ANHUI FEICHUN SPECIAL CABLE CO., LTD.

安徽飞纯特种电缆有限公司

5 CORE ARMORED MULTICORE CABLE - TECHNICAL SPECIFICATION

5C × 1.5 MM²

5 Core Flexible Armored Multicore Cable - Steel Wire Armoured (SWA) - 1.1kV

5 CORES | 1.5MM² FLEXIBLE | SWA ARMORED | 3-PHASE + N + E

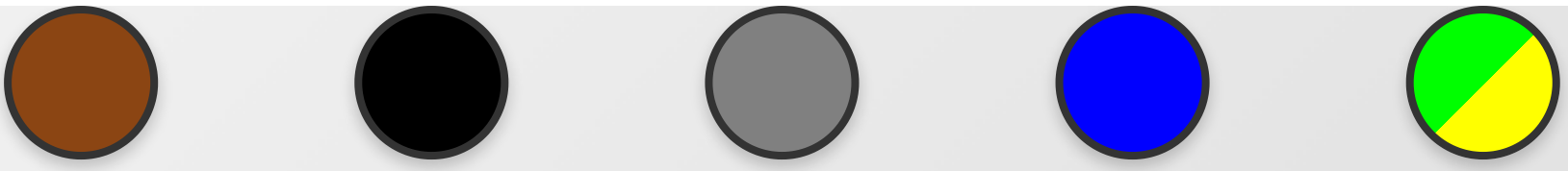
⚡ STANDARD 5 CORE ARMORED CABLE

Perfect for 3-Phase Systems | Power & Control | Direct Burial Capable

Number of Cores	Conductor Size	Rated Voltage	Armor Type	Flexibility
5C	1.5mm²	1.1kV	SWA	Class 5

Current/Core
~20A

🎨 STANDARD 5 CORE COLOR IDENTIFICATION



⚡ IDEAL FOR 3-PHASE + NEUTRAL + EARTH SYSTEMS

- ✓ **Complete 3-Phase Distribution:** All phases, neutral, and earth protection in one cable
- ✓ **Balanced Load Applications:** Perfect for 3-phase motors, power distribution, and balanced circuits
- ✓ **Standard Configuration:** Industry-standard 5-core arrangement (L1, L2, L3, N, PE)
- ✓ **Single Cable Solution:** Replaces five separate singles - faster, neater installation
- ✓ **Armored Protection:** Steel wire armor protects all cores for direct burial or harsh environments
- ✓ **Cost-Effective:** Lower installation labor and material costs versus separate cables
- ✓ **Space Efficient:** Reduces cable tray and conduit space requirements by 60-70%
- ✓ **Flexible Construction:** Class 5 flexibility despite multicore configuration
- ✓ **Built-in Earth:** Green/Yellow earth core eliminates need for separate earth conductor
- ✓ **Professional Installation:** Color-coded cores minimize wiring errors

1. GENERAL DESCRIPTION

This 5 core armored multicore cable with flexible 1.5mm² copper conductors and galvanized steel wire armor (SWA) is the industry-standard solution for 3-phase power distribution with neutral and earth protection. Rated at 1.1kV with Class 5 flexible stranded conductors (approximately 20A per core), this cable provides a complete, protected power distribution system in a single, easy-to-install package. The five color-coded cores (Brown, Black, Grey for phases L1/L2/L3, Blue for neutral, and Green/Yellow for earth) are individually PVC insulated, cabled together, surrounded by an inner PVC sheath, galvanized steel wire armor, and black PVC outer sheath. This robust construction delivers excellent mechanical protection for direct burial, underground installation, industrial environments, and outdoor applications subject to impact, crushing, or rodent damage. The 5-core configuration is ideal for small to medium 3-phase motors (up to 5.5 kW), 3-phase power distribution, building services, HVAC systems, pumps, compressors, and general industrial applications. Compared to running five separate cables, this multicore design reduces installation time by up to 70%, minimizes cable tray space, ensures consistent electrical properties across all cores, and provides a cleaner, more professional installation with simplified termination using a single cable gland.

