HIGH-FLEX LV MINING REELING CABLE · DRILL RIGS · LHD · SHUTTLE CARS | 0.6/1 kV | 9 sizes | CPE rubber

HIGH TENSILE · ARAMID BRAID

FC-TRB-M-S-HT 0.6/1 kV

Low-Voltage Mining Reeling Cable 0.6/1 kV – 3 power cores + 3 split PE conductors + 2 control cores + overall screen, with aramid tensile support braid, CPE rubber sheath. Complete technical data sheet: construction, dimensions, weights, current ratings, standards and installation guidance for 9 sizes.

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01 Application and Product Overview

FC-TRB-M-S-HT is a high-flex reeling cable for underground mines, tunnels and open-pit equipment, rated 0.6/1 kV, with the configuration 3 power cores + 3 split PE conductors + 2 control cores + overall screen, with aramid tensile support braid. It has fine-wire class 5 copper conductors, halogen-free EPR/HEPR rubber insulation, a halogen-free inner sheath and an outer sheath of chlorinated polyethylene (CPE) rubber, resistant to weather, ozone and oil; power cores from 25 – 240 mm². Short-lay stranding makes it suitable for continuous winding on and off a cable reel under tensile and torsional load. An aramid tensile support braid between the inner and outer sheath carries the axial load; the permissible pull of the largest size is 24,870 N. The construction is derived from the FC-TPU-M D2X11Y platform with a rubber sheath.

Typical applications

- Converter-fed machine drives where control signals in the same cable must be protected against electromagnetic interference
- Electric drill jumbos, rock bolters and anchor-setting rigs fed through spring-driven or motor-driven cable reels in underground mines and tunnels
- Load-haul-dump (LHD) machines, electric underground trucks and shuttle cars operating at travel speeds up to 60 m/min
- Continuous miners, roadheaders and mobile crushers in wet, muddy and abrasive headings
- Repeated winding, unwinding, tensile and torsional loads, with water resistance for temporary immersion in flooded workings
- Open-pit and surface duty that calls for a rubber sheath with proven weather, ozone and oil resistance
- Steep declines, ramps, raises and shaft installations where the cable weight or the reel tension would otherwise load the conductors; the aramid braid carries the axial load

Design

Combined power and control cable with an overall tinned-copper braid screen between the inner and outer sheath. The screen limits interference from frequency-converter-fed drives into the control cores and into nearby signal cables. A 360° screen termination at both ends is recommended. A braid of aramid yarn is applied between the inner and outer sheath. The braid is a high-modulus, low-elongation element: it takes the axial load that would otherwise stretch the copper conductors, keeps the stranded cores from lengthening and from forming loops (“bird-caging”) when the cable is released from tension on a reel, and raises the permissible working load well above the 20 N/mm² (power) or 15 N/mm² (control) copper-based rating. The permissible pull in the tables includes the braid.

9 sizes	0.6/1 kV	+90 °C	CPE rubber
Cross-section 25 – 240 mm²	Rated voltage U_0/U	Maximum conductor temperature	Sheath: CPE rubber

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Key features

- Fine-wire class 5 copper conductors and a very short core lay length for repeated reeling and trailing
- Three split PE conductors in the interstices keep the cross-section round and balanced
- Aramid tensile support braid under the outer sheath: permissible pull up to 24,870 N in the largest size
- CPE rubber sheath with proven weather, ozone and oil resistance
- Overall tinned-copper braid screen (≥ 85 % coverage) for EMC
- Flame retardant to IEC 60332-1-2

