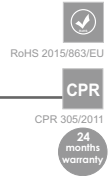
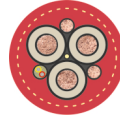


BiTcrane® (N)TSCGEW0EU-SR FO



Medium voltage, flexible power supply cable with fiber optic suitable for reeling applications and based on DIN VDE 0250-813

Crane cables



Technical data:

Thermal parameters:

Ambient temperature:
for fixed installation: -50 °C to 80 °C
reeling operation: -30 °C to 80 °C
Max. permissible conductor temp.: 90 °C
Max. short-circuit temp. at conductor: 250 °C
De-rating factors: acc. to DIN VDE 0298-4

Mechanical parameters:

Max. tensile load on conductor: 20 N/mm²
Torsional stresses: ± 25 °/m
Bending radius: acc. to DIN VDE 0298-3
Min. distance with S-type directional changes: 20 x O.D.
Reeling speed: up to 180 m/min

Design:

Main cores

Conductor: plain copper wires, finely stranded, class 5 acc. to IEC 60228
Insulation:
- inner semi-conductive stress control layer
- EPR compound with improved electrical and mechanical characteristics based on DIN VDE 0207-20
- outer semi-conductive insulation shield layer

Ground conductor

Conductor: plain copper wires, finely stranded, class 5 acc. to IEC 60228, semi-conductive layer

Optical fiber element:

12 / 2x12 fibers in G62.5/125, G50/125 or E9/125

Core arrangement:

three main cores laid-up with optimised lay length, optical fiber element and ground conductor cross-section split into two parts in the outer interstices

Inner sheath:

heavy duty rubber compound, quality 5GM5 based on DIN VDE 0207-21, filling the interstices, colour: red braid made of synthetic threads, placed between inseparably bonded inner and outer sheath, acting as an anti-twist protection

Reinforcement:

Outer sheath:

heavy duty rubber compound, quality 5GM5 acc. to DIN VDE 0207-21; colour: red; inkjet marking

*other designs, e.g. with cradle separator or according to application available on request

Application:

Flexible reeling cable for power supply with cable guidance in different levels, e.g. reel axis in travel direction. Especially for high and extreme mechanical stress. For connection of large material handling machines in open pit mines, different crane types in harbours, shipyards, stacker/reclaimers in stockyards and other industrial areas.

Chemical parameters:

Resistance to oil:	DIN EN / IEC 60811-404
Behaviour in case of fire:	DIN EN / IEC 60332-1-2
Weather resistance:	unrestricted use indoors, outdoors, resistance to ozone UV and moisture

Electrical parameters:

Rated voltage U ₀ /U [kV]	3.6/6	6/10	8.7/15	12/20	14/25	18/30
Maximum permissible operating voltage in AC systems U ₀ /U [kV]	4.2/7.2	6.9/12	10.4/18	13.9/24	17.3/30	20.8/36
Maximum permissible operating voltage in DC systems U ₀ /U [kV]	5.4/10.8	9/18	13.5/27	18/36	22.5/45	27/54
AC test voltage acc. to DIN VDE 0250-813 [kV]	11	17	24	29	36	43
Current-carrying capacity	acc. to DIN VDE 0298-4					
De-rating factors	acc. to DIN VDE 0298-4					

BiTcrane[®](N)TSCGEWOU-SR FO

Medium voltage, flexible power supply cable with fiber optic suitable for reeling applications and based on DIN VDE 0250-813

BiTcrane[®](N)TSCGEWOU-SR 12FO 3.6/6 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ¹⁾ static/dynamic [N]
3x50+2x25/2+12FO	49-52	3800	2250 / 3000
3x70+2x35/2+12FO	51-54	4490	3150 / 4200
3x95+2x50/2+12FO	56-59	5640	4275 / 5700
3x120+2x70/2+12FO	60-63	6820	5400 / 7200
3x150+2x70/2+12FO	62-65	7810	6750 / 9000
3x185+2x95/2+12FO	71-74	9780	8325 / 11100
3x240+2x120/2+12FO	78-81	12540	10800 / 14400

