HIGH-FLEX LV REELING CABLE · RTG / RMG / STS | 0.6/1 kV | 12 sizes | PUR low-temp

FC-TPU-MA D2X11Y-4G 0.6/1 kV

Low-Voltage Port Reeling Cable 0.6/1 kV – 3 power cores + PE of equal cross-section, halogen-free low-temperature PUR sheath. Complete technical data sheet: construction, dimensions, weights, current ratings, standards and installation guidance for 12 sizes.

Document no. FC-TDS-LV075-2026-14B30075-EN · Revision 0 · Issued 4 November 2026 · Language: English (AU)

01 Application and Product Overview

FC-TPU-MA D2X11Y-4G is a high-flex reeling cable for container terminals and heavy port equipment, rated 0.6/1 kV, with the configuration 3 power cores + PE of equal cross-section. It has fine-wire class 5 copper conductors, halogen-free cross-linked polyethylene (XLPE) insulation, a halogen-free inner sheath and an outer sheath of halogen-free polyurethane (PUR), flame-retardant, low-temperature grade; power cores from 6 – 240 mm². Short-lay stranding makes it suitable for continuous winding on and off a cable reel under tensile and torsional load. The construction is a variant of the FC-TPU-M D2X11Y platform.

Typical applications

- Three-phase supply of mobile equipment without neutral, with PE carried in the same cable
- Rubber-tyred gantry (RTG), rail-mounted gantry (RMG) and electrified RTG cranes fed through spring-driven or motor-driven cable reels
- Ship-to-shore (STS) crane auxiliary drives, automated stacking cranes, ship unloaders and bulk-handling machines in terminals
- Outdoor quayside and yard operation with exposure to seawater spray, salt mist, UV radiation and ozone
- Reeling operation at travel speeds up to 60 m/min with repeated tensile and torsional loads
- Terminals and cold-storage yards where the ambient temperature falls to −40 °C while the cable is in motion

Design

Three phase cores plus one green-yellow PE core of equal cross-section, laid in concentric layers. The standard four-core layout for a three-phase TN-S supply without neutral on mobile port equipment.

12 sizes	0.6/1 kV	+90 °C	Halogen-free
Cross-section 6 – 240 mm²	Rated voltage U_0/U	Maximum conductor temperature	Sheath: PUR low-temp

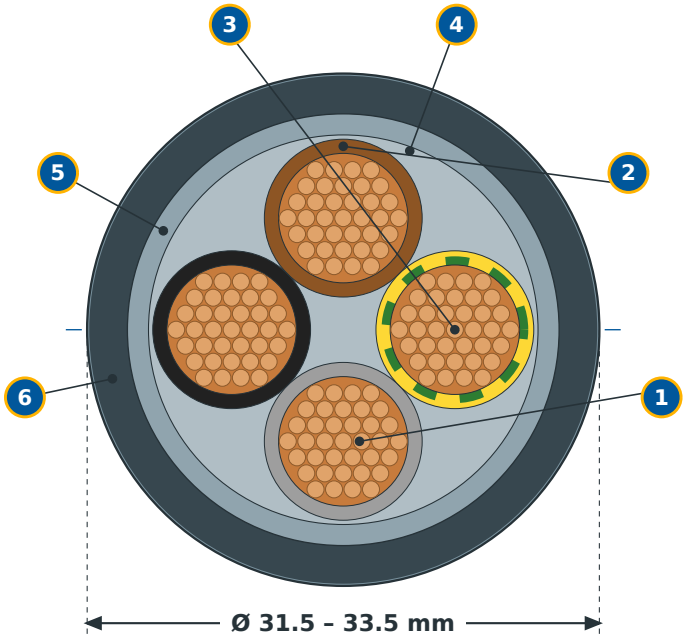
Key features

- Fine-wire class 5 copper conductors and a very short core lay length for repeated reeling
- Designed for 20 N/mm² continuous tensile load (on the total copper cross-section of the power cores)
- Halogen-free insulation and sheaths; no halogen acid gases when burned (IEC 60754-1/-2)
- Flexible in motion down to −40 °C (fixed installation −50 °C)
- Flame retardant to IEC 60332-1-2

