MODEL PAGE · FESTOON CABLE · KSA EDITION | 0.6/1 kV | 16 variants | Festoon cable

FC-FPU-R D12Y11Y-J/O Round PUR Festoon Cable for Crane Trolleys

Round halogen-free PUR festoon cable for power and control on STS trolleys, hoists and RMG / ASC cranes — 16 variants, 6 × D bending radius, up to 180 m/min; screened (C) versions on request.

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01 FC-FPU-R at a glance

FC-FPU-R (type D12Y11Y-J/O) is a round, halogen-free PUR festoon cable for power and control on STS trolleys, hoists and RMG / ASC cranes in Saudi ports. Power sizes run from 4×6 to 4×95 mm² and control cables from 7 to 36 numbered cores; short-lay stranding, a 6 × D bending radius and ±25 °/m torsion tolerance suit sliding-carrier festoon systems at up to 180 m/min. Sixteen variants are listed; screened (C) versions and individually screened pairs are available on request.

0.6/1 kV
AC rated voltage · 90 °C conductor

180 m/min
Festoon guidance speed

6 × D
Minimum bending radius

16 variants
4×6 – 4×95 power · 7 – 36 cores control

Best for

- STS trolley and hoist festoons that need limited torsion tolerance or screening
- Control and data cables with many numbered cores
- RMG / ASC trolley supply
- Boom-mounted festoons on shiploaders and stackers / reclaimers

Consider another family when the tightest loop radius and lowest profile matter → FC-FPU-F (flat); the cable winds on a reel instead of hanging in loops → FC-TPU-H, FC-TPU-M or FC-TMV.

02 Construction and characteristics

A round, halogen-free PUR cable for festoon systems where limited torsion, many control cores or screening are needed. Short-lay stranding keeps the cores in position over millions of loop cycles; power sizes run from 4×6 to 4×95 mm² and control cables from 7 to 36 numbered cores. Screened (C) versions and individually screened pairs on request.

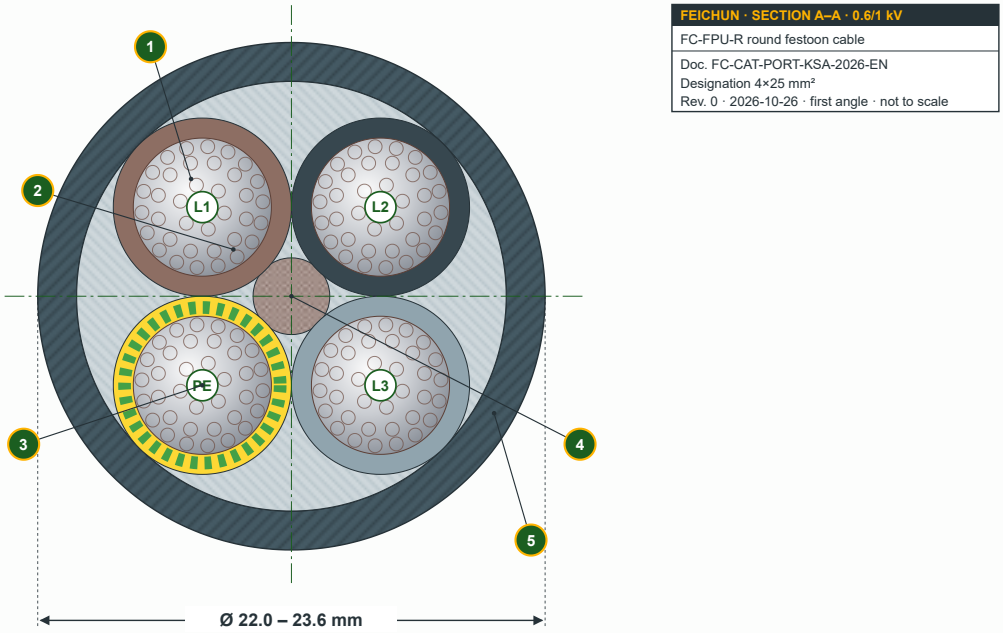


Figure 7 — Cross-section of FC-FPU-R round festoon cable (base size 4×25).

