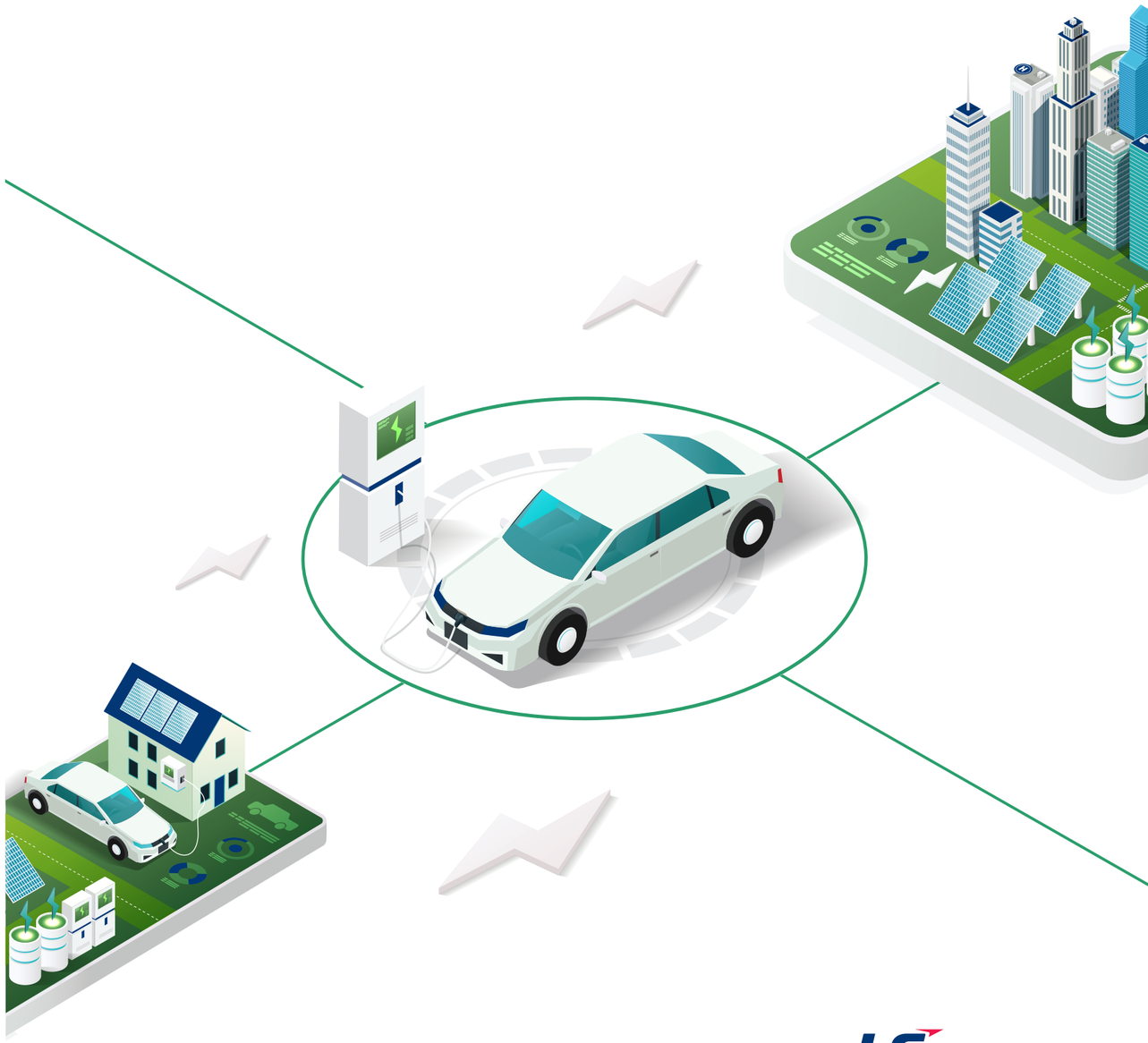
LS EV Korea

# LS EV KOREA PRODUCT CATALOG

Enhancing Value with Leading Connectivity Solutions



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LS EV Korea

# CONTENTS




# ABOUT LS GROUP

LG

- LG Electronics
- LG Energy Solution
- LG Display
- LG U+

GS

- GS Caltex
- GS Retail
- GS E&C
- GS Home-Shopping

LS

- LS ELECTRIC — Electric & Automated Equipment
- LS Mtron — Mechanical & Electronic Parts
- LS MnM — Copper Cathodes
- LS Cable & System — Transmission & Distribution Cable, Submarine Cable, Telecommunication Cable, Industrial Cable, Industrial Material
- GAON — Power & Communication Cables
- E1 — LPG
- yesco holdings — City Gas
- LS EV Korea
  - HV Harness & Connector
  - Flexible Busbar
  - ESS Components
  - EV Charging Connector
- LS EV Poland
  - Battery Pack Components (ICB & BFA)
- LS EV Mexico
  - Battery Pack Components
  - ESS Components
  - PDC
- LS Cable & System (Wuxi)
  - HV Harness & Connector
  - Battery Pack Components
  - ESS Components

LS Group, which spun off from LG in 2003 to specialize in Electrics, Electronics, Energy, and Materials, now comprises approximately 40 affiliated companies, including LS Cable & System, LS Electric, LS MnM, LS Mtron, Gaon, E1, and Yesco.

In 2017, LS EV Korea emerged from LS Cable & System Ltd., targeting the burgeoning electric vehicle components sector as a new growth avenue within the LS Group.

The recent corporate restructuring highlights the company's dedication to improving management efficiency in rapidly growing markets while upholding a more accountable and transparent management structure.

Our leadership is poised to take bold steps to advance our businesses and uncover new growth opportunities. The holding company will spearhead the pursuit of innovative growth engines and lucrative investment prospects, while our other business units concentrate on optimizing management and operational efficiency.

# HISTORY

As a pioneer in the EV market, LS EV Korea has evolved into a global company that provides leading connectivity solutions. Driven by a commitment to quality, sustainability, and customer satisfaction, LS EV Korea continually sets new industry standards. With an unwavering focus on research and development, the company is poised to shape the future of electric mobility and connectivity solutions.

**2003**
**LS Cable & System Harness and Module Division Established**

**2007**
**1st 75A HV Connector**

**2011**
**Hyundai Motors** (HV Connector & Harness)

**2012**
**BDNT** (HV Connector & Harness)
**LGES/Volvo** (Flexible Busbar & MSD)
**LGES/Renault** (Sensing Housing & Harness)

**2013**
**LGES** (Industrial ESS BPU)

**2015**
**Guangzhou Motors** (HV Harness)

**2016**
**Beijing Motors** (HV Harness)

**2017**
**LS EV KOREA ESTABLISHED**
**BYD** (HV Connector)

**2018**
**LS EV POLAND ESTABLISHED**
**LGES/Volkswagen** (BFA)
**LGES/BMW** (ICB)
**Volvo** (Flexible Busbar & MSD)

**2020**
**LGES/Omron** (Residential BPU)

**2021**
**LGES/Ford** (BFA)

**2022**
**Hyundai Mobis** (Hybrid Busbar)
**Rivian** (Busbar Overmold)
**BYD/Toyota** (HV Connector)

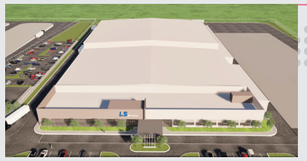
**2023**
**Stellantis** (PDC)
**Ultra Fast Charging Connector** (CCS1 500A)

**2024**
**LGES/Honda** (BFA)
**LGES/Toyota** (BFA)
**Powerlogics/Renault** (CCS)
**Ultra Fast Charging Connector** (NACS 500A)
**DC Fast Charging Connector** (CCS1 250A)

**2025**
**LS EV MEXICO OPENING**

# GLOBAL NETWORK

To ensure comprehensive global coverage and enhance the overall production capabilities of electric vehicles, it is crucial to establish production footprints in key EV markets. By strategically positioning production facilities in major regions worldwide, manufacturers can significantly improve the speed and efficiency of their production processes. LS EV Korea, with its presence across major continents, is well-positioned to effectively serve both the EV and energy storage system markets.



