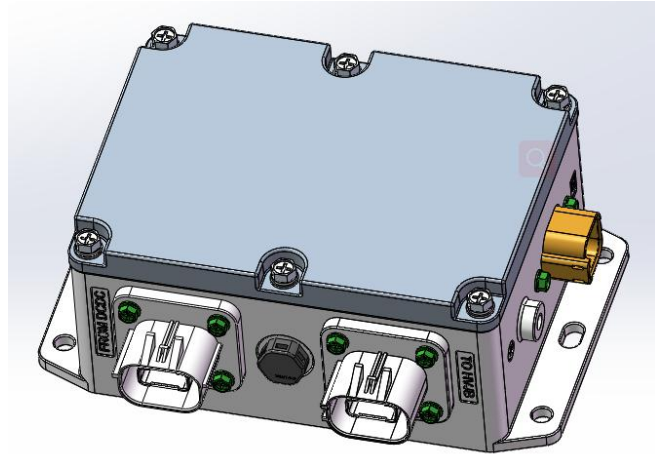
## PDU Description:

- Application: Airport tractor
- Operating voltage : 620 V DC
- Max current: 800A
- Contact driving voltage: 24V
- Temperature range : -40 °C ~ 85 °C
- HVIL: Yes
- IP Class: IP67
- Housing material: Steel plate
- Salt spray test: 96h
- Contactor: GIGAVAC
- Fuse: Mersen
- Connector: Amphenol
- Insulated resistance: 1000VDC, ≥100MΩ
- Withstand voltage: 2500V AC, 60s, Leakage current ≤3mA;

## PDU for US customer

### PDU Description:

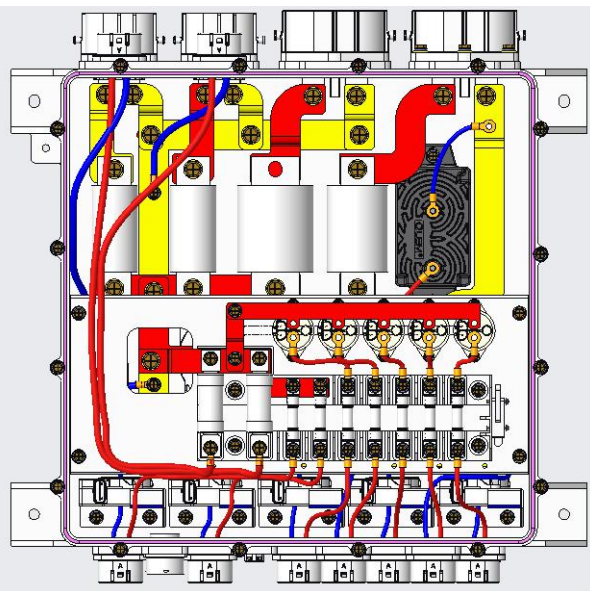
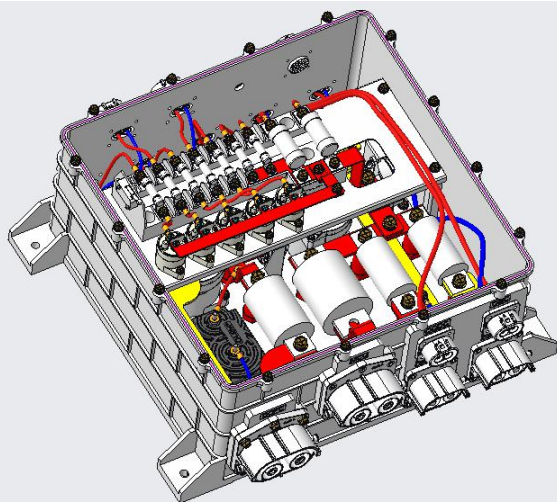
- Application: Insulation Junction Box
- Operating voltage : 800 V DC
- Max current: 80A
- Contact driving voltage: 12&24V
- Temperature range : -40 °C ~ 85 °C
- HVIL: Yes
- IP Class: IP67&IP6K9K
- Housing material: Die casting aluminum
- Salt spray test: 96h
- PCBA: Customer consigned
- Connector: Amphenol
- Insulated resistance: 1000VDC,  $\geq 100M\Omega$   
Withstand voltage: 2500V AC, 60s, Leakage current  $\leq 3mA$ ;



