

Instrument Cables: Accuracy at Its Best





Shuangdeng Instrument Cable Product Manual

Precision Signal Transmission for Industrial Control Systems

① Product Overview

Shuangdeng Instrument Cables are expertly engineered to meet the stringent requirements of modern industrial automation, process control, and instrumentation systems. Designed to ensure accurate and reliable signal transmission in complex, high - noise environments, these cables combine advanced shielding technologies with high - quality conductors and insulation materials. Whether for monitoring and control in chemical plants, power stations, or manufacturing facilities, our instrument cables deliver stable performance, excellent electromagnetic compatibility, and long - term durability.

② Core Features & Benefits

Feature	Technical Advantage	Application Benefit
Superior Signal Integrity	Utilizes high - purity oxygen - free copper conductors with low capacitance and inductance, minimizing signal distortion.	Ensures precise data transmission for accurate process control and monitoring, reducing measurement errors.
Effective EMI/RFI Shielding	Multi - layer shielding structures, including aluminum foil and braided copper shields, provide excellent protection against electromagnetic and radio - frequency interference.	Enables reliable operation in noisy industrial environments, preventing signal disruptions and system malfunctions.
High - Performance Insulation	Specialized insulation materials such as Polyvinyl Chloride (PVC), Cross - linked Polyethylene (XLPE), or Fluorinated Ethylene Propylene (FEP), offering high dielectric strength and chemical resistance.	Protects conductors from electrical leakage, moisture, and chemical corrosion, ensuring long - term cable reliability.
Flexible & Compact Design	Stranded conductor construction and thin - walled insulation allow for easy installation in tight spaces, reducing installation time and costs.	Ideal for complex instrument panel wiring, control cabinets, and confined industrial settings.
Temperature & Flame Resistance	Cables are rated for a wide temperature range (-40°C to +105°C, or up to +200°C for high - temperature models) and feature flame - retardant, low - smoke zero - halogen (LSZH) sheaths.	Suitable for use in hazardous areas and extreme environments, enhancing safety and compliance with industrial standards.

③ Product Specifications

3.1 Conductor

- Material: High - purity oxygen - free copper ($\geq 99.97\%$ conductivity)
- Structure: Class 5 or Class 6 flexible stranded conductors (IEC 60228) for maximum flexibility
- Cross - sections: 0.14mm^2 - 2.5mm^2 (single - core) and multi - core configurations (2 - 61 cores)

3.2 Insulation & Sheath

- Insulation:
 - PVC (standard for general applications)
 - XLPE (for higher temperature resistance and performance)
 - FEP (for extreme temperature and chemical resistance)
- Sheath:
 - PVC (cost - effective option)
 - LSZH (for indoor and safety - critical applications)
 - Polyurethane (PUR) for outdoor and abrasion - resistant use

Color coding: Compliant with IEC 60445 and customizable for specific customer requirements

3.3 Electrical Characteristics

- Rated voltage: 300/500V (standard), customizable for other voltage requirements
- Capacitance: $\leq 0.1\mu\text{F}/\text{km}$ (at 1kHz)
- Insulation resistance: $\geq 1000\text{M}\Omega\cdot\text{km}$ (20°C)
- Signal attenuation: Minimized to ensure long - distance transmission without significant loss

④ Application Scenarios

- Industrial automation and process control systems
- Power plants, refineries, and chemical plants for instrumentation and monitoring
- Building management systems (BMS) and smart buildings
- Oil and gas exploration and production facilities
- Railway signaling and transportation control systems
- Test and measurement equipment in laboratories and research facilities

⑤ Compliance & Certifications

- International standards: IEC 60227, IEC 60502, UL 13, CE