PREMIUM CABLE MANUFACTURER

ANHUI FEICHUN SPECIAL CABLE CO., LTD.

安徽飞纯特种电缆有限公司

TECHNICAL SPECIFICATION DOCUMENT

SHIELDED FLEXIBLE POWER CABLE

4C × 6MM²

4 Core Copper Flexible Shielded Power Cable

CORES	CROSS-SECTION	CONDUCTOR	TYPE
4C	6 MM²	COPPER	SHIELDED

ELECTROMAGNETIC SHIELDING TECHNOLOGY

This cable features advanced copper braided or foil shielding for superior electromagnetic interference (EMI) and radio frequency interference (RFI) protection, ensuring signal integrity and safe operation in electrically noisy environments.

1 PRODUCT DESIGNATION & KEY SPECIFICATIONS

NUMBER OF CORES	CONDUCTOR AREA	RATED VOLTAGE	CURRENT CAPACITY
4	6	0.6/1	38-44
Cores	mm² per core	kV AC	Amperes

PARAMETER	SPECIFICATION	REFERENCE STANDARD

Cable Type	**4 Core Copper Flexible Shielded Power Cable**	Custom Specification
Number of Cores	**4 Cores**	-
Conductor Cross-Sectional Area	**6.0 mm² per core**	IEC 60228
Rated Voltage (U_0/U)	**0.6/1.0 kV AC**	IEC 60502
Frequency	50/60 Hz	-
Conductor Material	Copper (Cu) - High Purity Annealed	IEC 60228
Conductor Class	**Class 5 or Class 6 - Flexible**	IEC 60228
Insulation Material	XLPE (Cross-Linked Polyethylene) or EPR	IEC 60502-1
Shielding Type	**Copper Braided Shield or Aluminum Foil + Drain Wire**	IEC 60502
Shield Coverage	≥ 85% (Braided) or 100% (Foil)	-
Outer Sheath Material	PVC, LSZH (Low Smoke Zero Halogen), or CPE	IEC 60502-1
Sheath Color	Black (Standard) or Custom	-
Core Identification	Brown, Black, Grey, Blue or Numbered	IEC 60446

2 CABLE CONSTRUCTION & SHIELDING DESIGN

⚡ MULTI-LAYER SHIELDED CABLE STRUCTURE ⚡

1. **Conductor Core:** Fine stranded bare copper wire (Class 5/6 flexibility), 6.0 mm² cross-sectional area per core, multiple fine wires for enhanced flexibility

2. **Primary Insulation:** XLPE or EPR compound (1.0 mm nominal thickness), color-coded for easy identification, excellent dielectric properties

3 **Core Assembly:** Four insulated cores laid together with fillers for round cable formation, tight lay for compact design

ELECTROMAGNETIC SHIELD: Copper braided shield (85%+ coverage) or aluminum/copper foil tape with tinned copper drain wire, provides EMI/RFI protection and fault current path

5 **Inner Separator (Optional):** Non-woven tape or thin PVC layer for shield protection and mechanical separation

6 **Outer Sheath:** Black PVC, LSZH, or CPE compound (2.0 mm nominal thickness), extruded overall, provides mechanical protection and environmental resistance

COMPONENT	MATERIAL/DESCRIPTION	NOMINAL DIMENSION
Conductor Diameter	Fine stranded copper wire	2.76 mm (nominal)
Number of Wires per Conductor	Class 5: 30+ wires | Class 6: 84+ wires	Per IEC 60228
Individual Wire Diameter	Ultra-fine copper wire	≤ 0.40 mm (Class 5) | ≤ 0.30 mm (Class 6)
Insulation Thickness	XLPE or EPR compound	1.0 mm (nominal)
Insulated Core Diameter	Conductor + Insulation	≈ 4.8 mm per core
Shield Type Option 1	Tinned copper braided wire	0.15-0.20 mm wire, 85-95% coverage
Shield Type Option 2	Aluminum/copper foil + drain wire	0.05-0.10 mm foil, 100% coverage
Drain Wire (if foil shield)	Tinned copper wire	0.5-1.0 mm^2 cross-section
Outer Sheath Thickness	PVC/LSZH/CPE compound	2.0 mm (nominal)
Overall Cable Diameter	Complete assembly	15.5 mm ± 0.8 mm (approx.)

