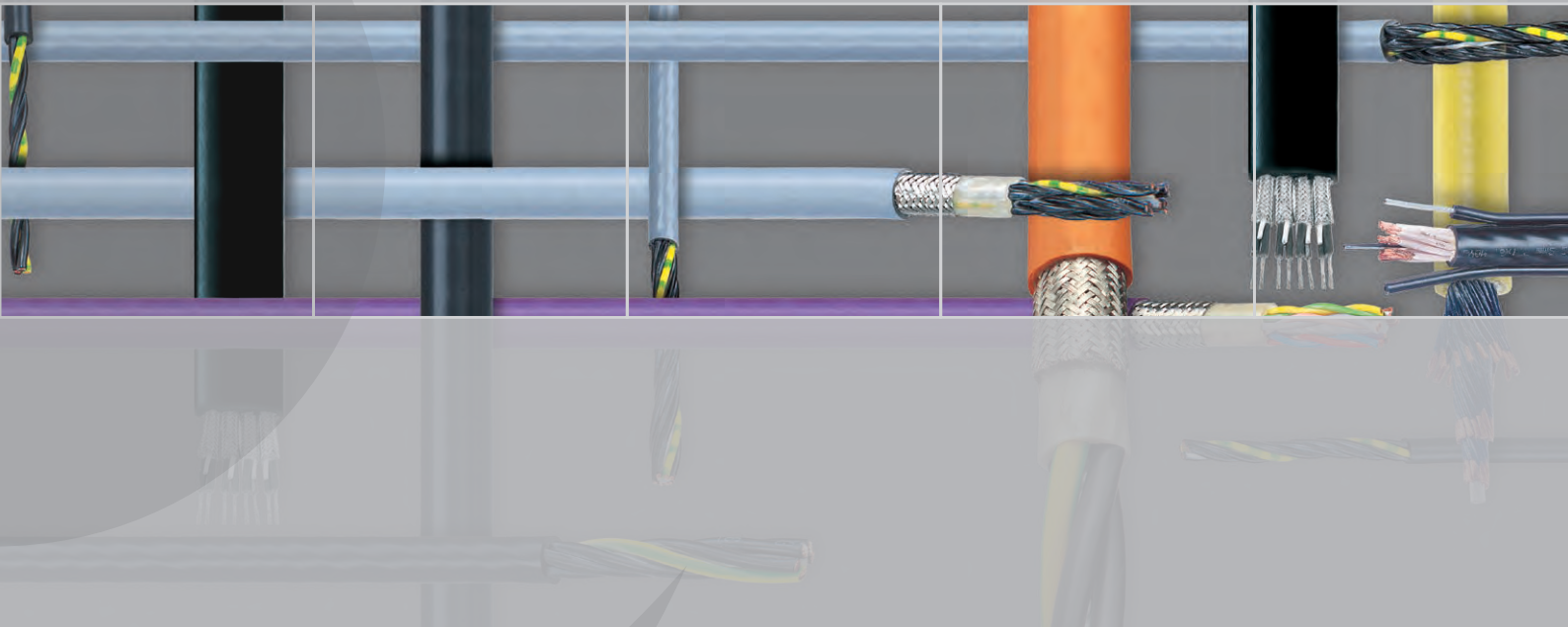
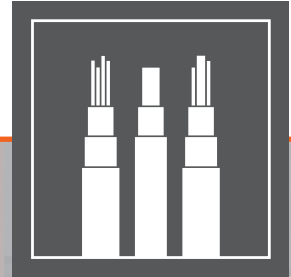
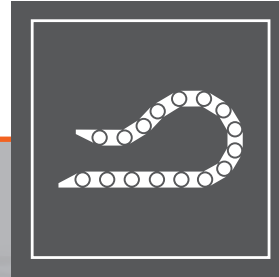
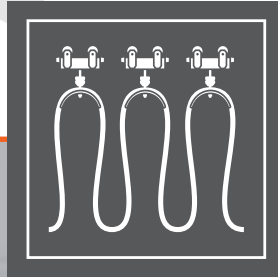


Conductix-Wampfler Cables

for Festoon Systems, Energy Guiding Chains & Others



CONDUCTIX
wampfler



Cables for systems in motion selected from experts

Advantage 1 Secure choice of cables

- Comprehension of our customers applications and needs is the foundation of our choice. We offer the safety for the complete package, system and cables matching perfectly your application.

Advantage 2 System compatibility

- The cable design can significantly influence the performance of the energy and/or data supply system – we ensure the proper alignment of the cable to the system for an optimized energy and data transfer.

Advantage 3 Manufacturer independence

- Important to us is only the performance of the cable, not its origin – we neutrally select only the technically most qualified cables available on the market.

Advantage 4 System guarantee

- Each complete Conductix-Wampfler system is provided with a comprehensive guarantee – needless to say, including the cable.

Advantage 5 Conductix-Wampfler cable service

- Conductix-Wampfler services ensure the reliability of our energy supply systems and the availability of our customers equipment.



Contents

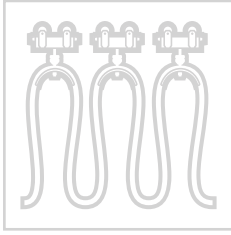
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At a glance

Conductix-Wampfler Cables

Application										
	Basic Festoon		Heavy Duty Festoon			Heavy Duty Chain		Specials		
Power / Control										
	FV	TG	FXG	TXP	TXG	CXP	PV	SXP	SXG	
Composite Power + Control + Data										
	FV-D		FXG-D	TXP-D	TXG-D	CXP-D		SXP-D		
Label respectively Design	H05VH6-F YCFLY H07VH6-F YFLY / YFLCY	H07RN-F	NGFLGOEU-J (UL) (N)GLFGOEU-J (UL) M(SID)HOEU (UL) GCFLGOEU	12YHRD11YH 12YHRDC11YH	(N)GRDGOEU-J/O (N)GRDCGOEU-J/O (N)3GRD5G (N)3GRDC5G	12YMSL11Y 13YMSL13Y	MTTY-0 FYMYTW	YSLTOE-J/O YSLZ3SOE-J	NTMCWOEU	
Outer jacket material	PVC	Rubber	Rubber	PUR	Rubber	PUR / TPE	PVC	PUR	Rubber	
Suitable for use outdoors										
Voltage range	up to 450/750 V	up to 450/750 V	up to 0.6/1 kV	up to 0.6/1 kV	up to 0.6/1 kV	up to 0.6/1 kV	mV up to 35 kV	mV up to 0.6/1 kV	mV up to 35 kV	
Tensile load capacity max. [N / mm²]	15	15	15	15	15 up to 20	15	15 up to 30	15 up to 30	15	
Travel speed max. [m / min]	120	80	180	210	240	up to 300	various	various	-	
Temperature range flexing [°C]	-25	-30	-35	-40	-35	-35	various	various	-25	
	up to	up to	up to	up to	up to	up to			up to	
	60	60	80	90	80	80			80	
Page	6	12	16	20	24	28	32	38	42	46

● ideal ● limited

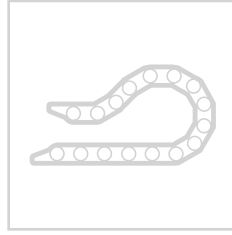


Special impacts on cables for Festoon systems...

- Very high acceleration and travel speed rates in the system, high dynamic bending and tensile stress on the cable
- Compressive stress resulting from clamping the cable at the support, double clamps utilized in systems with high travel speeds
- At the bottom of the loop uniform alternating bending stress, non-uniform mechanical load cause by jerky movements couple with forces generate by wind

... are met with dedicated features

- Low weight and small diameter due to a stranded layered structure and in the case of power cables, the earth conductor is split into three parts
- Alternating bending loads are taken care of by finely stranded conductors
- Sheathing compounds are being chosen by their abilities to withstand very high demands for outdoor atmospheric conditions
- Notch-resistant sheathing compounds with high resistance to tearing
- Robust outer sheath designed to absorb impact forces

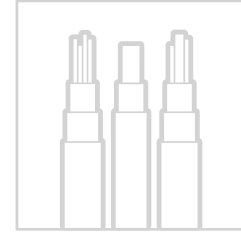


Special impacts on cables for Energy Guiding Chains...

- High horizontal & vertical acceleration cause deflection forces which are applied onto the cable
- Continuous friction and small bending radii
- Excessive movement between cable and chain generates compressive and tensile forces

... are met with dedicated features

- Low weight and small diameters as a result of particularly thin conductor insulation and sheathing
- Best insulation materials for small wall thicknesses
- Very high resilience due to short lay pitches
- Highly flexible sheath compounds with excellent resistance to tearing and abrasion, including wear against chain material
- Low risk of corkscrew effect as a result of stranding by reverse twist
- Stable construction due to extruded fillers in interstices



Special impacts on cables for Specialties...

- Basket spreader applications demand particular coiling abilities combined with a very sturdy sheathing concept to withstand constraints while being vertically suspended
- Single core connecting cables in medium voltage require high flexibility to bend into small spaces and provide reliable, secure and long lasting power transmission

... are met with dedicated features

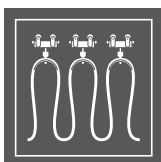
Basket spreader cables are...

- equipped with with finely stranded copper conductors
- based on concept with bundle assembly of conductors and short length of lay and provide so best coiling behavior
- Special synthetic threads increase the breaking load and provide additional safety

Single core connecting cables consist of...

- Finely stranded tinned copper conductors with an conductive rubber layer on it
- Insulation based on EPR plus another layer of conductive rubber; this multi extrusion process results in the concept being free of partial discharges
- A screen of close spiral tinned copper wire wrapping
- A robust PCP jacket

Highly overall resilient cables allow the smallest possible bending radius and therefore short system lengths



Conductix-Wampfler Cable FV / FV-D

PVC flat cable for basic festoon



- Compact design, broad range of sizes from 0,5² for data, control and up to 95² for power supply
- Proven concept and well balanced wall thicknesses and weight relation for applications with medium mechanical stresses
- Sturdy PVC jacket and very good flexing behavior therefore also long-lasting
- Particular range with Low Smoke Zero Halogene (LSOH) sections available

Particularly suitable,

- Used for standard, indoor applications
- Small to medium dynamic loads are applied to the system on a single plane
- The priority is a cost efficient system
- Target is the smallest possible festoon system size due to space limitations
- The operating temperatures do not exceed 60°C max

Characteristics

Resilient PVC flat cable

Main application: festoon system

Typical applications

- Indoor crane trolleys
- Main power supply for indoor cranes
- Process cranes
- Storage and retrieval systems

Electrical parameters

Rated voltage	U ₀ /U = 450 / 750 V
	Power /control from >1,5 ²
	U ₀ U = 300/500 V
	Power /control from up to 1 ²

Mechanical load-bearing capacity

Travel speed	up to 120 m/min (> 120 m/min on request)
Minimum bending radii	3 x Ø for d < 8 mm 4 x Ø for d = 8 up to 12 mm 5 x Ø for d > 12 mm 8 x Ø for LSOH types

Thermal / Chemical specifications

Ambient temperature	- flexing -25°C... +60°C (LSOH -5/+70°C)
	- fixed -35°C... +60°C (LSOH -25/+70°C)

Highest allowance on operational temperature at conductor:	70 °C (LSOH +90°C)
--	--------------------

Important features

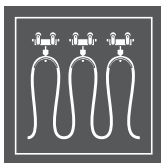
- Self extinguishing and flame retardant acc.IEC 60332-1
- Oil and grease resistant
- UV-resistant
- Silicone free

Design features

Conductor	flexible copper class 5 acc DIN VDE 0295
Insulation	PVC
For LSOH	special material compound
Stranding	Parallel side by side
Sheath	PVC
For LSOH	Polyolefin
Color	Black

Type

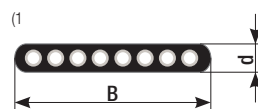
H05VVH6-F/H07VVH6-F,
YCFLY, YFLY / YFLCY



Conductix-Wampfler Cable FV

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Geometry d x B ⁽¹⁾ max [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required ⁽²⁾
Control cable FV Uo/U 0.45/0.75 kV	16 G 1	131250-F-16G1#	8.1 x 25.6	154	400	240	•
	24 G 1	131250-F24G1#	4.4 x 70.0	231	600	360	•
	4 G 1.5	131250-F4G1,5#	5.4 x 15.0	58	135	60	-
	5 G 1.5	131250-F5G1,5#	5.2 x 18.6	72	180	90	-
	7 G 1.5	131250-F7G1,5#	5.7 x 25.0	101	260	110	-
	8 G 1.5	131250-F8G1,5#	5.2 x 28.3	115	300	180	-
	10 G 1.5	131250-F10G1,5#	5.6 x 35.0	144	360	220	-
	12 G 1.5	131250-F12G1,5#	5.6 x 41.4	173	420	270	-
	14 G 1.5	131250-F14G1,5#	5.4 x 52.5	202	565	210	-
	16 G 1.5	131250-F16G1,5#	5.6 x 54.0	230	560	360	-
	18 G 1.5	131250-F18G1,5#	5.6 x 60.2	259	620	400	-
	24 G 1.5	131250-F24G1,5#	5.4 x 83.0	346	850	540	-
	4 G 2.5	131250-F4G2,5#	6.0 x 18.2	96	210	150	-
	5 G 2.5	131250-F5G2,5#	6.0 x 23.2	120	260	240	-
	7 G 2.5	131250-F7G2,5#	6.0 x 32.4	168	380	262	-
	8 G 2.5	131250-F8G2,5#	6.0 x 34.0	192	405	300	-
	12 G 2.5	131250-F12G2,5#	6.7 x 49.5	288	570	300	-



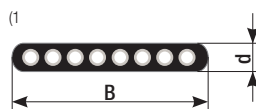
⁽²⁾ The Minimum Order Quantity is 500 m, please contact us.



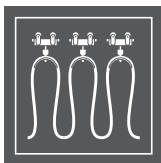
Conductix-Wampfler Cable FV

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Geometry d x B ⁽¹⁾ max [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required ⁽²⁾
Power cable FV I 0.45/0.75 kV	4 G 4	131150-F 4G4	7.2 x 21.5	154	290	240	-
	4 G 6	131150-F 4G6	7.2 x 22.8	230	390	360	-
	4 G 10	131150-F 4G10	10.5 x 29.0	384	620	600	-
	4 G 16	131150-F 4G16	11.0 x 37.0	614	990	960	-
	4 G 25	131150-F 4G25	13.5 x 46.0	960	1.550	1.500	-
	4 G 35	131150-F 4G35	14.8 x 51.0	1.344	2.030	2.100	-
	4 G 50	131150-F 4G50	17.0 x 57.0	1.920	2.650	3.000	-
	4 G 70	131150-F 4G70	18.5 x 64.0	2.700	3.650	4.200	-
	5 G 4	131150-F 5G4	7.0 x 26.0	192	380	300	-
	5 G 6	131150-F 5G6	7.2 x 26.6	290	480	450	-
	5 G 10	131150-F 5G10	10.5 x 38.3	480	780	750	-
	5 G 16	131150-F 5G16	11.0 x 43.0	770	1.200	1.200	-
Screened Power cable FV I 0.3/0.5 kV	7 G 4	131150-F 7G4	7,0 x 38,0	269	550	420	
	7 G 6	131150-F 7G6	8,5 x 42,5	403	700	630	
	4 G 2.5C	131151-F 4G2,5C	7.4 x 22.0	168	270	150	-
	4 G 4C	131151-F 4G4C	9.5 x 27.6	241	500	240	-
	4 G 6C	131151-F 4G6C	7.8 x 25.2	325	480	360	-
	4 G 10C	131151-F 4G10C	12.1 x 36.7	497	910	600	-
	4 G 16C	131151-F 4G16C	13.7 x 41.5	805	1.320	960	-
	4 G 25C	131151-F 4G25C	15.5 x 47.0	1.200	1.720	1.500	-
	4 G 35C	131151-F 4G35C	17.0 x 53.2	1.657	2.330	2.100	-
Screened Control cable FV-D I 0.3/0.5 kV							
	4 x 1.5C	131251-F 4X1,5C#	5.4 x 16.6	91	169	60	-
	8 x 1.5C	131251-F 8G1,5C#	6.3 x 37.1	220	400	90	-
	12 x 1.5C	131251-F 12X1,5C#	5.4 x 45.8	330	560	270	-
Control & Data cable FV-D I 0.45/0.75 kV							
	7 x 3 x 1	131350-F7x3x1#	9.6 x 46.6	202	710	310	•
	7 x 4 x 0.5	131350-F7x4x0,5#	9.6 x 46.6	135	675	210	•
	5 x 4 x 0.5C	131353-F5x4x0,5C#	9.9 x 35.3	168	514	150	•
	7 x 4 x 0.5C	131353-F7x4x0,5C#	9.9 x 46.8	222	745	210	•
	7 x 2x0.75C	131352-F7x2x0.75C#	9.6 x 46.8	235	721	150	•
	4 x 4 x 1C	0322-4x4x1C#	11.5 x 35.5	315	625	240	-
	7 x 3 x 1C	0507-7x3x1C#	10.3 x 54.3	275	755	150	•



⁽²⁾ The Minimum Order Quantity is 500 m, please contact us.