BiTcrane[®](N)TSCGEWOU-SR 12FO 6/10 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ¹⁾ static/dynamic [N]
3x25+2x25/2+12FO	43-46	2720	1125 / 1500
3x35+2x25/2+12FO	44-47	3010	1575 / 2100
3x50+2x25/2+12FO	48-51	3660	2250 / 3000
3x70+2x35/2+12FO	53-56	4750	3150 / 4200
3x95+2x50/2+12FO	57-60	5740	4275 / 5700
3x120+2x70/2+12FO	60-63	6820	5400 / 7200
3x150+2x70/2+12FO	65-68	8150	6750 / 9000
3x185+2x95/2+12FO	71-74	9840	8325 / 11100
3x240+2x120/2+12FO	78-81	12540	10800 / 14400

BiTcrane[®](N)TSCGEWOU-SR 12FO 8.7/15 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ¹⁾ static/dynamic [N]
3x35+2x25/2+12FO	44-47	3010	1575 / 2100
3x50+2x25/2+12FO	48-51	3660	2250 / 3000
3x70+2x35/2+12FO	53-56	4750	3150 / 4200
3x95+2x50/2+12FO	57-60	5740	4275 / 5700
3x120+2x70/2+12FO	60-63	6820	5400 / 7200
3x150+2x70/2+12FO	65-68	8150	6750 / 9000
3x185+2x95/2+12FO	71-74	9840	8325 / 11100
3x240+2x120/2+12FO	78-81	12540	10800 / 14400

BiTcrane[®](N)TSCGEWOU-SR 12FO 12/20 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ¹⁾ static/dynamic [N]
3x25+2x25/2+12FO	49-52	3260	1125 / 1500
3x35+2x25/2+12FO	53-56	3920	1575 / 2100
3x50+2x25/2+12FO	57-60	4630	2250 / 3000
3x70+2x35/2+12FO	60-63	5620	3150 / 4200
3x95+2x50/2+12FO	65-68	6900	4275 / 5700
3x120+2x70/2+12FO	69-72	8050	5400 / 7200
3x150+2x70/2+12FO	72-75	9210	6750 / 9000
3x185+2x95/2+12FO	78-81	11000	8325 / 11100
3x240+2x120/2+12FO	83-86	13350	10800 / 14400

BiTcrane® (N)TSCGEWOEU-SR FO

Medium voltage, flexible power supply cable with fiber optic suitable for reeling applications and based on DIN VDE 0250-813

BiTcrane® (N)TSCGEWOEU-SR 12FO 14/25 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ¹ static/dynamic [N]
3x25+2x25/2+12FO(..../125)	55-58	3900	1125 / 1500
3x35+2x25/2+12FO(..../125)	57-60	4420	1575 / 2100
3x50+2x25/2+12FO(..../125)	61-64	5170	2250 / 3000
3x70+2x35/2+12FO(..../125)	66-69	6420	3150 / 4200
3x95+2x50/2+12FO(..../125)	70-73	7520	4275 / 5700

BiTcrane® (N)TSCGEWOEU-SR 12FO 18/30 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ¹ static/dynamic [N]
3x25+2x25/2+12FO(..../125)	58-61	4310	1125 / 1500
3x35+2x25/2+12FO(..../125)	61-64	4850	1575 / 2100
3x50+2x25/2+12FO(..../125)	66-69	5850	2250 / 3000
3x70+2x35/2+12FO(..../125)	70-73	6920	3150 / 4200
3x95+2x50/2+12FO(..../125)	73-76	8040	4275 / 5700

BiTcrane® (N)TSCGEWOEU-SR 2x12FO 3.6/6 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ¹ static/dynamic [N]
3x50+2x25/2+2x12FO	49-52	3780	2250 / 3000
3x70+2x35/2+2x12FO	51-54	4470	3150 / 4200
3x95+2x50/2+2x12FO	56-59	5610	4275 / 5700
3x120+2x70/2+2x12FO	60-63	6880	5400 / 7200
3x150+2x70/2+2x12FO	62-65	7800	6750 / 9000
3x185+2x95/2+2x12FO	71-74	9800	8325 / 11100
3x240+2x120/2+2x12FO	78-81	12520	10800 / 14400

BiTcrane® (N)TSCGEWOEU-SR 2x12FO 6/10 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ¹ static/dynamic [N]
3x50+2x25/2+2x12FO	48-51	3650	2250 / 3000
3x70+2x35/2+2x12FO	53-56	4730	3150 / 4200
3x95+2x50/2+2x12FO	57-60	5710	4275 / 5700
3x120+2x70/2+2x12FO	60-63	6880	5400 / 7200
3x150+2x70/2+2x12FO	65-68	8140	6750 / 9000
3x185+2x95/2+2x12FO	71-74	9870	8325 / 11100
3x240+2x120/2+2x12FO	78-81	12520	10800 / 14400

