FC® ANHUI FEICHUN SPECIAL CABLE CO., LTD.

TRM-D Double-Sheathed High-Flex Reeling Cable 4×120 + 1×95 mm² 0.6/1 kV (FCH63000)

Technical Data Sheet and Commercial Quotation prepared for cable-reel and drum-driven power supply on mobile handling equipment. Torsion- and tension-resistant elastomer construction, oil and abrasion resistant, rated for continuous operation above 100 °C.

Tensile 20 N/mm² | Torsion ±25°/m | EPDM 110 °C | Double sheath | Oil resistant | Flame retardant IEC 60332-1-2

TDS No. FC-TDS-TRM-2026-V7N4 **Quotation No.** FC-QTN-VN-2026-V7N4 **Revision** 00

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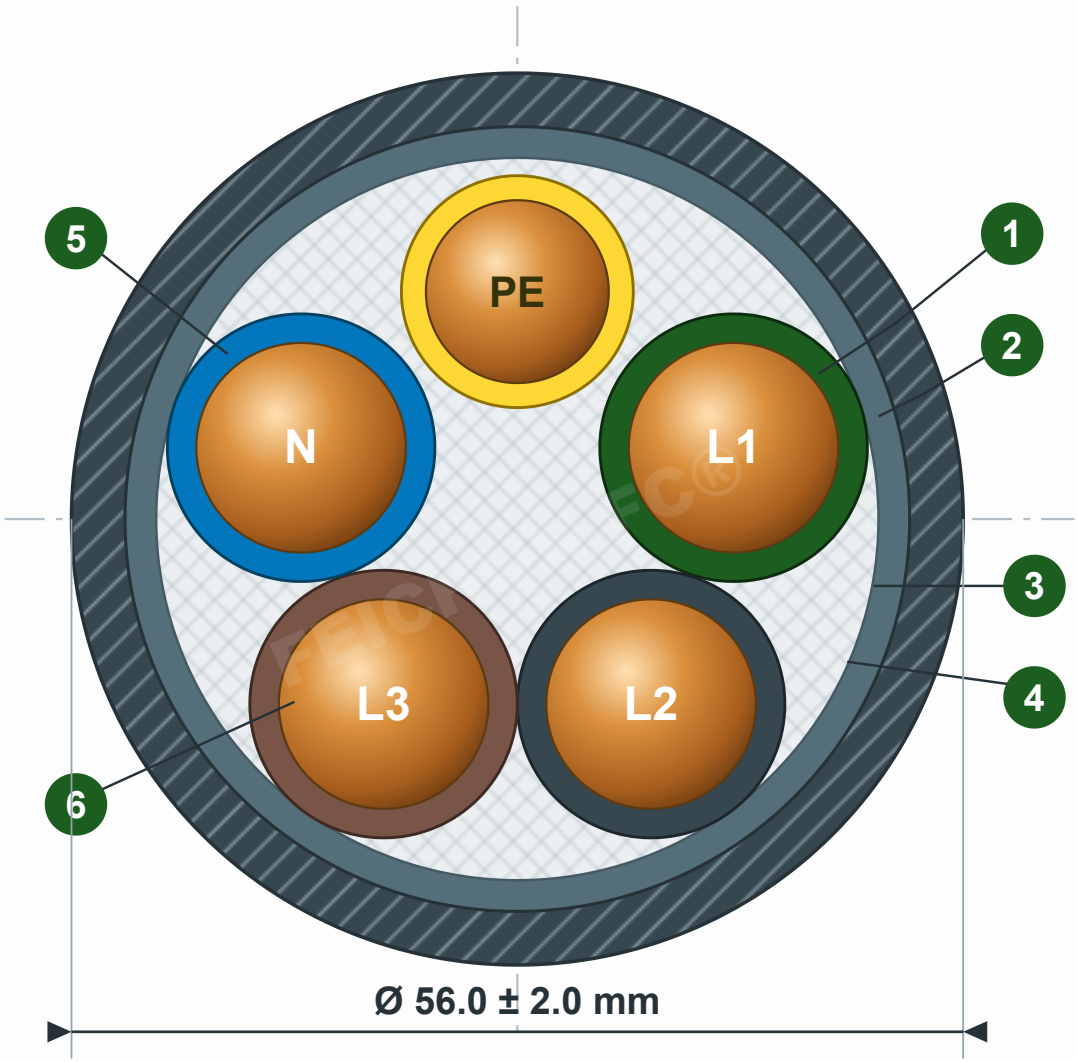
1. Scope and application