## LS EV MEXICO

**LOCATION** Queretaro, Mexico
**SIZE** Land 66,000㎡ / Building 19,260㎡
**PRODUCTS** Battery Pack Components, ESS Components, PDC

## LS EV POLAND

**LOCATION** Dzierzoniow, Poland
**SIZE** Land 26,041㎡ / Building 14,080㎡
**PRODUCTS** Battery Pack (ICB, BFA), HV Harness

## LS EV KOREA

**LOCATION** Gunpo, Gyeonggi, Korea
**SIZE** Land 2,735㎡ / Building 7,133㎡
**PRODUCTS** HV Connector & Harness
Battery pack, ESS products
**FUNCTION** HQ, Global R&D, Sales & Marketing

## LS CABLE & SYSTEMS WUXI

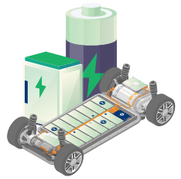
**LOCATION** Wuxi, China
**SIZE** Land 89,322㎡ / Building 34,415㎡
**PRODUCTS** HV Connector & Harness
Automotive Wire & Busduct

# RESEARCH & DEVELOPMENT

The R&D division of LSEVK is at the forefront of innovation in the electric vehicle (xEV) component industry. Through the development of cutting-edge technologies, the highest standards of product quality and reliability are guaranteed. With expertise in critical components such as battery modules and packs, high-voltage connectors, charging connectors, BDUs, and PDCs. Our ongoing commitment to research and innovation drives the expansion of our influence in the global market.

## CORE RESEARCH AREAS

**We are committed to providing advanced connectivity solutions for the electric vehicle (EV) and energy storage system (ESS) industries**



### BATTERY MODULE CONNECTION

- Battery Connectivity solution based on various battery form factor
- Advanced safety technologies that minimize the risk of fires and explosions
- Products : BFA, CCS & HV Busbar

### POWER DISTRIBUTION AND PROTECTION

- Safe Distribution of high current and voltage
- Integrated Modular Design
- Products : PDC, BDU & Junction Box

### HV CONNECTORS & CHARGING INTERFACE

- Reliable electric transmission and charging interface
- Various protections against harsh conditions
- Products: HV Connectors, EV Charging connectors & Inlet

## KEY ACHIEVEMENTS

**INNOVATIVE PATENTS**

- Over 100 innovative patents have been acquired to date, securing a competitive technological edge in key areas.
- Major patent fields include high-voltage connectors, charging connectors, BFA (FPCB) manufacturing technology, BDUs, PDCs, and BUSBAR designs.

**GLOBAL COLLABORATION**

- Conducting cutting-edge research in collaboration with leading research institutions and prestigious universities both domestically and internationally.
- Partnerships with global OEMs are accelerating the development and commercialization of new technologies.
- Key partners include LG Energy Solution, SK On, VW, Stellantis, BYD, Rivian, Volvo, GM, RKM and HKMC



# SUSTAINABILITY MANAGEMENT

**LS EV Korea is deeply committed to Corporate Social Responsibility (CSR), integrating sustainable practices into every aspect of our operations. We strive to lead in driving innovation that not only enhances our industry but also contributes positively to society. By focusing on creating value for communities and minimizing our environmental footprint, we are dedicated to fostering a sustainable future where both business and society can thrive in harmony.**

## E
## ENVIRONMENTAL

- RE100 goal by 2030; Net Zero goal by 2050.
- Expanding usage of renewable energy and strengthening the resource circulation system.
- ECOVADIS: Silver Rating (2023)

## S
## SOCIAL

- Emphasizing safety and cultivating a positive workplace environment
- Encouraging gender diversity and inclusivity.
- ‘LS Supporters’ empowering underprivileged local communities with contributions and support

## G
## GOVERNANCE


- Maintaining high ethical standards and build a culture of compliance
- Developing a robust ESG management framework
- Ensuring a clear and open decision-making process

LS EV KOREA

# PRODUCT PORTFOLIO

11 **ELECTRIC VEHICLES**

**BATTERY MODULE CONNECTION COMPONENTS**
BFA(Busbar Frame Assembly)
CCS(Cell Contacting System)

**POWER DISTRIBUTION & PROTECTION COMPONENTS**
PDC(Power Distribution Center)
BPU(Battery Disconnect Unit)

**HIGH VOLTAGE CONNECTORS**
20A Series / 40A Series /
Pass Through

**BUSBAR**
Flexible / Flat Wire / Hybrid

34 **ENERGY STORAGE SYSTEM**

**ESS BATTERY PACK COMPONENTS**
BPU(Battery Protection Unit)
Sensing Housing Assembly
Wiring Harness

37 **EV CHARGING**

**EV CHARGING CONNECTOR AND CABLE**
Inlet
Ultra Fast Charging Connector
DC Fast Charging Connector



PRODUCT PORTFOLIO

# ELECTRIC VEHICLES

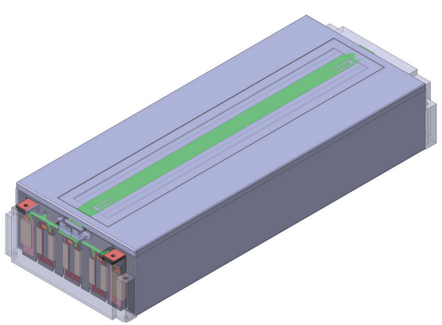
LS EV Korea enhances the future with seamless connectivity solutions for electric vehicles.

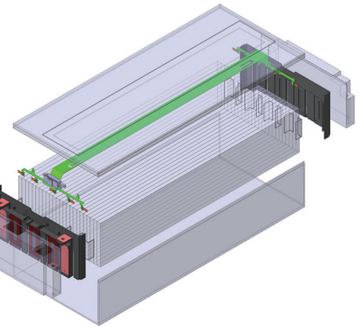
ELECTRIC VEHICLES

# Battery Module Connection Components

Battery Module Components provides a Connection Structure allowing for current conduction, cell voltage measurement, and temperature monitoring within modules by connecting cells in High-voltage battery for Electric Vehicles

## BFA (Busbar Frame Assembly)





### FEATURES

- Module connecting battery cells
- Voltage and temperature sensor
- Space optimization through application of FPCB

### DESCRIPTION

- Optimized design for battery module space with various shapes
- Removal of wiring harness with FPCB (Flexible Printed Circuit Board) for cost optimization
- Applied with Fuses for damage prevention of battery module from overcurrent

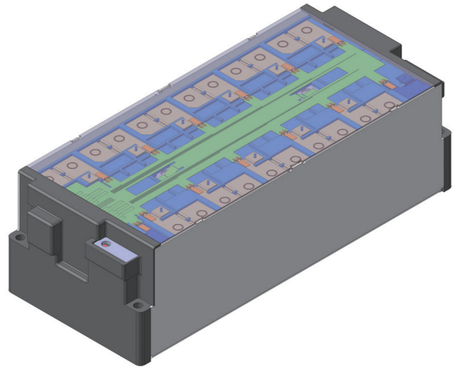
### SPECIFICATIONS

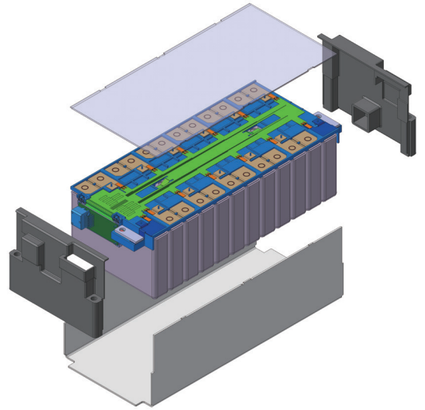
| | |
|---|---|
| Operating Temperature | -40℃~80℃ |
| Battery Form Factor | Pouch cell |
| Battery Configuration | 3P8S/2P12S or Sizes available to suit customer requirements |
| Dimensions | 536 X 216 X 103 or Sizes available to suit customer requirements |





