TYPE · PUR-SHEATHED REELING & TRAILING CABLE · MINING & TUNNELLING

0.6/1 kV

32 VARIANTS

EQUIVALENT TO TROMMELFLEX-M-PUR

FC-TPU-M D2X11Y 0.6/1 kV

PUR Reeling & Trailing Cable for Mines and Tunnels in India

Halogen-free, PUR-sheathed trailing and reeling cable for cable reels of drilling rigs, bolting rigs and loaders — XLPE-insulated power cores, split protective conductor, compact and lightweight. Suitable for 415 V, 690 V and 1100 V AC systems.

Document no. **FC-TDS-TMP-2026-9238-EN-IN** Revision **0** Issue date **30 October 2026**

Language **English (India)**

01 Application and product overview

FC-TPU-M D2X11Y is a compact, lightweight PUR-sheathed reeling and trailing cable for the cable reels of electric drilling rigs, rock-bolting rigs, load-haul-dump (LHD) machines and side-discharge loaders (SDL) in underground mines and tunnels.

The XLPE-insulated power cores are stranded with a very short lay length together with a protective conductor split into three parts and, optionally, two pilot (control) cores. The halogen-free inner sheath and the tough, flame-retardant polyurethane outer sheath give high resistance to abrasion, cuts, tear propagation and water.

Typical applications

- Electric drilling jumbos, roof-bolting rigs and anchor installers in underground mines and tunnels
- LHD machines, SDL loaders and other cable-reel-fed mobile equipment
- Self-propelled equipment in wet headings — water immersion up to 10 m
- Tunnelling equipment (metro, hydro-power and road tunnels) where halogen-free cables are specified
- Hard-rock underground mines and surface mobile plant with reeling duty

32 variants
Phase cores 16 – 300 mm²

20 N/mm²
Max. tensile load on conductors

60 m/min
Travelling speed

Halogen-free
Flame-retardant PUR outer sheath

Why it suits Indian operating conditions

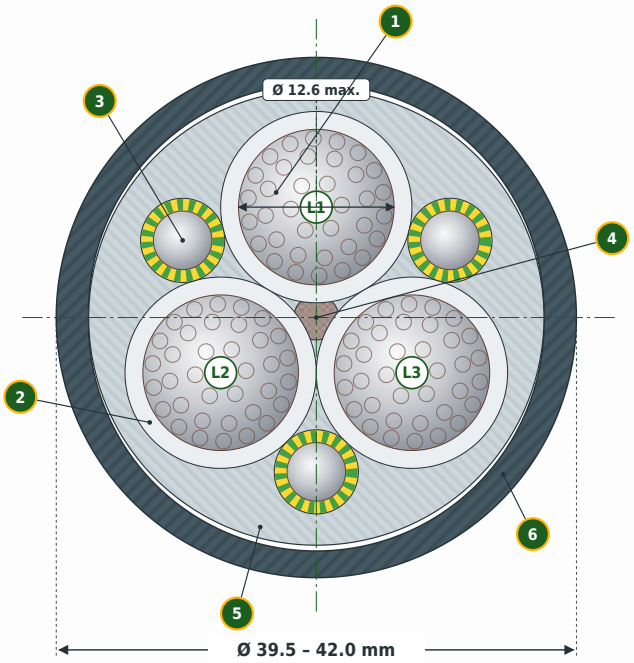
- **1.1 kV class:** rated 0.6/1 kV (U_m 1.2 kV) — suitable for 415 V, 690 V and 1100 V AC systems.
- **Hot and humid sites:** current-rating derating factors for ambient temperatures up to 60 °C are given in section 05; PUR outer sheath is UV- and ozone-resistant for surface runs.
- **Wet headings and monsoon seepage:** water-resistant construction, immersion depth up to 10 m.
- **Reeling duty:** 8 × D bending radius on reel, torsion up to ±50 °/m, travelling speed up to 60 m/min.
- **Safety:** halogen-free insulation and sheaths; flame non-propagation to IEC 60332-1-2.

Cross-reference to the equivalent type

REFERENCE TYPE	FEICHUN EQUIVALENT
TROMMELFLEX-M-PUR D2X11Y 0.6/1 kV	**FC-TPU-M D2X11Y 0.6/1 kV**

Equivalent to TROMMELFLEX-M-PUR D2X11Y 0.6/1 kV in construction and dimensions.