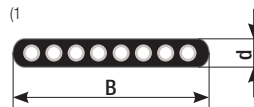


Conductix-Wampfler Cable FV-L(LSOH*)

*Low Smoke Free of Halogen

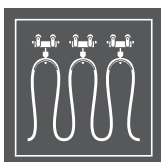
Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Geometry d x B ⁽¹⁾ max [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required ⁽²⁾
Control cable LSOH FV I 0.45/0.75 kV	4 G 1.5	131270-F4G1,5#	5.6 x 15.7	58	110	90	-
	8 G 1.5	131270-F8G1,5#	5.6 x 30.5	115	220	180	-
	12 G 1.5	131270-F12G1,5#	5.6 x 42.9	175	320	270	-
	4 G 2.5	131270-F4G2,5#	6.0 x 18.6	96	170	150	-
	8 G 2.5	131270-F8G2,5#	6.0 x 35.6	192	330	300	-
	12 G 2.5	131270-F12G2,5#	6.0 x 51.0	290	490	450	-
Power cable LSOH FV I 0.45/0.75 kV	4 G 4	131170-F4G4#	7.5 x 22.2	154	250	240	-
	4 G 6	131170-F4G6#	8.1 x 24.8	230	330	360	-
	4 G 10	131170-F4G10#	10.0 x 30.6	384	550	600	-
	4 G 16	131170-F4G16#	11.6 x 36.9	615	800	960	-
	4 G 25	131170-F4G25#	12.9 x 43.3	960	1.350	1.500	-
	4 G 35	131170-F4G35#	14.5 x 49.0	1.344	1.800	2.100	•
	4 G 50	131170-F4G50#	18.8 x 58.8	1.920	2.400	3.000	-



⁽²⁾ The Minimum Order Quantity is 500 m, please contact us.

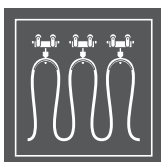




Conductix-Wampfler Cable FV / FV-D

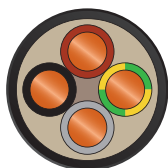
Technical data

		H05VVH6-F/YCFLY	H07VVH6-F	YFLY / YFLCY	
Electrical parameters	rated voltage	U ₀ /U = 300/500 V	U ₀ /U = 450/750 V	U ₀ /U = 450/750 V	
	maximum permitted AC operating voltage	U ₀ /U = 318/550 V	U ₀ /U = 476/825 V	U ₀ /U = 476/825 V	
	maximum permitted DC operating voltage	U ₀ /U = 413/825 V	U ₀ /U = 619/1238 V	U ₀ /U = 619/1238 V	
	ampacity	accord. to table data, otherwise accord. to DIN VDE 0298 part 4			
	AC test voltage	2 kV	2.5 kV	2.5 kV	
Thermal parameters	ambient temperature	flexing -20 °C to + 60 °C fixed -30 °C to + 60 °C	-20 °C to + 60 °C -30 °C to + 60 °C	-25 °C to + 70 °C -30 °C to + 70 °C	
	maximum permitted operating temperature of the conductor	70 °C			
	short-circuit temperature of the conductor	150 °C			
Mechanical parameters	minimum bending radii allowing for free movement	d < 8 mm : 3 x d d = 8 to 12 mm : 4 x d d > 12 mm : 5 x d			
	tensile load-bearing capacity	15 N/mm² conductor cross section during operation for moving cables according to DIN VDE 0298 part 3			
Chemical parameters	LBS-free / silicone-free	yes			
	combustion behaviour	flame retardant and self-extinguishing according to DIN VDE 0482 part 265-2-1, IEC 60332-1			
	resistant to ozone	yes			
	resistant to humidity	yes (waterproof)			
	UV-resistant	yes			
	oil-resistant	yes			
	halogen free	no			
Materials	insulation	base material polyvinylchloride (PVC)			
	outer sheath	base material polyvinylchloride (PVC), colour black RAL9005			
Design features	conductor	bare electrolytic copper, flexible, cat. 5 accord. to DIN VDE 0295			
	shield	copper yarn, coverage of approx. 75 %		tin-plated braided copper wires or copper covering	
	stranding	conductors or bundles			
	conductor coding	accord. to DIN VDE 0293, part 308 up to 5 conductors coloured, 6 or more conductors black with white numbers with or without green/yellow			
Standards		H05VVH6-F YCFLY H07VVH6-F YFLY / YFLCY	DIN VDE 0281 part 403 adapted to DIN VDE 0250 DIN VDE 0281 part 404 adapted to DIN VDE 0250		
	Design codes	harmonised cable H05VVH6-F / H07VVH6-F	H harmonised standard 05 rated voltage 300 / 500 V 07 rated voltage 450 / 750 V V polyvinylchloride (PVC) H6 flat cable according to HD 359 with 3 or more conductors -F flexible cable, category 5		
			Y	PVC material	FL flat cable
			C	conducting metallic covering surrounding the stranded core (shield), in form of foil or braid	
		J	with a green/yellow identification of the earth/ground conductor		
		not harmonised cable YCFLY / YFLY / YFLCY	O	without a green/yellow identification of the earth/ground conductor	



Conductix-Wampfler Cable TG

Rubber round cable basic festoon



- Standardized rubber cable for control and power applications
- Very robust design for applications with medium mechanical stresses, suitable for spring reels and festoon systems
- Good resilience and flexing behavior as a result of short length of lay
- Broad range of control and power sections available

Particularly suitable,

- if smaller or medium dynamic loads are applied to the equipment
- if the system requires UV, Oil and ozone resistance
- when moisture or humidity (industrial water) are a constant threat to the system
- for „medium“ cold environment (-25°C)

Characteristics

Cable designed for continuous standard duty environment, moisture and humidity proof, cost efficient and durable

Typical applications

- Power supply and control cable for cranes and trolleys
- Travel cars
- Dockyard cranes
- All horizontal operating machinery with travel speed up to 80 m/min on festoon system

Electrical parameters

Rated voltage $U_0/U = 0.45 / 0.75 \text{ kV}$
for fixed cabling permitted up to 1 kV

Mechanical load-bearing capacity

Travel speed up to 80 m/min (festoon application)

Minimum bending radii $5 \times \varnothing$ flexing

Tensile load-bearing capacity 15 N/mm²

Highest allowance on operational temperature at conductor: 60 °C
Short circuit temperature at conductor: 200 °C

Thermal / Chemical specifications

Ambient temperature
- flexing: - 30°C... + 60°C
- fixed: - 40°C... + 60°C

Important features

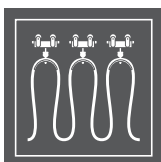
- Resistant to ozone
- Oil resistant
- UV-resistant
- Low flammability acc. IEC 60332-1
- Silicone free

Design features

Conductor flexible bare copper class 5
Sheath abrasion-resistant rubber compound
Core insulation special rubber compound

Special versions available on request

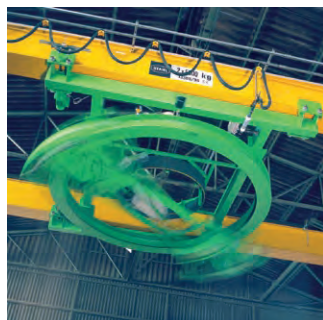
Type H07RN-F

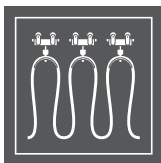


Conductix-Wampfler Cable TG

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required
Control cable TG Uo/U 0.45/0.75 kV	3 G 1.5	131210-R3G1.5#	9.2 – 11.9	43,2	157	68	-
	4 G 1.5	131210-R4G1.5#	10.2 – 13.1	58	192	90	-
	5 G 1.5	131210-R5G1.5#	11.2 – 14.4	72	238	113	-
	7 G 1.5	131210-R7G1.5#	14.7 – 17.5	101	371	158	-
	12 G 1.5	131210-R12G1.5#	17.6 – 22.4	173	516	270	-
	19 G 1.5	131210-R19G1.5#	20.7 – 26.3	275	788	428	-
	24 G 1.5	131210-R24X1.5#	24.3 – 30.7	346	968	540	-
							-
	3 G 2.5	131210-R3G2.5#	10.9 – 14.0	72	217	113	-
	4 G 2.5	131210-R4G2.5#	12.1 – 15.5	96	269	150	-
	5 G 2.5	131210-R5G2.5#	13.3 – 17.0	120	329	188	-
	7 G 2.5	131210-R7G2.5#	16.5 – 20.0	168	499	263	-
	12 G 2.5	131210-R12G2.5#	20.6 – 26.2	288	719	450	-
	18 G 2.5	131210-R18G2.5#	24.4 – 31.0	432	1.068	713	-
	24 G 2.5	131210-R24X2.5#	28.8 – 36.4	576	1.400	900	-

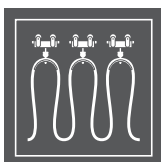




Conductix-Wampfler Cable TG

Order information

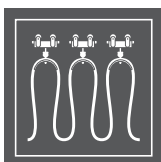
Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required
Power cable TG Uo/U 0.45/0.75 kV	4 G 4	131110-R 4G4	14.0 – 17.9	154	373	240	–
	4 G 6	131110-R 4G6	15.7 – 20.0	230	514	360	–
	4 G 10	131110-R 4G10	20.8 – 26.5	384	899	600	–
	4 G 16	131110-R 4G16	23.8 – 30.1	614	1.253	960	–
	4 G 25	131110-R 4G25	28.9 – 36.6	960	1.846	1.500	–
	4 G 35	131110-R 4G35	32.5 – 41.1	1.344	2.393	2.100	–
	4 G 50	131110-R 4G50	37.7 – 47.5	1.920	3.284	3.000	–
	4 G 70	131110-R 4G70	42.7 – 54.0	2.688	4.331	4.200	–
	4 G 95	131110-R 4G95	48.4 – 61.0	3.648	5.712	5.700	–
	4 G 120	131110-R 4G150	53.0 – 66.0	4.608	6.828	7.200	–
	4 G 150	131110-R 4G121	58.0 – 73.0	5.760	8.319	9.000	–
	5 G 4	131110-R 5G 4	15.6 – 19.9	192	466	300	–
	5 G 6	131110-R 5G6	17.5 – 22.2	288	640	450	–
	5 G 10	131110-R 5G10	22.9 – 29.1	480	1.107	750	–
	5 G 16	131110-R 5G16	26.4 – 33.3	768	1.564	1.200	–
	5 G 25	131110-R 5G25	32.0 – 40.4	1.200	2.291	1.875	–
	1 x 6	131110-R1x6	7.9 – 9.8	58	110	90	–
	1 x 10	131110-R1x10	9.5 – 11.9	96	200	150	–
	1 x 16	131110-R1x16	10.8 – 13.4	154	279	240	–
	1 x 25	131110-R1x25	12.7 – 15.8	240	396	375	–
	1 x 35	131110-R1x35	14.3 – 17.9	336	540	525	–
	1 x 50	131110-R1x50	16.5 – 20.6	480	719	750	–
	1 x 70	131110-R1x70	18.6 – 23.0	672	947	1.050	–
	1 x 95	131110-R1x95	20.8 – 26.0	912	1.230	1.425	–
	1 x 120	131110-R1x120	22.8 – 28.6	1.152	1.520	1.800	–
	1 x 150	131110-R1x150	25.2 – 31.4	1.440	1.887	2.250	–
	1 x 185	131110-R1x185	27.6 – 34.4	1.776	2.300	2.775	–
	1 x 240	131110-R1x240	30.6 – 38.3	2.304	2.960	3.600	–



Conductix-Wampfler Cable TG

Technical data

Electrical parameters	rated voltage	UoU = 450/750 V
	maximum permitted AC operating voltage	UoU = 476/825 V
	maximum permitted DC operating voltage	UoU = 619/1238 V
	ampacity	according to VDE 0298 part 4
	AC test voltage	2,5 kV
Thermal parameters	ambient temperature	flexing -30°C to +60°C, for temperatures below -30°C please consult with us fixed -40°C to +60°C
	maximum permitted operating temperature at conductor	60°C
	short-circuit temperature at conductor	200°C
Mechanical parameters		
	minimum radii for continuous flexing	5 x Ø fixed
	tensile load bearing capacity	15 N/mm ²
Chemical parameters	LBS-free / silicone free	yes
	combustion behaviour	of low flammability according IEC 60332-1
	resistant to ozone	yes
	resistant to humidity	yes
	UV-resistant	yes
	oil resistant	yes
	halogen free	no
Materials	insulation	Special rubber compound (EPR) EI4
	outer sheath	abrasion-resistant special rubber compound (CR) EM2, colour black RAL9005
Design features		
	conductor	bare electrolytic copper, flexible, category 5 according to DIN VDE 0295
	conductor coding	up to 5 conductors black with white numbers with green/yellow earth conductor
Standards & Design codes Note	H07RN-F	adapted to DIN VDE 0250
	H	harmonized
	07	450/750V
	R	insulation material ethylene-propylene caotchouc
	N	jacket material polychloroprene caotchouc or similar
	F	conductor finely stranded for flexible cable



Conductix-Wampfler Cable FXG / FXG-D

Neoprene flat cable for heavy duty festoon



- Reduced necessity for space due to flexible conductors and smaller bending radii
- Very robust design for applications with higher mechanical stresses
- High resistance to temperature thanks to core insulation materials resistant up to 90°C
- Complete range of unscreened and screened sections
- Robust and wear resistant outer sheath

Particularly suitable,

- if medium to higher dynamic loads are applied to the system on a single plane
- if the expectation is for a longterm solution
- if the festoon system needs to be kept to the smallest possible size due to space limitations
- when cold environment is -35°C
- if operating temperatures can reach 85°C
- if UL listing is required

Characteristics

Resilient neoprene flat cable for festoon systems

Typical applications

- Power supply for trolleys of indoor an process cranes
- Transport systems / transfer cars
- Longitudinal scrapers in sewage treatment plants
- Foundries and steel production plants
- Storage and retrieval systems

Electrical parameters

Rated voltage	U ₀ /U =	0.3 / 0.5 kV
		(0.6 / 1.0 kV on request)
	U ₀ /U =	0.6 kV UL

Mechanical load-bearing capacity

Travel speed	up to 180 m/min
	(> 180 m/min on request)

Minimum bending radii	3 x Ø	for d < 8 mm
	4 x Ø	for d = 8 up to 12 mm
	5 x Ø	for d > 12 mm