02 Construction

FEICHUN · CROSS-SECTION A-A · 0.6/1 kV

FC-TPU-MA D2X11Y-4G
Sample size 4G50 · Rev 0 · Illustrative, not to scale



No.	Component	Material
1	Conductor	Bare annealed fine-wire copper, class 5 to IEC 60228
2	Insulation	Halogen-free cross-linked polyethylene (XLPE)
3	Protective (PE) core	Class 5 copper, green-yellow insulation, same cross-section as the power cores
4	Filler and binder tape	Halogen-free compound, polyester tape
5	Inner sheath	Halogen-free polymer compound
6	Outer sheath	Halogen-free polyurethane (PUR), flame-retardant, low-temperature grade

The drawing shows size 4G50. Other sizes have the same construction with scaled dimensions.

Construction details

Conductor	Bare annealed fine-wire copper, class 5 to DIN EN 60228 / IEC 60228 / VDE 0295
Insulation	Halogen-free cross-linked polyethylene (XLPE) to IEC 60502-1, maximum conductor temperature 90 °C
Core identification	Green-yellow, brown, black, grey to DIN VDE 0293-308
Stranding	Cores stranded in concentric layers with a short lay length; polyester binder tape
Inner sheath	Halogen-free polymer compound, extruded tightly over the stranded cores
Outer sheath	Halogen-free polyurethane (PUR), flame-retardant, low-temperature grade

Sheath material

The low-temperature grade of halogen-free polyurethane (PUR) keeps the sheath flexible down to −40 °C in motion (−50 °C fixed), so the cable can be reeled in winter service without sheath cracking. It retains the abrasion, cut and tear resistance of standard PUR, resists mineral oil, UV radiation and ozone, and emits no halogen acid gases when burned. Typical use: terminals in northern climates and cold-storage yards.

03 Electrical, Thermal and Mechanical Characteristics

Electrical data

Rated voltage U_0/U	0.6/1 kV AC
Test voltage	2.5 kV AC (power cores); 2 kV AC (control cores)
Maximum operating voltage, DC	0.9/1.8 kV
Current-carrying capacity	To DIN VDE 0298-4 at 30 °C ambient; the table gives rated design values
Conductor resistance	Maximum at 20 °C, class 5 to IEC 60228

Thermal and mechanical data

Maximum conductor temperature	+90 °C
Maximum temperature at short circuit	+250 °C
Ambient temperature, fixed installation	−50 °C to +80 °C
Ambient temperature, in motion	−40 °C to +80 °C
Minimum bending radius	4 × D fixed; 8 × D on a cable reel (DIN VDE 0298-3)
Maximum tensile load	20 N/mm² continuous, on the total copper cross-section of the power cores
Maximum torsional load	±50 °/m
Maximum travelling speed	60 m/min on a cable reel; higher speeds on request
Flame propagation	IEC 60332-1-2 / DIN EN 60332-1-2
Halogen-free	Yes (insulation, inner and outer sheath); IEC 60754-1/-2
UV and ozone resistance	Resistant
Mineral oil resistance	Resistant, IEC 60811-404
Maximum water immersion depth	10 m

Sheath material comparison

Property	PUR	PUR low-temp	CSP rubber	CPE rubber	PCP rubber	HFFR rubber
Abrasion resistance	Excellent	**Excellent**	Good	Good	Very good	Good
Cut and tear resistance	Excellent	**Excellent**	Good	Good	Very good	Good
Mineral oil resistance	Very good	**Very good**	Very good	Very good	Very good	Good
Weather, UV and ozone resistance	Very good	**Very good**	Excellent	Very good	Excellent	Very good
Cold flexibility (moving)	−30 °C	**−40 °C**	−30 °C	−30 °C	−25 °C	−25 °C
Halogen-free (IEC 60754-1/-2)	Yes	**Yes**	No	No	No	Yes

The column of the sheath used in this cable is highlighted. Ratings are qualitative; ask FeiChun for test data on a specific requirement.

