REELING CABLE | 0.6/1 kV | EPR / PCP | IEC 60228 Class 5 | TRATOSMART equivalent

FC-TSM-R 4×35+3×1.5 mm² 0.6/1 kV

Heavy-duty rubber-sheathed motorised drum reeling cable with integrated control cores and anti-torsion braid. Technical equivalent of TRATOSMART 4×35+3×1.5 0.6/1 kV.

Document no. FC-TDS-TSM-2026-6AC6 Revision 0 Issued 23 September 2026
Client reference Tratosmart 4×35+3×1.5 mm² 0.6/1 kV

1 Application

Designed for high-mechanical-stress power and control supply to mobile equipment reeled on motorised cable drums, including container cranes, ship-to-shore cranes, stacker-reclaimers, ship loaders, gantry cranes and mining machinery.

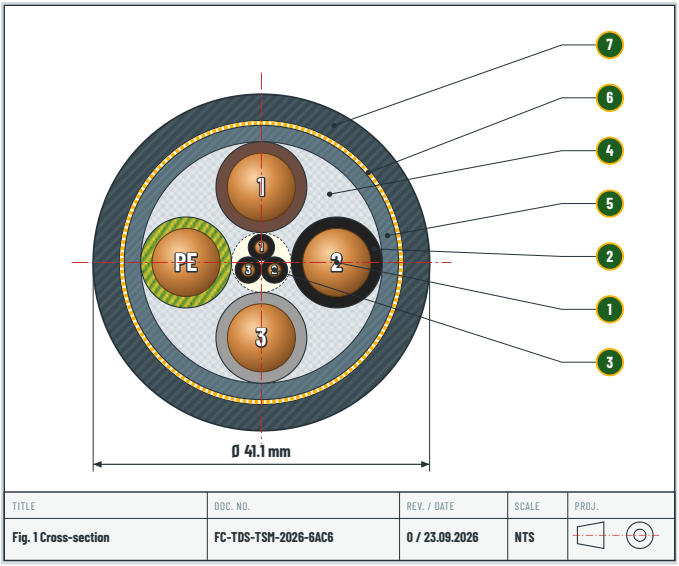
The integrated control cores carry interlock, pilot and monitoring signals in the same cable, removing the need for a separate control reel. The textile anti-torsion braid between the sheaths limits twisting under repeated reeling cycles and at high travel speeds.

Suitable for outdoor use in dry, damp and wet locations, including exposure to UV, ozone, mineral oils and salt-laden marine atmospheres.

Key features

- Class 5 fine-wire copper for high flexing endurance
- EPR insulation, 90 °C continuous rating
- Polyester anti-torsion braid between inner and outer sheath
- Heavy-duty PCP outer sheath: oil, ozone, UV and abrasion resistant
- Flame retardant to IEC 60332-1-2
- Travel speeds up to 120 m/min

2 Construction



TITLE	DOC. NO.	REV. / DATE	SCALE	PROJ.
Fig. 1 Cross-section	FC-TDS-TSM-2026-6AC6	0 / 23.09.2026	NTS	

Pos.	Element	Material / description
1	**Conductor**	Plain annealed copper, fine-wire Class 5, IEC 60228
2	**Insulation**	EPR, type EI 4 to EN 50363-1, 90 °C
3	**Control element**	Control cores twisted, polyester tape wrapped
4	**Filler**	Rubber compound, fills outer interstices
5	**Inner sheath**	Synthetic rubber compound, type EM 2
6	**Anti-torsion braid**	High-tenacity polyester yarn
7	**Outer sheath**	Polychloroprene (PCP), type EM 5 to EN 50363-2-1, black

Core identification: power cores brown, black, grey, green/yellow (PE); control cores black with white numbers 1–3

Element	Specification
Conductor	Plain annealed copper, Class 5 to IEC 60228; max. single-wire diameter 0.51 mm
Power cores	4 × 35 mm² (3 phases + 1 protective earth)
Control cores	3 × 1.5 mm², twisted as central element with polyester tape
Insulation	Ethylene-propylene rubber (EPR), type EI 4, 90 °C
Lay-up	Cores stranded with optimised short lay length for reeling duty; interstices filled with rubber compound
Inner sheath	Extruded synthetic rubber, type EM 2, pressure extruded into the interstices
Reinforcement	Anti-torsion braid of high-tenacity polyester yarn
Outer sheath	Heavy-duty polychloroprene (PCP), type EM 5, black; other colours on request