Thermal / Chemical specifications

Ambient temperature	- flexing	-35°C... +80°C
	- fixed	-40°C... +80°C

Highest allowance on operational temperature at conductor:	90 °C
Short circuit temperature at conductor:	250 °C

Important features

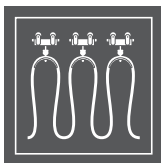
- Resistant to Ozone
- Oil resistant acc DIN EN 60811-2-1
- UV-resistant
- Low flammability acc. IEC 60332-1 plus FT1
- Silicone free

Design features

Conductor	flexible bare copper strand class 5) or 6)
Sheath	abrasion-resistant rubber compound
Core	insulation special rubber compound

Types

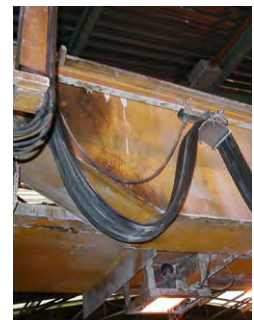
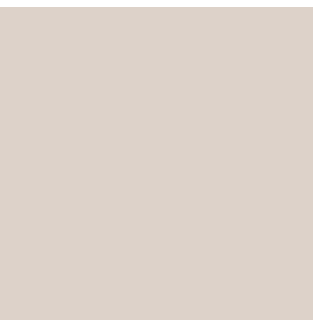
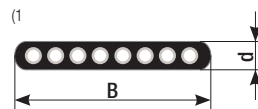
NGFLGOEU-J /
NGFLGCOEU-J/O
GCFLGÖUE
(UL Style 4540), M(STD)HÖU (UL)

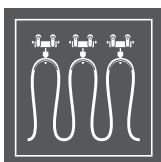


Conductix-Wampfler Cable FXG / FXG-D

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Geometry d x B ⁽¹⁾ max [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required ⁽²⁾
Control cable FXG Uo/U 0.3/0.5 kV	4 G 1.5	131220-F4G1.5#	6.4 – 17.3	58	180	90	-
	5 G 1.5	131220-F5G1.5#	6.4 – 22.0	72	230	115	-
	7 G 1.5	131220-F7G1.5#	6.0 x 27.6	101	380	160	-
	8 G 1.5	131220-F8G1.5#	6.4 – 32.0	115	340	180	-
	10 G 1.5	131220-F10G1.5#	6.5 x 40.0	144	580	225	-
	12 G 1.5	131220-F12G1.5#	7.2 – 47.5	173	550	270	-
	24 G 1.5	131220-F6G4X1.5#	12.2 x 53.0	346	1.330	540	-
	4 G 2.5	131220-F4G2.5#	7.8 – 20.7	96	280	150	-
	5 G 2.5	131220-F5G2.5#	7.8 – 26.0	120	330	190	-
	7 G 2.5	131220-F7G2.5#	7.8 – 33.9	168	450	260	-
	8 G 2.5	131220-F8G2.5#	7.8 – 38.0	192	500	300	-
	12 G 2.5	131220-F12G2.5#	8.2 – 54.8	288	795	450	-
	24 G 2.5	131220-F6G4X2.5#	17.0 x 72.5	576	2.300	900	-
Screened Control cable FXG Uo/U 0.6/1 kV	4 G 1.5C	131221-F4G1.5C#	8.0 - 21.5	115	220	90	-
	8 G 1.5C	131221-F8G1.5C#	8.0 x 38.6	228	550	180	-
	12 G 1.5C	131221-F12G1.5C#	8.0 x 57.1	342	800	270	-
	4 G 2.5C	131221-F4G2.5C#	8.7 x 24.1	163	370	150	-
	6 G 2.5C	131221-F12G2.5C#	8.7 x 64.0	493	1.050	450	-
Data cable FXG-D Uo/U 0.3/0.5 kV	12 G 2.5C	0405-12G2.5C#	8.7 – 65.1	493	1.004	450	-
	4 x (2x1)C	131322-F 4X(2X1)C	11.8 x 33.5	273	590	120	-
	7 x (2x1)C	131322-F 7X(2X1)C	12.5 x 59.0	430	1.050	210	-

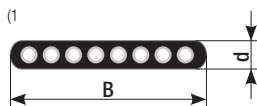


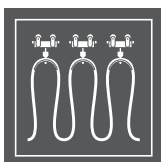


Conductix-Wampfler Cable FXG

Order information

Type of cable	Number of conductors and cross section [mm ²]		Order-No.	Geometry d x B ⁽¹⁾ max [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required ⁽²⁾
Power cable FXG 0.3/0.5 kV	4	G 4	131120-F 4G4	9.4 x 25.3	154	410	240	-
	4	G 6	131120-F 4G6	10.3 x 28.0	230	500	360	-
	4	G 10	131120-F 4G10	11.0 x 33.1	384	730	600	-
	4	G 16	131120-F 4G16	12.8 x 38.3	614	1.030	960	-
	4	G 25	131120-F 4G25	14.4 x 44.8	960	1.450	1.500	-
	4	G 35	131120-F 4G35	16.4 x 50.0	1.344	1.950	2.100	-
	4	G 50	131120-F 4G50	18.9 x 59.0	1.920	2.700	3.000	-
	4	G 70	131120-F 4G70	21.8 x 68.2	2.688	3.720	4.200	-
	4	G 95	131120-F 4G95	24.3 x 77.1	3.648	4.810	5.700	-
	4	G 120	131120-F 4G120	26.6 x 84.9	4.608	6.050	7.200	-
	5	G 4	131120-F 5G4	9.4 x 32.2	192	520	300	-
	5	G 6	131120-F 5G6	10.3 x 35.0	288	640	450	-
	5	G 16	131120-F 5G10	10.6 x 39.8	480	930	750	-
	5	G 25	131120-F 5G16	12.8 x 47.8	768	1.310	1.200	-
	7	G 4	131120-F 7G4	9.1 x 39.8	269	675	315	-
	7	G 6	131120-F 7G6	9.5 x 43.0	404	1.010	630	-
	7	G 16	131120-F 7G16	13.4 x 63.8	1.075	1.880	1.680	-
Screened Power cable FXG 0.3/0.5 kV	4	G 4C	131121-F 4G4 C	9.5 x 27.6	241	500	240	-
	4	G 6C	131121-F 4G6 C	10.5 x 31.1	353	610	360	-
	4	G 10C	131121-F 4G10 C	12.1 x 36.7	497	920	600	-
	4	G 16C	131121-F 4G16 C	13.7 x 41.5	805	1.320	960	-
	4	G 25C	131121-F 4G25 C	15.5 x 47.0	1.200	1.720	1.500	-
	4	G 35C	131121-F 4G35 C	17.1 x 53.2	1.657	2.330	2.100	-
	4	G 50C	131121-F 4G50 C	19.7 x 61.6	2.261	3.120	3.000	-
	4	G 95C	131121-F 4G95 C	25.3 x 81.9	4.311	5.540	57.00	-

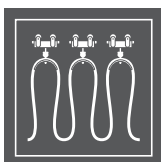




Conductix-Wampfler Cable FXG / FXG-D

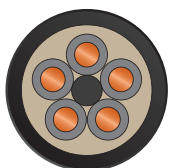
Technical data

Electrical parameters	rated voltage U ₀ /U	300/500V (600/1000V on request)	
	maximum permitted AC operating voltage U ₀ /U	318/550V	
	maximum permitted DC operating voltage U ₀ /U	413/825V	
	ampacity	according to table data, otherwise according to DIN VDE 0298 part 4	
	AC test voltage	2 kV in AC	
Thermal parameters	ambient temperature	flexing -35°C to +80°C fixed -40°C to +80°C	
	maximum permitted operating temperature of the conductor	90°C	
	short-circuit temperature of the conductor	250°C	
Mechanical parameters	minimum bending radii allowing for free movement	d < 8 mm : 3 x d	
		d = 8 to 12 mm : 4 x d	
		d > 12 mm : 5 x d	
	torsional stress	± 100 °/m	
Chemical parameters	tensile load-bearing capacity	15N/mm ² during operation for moving cables acc. DIN VDE 0298 part 3	
	LBS-free / silicone-free	yes	
	combustion behaviour	of low flammability according IEC 60332-1	
	resistant to ozone	yes	
	UV-resistant	yes	
	oil-resistant	yes	
	resistant to humidity	yes	
	halogen free	no	
Materials	insulation	Special rubber compound	
	outer sheath	abrasion-resistant special rubber compound, color black	
Design features	conductor	bare electrolytic copper, flexible, category 5 or 6 acc. DIN VDE 0295	
	stranding	parallel	
	conductor coding	acc. DIN VDE 0293 part 308, up to 5 conductors colored, > 5 conductors black with white numbers with green/yellow earth conductor	
Standards		according to DIN VDE 0250 part 813 UL style 4540 File E250813	
Design codes	NGFLGÖU (N)GFLGÖU GCFLGÖU M(StD)HÖU	N corresponds with VDE standard	
		(N) adapted to a VDE standard	
		G	rubber sheath
		FL	flat cable
		G	rubber insulation
		Ö	oil resistant cable
		U	outer sheath of low flammability acc DIN VDE 0472 part 804
		C	screen for individual conductors / screen for twisted pair conductors

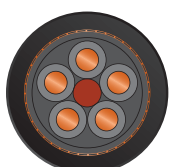


Conductix-Wampfler Cable TXP / TXP-D

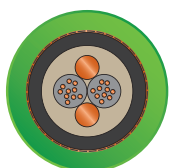
PUR round cable for heavy duty festoon



- Small dimensions and bending radii
- Highly flexible copper conductors
- Abrasion and cutproof outer jacket material PUR



- Wide temperature range thanks to special materials
- Halogen free sheathing materials



Particularly suitable,

- when a halogen free cable with resistance to atmospheric corrosion is important
- if the priority is a robust and durable system with high reliability
- if dynamic travel speed and acceleration force act on the system
- when frequent and continuous bending of the cable is expected

Characteristics

Cable designed for continuous heavy duty environment, specially adapted for use in conveying machinery

Typical applications

- All horizontal or vertical operating machinery with energy guiding chains such as container crane trolley power supply
- Theatres or other scenic applications with moveable machinery where "halogene free" and "flame retardant" compounds are a must
- Process cranes and conveyor equipment indoors and outdoors with wide temperature range, with severe atmospheric conditions

Electrical parameters

Rated voltage $U_0/U = 0.6 / 1 \text{ kV}$

Mechanical load-bearing capacity

Travel speed up to 210 m/min
(> 210 m/min on request)

Minimum bending radii
 4 x Ø fixed installation
 6 x Ø festoon trolleys
 7.5 x Ø energy guiding chains

Maximum travel length 100 m

Thermal / Chemical specifications

Ambient temperature
 - flexing -40°C... +90°C
 - fixed -50°C... +90°C

Highest allowance on operational temperature at conductor: 90 °C

Short circuit temperature at conductor: 200 °C

Important features

- Resistant to Ozone
- Oil resistant acc DIN EN 60811-2-1
- UV-resistant
- Low flammability acc. IEC 60332-1 plus FT1
- Silicone free

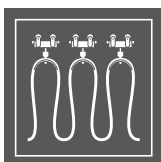
Design features

Conductor flexible copper class 5
 Sheath abrasion-resistant PUR, cutproof, low adhesion
 Color black
 Core insulation base material polyester

Shielded Types

Overall shield tinned copper braid approx. 85% coverage

Type 12YHRD11YH / 12YHRDC11YH

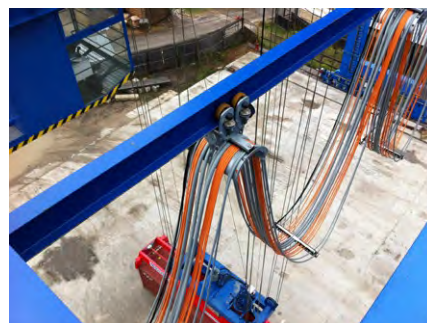


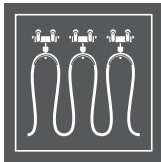
Conductix-Wampfler Cable TXP

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required ⁽²⁾
Control cable TXP Uo/U 0.6/1 kV	4 G 1.5	131240-R4G1.5#	8.5 – 9.5	58	140	90	-
	12 G 1.5	131240-R12G1.5#	14.2 – 15.8	173	260	270	-
	18 G 1.5	131240-R19G1.5#	15.2 – 16.8	259	340	400	-
	24 G 1.5	131240-R24X1.5#	16.2 – 17.8	346	480	540	-
	4 G 2.5	131240-R4G2.5#	9.5 – 10.5	96	190	150	-
	5 G 2.5	131240-R5G2.5#	9.5 – 10.5	120	210	180	-
	7 G 2.5	131240-R7G2.5#	11.5 – 12.5	168	295	260	-
	12 G 2.5	131240-R12G2.5#	16.2 – 17.8	288	463	450	-
	18 G 2.5	131240-R18G2.5#	16.7 – 18.3	432	576	675	-
	24 G 2.5	131240-R24X2.5#	19.0 – 21.0	576	758	900	-
Screened Control cable TXP Uo/U 0.6/1 kV	4 G 1.5C	131241-R4G1.5 C#	9.0 – 10.0	118	200	90	•
	5 G 1.5C	131241-R5G1.5 C#	11.0 – 12.0	177	322	110	•
	7 G 1.5C	131241-R7G1.5 C#	12.5 – 13.5	192	330	155	-
	12 G 1.5C	131241-R12X1.5 C#	15.2 – 16.8	336	410	270	-
	18 G 1.5C	131241-R18X1.5 C#	16.2 – 17.8	428	550	405	-
	4 G 2.5C	131241-R4G2.5 C#	10.5 – 11.5	157	257	150	•
	5 G 2.5C	131241-R5G2.5 C#	12.5 – 13.5	290	292	185	•
	12 G 2.5C	131241-R12G2.5 C#	17.7 – 19.3	370	646	450	-
	18 G 2.5C	131241-R18G2.5 C#	17.2 – 19.2	690	621	675	-

⁽²⁾ The Minimum Order Quantity is 300 m, please contact us.



