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Sumitomo Wiring Systems, Ltd.

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Sumitomo Electric Printed Circuits, Inc.

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Sumitomo Electric Toyama Co., Ltd.

https://www.sei-toyama.co.jp/

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Sumitomo Electric Sintered Alloy, Ltd.

https://www.sei-oss.co.jp

Headquarter: 2901 Nariwa, Nariwa-cho, Takahashi-city, Okayama 716-0192 Japan TEL +81 866 42 4161 FAX +81 866 42 4354

Nippon ITF Co., Ltd.

https://www.nippon-itf.co.jp/

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Sumitomo Electric System Solutions Co., Ltd.

https://www.seiss.co.jp/en/

Headquarter: 1-43-5 Sekiguchi, Bunkyo-ku, Tokyo 112-0014 Japan TEL +81 3 5286 7661 FAX +81 3 5286 7651

Sumitomo Electric Fine Polymer, Inc.

http://www.sei-sfp.co.jp/english/

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Sumitomo Electric Wintec, Inc.

https://www.sei-wintec.com/

Headquarter: 1074 Eda, Shigaraki-cho, Koka-shi, Shiga 529-1811 Japan TEL +81 748 82 7800 FAX +81 748 82 7810

A.L.M.T. Corp.

https://www.allied-material.co.jp/en.html Headquarter: 1-11-11 Shiba, Minato-ku, Tokyo 105-0014 Japan TEL +81 3 5418 1801 FAX +81 3 5418 1810

Sumitomo Electric Hardmetal Corp.

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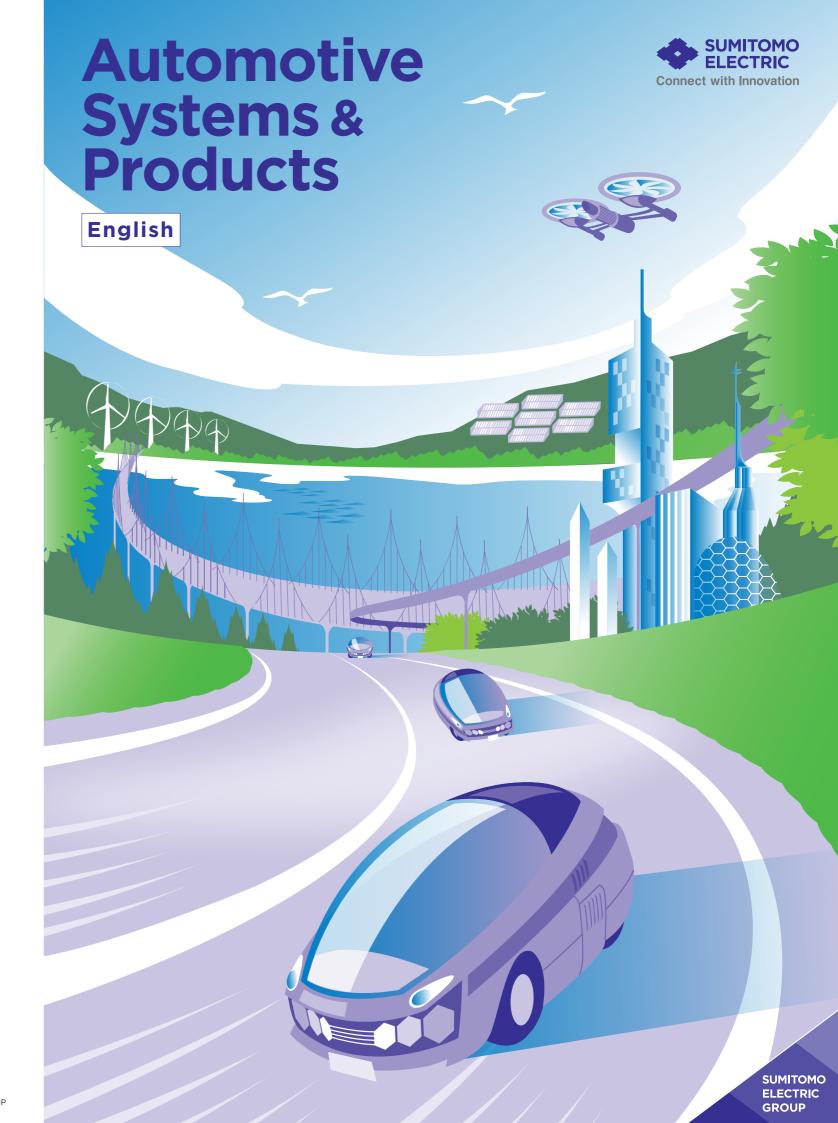


