REELING CONTROL CABLE · PORT CRANES & SPREADERS | 0.6/1 kV | 5 sizes | CSP rubber

FC-CR-S 2× 0.6/1 kV

Reeling Control Cable for Port Cranes 0.6/1 kV – 2-core reeling control cable, CSP rubber sheath. Complete technical data sheet: construction, dimensions, weights, current ratings, standards and installation guidance for 5 sizes.

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01 Application and Product Overview

FC-CR-S 2× is a 2-core reeling control cable rated 0.6/1 kV for cable reels on port cranes, spreaders and yard equipment. It has fine-wire class 5 copper cores with halogen-free EPR/HEPR rubber insulation, an inner sheath and an outer sheath of chlorosulfonated polyethylene (CSP) rubber, resistant to weather, ozone and oil. Core cross-sections: 0.75 – 4 mm².

Design

2 cores in concentric layers with a short lay length and polyester binder tape. Black cores carry white numbers. The cores are bound with halogen-free filler and covered by an inner sheath before the outer sheath is applied. Cables with few cores are used for dedicated circuits such as brake, limit-switch or sensor supply on the trolley.

Typical applications

- Control, signal and measuring circuits of crane trolleys, spreaders, headblocks and mobile machinery supplied through a cable reel
- Spring-driven and motor-driven cable reels on RTG, RMG, STS and yard equipment
- Operation with repeated winding, unwinding and bending within the permitted bending radius
- Wet, oily and abrasive outdoor environments typical of container terminals and bulk ports
- Control cabinets, junction boxes and trolley equipment of crane and handling systems

5 sizes	0.6/1 kV	+90 °C	CSP rubber
Cross-section 0.75 – 4 mm²	Rated voltage U_0/U	Maximum conductor temperature	Sheath: CSP rubber

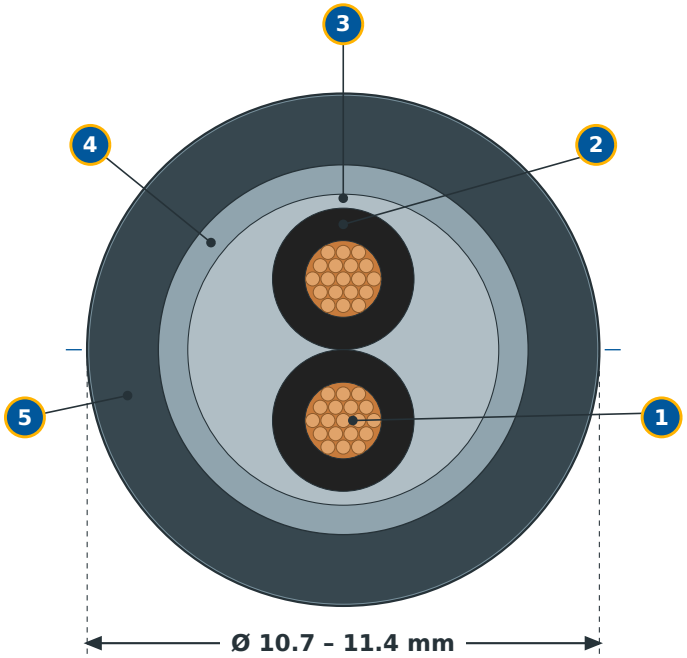
Key features

- Fine-wire class 5 copper cores with insulation thickness to 0.6/1 kV for reliable operation on a reel
- Cores laid in concentric layers with a short lay length and polyester binder tape
- Number-printed black cores
- CSP rubber sheath with proven weather, ozone and oil resistance
- Flame retardant to IEC 60332-1-2

02 Construction

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

FC-CR-S
Sample size 2×1.5 · 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	Filler and binder tape	Halogen-free compound, polyester tape
4	Inner sheath	Halogen-free polymer compound
5	Outer sheath	Chlorosulfonated polyethylene (CSP) rubber, resistant to weather, ozone and oil

The drawing shows size 2×1.5. 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	Black cores with white numbers
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	Chlorosulfonated polyethylene (CSP) rubber, resistant to weather, ozone and oil

Sheath material

The chlorosulfonated polyethylene (CSP) rubber sheath is a proven reeling-cable material for open-air cranes: excellent resistance to weather, ozone and mineral oil, good mechanical robustness and low-temperature flexibility to −30 °C in motion. CSP contains halogen; where halogen-free cables are specified, select the HFFR rubber or 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	3.5 kV AC, 5 min
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	Fixed: 4 × D (D ≥ 8 mm), 3 × D (D < 8 mm); moving or reeling: 6 × D (D ≤ 12 mm), 8 × D (D ≤ 20 mm), 10 × D (D > 20 mm)
Maximum tensile load	15 N/mm² continuous, on the total copper cross-section of the power cores
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 (CSP rubber sheath)
UV and ozone resistance	Resistant
Mineral oil resistance	Resistant, IEC 60811-404

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 (5 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	Current per core A	I_k (1 s) kA
2×0.75	FC-CR051-001	1.2	9.7	10.3	62	107	22	26.0	15	0.107
2×1	FC-CR051-002	1.4	10.1	10.7	64	117	30	19.5	17	0.143
2×1.5	FC-CR051-003	1.7	10.7	11.4	68	138	45	13.3	23	0.214
2×2.5	FC-CR051-004	2.2	11.7	12.5	100	174	75	7.98	31	0.357
2×4	FC-CR051-005	2.7	13.0	13.8	110	224	120	4.95	42	0.572

Current-carrying capacity: rated design values to DIN VDE 0298-4 for flexible cables, free air, 30 °C ambient; values per core include the derating factor for the number of cores; for other ambient temperatures, grouping or layered winding on a reel, apply the factors below. Pull force = 15 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).