02 Construction



FEICHUN · SECTION A-A · 0.6/1 kV
FC-TPU-M D2X11Y
Doc. no. FC-TDS-TMP-2026-9238-EN-IN Designation 3×95 mm² Rev. 0 · 2026-10-30 · 1st angle · not to scale

Drawing shows the base size 3×95 mm²; other sizes scale proportionally. Optional pilot cores are not shown.

Item	Element	Material
1	Conductor	Bare annealed fine-wire copper, class 5 (IEC 60228)
2	Insulation	Cross-linked polyethylene (XLPE), 90 °C; cores brown, black, grey
3	Protective conductor	Split into three parts (3G), green-yellow, laid in the interstices
4	Central filler	Halogen-free filler
5	Inner sheath	Halogen-free polymer compound
6	Outer sheath	Halogen-free polyurethane (PUR), flame-retardant, resistant to abrasion, cuts and tear propagation

Drawing: base size 3×95 mm².

Construction details

Element	Description
Conductor	Fine-wire bare annealed copper, class 5 to DIN EN 60228 / IEC 60228 / VDE 0295
Core insulation	Cross-linked polyethylene (XLPE) to IEC 60502-1, operating temperature 90 °C
Core identification	Power cores brown, black, grey to DIN VDE 0298-300; control cores blue and white
Protective conductor	Protective conductor split into three parts (3 G x), green-yellow, laid in the interstices
Pilot / control cores	Optional: two pilot cores (2 × 1 or 2 × 1.5 mm²) in the interstices; combined type with 2 × (10 × 2.5) control bundles and one screened (C) bundle 8 × 1.5 mm²
Stranding	Power cores, split protective conductor and pilot cores are stranded together with a very short lay length
Inner sheath	Halogen-free polymer compound
Outer sheath	Halogen-free polyurethane (PUR), flame-retardant, resistant to abrasion, cuts and tear propagation

03 Electrical, thermal and mechanical characteristics

Electrical data

Parameter	Value
Rated voltage U_0/U (U_m)	0.6/1 (1.2) kV AC
System compatibility	415 V, 690 V and 1100 V AC systems
Max. DC working voltage	0.9/1.8 kV
Test voltage	2.5 kV AC (power cores); 2 kV AC (control cores)
Current ratings	To DIN VDE 0298-4 at 30 °C ambient; derating factors in section 05

Thermal and mechanical data

Parameter	Value
Max. conductor temperature	+90 °C
Max. short-circuit temperature	+250 °C
Ambient temperature, fixed installation	−40 °C to +80 °C
Ambient temperature, flexing / reeling	−30 °C to +80 °C
Min. bending radius	4 × D fixed installation; 8 × D on cable reel (DIN VDE 0298-3)
Max. tensile load	20 N/mm² continuous, based on total copper cross-section of the power cores
Max. torsional load	±50 °/m
Max. travelling speed	60 m/min (underground reel winding)
Flame retardancy	DIN EN 60332-1-2 / IEC 60332-1-2
Halogen-free	Yes (insulation, inner and outer sheaths)
UV and ozone resistance	Resistant
Max. water immersion depth	10 m

04 Dimensions, mass and ratings — 0.6/1 kV (32 variants)

The FC-TPU-M D2X11Y range is supplied in four constructions. Sizes 16 mm² to 300 mm² are available for the three-core types; the four-core type covers 16 mm² to 185 mm². Other sizes and special constructions are manufactured to order.

Family	Construction	Phase-core sizes	Variants	Table
A	3 power cores + split protective conductor (3G) + 2 pilot cores	3×16 to 3×300 mm²	11	4.1
B	3 power cores + split protective conductor (3G), without pilot cores	3×16 to 3×300 mm²	11	4.2
C	4 power cores	4×16 to 4×185 mm²	9	4.3
D	Combined power + control cores with screened control bundle	4G70 + control bundles	1	4.4