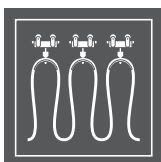


Conductix-Wampfler Cable TXP / TXP-D

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required ⁽²⁾
Power cable TXP Uo/U 0.45/0.75 kV	1 x 25	131140-R1x25#	9.9 – 11.1	240	270	375	-
	1 x 35	131140-R1x35#	11.7 – 12.9	336	380	525	-
	1 x 50	131140-R1x50#	13.9 – 15.1	480	530	750	•
	1 x 70	131140-R1x70#	16.2 – 17.4	672	740	1.050	-
	1 x 95	131140-R1x95#	17.9 – 19.1	912	940	1.425	-
	1 x 120	131140-R1x120#	20.2 – 21.5	1.152	1.200	1.800	•
	1 x 150	131140-R1x150#	21.8 – 23.2	1.440	1.490	2.250	•
	1 x 185	131140-R1x185#	24.3 – 25.7	1.776	1.830	2.775	•
	4 G 4	131140-R 4G4#	10.3 – 11.5	154	230	240	-
	4 G 6	131140-R 4G6#	12.1 – 13.2	230	320	360	-
	4 G 10	131140-R 4G10#	15.2 – 16.2	384	520	600	-
	4 G 16	131140-R 4G16#	17.7 – 18.9	614	750	960	-
	4 G 25	131140-R 4G25#	21.1 – 22.5	960	1.160	1.500	-
	4 G 35	131140-R 4G35#	25.8 – 27.3	1.344	1.660	2.100	-
	4 G 50	131140-R 4G50#	31.0 – 33.0	1.920	2.400	3.000	-
	5 G 4	131140-R 5G 4#	11.6 – 12.7	192	290	300	•
	5 G 6	131140-R 5G6#	14.0 – 15.2	288	420	450	•
	5 G 10	131140-R 5G10#	16.2 – 17.5	480	630	750	•
	5 G 16	131140-R 5G16#	19.4 – 20.6	768	930	1.200	•
	5 G 25	131140-R 5G25#	23.2 – 24.5	1.200	1.380	1.875	•
Screened Power cable TXP Uo/U 0.6/1 kV	1 x 25C	131141-R1x25C#	10.3 – 11.5	310	330	375	-
	1 x 35C	131141-R1x35C#	12.3 – 13.5	406	430	525	-
	1 x 50C	131141-R1x50C#	15.4 – 16.6	550	610	750	-
	1 x 70C	131141-R1x70C#	17.0 – 18.3	747	810	1.050	-
	1 x 95C	131141-R1x95C#	18.9 – 20.1	998	1.030	1.425	-
	1 x 120C	131141-R1x120C#	21.4 – 22.8	1.306	1.320	1.800	-
	1 x 150C	131141-R1x150C#	23.1 – 24.5	1.613	1.650	2.250	-
	1 x 185C	131141-R1x185C#	25.5 – 27.2	1.903	2.000	2.775	-
	4 G 4C	0675-4G4C#	11.5 – 12.5	221	340	240	-
	4 G 6C	0675-4G6C#	13.0 – 14.0	300	410	360	-
	4 G 10C	0675-4G10C#	15.7 – 17.3	454	710	600	-
	4 G 16C	0675-4G16C#	18.7 – 20.3	694	1.020	960	-
	4 G 25C	0675-4G25C#	23.5 – 25.5	1.050	1.168	1.500	-
	4 G 35C	0675-4G35C#	27.5 – 29.5	1.444	1.666	2.100	-
	4 G 50C	0675-4G50C#	32.8 – 35.2	2.030	2.457	3.000	-
Data cable TXP-D 0.6/1 kV	6 x (2x1)	131342-R6x(2x1)C#	19.0 – 20.3	265	640	300	-

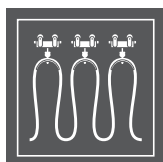
⁽²⁾ The Minimum Order Quantity is 300 m, please contact us.



Conductix-Wampfler Cable TXP / TXP-D

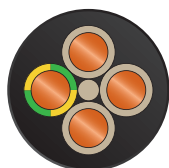
Technical data

Electrical parameters	rated voltage U ₀ /U	600 / 1000V
	maximum permitted AC operating voltage U ₀ /U	700 / 1200V
	maximum permitted DC operating voltage U ₀ /U	900 / 1800V
	ampacity	according to table data, otherwise according to DIN VDE 0298 part 4
	AC test voltage power	2.5 kV in AC
	AC test voltage control	2.0 kV in AC
Thermal parameters	ambient temperature	flexing -40°C to +90°C for temperatures below -40°C please consult with us fixed -50°C to +90°C
	maximum permitted operating temperature of the conductor	90°C
	short-circuit temperature of the conductor	200°C
Mechanical parameters	minimum bending radii allowing for free movement	6 x Ø for fixed installation
		6 x Ø for festoon
		7.5 x Ø for energy guiding chains
Chemical parameters	LBS-free / silicone-free	yes
	combustion behaviour	of low flammability according IEC 60332-1
	resistant to ozone	yes
	UV-resistant	yes
	oil-resistant	yes, DIN EN 60811-2-1
	halogen free	yes (except 2x2x0,75C)
	resistant to humidity	yes
	resistant to Sulfur	yes
Materials	insulation	Based on Polyester or TPE
	outer sheath	PUR (Polyurethane), color black
Design features	conductor	bare electrolytic copper, very flexible, class 5 acc. DIN VDE 0295 / EN 60228
	stranding	in layers up to 11 conductors, > 12 conductors bundle layering, optimized length of lay
	conductor coding	acc. DIN VDE 0293 part 308, > 5 conductors black with white numbers with green/yellow earth conductor
Standards		according to DIN VDE 0250 part 813
Design codes	12YHRD11YH	12YH core insulation based on polyester PE halogen free
	12YHRDC11YH	RD round cable
		C shield of braided copper
		Overall shield or screened pairs of conductors
		11YH router sheath based on polyurethane PUR, halogen free

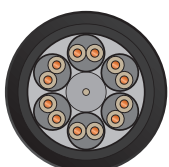


Conductix-Wampfler Cable TXG / TXG-D

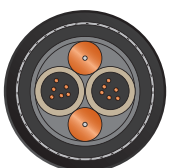
Neoprene round cable for heavy duty festoon



- Resistance to electromagnetic interference due to the use of braided copper screen
- Small diameter due to a stranded, layered structure, screened power cables 3 phase plus split earth conductors



- Complete selection of control, power, bus and optical fibre versions
- Durability resulting from a wear resistant sheathing compound



Particularly suitable,

- when system is subject to middle to high travel speeds and / or acceleration
- when the cable will be subject to a frequent and continuous bending due to a high duty cycle
- if a very high resistance to atmospheric corrosion is to be expected for a long period of time
- if the operating temperatures reach down to -35°C

Characteristics

Highly resilient festoon cable for continuous heavy duty environment

Typical applications

- Container crane trolley power supply
- Process crane trolleys power supply
- Cranes in foundries and steel mills
- Stackers & Reclaimers
- Car Dumpers, Ship unloaders
- Transport carriers

Electrical parameters

Rated voltage $U_0/U = 0.6 / 1 \text{ kV}$

Mechanical load-bearing capacity

Travel speed up to 240 m/min

Minimum bending radius, dynamic

acc. to DIN VDE 0298 part 3
125 mm for optical fibre cables

Thermal specifications

Ambient temperature	TXG (flexing)	-35°C... +80°C
	TXG (fixed)	-50°C... +80°C
	TXG-D 24 FO (flexing)	-30°C... +60°C
	TXG-D 24 FO (fixed)	-40°C... +80°C

Chemical specifications

- resistant to ozone
- oil resistant acc. to DIN EN 60811-404
- UV-resistant
- flame retardant acc. to IEC 60332-1
- free from silicone

Unlimited resistance to atmospheric corrosion

Highest allowance on operational temperature at conductor: 90 °C
Short circuit temperature at conductor: 250 °C

Design features

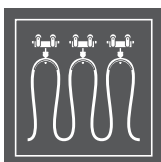
Conductor	flexible bare copper class 5 acc to VDE 0295
Sheath	wear-resistant synthetic rubber compound
Color	black
Core insulation	on base of EPR

Shielded Types

Overall shield tinned copper braid, opt. cover approx 85%

Type

(N)GRDGOEU, (N)GRDGC GOEU



Conductix-Wampfler Cable TXG / TXG-D

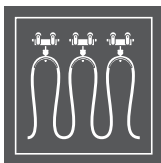
Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity [m]
Control cable TXG Uo/U 0.6/1 kV	12G2,5	131220-R12G2,5#	18.0 - 20.0	288	600	450	-
	18G2,5	131220-R18G2,5#	21.5 - 23.5	432	870	670	-
	24G2,5	131220-R24G2,5#	24.0 - 27.0	576	1140	900	-
	30G2,5	131220-R30G2,5#	26.4 - 29.4	720	1360	1120	-
	36G2,5	131220-R36G2,5#	28.7 - 31.7	864	1550	1350	500
Data cable TXG-D	6X(2X0,5)C	131222-R6X(2X0,5)C#	21.6 - 24.6	358	800	90	500
	6X(2X1)C	131322-R6X(2X1)C#	27.0 - 30.2	427	1230	180	-
	9X(2X1)C	131322-R9X(2X1)C#	35.3 - 38.3	641	1930	270	300
	* 24G62,5/125	131320-R24G62,5/125-X#	10.0 - 11.0	-	110	2000	-
	* 24G50/125	131320-R24G50/125-X#	10.0 - 11.0	-	110	2000	-
	* 24E9/125	131320-R24E9/125-X#	10.0 - 11.0	-	110	2000	-

Note: On request FO cables also available with 12, 18 or 24 fibers. Please contact us.

* color orange

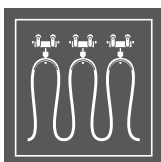




Conductix-Wampfler Cable TXG / TXG-D

Order information

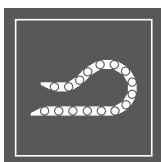
Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity [m]
Power cable TXG Uo/U 0.6/1 kV	1x35	131120-R1X35#	12.3 - 13.9	336	430	520	-
	1x70	131120-R1X70#	16.3 - 18.3	672	830	1050	-
	1x95	131120-R1X95#	18.5 - 20.5	912	1070	1420	-
	1x120	131120-R1X120#	20.3 - 22.3	1152	1330	1800	-
	1x150	131120-R1X150#	22.7 - 24.7	1440	1640	2250	-
	1x185	131120-R1X185#	24.6 - 27.6	1776	2010	2770	500
	4G4	131120-R4G4#	13.6 - 15.2	154	350	240	-
	4G6	131120-R4G6#	15.9 - 17.9	230	480	360	-
	4G10	131120-R4G10#	18.0 - 20.0	384	680	600	-
	4G16	131120-R4G16#	23.3 - 25.3	614	1110	960	-
	4G25	131120-R4G25#	26.9 - 29.9	960	1610	1500	-
	4G35	131120-R4G35#	30.1 - 33.1	1344	2100	2100	300
	4G50	131120-R4G50#	36.1 - 39.1	1920	3010	3000	-
	5G4	131120-R5G4#	15.7 - 17.7	192	450	300	-
	5G6	131120-R5G6#	17.5 - 19.5	288	580	450	-
	5G10	131120-R5G10#	20.2 - 22.2	480	860	750	1000
	5G16	131120-R5G16#	24.5 - 27.5	768	1340	1200	-
	5G25	131120-R5G25#	29.9 - 32.9	1200	1990	1870	-
	5G35	131120-R5G35#	34.7 - 37.7	1680	2700	2620	500
Screened power cable TXG Uo/U 0.6/1 kV	4G4C	131129-R4G4C#	14.8 - 17.8	277	480	240	1000
	4G6C	131129-R4G6C#	16.2 - 19.2	402	640	360	1000
	4G10C	131129-R4G10C#	19.6 - 22.6	610	890	600	-
	3x16+3G2.5C	131129-R3X16+3G2.5C#	22.4 - 25.4	758	1150	720	-
	3x25+3G4C	131129-R3X25+3G4C#	25.4 - 28.4	1134	1590	1125	-
	3x35+3G6C	131129-R3X35+3G6C#	29.3 - 32.3	1547	2160	1575	500
	3x50+3G10C	131129-R3X50+3G10C#	35.4 - 38.4	2181	3060	2250	500



Conductix-Wampfler Cable TXG / TXG-D

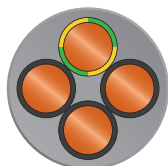
Additional technical data

Electrical parameters	AC test voltage	3.5 kV
	ampacity	acc. to DIN VDE 0298-4
Thermal specifications	max. permitted operating temperature of the conductor	90°C
	short-circuit temperature of the conductor	250°C
Design features	conductor	finely stranded bare electrolytic copper; conductor class 5 acc. to VDE 0295
	core arrangement	in layers
	insulation	EPR compound
	conductor coding	up to 5 cores: colored acc. to VDE 0293 from 6 cores: light colored insulation with black numerals with/without GN/YE
	outer sheath	abrasion-resistant special rubber compound (at least 5GM3)
Shielded types		tinned copper braid,
	overall shield	surface covered: at least 80%
	individually screened cores	surface covered: at least 60%
Standards/approvals	twisted and shielded pairs	surface covered: at least 80%
	TXG	acc. to DIN VDE 0250-814; GOST-R
	TXG-D 24 FO	acc. to DIN VDE 0888; UL

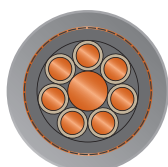


Conductix-Wampfler Cable CV / CV -D

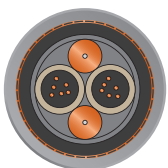
PVC round cable for energy guiding chains



- Small dimensions and bending radii
- Highly flexible copper conductors
- Durable through PVC outer jacket



- Resistance to electromagnetic interference due to the use of braided copper screen with 85% coverage



Particularly suitable,

- when low to medium travel speeds and acceleration forces act on the system
- if frequent and continuous bending in a longitudinal movement is needed
- when a cost effective system primarily for indoors is required
- if high resistance to wear is expected and outer jacket is subject to abrasion
- if system requires UL or CSA approvals

Characteristics

Cable designed for continuous medium duty environment, specially adapted for use in energy guiding chains

Typical applications

- Rack feeders
- Irrigation systems
- Power supply for trolleys and cranes
- Standard indoor cranes, process cranes
- Handling equipment

Electrical parameters

Rated voltage $U_0/U = 0.6 / 1 \text{ kV}$

Mechanical load-bearing capacity

Travel speed up to 140 m/min
(> 140 m/min on request)

Minimum bending radii
5 x Ø fixed installation
10 x Ø flexing in energy guiding chains

Thermal / Chemical specifications

Ambient temperature
- flexing -5°C... +80°C
- fixed -10°C... +80°C

Highest allowance on operational temperature at conductor: 70 °C
Short circuit temperature at conductor: 150 °C

Important features

- Resistant to Ozone
- Oil resistant acc DIN EN 60811-2-1
- Low flammability acc. IEC 60332-1 plus FT1
Flame test UL 758 and FT1 CSA C.22.2 N° 210

Design features

Conductor flexible copper class 5
Sheath abrasion-resistant PVC,
Acc. UL1581
Color grey RAL 7040
Core insulation Polyolefine

Shielded Types

Overall shield tinned copper braid approx 85% coverage

UL / CSA 80°C 1000V style 21179 DESINA approved



Conductix-Wampfler Cable CV

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required ⁽²⁾
Control Cable CV 0.6/1 kV	4 G 1.5	133250-R4G1.5#	7.0 – 7.7	58	105	90	-
	5 G 1.5	133250-R5G1.5#	8.0 – 8.0	72	127	112	-
	7 G 1.5	133250-R7G1.5#	10.0 – 10.4	101	168	157	-
	12 G 1.5	133250-R12G1.5#	11.9 – 12.3	175	275	270	-
	18 G 1.5	133250-R18G1.5#	13.9 – 14.4	260	403	405	-
	25 G 1.5	133250-R25G1.5#	16.9 – 17.3	360	550	563	-
	4 G 2.5	133250-R4G2.5#	9.2 – 9.7	96	154	150	-
	5 G 2.5	133250-R5G2.5#	10.0 – 10.4	120	193	190	-
	7 G 2.5	133250-R7G2.5#	12.3 – 12.5	168	254	260	-
Power Cable CV 0.6/1 kV	12 G 2.5	133250-R12G2.5#	15.0 – 15.5	280	421	450	-
	18 G 2.5	133250-R18G2.5#	17.2 – 17.9	432	615	675	-
	25 G 2.5	133250-R25G2.5#	22.0 – 22.5	600	843	940	-
	4 G 4	133150-R4G4#	11.2 – 11.5	154	239	240	-
	4 G 6	133150-R4G6#	13.2 – 13.6	231	519	360	-
	4 G 10	133150-R4G10#	16.9 – 17.4	384	580	600	-
	4 G 16	133150-R4G16#	20.5 – 20.9	615	836	960	-
	4 G 25	133150-R4G25#	24.9 – 25.5	960	1.313	1.500	-
	4 G 35	133150-R4G35#	28.2 – 28.6	1.344	1.716	2.100	-
Screened Control Cable CV 0.6/1 kV							
	5 G 4	133150-R5G4#	12.4 – 12.7	192	289	300	-
	7 G 4	133150-R7G4#	14.5 – 15.0	269	395	420	-
	7 G 6	133150-R7G6#	17.5 – 17.9	404	799	630	-
	4 G 1.5C	133253-R4G1.5C#	8.2 – 8.5	75	133	90	-
	5 G 1.5C	133253-R5G1.5C#	9.0 – 9.5	101	171	112	-
	7 G 1.5C	133253-R7G1.5C#	10.3 – 10.8	136	228	157	-
	12 G 1.5C	133253-R12G1.5C#	12.5 – 12.9	216	339	270	-
	18 G 1.5C	133253-R18G1.5C#	14.9 – 15.4	311	478	405	-
	25 G 1.5C	133253-R25G1.5C#	18.0 – 18.5	422	640	563	-