Approximate Cable Weight	Total weight per unit length	220 kg/km (approx.)

Shield Connection:

The cable shield must be properly grounded at one or both ends depending on application requirements. For single-point grounding, connect the shield at the source end only. For multi-point grounding, connect at both ends. The drain wire (if present) provides convenient shield termination point. Consult installation guidelines for proper shield earthing techniques.

3 ELECTRICAL CHARACTERISTICS & PERFORMANCE

PARAMETER	VALUE	TEST CONDITION / NOTES
Rated Voltage (U_0/U)	**0.6/1.0 kV**	AC, 50/60 Hz
Maximum Operating Voltage	1.2 kV	Continuous operation
Test Voltage (AC)	4.0 kV for 5 minutes	Between conductor and shield/earth
Current Carrying Capacity	**38 A (PVC) / 44 A (XLPE)**	Single circuit, 30°C ambient, laid in air
Current Capacity (Buried)	46 A (PVC) / 52 A (XLPE)	Direct burial, 25°C soil temperature
Conductor DC Resistance (Max)	3.30 Ω/km	At 20°C, for 6.0 mm^2 copper
Insulation Resistance	≥ 5 GΩ·km (XLPE) / ≥ 0.01 GΩ·km (PVC)	At 20°C
Shield DC Resistance	≤ 10 Ω/km (braided) / ≤ 3 Ω/km (foil+drain)	At 20°C
Maximum Conductor Temperature	70°C (PVC) / 90°C (XLPE/EPR)	Continuous operation
Emergency Overload Temperature	100°C (PVC) / 130°C (XLPE/EPR)	Maximum 100 hours/year

Short Circuit Temperature (5s max)	160°C (PVC) / 250°C (XLPE/EPR)	Short circuit condition
Voltage Drop	≈ 7.0 mV/A/m	At unity power factor
Shielding Effectiveness	≥ 60 dB (braided) / ≥ 85 dB (foil)	At frequencies 10 kHz - 10 MHz
Transfer Impedance	≤ 50 mΩ/m (braided)	Measure of shield quality

Derating Factors:

Current carrying capacity must be adjusted based on installation conditions. Apply derating factors for: ambient temperature (×0.87 at 40°C), grouping of cables (×0.80 for 3 cables), thermal soil resistivity (×0.88 for 2.0 K·m/W), and enclosed spaces (×0.70-0.90). Calculate according to IEC 60364-5-52 for accurate ratings.

4 MECHANICAL PROPERTIES & FLEXIBILITY

PROPERTY	SPECIFICATION	NOTES
Conductor Flexibility Class	**Class 5 or Class 6 (Highly Flexible)**	Per IEC 60228
Minimum Bending Radius (Installation)	10 × Overall Diameter (≥ 155 mm)	During cable laying
Minimum Bending Radius (Fixed)	8 × Overall Diameter (≥ 124 mm)	After installation, stationary
Minimum Bending Radius (Flexing)	15 × Overall Diameter (≥ 233 mm)	For dynamic/moving applications
Operating Temperature Range	-40°C to +90°C (XLPE) / -15°C to +70°C (PVC)	Continuous operation
Installation Temperature	≥ -5°C (XLPE) / ≥ 0°C (PVC)	Without pre-heating
Maximum Pulling Tension	50 N/mm^2 of total conductor area	During installation, with grip

Crush Resistance	≥ 200 N/cm	Short term mechanical stress
Impact Resistance	Passes test per IEC 60502	2 kg weight, 1m drop
Tensile Strength (Sheath)	≥ 12.5 MPa (PVC) / ≥ 8.0 MPa (LSZH)	At 20°C
Elongation at Break (Sheath)	≥ 150% (PVC) / ≥ 200% (LSZH)	At 20°C
Service Life (Expected)	30-40 years (XLPE) / 20-25 years (PVC)	Under normal operating conditions
Flex Cycle Life	≥ 100,000 cycles	For moderate flexing applications