Parameter	Specification
Cable Designation	**5 Core × 1.5 MM² Flexible Armored Multicore Cable**
Number of Cores	**5 Cores (3-Phase + Neutral + Earth)**
Conductor Cross-Section	**1.5 mm² per core**
Rated Voltage U_0/U	**0.6/1.1 kV**

Conductor Material	Annealed Copper (Cu) - Class 5 Flexible Stranded
Conductor Type	Flexible Multi-Wire Stranded (Fine Wire)
Insulation Material	Polyvinyl Chloride (PVC)
Core Colors	**Brown (L1), Black (L2), Grey (L3), Blue (N), Green/Yellow (PE)**
Inner Sheath	PVC Bedding Layer
Armour Type	**Galvanized Steel Wire Armour (SWA)**
Outer Sheath	PVC - Black Standard (Other colors available)
Flexibility Grade	Class 5 - High Flexibility
Application Type	3-Phase Power Distribution, Armored Multicore

2. CABLE CONSTRUCTION & ARMOUR DETAILS

5 CORE ARMORED MULTICORE CABLE STRUCTURE

1. Conductor Cores: Five fine stranded copper conductors, 1.5mm² each (Class 5 flexible)

2. Core Insulation: PVC insulation on each core with standard 5-core color coding

3. Core Assembly: Five insulated cores cabled together in optimized geometry

4. Filler (if needed): Polypropylene or paper filler to maintain circular shape

5. Binding Tape: Non-woven tape to secure core bundle

6. Bedding/Inner Sheath: PVC bedding layer protecting cores from armor

⚙ **7. STEEL WIRE ARMOUR (SWA): Galvanized steel wire armor protecting all 5 cores**

8. Outer Sheath: Heavy-duty black PVC compound, UV resistant

Component	Material/Description	Technical Details

Conductor (each core)	Class 5 flexible stranded copper	Per IEC 60228, wire diameter ≤0.31mm
Number of Strands per Core	Multiple fine copper wires	Approximately 30 strands per 1.5mm² conductor
Copper Purity	Annealed copper	≥99.9% purity, electrical grade
DC Resistance per Core (20°C)	Maximum	≤13.3 Ω/km per conductor
Conductor Diameter per Core	Nominal	Approximately 1.6 - 1.8 mm
Insulation Thickness per Core	PVC compound	0.6 - 0.7 mm nominal
Core Colors (Standard 5-Core)	**Fixed color scheme**	Brown, Black, Grey, Blue, Green/Yellow (IEC standard)
Core Assembly Method	Twisted configuration	Optimized for compactness and flexibility
Inner Sheath Thickness	PVC bedding	1.0 - 1.4 mm nominal
Steel Wire Armour	**Galvanized steel wires**	Wire diameter: 0.8 - 1.25 mm (typically 0.9mm)
Armour Application	Helically wound steel wires	Close pitch, single layer
Galvanization	Hot-dip galvanized	Corrosion protection per standards
Outer Sheath Thickness	PVC protective layer	1.8 - 2.0 mm nominal
Overall Diameter	Approximate with armor	17 - 20 mm
Approximate Weight	Per kilometer	550 - 650 kg/km
Total Copper Content	All 5 cores combined	Approximately 67 kg/km (5 × 1.5mm²)

3. ELECTRICAL CHARACTERISTICS

Parameter	Value	Test Condition / Standard
Rated Voltage (U_0/U)	**0.6/1.1 kV**	AC 50/60 Hz
Maximum Conductor DC Resistance	13.3 Ω/km per core	At 20°C per IEC 60228
Current Capacity per Core (Free Air)	**19 - 21 A**	All cores loaded, 30°C ambient

Current Capacity per Core (Direct Burial)	17 - 19 A	Underground, 25°C soil temperature
3-Phase Power Capacity (400V)	**Approximately 13 kW**	At 19A, 400V, 3-phase, 0.8 PF
3-Phase Motor Rating	Up to 5.5 kW (7.5 HP)	400V, 3-phase motor
AC Voltage Test	3.5 kV for 5 minutes	Between cores and armor/earth
Insulation Resistance	≥10 MΩ·km per core	At 20°C
Maximum Operating Temperature	70°C	Continuous operation (PVC)
Short Circuit Temperature	160°C	Maximum 5 seconds duration
Voltage Drop (3-Phase)	Approx. 26 mV/A/m	At power factor 0.8, per meter of cable run
Mutual Capacitance	Approx. 0.15 µF/km	Core to core
Armour Earthing	**Mandatory at both ends**	Steel wire armor provides earth path

4. MECHANICAL PROPERTIES

Parameter	Specification	Notes
Flexibility Class	**Class 5 - High Flexibility**	Per IEC 60228 - Easy installation
Mechanical Protection Level	**Heavy Duty - Armored**	SWA provides excellent protection
Minimum Bending Radius (Installation)	10 × Overall Diameter (≥190 mm)	During installation with armor
Minimum Bending Radius (Fixed)	8 × Overall Diameter (≥152 mm)	After installation complete
Radial Crushing Strength	Excellent	Steel armor protects all cores
Impact Resistance	**Excellent - Armored**	Suitable for mechanical hazards
Rodent Protection	**Excellent - Steel barrier**	Prevents damage from gnawing
Installation Temperature	≥0°C	Preheating required below 0°C
Operating Temperature Range	-15°C to +70°C	Ambient operational limits
Direct Burial Capability	**YES - Primary Application**	No conduit required