Service notes for mining duty

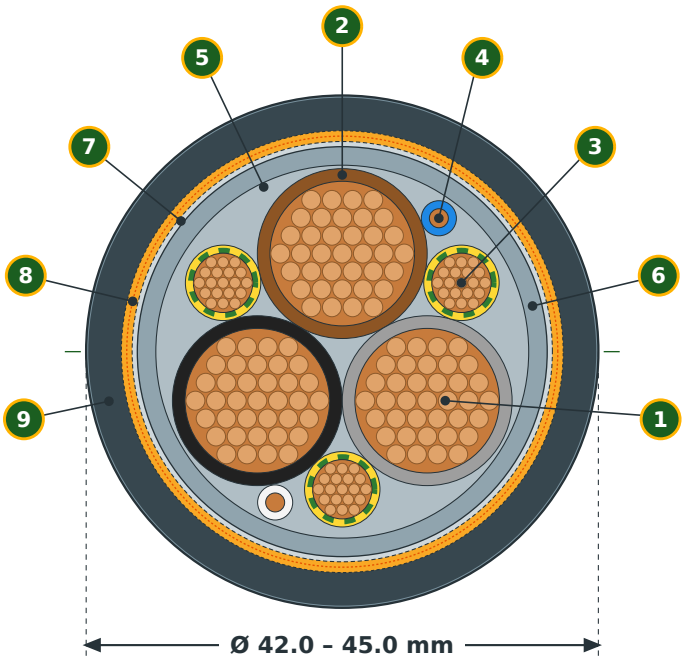
- Underground cable reels are exposed to rock contact and impact: fit a cable guide with rollers rather than fixed steel edges.
- Where the cable lies on the floor, run it on the side of the heading away from machine tracks and keep it out of standing water where possible.

02 Construction

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

FC-TRB-M-S-HT

Sample size 3×95+3G16+2×1.5 C · 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 EPR/HEPR rubber
3	Split PE conductor	Class 5 copper, green-yellow insulation, laid in the interstices between the power cores
4	Control cores	Class 5 copper, blue and white insulation
5	Filler and binder tape	Halogen-free compound, polyester tape
6	Inner sheath	Halogen-free polymer compound
7	Overall screen	Tinned-copper wire braid, coverage ≥ 85 %
8	Tensile support braid	Aramid yarn braid between inner and outer sheath; carries the axial load
9	Outer sheath	Chlorinated polyethylene (CPE) rubber, resistant to weather, ozone and oil

The drawing shows size 3×95+3G16+2×1.5 C. 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 EPR/HEPR rubber to IEC 60502-1, maximum conductor temperature 90 °C
Core identification	Power cores brown, black, grey to DIN VDE 0298-300
Protective conductor	Three PE conductors (3G), green-yellow, 16 mm² each, laid in the interstices between the power cores
Control cores	Two control cores 2 × 1.5 mm² (blue, white) laid in the free space between the power cores
Stranding	Power cores, split PE conductors and control or optical elements are stranded together with a very short lay length
Overall screen	Tinned-copper wire braid, coverage ≥ 85 %, between inner and outer sheath
Inner sheath	Halogen-free polymer compound, extruded tightly over the stranded cores
Tensile support braid	Aramid yarn braid, 0.94 mm thick, between the inner and the outer sheath; the braid carries the axial load
Outer sheath	Chlorinated polyethylene (CPE) rubber, resistant to weather, ozone and oil

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Sheath material

The chlorinated polyethylene (CPE) rubber sheath offers good resistance to weather, ozone and mineral oil with good mechanical robustness and flexibility to −30 °C in motion, at a favourable cost level. CPE contains halogen; where halogen-free cables are specified, select the PUR version of the same construction.

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	−40 °C to +90 °C
Ambient temperature, in motion	−30 °C to +90 °C
Minimum bending radius	4 × D fixed; 8 × D on a cable reel (DIN VDE 0298-3)
Maximum tensile load	20 N/mm² on the copper cross-section plus the permissible load of the aramid support braid; the pull force of each size is in section 04 and in the tensile table
Maximum torsional load	±30 °/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	No (CPE rubber sheath)
UV and ozone resistance	Resistant
Mineral oil resistance	Resistant, IEC 60811-404