FC-FLX™ TRM-D is a heavy-duty flexible copper power cable designed for continuous winding and unwinding on cable reels, drums and festoon systems where the cable is repeatedly subjected to axial tensile load, torsion and mechanical abrasion. The two-layer elastomer sheath system separates the mechanical duty (outer sheath: abrasion, oil, weathering, drum pressure) from the electrical and geometric duty (inner sheath: core protection, roundness, torsion transfer), which is what allows the cable to sustain a working tensile stress of 20 N/mm² on the copper cross-section without core migration or insulation creep.

FeiChun designation	FC-FLX™ TRM-D 4×120 + 1×95 mm² 0.6/1 kV
Customer model reference	FCH63000
Cable family	Double-sheathed reeling / drum cable, elastomer insulated and sheathed
Rated voltage U_0/U	0.6/1 kV AC (U_m 1.2 kV); DC application up to 1.8 kV pole-to-earth
Test voltage	3.5 kV AC, 5 min, each core against all other cores and screen/water bath
Typical applications	Reel- and drum-fed power supply to ship-to-shore and rubber-tyred gantry cranes, stackers and reclaimers, mobile crushers, shiploaders, tunnel boring and mining machinery, quay and yard equipment
Installation	Cylindrical and spiral (monospiral) reels, horizontal and vertical reeling, festoon trolleys, guided drag chains
Reference standards	Designed and tested in accordance with the relevant requirements of IEC 60502-1, IEC 60245-4, VDE 0250 Part 813 (reeling cables), IEC 60228 Class 5 conductors, IEC 60332-1-2 flame propagation

Enquiry conformity. This design responds directly to the specification supplied: flexible copper power cable 4×120 + 1×95 mm² for cable reels, withstanding a tensile force of 20 N/mm² and torsional stress, with sheath and insulation of elastic material resistant to abrasion, oil and temperatures above 100 °C. Each of these four requirements is verified in Sections 4, 5 and 7 below.

2. Construction — layer by layer



FC-FLX™ TRM-D 4×120+1×95	Rev. 00
DWG FC-DWG-TRM-V7N4	Scale 1:1 (ind.)
Section A–A, not to scale	1st angle proj.

Figure 1 — Section A–A through the finished cable. Element numbers correspond to the legend opposite.

Pos.	Element	Material and dimension
1	Conductor	Bare annealed copper, fine-wire bunched and rope-stranded, IEC 60228 Class 5 / reeling grade Class 6 wire diameter. Nominal wire Ø 0.21 mm. 4 × 120 mm² + 1 × 95 mm².
2	Conductor separator	Synthetic tape, applied helically, allows relative wire movement under torsion and prevents insulation adhesion.
3	Core insulation	EPDM/HEPR elastomer, type EI 4 equivalent. Nominal thickness 1.8 mm on 120 mm², 1.6 mm on 95 mm². Continuous conductor temperature 110 °C.
4	Lay-up and filler	Five cores laid up in one layer with short lay length; elastomer / synthetic-yarn fillers and centre element, cross-linked bedding to hold roundness under drum pressure.
5	Inner sheath	Vulcanised elastomer (EM 2 / CR), nominal 2.0 mm. Carries torsional shear between cores and outer sheath and prevents core migration.
6	Outer sheath	Heavy-duty polychloroprene (PCP/CR, type EM 5), nominal 3.5 mm, black, oil and abrasion resistant, flame retardant, UV and ozone stable. Embossed with permanent identification.