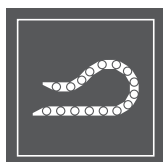


Conductix-Wampfler Cable CV-D

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required ⁽²⁾
Data Cable	4 x 2 x 0.34C	133259-R4x2x0.34#	8.9 – 9.2	52	120	41	-
	8 x 2 x 0.34C	133259-R8x2x0.34#	11.5 – 11.9	99	195	82	-
	14 x 2 x 0.34C	133259-R14x2x0.34#	13.3 – 13.6	159	277	143	-
CV-D 0.6/1 kV	4 x 2 x 0.5C	133259-R4x2x0.5#	10.0 – 10.3	77	156	60	-
	8 x 2 x 0.5C	133259-R8x2x0.5#	12.9 – 13.2	137	248	120	-
	14 x 2 x 0.5C	133259-R14x2x0.5#	14.9 – 15.3	226	361	210	-





Conductix-Wampfler Cable CV / CV -D

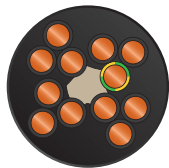
Technical data

Electrical parameters	rated voltage U ₀ /U	0.6 / 1kV
	maximum permitted AC operating voltage U ₀ /U	0.7 / 1.2kV
	maximum permitted DC operating voltage U ₀ /U	0.9 / 1.8kV
	ampacity	according to table data, otherwise according to DIN VDE 0298 part 4
	AC test voltage power	2.5 kV in AC
	AC test voltage control	2.0 kV in AC
Thermal parameters	ambient temperature	flexing -5°C to +80°C fixed -10°C to +80°C
	maximum permitted operating temperature of the conductor	70°C
	short-circuit temperature of the conductor	150°C
Mechanical parameters	minimum bending radii allowing for free movement	5 x Ø for fixed installation 10 x Ø for movement in chain
	Silicone-free	yes
Chemical parameters	combustion behaviour	of low flammability according IEC 60332-1 plus FT1
	resistant to ozone	yes
	UV-resistant	yes
	oil-resistant	yes, Yes, DIN EN 60811-2-1; 80°C UL758
	resistant to humidity	yes
Materials	insulation	Polyolefine
	outer sheath	PVC (Polivinychlorid), color gray
Design features	conductor	bare electrolytic copper, class 6 acc. DIN VDE 0295 / EN 60228
	stranding	n layers up to 11 conductors, > 12 conductors bundle layering, optimized length of lay
	conductor coding	acc. DIN VDE 0293 part 308, > 5 conductors black numbered cores with green/yellow earth conductor
Standards		UL / CSA – cURus 80°C 1000V style 21179
Design codes		DESINA approved



Conductix-Wampfler Cable CXP / CXP-D

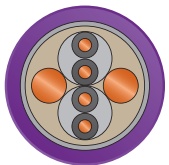
PUR or TPE round cable for energy guiding chains



- Small dimensions and bending radii
- Highly flexible copper conductors
- Abrasion and cutproof outer jacket material PUR or TPE



- Bundle layering for higher resilience
- Durable in frequent bending applications as a result of sturdy construction with adapted length of lay



- complete range

Particularly suitable,

- for energy guiding chains for up to 100 m (PUR) and 400 m (TPE) travel lengths
- if high dynamic travel speed and acceleration force act on the system
- if frequent and continuous bending with small bending radii of the cable is expected
- for applications with moveable machinery where "halogene free" and "flame retardant" compounds are a must
- if system requires UL or CSA approval

Characteristics

Cable designed for continuous heavy duty environment, specially adapted for use in moving machinery

Typical applications

- Container crane trolley power supply
- Theatres or other scenic
- Process cranes and conveyor equipment indoors and outdoors with wide temperature range, and severe resistance requirements

Electrical parameters

Rated voltage	U ₀ /U = 0.6 / 1 kV
up to 1 mm ²	U ₀ /U = 0.3 kV
up to 1,5 mm ²	U ₀ /U = 0.3 / 0.5 kV

Mechanical load-bearing capacity

Travel speed up to 250 m/min (> 250 m/min on request)

Minimum bending radii	4 x Ø fixed installation
	7,5 x Ø moving (TPE)
	6,5 x Ø < 10 travel (PUR)
	7,5 x Ø > 10 travel (PUR)
	10,0 x Ø Profibus
	14,0 x Ø Koax

Maximum travel length 100 m (PUR) | 400 m (TPE)

Thermal / Chemical specifications

Ambient temperature (TPE)	- flexing -35°C... +90°C
	- fixed -40°C... +80°C

Ambient temperature (PUR)	- flexing -25°C... +80°C
	- fixed -40°C... +80°C

Highest allowance on	PUR	TPE
operational temperature at conductor:	80 °C	90 °C
Short circuit temperature at conductor:	200 °C	200°C

Important features

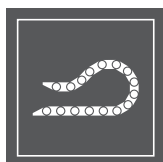
- Resistant to Ozone
- Oil resistant acc DIN EN 60811-2-1
- UV-resistant
- Low flammability acc. IEC 60332-1 plus FT1
- Silicone free
- Halogene free

Design features

	TPE	PUR
Conductor	flexible copper class 6	flexible copper class 6
Sheath	TPE	abrasion-resistant PUR cutproof, low adhesion
Core insulation	TPE	Pelon or Poliolefine

Type

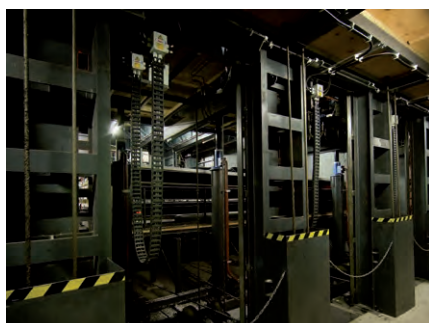
12YMSL11Y (PUR), 12YMSLC11Y (PUR)
13YMSL13Y (TPE), 13YMSLC13Y (TPE)
UL758 1000V FT-1 80°C



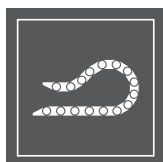
Conductix-Wampfler Cable CXP

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required
Power cable CXP 0.6/1 kV (TPE)	1 x 6	133100-R1X6#	6.7 – 7.3	60	96	90	-
	1 x 10	133100-R1X10#	7.7 – 8.3	100	142	150	-
	1 x 16	133100-R1X16#	9.2 – 9.8	160	211	240	-
	1 x 35	133100-R1X25#	12.1 – 12.9	350	428	525	-
	1 x 50	133100-R1X50#	14.1 – 14.9	500	598	750	-
	1 x 70	133100-R1X70#	16.0 – 17.0	700	801	1.050	-
	1 x 95	133100-R1X95#	18.5 – 19.5	950	1.061	1.425	-
	1 x 120	133100-R1X120#	20.9 – 22.1	1.200	1.280	1.800	-
	1 x 150	133100-R1X150#	22.4 – 23.6	1.850	1.996	2.250	-
	4 G 4	133100-R4G4#	10.5 – 11.3	158	232	240	-
	4 G 6	133100-R4G6#	13.0 – 13.8	231	348	360	-
	4 G 10	133100-R4G10#	16.7 – 17.7	348	570	600	-
	4 G 16	133100-R4G16#	21.1 – 22.3	614	905	960	-
	4 G 25	133100-R4G25#	24.6 – 26.2	960	1.355	1.500	-
	4 G 35	133100-R4G35#	30.0 – 32.0	1.344	1.914	2.100	-
	5 G 4	133100-R5G4#	11.7 – 12.5	192	295	300	-
	5 G 6	133100-R5G6#	14.6 – 15.4	288	436	450	-
	5 G 10	133100-R5G10#	18.8 – 19.8	480	721	750	-
	5 G 16	133100-R5G16#	23.7 – 24.9	768	1.140	1.200	-
	7 G 4	133100-R7G4#	14.0 – 14.9	269	364	420	-
	7 G 6	133100-R7G6#	17.9 – 18.9	404	737	630	-
Screened Power cable CXP 0.6/1 kV (TPE)	1 x 35C	133101-R1X35#	13.2 – 14.0	390	483	525	-
	1 x 50C	133101-R1X50#	14.6 – 15.4	541	639	750	-
	1 x 70C	133101-R1X70#	17.0 – 18.0	744	880	1050	-
	1 x 95C	133101-R1X95#	19.6 – 21.4	1.028	1.109	1.425	-
	1 x 120C	133101-R1X120#	22.0 – 23.2	1.277	1.410	1.800	-
	1 x 150C	133101-R1X150#	23.4 – 24.6	1.937	2.071	2.250	-
	4 G 4C	133103-R4G4#	13.3 – 14.1	212	325	240	-
	4 G 6C	133103-R4G6#	15.7 – 16.7	305	461	360	-
	4 G 10C	133103-R4G10#	20.0 – 21.2	513	760	600	-
	4 G 16C	133103-R4G16#	24.5 – 26.2	805	1.140	960	-
	4 G 25C	133103-R4G25#	28.0 – 29.6	1.210	1.616	1.500	-
	4 G 35C	133103-R4G35#	33.6 – 35.6	1.650	2.290	2.100	-
	5 G 6C	133103-R5G6#	17.3 – 18.3	378	561	450	-
	5 G 10C	133103-R5G10#	21.9 – 23.1	660	920	750	-
	5 G 16C	133103-R5G16#	27.1 – 28.7	990	1.405	1.200	-







Conductix-Wampfler Cable CXP

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required
Control & Data cable CXP 0.6/1 kV (PUR)	7 G 0.5	133340-R7G0.5#	7.1 – 7.7	35	80	53	-
	12 G 0.5	133340-R12G0.5#	10.6 – 11.4	60	151	90	-
	18 G 0.5	133340-R18G0.5#	13.3 – 14.1	90	197	135	-
	25 G 0.5	133340-R25G0.5#	15.1 – 16.1	125	290	188	-
	36 G 0.5	133340-R36G0.5#	18.7 – 19.7	180	404	270	-
	7 G 1	133340-R7G1#	8.1 – 8.7	70	146	105	-
	12 G 1	133340-R12G1#	12.0 – 12.8	120	212	180	-
	18 G 1	133340-R18G1#	15.4 – 16.4	180	329	270	-
	25 G 1	133340-R25G1#	17.5 – 18.5	250	460	375	-
	3 G 1.5	133240-R3G1.5#	6.5 – 7.1	45	75	68	-
	4 G 1.5	133240-R4G1.5#	7.1 – 7.7	60	101	90	-
	5 G 1.5	133240-R5G1.5#	7.8 – 8.4	75	123	113	-
	7 G 1.5	133240-R7G1.5#	9.1 – 9.7	105	170	158	-
	12 G 1.5	133240-R12G1.5#	14.1 – 14.9	180	303	270	-
	18 G 1.5	133240-R18G1.5#	17.7 – 18.87	270	404	405	-
	25 G 1.5	133240-R25G1.5#	19.6 – 20.8	375	628	563	-
	3 G 2.5	133240-R3G2.5#	9.1 – 9.3	72	117	113	-
	4 G 2.5	133240-R4G2.5#	9.2 – 9.4	102	155	150	-
	5 G 2.5	133240-R5G2.5#	9.1 – 9.7	125	190	188	-
	7 G 2.5	133240-R7G2.5#	10.6 – 11.4	175	265	263	-
	10 G 2.5	133240-R10G2.5#	13.3 – 14.1	250	348	375	-
	14 G 2.5	133240-R14G2.5#	18.9 – 19.9	350	476	525	-
	18 G 2.5	133240-R18G2.5#	20.0 – 21.3	432	670	900	-
	25 G 2.5	133240-R25G2.5#	22.5 – 22.9	600	804	938	-
	36 G 2.5	133240-R36G2.5#	28.3 – 29.9	900	1.198	1.350	-
Screened Control & Data cable CXP 0.6/1 kV (PUR)	7 G 0.75C	133343-R7G0.75#	9.7 – 10.3	82	154	79	-
	12 G 1C	133343-R12G1#	14.9 – 15.9	180	363	180	-
	18 G 1C	133343-R18G1#	18.8 – 19.8	272	535	270	-
	25 G 1C	133343-R25G1#	21.6 – 22.8	366	712	563	-
	3 G 1.5C	133243-R3G1.5#	8.1 – 8.7	70	116	68	-
	4 G 1.5C	133243-R4G1.5#	8.7 – 9.3	87	144	90	-
	5 G 1.5C	133243-R5G1.5#	9.5 – 10.1	136	171	113	-
	7 G 1.5C	133243-R7G1.5#	11.0 – 11.8	171	240	158	-
	12 G 1.5C	133243-R12G1.5#	16.6 – 17.5	247	460	270	-
	18 G 1.5C	133243-R18G1.5#	20.8 – 22.0	381	630	405	-
	25 G 1.5C	133243-R25G1.5#	23.2 – 24.4	496	894	563	-
	36 G 1.5C	133243-R36G1.5#	20.5 – 22.0	862	617	810	-
	4 G 2.5C	133243-R4G2.5#	10.0 – 10.8	134	206	150	-
	7 G 2.5C	133243-R7G2.5#	13.1 – 13.9	232	350	188	-



Conductix-Wampfler Cable CXP-D

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required
Data cable CXP-D 300/500 V	3 x 2 x 0.5C	133342-R3x2x0.5C	9.0 – 9.8	58	126	45	-
	4 x 2 x 0.5C	133342-R4x2x0.5C	10.0 – 10.9	80	115	60	-
	6 x 2 x 0.5C	133342-R6x2x0.5C	12.1 – 12.8	108	192	90	-
	8 x 2 x 0.5C	133342-R8x2x0.5C	12.4 – 13.1	150	274	120	-
	14 x 2 x 0.5C	133342-R14x2x0.5C	16.0 – 16.9	220	355	210	-
(PUR)	4 x 2 x 0.75C	133342-R4x2x0.75C	10.8 – 11.6	105	180	90	-
	6 x 2 x 0.75C	133342-R6x2x0.75C	12.9 – 13.6	150	240	135	-
	8 x 2 x 0.75C	133342-R8x2x0.75C	14.1 – 15.9	210	335	180	-
	10 x 2 x 0.75C	133342-R10x2x0.75C	17.0 – 17.8	260	449	225	-
	12 x 2 x 0.75C	133342-R12x2x0.75C	17.5 – 18.0	295	430	270	-
Data cable CXP-D 300/300 V	(4X(2XAWG26))C CAT5	133346-R(4x(2xAWG26))C	7.0 – 8.0	11	70	16.8	-
(PUR)	(4X(2XAWG26))C CAT6	133346-R(4x(2xAWG26))C	7.0 – 8.0	11	70	16.8	-
Data cable CXP-D 500/500 V	(4X(2X0.5))C*	133346-R(4x(2x0.5))CD	15.0 – 15.9	160	345	60	-
(PUR)	(14X(2X0.5))C*	133346-R(14x(2x0.5))CD	17.3 – 18.2	365	550	210	-
Data cable CXP-D 300/300 V	CAN BUS 1X2X0.5C 1200hm	133342-R(1x2x0.5)CCAN	8.0 – 8.4	34	85	15	-
	CAN BUS 2X2X0.5C 1200hm	133342-R(2x2x0.5)CCAN	8.0 – 8.4	45	95	30	-
	1X2X0.64C PB	133342-R(1x2x0.64)CPB	8.0 – 8.5	13	70	19.2	-
	(2X1)+(2X0.75)C DN	133342-R(2x1)+(2x0.75)CDN	13.0 – 14.5	33.6	186	45	-
Data cable CXP-D 250/250 V	KOAX 3X(1XHF75)C	133345-R(3x1HF75)CKOAX	11.1 – 11.5	63	143		-
(PUR)	KOAX 5X(1XHF75)C	133345-R(5x1HF75)CKOAX	11.7 – 12.3	95.5	177		-
Data cable CXP-D	6FOG62.5/125	133340-R6G62.5/125	6.0 – 6.3		38	950	-
	6FOG50/125	133340-R6G50/125	6.0 – 6.3		38	950	-
	6FOE9/125	133340-R6GE9/125	6.0 – 6.3		38	950	-
	12FOG62.5/125	133340-R12G62.5/125	13.0 – 15.0		170	300	-
	12FOG50/125	133340-R12G50/125	13.0 – 15.0		170	300	-
	12FOE9/125	133340-R12E9/125	13.0 – 15.0		170	300	-