Pos.	Element	Material
1	Conductor	Bare copper, fine-wire, class 5 (IEC 60228)
2	Core insulation	XLPE, 90 °C — flexible, abrasion-resistant
3	Earth core	Green-yellow, laid up with the power cores
4	Central filler	Halogen-free filler
5	Outer sheath	Halogen-free PUR, round profile, flame-retardant, black

Drawing: base size 4×25 mm².

03 Dimensions, weights and ratings

FC-FPU-R D12Y11Y-J/O 0.6/1 kV — round PUR festoon cable: dimensions, weights and ratings (16 variants)

Type designation cores × mm²	FeiChun art. no.	Ø conductor max. mm	Outer diameter min. mm	Outer diameter max. mm	Min. bending radius mm	Weight approx. kg/km	Max. tensile force N	R_{20} max. Ω/km	Current rating A	Short-circuit current kA (1 s)
Power cables, four-core (3 phases + earth)										
4×6	FC-FPR-001	3.2	13.6	14.6	88	325	360	3.30	56	0.86

Type designation cores × mm²	FeiChun art. no.	Ø conductor max. mm	Outer diameter min. mm	Outer diameter max. mm	Min. bending radius mm	Weight approx. kg/km	Max. tensile force N	R_{20} max. Ω/km	Current rating A	Short-circuit current kA (1 s)
4×16	FC-FPR-003	5.0	17.8	19.1	115	740	960	1.21	104	2.29
4×25	FC-FPR-004	6.2	22.0	23.6	142	1,150	1,500	0.780	138	3.57
4×35	FC-FPR-005	7.8	26.3	28.2	169	1,620	2,100	0.554	170	5.00
4×50	FC-FPR-006	9.6	31.7	34.0	204	2,330	3,000	0.386	212	7.15
4×70	FC-FPR-007	11.1	35.7	38.3	230	3,160	4,200	0.272	263	10.01
4×95	FC-FPR-008	12.6	40.2	43.1	259	4,220	5,700	0.206	316	13.58
Control cables, multicore (numbered cores)										
7×1.5	FC-FPR-009	1.5	11.3	12.1	73	190	160	13.3	24*	0.21
12×1.5	FC-FPR-010	1.5	14.1	15.1	91	310	270	13.3	24*	0.21
18×1.5	FC-FPR-011	1.5	15.8	16.9	101	425	400	13.3	24*	0.21
24×1.5	FC-FPR-012	1.5	16.6	17.8	107	520	540	13.3	24*	0.21
36×1.5	FC-FPR-013	1.5	21.2	22.7	136	800	810	13.3	24*	0.21
12×2.5	FC-FPR-014	2.0	16.0	17.2	103	455	450	7.98	32*	0.36
24×2.5	FC-FPR-015	2.0	19.1	20.5	123	780	900	7.98	32*	0.36
36×2.5	FC-FPR-016	2.0	24.7	26.5	159	1,230	1,350	7.98	32*	0.36

* Control cables: current shown for three loaded cores; with more loaded cores apply the multicore factors in section 06. Bending radius = 6 × D_{max}. Current: free air, 30 °C ambient, DIN VDE 0298-4. Tensile force 15 N/mm² × total copper cross-section. Type designation: -J with, -O without green-yellow earth core.

04 Current rating, derating for Saudi conditions and short-circuit data

Ambient temperature factors (conductor 90 °C, reference 30 °C)

θ °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	

Factor = √((90 − θ) / 60). Use the design ambient from the project specification; add a solar-load allowance for reels and festoon tracks in direct sun.

Reduction factors for multicore cables (number of loaded cores)

Loaded cores	5	7	10	14	19	24	40	61
Factor	0.75	0.65	0.55	0.50	0.45	0.40	0.35	0.30

Applies to control and multicore cables with more than three loaded cores; the catalogue current for control types refers to three loaded cores.

