FEICHUN SPECIAL CABLES · 飞纯特种电缆

TDS · LV POWER & CONTROL CABLES | 5 ITEMS · B.2.2 – B.2.6

Cu / XLPE / PVC / GSWA / PVC | 0.6/1 kV · IEC 60502-1 · IEC 60332-3-24 Cat. C · RBT

Low Voltage Power & Control Cables 0.6/1 kV, Cu/XLPE/PVC (GSWA)

Technical specification for multi-core copper conductor, XLPE insulated, extruded low-smoke PVC bedding, galvanized steel wire armoured (or unarmoured) and black PVC sheathed cables, flame retardant to IEC 60332-3-24 Cat. C and restricted-breathing tested per IEC 60079-14 — offered against RFQ-466 (Cabling System), Section B — Power and Control Cables.

Document code: **FC-TDS-RFQ466-2026-LVPC** Revision: **00** Date: **24.11.2026** Items: **B.2.2 – B.2.6**

MOQ: **1,000 m per size**

01 Scope and Item List

This specification covers the design, materials, construction, testing, marking and packing of the **FeiChun 0.6/1 kV Cu/XLPE/PVC low voltage multi-core power and control cables** listed below, manufactured and tested to IEC 60502-1. The cables are intended for fixed installation in industrial and hazardous-area plants (indoors, outdoors, on cable trays and ladders, in ducts and trenches; armoured types also for direct burial), where flame retardancy of bunched cables and, for cables entering Ex equipment, restricted-breathing performance are required.

RFQ item	Epicore ID	Cable type	FeiChun designation	RFQ qty	Offered qty
B.2.2	27-101-2727	4C × 4 mm², armoured, power	Cu/XLPE/LS-PVC/GSWA/PVC-RBT 0.6/1 kV 4C×4	54 m	**1,000 m**
B.2.3	27-103-3492	3C × 2.5 mm², unarmoured, power	Cu/XLPE/LS-PVC/PVC-RBT 0.6/1 kV 3C×2.5	36 m	**1,000 m**
B.2.4	27-103-3485	3C × 4 mm², armoured, power	Cu/XLPE/LS-PVC/GSWA/PVC-RBT 0.6/1 kV 3C×4	204 m	**1,000 m**
B.2.5	12-112-6734	4C × 50 mm², armoured, power	Cu/XLPE/LS-PVC/GSWA/PVC-RBT 0.6/1 kV 4C×50	96 m	**1,000 m**
B.2.6	27-100-4573	12C × 1.5 mm², armoured, control	Cu/XLPE/LS-PVC/GSWA/PVC 0.6/1 kV 12C×1.5	168 m	**1,000 m**

Minimum order quantity. FeiChun minimum order quantity is **1,000 m per cable size** (one continuous production length per size). All RFQ quantities are below the MOQ; therefore each item is offered at 1,000 m, supplied on one drum. Total offered length: **5,000 m** (5 drums).

RATED VOLTAGE UO/U (UM)
0.6/1 (1.2) kV

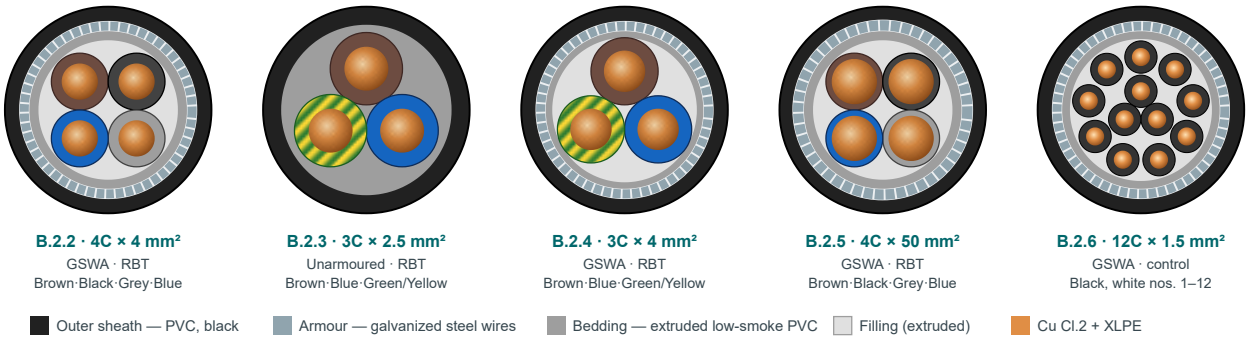
CONDUCTOR / INSULATION
Cu Cl.2 / XLPE 90 °C

FLAME RETARDANCY
IEC 60332-3-24 C

RESTRICTED BREATHING
IEC 60079-14

02 Cable Construction — Cross-Sections

Fig. 1 · Cross-sections of offered cables, items B.2.2 – B.2.6 (schematic, not to scale)



