MODEL PAGE · FESTOON CABLE · KSA EDITION | 0.6/1 kV | 13 variants | Festoon cable

FC-FPU-F Flat PUR Festoon Cable 0.6/1 kV for STS and RMG Cranes

Flat halogen-free PUR festoon cable with parallel cores for single-plane bending: 5 × H loop radius, low-profile stacking and 13 variants for STS booms and RMG / ASC trolley supply at Saudi seaports.

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01 FC-FPU-F at a glance

FC-FPU-F is a flat, halogen-free PUR festoon cable with parallel cores in one row. It bends in a single plane only, which gives the tightest loop radius (5 × H), the lowest profile and the neatest stacking on a festoon track — the first choice for STS boom festoons and RMG / ASC trolley supply in Saudi ports. Thirteen variants: nine four-core power cables from 4×4 to 4×95 mm² and four control cables from 7×1.5 to 12×2.5 mm²; aramid support elements for long unsupported spans are available on request.

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

180 m/min
Festoon guidance speed

5 × H
Minimum bending radius in the flat plane

13 variants
4×4 – 4×95 power · 7×1.5 – 12×2.5 control

Best for

- STS boom and trolley festoons
- RMG / ASC trolley power and control supply
- Tracks where space for cable loops is limited
- High-cycle bending in one plane at up to 180 m/min

Consider another family when the cable sees torsion, needs screening or has many control cores → FC-FPU-R (round); the cable winds on a reel → FC-TPU-H, FC-TPU-M or FC-TMV.

02 Construction and characteristics

Parallel cores in one row inside a flat halogen-free PUR sheath give the tightest loop radius (5 × H), the lowest profile and the neatest stacking on a festoon track. Because the cable bends in one plane only, it is the first choice for STS boom festoons and RMG / ASC trolley supply.

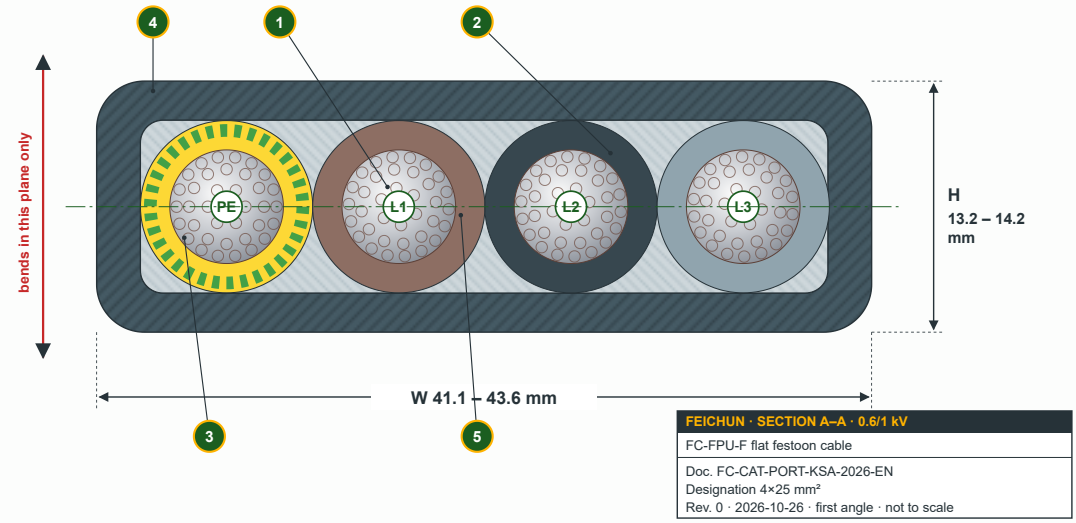


Figure 5 — Cross-section of FC-FPU-F flat festoon cable (base size 4×25).

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, at the end of the row
4	Outer sheath	Halogen-free PUR, flat profile, black
5	Core arrangement	Parallel cores in one row; bends in the flat plane only

Aramid support elements for long unsupported spans are available on request.