04 Dimensions, Weights and Rated Data – 0.6/1 kV (9 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
3×25+3G6+2×1 C	FC-MR056-001	6.2	24.5	26.0	208	1,330	3,580	0.780	131	3.58
3×35+3G6+2×1.5 C	FC-MR056-002	7.8	28.5	30.5	244	1,770	4,840	0.554	162	5.00
3×50+3G10+2×1.5 C	FC-MR056-003	9.6	32.5	34.5	276	2,450	6,370	0.386	202	7.15
3×70+3G16+2×1.5 C	FC-MR056-004	11.1	37.5	39.5	316	3,420	8,520	0.272	250	10.01
3×95+3G16+2×1.5 C	FC-MR056-005	12.6	42.0	45.0	360	4,060	10,960	0.206	302	13.59
3×120+3G25+2×1.5 C	FC-MR056-006	14.8	46.5	49.5	396	5,250	13,360	0.161	350	17.16
3×150+3G25+2×1.5 C	FC-MR056-007	16.0	52.0	55.0	440	6,290	16,350	0.129	402	21.45
3×185+3G35+2×1.5 C	FC-MR056-008	17.7	56.0	59.5	476	7,910	19,380	0.106	459	26.45
3×240+3G50+2×1.5 C	FC-MR056-009	20.2	64.0	68.0	544	10,350	24,870	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 plus the permissible load of the aramid support braid (split out in the tensile table). 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.

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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
3×25+3G6+2×1 C	26.0	208	416	950	133.0	105	80	64	54
3×35+3G6+2×1.5 C	30.5	244	488	1,240	177.0	130	99	79	66
3×50+3G10+2×1.5 C	34.5	276	552	1,760	245.0	162	123	99	83
3×70+3G16+2×1.5 C	39.5	316	632	2,460	342.0	200	152	122	102
3×95+3G16+2×1.5 C	45.0	360	720	3,150	406.0	242	184	148	124
3×120+3G25+2×1.5 C	49.5	396	792	4,070	525.0	280	214	172	144
3×150+3G25+2×1.5 C	55.0	440	880	4,890	629.0	322	245	197	165
3×185+3G35+2×1.5 C	59.5	476	952	6,110	791.0	367	280	225	188
3×240+3G50+2×1.5 C	68.0	544	1,088	8,010	1,035.0	432	329	265	221

Reel design guidance

- Minimum reel core diameter = 2 × minimum bending radius = 16 × D (outer diameter D).
- 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 Tensile Performance of the Aramid Support Braid

The aramid braid adds its own permissible working load to the copper-based rating. The table splits the permissible pull of every size into the copper part (20 N/mm² × copper cross-section) and the braid part, and shows how long a length of cable can hang vertically before its own weight reaches the rated pull. The braid part is a design value: aramid yarn strength 2,900 N/mm², braid efficiency 0.70 and a safety factor of 15 on the yarn strength. Introduce the load only through a cable grip or strain-relief clamp that holds the sheath and the braid.

Type designation cores × mm²	Pull, copper only N	Pull, aramid braid N	Total permissible pull N	Factor × standard	Free-hanging length m (vertical)
3×25+3G6+2×1 C	1,500	2,080	3,580	2.4	274
3×35+3G6+2×1.5 C	2,100	2,740	4,840	2.3	278
3×50+3G10+2×1.5 C	3,000	3,370	6,370	2.1	265
3×70+3G16+2×1.5 C	4,200	4,320	8,520	2.0	253
3×95+3G16+2×1.5 C	5,700	5,260	10,960	1.9	275
3×120+3G25+2×1.5 C	7,200	6,160	13,360	1.9	259
3×150+3G25+2×1.5 C	9,000	7,350	16,350	1.8	264
3×185+3G35+2×1.5 C	11,100	8,280	19,380	1.7	249
3×240+3G50+2×1.5 C	14,400	10,470	24,870	1.7	244

Free-hanging length = permissible pull ÷ (weight × 9.81). For hoisting, shaft suspension or lifting applications apply the safety factor required by the applicable regulations and confirm the arrangement with FeiChun.