* Double screen: twisted screened pairs plus overall screen



Conductix-Wampfler Cable CXP / CXP-D

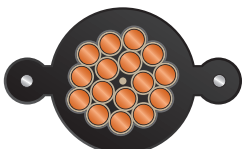
Technical data

Electrical parameters	rated voltage	UoU = 600/1000V	
	maximum permitted AC operating voltage	UoU = 700/1200V	
	maximum permitted DC operating voltage	UoU = 900/1800V	
	ampacity	according to table data, otherwise according to VDE 0298 part 4	
	AC test voltage power	TPE: 4.0 kV	PUR: 2.5 kV
	AC test voltage control	TPE: 2.0 kV	PUR: 2.0 kV
Thermal parameters	ambient temperature	TPE: flexing -35°C to +90°C PUR: flexing -25°C to +80°C	
		for temperatures below -25°C please consult with us	
		TPE: fixed -40°C to +90°C PUR: fixed -40°C to +80°C	
	maximum permitted operating temperature at conductor	90°C	
Mechanical parameters	short-circuit temperature at conductor	200°C	
	minimum radii for continuous flexing	TPE: 7,5 x Ø for movement	PUR: 6,5 x Ø for movement
		TPE: 4 x Ø for fixed installation	PUR: 4 x Ø for fixed installation
Chemical parameters	LBS-free / silicone free	yes	
	combustion behaviour	of low flammability according IEC 60332-1	
	resistant to ozone	yes	
	resistant to humidity	yes	
	UV-resistant	yes	
	oil resistant	yes	
	halogen free	yes	
	Sulfur consistent	yes	
Materials	insulation	TPE or PUR	
	outer sheath	TPE or PUR	
Design features	conductor	bare electrolytic copper, very flexible, class 6 acc. DIN VDE 0295 / EN 60228	
	stranding TPE	stranding layers around central support element, optimized length of lay	
	stranding PUR	in layers up to 11 conductors, > 12 conductors bundle layering, optimized length of lay	
	conductor coding TPE	acc. DIN VDE 0293 part 308, conductors black with white numbers with green / yellow earth conductor	
	conductor coding PUR	acc. DIN VDE 0293 part 308, > 5 conductors black with white numbers with green/yellow earth conductor	
Standards		UL / CSA – cURus	
Design Codes	12YMSL11Y (PUR)	12Y	insulation material PELON (TPE-E)
	12YMSLC11Y (PUR)	13Y	insulation material TPE
		MSL	sheath round cable
	13YMSL13Y (TPE)	C	shield of braided copper
	13YMSLC13Y (TPE)	11Y	outer sheathing material polyurethane (halogen free)
		13Y	outer sheathing material TPE



Conductix-Wampfler Cable PV

PVC pendant control station cable



- Compact design with the use of a concentric layer stranding
- Simple insulation by means of coaxially extruded conductor insulation material
- Particularly long free-hanging lengths (50 m) provided by the integration of two resilient steel cables into the outer sheath
- Durability due to the additives designed to prevent deterioration of the outer sheath
- Easy installation due to the simple separation of the steel supporting cables from the main cable
- A broad product line with 5 to 30 conductor configurations available

Particularly suitable,

- if a control cable needs to be connected hanging freely over a distance of maximum 50 m
- when used for standard, indoor applications
- if a cost-effective solution for transfer of control signals from a pendant control station is required
- if the cable is potentially subject to high tensile stress
- when the operating temperatures do not exceed 70°C

Characteristics

Resilient PVC round cable with two integrated steel ropes

Main application: pendant control station for crane systems

Typical applications

- pendant control station for trolleys of indoor cranes
- passenger and goods hoists
- applications with up to 50 m of vertical freely hanging cable

Electrical parameters

Rated voltage $U_0/U = 0.3 / 0.5 \text{ kV}$
for fixed cabling permitted up to 1.000 V

Mechanical load-bearing capacity

Minimum bending radii fixed $5 \times \varnothing$
flexing $10 \times \varnothing$

Tensile load-bearing capacity 2,800 N/mm² (support steel ropes)

Thermal / Chemical specifications

Ambient temperature flexing: $-25^\circ\text{C} \dots +70^\circ\text{C}$
fixed: $-40^\circ\text{C} \dots +70^\circ\text{C}$

Resistance to atmospheric corrosion to ozone, UV and water

Important features

- flame retardant according to IEC 60332-1
- resistant to humidity
- resistant to oils and grease
- LBS-free / silicone-free

Design features

Conductor flexible, category 5
Sheath PVC compound
Core insulation TPE material

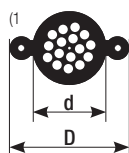
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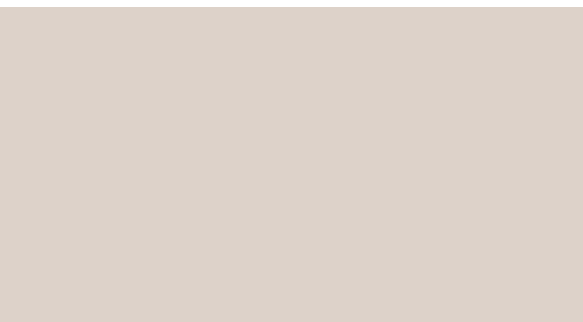
Conductix-Wampfler Cable PV

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø d / D ⁽¹⁾ [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required ⁽²⁾
Control cable PV 0.3/0.5 kV	5 x 1.5	131250-P5x1.5#	9.1 – 19.1	72	215	2.800	–
	8 x 1.5	131250-P8x1.5#	13.7 – 23.7	115	430		–
	12 x 1.5	131250-P12x1.5#	16.3 – 26.3	173	510		–
	16 x 1.5	131250-P16x1.5#	16.3 – 26.3	230	576		–
	20 x 1.5	131250-P20x1.5#	20.0 – 31.0	288	720		–
	24 x 1.5	131250-P24x1.5#	22.5 – 32.5	346	830		•
	30 x 1.5	131250-P30x1.5#	25.0 – 35.0	432	1.000		•



⁽²⁾ The Minimum Order Quantity varies between 300 m and 500 m, please contact us.







Conductix-Wampfler Cable PV

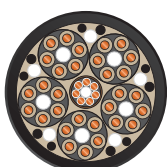
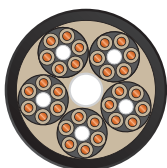
Technical data

Electrical parameters	rated voltage	UoU = 300/500 V
	maximum permitted AC operating voltage	UoU = 318/550 V
	maximum permitted DC operating voltage	UoU = 413/825 V
	ampacity	according to VDE 0298 part 4
	AC test voltage	2,0 kV
Thermal parameters	ambient temperature	flexing -25°C to +70°C fixed -40°C to +70°C
	maximum permitted operating temperature at conductor	70°C
	short-circuit temperature at conductor	200°C
Mechanical parameters	minimum radii for continuous flexing	5 x Ø fixed 10 x Ø flexing
	tensile load bearing capacity	15 N/mm ² conductor cross section during operation for moving cables according to DIN VDE 0298 part 3, steel support ropes provide 2.800 N of strain relief
Chemical parameters	LBS-free / silicone free	yes
	combustion behaviour	flame retardant according to DIN VDE 0482 part 265-2-1; IEC 60332-1
	resistant to ozone	yes
	resistant to humidity	yes
	UV-resistant	yes
	oil resistant	yes
Materials	halogen free	no
	insulation	base material TPE
Design features	outer sheath	base material polyvinylchloride (PVC), colour black RAL9005
	conductor	bare electrolytic copper, flexible, category 5 according to DIN VDE 0295
	reinforcement	two outer steel cables incorporated into the outer sheath
Standards & Design codes	conductor coding	accord. to DIN VDE 0293, part 308 up to 5 conductors coloured, 6 or more conductors black with white numbers without green/yellow
	MTTY-O	adapted to DIN VDE 0250
	M	sheath cable
	T	reinforcement element
Note	Y	PVC material
	-O	without earth/ground conductor green/yellow
Note	assembly	for proper strain relief the steel support cables must be installed in such a way as they absorb the load. The mobility of conductors may not be restricted by clamps



Conductix-Wampfler Cable SXP / SXP-D

PUR round cable for basket applications



- Special control cable for load lifting machines
- Vertical gravity-fed collector basket operation very robust construction
- Heavy duty construction designed for best torsional properties
- Particularly suitable for marine environments, e.g. ship to shore cranes

Particularly suitable,

- for spreader basket application
- if free fall into basket requirements are requested
- when cable is faced with torsional stresses and tensile load strains

Characteristics

Heavy duty control cable designed for load lifting devices outdoors, gravity-fed basket or special container coiling capacities

Typical applications

- Vertical feeding control cable for load lifting equipment with high mechanical stress in spreader basket operation

Electrical parameters

Rated voltage	U ₀ /U = 0.6 / 1 kV
	Special versions for data transmission (BUS) available on request

Mechanical load-bearing capacity

Travel speed	up to 160 m/min vertical
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Min. bending radius, dynamic acc. DIN VDE 0298-3

Breaking load	The breaking load provides a safety factor of 5 when the cable is suspended vertically for 50 m
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Thermal specifications

Ambient temperature	- flexing -40°C... +80°C
	- fixed -50°C... +80°C

Chemical specifications

- Oil resistant acc DIN EN 60811-404
- Resistant to moisture
- Resistant to Ozone
- UV-resistant
- free from lacquer damaging substances and silicone (during production)

Certifications / Approvals	GOST-R
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Color	Black
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Type	3GSLTOE-J
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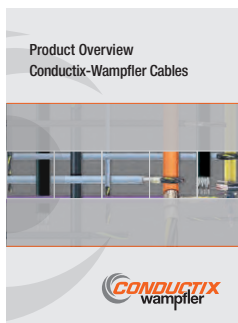
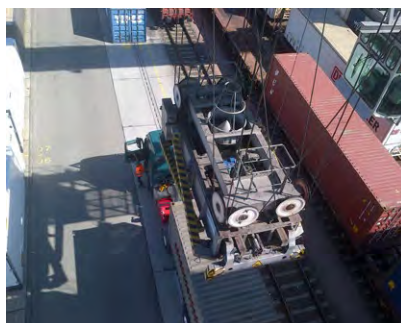
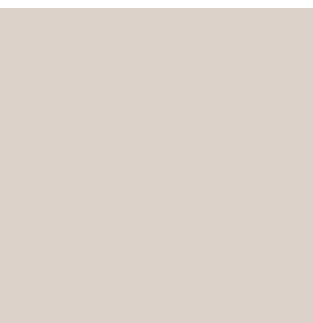


Conductix-Wampfler Cable SXP / SXP-D

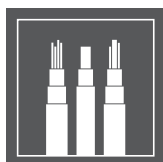
Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required [m]
Control cable SXP Uo/U 0,6/1 kV	48G1	137240-R48G1#	31.1 – 34.1	461	2340	720	–
	30G2,5	137240-R30G2,5#	31.1 – 34.1	720	2260	1125	–
	36G2,5	137240-R36G2,5#	34.5 – 37.5	864	2780	1350	–
	42G2,5	137240-R42G2,5#	36.8 – 39.8	1008	3490	1575	–
	54G2,5	137240-R54G2,5#	45.5 – 48.5	1296	3890	2025	–
	30G3,5	137240-R30G3,5#	34.3 – 37.3	1008	2970	1575	300
	36G3,5	137240-R36G3,5#	37.9 – 40.9	1210	3750	1890	–
	42G3,5	137240-R42G3,5#	42.4 – 45.4	1411	4510	2205	–
Control & Data cable SXP-D Uo/U 0,6/1 kV	24G2,5+4x(2x1)C	137440-R24G2,5+4x(2x1)C#	41.2 – 44.2	850	3600	900	300
	36G2,5+FO	137440-R36G2,5+12G62,5#	36.8 – 39.8	864	3360	1350	300
	48G2,5+FO	137440-R48G2,5+12G62,5#	45.5 – 48.5	1152	3940	1800	300

Other cross-sections available on request. Please contact us.







Conductix-Wampfler Cable SXP / SXP-D

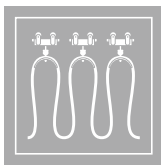
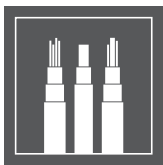
Additional technical data

Electrical parameters	rated voltage	0.6 / 1 kV
	maximum permitted AC operating voltage	0.7 / 1.2 kV
	maximum permitted DC operating voltage	0.9 / 1.8 kV
	AC test voltage	3.5 kV
	ampacity	according to DIN VDE 0298-4
	data transmission	with special bus elements: ASI-Bus, Profibus or Fiber optic elements
Thermal specifications		
	maximum permitted operating temperature of the conductor	90°C
	short-circuit temperature of the conductor	250°C
Design features	conductor	extremely finely stranded bare copper; conductor class FS
	core arrangement	cores in bundles, laid-up around the central element
	insulation	special EPR compound based on type 3GI3
	conductor coding	light-colored insulation with black numerals with/without GN/YE
	screen	tinned copper braid; coverage approx. 60% for shielded cores, 80% for twisted pairs
	supporting element	aramid threads
	outer sheath	special PUR compound

		fiber type (core-Ø / fiber-Ø)	singlemode E9/125	multimode 50/125	multimode 62.5/125
Fiber optic	max. attenuation	at 850 nm	—	2.8 dB/km	3.3 dB/km
		at 1300 nm	0.4 dB/km	0.8 dB/km	0.9 dB/km
		at 1550 nm	0.3 dB/km	—	—
	numeric aperture ± 0.02		0.14	0.2	0.275
	band width	at 850 nm	—	400 MHz	400 MHz
		at 1300 nm	—	1200 MHz	600 MHz

Installation notes

The cable must be laid into the basket in a counter-clockwise direction



Conductix-Wampfler Cable SXG

Flexible single core connecting cable high voltage



- Special single core cable are used in short lengths to connect mobile transformer substations
- Unrestricted use outdoors and indoors
- Highly flexible connection for switch gear units or generators in the medium voltage range

Particularly suitable,

- for confined connection spaces where small bending radii are required
- if a flexible medium voltage connection to a motor or transformer needs to be realized
- when single core including screen version in 6/10 kV and 12/20 kV is needed
- if a single core medium voltage cable is required in a festoon system

Characteristics

Flexible single core screened medium voltage cables are designed acc. DIN VDE 0250 chapter 813

Typical applications

Medium voltage connection of minisubs or generators, transformer units indoor and outdoor, secondary use on festoon systems