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Automotive Products Catalog WEB site
https://www.sei-automotive.jp/







Living in Safety and Comfort on our green planet Relentlessly Challenging ourselves to use Technology for Good— Connect with Innovation



Since Our Establishment

Safety

For a safer society, we will supply various products that support infrastructure and industries







For a more comfortable society, we will supply high-quality and high-performance products to global markets









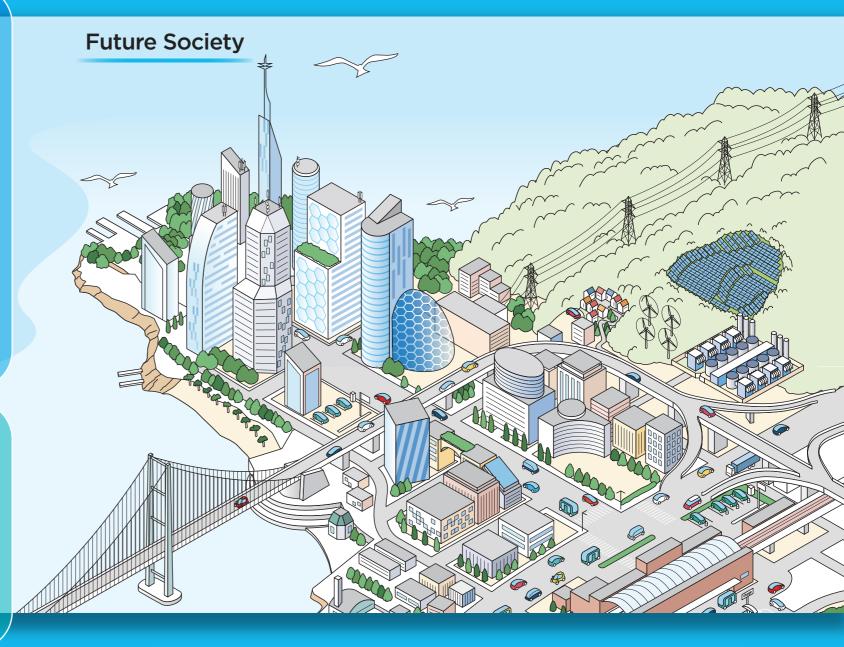
Further Emphasis

Green (

For a green society, making all-out efforts in decarbonization and related businesses we contribute in Sumitomo's way

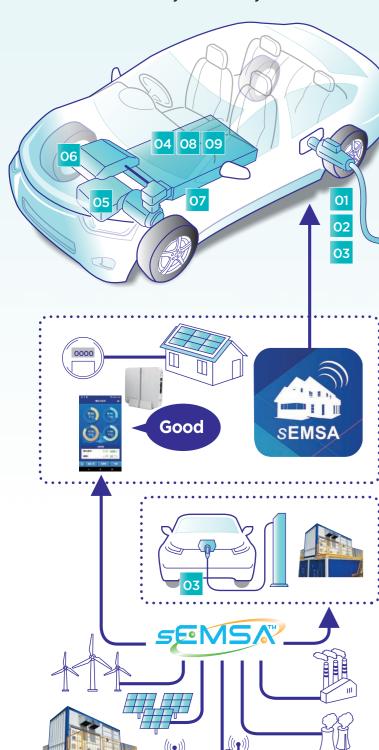






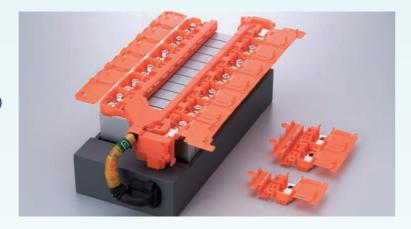
Supposing mobility and city from future society, we will provide solution and new value.