04 Dimensions, Weights and Rated Data – 0.6/1 kV (12 sizes)

Type designation cores × mm²	FeiChun article no.	Conductor Ø max mm	Outer Ø min mm	Outer Ø max mm	Min. bend radius mm	Weight approx. kg/km	Max. pull force N	R_{20} max Ω/km	Rated current A	I_k (1 s) kA
4G6	FC-LV075-001	3.3	17.0	18.1	144	430	480	3.30	54	0.858
4G10	FC-LV075-002	4.1	18.3	19.5	156	590	800	1.91	74	1.43
4G16	FC-LV075-003	5.2	19.9	21.1	168	810	1,280	1.21	99	2.29
4G25	FC-LV075-004	6.2	21.8	23.2	186	1,150	2,000	0.780	131	3.58
4G35	FC-LV075-005	7.8	26.5	28.0	224	1,650	2,800	0.554	162	5.00
4G50	FC-LV075-006	9.6	31.5	33.5	268	2,360	4,000	0.386	202	7.15
4G70	FC-LV075-007	11.1	37.5	40.0	320	3,340	5,600	0.272	250	10.01
4G95	FC-LV075-008	12.6	43.5	46.5	372	4,240	7,600	0.206	302	13.59
4G120	FC-LV075-009	14.8	47.5	50.5	404	5,350	9,600	0.161	350	17.16
4G150	FC-LV075-010	16.0	54.5	57.5	460	6,680	12,000	0.129	402	21.45
4G185	FC-LV075-011	17.7	59.0	62.5	500	8,340	14,800	0.106	459	26.45
4G240	FC-LV075-012	20.2	68.0	72.0	576	10,870	19,200	0.0801	540	34.32

Current-carrying capacity: rated design values to DIN VDE 0298-4 for flexible cables, free air, 30 °C ambient; for other ambient temperatures, grouping or layered winding on a reel, apply the factors below. Pull force = 20 N/mm² × total copper cross-section of the power cores. Diameters, dimensions and weights are nominal design values and vary within manufacturing tolerances; confirm critical dimensions before dimensioning reels, guides or festoon systems. Other sizes and configurations are produced to order.

Ambient temperature factors (conductor 90 °C)

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

Short-circuit current rating

I_k = 0.143 kA/mm² × cross-section of the power core (conductor 90 °C → 250 °C). For another short-circuit duration t: $I_{k,t} = I_{k,1s} / \sqrt{t}$ (0.1 s ≤ t ≤ 5 s).

Derating on a cable reel (DIN VDE 0298-4)

1 layer: 0.80 · 2 layers: 0.61 · 3 layers: 0.49 · 4 layers: 0.41. Permissible current = table current × layer factor × temperature factor.

05 Reeling Performance and Reel Design Data

The values below support the dimensioning of the cable reel: minimum reel core diameter, copper weight for earthing and loop-resistance calculations, cable weight, and the rated current for the number of layers wound on the reel.

Type designation cores × mm²	Outer Ø max mm	Min. bend radius on reel, mm	Min. reel core Ø mm	Copper weight kg/km	Cable weight kg/100 m	Current, 1 layer A	2 layers A	3 layers A	4 layers A
4G6	18.1	144	288	213	43.0	43	33	26	22
4G10	19.5	156	312	356	59.0	59	45	36	30
4G16	21.1	168	336	570	81.0	79	60	49	41
4G25	23.2	186	372	890	115.0	105	80	64	54
4G35	28.0	224	448	1,240	165.0	130	99	79	66
4G50	33.5	268	536	1,780	236.0	162	123	99	83
4G70	40.0	320	640	2,490	334.0	200	152	122	102
4G95	46.5	372	744	3,380	424.0	242	184	148	124
4G120	50.5	404	808	4,270	535.0	280	214	172	144
4G150	57.5	460	920	5,330	668.0	322	245	197	165
4G185	62.5	500	1,000	6,580	834.0	367	280	225	188
4G240	72.0	576	1,152	8,530	1,087.0	432	329	265	221

Reel design guidance

- Minimum reel core diameter = 2 × minimum bending radius = 16 × D (outer diameter D).
- Spring reels suit short travel and low tensile load; motor-driven reels with torque control keep the cable under constant, low tension.
- Fit a guide or level-wind that keeps the cable parallel to the reel axis to prevent crossing turns.
- Rated current falls with the number of layers on the reel because heat is not dissipated; see the layer factors below.

06 Selection Guide and Sizing Aid

FC-TPU-MA D2X11Y-4G covers 12 sizes. The smallest, 4G6, has an outer diameter of up to 18.1 mm and weighs about 430 kg/km; the largest, 4G240, has an outer diameter of up to 72.0 mm and weighs about 10,870 kg/km, 25.3 times as much. Across the range the rated current in free air rises from 54 A to 540 A at 30 °C, and the minimum bending radius from 144 mm to 576 mm.