B.2.2 · 4C × 4 mm²
GSWA · RBT
Brown·Black·Grey·Blue

B.2.3 · 3C × 2.5 mm²
Unarmoured · RBT
Brown·Blue·Green/Yellow

B.2.4 · 3C × 4 mm²
GSWA · RBT
Brown·Blue·Green/Yellow

B.2.5 · 4C × 50 mm²
GSWA · RBT
Brown·Black·Grey·Blue

B.2.6 · 12C × 1.5 mm²
GSWA · control
Black, white nos. 1–12

Outer sheath — PVC, black · Armour — galvanized steel wires · Bedding — extruded low-smoke PVC · Filling (extruded) · Cu Cl.2 + XLPE

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Pos.	Component	Material / requirement (all items unless noted)
1	Conductor	Plain annealed copper, stranded, **IEC 60228 Class 2**; circular stranded for 1.5 – 4 mm², circular compacted for 50 mm²
2	Insulation	XLPE (cross-linked polyethylene, compound XLPE per IEC 60502-1), 90 °C; nominal thickness 0.7 mm (1.5 – 4 mm²), 1.0 mm (50 mm²)
—	Core identification	4-core: **Brown, Black, Grey, Blue** · 3-core: **Brown, Blue, Green/Yellow** · 12-core: **Black cores with white printed numbers 1–12** (IEC 60227-1, cl. 4.2) — all as specified in RFQ
3	Laying-up / core wrapping	Cores laid up together; binder / wrapping tape as per manufacturer's design
4	Filler / bedding	**Extruded low-smoke PVC compound**, filling the interstices between cores and forming a compact, void-free circular bedding (inner covering) — this filled construction provides the restricted-breathing performance
5	Armour (B.2.2, B.2.4, B.2.5, B.2.6)	Single layer of **galvanized round steel wires (GSWA)**, wire diameter per IEC 60502-1 cl. 12; not applicable to B.2.3 (unarmoured)
6	Outer sheath	PVC compound type **ST2** (IEC 60502-1), flame retardant, **black**, UV resistant; nominal thickness per IEC 60502-1 cl. 13

Designation. Cu/XLPE/LS-PVC/GSWA/PVC = copper conductor / XLPE insulation / low-smoke PVC extruded bedding / galvanized steel wire armour / PVC outer sheath. RBT = restricted breathing tested. Chinese GB equivalent: ZC-YJV32-0.6/1 kV (armoured items), ZC-YJV-0.6/1 kV (B.2.3). Cross-section figures are schematic; final dimensions are confirmed by the manufacturer's production drawing.

03 Applicable Standards

Standard	Subject
IEC 60502-1	Power cables with extruded insulation, rated voltages 1 kV (Um = 1.2 kV) and 3 kV — design, construction and tests
IEC 60228	Conductors of insulated cables (Class 2)
IEC 60811 series	Test methods for insulating and sheathing materials
IEC 60332-1-2	Flame propagation — single vertical insulated wire or cable
IEC 60332-3-24 (Cat. C)	Flame propagation — vertically mounted bunched cables, Category C
IEC 60079-14	Explosive atmospheres — electrical installations design; restricted breathing test for cables (items B.2.2 – B.2.5)
IEC 60227-1	Core identification by numbering (item B.2.6)

04 Construction Data, Dimensions and Weights (Approximate)

Parameter	B.2.2 4C × 4	B.2.3 3C × 2.5	B.2.4 3C × 4	B.2.5 4C × 50	B.2.6 12C × 1.5
Conductor and insulation					
Conductor shape (IEC 60228 Cl. 2)	Circular stranded	Circular stranded	Circular stranded	Circular compacted	Circular stranded
Min. number of wires	7	7	7	6	7
Conductor diameter, approx. (mm)	2.5	2.0	2.5	8.3	1.6
XLPE insulation, nominal (mm)	0.7	0.7	0.7	1.0	0.7
Core diameter, approx. (mm)	3.9	3.4	3.9	10.3	3.0
Bedding, armour and sheath					
Extruded LS-PVC bedding, approx. (mm)	1.0	1.0	1.0	1.2	1.0
Galvanized steel wire diameter, nominal (mm)	0.8	—	0.8	1.6	1.25
PVC outer sheath, nominal (mm)	1.8	1.4	1.8	2.0	1.8
Overall data					
Overall diameter, approx. (mm)	16.8	12.2	15.7	34.5	20.4
Cable weight, approx. (kg/km)	560	215	480	3,450	850
Min. bending radius, installed	12 × OD ≈ 200 mm	8 × OD ≈ 100 mm	12 × OD ≈ 190 mm	12 × OD ≈ 415 mm	12 × OD ≈ 245 mm
Max. pulling force on conductors (50 N/mm²)	0.8 kN	0.38 kN	0.6 kN	10.0 kN	0.9 kN

Values are approximate and are confirmed by the manufacturer's final design data sheet and routine test report. Overall diameter tolerance approx. ±1.0 mm (B.2.5: ±1.5 mm). Armour wire diameters are determined from the fictitious diameter under armour per IEC 60502-1, Annex A. B.2.5 is offered with circular compacted conductors; sector-shaped conductors (smaller OD and weight) are available on request.