Core identification: L1 green, L2 grey/black, L3 brown, N blue, PE green-yellow (95 mm²). Alternative numbered identification available on request.

3. Dimensions and mass

Parameter	4 × 120 mm² cores	1 × 95 mm² core	Finished cable
Nominal cross-section	120 mm²	95 mm²	4 × 120 + 1 × 95
Conductor construction	≈ 3 400 × 0.21 mm	≈ 2 700 × 0.21 mm	Rope-lay, Class 5 flexible
Conductor diameter (nom.)	14.4 mm	12.8 mm	—
Insulation thickness (nom.)	1.8 mm	1.6 mm	—
Core diameter over insulation	18.0 mm	16.0 mm	—
Inner sheath thickness (nom.)	—		2.0 mm
Outer sheath thickness (nom.)	—		3.5 mm
Overall diameter	—		56.0 ± 2.0 mm
Approximate mass	Copper content ≈ 5.12 kg/m		≈ 9.8 kg/m (≈ 5 880 kg / 600 m)
Minimum bending radius, reeling	—		8 × Ø = 450 mm
Minimum bending radius, fixed	—		6 × Ø = 340 mm

4. Mechanical performance — tension, torsion, abrasion

Property	Value	Basis
Permissible tensile stress	**20 N/mm²** referred to the total copper cross-section of 575 mm²	VDE 0250-813 reeling duty
Maximum permissible pulling force	**11 500 N (11.5 kN)** continuous reeling load	20 N/mm² × 575 mm²
Short-term peak force (≤ 5 s, ≤ 10 events/h)	17 250 N (1.5 ×), no permanent elongation	Type-tested
Permissible torsional stress	**± 25 °/m** continuous, ± 45 °/m occasional	Torsion cycle test, 30 000 cycles
Reeling cycles (type test)	≥ 30 000 bending/reeling cycles at min. bending radius without electrical or mechanical deterioration	Drum test rig
Maximum reeling speed	120 m/min (2.0 m/s)	Guided reel systems
Maximum acceleration	0.8 m/s²	—
Sheath abrasion resistance	PCP outer sheath, abrasion loss ≤ 100 mm³ (DIN 53516 comparative)	Heavy-duty class EM 5
Sheath tensile strength / elongation	≥ 12.5 N/mm² / ≥ 300 %	IEC 60245-4
Insulation tensile strength / elongation	≥ 8.5 N/mm² / ≥ 300 %	IEC 60245-4 (EI 4)
Tear resistance, outer sheath	≥ 9 N/mm	Type test
Crush resistance	≥ 20 kN over 100 mm without electrical failure	Type test

Why the double sheath matters for tensile duty. In a single-sheathed construction the whole 11.5 kN reeling load is transmitted through one elastomer layer directly onto the cores, which produces core migration, insulation thinning at the drum flange and eventual conductor birdcaging. In the TRM-D construction the vulcanised inner sheath bonds the five-core assembly into one torsionally stiff body, while the outer sheath is free to absorb drum pressure, flange abrasion and impact. The two layers are separately vulcanised, so the outer sheath can be repaired or locally vulcanised in the field without exposing the cores.

5. Thermal, chemical and environmental resistance

Property	Value
Maximum conductor temperature, continuous	**110 °C** (EPDM/HEPR insulation)
Maximum sheath surface temperature, continuous	100 °C
Short-circuit temperature (≤ 5 s)	250 °C
Ambient operating range, mobile	−35 °C to +90 °C
Ambient operating range, fixed installation	−40 °C to +100 °C
Installation temperature (minimum)	−25 °C
Oil resistance	Resistant to mineral oils, hydraulic fluids and greases; IEC 60811-404 immersion, 168 h at 100 °C in IRM 902 oil — variation of tensile strength and elongation within ± 30 %
Chemical resistance	Resistant to dilute acids and alkalis, sea water, coal and ore dust, fertiliser and cement slurry
Weather, UV and ozone	Resistant, suitable for permanent outdoor and tropical service (Vietnam coastal climate)
Flame propagation	Flame retardant to IEC 60332-1-2
Halogen content	Contains halogen (PCP sheath). Halogen-free variant available on request as FC-FLX™ TRM-D/HF
Water immersion	Suitable for occasional immersion; permanent submersion on request