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07 Selection Guide and Sizing Aid

FC-TRB-M-S-HT covers 9 sizes. The smallest, 3×25+3G6+2×1 C, has an outer diameter of up to 26.0 mm and weighs about 1,330 kg/km; the largest, 3×240+3G50+2×1.5 C, has an outer diameter of up to 68.0 mm and weighs about 10,350 kg/km, 7.8 times as much. Across the range the rated current in free air rises from 131 A to 540 A at 30 °C, and the minimum bending radius from 208 mm to 544 mm.

Example 1. A drive draws 128 A continuously, the cable is wound in 2 layers on the reel and the ambient temperature is 40 °C. Required table current = 128 / (0.61 × 0.91) = 231 A. The smallest suitable size is 3×70+3G16+2×1.5 C with 250 A.

Example 2. A drive draws 284 A continuously, the cable is wound in 1 layer on the reel and the ambient temperature is 35 °C. Required table current = 284 / (0.80 × 0.96) = 370 A. The smallest suitable size is 3×150+3G25+2×1.5 C with 402 A.

Type designation cores × mm²	Apparent power at 400 V kVA (1 layer)	Apparent power at 690 V kVA (1 layer)	Winding capacity m	Free-hanging length m (vertical)
3×25+3G6+2×1 C	72.6	125.2	6,255	274
3×35+3G6+2×1.5 C	89.8	154.9	4,240	278
3×50+3G10+2×1.5 C	112.0	193.1	3,365	265
3×70+3G16+2×1.5 C	138.6	239.0	2,505	253
3×95+3G16+2×1.5 C	167.4	288.7	1,860	275
3×120+3G25+2×1.5 C	194.0	334.6	1,570	259
3×150+3G25+2×1.5 C	222.8	384.3	1,175	264
3×185+3G35+2×1.5 C	254.4	438.8	1,015	249
3×240+3G50+2×1.5 C	299.3	516.3	700	244

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. Free-hanging length = permissible pull ÷ (weight × 9.81); it is the length at which the cable’s own weight reaches the rated pull, without any safety factor for hoisting.

08 Engineering Profile by Size

Each size of FC-TRB-M-S-HT with the values that matter when sizing a circuit: dimensions, weight, copper share, heat and voltage drop at rated current, and the permissible pull. Voltage drop is for 100 m of cable at rated current with conductors at 90 °C (three-phase).

At 3×25+3G6+2×1 C the cable measures Ø 26.0 mm and weighs roughly 1,330 kg/km. It carries 131 A at 30 °C ambient, which produces 34.1 W/m of heat and a 22.6 V drop per 100 m. The permissible pull is 3,580 N, so a vertical length of 274 m can hang from its own weight before that limit is reached. Per 100 m, 3×25+3G6+2×1 C contains 95.0 kg of copper and 38.0 kg of insulation, filler and sheath material, which sets the scrap value and the recycling split.

3×35+3G6+2×1.5 C: outer Ø 30.5 mm, about 1,770 kg/km of which 1,240 kg/km is copper (70%). Rated current is 162 A in free air at 30 °C; at that current the conductor loss is about 37.1 W per metre and the voltage drop over 100 m is 19.8 V (conductors at 90 °C). Handling 3×35+3G6+2×1.5 C: 177.0 kg per 100 m, bending radius 244 mm; two people can lift a 20 m piece of about 35.4 kg.

Choose 3×50+3G10+2×1.5 C when the load is near 202 A: the conductor resistance is 0.386 Ω/km, the overall size is Ø 34.5 mm and the weight 2,450 kg/km. The minimum reel core is 552 mm and the 1 s short-circuit rating 7.15 kA. A 500 m length of 3×50+3G10+2×1.5 C weighs about 1,225 kg; with a 552 mm minimum core the drum must be sized for that load.