05 Electrical and Thermal Characteristics

Parameter	B.2.2 4C × 4	B.2.3 3C × 2.5	B.2.4 3C × 4	B.2.5 4C × 50	B.2.6 12C × 1.5
Rated voltage Uo/U (Um)			0.6/1 (1.2) kV AC		
Max. DC conductor resistance at 20 °C (Ω/km, IEC 60228)	4.61	7.41	4.61	0.387	12.1
Approx. AC resistance at 90 °C (Ω/km)	5.88	9.45	5.88	0.494	15.4
Short-circuit current of conductor, 1 s (kA, k = 143)	0.57	0.36	0.57	7.15	0.21
Indicative current rating, in free air / perforated tray, 30 °C (A)*	42 3 loaded	36 2 loaded	49 2 loaded	192 3 loaded	— control
Max. conductor temperature, normal operation			90 °C		
Max. conductor temperature, short circuit (≤ 5 s)			250 °C		
Routine test voltage			3.5 kV AC, 5 min		
Min. installation temperature (PVC sheath)			0 °C		

* Indicative values per IEC 60364-5-52, Table B.52.12, installation method E (multi-core cable in free air), XLPE, copper. Ratings must be derated for actual ambient temperature, grouping, soil thermal resistivity and installation method.

06 Tests

Routine tests (every drum length, IEC 60502-1 cl. 15)

- Measurement of conductor DC resistance
- Voltage test, 3.5 kV AC, 5 min, between conductors and between conductors and armour
- Insulation resistance check
- Visual inspection, core identification, dimensions and marking check

Sample tests (IEC 60502-1 cl. 16)

- Conductor examination; thickness of insulation, bedding and outer sheath; overall diameter
- Measurement of armour wires (armoured items)
- Hot-set test for XLPE insulation

Type tests

- Electrical and non-electrical type tests per IEC 60502-1 cl. 17 and 18
- Flame propagation, single cable — IEC 60332-1-2

- Flame propagation, bunched cables — IEC 60332-3-24, Category C
- Restricted breathing test per IEC 60079-14 (items B.2.2, B.2.3, B.2.4, B.2.5)

> Type test reports and a Certificate of Conformity to IEC 60502-1 are provided; a mill / factory routine test certificate accompanies every drum. Witness of routine tests by the Buyer or a third-party inspector can be arranged on request.

07 Fire Performance and Restricted Breathing

Property	Standard	Requirement	Applicable items
Flame retardancy, single cable	IEC 60332-1-2	**Pass**	All
Flame retardancy, bunched cables	IEC 60332-3-24	**Category C — char height ≤ 2.5 m above burner**	All
Restricted breathing	IEC 60079-14	**Pass — time for internal pressure to fall from 3 kPa to 1.5 kPa ≥ 5 s (cable sample 3 m)**	B.2.2 – B.2.5
Bedding / filler compound	—	**Extruded low-smoke PVC**	All

The restricted-breathing property is achieved by a fully filled, void-free construction: the extruded LS-PVC filler/bedding is applied under pressure into the interstices between the cores, with the outer sheath extruded tightly over it, so that the cable is suitable for use with Ex "d" / Ex "e" cable glands where IEC 60079-14 requires restricted-breathing cables.

