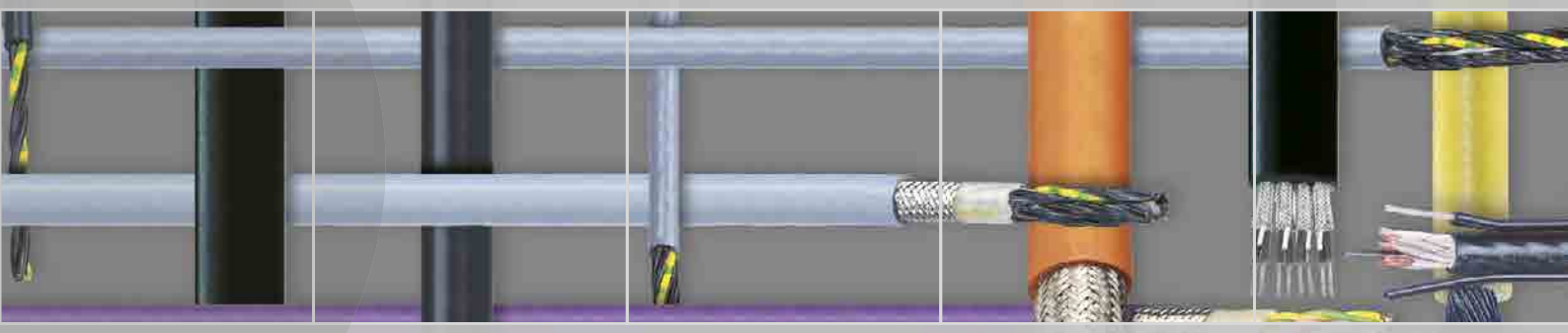
Conductix-Wampfler Cables for Reeling Systems



CONDUCTIX wampfler

DELACHAUX GROUP

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 complete package with systems and cables that match perfectly to your application.

Advantage 2 System compatibility

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

Advantage 3 Manufacturer independence

- The performance of the cable is more important to us than its origin – we neutrally select only the most technically qualified cables available on the market. Additionally we concept our own designs and conduct our own test scenarios on our systems to ensure best functionality.

Advantage 4 System warranty

- Each complete Conductix-Wampfler system is provided with a comprehensive warranty – this, needless to say, includes 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

At a glance
Conductix-Wampfler Cables for Reeling Systems

Special features for Reeling Systems

- Reduced diameter and weight as a result of ideal insulation and sheathing materials
- Better resistance to corkscrew due to reverse twist stranding
- Stable design and geometry based on extruded fillers
- Outer sheath is highly resistant to wear even in aggressive environments
- Extremely high resilience thanks to a very short lay stranding
- High axial rigidity due to interlinked inner and outer sheaths
- All high voltage cables are produced with left-hand lay

Specialities (available on request)

- Composite cables with power + control + fiber optics
- Cables with compounds for low temperature environments down to -50°C
- Cables with compounds and protection for very high temperatures up to 180°C
- Cables suitable for use in all kinds of water (e.g. drinking water, waste water etc.).

Brand/Type index:

RG | RG-D - NSHTOEU Panzerflex
- Trommelflex K

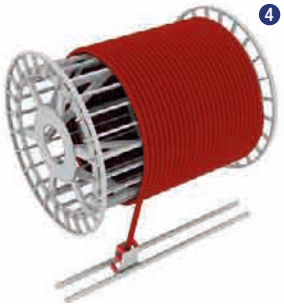
RXG | RXG-D - Cordaflex SMK
- Rheycord RTS

