
VEHICLE SPECIALTY CABLE
VIBRATION RESISITANT | −40℃ TO 150℃ | FLAME RETARDANT
600V-1kV
双登电缆
SHUANGDENG CABLE

Shuangdeng New Energy Automotive Cable Product Manual

Engineered for the Future of Electric Mobility

❶ Product Overview

Shuangdeng New Energy Automotive Cables are expertly crafted to address the unique and rigorous demands of modern new energy vehicles, including fully electric vehicles (EVs), plug - in hybrid electric vehicles (PHEVs), and fuel cell electric vehicles (FCEVs). Engineered to handle high - voltage power transmission, high - frequency signal control, and extreme in - vehicle conditions, these cables ensure reliable performance, enhanced safety, and optimal efficiency. Leveraging advanced materials and state - of - the - art manufacturing processes, our cables play a crucial role in powering the next generation of sustainable transportation.

❷ Core Features & Benefits

Feature	Technical Advantage	Application Benefit
High - Voltage Compatibility	Designed to safely handle voltages ranging from 400V to 800V (and even higher in future - generation models), with robust insulation and shielding.	Enables efficient power transfer from high - voltage batteries to motors and other components, supporting fast - charging and high - performance driving.
Superior Electromagnetic Compatibility (EMC)	Multi - layer shielding structures, including double - layer copper foil and high - density braided copper shields, effectively suppress electromagnetic interference (EMI) and radio - frequency interference (RFI).	Ensures stable operation of sensitive electronic systems, such as battery management systems (BMS), autonomous driving modules, and in - vehicle communication networks.
Exceptional Thermal Management	Utilizes advanced insulation materials like cross - linked polyethylene (XLPE) with enhanced heat - dissipation properties and temperature - resistant sheaths, capable of withstanding - 40°C to + 150°C operating temperatures.	Prevents overheating during continuous high - power operation and fast - charging, extending the lifespan of both the cable and connected components.
High - Flexibility and Durability	Ultra - flexible stranded conductor design combined with abrasion - resistant and flame - retardant polyurethane (PUR) sheaths, withstanding repeated bending and mechanical stress in vehicle vibrations.	Facilitates easy installation in tight vehicle spaces and ensures long - term reliability, reducing the need for frequent maintenance and replacement.
Enhanced Safety Features	Incorporates low - smoke zero - halogen (LSZH) materials, double - insulation layers, and self - extinguishing properties, meeting strict international safety standards.	Minimizes the risk of fire and toxic fume emissions in case of accidents or malfunctions, safeguarding passengers and vehicle integrity.
Lightweight Design	Optimized conductor and insulation structures reduce cable weight without sacrificing performance, contributing to overall vehicle weight reduction and improved energy efficiency.	Helps increase the vehicle's driving range and reduces energy consumption during operation.

❸ Product Specifications

3.1Conductor

· Material: High - purity oxygen - free copper (≥99.97% conductivity) or high - conductivity aluminum alloy for lightweight options
· Structure: Class 6 flexible stranded conductors (IEC 60228) with optimized stranding patterns for low resistance
· Cross - sections: 10mm² - 120mm² (for high - voltage power transmission) and 0.5mm² - 10mm² (for signal control), multi - core configurations available

3.2 Insulation & Sheath

· Insulation:
  XLPE (standard for high - voltage and high - temperature resistance)
  Fluorinated Ethylene Propylene (FEP) for extreme - temperature and chemical - resistant applications
· Sheath:
  PUR (offers excellent abrasion resistance, flexibility, and flame retardancy)
  LSZH for safety - critical areas within the vehicle
  Color coding: Customizable according to international automotive wiring standards and specific vehicle requirements

3.3 Electrical Characteristics

· Rated voltage: 400V, 600V, 800V, 1000V (customizable for different vehicle platforms)
· Capacitance: ≤0.1μF/km (at 1kHz) to minimize signal distortion
· Insulation resistance: ≥10000MΩ·km (20°C)
· Current - carrying capacity: Up to 500A (depending on cable size, voltage class, and ambient temperature)

❹ Application Scenarios

· High - voltage power connections between batteries, inverters, and electric motors
· On - board charger (OBC) and DC fast - charging port connections
· Wiring for battery management systems (BMS) and vehicle control units (VCUs)
· High - frequency signal transmission for advanced driver - assistance systems (ADAS) and autonomous driving sensors
· Electrical systems in electric buses, trucks, and other commercial new energy vehicles
· Thermal management system wiring for battery cooling and heating

❺ Compliance & Certifications

· International standards: IEC 60332, ISO 6722, LV 216, GB/T 18384 (China national standard for electric vehicle safety), SAE J1766
· Environmental compliance: RoHS 3.0, REACH
· Optional certifications: TÜV, ISO 9001, IATF 16949 (Automotive Quality Management System)

6 Installation & Maintenance

6.1Installation Guidelines

· Minimum bending radius: 8× cable diameter (static), 10× (dynamic) to avoid damage to insulation and shielding
· Ensure proper grounding of shielding layers to enhance EMC performance
· Use specialized high - voltage connectors and terminals approved for new energy vehicle applications
· Route cables away from moving parts, sharp edges, and heat sources, maintaining a safe distance from fuel lines (in hybrid vehicles)

6.2 Maintenance

· Regularly inspect cables for signs of wear, especially at connection points and areas prone to vibration
· Check for any signs of insulation degradation or shielding damage using specialized diagnostic tools
· Ensure proper cable strain relief to prevent mechanical stress during vehicle operation

7 Customization Options

· Custom - designed cables for specific vehicle models and power system architectures
· High - voltage cables with integrated temperature sensors for real - time thermal monitoring
· Specialized cables for underwater charging applications (e.g., for amphibious electric vehicles)
· Tailored cable lengths, color - coding, and marking for seamless integration into vehicle wiring harnesses