4.1 Family A — three power cores + split protective conductor + two pilot cores

Designation cores × mm²	FeiChun part no.	Conductor Ø max. mm	Overall diameter min. mm	Overall diameter max. mm	Min. bending radius mm	Approx. mass kg/km	Max. pulling force N	R_{20} max. Ω/km	Current rating A	Short-circuit current kA (1 s)
3×16+3G4+2×1	FC-TMP-013	5.1	19.0	20.5	164	760	960	1.21	99	2.29
3×25+3G6+2×1	FC-TMP-001	6.2	22.5	24.0	192	1,130	1,500	0.780	131	3.57
3×35+3G6+2×1.5	FC-TMP-002	7.8	26.5	28.0	224	1,530	2,100	0.554	162	5.00
3×50+3G10+2×1.5	FC-TMP-003	9.6	30.0	32.0	256	2,160	3,000	0.386	202	7.15
3×70+3G16+2×1.5	FC-TMP-004	11.1	35.0	37.0	296	3,050	4,200	0.272	250	10.01
3×95+3G16+2×1.5	FC-TMP-005	12.6	39.5	42.0	336	3,690	5,700	0.206	302	13.58
3×120+3G25+2×1.5	FC-TMP-006	14.8	44.0	46.5	372	4,810	7,200	0.161	352	17.16
3×150+3G25+2×1.5	FC-TMP-007	16.0	49.0	52.0	416	5,780	9,000	0.129	404	21.45
3×185+3G35+2×1.5	FC-TMP-008	17.7	53.5	56.0	448	7,300	11,100	0.106	461	26.45
3×240+3G50+2×1.5	FC-TMP-009	20.2	61.5	64.5	516	9,600	14,400	0.0801	540	34.32
3×300+3G50+2×1.5	FC-TMP-014	22.6	69.0	72.5	580	11,740	18,000	0.0641	617	42.90

4.2 Family B — three power cores + split protective conductor (without pilot cores)

Designation cores × mm²	FeiChun part no.	Conductor Ø max. mm	Overall diameter min. mm	Overall diameter max. mm	Min. bending radius mm	Approx. mass kg/km	Max. pulling force N	R_{20} max. Ω/km	Current rating A	Short-circuit current kA (1 s)
3×16+3G4	FC-TMP-015	5.1	19.0	20.5	164	740	960	1.21	99	2.29
3×25+3G6	FC-TMP-016	6.2	22.5	24.0	192	1,110	1,500	0.780	131	3.57
3×35+3G6	FC-TMP-017	7.8	26.5	28.0	224	1,510	2,100	0.554	162	5.00
3×50+3G10	FC-TMP-018	9.6	30.0	32.0	256	2,140	3,000	0.386	202	7.15
3×70+3G16	FC-TMP-019	11.1	35.0	37.0	296	3,030	4,200	0.272	250	10.01
3×95+3G16	FC-TMP-020	12.6	39.5	42.0	336	3,670	5,700	0.206	302	13.58
3×120+3G25	FC-TMP-021	14.8	44.0	46.5	372	4,790	7,200	0.161	352	17.16
3×150+3G25	FC-TMP-022	16.0	49.0	52.0	416	5,760	9,000	0.129	404	21.45
3×185+3G35	FC-TMP-023	17.7	53.5	56.0	448	7,280	11,100	0.106	461	26.45
3×240+3G50	FC-TMP-024	20.2	61.5	64.5	516	9,580	14,400	0.0801	540	34.32
3×300+3G50	FC-TMP-025	22.6	69.0	72.5	580	11,720	18,000	0.0641	617	42.90

4.3 Family C — four power cores

Designation cores × mm²	FeiChun part no.	Conductor Ø max. mm	Overall diameter min. mm	Overall diameter max. mm	Min. bending radius mm	Approx. mass kg/km	Max. pulling force N	R_{20} max. Ω/km	Current rating A	Short-circuit current kA (1 s)
4×16	FC-TMP-026	5.1	20.5	22.0	176	820	1,280	1.21	99	2.29
4×25	FC-TMP-027	6.2	25.0	26.5	212	1,250	2,000	0.780	131	3.57
4×35	FC-TMP-028	7.8	29.0	30.5	244	1,710	2,800	0.554	162	5.00
4×50	FC-TMP-010	9.6	33.0	35.0	280	2,450	4,000	0.386	202	7.15
4×70	FC-TMP-011	11.1	38.1	40.6	325	3,300	5,600	0.272	250	10.01
4×95	FC-TMP-029	12.6	43.5	46.0	368	4,410	7,600	0.206	302	13.58
4×120	FC-TMP-030	14.8	48.5	51.0	408	5,530	9,600	0.161	352	17.16
4×150	FC-TMP-031	16.0	54.0	57.0	456	6,910	12,000	0.129	404	21.45
4×185	FC-TMP-032	17.7	59.0	62.0	496	8,420	14,800	0.106	461	26.45