Short-circuit rating

Permissible short-circuit current for 1 s (XLPE / EPR, conductor 90 °C → 250 °C):

$$I_{k,1s} = 0.143\ \text{kA/mm}^2 \times S\ \text{(cross-section of one phase conductor)}$$

$$I_{k,t} = I_{k,1s} / \sqrt{t} \quad (0.1\ \text{s} \le t \le 5\ \text{s})$$

05 Where it is used in Saudi ports

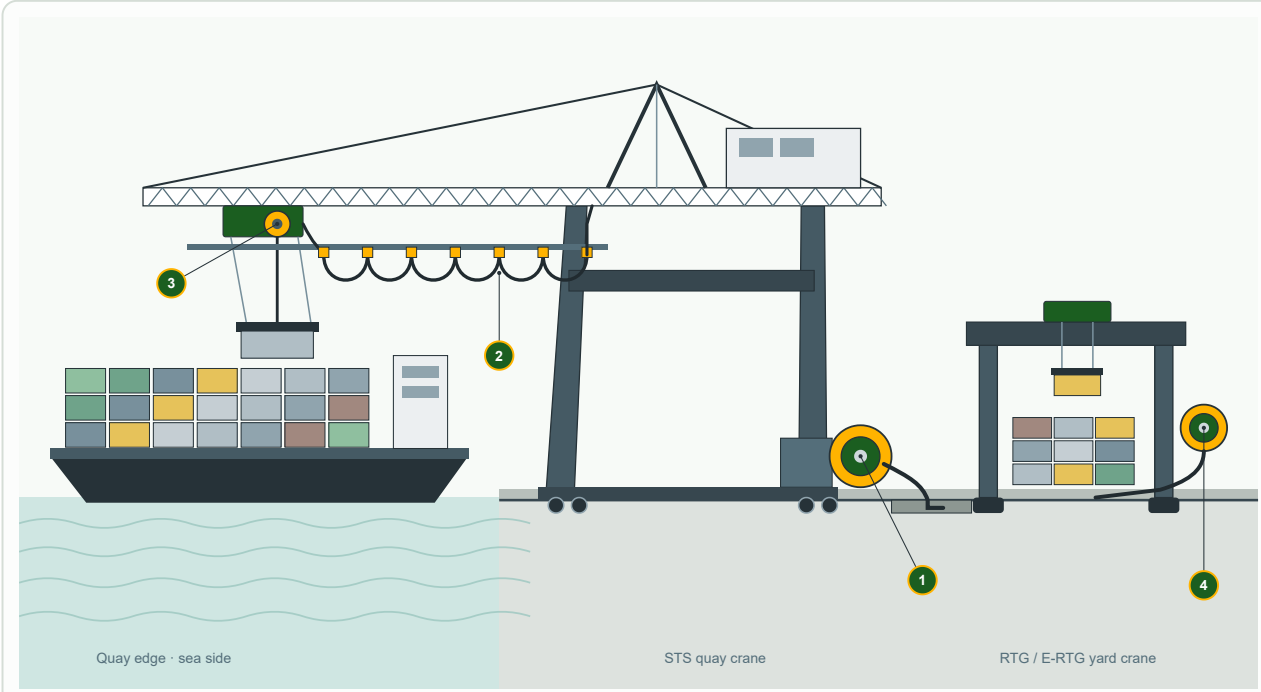


Figure 2 — Cable systems on an STS quay crane and an RTG / E-RTG yard crane (schematic).

Pos.	Location and duty	Family
1	STS gantry cable reel (quay trench feed) MV power and pilot/fibre; long travel; multi-plane bending	FC-TMV 8.7/15 kV (13.8 kV) or 6/10 kV
2	STS trolley festoon along the boom Power and control to trolley and hoist; single-plane loops	FC-FPU-F or FC-FPU-R
3	Spreader / hoist cable reel Power, control and data to the spreader; fast reeling and torsion	FC-TPU-H (fibre or screened pairs on request)
4	RTG / E-RTG power cable reel LV or MV feeder along the container row	FC-TMV (MV) · FC-TPU-M (LV)

Selection matrix — equipment, cable position and recommended FeiChun family

Equipment	Position	Family	Note
STS quay crane	Trolley festoon — power	FC-FPU-F, FC-FPU-R (4-core power types)	Choose flat for the tightest loop radius; round where twisting or screening is needed.
STS quay crane	Trolley festoon — control and data	FC-FPU-R / FC-FPU-F control types	Keep control and power on separate carriers where EMC requires.
RMG / ASC	Trolley festoon and rail feeder	FC-FPU-F, FC-FPU-R · FC-TMV reel	Festoon length and loop count follow the rail span.