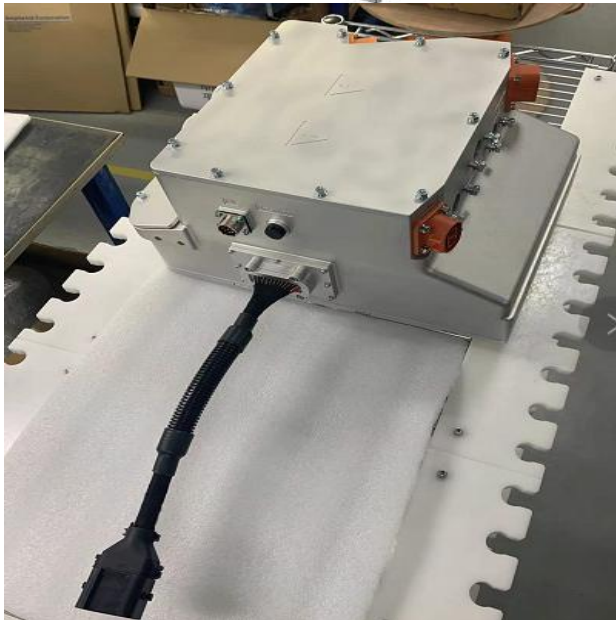
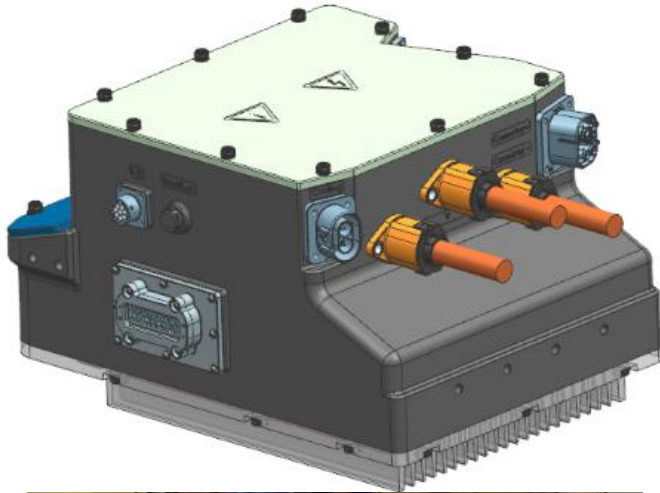
## PDU for US customer

### PDU Description:

- Application: Commercial vehicle
- Operating voltage : 900 V DC
- Max current: 300A
- Contact driving voltage: 24V
- Temperature range : -40 °C ~ 85 °C
- HVIL: Yes
- IP Class: IP67&IP69K
- Housing material: Die casting aluminum
- Salt spray test: 96h
- Fuse: Bussmann
- Current & Voltage Sensor : LEM
- Contactor : YM
- Connector: Amphenol
- Insulated resistance: 1000VDC,  $\geq 100M\Omega$   
Withstand voltage: 2500V AC, 60s, Leakage current  $\leq 3mA$ ;



## PDU for India customer



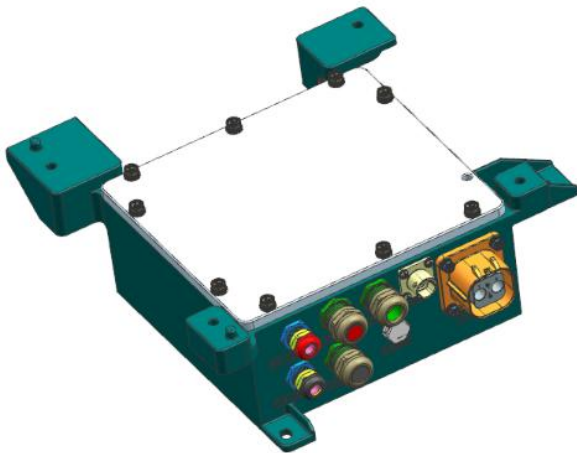
## PDU Description:

- Application: Farm Tractors
- Operating voltage : 120 V DC
- Max current: 200A
- Contact driving voltage: 12V
- Temperature range : -40 °C ~ 85 °C
- HVIL: Yes
- IP Class: IP67
- Housing material: Die-casting aluminum
- Salt spray test: 168h
- Contactor: TE
- Fuse: Bussmann
- Connector: Amphenol
- Insulated resistance: 1000VDC, ≥100MΩ
- Withstand voltage: 1500V AC, 60s, Leakage current ≤3mA;

## PDU for Turkey& Germany

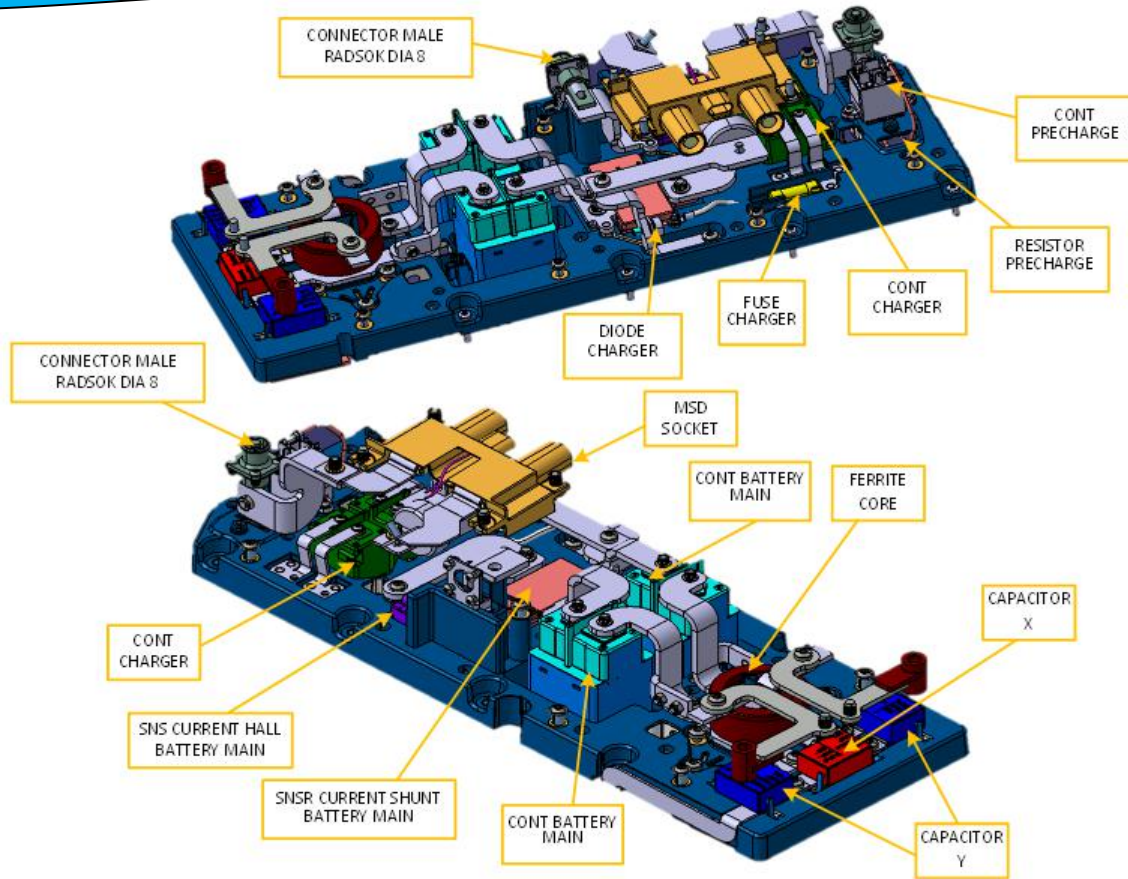
### PDU Description:

- Motorcycle type: Passenger Car
- Operating voltage : 356 V DC
- Max current:70A
- Temperature range : -40 °C~85 °C
- HVIL: Yes
- IP Class: IP67&IP6K9K
- Housing material: Die-casting aluminum
- Salt spray test: 144h
- Fuse: Bussmann
- Connector: Amphenol
- Testing standard: VW 80000
- Insulated resistance: 1000VDC,≥100MΩ  
Withstand voltage: 1500V AC, 60s, Leakage current ≤3mA;





# BDU for UK customer



Overall dimension : 620\*260\*110mm.