Choose 3×70+3G16+2×1.5 C when the load is near 250 A: the conductor resistance is 0.272 Ω/km, the overall size is Ø 39.5 mm and the weight 3,420 kg/km. The minimum reel core is 632 mm and the 1 s short-circuit rating 10.01 kA. Reel and handling: at 3×70+3G16+2×1.5 C the minimum reel core is 632 mm and the cable weighs 342.0 kg per 100 m, so a 500 m length weighs about 1,710 kg before the drum.

3×95+3G16+2×1.5 C: Ø 45.0 mm; bend radius 360 mm; weight 4,060 kg/km. Voltage drop at rated current (302 A) is 13.7 V per 100 m, loss 47.9 W/m, and the cable can support 275 m of its own length vertically at the rated pull of 10,960 N. Per 100 m, 3×95+3G16+2×1.5 C contains 315.0 kg of copper and 91.0 kg of insulation, filler and sheath material, which sets the scrap value and the recycling split.

For 3×120+3G25+2×1.5 C the design values are: Ø 49.5 mm, 5,250 kg/km, 13,360 N permissible pull (7,200 N copper, 6,160 N braid), 350 A rated current. The copper accounts for 78% of the weight, and 50.3 W/m is dissipated at full load, so heat-sensitive reel layers should be derated as shown in section 04. Handling 3×120+3G25+2×1.5 C:

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525.0 kg per 100 m, bending radius 396 mm; two people can lift a 20 m piece of about 105.0 kg.

For 3×150+3G25+2×1.5 C the design values are: Ø 55.0 mm, 6,290 kg/km, 16,350 N permissible pull (9,000 N copper, 7,350 N braid), 402 A rated current. The copper accounts for 78% of the weight, and 53.2 W/m is dissipated at full load, so heat-sensitive reel layers should be derated as shown in section 04. A 500 m length of 3×150+3G25+2×1.5 C weighs about 3,145 kg; with a 880 mm minimum core the drum must be sized for that load.

Size 3×185+3G35+2×1.5 C has a maximum conductor resistance of 0.106 Ω/km, a copper content of 6,110 kg/km and a minimum bending radius of 476 mm (reel core 952 mm). Short-circuit capability for 1 s is 26.45 kA. Expect 10.7 V of drop per 100 m at 459 A. Reel and handling: at 3×185+3G35+2×1.5 C the minimum reel core is 952 mm and the cable weighs 791.0 kg per 100 m, so a 500 m length weighs about 3,955 kg before the drum.

At 3×240+3G50+2×1.5 C the cable measures Ø 68.0 mm and weighs roughly 10,350 kg/km. It carries 540 A at 30 °C ambient, which produces 59.6 W/m of heat and a 9.6 V drop per 100 m. The permissible pull is 24,870 N, so a vertical length of 244 m can hang from its own weight before that limit is reached. Per 100 m, 3×240+3G50+2×1.5 C contains 801.0 kg of copper and 234.0 kg of insulation, filler and sheath material, which sets the scrap value and the recycling split.

09 Configuration Guidance and Variant Comparison

Typical case: a shuttle car hauling over a wet floor with a reel torque limited to 10,960 N of pull. For this case FC-TRB-M-S-HT is a fit in the 3×95+3G16+2×1.5 C size (Ø 45.0 mm).

Select CPE where weather and oil resistance are needed at a lower cost than CSP or PUR and where the cable is not dragged over sharp rock.

Rated 0.6/1 kV, the cable covers the common 400 V, 690 V and 1,000 V mining supplies.

In the drawn size 3×95+3G16+2×1.5 C the cores fill 76% of the circle inside the inner sheath, the inner sheath is 1.6 mm thick, the screen 0.45 mm, the aramid braid 0.94 mm and the outer sheath 3.1 mm, giving a total wall of 6.1 mm around a core bundle of Ø 32.4 mm.

The aramid braid adds 5,260 N of permissible pull in the 3×95+3G16+2×1.5 C size (10,960 N total instead of 5,700 N), at the cost of about 1.9 mm more diameter and 38 kg/km more weight than the standard design.

FC-TRB-M-S-HT is one of 113 datasheets in the low-voltage mining reeling cable group and one of 953 in the library.

