FLAT FESTOON CABLE · PORT CRANES | 0.6/1 kV | PUR low-temp | Article FC-FS21-003

NGFLGÖU 12G4 0.6/1 kV

Flat Festoon Cable for Port Cranes 0.6/1 kV – 12-core flat festoon cable, halogen-free low-temperature PUR sheath. Complete technical data sheet of this single model: cross-section drawing, dimensions, weight, current ratings, reel design data, standards and ordering information.

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01 Application and Product Overview

NGFLGÖU 12G4 is a low-temperature PUR-sheathed flat festoon cable with 12 cores of 4 mm² rated 0.6/1 kV for festoon systems of port cranes and stackers. The cores lie parallel in one plane inside a flat sheath measuring 51.6 × 6.5 mm, weighing about 690 kg/km, with a current of 23 A per core at 30 °C and a minimum bending radius of 52 mm.

Typical applications

- Power and control supply of trolleys, hoists and travelling crane equipment suspended in festoon systems
- Port cranes, stackers and warehouse cranes with long travel distances
- Parallel cores in one plane reduce twisting and let the cable hang in regular loops on festoon trolleys
- Indoor and covered outdoor use; the sheath resists oil, abrasion and weather

Design

12 cores of equal cross-section lie side by side in one plane inside a flat sheath. The green-yellow protective core is placed at the edge. The flat shape lets the cable hang in uniform loops from festoon trolleys and keeps twisting low. Bend the cable only flat-wise, about an axis parallel to the cable width; edge-wise bending is not permitted.

51.6 × 6.5 mm	690 kg/km	23 A	52 mm
Flat cable, width × height	Approx. weight	Rated current per core, 30 °C	Min. bending radius

Key features

- Cores lie parallel in one plane for orderly hanging on festoon trolleys
- Fine-wire class 5 copper conductors for repeated bending
- Green-yellow protective core at the edge of the flat cable
- Halogen-free insulation and sheaths; no halogen acid gases when burned (IEC 60754-1/-2)
- Flexible in motion down to −40 °C (fixed installation −50 °C)
- Flame retardant to IEC 60332-1-2

Type designation

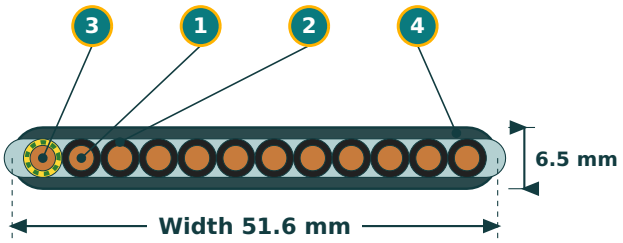
NGFLGÖU (also typed NGFLGOEU) is the German VDE-style type designation used in the trade for flat, oil-resistant, rubber-sheathed cables for festoon systems. The designation identifies the cable class and is used so that engineers can find and compare the product. Construction, dimensions and data in this datasheet are FeiChun's own. This model is the low-temperature PUR-sheathed version of the construction.

02 Construction

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

NGFLGÖU 12G4

Article FC-FS21-003 · 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 cross-linked polyethylene (XLPE)
3	Protective (PE) core	Class 5 copper, green-yellow insulation, same cross-section as the power cores
4	Outer sheath	Halogen-free polyurethane (PUR), flame-retardant, low-temperature grade

Figure 1. Cross-section of NGFLGÖU 12G4 0.6/1 kV. The drawing is generated from the geometry of this exact size; elements are shown to scale relative to each other and do not overlap.

Construction details

Conductor	Bare annealed fine-wire copper, class 5 to DIN EN 60228 / IEC 60228 / VDE 0295
Insulation	Halogen-free cross-linked polyethylene (XLPE) to IEC 60502-1, maximum conductor temperature 90 °C
Core identification	Green-yellow core at the edge; remaining cores black with white numbers
Core arrangement	Cores lie parallel in one plane and are enclosed by a common flat outer sheath
Outer sheath	Halogen-free polyurethane (PUR), flame-retardant, low-temperature grade

Sheath material

The low-temperature grade of halogen-free polyurethane (PUR) keeps the sheath flexible down to −40 °C in motion (−50 °C fixed), so the cable can be reeled in winter service without sheath cracking. It retains the abrasion, cut and tear resistance of standard PUR, resists mineral oil, UV radiation and ozone, and emits no halogen acid gases when burned. Typical use: terminals in northern climates and cold-storage yards.