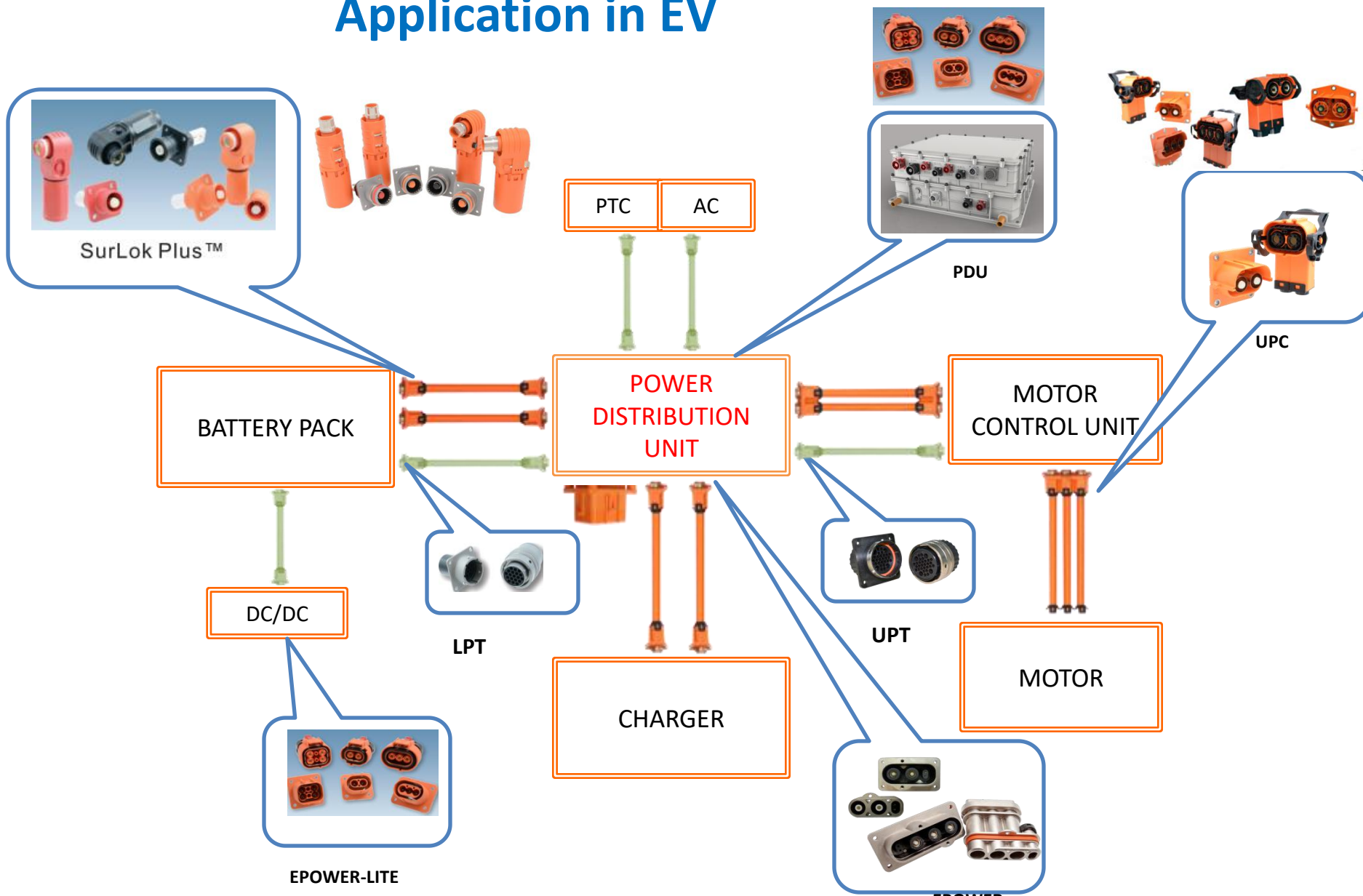
Rating voltage : 750V.

Rating current: 250A.