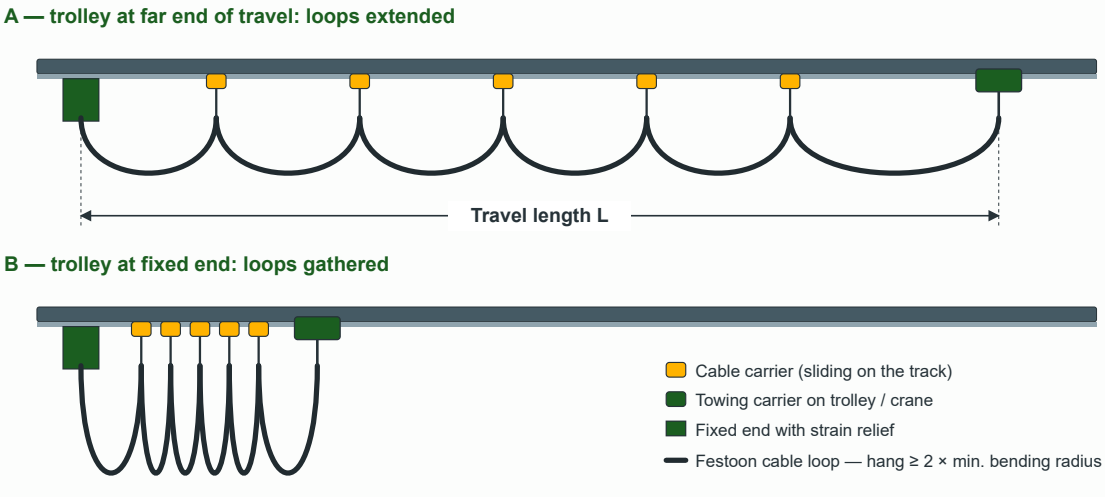


Figure 6 — Festoon system: cable carriers slide on a track; loops extend and gather as the trolley travels.

FC-FPU-R and FC-FPU-F — characteristics

Parameter	Value
Rated voltage U_0/U	0.6/1 kV AC (Um 1.2 kV); test voltage 2.5 kV; DC 0.9/1.8 kV
Conductor and insulation	Bare copper class 5; XLPE 90 °C; short-circuit temperature +250 °C
Outer sheath	Halogen-free PUR, flame-retardant (IEC 60332-1-2), abrasion-resistant, black
Core identification	Up to 5 cores coloured to DIN VDE 0293-308; from 6 cores natural colour with black numbers
Ambient temperature	Fixed installation −40 °C to +80 °C; moving −30 °C to +80 °C
Min. bending radius	FC-FPU-R: 6 × D · FC-FPU-F: 5 × H in the flat plane (H = cable height)
Max. tensile load on conductors	15 N/mm²
Torsion	FC-FPU-R: ± 25 °/m · FC-FPU-F: not permitted
Max. travel speed in festoon systems	180 m/min guidance value; consult FeiChun for higher speeds or long travel

03 Dimensions, weights and ratings

FC-FPU-F flat PUR festoon cable 0.6/1 kV — dimensions, weights and ratings (13 variants)

Type designation cores × mm²	FeiChun art. no.	Ø conductor max. mm	Height H min. mm	Height H max. mm	Width W min. mm	Width W 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 parallel cores (3 phases + earth)												
4×4	FC-FPF-001	2.6	7.9	8.4	23.1	24.5	42	355	240	4.95	43	0.57
4×6	FC-FPF-002	3.2	8.8	9.4	26.2	27.8	47	480	360	3.30	56	0.86
4×10	FC-FPF-003	4.0	10.0	10.7	30.1	32.0	54	690	600	1.91	78	1.43
4×16	FC-FPF-004	5.0	11.6	12.4	35.6	37.8	62	1,020	960	1.21	104	2.29
4×25	FC-FPF-005	6.2	13.2	14.2	41.1	43.6	71	1,460	1,500	0.780	138	3.57
4×35	FC-FPF-006	7.8	15.3	16.4	48.2	51.1	82	2,010	2,100	0.554	170	5.00
4×50	FC-FPF-007	9.6	17.8	19.1	56.8	60.3	96	2,830	3,000	0.386	212	7.15
4×70	FC-FPF-008	11.1	19.8	21.2	63.4	67.4	106	3,750	4,200	0.272	263	10.01
4×95	FC-FPF-009	12.6	22.0	23.6	70.9	75.3	118	4,900	5,700	0.206	316	13.58
Control cables, parallel cores (numbered)												
7×1.5	FC-FPF-010	1.5	5.9	6.3	25.4	27.0	32	275	160	13.3	24*	0.21
12×1.5	FC-FPF-011	1.5	5.9	6.3	40.5	43.0	32	445	270	13.3	24*	0.21
7×2.5	FC-FPF-012	2.0	6.7	7.2	30.2	32.1	36	395	260	7.98	32*	0.36
12×2.5	FC-FPF-013	2.0	6.7	7.2	48.6	51.7	36	650	450	7.98	32*	0.36

* Control cables: current shown for three loaded cores; with more loaded cores apply the multicore factors in section 06. Current: free air, 30 °C ambient, DIN VDE 0298-4. Bending radius = 5 × H_{max} in the flat plane. Tensile force 15 N/mm² × total copper cross-section.