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
2×0.75	10.3	62	124	13	10.7
2×1	10.7	64	128	18	11.7
2×1.5	11.4	68	136	27	13.8
2×2.5	12.5	100	200	44	17.4
2×4	13.8	110	220	71	22.4

Reel design guidance

- Minimum reel core diameter = 2 × minimum bending radius = 2 × minimum bending radius (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-CR-S 2× covers 5 sizes. The smallest, 2×0.75, has an outer diameter of up to 10.3 mm and weighs about 107 kg/km; the largest, 2×4, has an outer diameter of up to 13.8 mm and weighs about 224 kg/km, 2.1 times as much. Across the range the rated current per core rises from 15 A to 42 A at 30 °C, and the minimum bending radius from 62 mm to 110 mm.

Example 1. A circuit carries 14 A per core at an ambient temperature of 40 °C. Required table current = 14 / 0.91 = 16 A per core. The smallest suitable size is 2×1 with 17 A per core.

Example 2. A circuit carries 27 A per core at an ambient temperature of 35 °C. Required table current = 27 / 0.96 = 29 A per core. The smallest suitable size is 2×2.5 with 31 A per core.

Type designation cores × mm²	Total copper mm²	Cable weight kg/100 m	Winding capacity m
2×0.75	1.5	10.7	41,270
2×1	2	11.7	37,745
2×1.5	3	13.8	33,195
2×2.5	5	17.4	28,095
2×4	8	22.4	22,560

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 60811-404	Mineral oil immersion test

Routine and type tests

- AC voltage test on every reel length (routine test): 3.5 kV AC, 5 min
- Conductor resistance and checks of dimensions, insulation thickness and sheath thickness
- Continuity of conductors and protective earth
- Bending, tensile tests (type test)
- Flame propagation (IEC 60332-1-2)

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 reel core diameter of at least twice the minimum bending radius; keep the cable free of loops and kinks while winding.
- Do not exceed the tensile load in the table; relieve the cable of tension at the reel hub and at the trolley.
- Connect the protective core (G types) at both ends; terminate the screen 360° where fitted.
- Keep control cables away from unscreened power cables running in parallel where possible.
- Inspect the sheath regularly for abrasion and mechanical damage.

Sheath marking

FEICHUN FC-CR-S [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-CR-S	FeiChun series and sheath system
Core configuration	2×1.5	Number of cores with G (protective core included) or × (no protective core), and core 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-CR-S 2×1.5 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-CR-U 2× 0.6/1 kV – 2-core reeling control cable, PUR
- FC-CR-S 3G 0.6/1 kV – 3-core reeling control cable, CSP rubber
- FC-CR-S-C 2× 0.6/1 kV – 2-core reeling control cable with overall tinned-copper braid screen, CSP rubber
- FC-CR-A 2× 0.6/1 kV – 2-core reeling control cable, PUR low-temp
- FC-CR-S 4G 0.6/1 kV – 4-core reeling control cable, CSP rubber
- FC-CR-R 2× 0.6/1 kV – 2-core reeling control cable, CPE rubber
- FC-CR-S 5G 0.6/1 kV – 5-core reeling control cable, CSP rubber
- FC-CR-P 2× 0.6/1 kV – 2-core reeling control cable, PCP rubber

Overview of all datasheets: Reeling Control Cables 0.6/1 kV

Frequently asked questions

What is FC-CR-S 2× used for?
Typical applications include control, signal and measuring circuits of crane trolleys, spreaders, headblocks and mobile machinery supplied through a cable reel.

What are the outer diameter and minimum bending radius of 2×1.5?
The outer diameter is 10.7 to 11.4 mm and the minimum bending radius in moving or reeling operation is 68 mm (6 to 10 × D depending on diameter).

What minimum reel core diameter is needed for 2×1.5?
At least 136 mm, which is twice the minimum bending radius of 68 mm. A larger core diameter extends cable life.

What current can each core of 2×1.5 carry?
The table gives 23 A per core in free air at 30 °C ambient, already reduced for the number of cores; apply the ambient temperature factor and, on a reel, the layer factor.

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

Which cross-sections are available?
FC-CR-S 2×: 0.75, 1, 1.5, 2.5, 4 mm². Other sizes and special designs can be produced to order.

11 Trademark Notice and Intellectual Property

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