Electrical parameters

Rated voltage	U ₀ /U = 6 / 10 kV
	U ₀ /U = 12 / 20 kV
	other ranges on request

Mechanical load-bearing capacity

Minimum bending radii	fixed	5 x Ø
	flexing	10 x Ø

Thermal / Chemical specifications

Ambient temperature	flexing:	- 25°C... + 80°C
	fixed:	- 40°C... + 80°C

Highest allowance on operational temperature at conductor:	90 °C
Short circuit temperature at conductor:	250 °C

Resistance to atmospheric corrosion to ozone, UV and water

Important features

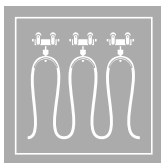
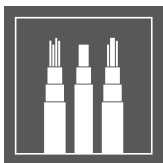
- resistant to UV
- resistant to ozone
- resistant to oil
- resistant to moisture

Design features

Conductor	copper tinned wire class 5 acc DIN VDE 0295
Inner layer	special conductive rubber compound
Core insulation	Rubber
Outer layer	special conductive rubber
Sheath	Rubber acc DIN VDE 0207
Color	red

Brand	Felflex or similar
-------	--------------------

Type	NTMCWOEU acc. VDE 0250 part 813
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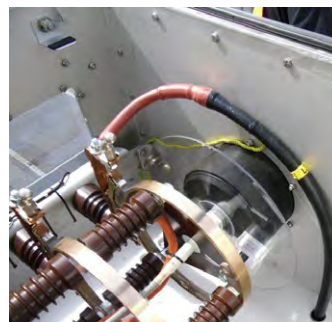
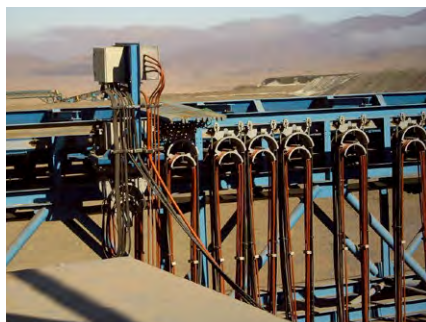
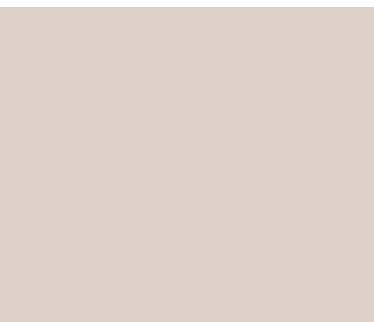


Conductix-Wampfler Cable SXG

Order information

Type of cable	Number of conductors and cross section [mm ²]	Order-No.	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required ⁽²⁾
Power cable SXG 0.6 / 10 kV	1 x 35/16	1390-1X35-6/10KV#	23.0 – 25.0	490	1.040	525	-
	1 x 50/16	1390-1X50-6/10KV#	26.0 – 27.5	634	1.260	750	-
	1 x 70/16	1390-1X70-6/10KV#	27.5 – 29.0	826	1.530	1.050	-
	1 x 95/16	1390-1X95-6/10KV#	29.5 – 31.0	1.066	1.770	1.425	-
	1 x 120/16	1390-1X120-6/10KV#	32.5 – 33.5	1.306	2.180	1.800	-
	1 x 150/25	1390-1X150-6/10KV#	34.0 – 35.5	1.613	2.550	2.250	•
	1 x 185/25	1390-1X185-6/10KV#	36.0 – 37.5	1.903	2.900	2.775	•
Power cable SXG 12 / 20 kV	1 x 240/25	1390-1X240-6/10KV#	40.0 – 42.0	2.418	3.590	3.600	•
	1 x 35/16	1390-1X35-12/20KV#	28.5 – 30.5	490	1.320	525	-
	1 x 50/16	1390-1X50-12/20KV#	30.0 – 32.0	634	1.560	750	-
	1 x 70/16	1390-1X70-12/20KV#	33.5 – 35.0	826	1.920	1.050	-
	1 x 95/16	1390-1X95-12/20KV#	35.0 – 37.0	1.066	2.190	1.425	-
	1 x 120/16	1390-1X120-12/20KV#	37.0 – 39.0	1.306	2.400	1.800	-
	1 x 150/25	1390-1X150-12/20KV#	39.0 – 41.0	1.613	2.990	2.250	-
	1 x 185/25	1390-1X185-12/20KV#	41.0 – 43.0	1.903	3.350	2.775	•
	1 x 240/25	1390-1X240-12/20KV#	44.0 – 46.0	2.418	3.990	3.600	-

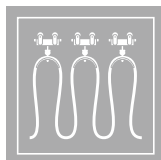
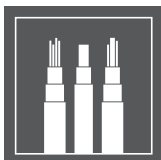
⁽²⁾ The Minimum Order Quantity is 1000 m, please contact us.





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Conductix-Wampfler Cable SXG

Technical data

Electrical parameters	rated voltage	UoU = 600/1000 V
		UoU = 1200/20000 V
	ampacity	according DIN VDE 0298 part 4
	AC test voltage	according DIN VDE 0250 T813
Thermal parameters	ambient temperature	flexing -25°C to +80°C for temperatures below -35°C please consult with us fixed -40°C to +80°C
	maximum permitted operating temperature at conductor	90°C
	short-circuit temperature at conductor	250°C
Mechanical parameters	minimum radii for continuous flexing	5 x Ø fixed 10 x Ø flexing
	tensile load bearing capacity	15 N/mm²
		according to DIN VDE 0298 part 3,
Chemical parameters	LBS-free / silicone free	yes
	combustion behaviour	acc. IEC 60332-1
	resistant to ozone	yes
	resistant to humidity	yes
	UV-resistant	yes
	oil resistant	yes
	halogen free	no
Materials	insulation	base material rubber
	outer sheath	base material rubber, color red
Design features	conductor	tinned copper, flexible, class 5 acc. DIN VDE 0295/IEC 60228
	conductor coding	acc. DIN VDE 0250813 color: nature
Standards & Design codes	NTMCW0EU	Based on DIN VDE 0250, Part 813



Technical exhibit

Comparison of AWG-numbers and metrical cross sections

AWG-number	25	24	23	22	21	20	19	18	17	16	15	14	13
Cross section mm²	0.163	0.205	0.259	0.325	0.412	0.519	0.653	0.823	1.04	1.31	1.65	2.08	2.62
Nominal cross section metrical	0.25			0.5		0.75		1		1.5		2.5	

AWG-number	12	11	10	9	8	7	6	5	4	3	2	1
Cross section mm²	3.30	4.15	5.26	6.63	8.37	10.6	13.3	16.8	21.2	26.7	33.6	42.4
Nominal cross section metrical	4		6		10		16		25		35	50

AWG-number	1/0	2/0	3/0	4/0	250	300	350	400	500	600	750	1000
Cross section mm²	53.4	67.5	85	107	127	152	178	203	254	304	380	507
Nominal cross section metrical	50	70	95	120		150	185		240	300	400	500

Calculation of current carrying capacity (of Conductix-Wampfler Cables)

Typical ampacities I_b can be found in the tables as contained in this catalogue. The values are valid for the ambient temperature of 30°C stated in the foot notes, for standard cabling arrangements, and for continuous duty.

The **actual required ampacity** can significantly deviate if other application parameters exist. For such cases, please refer to **tables 1-3** (p.51 - S.53) for adjustment factors.

Step 1	All conversion factors for a specific application are multiplied:	
		$F_{\text{Gesamt}} = f_1 \times f_2 \times f_3 \times f_4$
Step 2	The actual ampacity I_T is calculated from the product of the total factor F_{total} with the typical ampacities I_b :	
		$I_T = F_{\text{Gesamt}} \times I_b$

Example Cable TXG consisting of several conductors and suitable for use on festoon systems, cross section 4G50 mm², at temperatures of up to 40 °C, with an on-time of 35 % for 10 minutes.

	Affecting criteria	feature	Catalogue page	Factor
Step 1	ambient temperature = 40 °C	Cable TXP I maximum operating temperature for this cable = 90 °C	page 51, table 1	$f_1 = 0.91$
	type of cabling	free in air	page 51, table 2	$f_2 = 1.00$
	intermittent operation	on-time = 35 %, duration = 10 minutes cross section of 50 mm²	page 52, table 2b	$f_3 = 1.30$
	cable configuration	one cable = single layer	page 53, table 4	$f_4 = 1.00$
			$F_{\text{total}} = f_1 \times f_2 \times f_3 \times f_4$	$= 1.183$
Step 2	ampacity benchmark I_b	4G50 mm²	page 27, data sheet	$I_b = 212.1 \text{ A}$
	total ampacity	$I_T = F_{\text{total}} \times I_b = 1.183 \times 212.1 \text{ A} = 250.91 \text{ A}$		

Conversion factors f_1 for varying ambient temperatures
acc. to DIN VDE 0298 T4 08.03, table 17

table 1	
ambient temperature	Conversion factors f_1 according to
	60 °C
	 TG
	
	
10 °C	1.29
15 °C	1.22
20 °C	1.08
25 °C	1.00
30 °C	0.91
35 °C	0.82
40 °C	0.71
45 °C	0.58
50 °C	0.41
55 °C	
60 °C	
65 °C	
70 °C	
75 °C	
80 °C	
85 °C	

The maximum permitted operating temperature of the conductor can be found in the respective data sheet.

Conversion factors f_2 for the type of cabling configuration/application
adapted to DIN VDE 0298 T4 08.03 table 27

table 2	
type of cabling	
	
free in the air	longitudinal at a support
cable	
FV FXG TG TXG TXP SXG	CV CXG CXP
Conversion factors f_2	
1.00	1.00



Technical exhibit

Conversion factors f_s for intermittent operation
adapted from DIN VDE 0298 T4 08.03 table 16

table 2a

duration of 5 minutes

On-time	100 %	85 %	80 %	60 %	35 %	20 %	8 %
cross section conductor mm ²	conversion factors f_s						
≤ 1.5	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2.5	1.00	1.00	1.00	1.00	1.02	1.06	1.20
4.0	1.00	1.00	1.00	1.00	1.04	1.12	1.45
6.0	1.00	1.00	1.00	1.00	1.07	1.20	1.70
10.0	1.00	1.01	1.02	1.06	1.19	1.43	2.06
16.0	1.00	1.02	1.03	1.09	1.28	1.57	2.32
25.0	1.00	1.03	1.05	1.13	1.35	1.69	2.55
35.0	1.00	1.05	1.06	1.16	1.41	1.78	2.70
50.0	1.00	1.05	1.07	1.18	1.45	1.85	2.84
70.0	1.00	1.06	1.08	1.20	1.50	1.92	2.96
95.0	1.00	1.06	1.08	1.21	1.53	1.98	3.07
120.0	1.00	1.06	1.09	1.23	1.55	2.01	3.13
150.0	1.00	1.07	1.09	1.23	1.57	2.04	3.18
185.0	1.00	1.07	1.10	1.24	1.59	2.07	3.23
240.0	1.00	1.07	1.10	1.24	1.61	2.10	3.28

Conversion factors f_s for intermittent operation
adapted from DIN VDE 0298 T4 08.03 table 16

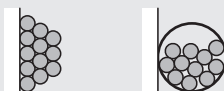
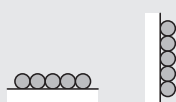
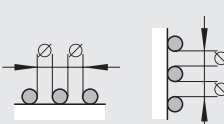
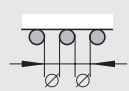
table 2b

duration of 10 minutes

On-time	100 %	85 %	80 %	60 %	35 %	20 %	8 %
cross section conductor mm ²	conversion factors f_s						
≤ 1.5	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2.5	1.00	1.00	1.00	1.00	1.02	1.04	1.17
4.0	1.00	1.00	1.00	1.00	1.04	1.07	1.26
6.0	1.00	1.00	1.00	1.00	1.05	1.09	1.38
10.0	1.00	1.00	1.00	1.01	1.06	1.18	1.58
16.0	1.00	1.01	1.01	1.02	1.10	1.27	1.78
25.0	1.00	1.01	1.02	1.05	1.18	1.41	2.03
35.0	1.00	1.02	1.03	1.08	1.24	1.50	2.21
50.0	1.00	1.03	1.04	1.11	1.30	1.60	3.39
70.0	1.00	1.03	1.05	1.13	1.36	1.70	2.56
95.0	1.00	1.04	1.06	1.16	1.41	1.78	2.70
120.0	1.00	1.05	1.07	1.18	1.44	1.83	2.81
150.0	1.00	1.05	1.07	1.19	1.47	1.88	2.89
185.0	1.00	1.06	1.08	1.20	1.50	1.92	2.97
240.0	1.00	1.06	1.08	1.23	1.53	1.96	3.05

Conversion factors f_c for cable configuration
adapted from DIN VDE 0298 T4 08.03 table 21

table 3

		Number of cables with several conductors or number of alternating or rotary circuits in 1-core cables (2 or 3 conducting cables)																	
		1	2	3	4	5	6	7	8	9	10	12	14	16	18	20			
cabling arrangement		conversion factors f_c																	
	Bundled directly on the wall, on the floor, in a conduit on or in the wall	1.00	0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.48	0.45	0.43	0.41	0.39	0.38			
	1-layer on the wall or floor, laying on a surface	1.00	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70	0.70	0.70	0.70	0.70	0.70	0.70			
	1-layer on the wall or floor, separated by a distance equal to or greater than the cable diameter	1.00	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
	1-layer beneath the ceiling, in contact with the surface	0.95	0.81	0.72	0.68	0.66	0.64	0.63	0.62	0.61	0.61	0.61	0.61	0.61	0.61	0.61			
	1-layer beneath the ceiling, separated by a distance equal to or greater than the cable diameter	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			

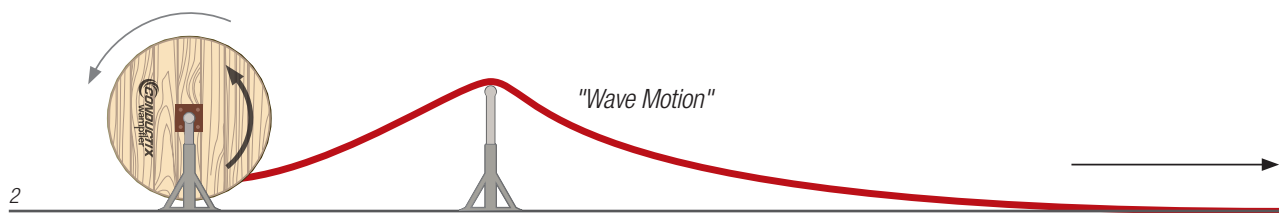
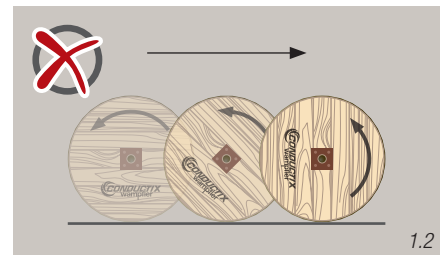
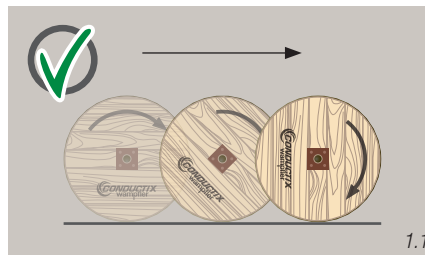


Technical exhibit

Handling Instructions

A transport reel with cables should always be rolled in the winding direction of the cable (usually marked with an arrow). (1.1)

In rare cases, it may occur that there is already a twist on the transport reel. This can generally be noted by the fact that the cable winding there is already irregular and shows stress or twisting. Here, we recommend entirely unreeling the cable as shown (2), stretching it out, and removing the twist.