4.4 Family D — combined power and control cores (screened control bundle)

Designation cores × mm²	FeiChun part no.	Conductor Ø max. mm	Overall diameter min. mm	Overall diameter max. mm	Min. bending radius mm	Approx. mass kg/km	Max. pulling force N	R_{20} max. Ω/km	Current rating A	Short-circuit current kA (1 s)
4G70+2×(10×2.5)+ 1×(8×1.5)C	FC-TMP-012	11.1	62.0	66.0	528	5,300	5,600	0.272	250	10.01

Current rating: values to DIN VDE 0298-4 for flexible rubber-type cables at 30 °C ambient, three loaded cores, cable fully unwound — for other ambient temperatures and for cable wound on a reel apply the factors in section 05. Bending radius: 8 × D. Pulling force: 20 N/mm² × total cross-section of the power cores. Dimensions and mass are nominal and subject to manufacturing tolerances. Families A and B have identical diameters; the pilot cores lie in the interstices. Other sizes and special constructions are manufactured to order.

05 Current rating, derating and short-circuit withstand

5.1 Ambient temperature factors (conductor 90 °C)

°C	20	25	30	35	40	45	50	55	60
Factor	1.08	1.04	1.00	0.96	0.91	0.87	0.82	0.76	0.71

5.2 Factors for cable wound on a reel (DIN VDE 0298-4)

Layers on reel	unwound	1	2	3	4	5
Factor	1.00	0.80	0.61	0.49	0.42	0.38

Apply both factors in series: $I_{service} = I_{rating}$ × ambient factor × reel factor. Example: 3×70+3G16+2×1.5 at 40 °C ambient with two layers on the reel: 250 A × 0.91 × 0.61 = 139 A.

5.3 Indicative current ratings in service at 40 °C ambient

Phase core mm²	Rating at 30 °C, unwound A	At 40 °C ambient (A)				Indicative load at 1.1 kV, cos φ 0.85 (kW)	
		unwound	1 layer	2 layers	3 layers	unwound	2 layers
16	99	90	72	55	44	146	89
25	131	119	95	73	58	193	118
35	162	147	118	90	72	239	146
50	202	184	147	112	90	298	182
70	250	228	182	139	111	368	225
95	302	275	220	168	135	445	271
120	352	320	256	195	157	519	316
150	404	368	294	224	180	595	363
185	461	420	336	256	206	679	414
240	540	491	393	300	241	796	485
300	617	561	449	342	275	909	555

Indicative values: thermal limit of the cable only, valid for three loaded cores. Verify voltage drop, starting current, protection settings and short-circuit withstand for the actual installation. Values apply to the three-core and four-core families.

5.4 Short-circuit withstand

Permissible short-circuit current for 1 s: I_k = 0.143 kA/mm² × phase conductor cross-section (XLPE, 90 °C → 250 °C, bare copper). For another duration t: $I_{k,t} = I_{k,1s} / \sqrt{t}$ (0.1 s ≤ t ≤ 5 s).

06 Frequently asked questions

What voltage is the FC-TPU-M D2X11Y cable rated for?

It is rated 0.6/1 kV AC (U_m 1.2 kV) and is suitable for 415 V, 690 V and 1100 V AC systems. The maximum DC working voltage is 0.9/1.8 kV.

Is the cable halogen-free and flame-retardant?

Yes. The insulation, inner sheath and PUR outer sheath are halogen-free, and the cable passes the single-cable flame test to IEC 60332-1-2.

Can it be used in wet headings or under water?

Yes. The cable is suitable for wet conditions and temporary immersion to a depth of 10 m.

What are the minimum bending radius and reel core diameter?

The minimum bending radius is 8 × D on a cable reel and 4 × D in fixed installation. The reel core diameter should be at least twice the minimum bending radius.

How much current can it carry on a reel in hot weather?

Multiply the rating in section 04 by the ambient factor (section 5.1) and the reel-layer factor (section 5.2). Section 5.3 gives worked values at 40 °C.

Which cable is it equivalent to?

FC-TPU-M D2X11Y 0.6/1 kV is the FeiChun equivalent of TROMMELFLEX-M-PUR D2X11Y 0.6/1 kV in construction and dimensions.

What are the delivery time and warranty?