Example 1. A drive draws 83 A continuously, the cable is wound in 2 layers on the reel and the ambient temperature is 40 °C. Required table current = 83 / (0.61 × 0.91) = 150 A. The smallest suitable size is 4G35 with 162 A.

Example 2. A drive draws 247 A continuously, the cable is wound in 1 layer on the reel and the ambient temperature is 35 °C. Required table current = 247 / (0.80 × 0.96) = 322 A. The smallest suitable size is 4G120 with 350 A.

Type designation cores × mm²	Apparent power at 400 V kVA (1 layer)	Apparent power at 690 V kVA (1 layer)	Winding capacity m
4G6	29.9	51.6	13,205
4G10	41.0	70.8	11,340
4G16	54.9	94.7	9,570
4G25	72.6	125.2	7,745
4G35	89.8	154.9	5,185
4G50	112.0	193.1	3,585
4G70	138.6	239.0	2,535

Type designation cores × mm²	Apparent power at 400 V kVA (1 layer)	Apparent power at 690 V kVA (1 layer)	Winding capacity m
4G95	167.4	288.7	1,690
4G120	194.0	334.6	1,390
4G150	222.8	384.3	1,040
4G185	254.4	438.8	950
4G240	299.3	516.3	595

Apparent power S = √3 × U × I × 0.80 (one layer on the reel, 30 °C). Winding capacity is an indicative value for a reel with 2,500 mm flange diameter, 1,000 mm traverse width, core diameter equal to the minimum reel core diameter and 90 % fill; it is not a substitute for the reel manufacturer's calculation.

07 Standards and Testing

Standard	Scope
DIN EN 60228 / IEC 60228 / VDE 0295	Conductors, class 5
IEC 60502-1	Insulation compound, power cables up to 1 kV
DIN VDE 0298-3	Application of cables – bending radii and tensile loads
DIN VDE 0298-4	Application of cables – current-carrying capacity
DIN EN 60332-1-2 / IEC 60332-1-2	Flame propagation, single cable
DIN VDE 0298-300	Core identification
DIN VDE 0250-814	Design reference for flexible reeling and trailing cables (NSHTÖU type)
IEC 60754-1 / -2	Halogen acid gas emission when burned
IEC 60811-404	Mineral oil immersion test

Routine and type tests

- AC voltage test on every reel length (routine test): 2.5 kV AC (power cores); 2 kV AC (control cores)
- Conductor resistance and checks of dimensions, insulation thickness and sheath thickness
- Continuity of conductors and protective earth
- Bending, tensile and reeling torsion tests (type test)
- Flame propagation (IEC 60332-1-2) and confirmation of halogen-free materials

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

08 Installation, Marking and Delivery

Installation guidance

- Use a spring-driven or motor-driven cable reel with a core diameter of at least twice the minimum bending radius (16 × D).
- Unwind from the shipping reel tangentially; never pull the cable over the flange of the drum, and avoid loops and kinks.
- Keep torsion within the permitted limit (±50 °/m) and tensile load within the value in the table.
- Guide the cable so that it is not run over by vehicles or crushed; inspect the sheath regularly.
- Connect all parts of the split PE conductor at both ends of the cable.
- Suitable for wet conditions and temporary immersion to a depth of up to 10 m.

Sheath marking

FEICHUN FC-TPU-MA D2X11Y-4G [cross-section] 0.6/1 kV [year] [serial no.] [metre mark]

Packing and delivery

Reel	Steel or fumigated wooden reels; cable ends sealed with heat-shrink caps
Delivery length	As ordered, in one continuous length without joints
Lead time	2–3 weeks after technical approval
Warranty	1 year, covering failures not caused by human factors
Reel label	Type, cross-section, length, gross/net weight, batch no., reel no.

Ordering information

Field	Example	Meaning
Series code	FC-TPU-MA D2X11Y-4G	FeiChun series and sheath system
Core configuration	4G50	Number of cores with × (no PE core) or G (with PE core) and cross-section in mm²
Rated voltage	0.6/1 kV	U_0/U, AC
Length and packing	500 m, steel reel	Delivery length in one piece; reel type on request

Order example: FC-TPU-MA D2X11Y-4G 4G50 0.6/1 kV – 500 m on one steel reel. When requesting a quotation, state the cable type, configuration, cross-section, voltage, length per piece, required standards and installation conditions.