Element inventory and core layout

Element inventory of the drawn size 3×95+3G16+2×1.5 C: 8 elements with 336.0 mm² of copper in total.

Element	Quantity	Cross-section	Ø over insulation mm	Copper mm²
Power / main core	3	95 mm²	14.8	285.0
Protective (PE) conductor	3	16 mm²	6.6	48.0
Control core	2	1.5 mm²	3.1	3.0

Termination data (indicative)

Type designation cores × mm²	Outer Ø or W × H mm	Cable gland thread	Lug / ferrule bolt	Strip length mm	Terminal row mm	Gland-to-bend straight mm
3×25+3G6+2×1 C	26.0	M40	M8	16	96	104
3×35+3G6+2×1.5 C	30.5	M50	M8	22	96	122
3×50+3G10+2×1.5 C	34.5	M50	M10	22	160	138
3×70+3G16+2×1.5 C	39.5	M63	M10	22	160	158
3×95+3G16+2×1.5 C	45.0	M63	M12	28	160	180
3×120+3G25+2×1.5 C	49.5	M75	M12	28	160	198
3×150+3G25+2×1.5 C	55.0	M75	M12	28	160	220
3×185+3G35+2×1.5 C	59.5	M75	M16	34	160	238
3×240+3G50+2×1.5 C	68.0	M90	M16	34	160	272

Gland, lug and terminal-row values are planning guides computed from the dimensions above; confirm them with the accessory manufacturer.

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Comparison with related variants at size 3×95+3G16+2×1.5 C

Variant	Differs in	Outer Ø / H mm	Weight kg/km	Pull N	Current A
This datasheet FC-TRB-M-S-HT	–	45.0	4,060	10,960	302
FC-TCS-M-S-HT 0.6/1 kV	sheath	45.0 (+0%)	4,090 (+1%)	10,960 (+0%)	302 (+0%)
FC-TPU-MA D2X11Y-S-HT 0.6/1 kV	sheath	45.0 (+0%)	3,980 (-2%)	10,960 (+0%)	302 (+0%)
FC-TRB-M-2F-HT 0.6/1 kV	configuration	50.0 (+11%)	4,180 (+3%)	12,000 (+9%)	302 (+0%)
FC-TRB-M-NS-HT 0.6/1 kV	configuration	45.0 (+0%)	4,030 (-1%)	10,960 (+0%)	302 (+0%)
FC-TRB-M-S 0.6/1 kV	tensile braid	43.0 (-4%)	3,940 (-3%)	5,700 (-48%)	302 (+0%)
FC-TRB-M-S-HT 0.66/1.14 kV	voltage class	46.0 (+2%)	4,120 (+1%)	11,160 (+2%)	302 (+0%)

Percentages show the change against this datasheet for the same cross-section; use them to judge what a change of sheath, voltage class, screen or tensile braid costs in size and weight.

10 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
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 and control cores
- Bending, tensile and reeling torsion tests (type test)
- Flame propagation (IEC 60332-1-2)
- Tensile test of the finished cable including elongation at the rated pull, and inspection of the aramid braid coverage (type test)

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.

11 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.
- Never repair a damaged outer sheath with tape alone; cut out the damaged section and use a repair method approved for the voltage class.
- Connect all parts of the split PE conductor at both ends of the cable.
- Terminate the tensile braid: fix the cable with a cable grip or strain-relief clamp that holds the sheath and braid at both ends, so the braid, not the conductors, carries the load.

Sheath marking

FEICHUN FC-TRB-M-S-HT [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	At least 3 years against manufacturing defects
Reel label	Type, cross-section, length, gross/net weight, batch no., reel no.

Ordering information

Order example: FC-TRB-M-S-HT 3×95+3G16+2×1.5 C 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.

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12 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.

Mine-specific approvals (for example coal-mine safety marks, MSHA, or ATEX / IECEx for gassy atmospheres) are not implied by this datasheet; they depend on the project, the machine and the country and are arranged with the end user.