RXP | RXP-D - Trommelflex PUR-HF

WXG | WXG-D - Protolon SMK
- Rheyfirm-RTS

for more information please refer to relevant product line

Application	Basic Reeling Systems							
Power / Control	 MALT	 GPM	 RP	 RG	 WG	 WGF	 C800	
Composite Power + Control + Data			 RP-D	 RG-D	 WG-D	 WGF-D		
Label respectively Design	Conductix-Wampfler	Conductix-Wampfler	12YRDT11YH	NSHTOEU-J	Conductix-Wampfler	(N)TSFLCGEWOEU	Conductix-Wampfler	
Outer jacket material	PVC	PUR	PUR	Rubber	Rubber	Rubber	PVC	
Suitable for use outdoors	●	●	●	●	●	●	●	
Voltage range	0.6/1 kV	0.6/1 kV	up to 0.6/1 kV	0.6/1 kV	3.6/6 kV up to 12/20 kV	3.6/6 kV up to 12/20 kV	0.6/1 kV	
Tensile load capacity max. [N / mm²]	10	12	15	15	20	15	15	
Travel speed max. [m / min]	40	60	80	120	120	120	60	
Temperature range flexing [°C]	-20 up to 60	-25 up to 60	-20 up to 70	-25 up to 80	-25 up to 80	-25 up to 80	-10 up to 60	
Page	6	8	12	16	20	24	28	



	Heavy Duty Reeling Systems						Extra Heavy Duty Reeling Systems	
	GPM-RF	RXP	RXG	TRA	HVR	WXG	RXX	TRA-RF
		RXP-D	RXG-D		HVR-FO	WXG-D	RXX-D	
	Conductix-Wampfler	12YHRDT11YH	(N)SHTOEU-J	Conductix-Wampfler	Conductix-Wampfler	(N)TSKCGEWOEU	(N)SHTOEU-J	Conductix-Wampfler
	PUR	PUR	Rubber	PUR	Rubber	Rubber	Rubber	PUR
	●	●	●	●	●	●	●	●
	0.6/1 kV	up to 0.6/1 kV	0.6/1 kV	0.6/1 kV	3.6/6 kV up to 12/20 kV	3.6/6 kV up to 12/20 kV	0.6/1 kV	0.6/1 kV
	20	25	30	30	20	20	30+	30+
	90	180	240	200	180	300	240 *	240
	-25	-40	-35 (1	-25	-30 (2	-35	-35	-25
	up to	up to	up to	up to	up to	up to	up to	up to
	60	80	60	80	80	80	80	60
	32	36	40	44	48	52	56	60

(1 -45 °C on request (2 -45 °C on request ● ideal ● limited

Prominent places of particular impacts

1 Monospiral winding reel

- High tensile loads can occur during winding
- Torsional stresses through the use of guiding pulleys
- High speed in combination with changing bending direction
- Reverse bending “S-type” due to mid feeding point
- Abrasion through the inner spokes of the drum body
- Temperature drops effect the cable jacket rigidity

2 Spreader winding reel

- Very high tensile load from vertical pull
- The metal cleaves on the drum body may lead to abrasion
- Cable must withstand oil and grease
- Temperature drops effect the cable jacket rigidity

3 Random winding reel

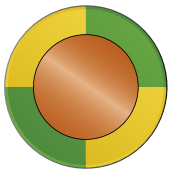
- Random winding on the drum
- Smaller bending radii stress the copper conductors which need to be flexible

4 Level winding reel

- Torsion to the cable through the use of a special guiding device
- Bending via the special guiding device
- Winding of one layer has to be exact over the large width of the reel body
- Extreme ambient influences on the jacket (e.g. UV, ozone, coal dust, graphite)
- Max 2 layers on drum body because of heat emanation

Conductix-Wampfler Cable MALT

PVC flexible round cable for electrical grounding



- Standardized PVC cable for electrical grounding purposes
- Flexible copper core, class 5 according to IEC 60228
- PVC outer sheath, green/yellow (standardized for electrical grounding)

Particularly suitable,

- for manually operated extension reels
- to generate a potential equalization
- to discharge electric charge

Characteristics

CXW

Typical applications are to make a temporary equipotential bonding for:

- static discharge (e.g. fuel tank static grounding)
- fault current discharge (e.g. electric generating sets)

Electrical parameters

Rated voltage Uo/U = 0.6 / 1 kV

Mechanical load-bearing capacity

Travel speed up to 10 m/min

Minimum bending radii 6 x Ø reeling

Thermal / Chemical specifications

Ambient temperature flexing: -5°C... +70°C
fixed: -5°C... +70°C

Highest allowance on operational temperature at conductor: 80°C

Important features

- resistant to ozone
- oil resistant
- UV-resistant
- low flammability according to IEC 60332-1

