



ÖLFLEX® TORSION FRNC

Cold and oil-resistant cables for flexible applications under torsional load, halogen-free - 0.6/1 kV

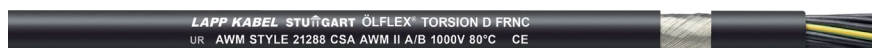


Info

- Torsion resistant, Cold flexible and Oil resistant for drip loops
- Halogen-free, Highly flame retardant, Low smoke density

ÖLFLEX® TORSION D FRNC

Screened, cold and oil-resistant cables for flexible applications under torsional load, halogen-free - 0.6/1 kV



Info

- Torsion resistant, Cold flexible and Oil resistant for drip loops
- Halogen-free, Highly flame retardant, Low smoke density
- EMC/Screened

Benefits

- The special design reliably compensates for the permanent torsional drip loop movements inside the wind turbine between the nacelle and the tower
- The high flexibility and good dismantling and stripping properties enable easy space-saving cable installation and fast processing
- Resistant to lipper and drops of sea water for onshore and offshore applications
- FRNC = Flame Retardant Non Corrosive
 - Reduction of flame-propagation and density and toxicity of smoke gases in the event of fire
 - Minimisation of damage to buildings and production facilities
 - Safety for staff and in areas with high density of people
- The copper wrapping of the screened D version protects against electromagnetic interference

Norm references / Approvals

- Use of leading, European metric stranded conductors according to the IEC scale for conductor nominal cross-sections in mm² according to IEC 60228/VDE 0295, braided conductor class 6 (tinned): For converting to AWG, odd-numbered nominal AWG cross-sections must be excluded. The next lowest nominal AWG conductor cross-section in mm² must then be allocated to the metric nominal conductor cross-section in mm² (according to IEC 60228) (please refer to the technical catalogue appendix T16). This is to ensure that the normative current rating defined by the nominal AWG conductor cross-section does not exceed the physical/real current rating defined by the nominal IEC conductor cross-section that is actually used
- Cable type certifications: UL AWM style 21288 by UL acc. UL standard as well as cUL AWM II A/B by UL acc. CSA AWM standard
- Fire behaviour:
 - Halogen-free (IEC 60754-1)
 - No corrosive gases (IEC 60754-2)
 - Low smoke density (IEC 61034-2)
 - Flame-retardant (IEC 60332-1-2)
 - No fire propagation (IEC 60332-3-24 and IEC 60332-3-25)
- Oil-resistant according to EN 60811-404 and UL OIL RES I and UL OIL RES II
- UV-resistant according to ISO 4892-2 and ozone-resistant according to EN 50396

Application range

- For fixed and flexible installations, as well as for applications with torsional movements (e.g. machinery, wind turbines)
- Very suitable for installation in the drip loop, between the rotating nacelle and the stationary windmill tower, to connect the generator to the control units

Product features

- Torsion-resistant up to ±150°/m
- Good weather, abrasion, temperature and UV-resistance
- Resistant to oils
- Halogen-free and highly flame-retardant
- Depending on the quantity, customised designs are also possible upon request

Product Make-up

- Extra-fine wire conductor made of bare copper
- Core insulation: polyolefin compound
- Core connection optimised for high torsion requirements, twisted in layers
- Optional screening (D): wrapped with braided tinned-copper wires
- Outer sheath: special compound, halogen-free, black (RAL 9005)

Technical data

Classification
ÖLFLEX® TORSION FRNC
 ETIM 5.0 Class-ID: EC000057
 ETIM 5.0 Class-Description: Low voltage power cable

ÖLFLEX® TORSION D FRNC
 ETIM 5.0 Class-ID: EC000104
 ETIM 5.0 Class-Description: Control cable

Core identification code
 Power and control cables: Colour-coded in accordance with VDE 0293-308, refer to Appendix T9
 From 6 cores: black with white numbers
 Paired signal cables: DIN 47100

Conductor stranding
ÖLFLEX® TORSION FRNC
 Extra-fine wire acc. to VDE 0295, class 6/ IEC 60228 class 6 (Refer to Appendix T16 for the matching US conductor sizes in AWG standard)

ÖLFLEX® TORSION D FRNC
 Extra-fine wire acc. to VDE 0295, class 6/ IEC 60228 class 6

Torsion movement in WTG
 TW-0 & TW-2, refer to Appendix T0

Minimum bending radius
 Flexible use: 10 x outer diameter
 Fixed installation: 6 x outer diameter

Nominal voltage
 According to IEC/VDE: U0/U 0.6/1 kV ac
 Operating voltage in accordance with UL: 1000V

Test voltage
ÖLFLEX® TORSION FRNC
 C/C: 4000 V
ÖLFLEX® TORSION D FRNC
 C/C: 4000 V
 C/S: 2000 V

Protective conductor
 G = with GN-YE protective conductor
 X = without protective conductor

Temperature range
 Flexible use: -40°C to +90°C (UL +80°C)
 Fixed installation: -40°C to +90°C (UL +80°C)

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® TORSION FRNC				
1150373	12 G 1.0	13.2	115.2	274
1150378	16 G 1.0	14.8	153.6	392
1150271	3 G 1.5	9.0	43.2	131
1150272	4 G 1.5	9.7	57.6	156
1150273	5 G 1.5	10.6	72	183
1150275	7 G 1.5	12.6	100.8	253
1150279	12 G 1.5	15.3	172.8	386
1150311	3 G 2.5	10.4	72	181
1150312	4 G 2.5	11.3	96	242
1150313	5 G 2.5	12.4	120	258
1150350	3 G 4	11.9	115.2	254
1150351	4 G 4	13.0	153.6	313
1150357	5 G 6	16.0	288	486
1150362	5 G 10	20.5	480	799
ÖLFLEX® TORSION D FRNC - screened				
1150111	4 x 2 x 0.5	11.9	71	205
1150115	12 x 2 x 0.5	18.3	188	518
1150121	4 x 2 x 0.75	12.7	90	232
1150125	12 x 2 x 0.75	19.8	258	603
1150221	18 G 0.75	15.2	180	402
1150228	50 G 0.75	24.9	470	1079

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
 Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
 Packaging size: Drum
 Details of the clamping force are available upon request, halogen-free.
 Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

ÖLFLEX® TORSION FRNC

- H07RN-F, enhanced version refer to page 92