## CCS (Cell Contacting System)





### FEATURES

- Module connecting battery cells
- Voltage and temperature sensor
- Space optimization through application of FPCB

### DESCRIPTION

- Space-optimized battery module design adaptable to various shapes
- Cost optimization achieved by replacing wiring harnesses with FPCB
- Fuse integration for battery module protection against overcurrent damage

### SPECIFICATIONS

| | |
|---|---|
| Operating Temperature | -40℃~80℃ |
| Battery Form Factor | Prismatic cell |
| Battery Configuration | 1P12S or Sizes available to suit customer requirements |
| Dimensions | 152 X 360 X 110 or Sizes available to suit customer requirements |

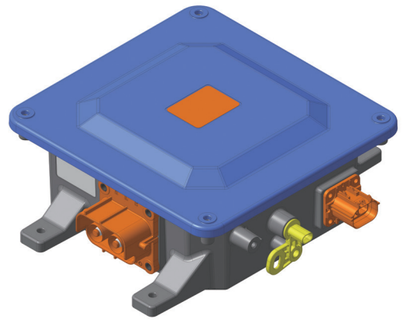
ELECTRIC VEHICLES

# Power Distribution / Protection Components

Power distribution and protection components in electric vehicles manage the allocation of power from the battery to various systems, ensuring appropriate voltage and current levels. These components also safeguard the electrical systems from potential damage caused by abnormal overcurrent.

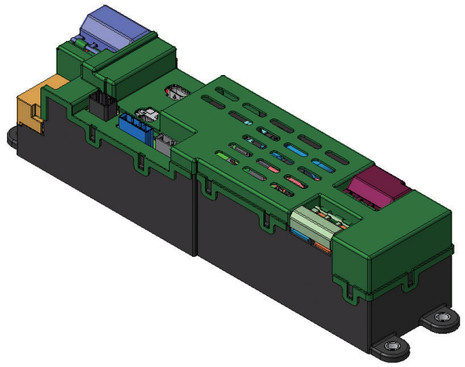
## PDC (Power Distribution Center)

- Design space optimization to meet customer requirements
- Optimize battery performance and applies stable operation and protection technology for dangerous situations
- Integrated Components including connectors, fuses, terminals and busbars



## BDU (Battery Disconnect Unit)

- Offers advanced power solutions to achieve efficiency and power density
- Integrated components including HV relays, pre-charge circuit, fuses, current sensors & etc.
- Thermally optimized busbar layout design



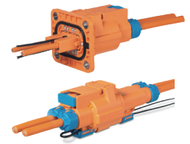


ELECTRIC VEHICLES

# High Voltage Connectors

High Voltage Connectors are utilized to link the high voltage power supply of electric vehicles to various components, such as the battery pack, inverter, and motors.

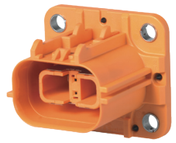
PRODUCT LINE UP

| Application | Item | Picture | Specification | |
|---|---|---|---|---|
| PTC, A/C Comp, OBC, Battery Pack, PDU & Others | 20A 2P |  | Current | 20A |
| | | | Voltage | Up to1,000V |
| | | | Wire Range | 1.25SQ, 3SQ, 4SQ |
| | 20A 3P |  | Current | 20A |
| | | | Voltage | Up to 1,000V |
| | | | Wire Range | 1.25SQ, 3SQ, 4SQ |
| | 40E 2P |  | Current | 40A |
| | | | Voltage | Up to 1,000V |
| | | | Wire Range | 3SQ, 6SQ |
| | 40E 4P |  | Current | 40A |
| | | | Voltage | Up to 1,000V |
| | | | Wire Range | 3SQ, 5SQ |
| J/BOX, PTC, A/C Comp, OBC, Battery Pack, PDU | AP020A 2P Pass Through |  | Current | 20A |
| | | | Voltage | Up to 1,000V |
| | | | Wire Range | 3SQ |
| | UE125A 2P,3P Pass Through |  | Current | 125A |
| | | | Voltage | Up to 1,000V |
| | | | Wire Range | 25SQ, 35SQ, 50SQ |

# 20A Series : 20A 2P

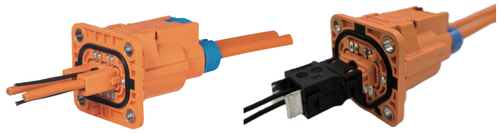
## WIRE TO UNIT

MALE



FEMALE

ASSEMBLED



## WIRE TO WIRE

MALE

FEMALE

ASSEMBLED

## APPLICATION

- High Voltage AC/DC Connections
- PTC, A/C Comp, OBC, Battery Pack & Others

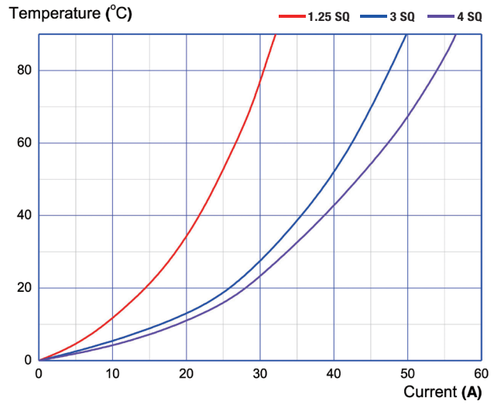
## KEY FEATURES

- USCAR 2/USCAR 37/USCAR 21
- HVIL
- 2 Step Disconnection for safe unmating

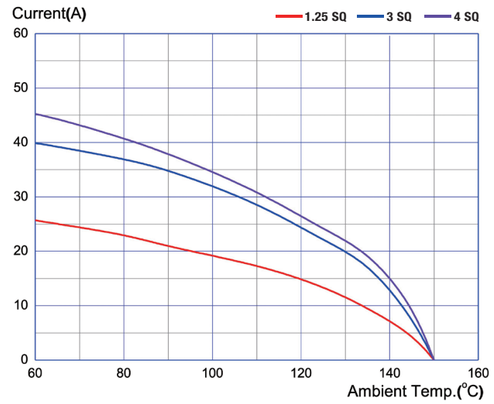
## TECHNICAL DATA

| Specification | | Value |
|---|---|---|
| Mechanical | Connection Type | Wire to Unit & Wire to Wire |
| | Terminal Size | HV: 2.8mm Terminal<br>Interlock: 0.63mm Terminal |
| | Cable | 1.25/3.0/4.0SQ Single Core Wire<br>Shield & Non-shield Wire required |
| | Finger Protection | IP2XB (Unmated) |
| | CPA Release | Type 1 : By finger<br>Type 2 : By Tool |
| | Multiple Key Codes | LB/LT/RB/RT (4 Types) |
| | Unit connector Type | Type A,B: Cable, Type C: Terminal(2.8x0.8) |
| Electrical | Voltage | Up to 1,000V |
| | Current | 20A |
| Environmental | IP Rating | IP67/IP69K (mated) |
| | Operating Temperature | -40℃ ~ 125℃ |