13 Related Datasheets

Variants of this cable with a different sheath, configuration or voltage. All datasheets are in PDF format.

- FC-TCS-M-S-HT 0.6/1 kV – 3 power cores + 3 split PE conductors + 2 control cores + overall screen, with aramid tensile support braid, CSP rubber
- FC-TPU-MA D2X11Y-S-HT 0.6/1 kV – 3 power cores + 3 split PE conductors + 2 control cores + overall screen, with aramid tensile support braid, PUR low-temp
- FC-TRB-M-2F-HT 0.6/1 kV – 3 power cores + 3 split PE conductors + two 12-fibre single-mode optical elements, with aramid tensile support braid, CPE rubber
- FC-TRB-M-NS-HT 0.6/1 kV – 3 power cores + 3 split PE conductors + overall screen, with aramid tensile support braid, CPE rubber
- FC-TRB-M-S 0.6/1 kV – 3 power cores + 3 split PE conductors + 2 control cores + overall screen, CPE rubber
- FC-TRB-M-S-HT 0.66/1.14 kV – 3 power cores + 3 split PE conductors + 2 control cores + overall screen, with aramid tensile support braid, CPE rubber
- FC-TRB-M-F-HT 0.6/1 kV – 3 power cores + 3 split PE conductors + 12-fibre single-mode optical element, with aramid tensile support braid, CPE rubber
- FC-TRB-M-P-HT 0.6/1 kV – 3 power cores + 3 split PE conductors + 2 pilot cores 2×2.5 mm², with aramid tensile support braid, CPE rubber

Overview of all datasheets: Low-Voltage Mining Reeling Cables 0.6/1 and 0.66/1.14 kV

Frequently asked questions

What is FC-TRB-M-S-HT used for?
Typical applications include converter-fed machine drives where control signals in the same cable must be protected against electromagnetic interference.

What are the outer diameter and minimum bending radius of 3×95+3G16+2×1.5 C?
The outer diameter is 42.0 to 45.0 mm and the minimum bending radius in moving or reeling operation is 360 mm (8 × D).

What minimum reel core diameter is needed for 3×95+3G16+2×1.5 C?
At least 720 mm, which is twice the minimum bending radius of 360 mm. A larger core diameter extends cable life.

What current rating applies to 3×95+3G16+2×1.5 C on a cable reel?
The rated current in free air at 30 °C ambient is 302 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.

How much tensile load can 3×95+3G16+2×1.5 C take, and how long can it hang freely?
The permissible pull force is 10,960 N (including the aramid braid; 5,700 N on the copper alone). With a weight of about 4,060 kg/km this corresponds to a free-hanging vertical length of about 275 m before the rated pull is reached; apply your own safety factor for hoisting or suspended installations.

What does the tensile support braid add compared with the standard design?
It raises the permissible pull of 3×95+3G16+2×1.5 C from 5,700 N to 10,960 N, a factor of 1.9, and keeps the conductors from stretching and the cores from forming loops. The cable is somewhat larger and heavier than the standard version because of the braid layer.

What is the voltage drop and heat loss of 3×95+3G16+2×1.5 C at rated current?
At 302 A and a conductor temperature of 90 °C the voltage drop is about 13.7 V per 100 m and the conductor loss about 47.9 W per metre (maximum resistance 0.206 Ω/km at 20 °C).

Is this cable halogen-free?
No. The CPE rubber sheath contains halogen. If halogen-free cables are required, select the PUR version of the same construction.

Which cross-sections are available?
FC-TRB-M-S-HT: 25, 35, 50, 70, 95, 120, 150, 185, 240 mm². Other sizes and special designs can be produced to order.

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Does this datasheet include mine-specific approvals?

No. Mine-specific approvals, such as coal-mine safety marks, MSHA or ATEX/IECEx for gassy atmospheres, depend on the project and the country and are not implied by this document. Send the requirements to FeiChun technical support.

14 Trademark Notice and Intellectual Property

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