Design features

Conductor flexible copper class 5

Sheath PVC compound

Brand Index MALT

Order information

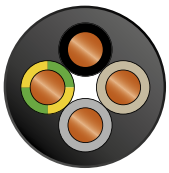
Type of cable	Cross section [mm²]	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Resistance max. [Ω/km]	Minimum Order Quantity
Electrical grounding	4	7.0 – 8.0	38.4	90	4.95	10 m
	6	7.5 – 8.5	57.6	120	3.30	10 m
	10	9.5 – 10.5	96.0	180	1.91	10 m
	25	19.0 – 20.2	240.0	370	0.78	10 m
	35	20.5 – 21.5	336.0	520	0.55	10 m

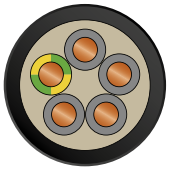
Conductix-Wampfler Cable MALT
Technical data

Electrical parameters	rated voltage	UoU = 600/1000V
	maximum permitted AC operating voltage	UoU = 700/1200V
	maximum permitted DC operating voltage	UoU = 900/1800V
	AC test voltage	2,5 kV
Thermal parameters	ambient temperature	flexing -5°C to +70°C
		fixed -5°C to +70°C
	maximum permitted operating temperature at conductor	70°C
	short-circuit temperature at conductor	150°C
Mechanical parameters	minimum radii for continuous flexing	6 x Ø for reeling
		7,5 x Ø
	tensile load bearing capacity	according to data table
Chemical parameters	combustion behaviour	of low flammability according to DIN VDE 0482 part 265-2-1; IEC 60332-1
	resistant to ozone	limited
	resistant to humidity	yes
	UV-resistant	yes
	resistant to moisture	yes
	oil resistant	yes
	halogen free	no
Materials	sheath	PVC
	color	green-yellow
	conductor	plain copper, category 5 according to DIN VDE 0295 / IEC 60228
Design features	conductor	single core
	conductor coding	none, green/yellow sheathed earth conductor
Brand		Conductix-Wampfler

Conductix-Wampfler Cable GPM

PUR round reeling cable





- Flexible Conductix-Wampfler reeling cable designed for standard duty reeling applications
- Stringent characteristics of the insulation cover and the double sheath make this cable suitable for use on reeling systems for power supply of moving machines
- Wear resistant polyurethane sheath plus high flexibility demonstrate stringent mechanical features

Particularly suitable,

- for spring and motorized reels with max speed of 60 m/min
- if small dynamic loads act on the system
- for use outdoors, but also for dry, humid and wet rooms
- if a cost-effective cable is high priority
- for operating temperatures from -25°C up to 60°C
- for all spool types in accordance with the minimum bending radius

Not or restricted suitable,

- for level wind reeling applications
- for installations with deflecting pulley (please consult with us)
- for use in water

CONDUCTIX WAMPFLER GPM ...G.... mm² 0.6/1 KV ww-yyyy

Characteristics

Cable designed for continuous standard duty environment, specially adapted for use on random winding reels

Typical applications
- power supply to all horizontally operating machinery with travel speed up to 60 m/min
- ergonomic handling systems

Electrical parameters

Rated voltage	Uo/U = 0.6 / 1 kV

Mechanical load-bearing capacity

Travel speed	up to 60 m/min horizontal (> 60 m/min on request)
Minimum bending radii	6 x Ø on spool 9 x Ø on guiding device 4 x Ø on anti-tension drum

On pulley not recommended – please consult with us

Tensile load-bearing capacity 12 N/mm² (please refer to table)

Thermal / Chemical specifications

Ambient temperature	flexing:	-25°C... +60°C
	fixed:	-30°C... +60°C

Highest allowance on operational temperature at conductor: 80°C

Short circuit temperature at conductor: 200°C

Important features
- halogene free
- resistant to ozone
- oil resistant
- UV-resistant
- Low flammability according to IEC 60332-1, class 3 (not tested)
- voltage test IEC 60502-1

Design features

Conductor	flexible copper class 5 acc: IEC60228 / VDE 0295 / BSI 6360
Sheath	highly abrasion-resistant polyurethane jacket
Core	insulation special polyproylene
Jacket color	black (until 2010: green)