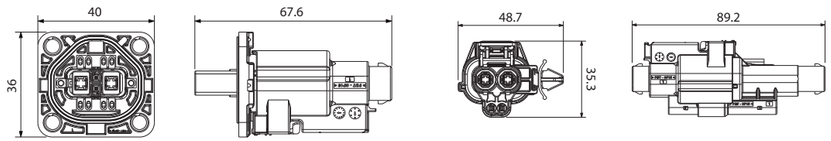
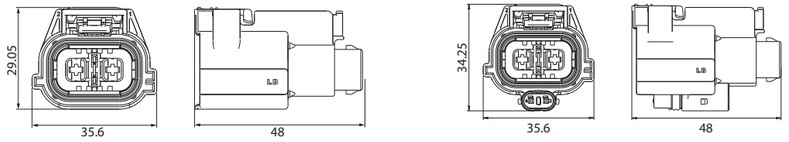
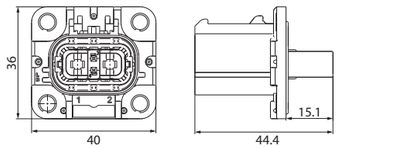
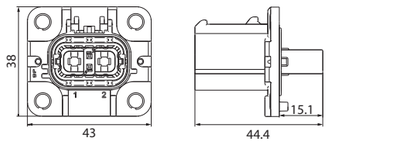
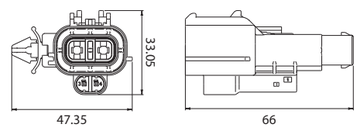
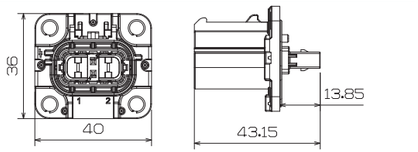
## TEMPERATURE RISING




## DERATING CURVE



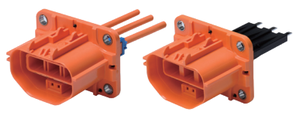

## CONNECTOR SIZE

| Specification | | Wire to Unit | Wire to Wire |
|---|---|---|---|
| Connector Assembly | |  | |
| Female Connector | |  |  |
| Male Connector | Type A |  | |
| | Type B |  |  |
| | Type C |  | |

# 20A Series : 20A 3P

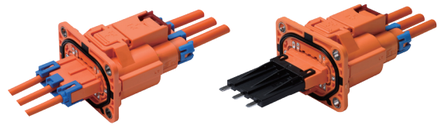
## WIRE TO UNIT

MALE



FEMALE

ASSEMBLED



## WIRE TO WIRE

MALE

FEMALE

ASSEMBLED

## APPLICATION

- High Voltage AC/DC Connections
- PTC, A/C Comp, OBC, Battery Pack & Others

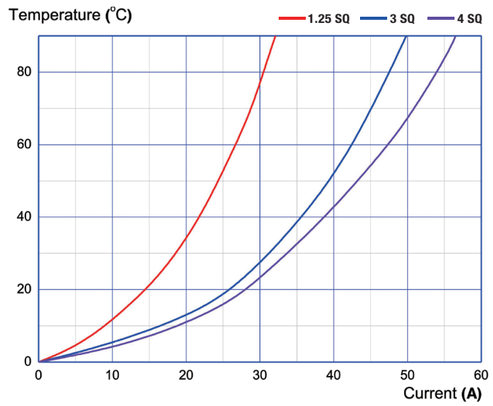
## KEY FEATURES

- USCAR 2/USCAR 37/USCAR 21
- HVIL
- 2 Step Disconnection for safe unmating

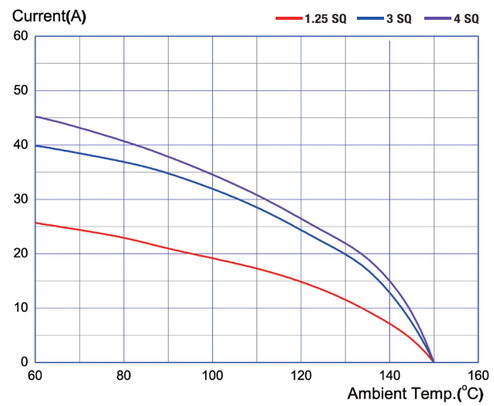
## TECHNICAL DATA

| Specification | | Value |
|---|---|---|
| Mechanical | Connection Type | Wire to Unit & Wire to Wire |
| | Terminal Size | HV : 2.8mm Terminal<br>Interlock : 1.2mm Terminal |
| | Cable | 1.25/3.0/4.0SQ Single Core Wire<br>Shield & Non-shield Wire required |
| | Finger Protection | IP2XB (Unmated) |
| | CPA Release | Type 1 : By finger<br>Type 2 : By Tool |
| | Multiple Key Codes | LB/LT (2 Types) |
| | Unit connector Type | Type 1: Cable, Type 2: Terminal(2.8x0.8) |
| Electrical | Voltage | Up to 1,000V |
| | Current | 20A |
| Environmental | IP Rating | IP67/IP69K (mated) |
| | Operating Temperature | -40℃ ~ 125℃ |

## TEMPERATURE RISING



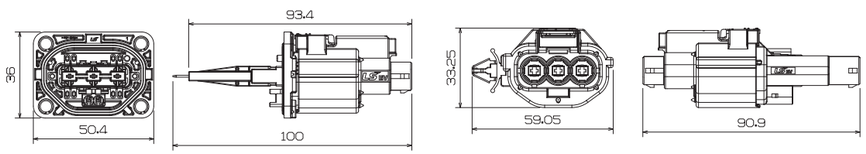

## DERATING CURVE




## CONNECTOR SIZE

| Specification | Wire to Unit | Wire to Wire |
|---|---|---|

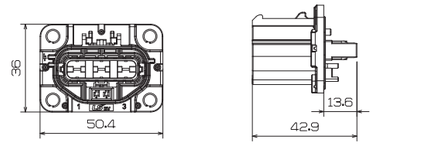
Connector Assembly



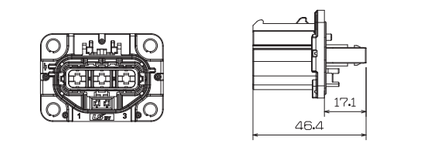

Female

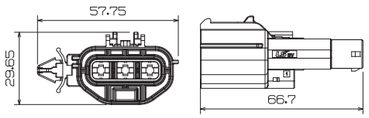

Male

Type 1




Type 2



# 40A Series : 40E 2P

| MALE | FEMALE | ASSEMBLED |
|---|---|---|
|  |  |  |

## APPLICATION

- High Voltage AC/DC Connections
- PTC, A/C Comp, OBC, Battery Pack & Others

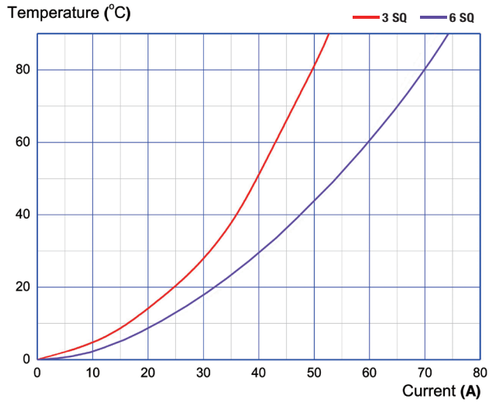
## KEY FEATURES

- USCAR 2/USCAR 37/USCAR 21
- HVIL
- 2 Step Disconnection for safe unmating

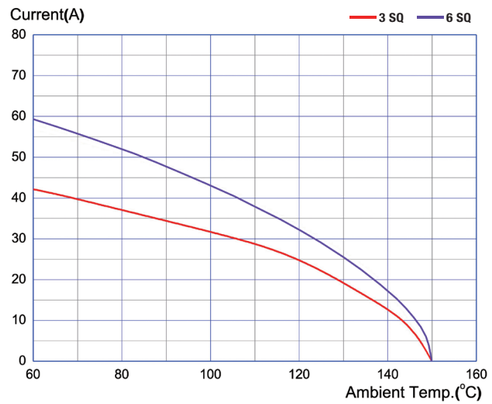
## TECHNICAL DATA

| Specification | | Value |
|---|---|---|
| Mechanical | Connection Type | Wire to Unit |
| | Terminal Size | HV: 6.3mm Terminal<br>Interlock: 1.5mm Terminal |
| | Cable | 3.0/6.0SQ Single Core Wire<br>Shield & Non-shield Wire required |
| | Finger Protection | IP2XB (Unmated) |
| | CPA Release | Type 1 : By Finger<br>Type 2 : By Tool |
| | Multiple Key Codes | LB/LT/RB/RT (4 Types) |
| Electrical | Voltage | Up to 1,000V |
| | Current | 40A |
| Environmental | IP Rating | IP67/IP69K (mated) |
| | Operating Temperature | -40℃ ~ 125℃ |