Smart use of energy in Communities, Homes, and EVs



Energy Storage

Battery-related products



Energy Supply

Infrastracture-related products



AC charging connector for PHEV/EV. Compliant with international standards (IEC62196-1, SAE J1772, and



EV Bi-Directional Charger Connector Sumitomo Electric

Electric Wire Energy Business Unit

The SEVD™-V3 is Bi-directional charging connector cable for EV. It is in conformity with CHAdeMO specification, CE-certified. Low capacity type provides not only a high level of safety but also excellent operability, high durability and excellent design.



EV Quick-charger Connector Sumitomo Electric

Electric Wire Energy Business Unit

The SEVD™-11 is apply for large power such as 200A. It is adapted for CHAdeMO and CE/UL-certified. Product features are excellent operability, safety design, wide applicable temperature, high cable flexibility and high durability.

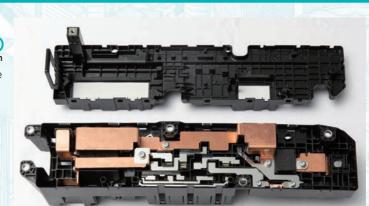


VDM (Voltage **Detection Module)** Sumitomo Wiring System

Component where high-voltage batteries are connected in series, with voltage detection terminal and harness mounted. Applicable to batteries with a different number of cells by connecting a shared-use small component.





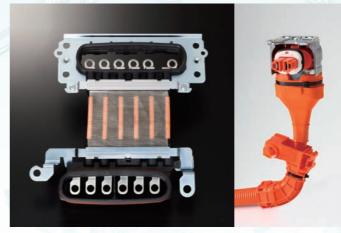


High-Voltage Junction Box Sumitomo Wiring System

Equipped with a function that checks the connection of the electrical circuit in the battery pack and shuts down the circuit when connection failure is detected. Technology that supports heat generation due to concentrated circuits is required.



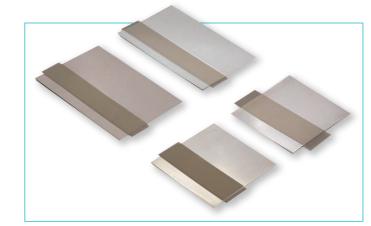




High-Voltage Connector

Sumitomo Wiring System

Waterproof and electromagnetic-shielded connector applicable to high-voltage wiring. Connected to inverters, motors, or batteries.





Tab leads

Sumitomo (SEI) Electric Wire

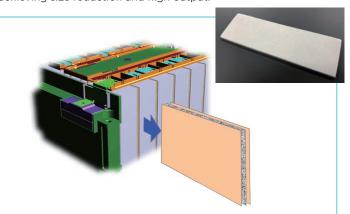
Cathode and Anode terminal for laminating type Lithium ion Battery and All Solid State Battery. High seal reliability for BEV battery cell realized by SUMITOMO's original insulation resin and flat conductor technology.



Bi-direction charging controller for Regenerative system

Sumitomo Wiring System

Improves energy efficiency by collecting deceleration energy as electricity. The original high heat radiation structure is used to enable high-density mounting, achieving size reduction and high output.



Insulation for between Battery Cells Sumitomo Riko

This product is installed between the cells of EV battery, and it also prevents fires occurring from the battery in case of emergency. We would like to promote this EV activity with strong focus to safety.

Green Supporting the "Driving" of EV/FCV

Energy Connection

High Voltage System



High-Voltage Under-floor Harness

Sumitomo Wiring System

DC high-voltage wiring harness that connects the high-voltage battery to the inverter in the engine room. Using aluminum pipes, formed into a three-dimensional structure with shield and protector functions.

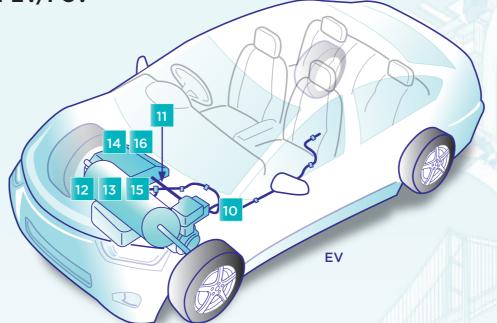




High-Voltage Cable Sumitomo Wiring System

Considering the environment, halogen-free materials or lead-free PVC is used. With excellent flexibility, suitable for wiring that requires a long high-voltage circuit.