Conductix-Wampfler Cable GPM
Order information

Type of cable	Number of conductors and cross section [mm²]	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity
Control cable	3 G 2.5	9.0 – 10.0	72	150	90	300 - 500 m
	4 G 2.5	9.9 – 11.3	96	170	120	10 m
GPM I 0.6/1 kV	5 G 2.5	10.8 – 12.0	120	200	150	10 m
	4 G 4	11.3 – 12.5	154	250	192	10 m
Power cable	5 G 4	12.6 – 14.0	192	300	240	10 m
GPM I 0.1/1 kV	4 G 6	12.6 – 14.0	230	320	288	10 m
	5 G 6	14.4 – 16.0	288	410	360	10 m

Conductix-Wampfler Cable GPM
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						
	AC test voltage	according to IEC 60502-1						
		3 G 2.5	**4 G 2.5**	**5 G 2.5**	**4 G 4**	**5 G 4**	**4 G 6**	**5 G 6**
	current carrying capacity max [A] (1)	36	31	31	42	42	54	54
	voltage drop [V/A.km] (2)	14.0	14.0	14.0	8.8	8.8	5.9	5.9
	resistance max [Ohm/km] (3)	7.98	7.98	7.98	4.95	4.95	3.30	3.30
Thermal parameters	ambient temperature	flexing -25°C to +60°C fixed -30°C to +60°C						
	maximum permitted operating temperature at conductor	80°C						
	short-circuit temperature at conductor	200°C						
Mechanical parameters	minimum radii for continuous flexing	6 x Ø on spool 4 x Ø on anti-tension drum 9 x Ø on guiding device – PULLEY NOT RECOMMENDED						
	tensile load bearing capacity	according to data table						
Chemical parameters	combustion behaviour	of low flammability according to DIN VDE 0482 part 265-2-1; IEC 60332-1						
	resistant to ozone	yes						
	resistant to humidity	yes						
	UV-resistant	yes						
	Resistant to moisture	yes						
	oil resistant	yes						
	halogene free	Yes						
Materials	insulation	special polypropylene compound						
	inner sheath	special polyurethane compound						
	outer sheath	special polyurethane compound						
	color	black						
Design features	conductor	flexible copper, category 5 according to DIN VDE 0295 / IEC 60228						
	stranding	short length of lay and assembled conductors around a polypropylene reinforced filler (4G & 5G)						
	conductor coding	3G green/yellow, blue, brown 4G green/yellow, brown, black, grey 5G green/yellow, blue, brown, black, grey						
Brand		Conductix-Wampfler						
Marking		CONDUCTIX-WAMPFLER GPM …G…. mm^2 0.6/1 KV ww-yyyy						

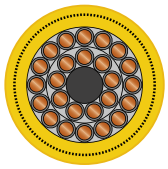
(1) cable laid straight on the ground at +30°C

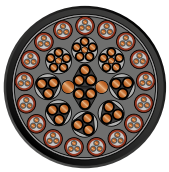
(2) cos phi = 0,8 / temperature of cores = +90°C

(3) DC resistance of a core at +20°C

Conductix-Wampfler Cable RP / RP-D

PUR round reeling cable





- Standardized PUR cable for control, and power reeling applications with broard product line range
- Small size as a result of optimized wall thicknesses for sheathing and core insulation thus providing a compact design
- Good resilience due to short length of lays
- Durability thanks to an PUR outer sheath which is resistant to wear and cracking

Particularly suitable,

- for spring and motorized reels with maximum speed of 80 m/min
- if small to medium dynamic loads act on the system
- for use outdoors, but also for dry, humid and wet rooms
- if the priority is a cost-effective cable
- if the operating temperatures do not exceed 80°C
- if systems are designed with an end feed

Not suitable,

- for use in water

Characteristics

Cable designed for continuous standard duty environment, especially adapted for use on random winding reels and monospiral reels

Typical applications
- all horizontal operating machinery with travel speed up to 80 m/min
- ergonomic handling systems
- hoisting gear with small to middle hoisting heights and stresses