Equipment	Position	Family	Note
Ship loader / unloader · stacker / reclaimer	Travel reel and boom festoon	FC-TMV · FC-FPU-R / FC-FPU-F	Bulk dust: specify sealed terminations and abrasion-resistant sheaths.

Design checklist

- **Loop and carrier geometry:** hang diameter ≥ 2 × minimum bending radius; neighbouring loops must not touch; carriers must not crush or kink the sheath.
- **One plane:** mount flat cables with the flat face vertical so that they bend only about the width axis; never twist a flat cable.
- **Matched cables:** hang cables of similar weight and stiffness on the same carriers; separate power and control where EMC requires.
- **Strain relief** at the fixed end and at the towing carrier; leave a length reserve for thermal movement and wear.
- **Speed and acceleration:** stay within the 180 m/min guidance value; long strokes or high accelerations need support elements — ask FeiChun.
- **Heat:** loops stacked in the sun or in a dense bundle carry less current — use the grouping and ambient factors in section 06.

06 Standards, testing and quality

Standards and normative references

Standard	Scope
DIN EN 60228 / IEC 60228 / VDE 0295	Conductors, class 5 (flexible)
IEC 60502-1	Power cables up to 1 kV — insulation basis for LV types
DIN VDE 0298-3	Use of cables — bending radii, tensile loads, torsion
DIN VDE 0298-4	Current-carrying capacity and reduction factors
DIN VDE 0293-308 (HD 308)	Identification of cable cores
DIN EN 60332-1-2 / IEC 60332-1-2	Flame propagation, single vertical cable
IEC 60754-1 / -2	Halogen content and acidity of gases from combustion

Routine and type tests

- AC voltage test on every drum length
- Conductor resistance and dimension check
- Continuity of earth, control and pilot cores
- Partial-discharge test on MV screened cores (FC-TMV)
- Reeling, bending and torsion tests (type test)
- Flame propagation (IEC 60332-1-2) and confirmation of halogen-free materials (LV PUR types)

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

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

EAC — TR CU 004/2011

Certificate No. EAEU KG417/052.CN.02.15390 · GOST 31996-2012, GOST 31565-2012 · valid 24.10.2025–23.10.2030

UKCA — Verification

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

Certificate scope and product coverage are confirmed per project. Certificate copies are available on request.

07 Ordering, packaging and delivery to Saudi Arabia

Packaging, delivery and warranty

Item	Standard
Drums	Steel or fumigated wooden drums, cable ends sealed with heat-shrink caps
Delivery lengths	To order, in one continuous length without joints
Lead time	2–3 weeks after technical approval for standard LV sizes; MV and special constructions confirmed at quotation
Delivery terms	EXW, FOB or CIF; sea freight to Jeddah Islamic Port or King Abdulaziz Port, Dammam on request
Warranty	At least 3 years against manufacturing defects
Drum label	Type, cross-section, length, gross / net weight, batch no., drum no.