09 Certification and Quality

All cable is subject to FeiChun's quality control, with routine testing over 100 % of the delivered length. Certificates, type tests and third-party tests (for example partial discharge or compatibility with cable accessories) are provided per project requirement; copies of the records are available on request.

The CE, EAC and UKCA certificates listed in datasheet FC-TDS-TMP-2026-9238-EN apply to the FC-TPU-M D2X11Y product group. Confirm with FeiChun that the certificate scope covers this construction before quoting it in a tender.

10 Related Datasheets

Variants of this cable that differ in one attribute – sheath, configuration, optical fibres or voltage. All datasheets are in PDF format.

- FC-TPU-M D2X11Y-4G 0.6/1 kV – 3 power cores + PE of equal cross-section, PUR
- FC-TPU-MA D2X11Y 0.6/1 kV – 3 power cores + 3 split PE conductors + 2 control cores, PUR low-temp
- FC-TCS-M-4G 0.6/1 kV – 3 power cores + PE of equal cross-section, CSP rubber
- FC-TPU-MA D2X11Y-N 0.6/1 kV – 3 power cores + 3 split PE conductors, PUR low-temp
- FC-TRB-M-4G 0.6/1 kV – 3 power cores + PE of equal cross-section, CPE rubber
- FC-TPU-MA D2X11Y-P 0.6/1 kV – 3 power cores + 3 split PE conductors + 2 pilot cores 2×2.5 mm², PUR low-temp
- FC-CFX-M (N)SHTÖU-4G 0.6/1 kV – 3 power cores + PE of equal cross-section, PCP rubber
- FC-TPU-MA D2X11Y-NS 0.6/1 kV – 3 power cores + 3 split PE conductors + overall screen, PUR low-temp

Overview of all datasheets: Low-Voltage Port Reeling Cables 0.6/1 kV

Frequently asked questions

What is FC-TPU-MA D2X11Y-4G used for?
Typical applications include three-phase supply of mobile equipment without neutral, with PE carried in the same cable.

What are the outer diameter and minimum bending radius of 4G50?
The outer diameter is 31.5 to 33.5 mm and the minimum bending radius in moving or reeling operation is 268 mm (8 × D).

What minimum reel core diameter is needed for 4G50?
At least 536 mm, which is twice the minimum bending radius of 268 mm. A larger core diameter extends cable life.

What current rating applies to 4G50 on a cable reel?
The rated current in free air at 30 °C ambient is 202 A. Multiply it by 0.80 for one layer on the reel, 0.61 for two layers, 0.49 for three layers and 0.41 for four layers (DIN VDE 0298-4), and by the ambient temperature factor.

Is this cable halogen-free?
Yes. The insulation and all sheaths are halogen-free; see section 03 for flame-retardancy and temperature data.

Which cross-sections are available?
FC-TPU-MA D2X11Y-4G: 6, 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240 mm². Other sizes and special designs can be produced to order.

11 Trademark Notice and Intellectual Property

© 2026 Anhui FeiChun Special Cable Co., Ltd. — All rights reserved. This document, including its drawings, tables and layout, is the intellectual property of FeiChun and is protected under the Copyright Law and the Anti-Unfair Competition Law of the People's Republic of China and the Copyright Act 1968 (Cth) of Australia. Reproduction, distribution or modification of the whole or any part without written consent is prohibited. Technical data may change without notice as part of continuous product improvement.

Technical and commercial contacts

Anhui FeiChun Special Cable Co., Ltd.
International Business Department
Park No. 1, Private Science and Technology Park, Hefei National Economic and Technological Development Zone, Hefei, Anhui, China
Technical support: Tech@feichuncables.com
Mining and heavy industry: mining@feichuncables.com
Zihao Yang, Global Sales Manager: zihao.yang@feichuncables.com
WhatsApp: +86 138 5512 3218
Web: www.feichuncables.com

Document control

Document no. FC-TDS-LV075-2026-14B30075-EN
Revision 0 — first issue
Date 4 November 2026
Product FC-TPU-MA D2X11Y-4G 0.6/1 kV

Prepared — Engineering | Checked — QC | Approved — International Business