08 Compliance with RFQ-466, Section B

RFQ requirement	FeiChun offer	Status
Rated voltage 0.6/1 kV, Cu/XLPE	0.6/1 kV, copper conductor, XLPE 90 °C insulation	**Complies**
Construction & testing to IEC 60502-1	Designed, manufactured and tested to IEC 60502-1	**Complies**
Flame retardant to IEC 60332-3-24, Cat. C	IEC 60332-3-24 Cat. C (plus IEC 60332-1-2)	**Complies**
Restricted breathing tested, IEC 60079-14 Annex C (B.2.2 – B.2.5)	Filled construction, restricted breathing tested per IEC 60079-14 — see Clarification 4	**Complies**
Conductor: copper, IEC 60228 Cl. 2	Plain annealed copper, IEC 60228 Class 2 (also applied to B.2.6)	**Complies**
Insulation: XLPE	XLPE	**Complies**
Filler / bedding: extruded low-smoke PVC compound	Extruded low-smoke PVC filler / bedding	**Complies**
Core wrapping: as per vendor design	Binder / wrapping tape as per FeiChun design	**Complies**
Armour: galvanized steel wires (B.2.2, B.2.4, B.2.5, B.2.6)	Galvanized round steel wire armour, wire Ø per IEC 60502-1	**Complies**
B.2.3: no armour (Cu/XLPE/PVC)	Unarmoured	**Complies**
Outer sheath: PVC, black	PVC ST2, black	**Complies**
Core colours 4C: Brown, Black, Grey, Blue	Brown, Black, Grey, Blue	**Complies**
Core colours 3C: Brown, Blue, Yellow/Green	Brown, Blue, Green/Yellow	**Complies**
Core colours 12C: black with white numbering, IEC 60227-1 cl. 4.2	Black cores, white printed numbers 1–12	**Complies**
Quantities: 54 / 36 / 204 / 96 / 168 m	1,000 m per item (MOQ)	**Clarified**

Technical deviations: none. The only commercial clarification is the minimum order quantity of 1,000 m per size.

09 Clarifications

1. **Minimum order quantity.** 1,000 m per cable size. RFQ quantities (54 m, 36 m, 204 m, 96 m, 168 m) are below the MOQ; each item is offered and priced at 1,000 m.
2. **Item B.1 — MV Power Cables 6/10 (12) kV.** The RFQ shows a heading only, with no line items; MV cables are not part of this offer. FeiChun can submit a separate MV cable data sheet on receipt of sizes and quantities.
3. **Item B.2.6 (12C × 1.5 mm^2).** The RFQ does not call for restricted-breathing testing or the IEC 60228 class for this item. FeiChun offers Class 2 copper conductors and the same extruded filled construction as the power cables; RBT certification for B.2.6 can be provided on request if the cable will enter Ex equipment.
4. **Restricted breathing test reference.** The RFQ refers to IEC 60079-14 Annex C. The numbering of this annex differs between editions of IEC 60079-14; the test is carried out to the restricted-breathing test procedure of the IEC 60079-14 edition agreed with the Buyer.
5. **Item B.2.3 designation "Cu/XLPE/PVC//RBT//".** Read as an unarmoured cable: copper / XLPE / extruded LS-PVC filler-bedding / PVC outer sheath, restricted breathing tested.

6. **Low smoke PVC.** As specified in the RFQ, low-smoke PVC applies to the filler/bedding; the outer sheath is standard flame-retardant PVC ST2, black. A low-smoke or LSZH outer sheath is available as an option.

10 Marking, Packing and Delivery

Item	Length / drum	Net weight (approx.)	Drum size (approx.)	Gross weight (approx.)
B.2.2 · 4C × 4 mm²	1 × 1,000 m	560 kg	Ø 1,200 × 800 mm	700 kg
B.2.3 · 3C × 2.5 mm²	1 × 1,000 m	215 kg	Ø 1,000 × 700 mm	300 kg
B.2.4 · 3C × 4 mm²	1 × 1,000 m	480 kg	Ø 1,200 × 800 mm	620 kg
B.2.5 · 4C × 50 mm²	1 × 1,000 m	3,450 kg	Ø 2,000 × 1,200 mm	3,850 kg
B.2.6 · 12C × 1.5 mm²	1 × 1,000 m	850 kg	Ø 1,400 × 900 mm	1,020 kg
Total	**5 drums · 5,000 m**	**≈ 5,555 kg**	—	**≈ 6,490 kg**

Item	Requirement
Marking on outer sheath	**Printed (white) at intervals ≤ 1 m, e.g.: FEICHUN CABLE – 0.6/1 kV – 4C×4 mm² – Cu/XLPE/PVC/GSWA/PVC – IEC 60502-1 – IEC 60332-3-24 CAT.C – RBT – [YEAR] – [METRE MARK]**
Drum marking	**Manufacturer, cable type, size, voltage, length, gross/net weight, drum number, RFQ / PO no., RFQ item no. and Epicore ID, rolling direction arrow**
Drums	**Export-grade fumigated wooden drums (steel-wooden drum for B.2.5), lagged with wooden battens**
Cable ends	**Sealed with heat-shrink end caps against moisture ingress**
Length tolerance	**±2 % per drum, or as agreed in the purchase order**

Final drum sizes and gross weights are confirmed on the packing list at dispatch.

11 Documents to be Supplied

- Cable data sheets and cross-section drawings (this document)
- Mill / factory routine test certificate (per drum)
- Certificate of Conformity to IEC 60502-1; type test reports including IEC 60332-3-24 Cat. C and restricted breathing test
- Packing list, Commercial Invoice, Certificate of Origin (China)

Prepared by: design engineer	Checked by: technical dept. / QA	Approved by: technical director

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