Generation of the driving force



Rectangular Magnet Wires for Electrified Vehicles

Sumitomo Electric Wintec

Compared to a round wire, a rectangular magnet wire can be wound without gaps in the same space. This helps reduce the size and increase the output of driving motors.



Heatspreader Materials

This heatspreader has high thermal conductivity and low thermal expansion. When assembled on power devices for xEVs, it reduces thermal stress and contributes to improving reliability. It is also effective as a heatspreader for next-generation SiC devices, which are expected to operate at high temperatures in the future.



Motor Mount Sumitomo Riko

Supports the motor and reduces vibration and noise of the motor and gear.





FM-CM Material (Sintered Soft Magnetic **Member with High Magnetic Property)**

Sumitomo Electric Sintered Alloy

The FMCM materials have isotropic magnetic properties and excellent AC magnetic properties. The FMCM greatly contributes to the miniaturization and lower iron loss of actuators ,motors and reactors for automotive parts. They also have excellent recyclability, and combination with SEI's compacting technology, enables shapes that are difficult to achieve with electrical steel sheets.



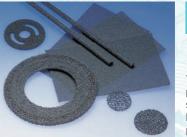
SiC

Sumitomo Electric Power Device Development Division

SiC realize compact power units and improve the cruising of vehicles. SiC will contribute to the development of EV/HEV.

Deal with Hydrogen fuel

FCV-related products



Porous Electrode "CELMET™" for FC stack

Sumitomo Electric Toyama

Three-dimensional structure porous metal parts for FC stack electrode. Advantage in low electrical resistance and pressure loss reduction by high porosity and large surface area.



Cell gaskets for FC stack cells

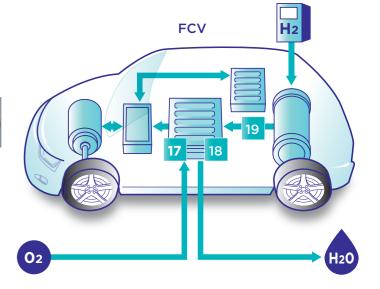
• Available in a wide range of temperatures from -30 to 120°C •Can be integrated with separators and power generation

•Can be molded in less than 1 minute (Received the 2020 Toyota Technology Development Award)



Hydrogen Hoses

Sumitomo Riko Hydrogen hoses are used to transport hard to seal small gaseous matter at high pressure. Installed in fuel cell electric vehicles (FCEV), these hoses require a high level of reliability and durability to ensure that hydrogen is not leaked outside the vehicle under any circumstances.



Enviromental load, energy loss Reduce



Compliance with environmental regulations

High performance **Materials**



Hoses

We have an advantage of material blending technology of rubber and resin, and our products have excellent performance in heat resistance, vibration and impact absorption, and lightweight. In addition, our products are comply with gasoline vapor emission regulations, and used in various area such as around engines and around fuel



Ni-free High strength Sintered **Materials**

Sumitomo Electric Sintered Alloy

The newly developed (Ni-Free) sintered material has equal or greater strength and low cost than conventional higher alloyed materials, which avoid price increasing and supply risk of nickel. It was applied for various automotive parts and contributes to low alloying.





SUMIBORON™, SUMIDIA™ Sumitomo Electric Hardmetal

SUMIBORON™ is a cutting tool made by cubic Boron Nitride (cBN) sintered body with concentration of original high pressure / high temperature sintering technology, which contributes low electric consumption in high productivity, high precision machining of hardened steel or cast iron.



Fuel and Electricity efficiency Improvement

Weight reduction



Aluminum Alloy Wire and Rods for Forging and Machining

Sumitomo Electric Toyama

Aluminum-alloy wire and bar for forging and machining are processed in an unique continuous cast-rolling method and contribute to weight reduction of automotive parts. Comparing to an extrusion method, finer grain size and larger coil (max. 2t) are available. It enables high forgeability and machine-processability, resulting in higher yield and productivity.