Electrical parameters

Rated voltage	Uo/U = 0.6 / 1 kV
	Uo/U = 0.3 / 0.5 kV
	for design code 12YRDT11YH

Mechanical load-bearing capacity

Travel speed	up to 80 m/min horizontal (> 80 m/min on request)
Minimum bending radii	8 x Ø reeling
	6 x Ø reeling on request

Minimum distance especially for S-type forced guide pulley 20 x Ø

Tensile load-bearing capacity 15 N/mm² (please refer to table)

Thermal / Chemical specifications

Ambient temperature	flexing:	-20°C... +80°C
	fixed:	-30°C... +80°C

Highest allowance on operational temperature at conductor: 90°C

Short circuit temperature at conductor: 250°C

Important features
- halogene free
- resistant to ozone
- oil resistant
- UV-resistant
- low flammability according to IEC 60332-1
- LBS-free/silicone free

Design features

Conductor	flexible Copper class 5 or 6
Sheath	highly abrasion-resistant polyurethane jacket
Core	insulation special PE compound
Jacket color	yellow or black
Brand Index	Semoflex Drum, Rheycord PUR R or equal

Special versions available on request
UL/ CSA approbation available on request

Conductix-Wampfler Cable RP
Order information

Type of cable	Number of conductors and cross section [mm²]	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 RP I 0.6/1 kV	7 x 1.5	11.5 – 13.2	105	245	158	-
	12 x 1.5	16.5 – 18.5	180	337	270	-
	18 x 1.5	16.5 – 18.6	270	525	405	-
	24 x 1.5	19.0 – 21.5	360	660	540	-
	36 x 1.5	27.0 – 29.5	540	950	810	•
	4 G 2.5	11.4 – 12.0	100	205	150	-
	5 G 2.5	12.4 – 13.0	122	260	188	-
	7 x 2.5	12.5 – 14.8	176	320	263	-
	12 x 2.5	18.5 – 20.5	332	530	450	-
	18 x 2.5	19.0 – 21.5	454	725	675	-
	24 x 2.5	22.5 – 24.9	656	990	900	-
	36 x 2.5	25.5 – 28.3	900	1.410	1.350	-
Power cable RP I 0.6/1 kV	4 G 4	11.3 – 12.8	160	270	240	-
	4 G 6	14.7 – 16.9	240	405	360	-
	4 G 10	16.8 – 19.8	400	630	600	-
	4 G 16	20.0 – 23.8	640	935	960	-
	4 G 25	26.0 – 27.9	1.000	1.483	1.500	-
Power cable RP I 0.6/1 kV	3 x 25 + 3 G 6	23.5 – 25.5	893	1.240	1.125	•
	3 x 35 + 3 G 6	27.0 – 29.5	1.181	1.640	1.575	•
	3 x 50 + 3 G 10	30.0 – 32.5	1.728	2.240	2.250	•
	3 x 70 + 3 G 16	35.0 – 37.5	2.477	3.100	3.150	•
	3 x 95 + 3 G 16	39.0 – 42.0	3.197	3.890	4.275	•
	3 x 120 + 3 G 25	44.0 – 47.0	4.176	5.080	5.400	•
	3 x 150 + 3 G 25	49.0 – 53.0	5.040	6.160	6.750	•
	3 x 185 + 3 G 35	54.5 – 59.0	6.048	7.680	8.325	•

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

Conductix-Wampfler Cable RP-D
Order information

Type of cable	Number of conductors and cross section [mm²]	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required(2
Control & Data cable	26 G 2.5 + (4 x 1.5)C	24.5 – 27.0	683	933	975	-
	26 G 2.5 + (4 x 2.5)C	24.5 – 27.0	720	1.012	1.270	-
RP-D I 0.6/1 kV	26 G 2.5 + 2 x (2xAWG22) PN	24.5 – 27.0	663	1.060	975	•
Power & Control cable RP-D I 0.6/1 kV	4 G 25 + 2 x 4 x 2,5	31.0 – 33.0	1.152	1.590	1.500	-

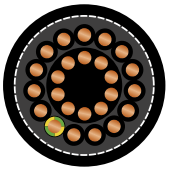
(2 The Minimum Order Quantity varies between 300 m and 500 m, please contact us.