RFQ checklist for Saudi port projects

Item	Please provide	Why it matters
Equipment and duty	Crane type (STS, RTG / E-RTG, RMG / ASC, MHC, shiploader), cable position (gantry reel, trolley festoon, spreader reel)	Chooses the family (section 03)
System voltage	Nominal voltage, 60 Hz, earthing method and earth-fault clearing time	Sets the rating, e.g. 8.7/15 kV for 13.8 kV
Current and duty cycle	Full-load current, design ambient (e.g. 50–55 °C), layers on the reel, solar exposure	Drives the cross-section (section 06)
Length and reel data	Cable length, reel core and flange diameter, number of layers, loop count for festoons	Fixes bending radius and weight
Movement	Travel speed, acceleration, tensile and torsion expectations	Confirms the family and the anti-torsion design

Item	Please provide	Why it matters
Cores and signals	Control cores, bus or Ethernet pairs, fibre count and type, screening	Defines special constructions
Documentation	SABER / PCoC route, consultant approvals, third-party inspection	Planned into lead time
Delivery	Incoterms, port of discharge, packaging and marking requirements	Logistics and cost

08 Frequently asked questions

Which control core counts does FC-FPU-R offer?

Control cables with 7, 12, 18, 24 and 36 cores of 1.5 mm^2 and 12, 24 and 36 cores of 2.5 mm^2; power types are four-core from 4×6 to 4×95 mm^2. Screened (C) versions and individually screened pairs are available on request.

When should I choose round instead of flat festoon cable?

Choose round FC-FPU-R when the cable must tolerate limited torsion, carry many control cores or needs screening. Choose flat FC-FPU-F for the smallest loop radius (5 × H), the lowest profile and neat stacking on the track.

What is the difference between a reeling cable and a festoon cable?

A reeling cable is wound onto a motorised or spring-loaded cable reel and pays out as the machine travels — the usual main feeder of STS gantries, RTG / E-RTG cranes and shiploaders. It must cope with multi-layer winding, S-bends and torsion. A festoon cable hangs in loops from carriers on a track and bends repeatedly in one plane as the trolley moves — the usual supply for STS trolleys and hoists and for RMG / ASC trolleys. Reeling cables are built for torsion and high tensile loads; festoon cables are built for repeated bending at speed.

Which cable should I use for the trolley festoon of an STS crane?

Use a 0.6/1 kV PUR festoon cable: FC-FPU-F (flat, bends in one plane, 5 × H radius, compact stacking) for power and control, or FC-FPU-R (round) where limited torsion, many control cores or screening are needed. Size the cross-section from the derated current at your design ambient (section 06) and keep power and control cables on separate carriers where EMC requires.

How does Saudi summer heat change cable current ratings?

Catalogue currents refer to 30 °C ambient (DIN VDE 0298-4). The ambient factor is 0.82 at 50 °C, 0.76 at 55 °C and 0.71 at 60 °C. Cable wound on a reel is derated again by the number of layers: 0.80 for one layer down to 0.42 for four. For example, an FC-TPU-M 3×95 (302 A) wound in three layers at 50 °C ambient is limited to about 121 A. Size the cable from the derated current, not from the catalogue value.

How do I request a quotation?

Email Tech@feichuncables.com or call +86 138 5512 3218 (WhatsApp available) with the details in the RFQ checklist in section 09: equipment and duty, voltage, current and ambient, reel or festoon data, special cores or fibres, documentation and delivery port.

09 Related models and the full catalogue

FC-FPU-F

Flat PUR festoon cable · 0.6/1 kV

Parallel cores in one row for single-plane bending: 5 × H radius and low-profile stacking on STS booms and RMG festoons.

Model page →

FC-TPU-H

PUR reeling cable for spreader & auxiliary reels · D12Y11YU11Y-J/O · 0.6/1 kV

Power and multicore control sizes with open anti-torsion braid; fibre-optic and screened-pair designs on request.

Model page →

FC-TMV

MV reeling cable · (N)TSCGEWÖU · 6/10 and 8.7/15 kV

EPR cores with field control, split earth, polyester anti-torsion braid, heavy-duty sheath. STS, RMG and shiploader gantry reels on 13.8 kV supplies.

Model page →

FC-TPU-M

Heavy-duty LV reeling cable · D2X11Y · 0.6/1 kV

Three XLPE power cores, split earth, PUR outer sheath. Power reels of mobile harbour cranes, shiploaders, stackers and reclaimers.

Model page →

Full catalogue: port flexible cables for Saudi Arabia — all models, selection matrix and derating

Technical and commercial contact

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