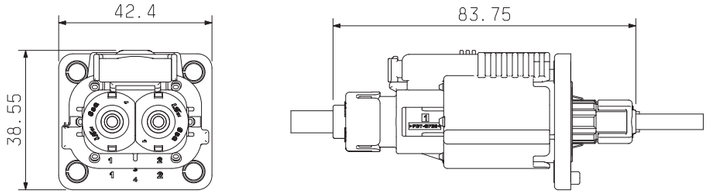
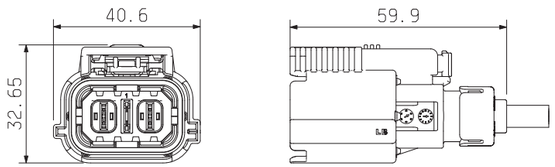
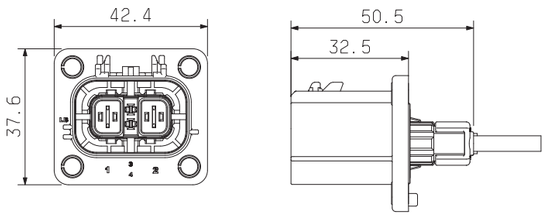
## TEMPERATURE RISING




## DERATING CURVE




## CONNECTOR SIZE

| Specification | Wire to Unit |
|---|---|
| Connector Assembly |  |
| Female Connector |  |
| Male Connector |  |

# 40A Series : 40E 4P

| MALE | FEMALE | ASSEMBLED |
|---|---|---|
|  |  |  |

## APPLICATION

- High Voltage AC/DC Connections
- PTC, A/C Comp, OBC, Battery Pack & Others

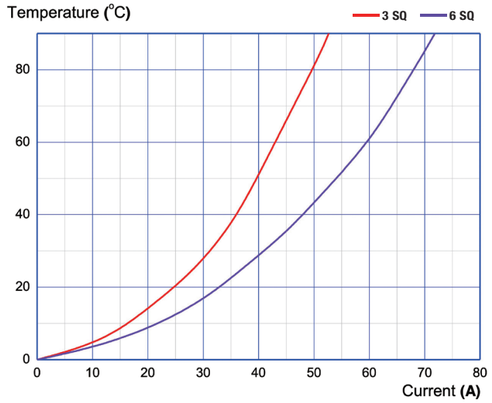
## KEY FEATURES

- USCAR 2/USCAR 37/USCAR 21
- HVIL
- 2 Step Disconnection for safe unmating

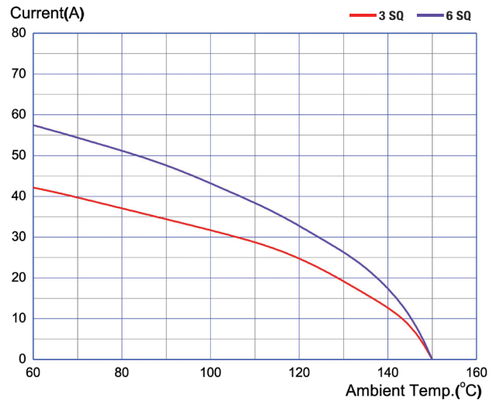
## TECHNICAL DATA

| Specification | | Value |
|---|---|---|
| Mechanical | Connection Type | Wire to Unit |
| | Terminal Size | HV: 6.3mm Terminal<br>Interlock: 1.2mm Terminal |
| | Cable | 3.0/5.0SQ Single Core Wire<br>Shield & Non-shield Wire required |
| | Finger Protection | IP2XB (Unmated) |
| | CPA Release | By finger |
| | Multiple Key Codes | LB/LT/RB/RT (4 Types) |
| Electrical | Voltage | Up to 1,000V |
| | Current | 40A |
| Environmental | IP Rating | IP67/IP69K (mated) |
| | Operating Temperature | -40℃ ~ 125℃ |

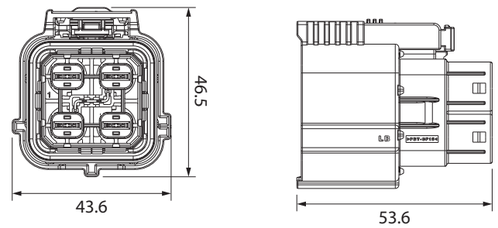
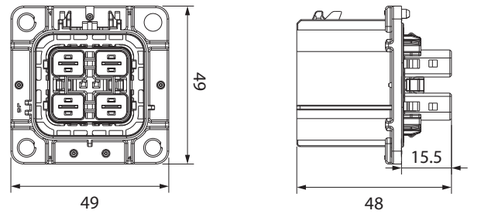
## TEMPERATURE RISING



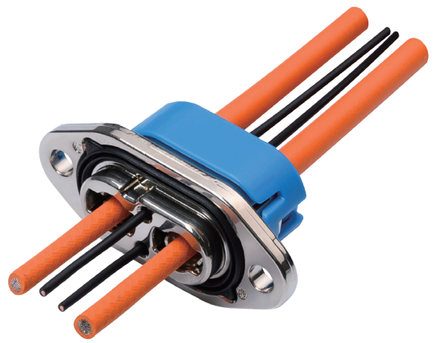

## DERATING CURVE



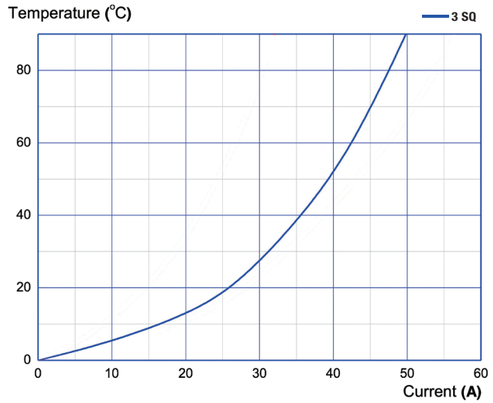

## CONNECTOR SIZE

| Specification | Wire to Unit |
|---|---|
| Connector Assembly |  |
| Female Connector |  |
| Male Connector |  |

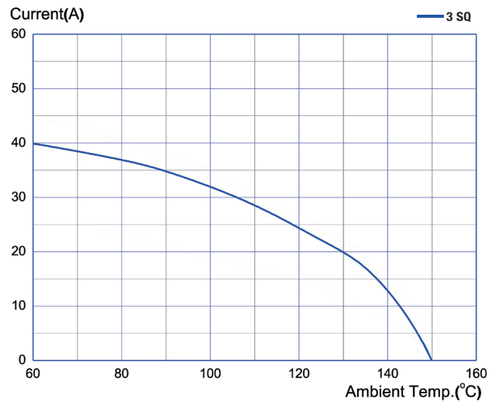
# Pass Through : AP020A 2P



## TEMPERATURE RISING




## DERATING CURVE




## CONNECTOR SIZE

| Specification | Wire to Unit |
|---|---|

## APPLICATION

- High Voltage AC/DC Connections
- Batteries, Junction Box, PTC Heater, AC comp, Inverter and etc.