6. Electrical characteristics

Characteristic (per core, 20 °C unless stated)	120 mm²	95 mm²
Maximum DC conductor resistance	0.153 Ω/km	0.193 Ω/km
AC resistance at 90 °C (approx.)	0.201 Ω/km	0.253 Ω/km
Inductance (approx.)	0.28 mH/km	0.29 mH/km
Insulation resistance at 20 °C	≥ 200 MΩ·km	≥ 200 MΩ·km
Current rating, free in air, 30 °C, single layer	355 A	300 A
Current rating, fully wound on drum (factor 0.60)	213 A	180 A
Current rating, wound in 2 layers (factor 0.80)	284 A	240 A
Short-circuit current, 1 s (143 °C rise)	13.7 kA	10.9 kA
Voltage drop, 3-phase, cos φ 0.85	0.38 V/(A·km)	0.47 V/(A·km)

Rating note. Drum-wound ratings assume an ambient of 40 °C and a fully wound, unventilated steel drum. Where the reel is only partly wound in service, or where forced ventilation is present, the derating factor may be relaxed. Send us the drum geometry, number of layers and duty cycle and we will return a project-specific thermal rating calculation at no charge.

7. Testing and quality assurance

Routine tests — every drum, every batch

- Conductor DC resistance measurement at 20 °C on each core.
- AC voltage withstand test, 3.5 kV for 5 min, water-bath method.
- Insulation resistance measurement after the voltage test.
- Dimensional check of insulation and both sheath thicknesses at the minimum point.
- Continuous length measurement and sheath surface inspection over the whole delivered length.

Type and sample tests on record

- Tensile and elongation of insulation and sheath compounds, before and after ageing (7 days at 100 °C).
- Oil immersion resistance to IEC 60811-404, 168 h at 100 °C.
- Hot set test on the cross-linked insulation, 200 °C / 15 min / 20 N/cm^2.
- Cold bend and cold impact at −35 °C.
- Flame propagation to IEC 60332-1-2.
- Reeling cycle test, 30 000 cycles at 8 × Ø with 11.5 kN applied tension and ± 25 °/m torsion.
- Ozone resistance and UV weathering on the outer sheath.

Documents supplied with the shipment. Works Test Certificate (routine test values per drum), Certificate of Conformity, Mill certificate for the copper, Packing List, Commercial Invoice and Certificate of Origin (Form E under the ACFTA China–ASEAN agreement, so that the preferential import duty rate in Vietnam can be claimed). Full type-test reports are available on request under the FeiChun test report format.

8. Packing, marking and delivery

Ordered quantity	600 m
Delivery lengths	To be confirmed by the customer. Standard proposal: 1 × 600 m continuous, or 2 × 300 m. Length tolerance +2 % / −0 %.
Drum	Steel-reinforced timber export drum, seaworthy, fumigation-free (IPPC ISPM-15 compliant timber or non-wood). Both cable ends sealed with heat-shrink caps and secured to the drum flange.
Estimated gross mass	≈ 5 880 kg cable + ≈ 620 kg drum ≈ **6 500 kg** for 1 × 600 m
Estimated drum size	≈ Ø 2 200 × 1 250 mm barrel (subject to final confirmation)
Sheath marking	FEICHUN · FC-FLX TRM-D · 4×120+1×95 mm^2 · 0.6/1 kV · FCH63000 · sequential metre marks · year of manufacture. Customer marking accepted at no extra cost.
Production lead time	25–30 working days after receipt of the advance payment and technical approval of this data sheet
Port of loading	Shanghai, China
Suggested discharge ports	Hai Phong, Da Nang, Cat Lai / Ho Chi Minh City
HS code	8544.49 (China export) — Vietnamese import classification to be confirmed by the consignee

9. Commercial quotation — FC-QTN-VN-2026-V7N4

Prices are calculated from the current FeiChun ex-works (出厂价) manufacturing price and converted to United States dollars at an internal accounting rate of CNY 6.70 = USD 1.00.