3 Dimensional data

Parameter	Unit	Value
Power cores		**4 × 35 mm²**
Conductor diameter, power (approx.)	mm	**8.3**
Insulation thickness, power (nominal)	mm	**1.4**
Control / pilot cores		**3 × 1.5 mm²**
Insulation thickness, control (nominal)	mm	**0.8**
Diameter over lay-up (approx.)	mm	**29.5**
Inner sheath thickness (nominal)	mm	**2.0**
Outer sheath thickness (nominal)	mm	**3.2**
Overall diameter (nominal)	mm	**41.1 ± 5 %**
Copper content (approx.)	kg/km	**1,325**
Cable mass (approx.)	kg/km	**2,730**

4 Electrical data

Parameter	Unit	Value
Rated voltage U_0/U	kV	**0.6/1**
Maximum system voltage U_m	kV	**1.2**
AC test voltage, core to core (5 min)	kV	**3.5**
Max. DC resistance at 20 °C, 35 mm²	Ω/km	**0.554**
Approx. AC resistance at 90 °C, 35 mm²	Ω/km	**0.709**
Max. DC resistance at 20 °C, 1.5 mm² (control)	Ω/km	**13.3**
Min. insulation resistance constant K_i at 90 °C	MΩ·km	**3.67**
Current rating, 35 mm², free air, 30 °C ambient	A	**158**
Short-circuit rating, 35 mm² (1 s, 90 → 250 °C)	kA	**5.00**

Current rating: three loaded cores, single cable in free air, conductor 90 °C, ambient 30 °C, based on IEC 60364-5-52 / VDE 0298-4 methodology for rubber-insulated flexible cables.

Derating on cylindrical drums

Operating condition	Factor	Rating, 35 mm² (A)
1 layer	0.80	**126**
2 layers	0.61	**96**
3 layers	0.49	**77**
4 layers	0.42	**66**

Ambient temperature correction

Ambient (°C)	10	20	30	35	40	45	50	55	60
Factor	1.15	1.08	1.00	0.96	0.91	0.87	0.82	0.76	0.71

Multiply the free-air rating by the applicable factors. Factors are cumulative where more than one condition applies.

5 Mechanical and thermal data

Parameter	Unit	Value
Min. bending radius, fixed installation (4 × D)	mm	**164**
Min. bending radius, motorised drum reeling (6 × D)	mm	**247**
Min. diameter of guide rollers / pulleys (15 × D)	mm	**616**
Max. static tensile load (20 N/mm² × power copper)	N	**2,800**
Max. travel speed	m/min	**120**
Max. acceleration	m/s²	**0.6**
Permissible torsional stress	°/m	**± 25**
Conductor operating temperature, max.	°C	**+90**
Short-circuit conductor temperature, max. (≤ 5 s)	°C	**+250**
Ambient temperature, flexing / reeling	°C	**–25 ... +80**
Ambient temperature, fixed installation	°C	**–40 ... +80**

6 Standards and tests

Reference standards

- **IEC 60228** Conductors, Class 5
- **EN 50363-1 / -2-1** Insulating and sheathing compounds
- **VDE 0250-814 / DIN VDE 0298-3** Design and application reference, reeling cables

Routine and type tests

- Conductor resistance, 100 % of lengths
- AC voltage test 3.5 kV, 5 min, all cores
- Spark test on insulation
- Dimensional check and visual inspection

- **DIN VDE 0298-4** Current-carrying capacity
- **IEC 60332-1-2** Flame propagation, single cable
- **EN 60811-404** Mineral oil resistance of sheath
- **EN 50396** Ozone resistance
- **HD 605 / ISO 4892-2** UV / weathering resistance
- Tensile and elongation of insulation and sheath, before and after ageing
- Hot set test (EPR, PCP)
- Mineral oil immersion test on sheath
- Flame test to IEC 60332-1-2

7 Marking, packing and ordering

Sheath marking	Embossed or ink-jet: *FEICHUN CABLES FC-TSM-R 4×35+3×1.5 mm² 0.6/1 kV YEAR* with sequential metre marking
Packing	Fumigated wooden drums (ISPM 15) or steel drums for heavy lengths; both cable ends sealed with heat-shrink end caps; drum flange marked with document no., size, length, gross/net mass and drum no.
Delivery lengths	As per order, single continuous lengths; drum sizing confirmed on order acceptance
Production lead time	2–3 weeks after order confirmation and advance payment
Quality documentation	In-house routine test report per drum; third-party witness testing available at the buyer's cost
Warranty	Minimum 3 years against manufacturing defects
Certifications	FeiChun holds ATEX, IECEx, VDE, CE, UKCA, EAC and Russian Fire Safety certification (scope per certificate)

Order code **FC-TSM-R 0.6/1 kV 4G35+3×1.5 mm² BK**

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FC-TDS-TSM-2026-6AC6
Rev. 0 | 23.09.2026
Technical data sheet

FEICHUN CABLE