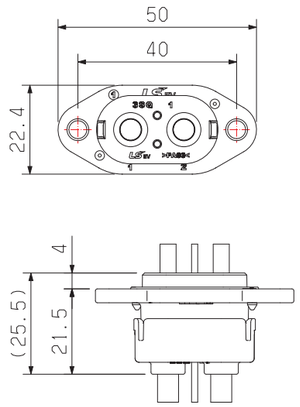
## KEY FEATURES

- HVIL

## TECHNICAL DATA

| Specification | | Value |
|---|---|---|
| Mechanical | Connection Type | Pass Through (Eyelet Connector) |
| | Cable | 3SQ Single Core Wire<br>Shielding Wire Required |
| | Multiple Key Codes | 1 Types |
| Electrical | Voltage | Up to 1,000V |
| | Current | 20A |
| Environmental | IP Rating | IP67/IP69K (Fastened) |
| | Operating Temperature | -40℃ ~ 125℃ |

## Connector Assembly



# Pass Through : UE125A 2P/3P

*Pass-through is only available for customized options

## UE125A 2P

## UE125A 3P

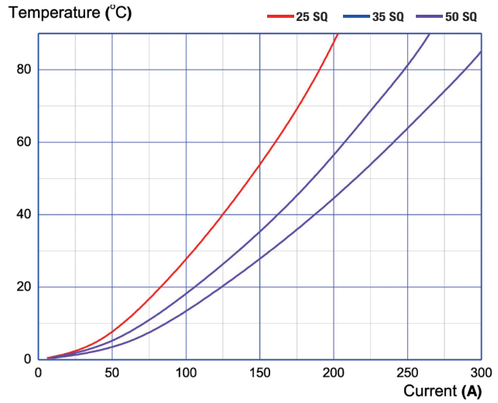
## APPLICATION

- High Voltage AC/DC Connections
- Batteries, Junction Box, Inverter and Others.

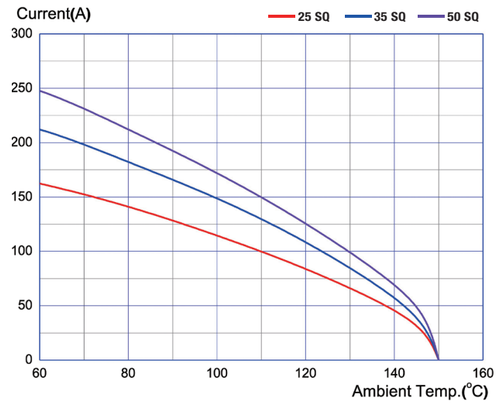
## TECHNICAL DATA

| Specification | | Value |
|---|---|---|
| Mechanical | Connection Type | Pass Through (Eyelet Connector) |
| | Cable | 25/35/50SQ Single Core Wire<br>Shielding Wire Required |
| | Multiple Key Codes | L/R/CL (3 Types) |
| Electrical | Voltage | Up to 1,000V |
| | Current | 125A |
| Environmental | IP Rating | IP67/IP69K (Fastened) |
| | Operating Temperature | -40℃ ~ 125℃ |

## TEMPERATURE RISING




## DERATING CURVE




## CONNECTOR SIZE

| Specification | Wire to Unit |
|---|---|

Connector Assembly

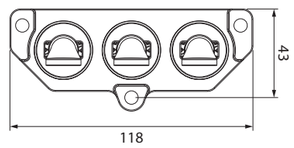
2P

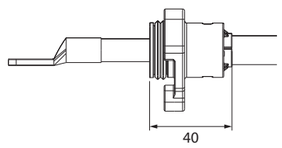






3P(A)



ELECTRIC VEHICLES

# Busbar

A Conductive Bar or Strip used to distribute electrical power efficiently within the vehicle. Busbars are integral in managing the flow of electricity between different components such as the battery, inverter and electric motor.

## PRODUCT LINE UP

| | Flexible | Flat Wire | Hybrid |
|---|---|---|---|
| Image |  |  |  |
| Process | Manual | Semi-Automation (Extrusion) | Application Depending On Shape |
| Insulation | TPE (Thermal Plastic Elastomer) | PA12 (Nylon) | Application Depending On Shape |
| Material | Copper | Copper | Copper |
| Plating Option | Nickel Tin | Tin | Silver Nickel Tin |
| Difference | - No Need Tooling Cost<br>- High Flexibility | - No Need Tooling Cost<br>- Automated Bending Process | Different Characteristics Depending On Shape |

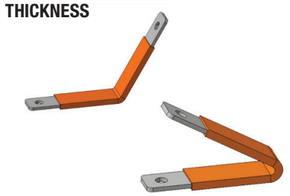


ELECTRIC VEHICLES

# Flexible Busbar

## AVAILABLE BENDING TYPES

THICKNESS

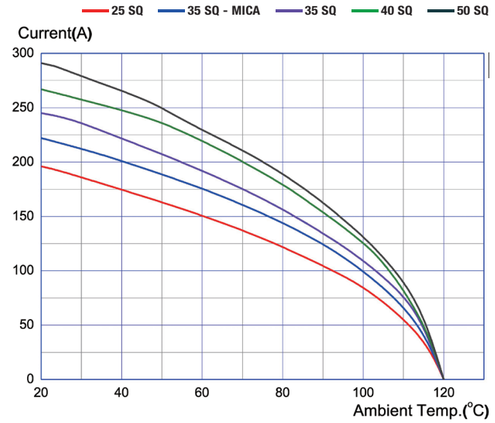


TWIST

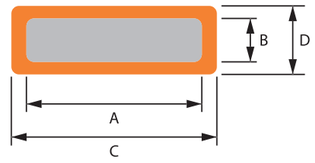
## KEY FEATURES

- High Flexibility & Operating Efficiency For Connection
- Optimized Design Application For Battery Pack Structure
- No Tooling Cost

## DERATING CURVE




## DIMENSION




## TECHNICAL DATA

| SQ | Type | Layers (0.25t) [PCS] | Conductor | | Insulation | | Resistance |
|---|---|---|---|---|---|---|---|
| | | | A±0.2 | B±0.05 | C±0.5 | D±0.2 | @23℃ |
| | | | [mm] | | | | [μΩ/m] |
| 25 | 15.0(w)X1.75(t) | 7 | 15 | 1.75 | 17.5 | 4.6 | 0.700 |
| 35 | 15.0(w)X2.50(t) | 10 | 15 | 2.5 | 17.5 | 5.5 | 0.480 |
| | 18.0(w)X2.00(t) - MICA | 8 | 18 | 2.0 | 20.5 | 4.8 | 0.516 |
| 40 | 18.0(w)X2.50(t) | 10 | 18 | 2.5 | 20.5 | 5.2 | 0.400 |
| 50 | 18.0(w)X5.00(t) | 12 | 18 | 3.0 | 20.5 | 5.8 | 0.325 |

* Optional

# Flat Wire Busbar

## AVAILABLE BENDING TYPES

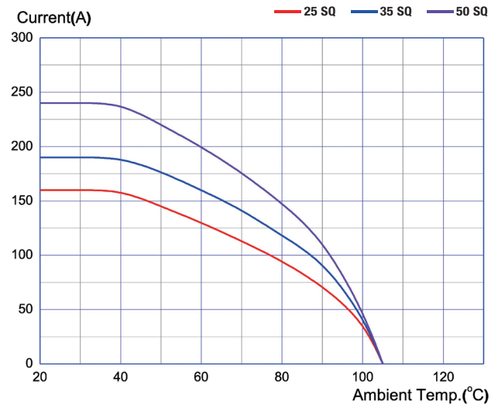
**STRAIGHT**

**TWIST**

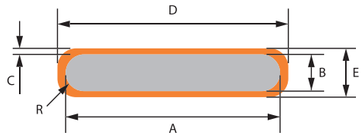
## KEY FEATURES

- Operating Efficiency For Connection
- Optimized Design Application For Battery Pack Structure
- No Tooling Cost

## DERATING CURVE




## DIMENSION




## TECHNICAL DATA

| SQ | Conductor | | Insulation | | Overall | |
|---|---|---|---|---|---|---|
| | A±0.1 | B±0.05 | R±0.15 | C±0.5 | D | E |
| | [mm] | | | | | |
| 25 | 12.0 | 2.2 | 1.0 | 0.5 | 13.0 | 3.5 |
| 35 | 12.0 | 3.0 | 1.0 | 0.5 | 13.0 | 4.0 |
| | 15.5 | 2.5 | 1.3 | 0.5 | 16.5 | 3.5 |
| 50 | 15.5 | 3.5 | 1.8 | 0.5 | 16.5 | 4.5 |
| 60 | 18.0 | 3.5 | 1.8 | 0.6 | 19.2 | 4.7 |

| SQ | Conductor | | Insulation | | Overall | |
|---|---|---|---|---|---|---|
| | A±0.1 | B±0.05 | R±0.15 | C±0.5 | D | E |
| | [mm] | | | | | |
| 70 | 18.0 | 4.0 | 2.0 | 0.6 | 19.2 | 5.2 |
| 80 | 20.0 | 4.0 | 2.0 | 0.6 | 21.2 | 5.2 |
| 90 | 20.0 | 4.5 | 2.3 | 0.6 | 21.2 | 5.7 |
| 100 | 20.0 | 2.5 | 2.5 | 0./8 | 21.6 | 6.6 |
| 125 | 25.0 | 2.5 | 2.5 | 0.8 | 26.6 | 6.6 |