Unit price, EXW Hefei

USD 118.24 / m

Ex-works basis, Incoterms 2020

Unit price, FOB Shanghai

USD 125.50 / m

Export packing, inland haulage, customs clearance and terminal handling included

Contract value, 600 m

USD 75,300.00

FOB Shanghai, Incoterms 2020

Item	Description	Quantity	Unit price FOB Shanghai	Amount USD
01	FC-FLX™ TRM-D double-sheathed high-flex reeling cable, flexible copper conductor, EPDM insulated, double elastomer sheath, **4 × 120 + 1 × 95 mm², 0.6/1 kV**, customer reference **FCH63000**. Tensile 20 N/mm², torsion ± 25°/m, oil and abrasion resistant, 110 °C conductor rating.	600 m	125.50	75,300.00
02	Seaworthy steel-reinforced export drum, heat-shrink end caps, ISPM-15 compliant timber, marking and strapping	1 set	included	0.00
03	Works test certificate, certificate of conformity, packing list, certificate of origin Form E (ACFTA preferential duty)	1 set	included	0.00
Total, FOB Shanghai, Incoterms 2020 — six hundred metres				**USD 75,300.00**

Commercial terms

Price basis	FOB Shanghai, Incoterms® 2020. EXW Hefei and CIF Hai Phong / Cat Lai prices available on request — CIF adds approximately USD 1,850–2,400 for one 600 m drum depending on the sailing and the discharge port.
Currency	United States dollars (USD)
Payment terms	T/T 50 % with the order as advance payment, 50 % balance against the copy of the bill of lading and the scanned shipping documents
Beneficiary bank	China Merchants Bank, Hefei Branch — SWIFT CMBCCNBS441. Full account details are issued with the proforma invoice.
Lead time	25–30 working days from advance payment and drawing approval
Warranty	18 months from the bill of lading date, or 12 months from commissioning, whichever occurs first, against defects in material and workmanship under the stated operating conditions
Minimum order	The quoted price applies to the full 600 m. Split shipments or reduced quantities will be re-quoted.

Copper price clause. The price of this cable is dominated by its copper content of approximately 5.12 kg per metre, that is 3 072 kg for the 600 m order. All prices in this quotation are subject to fluctuation of the LME copper settlement price and are recalculated at the time of order confirmation. The price above is based on the LME cash settlement price prevailing on the issue date of this document. A movement of USD 100 per tonne in the LME price alters the cable price by approximately USD 0.51 per metre. No fixed validity period is attached to this quotation; please request a re-confirmation of price at the moment you are ready to place the order.

What we need from you to finalise the order. Confirmation of the delivery length split (1 × 600 m or 2 × 300 m); the drum diameter, number of layers and maximum reeling speed of the machine so we can validate the current rating and bending radius; the required core identification (colour or numbered); any customer-specific sheath marking; and the discharge port for a CIF alternative.

Notes and disclaimers

- All dimensions and masses are nominal values based on the design calculation and are subject to normal manufacturing tolerances. Final values are confirmed on the works test certificate.
- This cable is a FeiChun original design. Any third-party brand or model reference appearing in the customer enquiry is used solely to identify the technical requirement; FeiChun claims no association with, and no endorsement by, the owners of those trademarks, which remain the property of their respective holders.

- This document contains proprietary engineering information of Anhui FeiChun Special Cable Co., Ltd. and is supplied for the evaluation of this enquiry only. It may not be reproduced, forwarded to a competing manufacturer or used to solicit alternative offers.
- Ratings, derating factors and installation advice given here are guidance for the design conditions stated. The final selection remains the responsibility of the installation designer.

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Technical review
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Customer acceptance
Name / position: _____
Signature and company stamp: _____
Date: _____

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