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	−50 °C to +80 °C
Ambient temperature, in motion	−40 °C to +80 °C
Minimum bending radius	5 × H fixed; 8 × H in festoon operation (H = cable thickness)
Maximum tensile load	15 N/mm² continuous, on the total copper cross-section of the power cores
Flame propagation	IEC 60332-1-2 / DIN EN 60332-1-2
Halogen-free	Yes (insulation, inner and outer sheath); IEC 60754-1/-2
UV and ozone resistance	Resistant
Mineral oil resistance	Resistant, IEC 60811-404

Sheath material comparison

Property	PUR	PUR low-temp	CSP rubber	CPE rubber
Abrasion resistance	Excellent	**Excellent**	Good	Good
Cut and tear resistance	Excellent	**Excellent**	Good	Good
Mineral oil resistance	Very good	**Very good**	Very good	Very good
Weather, UV and ozone resistance	Very good	**Very good**	Excellent	Very good
Cold flexibility (moving)	−30 °C	**−40 °C**	−30 °C	−30 °C
Halogen-free (IEC 60754-1/-2)	Yes	**Yes**	No	No

The column of the sheath used in this cable is highlighted. Ratings are qualitative; ask FeiChun for test data on a specific requirement.

04 Technical Data of NGFLGÖU 12G4 0.6/1 kV

Type designation	**NGFLGÖU 12G4**	**FeiChun article no.**	FC-FS21-003
Cores	12 × 4 mm² (incl. green-yellow PE core)	**Rated voltage U_0/U**	0.6/1 kV AC
Test voltage	3.5 kV AC, 5 min	**Conductor**	Class 5 fine-wire copper, Ø max 2.7 mm
Insulation	XLPE, 0.7 mm nominal	**Outer sheath**	PUR low-temp, ≈ 1.2 mm nominal
Width × height	51.6 × 6.5 mm	**Weight, approx.**	690 kg/km
Copper weight	430 kg/km	**R_{20} max**	4.95 Ω/km
R_{90} (calculated)	6.31 Ω/km	**Rated current per core**	23 A (free air, 30 °C)
I_k (1 s, 90 → 250 °C)	0.572 kA	**Min. bending radius, festoon**	52 mm (8 × H)
Max. pull force	720 N	**Flame propagation**	IEC 60332-1-2

Diameters, dimensions and weights are nominal design values and vary within manufacturing tolerances; confirm critical dimensions before dimensioning reels, guides or festoon systems. Current ratings are design values to DIN VDE 0298-4 for flexible cables in free air at 30 °C ambient; values per core include the derating factor for the number of cores. Pull force = 15 N/mm² × total copper cross-section of the power cores. Other sizes and configurations are produced to order.

Calculated electrical data

Quantity	Value	Basis
Conductor resistance at 90 °C	6.31 Ω/km	$R_{90} = R_{20} \times (1 + 0.00393 \times 70)$
Voltage drop per core at rated current	14.52 V per 100 m	Single conductor, conductor at 90 °C
Conductor loss at rated current	36.7 W/m	All 11 load-carrying cores at 90 °C
Length for 3 % drop, 24 V DC	2 m	Out-and-back loop of two cores at rated current
Length for 3 % drop, 230 V AC	23 m	Out-and-back loop of two cores at rated current

Current-carrying capacity by ambient temperature

Ambient °C	20	25	30	35	40	45	50
Current per core, A	25	24	23	22	21	20	19

Permissible current = table current × ambient temperature factor (conductor 90 °C). Factors: 20 °C: 1.08, 25 °C: 1.04, 30 °C: 1.00, 35 °C: 0.96, 40 °C: 0.91, 45 °C: 0.87, 50 °C: 0.82.

Short-circuit current rating of the power cores

Duration t (s)	0.1	0.2	0.5	1	2	3	5
I_k (kA)	1.81	1.28	0.809	0.572	0.404	0.330	0.256

I_k = 0.143 kA/mm² × 4 mm² for 1 s (conductor 90 °C → 250 °C); for another duration t: $I_{k,t} = I_{k,1s} / \sqrt{t}$ (0.1 s ≤ t ≤ 5 s).

05 Festoon Installation Data

The flat construction of NGFLGÖU 12G4 lets the cable hang in regular loops from festoon trolleys. The minimum festoon loop diameter is 104 mm (twice the minimum bending radius of 52 mm).

Cable length	Cable weight kg	Min. festoon loop Ø mm (2 × bending radius)
10 m	7	104
25 m	17	104
50 m	34	104
100 m	69	104

Installation guidance

- Hang the cable on festoon trolleys or rollers; the spacing between trolleys must not exceed half of the loop length.
- Keep the bending radius at or above 8 × H (cable thickness); bend only flat-wise and do not twist the cable about its axis.
- Do not pull the cable by its conductors; use cable clamps that grip the sheath.
- Connect the green-yellow protective core before connecting the other cores.