Battery distribution unit

Application: battery control

# Application in EV



## ➤ Housing & Cover

**CNC Machined aluminum housing & cover for prototype**  
**Welded steel plate housing & cover for prototype**  
**Die casting aluminum for MP.**

## ➤ Busbar

**Copper busbar**  
**Aluminum busbar**  
**In-house Plating :Ni, Tin, Silver, Pressfit PEM nuts.**  
**Insulation: Heat shrink tube, Epoxy ,PVC**

## ➤ Fuse

**Bussmann, Mersen 20A-600A**

## ➤ Sensor

**LEM Current & Voltage sensor**

## ➤ Contactor

**Gigavac , TE, YM, Guoli, Hongfa .etc.. 50A-1500A**

## ➤ Connector

**Amphenol, TE, Aptiv .etc.. 50A-500A**

- CAN module with contactor welded detection
- HV cable harness



**We are 100% test at end of production line :**

**Screw torque and record by computer**

**Dielectric voltage**

**Insulation resistance**

**Contact resistance**

**Contactor on or off**

**Air pressure (IP Rating)**

**Cable length**

**Dimensions and appearance**



## Different customer requires different DVP, Some customer below DVP only for reference :

Test Category	Test Name	Standard
General	Labeling & Marking	ISO 6469-3
	High-Low Temperature Storage	LV 124-2 9.1
Temperature	Incremental Temperature Test	LV 124-2 9.2
	Low Temperature Operation	LV 124-2 9.3
	Repainting Temperature	LV 124-2 9.4
	Temperature Shock	LV 124-2 9.5
	Damp Heat, Cyclic	LV 124-2 9.8
	Damp Heat, Cyclic (with Frost)	LV 124-2 9.9
	Temperature Shock - Immersion	LV 124-2 9.13
	Damp Heat, Constant	LV 124-2 9.14
	Temperature Shock (without housing)	LV 124-2 9.16
	Electrical	Overcurrent Protection
Overvoltage Protection		ISO 6469-1, ISO 12405-
Jump Start		LV 124-1 6.4
Load Dump		LV 124-1 6.5
Reverse Polarity		LV 124-1 6.15
Ground Offset		LV 124-1 6.16
Short Circuit in Signal Circuit and Load Circuits		LV 124-1 6.17
Insulation Resistance		LV 124-1 6.18
Dielectric Strength		LV 124-1 6.20
Mechanical		Free Fall
	Dust Test	LV 124-2 8.3
	Vibration Test (w/ and w/o driving operation)	LV 124-2 8.4
	Mechanical Shock (w/ and w/o driving operation)	LV 124-2 8.5
	Water Protection - IPX0 to IPX6K	LV 124-2 9.10
Sealing	High Pressure Cleaning	LV 124-2 9.11
	Condensation and Climate Test	LV 124-2 9.15
Corrosive	Salt Spray test with operation, exterior	LV 124-2 9.6
	Humidity	tbd.
Chemical	Moisture Resistance Test	tbd.
	Chemical Test (Related Fluids such as ID14, applicatio	LV 124-2 10
Service-Life	Flammable and Explosive Environments	tbd.
	Life Test - High- Temperature Endurance Test	LV 124-2 11.2
	Life Test - Temperature Cycle Test	LV 124-2 11.3

### Sequential DV Testing

Electrical Tests - CES14269/14270:	Requirement
High Voltage Dielectric	IEC60664 6.1.2.2.2.3 IEC60664 6.1.3.6 CES 14269 4.8
Environmental - CES14311/ISO16750	Requirement
Water Immersion	CES 14311 5.26
Temp Cycling Durability	CES 14311 5.6
Temperature Shock (Air/air)	CES 14311 5.7
Salt Spray/Salt Fog	CES 14311 5.16
Dust	CES 14311 5.21
Gravel Bombardment	CES 14311 5.22
Drop	CES 14311 5.23
Mechanical Shock	ISO16750-3 4.2.2
Vibration	ISO16750-3 Test VII
Combined Environment	CES 14311 5.32
Harness Pull	CES 14311 5.25
Humidity	CES 14311 5.12
High Pressure Wash	CES 14311 5.14
Chemical Resistance	CES 14311 5.17
High Temp/Life	CES 14311 5.4
Storage Temp	CES 14311 5.3
Seal Pressure Test	CES 14311 5.27