✨ FLEXIBILITY ADVANTAGES ✨

- ✓ Class 5/6 flexible conductor design
- ✓ Easy routing in tight spaces
- ✓ Reduced installation labor
- ✓ Suitable for moving applications
- ✓ Minimal stress on terminations
- ✓ Long flex life expectancy

5 SHIELDING PERFORMANCE & EMC PROPERTIES

🔬 ELECTROMAGNETIC COMPATIBILITY (EMC) 🔬

The integrated shielding system provides comprehensive protection against electromagnetic interference, ensuring reliable operation in environments with high electrical noise, variable frequency drives (VFDs), switching power supplies, and radio frequency equipment.

EMC PARAMETER	PERFORMANCE	DESCRIPTION
Shielding Effectiveness (SE)	**60-85 dB**	Attenuation of electromagnetic field strength
Frequency Range	10 kHz to 10 MHz	Effective shielding bandwidth
Transfer Impedance	≤ 50 mΩ/m	Lower values indicate better shielding
Coupling Attenuation	≥ 80 dB	Reduction of induced voltages

Shield Coverage	85-100%	Physical coverage of shield over cable
EMI/RFI Protection	Excellent	Protects against external interference
Signal Emission Reduction	Excellent	Prevents cable from radiating interference
Ground Fault Current Path	Yes	Shield provides fault current return path



EMI/RFI Protection

Prevents electromagnetic and radio frequency interference from affecting cable performance or connected equipment



Reduced Emissions

Minimizes electromagnetic radiation from the cable, preventing interference with nearby sensitive equipment



Fault Protection

Shield provides low-impedance path for ground fault currents, enhancing safety and protective device operation



Noise Immunity

Protects power supply from voltage spikes, transients, and high-frequency noise in industrial environments

6 APPLICATIONS & INSTALLATION ENVIRONMENTS



Industrial Automation

Power supply to VFDs, servo drives, PLCs, and automation equipment requiring EMI protection



Electrically Noisy Environments

Installations near high-power equipment, switch-mode power supplies, welding machines, and RF transmitters



Data Centers & IT Equipment

Clean power distribution for servers, network equipment, and sensitive electronic systems



Motor Drives & Inverters

Connection to variable frequency drives and inverter-fed motors with high EMI generation

Medical Equipment

Power supply to sensitive medical devices requiring electromagnetic compatibility

Broadcasting & Telecommunications

Power distribution in RF-sensitive environments like radio/TV stations and telecom facilities

Laboratory & Testing

Clean power for precision measurement equipment and analytical instruments

Transportation Systems

Railway signaling, metro systems, and transportation control systems with strict EMC requirements

Installation Methods:

Suitable for installation in cable trays, conduits, ducts, directly buried with protection, on walls, suspended, or in cable trenches. Can be used in dry, damp, or wet locations. Flexible design allows routing through tight spaces and around obstacles. Ideal for both fixed installations and applications requiring moderate cable movement.

EMC Installation Requirements:

For maximum shielding effectiveness, ensure proper shield termination using appropriate cable glands with 360° shield connection. Maintain shield continuity throughout the installation. Use shielded connectors and junction boxes. Avoid shield interruptions. Ground the shield according to system grounding scheme (single-point or multi-point depending on frequency and application).

7 FIRE PERFORMANCE & ENVIRONMENTAL PROPERTIES

PROPERTY	SPECIFICATION	TEST STANDARD
Flame Retardancy	Passes vertical flame test	IEC 60332-1-2
Low Smoke (LSZH option)	Light transmittance ≥ 60%	IEC 61034-2
Zero Halogen (LSZH option)	Halogen content < 0.5%	IEC 60754-1

Acidity (LSZH option)	pH ≥ 4.3, Conductivity ≤ 10 µS/mm	IEC 60754-2
Oil Resistance	Resistant to mineral oils and greases	IEC 60811-404
Chemical Resistance	Resistant to acids, alkalis, solvents	General industrial chemicals
UV Resistance (Black sheath)	Suitable for outdoor installation	UV stabilized compounds
Water Resistance	Suitable for wet locations	Not water-blocked (standard)
Ozone Resistance	Excellent (XLPE/EPR insulation)	-
Weather Resistance	Good (with proper UV-stabilized sheath)	-