06 Sizes in this Series and Selection Aid

NGFLGÖU 0.6/1 kV low-temp PUR is offered in 6 sizes from 1.5 to 16 mm². Each size has its own datasheet; the size of this document is highlighted. The next smaller or larger size can be opened directly from the table.

Type designation	Article no.	Width × height mm	Weight kg/km	Current A	Bend radius mm
12G1.5	FC-FS21-001	38.9 × 5.4	341	12	43
12G2.5	FC-FS21-002	44.7 × 5.9	480	17	47
12G4	**FC-FS21-003**	**51.6 × 6.5**	**690**	**23**	**52**
12G6	FC-FS21-004	58.9 × 7.2	950	29	57
12G10	FC-FS21-005	68.3 × 8.0	1,440	41	64
12G16	FC-FS21-006	81.4 × 9.2	2,180	54	74

Example. At 40 °C ambient each core of NGFLGÖU 12G4 may carry 23 × 0.91 = 21 A. A 50 m cable weighs about 34 kg.

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
IEC 60754-1 / -2	Halogen acid gas emission when burned
IEC 60811-404	Mineral oil immersion test
DIN VDE 0292	Type designation of cables (designation practice)

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) and confirmation of halogen-free materials

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, Delivery and Ordering

Installation guidance

- Hang the cable on festoon trolleys or rollers; the spacing between trolleys must not exceed half of the loop length.
- Keep the bending radius at or above 8 × H (cable thickness); bend only flat-wise and do not twist the cable about its axis.
- Do not pull the cable by its conductors; use cable clamps that grip the sheath.
- Connect the green-yellow protective core before connecting the other cores.

Sheath marking

FEICHUN NGFLGÖU 12G4 0.6/1 kV PUR low-temp [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

Field	Example	Meaning
Type designation	NGFLGÖU	Cable type as used in the trade
Core configuration	12G4	Number of cores with G (protective core included) and core cross-section in mm²
Rated voltage	0.6/1 kV	U_0/U, AC
Sheath	low-temp PUR	Halogen-free polyurethane (PUR), flame-retardant, low-temperature grade
Length and packing	500 m, steel reel	Delivery length in one piece; reel type on request
FeiChun article no.	FC-FS21-003	Quote this number in enquiries and orders

Order example: NGFLGÖU 12G4 0.6/1 kV PUR low-temp – 500 m on one steel reel (FeiChun article FC-FS21-003). 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 issued for the D2X11Y base type (LVD 2014/35/EU, TR CU 004/2011, UKCA) apply to that product group. Confirm with FeiChun that the certificate scope covers this construction before quoting it in a tender.

10 Related Datasheets and FAQ

Cables of the same class with a different sheath, configuration or voltage and the closest cross-section. All datasheets are PDF files.

- NGFLGÖU 10G4 0.6/1 kV low-temp PUR – 10-core flat festoon cable
- NGFLGÖU 14G2.5 0.6/1 kV low-temp PUR – 14-core flat festoon cable
- NGFLGÖU 8G4 0.6/1 kV low-temp PUR – 8-core flat festoon cable
- NGFLGÖU 12G4 0.6/1 kV PUR – 12-core flat festoon cable
- NGFLGÖU 12G4 0.6/1 kV CSP rubber – 12-core flat festoon cable
- NGFLGÖU 12G4 0.6/1 kV CPE rubber – 12-core flat festoon cable

Overview of all datasheets in this family: Flat Festoon Cables 0.6/1 kV

Frequently asked questions

What is NGFLGÖU 12G4 used for?
NGFLGÖU 12G4 is intended for power and control supply of trolleys, hoists and travelling crane equipment suspended in festoon systems.

What are the dimensions and weight of NGFLGÖU 12G4 0.6/1 kV?
The overall size (width × height) is 51.6 × 6.5 mm and the weight is about 690 kg/km, of which copper is 430 kg/km. These are nominal design values and vary within manufacturing tolerances.

What is the minimum bending radius of NGFLGÖU 12G4?
The minimum bending radius in festoon operation is 52 mm (8 × H).

What current can each core of NGFLGÖU 12G4 carry?
23 A per core in free air at 30 °C ambient, already reduced for the number of loaded cores. Apply the ambient temperature factor from the table in section 04.

Is NGFLGÖU 12G4 halogen-free?
Yes. Insulation and sheaths are halogen-free (IEC 60754-1/-2) and the cable is flame retardant to IEC 60332-1-2.

Which other sizes of this type are available?
NGFLGÖU 0.6/1 kV low-temp PUR is offered in 1.5, 2.5, 4, 6, 10, 16 mm². Each size has its own datasheet, linked in section 06.

11 Notices and Intellectual Property

NGFLGÖU is a type designation used in the cable trade to name a class of cable; it is used here for identification and comparison only. The designation does not imply approval of the product by a third party unless a certificate is named in section 09.

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