Flame Retardant	IEC 60332-1	Single vertical wire flame test
Cable Weight Handling	Light - Easy Manual Handling	Approximately 0.55-0.65 kg per meter

5. TYPICAL APPLICATIONS

3-Phase Motor Connections

Small to medium motors up to 5.5 kW (7.5 HP) - complete power distribution in one cable

HVAC Systems

Air conditioning units, ventilation fans, heat pumps requiring 3-phase power

Water Pumps

Submersible pumps, irrigation pumps, water treatment - 3-phase applications

Industrial Machinery

Small conveyors, mixers, agitators, and workshop machinery

Building Services Distribution

Main and sub-main 3-phase distribution in commercial buildings

Agricultural Applications

Farm equipment, barn power distribution, irrigation systems

Workshop Power Distribution

3-phase power to machine tools, welders, compressors

Commercial Kitchen Equipment

Ovens, fryers, dishwashers requiring 3-phase power

Outdoor Installations

Garden lighting, outdoor equipment - armor protects from burial and weather

Car Washes

Equipment motors, pumps in wet environments

Renewable Energy

Small wind turbines, solar tracking systems

Marine & Waterfront

Marina power distribution, boat lifts, dock facilities

5-Core Cable Advantages: Complete 3-phase system in one cable (L1, L2, L3, N, PE) | One cable replaces five separate singles - 70% faster installation | Guaranteed balanced electrical properties | Integrated earth core eliminates separate earth conductor | Armored protection for all phases | 60-70% reduction in cable tray space | Single cable gland simplifies termination | Cost-effective solution | Professional, organized installation | Color-coded for easy identification | Direct burial capable without conduit

6. 3-PHASE MOTOR APPLICATION GUIDE

Motor Power Rating	Motor Current (400V)	Cable Suitability	Notes
1.1 kW (1.5 HP)	~3 A	✓ Excellent	Well within capacity
1.5 kW (2 HP)	~4 A	✓ Excellent	Very suitable
2.2 kW (3 HP)	~5 A	✓ Excellent	Ideal application
3.0 kW (4 HP)	~7 A	✓ Very Good	Suitable

4.0 kW (5.5 HP)	~9 A	✓ **Good**	Suitable for short runs
5.5 kW (7.5 HP)	~12 A	✓ **Acceptable**	Check voltage drop for run length
7.5 kW (10 HP)	~16 A	⚠ Maximum	Short runs only, consider 2.5mm²
>7.5 kW	>16 A	✗ Not Recommended	Use 2.5mm² or 4mm² cable

7. TECHNICAL STANDARDS & COMPLIANCE

Standard	Description
IEC 60502-1	Power cables with extruded insulation for rated voltages from 1 kV to 30 kV
IEC 60228	Conductors of insulated cables - Class 5 flexible conductors
IEC 60332-1	Tests on electric cables under fire conditions - Single vertical wire flame test
IEC 60364-5-52	Electrical installations of buildings - Selection and erection of equipment
IEC 60446	Basic and safety principles for man-machine interface - Identification of conductors by colors
BS 5467	Electric cables - Armoured cables with thermosetting insulation (Reference)
BS 6346	Electric cables - PVC insulated, armoured cables (Reference)
GB/T 12706	Chinese National Standard for power cables 0.6/1kV to 26/35kV
RoHS Directive	Restriction of Hazardous Substances - Environmental compliance
CE Marking	European Conformity (where applicable)

8. INSTALLATION GUIDELINES

Installation Parameter	Requirement
Burial Depth (General Areas)	Minimum 600mm from finished grade
Burial Depth (Under Roads/Driveways)	Minimum 900mm from finished grade
Trench Preparation	100mm sand bedding, free from sharp stones

Cable Glands	**SWA glands (BW type) - M20 or M25 size with earthing tag**
Armour Earthing	**MANDATORY - Earth armor at both ends using SWA glands**
Core Termination Sequence	L1 (Brown), L2 (Black), L3 (Grey), N (Blue), PE (Green/Yellow)
Earth Core Connection	**Green/Yellow core MUST be connected to earth terminal**
Neutral Core Connection	Blue core to neutral terminal (do not use for phase)
Pulling Force	Maximum 50 N/mm² per core (total ~375N)
Support Spacing (Vertical)	Maximum 0.4 - 0.6 meters
Support Spacing (Horizontal)	Maximum 1.0 - 1.5 meters on cable tray
Cable Tray Width	Minimum 75mm for single cable
Core Termination Hardware	Use ferrules or lugs rated for 1.5mm² (M4 or M5 stud)
Circuit Protection	MCB/MCCB rated at 16-20A (B16 or C16 typical for motors)
Testing Before Energization	Insulation resistance test (min 1MΩ), continuity test all cores, phase rotation test
Warning Tape (Buried)	Install 300mm above cable - "Electric Cable Below"