* Cross section can be customized up to 150SQ
* Tin plating and non-insulation are optional





# Hybrid Busbar

## KEY FEATURES

- High Flexibility & Operating Efficiency For Connection
- Optimized Design Application For Battery Pack Structure

## BRAZING METAL JOINING

- Connection Available For
  - Rigid Busbar + Flexible Busbar + Flat Wire

PRODUCT PORTFOLIO

# ENERGY STORAGE SYSTEM

Superior protection and reliable battery performance guaranteed with
LS EV Korea’s connectivity solutions for energy storage systems

ENERGY STORAGE SYSTEM

# ESS Battery Pack Components

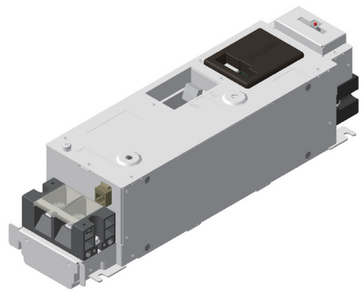
**Our product range includes customized connectivity solutions such as, Battery Protection Unit(BPU), Sensing Housing Assembly, and Wiring Harness ensuring optimal performance, safety, and reliability of energy storage system.**

## BPU (Battery Protection Unit)

Battery Protenction Unit (BPU) oversees the status of the Energy Storage System (ESS) battery and interrupts power flow to regulate battery charging or discharging, ensuring system protection through the power conversion system.

### GRID

### RESIDENTIAL

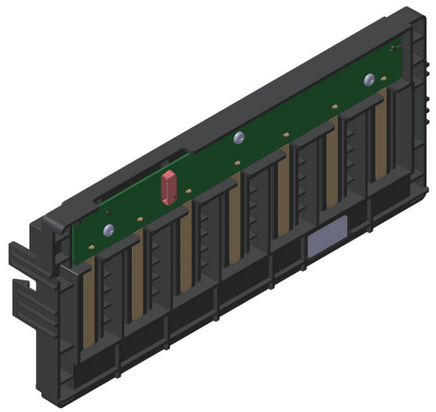


### DESCRIPTION

- Protection of Battery Systems
- BMS integration for controlling Battery modules
- System protection & performance monitoring
- Develops and produces Grid BPU 1,000~1,500V range and Residencial BPU 100~250V
- Integrated components including HV relays, pre-charge circuit, fuses, current sensors & etc.

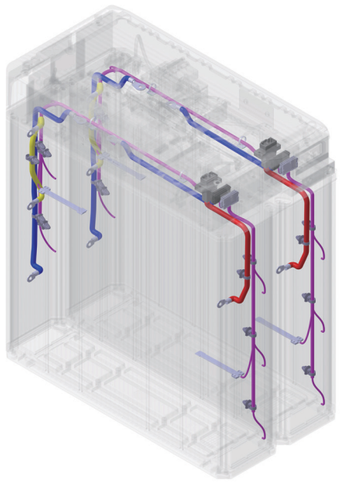
# Sensing Housing Assembly

- Provide a connection structure for measuring the voltage of the battery cell
- Customized design based on the form factor and interface of the battery module and pack



# Wiring Harness

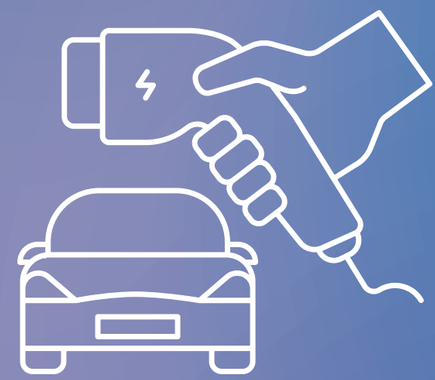
- Optimized routing for various battery pack configurations
- Validate reliability performance for terminals in accordance with USCAR-21 standard





PRODUCT PORTFOLIO

# EV CHARGING



LS EV Korea's specialized EV charging solutions with Advanced Ultra Fast Charging technology

# Inlet

The DC inlet in electric vehicles are used as an Interface enabling efficient, rapid charging from high-capacity stations, reducing charging time and enhancing performance.

## CCS1

### DESCRIPTION

- Available for Custom Development
- Front IP55 / Rear IP67 with Waterproof / Dustproof
- Designed for Replaceable DC Cable / Emergency Release Cable
- Specification guideline applied: SAE J1772, IEC 62196-1, IEC 62196-2, IEC 62196-3

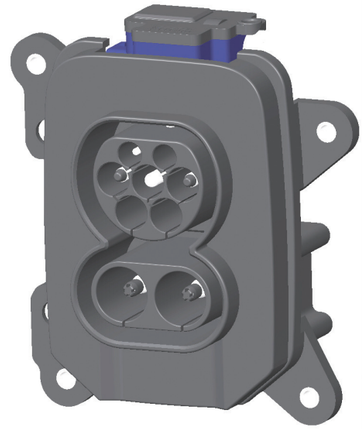
### TECHNICAL DATA

| Specification | | Value |
|---|---|---|
| General | Voltage Rating | 1,000V DC |
| | Current Rating | 350A |
| | Insertion/Withdrawal Cycles | > 10,000 |
| | Insertion/Withdrawal Force | ≤ 75N |
| | Operating Temperature | -30℃ ~ 50℃ |
| | Power Contact | DC+, DC-, PE, L1, L2/N |
| | Signal Contact | CP, CS |
| | Double Lock System (Actuator) | Applied |
| | Temperature Sensor | DC/AC Applied |





## CCS2



### DESCRIPTION

- Available for Custom Development
- Front IP55 / Rear IP67 with Waterproof / Dustproof
- Designed for Replaceable DC Cable / Emergency Release Cable
- Specification guideline applied: IEC 62196-1, IEC 62196-2, IEC 62196-3

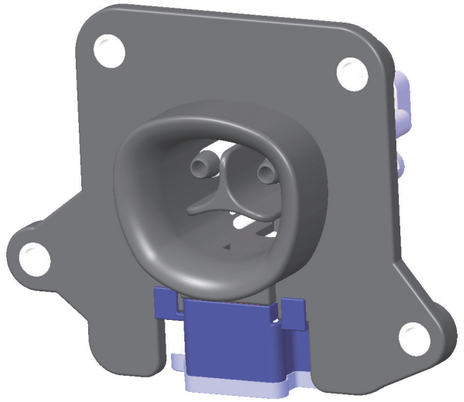
### TECHNICAL DATA

| Specification | | Value |
|---|---|---|
| General | Voltage Rating | 1,000V DC |
| | Current Rating | 200A |
| | Insertion/Withdrawal Cycles | > 10,000 |
| | Insertion/Withdrawal Force | ≤ 100N |
| | Operating Temperature | -30℃ ~ 50℃ |
| | Power Contact | DC+, DC-, PE, L1, L2, L3, N |
| | Signal Contact | CP, CS |
| | Double Lock System (Actuator) | Applied |
| | Temperature Sensor | DC/AC Applied |

# NACS

## DESCRIPTION

- Available for Custom Development
- Front IP55 / Rear IP67 with Waterproof / Dustproof
- Designed for Replaceable DC Cable / Emergency Release Cable
- Specification guideline applied: SAE-J3400



## TECHNICAL DATA

| Specification | | Value |
|---|---|---|
| General | Voltage Rating | > 265V AC |
| | Current Rating | 80A |
| | Insertion/Withdrawal Cycles | > 17,500 |
| | Insertion/Withdrawal Force | ≤ 100N |
| | Operating Temperature | -30℃ ~ 50℃ |
| | Power Contact | L1, L2/N, GND |
| | Signal Contact | CP, CS |
| | Double Lock System (Actuator) | Applied |
| | Temperature Sensor | AC Applied |





# DC Fast Charging Connector and Cable

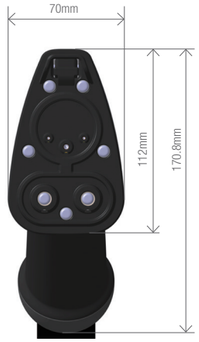
DC Fast Charging Connectors and Cables offer reliable and efficient solutions for fast electric vehicle charging, with high current capacity and a robust design to ensure long-lasting performance.