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

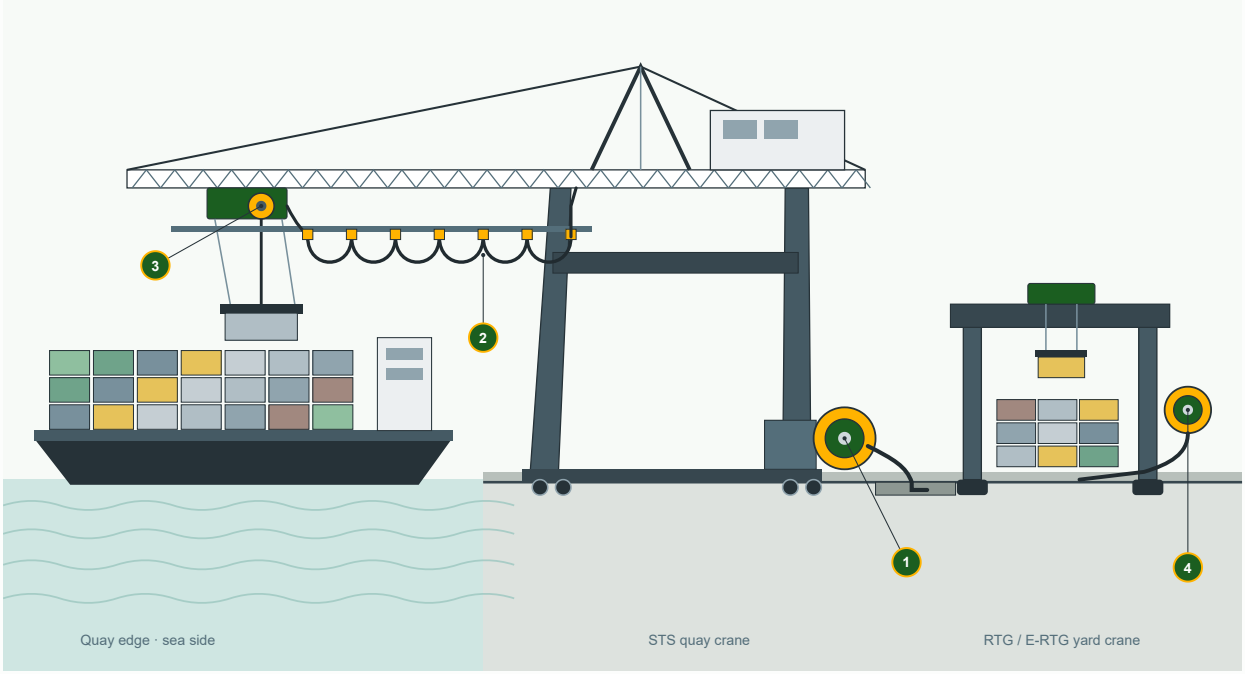


Figure 2 — Cable systems on an STS quay crane and an RTG / E-RTG yard crane (schematic).

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.
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

Routine and type tests

- AC voltage test on every drum length

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 0250-809	Flat festoon cables — construction basis of FC-FPU-F
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

- 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

Item	Standard
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
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

Can FC-FPU-F flat festoon cable be twisted?

No. FC-FPU-F must bend only in the flat plane — torsion is not permitted. Mount it with the flat face vertical and keep the carriers aligned; use the round FC-FPU-R where limited torsion occurs.

What are the width and height of FC-FPU-F?

From about 8 mm high × 24 mm wide (4×4) to 24 mm × 75 mm (4×95); the data table lists minimum and maximum height and width for every size, together with weight and bending radius.

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-R

Round PUR festoon cable · D12Y11Y-J/O · 0.6/1 kV

Power 4×6 – 4×95 and control 7 – 36 cores; short lay, 6 × D bending radius, up to 180 m/min.

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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Products FC-TPU-M · FC-TPU-H · FC-TMV · FC-FPU-R · FC-FPU-F

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