Internal gear pump rotors are powder metallurgy parts widely used in oil pumps of automobile engines, automatic transmissions, continuously variable transmissions, lubrication of power division mechanism for HEV and electric pump application for BEV. Our pump rotors are able to reduce the driving torque, the sound and the size of these automotive equipment, due to our original rotor's tooth profile.

Fuel and Electricity

Oil Pump Rotors

Sumitomo Electric Sintered Alloy

efficiency Improvement

Driving loss

reduction



High Strength Aluminum Harness

Sumitomo Wiring System

Developed the world's first aluminum wire with higher strength and flexibility than the conventional twisted conductor thin aluminum wire. Can be used for sections subject to vibration or bending, and reduction in wire size is enabled



Planetary Carrier Sumitomo Electric Sintered Alloy

Planetary carriers are one component of the planetary gear mechanism used by BEV e-axle reduction drives. Molding more than two components and assembling to net shape means window and spline dimensions are achieved without machining.



High-Strength Oil Tempered Wire

Sumitomo Electric, Special Steel Wire Division

By applying the state of the art technologies and well-established quality management system, our product shows outstanding performance and stable quality. It helps light-weighting of automobile



Ceramic Coating

DLC is a ceramic coating with excellent friction coefficient reduction performance, which greatly contributes to the global environment and energy fields.

Safety Products connected with infrastrucure



Driving Safety Support Systems (DSSS)

Sumitomo Electric System Solutions

This system alert drivers according to the status of intersections with ITS roadside communication devices, and reduce the risk of traffic accidents.

Communicates with road-side devices installed on general roads using near-infrared rays. Can provide signal information (e.g. switching time from green to red) in addition to traffic jam information, contributing to improvement of traffic safety.

On-board Device

Sumitomo Wiring System

Advanced Infrared Beacon

Wheel Speed Sensor Integrated with EPB Harness

Sumitomo Wiring System

Integrated a wheel speed sensor with an electric parking brake (EPB) harness. This has reduced the quantity of required parts and vehicle assembly manhours.



10 Automotive Systems & Products Automotive Systems & Products 11

Management System "Eagle Sight™"

Operation

Sumitomo Electric Systems & Electronics Division

Intelligent Mobility

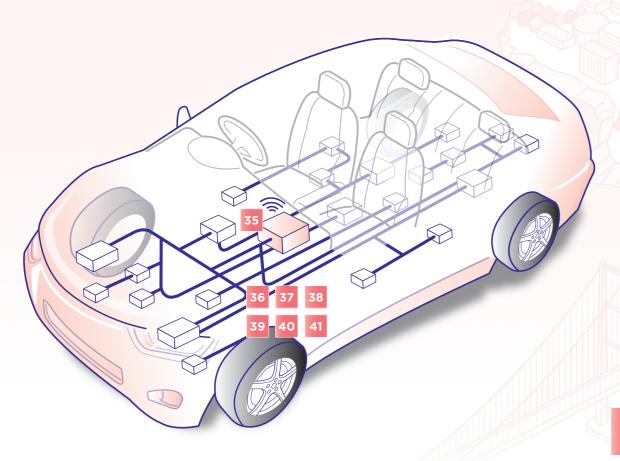
The current position and position history of the vehicle are displayed on a map, and the estimated arrival time and the operation status are provided in

Driver Monitoring System

Sumitomo Riko

It is possible to estimate the biological information (heart rate, breathing rate, etc.) of the passenger while driving just by sitting down.

Safety Safety, Secure, Connected



Connect with high rerliability information

Internal Vehicle Network

Wire Harness

Sumitomo Wiring System

Electrical wiring system that transmits information and energy. Becoming an increasingly important automobile component due to the increase in automobile electronic control functions.





Prevention unatuhorized access

External Vechilce Network





Central Gateway ECU

Sumitomo Wiring System

In the communication network where many ECUs are mounted, ECUs are connected via a gateway for the relevant functional system to organize the exchange of signals. In addition, security functions have been enhanced.