## PRODUCT LINE UP

| Item | Ultra Fast Charging (Liquid Cooled) | | DC Fast Charging (Air Cooled) | |
|---|---|---|---|---|
| Image |  |  |  |  |
| Standard | CCS1 / CCS2* | NACS | CCS1 / CCS2* | CCS1/ CCS2 |
| Voltage Rating | 1,000V DC | | | |
| Current Rating | 500A | 500A | 200A/250A | 150A |
| IP Rating (Housing) | 3R, IP67 | 3R, IP67 | 3R, IP67 | IP55 |
| Insertion/ Withdrawal Force | < 100N | | | |
| Cable Overall Diameter | 30±0.5mm | 30±0.5mm | 200A: 30±0.4mm<br>250A: 34±0.4mm | 26±0.4mm |

* Under development

# CCS1 500A/250A/200A





## MATERIAL

- Housing : Polyamide (PA6) glass fiber reinforced
- Interface : Polyamide (PA6) glass fiber reinforced
- Cover : Silicone Polycarbonate

## DESCRIPTION

- Capable of covering continuous currents up to 500A at 1,000V
- Ergonomic connector with interchangeable cover
- Specification guideline applied : IEC62196-3, UL2251
- IEC and UL Certified

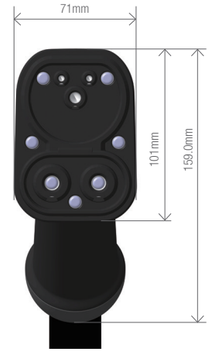
## TECHNICAL DATA

| Specification | | 500A | 250A | 200A |
|---|---|---|---|---|
| General | Voltage Rating | | 1,000V DC | |
| | Current Rating | 500A | 250A | 200A |
| | Power Contact | | DC+, DC-, PE | |
| | Signal Contact | | CP, CS | |
| | Temperature Sensors | | 2x PT1000 / 1mA (1V at 0℃) | |
| Cable | Max Conductor Temperature | | 90℃ | |
| | Overall Diameter | 30±0.4mm | 34±0.4mm | 30±0.4mm |
| | Lengths | | Customized | |
| | Bending Radius (Fixed) | 150mm | 170mm | 150mm |
| Connector | IP Rating (Housing) | | IP67 | |
| | Flammability Rating (Housing) | | V0 | |
| | Insertion/Withdrawal Cycles | | > 10,000 | |
| | Insertion/Withdrawal Force | | < 100N | |
| | DC Contacts & Locking Latch | | Replaceable | |





# CCS2 500A/250A/200A





## MATERIAL

- Housing : Polyamide (PA6) glass fiber reinforced
- Interface : Polyamide (PA6) glass fiber reinforced
- Cover : Silicone Polycarbonate

## DESCRIPTION

- Capable of covering continuous currents ranging from 200A to 250A at 1,000V
- Ergonomic connector with interchangeable cover
- Specification guideline applied: UL2251, IEC62196-3
- IEC and UL Certified (UL 250A Only)

## TECHNICAL DATA

| Specification | | 500A | 250A | 200A |
|---|---|---|---|---|
| General | Voltage Rating | | 1,000V DC | |
| | Current Rating | 500A | 250A | 200A |
| | Power Contact | | DC+, DC-, PE | |
| | Signal Contact | | CP, CS | |
| | Temperature Sensors | | 2x PT1000 / 1mA (1V at 0℃) | |
| Cable | Max Conductor Temperature | | 90℃ | |
| | Overall Diameter | 30±0.4mm | 34±0.4mm | 30±0.4mm |
| | Lengths | | Customized | |
| | Bending Radius (Fixed) | 150mm | 170mm | 150mm |
| Connector | IP Rating (Housing) | | IP67 | |
| | Flammability Rating (Housing) | | V0 | |
| | Insertion/Withdrawal Cycles | | > 10,000 | |
| | Insertion/Withdrawal Force | | < 100N | |
| | DC Contacts | | Replaceable | |

# CCS1 & CCS2 150A (Vertical Type)

## CCS1


## CCS2


## DESCRIPTION

- Customized for charging in commercial, logistics vehicle and buses
- Suitable for ceiling mount / retracting types
- Specification guideline applied: IEC 62196, IEC 62893, UL 2251, UL 2261
- IEC Certified

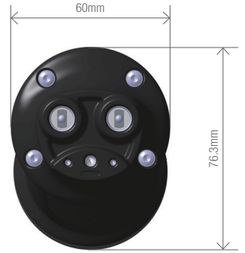
## TECHNICAL DATA

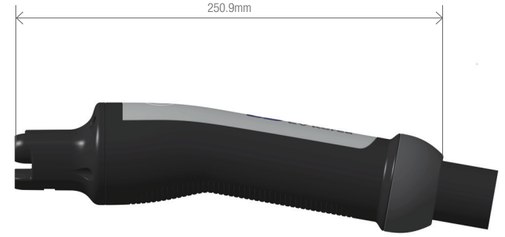
| Specification | | Value |
|---|---|---|
| General | Voltage Rating | 1,000V DC |
| | Current Rating | 150A |
| | Power Contact | DC+, DC-, PE |
| | Signal Contact | CP, CS |
| | Operating Temperature | -35℃ ~ 50℃ |
| | Temperature Sensor | 2x PT1000 / 1mA (1V at 0℃) |
| Cable | Max Conductor Temperature | 90℃ |
| | Overall Diameter | 25.8±0.4mm |
| | Length | Max. 8m |
| | Bending Radius (Fixed) | 130mm |
| Connector | IP Rating (Housing) | IP55 |
| | Flammability Rating (Housing) | V0 |
| | Insertion/Withdrawal Cycles | > 10,000 |
| | Insertion/Withdrawal Force | < 100N |
| | DC Contact & Locking Latch | Replaceable |





# NACS 500A




## MATERIAL

- Case Body : Polyamide (PA6) glass fiber reinforced
- Interface : Polyamide (PA6) glass fiber reinforced
- Cover Sticker : Polycarbonate

## DESCRIPTION

- Capable of covering continuous currents up to 500A at 1,000V
- A slim and lightweight design, ensuring easy handling
- Specification guideline applied : SAE J3400, UL2251

## TECHNICAL DATA

| Specification | | 500A |
|---|---|---|
| General | Voltage Rating | 1,000V DC |
| | Current Rating | 500A |
| | Power Contact | DC+, DC-, PE |
| | Signal Contact | CP, CS |
| | Operating Temperature | -35℃ ~ 50℃ |
| | Temperature Sensor | 2x PT1000 / 1mA (1V at 0℃) |
| Cable | Max Conductor Temperature | 90℃ |
| | Overall Diameter | 30±0.4mm |
| | Length | Max. 8m |
| | Bending Radius (Fixed) | 150mm |
| Connector | IP Rating (Housing) | 3R, IP67 |
| | Flammability Rating (Housing) | V0 |
| | Insertion/Withdrawal Cycles | > 10,000 |
| | Insertion/Withdrawal Force | < 100N |
| | DC Contact & Locking Latch | Replaceable |