



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

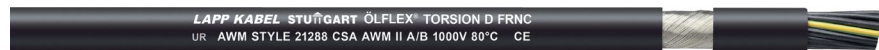


ÖLFLEX® TORSION D FRNC

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
- Sea water-resistant 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

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 $\pm 150^\circ/\text{m}$
- 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

Norm references / Approvals

- Use of leading, European metric stranded conductors according to the IEC scale for conductor nominal cross-sections in mm^2 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 mm^2 must then be allocated to the metric nominal conductor cross-section in mm^2 (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

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

Specific insulation resistance
 $> 20 \text{ GOhm} \times \text{cm}$

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: $10 \times$ outer diameter
 Fixed installation: $6 \times$ 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 $+90^\circ\text{C}$
 (UL $+80^\circ\text{C}$)
 Fixed installation: -40°C to $+90^\circ\text{C}$
 (UL $+80^\circ\text{C}$)