Antenna Harness & **High Frequency Connector**

Sumitomo Wiring System

Wiring harness that connects the receiving antenna (e.g. radio, TV, phone, GPS) and the receiver, with a high frequency connector.



Irradiated Cross-linked Products Sumitomo Electric Fine Polymer

SUMITUBE™ has excellent heat resistance and electrical properties, and is widely used for insulation protection and waterproofing applications in wire harnesses.



Automotive High Speed LAN Sumitomo Wiring System

Information volume to grasp peripheral situations (e.g. videos) becomes immense along with the advancement of driver assistance technologies (e.g. self-driving). Developed a high-speed in-vehicle communication harness (metallic, optical) that transmits this data without delay.



ECU Connector Sumitomo Wiring System

Connector that can be mounted on a printed circuit board. Suitable for connection of wires and electronic control units.





Sumitomo Wiring System

Fully demonstrates its function even when used in an engine room for wire connection where waterproofness is required.

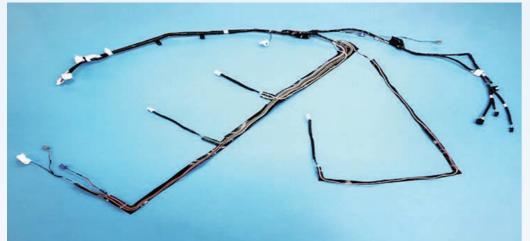




Comfort Wider living space, Amenity comfortableness

Wider living space

Electric unit, sensor





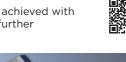
A flat wire harness that can be easily adapted (bent, diverted) to the specific shape of the vehicle it is installed in. It uses existing composite parts (e.g. wires and connectors). The manufacturing process for e-STEALTH W/H has a higher percentage of automation in comparison to conventional

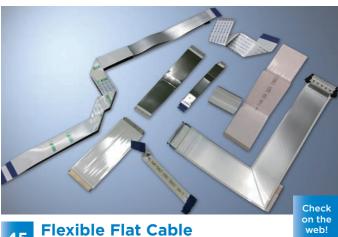




Compact Relay Module Sumitomo Wiring System

Relay and fuse functions have been achieved with semiconductors. This has achieved further reduction in size and weight.





A thin flat electric wire that enables simultaneous wiring of multiple circuits and achieves direct connector connection using flat conductors.

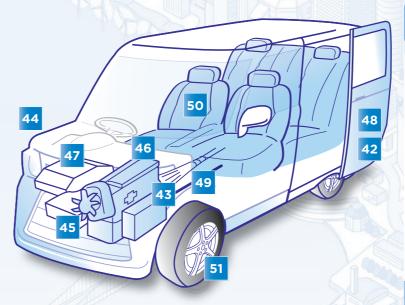
Sumitomo (SEI) Electric Wire



FPC are flexible circuit boards that offer high-density circuitry and component mounting capabilities. Developed 150°C heat-resistant material greatly improves durability.



POREFLON™AIR VENT is the product used for precision equipment which utilized the characteristic of porous PTFE membrane that allows venting and prevents from penetrating water and dust.



Easy boarding

Door Control



Smart entry function integrated BCM Sumitomo Wiring System

Integrated a smart entry function that eliminates remote control and a body electronics control function. Reduction in the number of units can save vehicle space and reduce vehicle weight.



Wire Harness For Power Sliding Door Sumitomo Wiring System

Wiring harness that constantly supplies power to electrical components in the sliding door, regardless of door opening or closina.

Achieve a quiet space

Engine / Tire etc.



Anti-Vibration Rubber

By developing materials that make use of polymer material technology, we combine flexibility, damping, and high reliability, and efficiently absorb vibrations from road, engines, motors, and compressors, etc.



Sound Controlling & Insulation Products /Interior Equipment Sumitomo Riko

Automobiles have many sources of noise, including the engine. Sound dampening products block them and keep your car quiet. Interior products are excellent in shock absorption and have a pleasant touch. We provide headrests, armrests, seat backboards, etc.



Steel Cords For Tire Reinforcement Sumitomo Electric, Special Steel Wire Division

This products have been highly evaluated by tire manufactures contributing to their needs for lower weight, better riding comfort of tires.