Critical Installation Requirements:

- **Armour Earthing Mandatory:** Steel wire armor MUST be earthed at both ends using proper SWA glands with earthing continuity
- **Color Code Compliance:** ALWAYS follow standard color coding - Brown/Black/Grey for phases, Blue for neutral, Green/Yellow for earth
- **Never Swap Colors:** Do NOT use neutral (Blue) as a phase - can cause dangerous neutral faults
- **Earth Connection Essential:** Green/Yellow core MUST be connected to earth at both ends
- **Phase Rotation Check:** Verify correct phase rotation (L1-L2-L3) for motor direction
- **SWA Glands Required:** Standard glands will NOT provide armor earthing - use only SWA-specific BW glands
- **Circuit Protection:** Provide appropriate MCB/MCCB rated for motor starting current
- **Test Before Energizing:** Always test insulation resistance and phase rotation before connecting motor
- Professional installation by qualified electricians mandatory
- Follow all local electrical codes, regulations, and motor manufacturer requirements

9. QUALITY ASSURANCE & TESTING

Comprehensive factory testing program:

- **Conductor DC resistance test:** All 5 cores tested individually, verified ≤13.3 Ω/km at 20°C
- **High voltage withstand test:** 3.5 kV AC for 5 minutes between all cores and armor

- **Core-to-core insulation test:** Insulation verified between all core pairs
- **Insulation resistance test:** Minimum 10 MΩ·km per core at 20°C
- **Color code verification:** Visual inspection ensuring correct standard 5-core colors
- **Dimensional verification:** Conductor size, insulation thickness, overall diameter measured
- **Flexibility test:** Repeated bending test per IEC 60228 Class 5 requirements
- **Armour wire quality:** Tensile strength and galvanization thickness verified
- **Fire performance test:** Vertical flame test per IEC 60332-1
- **Armour continuity test:** Electrical continuity and resistance of steel wire armor
- **Color permanence test:** Color fastness verification especially for Green/Yellow earth
- **Visual inspection:** Complete construction quality and marking verification

Quality Certification: Manufactured under ISO 9001:2015 quality management system. Complete documentation includes: Type test reports, Routine test certificates for all 5 cores, Certificate of conformity, Standard 5-core color identification guide, Installation and connection guidelines. Third-party testing available upon request. Full batch traceability maintained with detailed production records.

10. PACKAGING & DELIVERY

Item	Details
Standard Lengths Available	100m, 200m, 500m, or customized length as required
Packaging Type	Steel or wooden cable drum suitable for armored cable weight
Cable Marking on Sheath	Sequential meter marking every 1 meter - "5C×1.5mm² SWA 0.6/1kV"
Core Color Chart	Color identification chart attached to drum showing standard 5-core scheme
Documentation Package	Test certificates, core wiring guide, installation instructions, conformity certificate
Storage Location	Store drums upright in dry, covered, well-ventilated area
Storage Temperature	-5°C to +35°C (protect from temperature extremes)
Protection Requirements	Protect from direct sunlight, moisture, and mechanical damage
Shelf Life	24 months under proper storage conditions
Handling	Manual handling possible - lightweight cable (~0.6 kg/m)
Production Lead Time	15-30 working days after order confirmation
Minimum Order Quantity	500 meters total (can be split into multiple drum lengths)

Important Technical Information:

- This specification is for reference purposes and subject to technical modifications
- Standard 5-core color scheme per IEC standards - custom colors not recommended as may cause confusion
- Other conductor sizes available: 1.0mm², 2.5mm², 4mm², 6mm² for different current requirements
- LSZH (Low Smoke Zero Halogen) sheath available for enhanced fire safety in buildings
- XLPE insulation available for higher temperature rating (90°C) applications
- Always provide motor nameplate data when selecting cable - consider starting current, not just running current
- Voltage drop calculations essential for long cable runs - consult electrical engineer if unsure
  Installation must comply with IEC 60364, NEC Article 310, BS 7671, or applicable local electrical codes
- Professional installation with proper phase rotation testing mandatory for motor applications
- Earth continuity is life-safety critical - always verify before energizing
- For special requirements, technical support, or application assistance, contact our engineering department

FEICHUN SPECIAL CABLES

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