BiTcrane® (N)TSCGEWOEU-SR 2x12FO 8.7/15 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ¹ static/dynamic [N]
3x50+2x25/2+2x12FO	48-51	3650	2250 / 3000
3x70+2x35/2+2x12FO	53-56	4730	3150 / 4200
3x95+2x50/2+2x12FO	57-60	5710	4275 / 5700
3x120+2x70/2+2x12FO	60-63	6880	5400 / 7200
3x150+2x70/2+2x12FO	65-68	8140	6750 / 9000
3x185+2x95/2+2x12FO	71-74	9870	8325 / 11100
3x240+2x120/2+2x12FO	78-81	12520	10800 / 14400

BiTcrane[®](N)TSCGEWOU-SR FO

Medium voltage, flexible power supply cable with fiber optic suitable for reeling applications and based on DIN VDE 0250-813

BiTcrane[®](N)TSCGEWOU-SR 2x12FO 12/20 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ^{*)} static/dynamic [N]
3x25+2x25/2+2x12FO	49-52	3250	1125 / 1500
3x35+2x25/2+2x12FO	53-56	3900	1575 / 2100
3x50+2x25/2+2x12FO	57-60	4610	2250 / 3000
3x70+2x35/2+2x12FO	60-63	5600	3150 / 4200
3x95+2x50/2+2x12FO	65-68	6870	4275 / 5700
3x120+2x70/2+2x12FO	69-72	8110	5400 / 7200
3x150+2x70/2+2x12FO	72-75	9190	6750 / 9000
3x185+2x95/2+2x12FO	78-81	11020	8325 / 11100
3x240+2x120/2+2x12FO	83-86	13330	10800 / 14400

BiTcrane[®](N)TSCGEWOU-SR 2x12FO 14/25 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ^{*)} static/dynamic [N]
3x25+2x25/2+2x12FO(..../125)	55-58	3880	1125 / 1500
3x35+2x25/2+2x12FO(..../125)	57-60	4410	1575 / 2100
3x50+2x25/2+2x12FO(..../125)	61-64	5150	2250 / 3000
3x70+2x35/2+2x12FO(..../125)	66-69	6400	3150 / 4200
3x95+2x50/2+2x12FO(..../125)	70-73	7490	4275 / 5700

BiTcrane[®](N)TSCGEWOU-SR 2x12FO 18/30 kV

n x mm ²	Outer diameter min. - max. [mm]	Approximate cable weight [kg/km]	Permissible tensile force ^{*)} static/dynamic [N]
3x25+2x25/2+2x12FO(..../125)	58-61	4290	1125 / 1500
3x35+2x25/2+2x12FO(..../125)	61-64	4840	1575 / 2100
3x50+2x25/2+2x12FO(..../125)	66-69	5840	2250 / 3000
3x70+2x35/2+2x12FO(..../125)	70-73	6900	3150 / 4200
3x95+2x50/2+2x12FO(..../125)	73-76	8010	4275 / 5700

Cable Factory BITNER reserves the right to modify specifications without prior notification.

*) please contact us if higher loads are required.

Note: on customer's request other cross sections or number of cores can be produced

Regulations of the individual fibre types:

Fiber optic type	Standard	Colour code
Single-mode optical fiber E9/125	ITU-T G.652 D	acc. to ANSI/TIA/EIA 598-A
Multimode fiber G50/125 (OM2-OM4)	ITU-T G.651	
Multimode fiber G62,5/125		

Typical attenuation values:

Fiber optic type	Description	Value (max.)	Unit
Single-mode optical fiber E9/125	attenuation at 1310 nm	0,5	dB/km
Single-mode optical fiber E9/125	attenuation at 1550 nm	0,3	dB/km
Multimode fiber G50/125	attenuation at 850 nm	3,0	dB/km
Multimode fiber G50/125	attenuation at 1300 nm	1,0	dB/km
Multimode fiber G62,5/125	attenuation at 850 nm	3,5	dB/km
Multimode fiber G62,5/125	attenuation at 1300 nm	1,5	dB/km