🌿 ENVIRONMENTAL BENEFITS (LSZH VERSION) 🌿

- ✓ Low smoke emission in fire
- ✓ Zero halogen content
- ✓ Non-corrosive gases
- ✓ Safer for building evacuation
- ✓ Reduced equipment damage in fire
- ✓ Environmentally friendly

8 STANDARDS COMPLIANCE & CERTIFICATIONS

STANDARD/DIRECTIVE	TITLE	STATUS
IEC 60502-1	Power cables with extruded insulation - Cables for rated voltages 1 kV to 30 kV	✓ **Compliant**
IEC 60228	Conductors of insulated cables	✓ **Compliant**
IEC 60332-1-2	Vertical flame test for single insulated wire or cable	✓ **Compliant**
IEC 60332-3	Tests on bunched wires or cables (Optional)	✓ **Available**
IEC 61034-2	Smoke density test (LSZH version)	✓ **Compliant**
IEC 60754-1/2	Halogen acid gas and acidity tests (LSZH version)	✓ **Compliant**

IEC 60364-5-52	Selection and erection of electrical equipment - Wiring systems	✓ **Compliant**
GB/T 12706	Chinese National Standard for power cables 1-35 kV	✓ **Compliant**
RoHS 2011/65/EU	Restriction of Hazardous Substances	✓ **Compliant**
CE Marking	European Conformity	✓ **Available**
UL/CSA	North American safety standards (Optional)	**Available on request**
ISO 9001:2015	Quality Management System	✓ **Certified**

9 PACKAGING, MARKING & QUALITY ASSURANCE

ITEM	SPECIFICATION
Standard Lengths	100m, 200m, 500m, 1000m (or customer specified)
Packaging Method	Wooden drum, steel-wood drum, or steel drum (based on length/weight)
Drum Protection	Sealed with moisture-proof wrapping, secured with steel straps
Cable Marking (on sheath)	Manufacturer name, cable designation, rated voltage, cross-section, date code, sequential meter marking
Marking Interval	Every 1 meter (sequential length marking)
Drum Label	Complete specifications, length, weight (gross/net), drum number, date, destination, handling instructions
Quality Documentation	Test certificate (routine tests), Material certificates, Compliance documents
Type Test Reports	Available upon request (electrical, mechanical, fire performance)
Production Lead Time	20-35 days after order confirmation (quantity dependent)
Storage Conditions	Dry, ventilated warehouse, temperature 5-35°C, keep drums upright and covered
Shelf Life	24 months from manufacturing date (when properly stored)

Traceability	Full batch traceability from raw materials to finished product

Quality Control Process:

Every production batch undergoes comprehensive testing including: conductor resistance measurement, high voltage withstand test, insulation resistance test, shield continuity check, dimensional verification, and visual inspection. Random samples tested for mechanical properties and fire performance. Third-party testing and inspection can be arranged upon customer request.

Customization Services:

We offer comprehensive customization including: conductor class (Class 5 or 6), insulation material (XLPE/EPR/PVC), shielding type (braided/foil/combination), sheath material (PVC/LSZH/CPE/PUR), special colors, extended voltage ratings, armored versions, and special environmental requirements. Contact our technical team with your specific requirements.

🏭 MANUFACTURER INFORMATION

Anhui Feichun Special Cable Co., Ltd.
安徽飞纯特种电缆有限公司

Specialized in high-performance shielded cables
ISO 9001:2015 Quality Management Certified
Advanced production technology
Strict quality control systems

⚡ TECHNICAL EXCELLENCE

Premium copper conductors
Advanced shielding technology
State-of-the-art manufacturing
Comprehensive testing facilities
Professional engineering support
Custom design capabilities

🛡️ QUALITY GUARANTEE

100% factory tested
International standards compliance
Complete traceability
Technical documentation provided
After-sales technical support
Warranty coverage available

FEICHUN SPECIAL CABLES

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