Manufacturing time is 2–3 weeks after technical agreement. The warranty is at least 3 years against manufacturing defects. Continuous lengths without joints are supplied to order.

07 Standards and testing

Standard	Scope
DIN EN 60228 / IEC 60228 / VDE 0295	Conductors, class 5
IEC 60502-1	Insulation compound
DIN VDE 0298-300	Use of cables — core identification
DIN VDE 0298-3	Use of cables — bending radii, tensile load
DIN VDE 0298-4	Current-carrying capacity
DIN EN 60332-1-2 / IEC 60332-1-2	Flame propagation, single cable
IS 8130	Indian standard for conductors of insulated cables and flexible cords (counterpart of IEC 60228) — cross-reference
IS 7098 (Part 1)	XLPE-insulated thermoplastic-sheathed cables up to and including 1100 V — cross-reference
IS 9968 (Part 1)	Elastomer-insulated cables up to and including 1100 V (including heavy-duty flexible cables) — cross-reference
IS 10810	Methods of test for cables — cross-reference

Indian standards are listed for cross-reference in tenders and specifications. Clause-by-clause conformity statements are issued in writing on request for each project.

Routine and type tests

- AC voltage test on every drum
- Conductor resistance and dimensional check
- Continuity of protective and control cores
- Reeling, bending and torsion tests (type test)
- Flame non-propagation (IEC 60332-1-2) and verification of halogen-free materials

Test documentation: every delivery is accompanied by a test certificate from the FeiChun in-house laboratory. Third-party witnessed tests can be arranged at the buyer's expense.

08 Installation, marking and delivery

Installation guidance

- Use a motor-driven or spring-driven cable reel with a core diameter of at least 2 × the minimum bending radius (8 × D).
- Unwind the cable from the transport drum tangentially — never pull it over the flange; avoid loops and kinks.
- Keep torsion within ±50 °/m and the pulling force within the value in the tables.
- Suitable for wet conditions and temporary immersion to a depth of 10 m.
- Protect the cable from being driven over or crushed by machinery; inspect the sheath regularly.
- Connect every part of the split protective conductor at both ends.

Sheath marking

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FEICHUN FC-TPU-M D2X11Y [size] 0.6/1 kV [year] [serial no.] [metre mark]
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Packing and delivery

Item	Standard
Drum	Steel or fumigated wooden drums; cable ends sealed with heat-shrink caps
Delivery lengths	To order, in one continuous length (no joints)
Manufacturing time	2–3 weeks after technical agreement
Warranty	At least 3 years against manufacturing defects
Drum label	Type, size, length, gross/net weight, batch no., drum no.

How to order: state the type (FC-TPU-M D2X11Y), the designation (for example 3×70+3G16+2×1.5), the part number (for example FC-TMP-004), the length per drum and the number of drums. Special constructions, colours of the outer sheath and other sizes are available on request.

09 Certification, quality and approvals

CE — LVD 2014/35/EU

Certificate no. M.2025.206.C116598 · EN 50525-1:2011+A1:2022 · UDEM International Certification · valid until 01.04.2030

UKCA — Verification

No. ICR/VC/HS2508110 · BS EN 50525-1:2011+A1:2022 · ICR Polska · valid until 17.08.2030

India — project approvals

Mine- and project-specific approvals (end-user specifications, DGMS requirements) are arranged together with the end user or the local distributor. Type-test reports and clause-wise conformity information are available on request.

FeiChun also holds documentary verification for ATEX (Directive 2014/34/EU) and IECEx / VDE approvals for certain product groups. Approvals for specific mines are processed together with the end user or the local distributor where required. Copies of certificates are supplied on request.

10 Trademark notice and intellectual property

TROMMELFLEX® and the type designation TROMMELFLEX-M-PUR D2X11Y 0.6/1 kV are given only to identify the reference product of Prysmian Group, the trademark owner. They are used solely for technical comparison; FeiChun Cables is not affiliated with, or endorsed by, the trademark owner. FC-TPU-M is a FeiChun product developed with equivalent functional characteristics.

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Document control

Doc. no. FC-TDS-TMP-2026-9238-EN-IN
Revision 0 — first issue (India edition)
Date 30 October 2026
Product FC-TPU-M D2X11Y 0.6/1 kV

Prepared — Technical Dept.	Checked — QC	Approved — Int'l Business

FEICHUN CABLE