Festoon systems

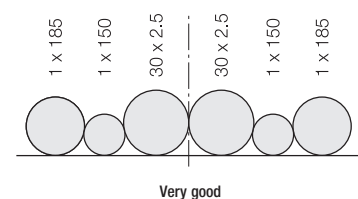
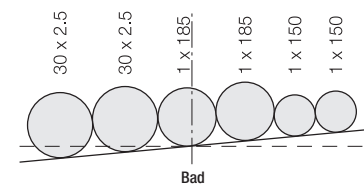
General advice

F.1. Only cables permitted for the installation in cable trolleys are allowed (see general view pages 4-5). These cables meet all requirements on modern festoon systems both in view of their construction and in the selection of sheath material.

F.2. The cables must be placed on the cable supports free of twists - identifiable from a uniform cable loop between two cable supports.

F.3. When installing the cables these must not be dragged across edges, which might damage the outer sheath of the cable. Nor should the cables be bended by more than the permissible bending radii, in order to prevent damage of the stranded elements.

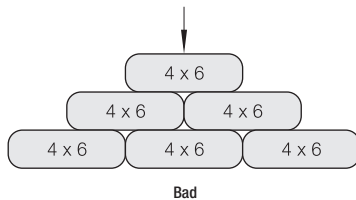
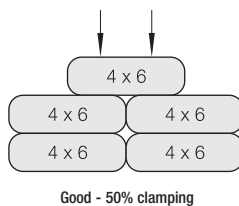
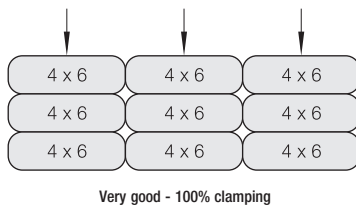
F.4. For the arrangement of the cables it is required to observe the balance of moments, i.e. the cable weight must be distributed equally on the cable support.



Flat cables

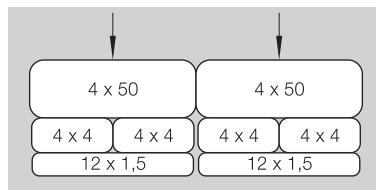
F.5. The flat cable package must be arranged on the supports, so that all the cables can be clamped tight on the cable supports and cannot slip out. The cable packages must be stacked in width rather than in height, in order to assure a firm clamping even under dynamic conditions.

F.6. Large energy cables must always be put on top of the cable package, in order to better dissipate the heat from the cables and to clamp smaller cables more securely. Due to the slightly shorter cable length of the upper heavier cables these are more likely subject to dynamical forces from the movement of the system.

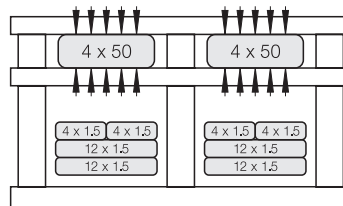


F.7. Fewer wider cables are easier to stack, clamp and guide than many small cables (e.g. a cable 12x1.5 is better than three cables 4x1.5).

F.8. A cable clamp holds the cables together in a cable loop and is fixed in the upper window by the clamping of the strongest cable (e.g. 4G50). All the other cables must be able to move freely -geometrically guided - in the lower window.

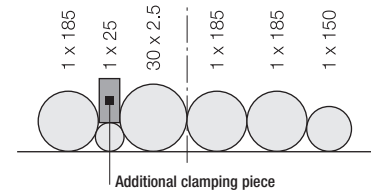


F.9. Screened cables should not be clamped in the cable clamp of the cable loop.

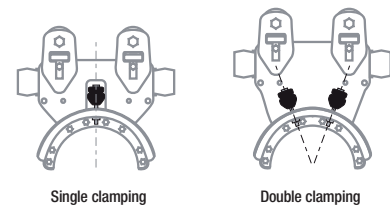


Round cables

F.10. Cables with more or less the same diameter allow a better clamping on the cable support than cables which differ strongly in diameter. If the differences in diameter of adjacent cables exceed 15 mm it is required to install additional clamping pieces over the smaller cables to guarantee a safe clamping.

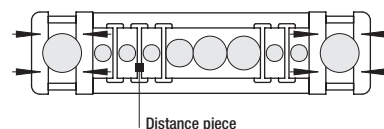


F.11. Depending on the cable layout and the dynamical parameters of the system the cable will be installed on the cable support with a single or double clamping, in order to guarantee a safe installation of the cables during the system's service life.



F.12. A cable clamp holds the cables together in the cable loop and is fixed by the clamping of two exterior - preferably unscreened - energy cables with larger copper cross sections (e.g. 1x120). All the other cables are geometrically guided in the inner window and can move freely.

F.13. The mutual twisting of cables within the cable clamp, especially in case of larger differences in diameter will be prevented by using distance pieces.





Technical exhibit

Energy Guiding Chain Systems

General advice

E.1. Only cables permitted for operation in energy guiding chains are allowed (see general tables pages 4-5). These cables fulfill the requirements on chain systems with all adjoining system components both in view of their construction and the selection of the sheath material.

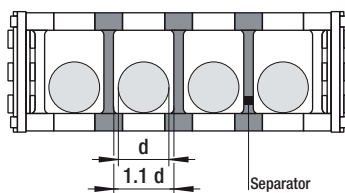
E.2. Depending on the application it makes sense to achieve smaller bending radii and consequently smaller installation dimensions for the system by the separation of large multi-core cables into smaller single-core cables.

E.3. Cables must be secured against twisting; hitting one another, jamming of the cables or just a restriction of the required movements must be avoided by a correct design of the system.

Arrangement in the chain cross section

E.4. The optimum lifetime of the cables is achieved by a 1-layer arrangement. Multi-layer arrangements cause large forces onto the cables as well as larger relative movement of the cables and consequently a stronger wear at the cable sheathing.

E.5. If the cables fill up less than 60 % of the free chain inner height, they will be separated laterally from each other in the chain cross section by separators. The space between the separators must be 10 ... 15 % larger than the max. cable diameter, however at least 1 mm.

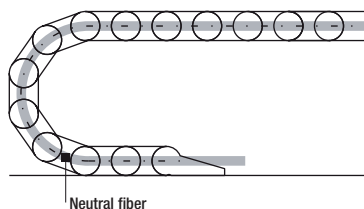


E.6. Depending on the chain type, the travel distance and the cable load, the cables in the chain cross section require different room in height. The best performance is achieved if the cable has an optimum mobility in the vertical direction. The free room above the cables should be min. 20 % of the max. cable diameter, on high-pressure hydraulic hoses 25 %. Less room is only allowed for very short travel distances and after having consulted our specialist staff.

E.7. The distribution of the cable weights in the chain cross section must be in balance of moments, with the heavy loads being placed outside. If required, it can be useful to separate the energy cables from the control, data and bus cables.

Correct length of cable in the chain

E.8. In the retracted condition of the system the cables should be placed in the neutral fiber of the chain, in order to minimize the relative movement of the cables and prevent the cables from damage. The neutral fiber is the connecting line through all the joints of the chain and ideally has the same length as the installed cables.



E.9. The cables must be able to freely pass the chain bend and must at no time be under tensile stress due to a too short cable length.

E.10. The adjustment of the correct cable length is achieved by a readjustment after the run-in of the system; the length will be adjusted after approaching the final position with maximum upper run length.

E.11. Due to setting processes in the joints of the chain links it is recommended prior to running-in the system to install a little bit more than the ideal cable length in the chain (Rule: +1cm per 10 m travel distance). Consequently the cables are rather installed in the outer area of the chain bend and have more tolerance than required.

Tension relief of the cable

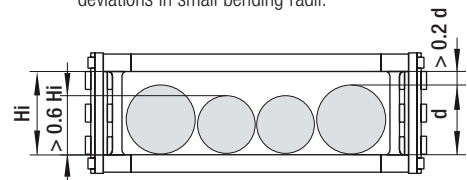
E.12. The clamping of the cables must not cause any crushing or damage of the cores, while the outer sheathing must be secured from shifting.

E.13. Cables in energy guiding chains must be tension-relieved. For simple applications it is sufficient to fix them with a cable tie to the chain connectors. In most cases the fixation has to be made with appropriate cable clamps in a single row, in case of medium to high dynamical loads in two rows.

E.14. Tension reliefs are basically provided at the driver side and at the fixed point; in case of longer distances and depending on the cable package it is recommended to fix the cables at the fixed point or driver with only one tension relief and just guide the cables axially on the opposite side; this layout should only be realized after consultation with the Conductix-Wampfler project engineers.

E.15. In case of hydraulic high-pressure hoses it is only permitted to use single-sided tension relief devices; an axial guidance is required on the second side, however no clamping.

E.16. In the area of the fixed cable laying after the tension relief the cables should be guided in a straight line for at least 500 mm to calm them down, before effecting another laying with deviations in small bending radii.



Fiber optic cables

Fiber optic cables have become essential for today's telecommunications and data transmission applications.

The reason for this is the ever more rapidly increasing quantity of data and associated transmission speeds, which have now hit the limits of economical feasibility with conventional copper cables.

Structure of a fiber optic cable (1)

The glass fibers themselves are manufactured from high-purity quartz glass. The glass core (A) is surrounded by a glass sheath (cladding (B)) and is then enclosed in a plastic layer, the so-called primary coating (C). The glass cladding is responsible for guidance of the light waves. The plastic coating provides the fibers with flexibility and robustness. Without this coating, the glass would break if bent.

The fiber types used in our area are multi-mode 50/125 μ , 62,5/125 μ and single- or mono-mode E9/125 μ . (3)

Multi-mode fibers with a gradient index fiber have a core of 50 or 62.5 μ m, which many modes (= light waves) propagate. The index of refraction is parabolic, that is, it falls off from the center of the core to the mantle. This equalizes the transmission times of the modes. The light beams bend generally outwards and then return to the middle of the glass core. Despite the differing path lengths, the rays reach the other end of the optical fiber at the same time. The attenuation values are about 0.8 dB (1300 nm).

Connectors

In fiber optic technology, there are a wide variety of connector types used around the world. The most frequently used are the following types (4):

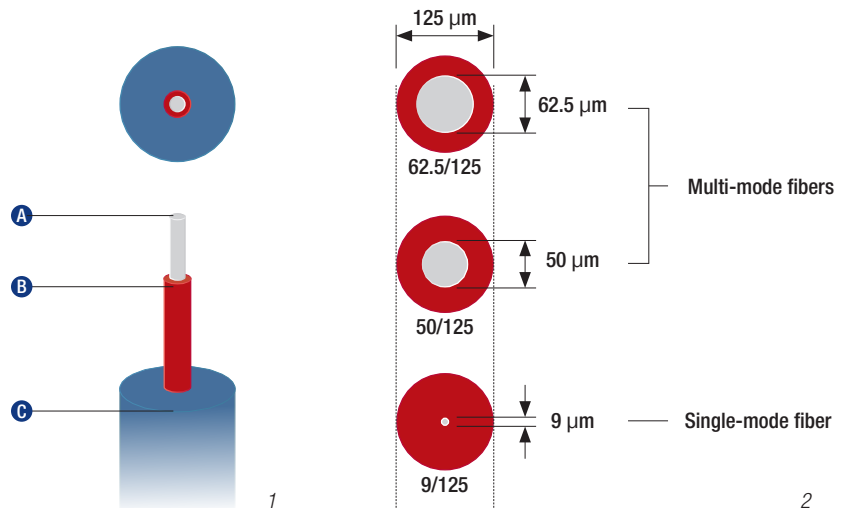
- ST: these are especially widespread in local networks (LAN). This connector is suitable for single-mode and multi-mode glass fiber cables.



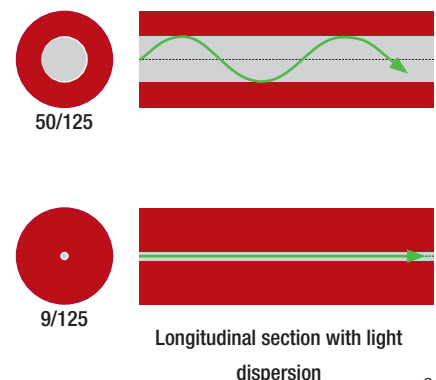
4

General features

- High transmission capacity
- High resistance to eavesdropping
- Low signal attenuation (resistance)
- Not sensitive to electromagnetic or high-frequency interferences
- No conducting connection (complete potential isolation) between the transmitter and the receiver, so no potential problems (ground loop)
- No short circuits, so no risk in potentially explosive environments
- Low weight, lower space requirements (in comparison with copper)



Single-mode fibers have a smaller core of 9 μ m and are thus most difficult to manufacture, lay, and splice. These fibers only work with one mode, which permits almost no modal dispersion and a very small optical attenuation of about 0.4dB (1300nm). This fiber optic cable is suitable for high bandwidths of over 1000GHz/km and distances of well over 50km.



3

Customized Service

Expertise

The breadth and depth of Conductix-Wampfler's service is geared to the requirements and desires of our customers. The service varies from consulting and project planning to long-term service contracts for complete systems for energy and data transfer.

Project planning

- Selection of suitable cables considering the installation and environmental requirements
- Calculation of our cables' ampacity for the respective application on request
- Complete selection of cables compatible with the specific system for energy and data transfer: correct cable lengths, physical dimensions, bending radii and tensile loads



Pre-assembly

- Assembly of cables onto spring and motorized cable reels
- Shipment of complete assembly with cables pre-confectioned and connected to the slip rings
- Pre-confectioned cables with sealing ends for safe „plug&play“ to a connection box on site (copper conductors and/or fiber optics)

Final assembly

- Complete installation as well as start-up operation carried out by trained and qualified personnel
- Acceptance together with the customer
- On site instruction and training

Inspection & Servicing

- Regular inspections of the facility coupled with expert service, increase the availability and reliability of every system



Your Applications – our Solutions

The solutions we deliver for your applications are based on your specific requirements. In many cases, a combination of several different Conductix-Wampfler systems can prove advantageous. You can count on Conductix-Wampfler for hands-on engineering support together with the optimum solution to safely meet your needs.



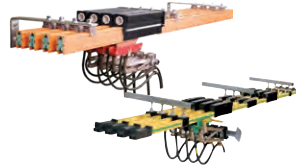
Cable and Hose Reels

Motor driven and spring driven reels by Conductix-Wampfler provide energy, data and media over a variety of distances, in all directions, fast and safe.



Festoon Systems

Conductix-Wampfler cable trolleys can be used in virtually every industrial application. They are reliable, robust and available in an enormous variety of dimensions and designs.



Conductor Rails

Available as enclosed or multiple unipole systems, Conductix-Wampfler conductor rails reliably move people and material.



Inductive Power Transfer IPT®

The no-contact system for transferring energy and data. For all tasks that depend on high speeds and absolute resistance to wear. Flexible installation when used with Automated Guided Vehicles.



Non-insulated Conductor Rails

Robust, non-insulated aluminum conductor rails with stainless steel cap provide the ideal basis for power supply of people movers and transit networks.



Radio Remote Controls

Safety remote control solutions customized to meet our customer needs with modern ergonomic design.



Reels, Retractors and Balancers

Available for hoses and cables, as classical reels or high-precision positioning aids for tools, we offer a complete range of reels and spring balancers.



Jib Booms

Complete with tool transporters, reels or an entire media supply system – safety and flexibility are key to the completion of difficult tasks.



Slip Ring Assemblies

Whenever things are really “moving in circles”, the proven slip ring assemblies by Conductix-Wampfler ensure the flawless transfer of energy and data. Here, everything revolves around flexibility and reliability!



Mobile Control Systems

Mobile control solutions for your plant – whether straightforward or intricate. Control and communication systems from LJU have been tried and tested in the automotive industry for decades.



ProfiDAT

This data transfer system is a compact slotted waveguide and furthermore can be used as Grounding rail (PE) as well as positioning rail at the same time.

www.conductix.com

Conductix-Wampfler

has just one critical mission:

To provide you with energy and data transmission systems that will keep your operations up and running 24/7/365.

To contact your nearest sales office, please refer to:

www.conductix.contact