Conductix-Wampfler Cable RP / RP-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	3.5 kV
	AC test voltage Control	2.5 kV
Thermal parameters		
	ambient temperature	flexing -20°C to +70°C for temperatures below -25°C please consult with us fixed -30°C to +70°C
	maximum permitted operating temperature at conductor	90°C
	short-circuit temperature at conductor	250°C
Mechanical parameters		
	minimum radii for continuous flexing	8 x Ø for reeling (6 x Ø on request) 6 x Ø fixed
	minimum distance between 2 changes of direction (e.g. S shaped track curves)	20 x Ø
	tensile load bearing capacity	according to data table design with double sheath design and embedded anti-torsion braid
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
	resistant to moisture	yes
	oil resistant	yes
	halogen free	yes
Materials		
	insulation	XLPE or semocore on polyester base (PE)
	inner sheath	special polyurethane, double layer with embedded anti-twist reinforcement
	outer sheath	special polyurethane
	color	yellow (other colors available on request)
Design features		
	conductor	plain copper, category 6 or 5 according to DIN VDE 0295 / IEC 60228
	stranding	in layers, maximum 3 layers, short length of lay
	conductor coding	according to DIN VDE 0293 part 308, > 7 conductors white with black numbers with green/yellow earth conductor
Standards		
		versions with UL / CSA approbation available on request
Design Codes		
	12YRDT11Y, 12YRDT11YH	12Y core insulation based on polyester or similar
		RDT round cable for reeling
		11Y inner sheath based on PUR outer sheath PUR
		H outer sheath halogene free

Conductix-Wampfler Cable RG / RG-D

Rubber round reeling cable NSHTOEU-J



- Standardized rubber cable for control, power and composite reeling applications
- Very robust design for applications with high mechanical stresses, suitable for motorized and spring reels
- Sandwich double sheath, outer sheath with special compounds providing very good abrasion resistance
- Design with embedded anti-torsion braid for higher torsional flexibility

Particularly suitable,

- on motorized reels with max speed 120 m/min
- for use outdoors, but also for dry, humid and wet rooms
- for medium dynamic loads and abrasion act on the system
- for a chemical environment that excludes other thermoplastics and requires rubber sheathed cable

Not suitable,

- for use in water

Characteristics

Cable designed for continuous standard duty environment, specially adapted for use on monospiral and level wind reels

Typical applications
- movable equipment e.g. Stacker / Reclaimer or Shiploaders
- all horizontal operating machinery with travel speed up to 120 m/min
- material handling machines in rough chemical environment e.g. Urea, Sulfur
- any other bulk machinery e.g. bucket wheel excavator

Electrical parameters

Rated voltage	Uo/U = 0.6 / 1 kV

Mechanical load-bearing capacity

Travel speed	up to 120 m/min horizontal
Minimum bending radii	6 x Ø reeling 7.5 x Ø for rollers

Minimum distance especially for S-type forced guide pulley 20 x Ø

Tensile load-bearing capacity 20 N/mm² (please refer to table)

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: 200°C

Important features
- resistant to ozone
- oil resistant
- UV-resistant
- low flammability according to IEC 60332-1
- LBS-free/silicone free

Design features

Conductor	flexible copper class 5
Sheath	abrasion-resistant rubber compound
Core	insulation special rubber compound
Jacket color	black
Type	NSHTOEU-J
Brand Index	Panzerflex (NSHTOEU), Trommelflex K (NSHTOEU) or equal

Special versions available on request
UL/ CSA approbation available on request

Conductix-Wampfler Cable RG
Order information

Type of cable	Number of conductors and cross section [mm²]	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 RG I 0.6/1 kV	7 x 1.5	16.5 – 18.5	93	415	158	•
	12 x 1.5	19.5 – 21.9	158	585	270	-
	18 x 1.5	22.0 – 24.9	240	801	405	-
	24 x 1.5	25.6 – 28.5	322	1.040	540	-
	36 x 1.5	28.6 – 31.8	483	1.370	810	•
	4 G 2.5	14.5 – 17.8	96	360	150	–
	5 G 2.5	15.0 – 17.5	120	425	188	–
	7 x 2.5	18.1 – 21.1	157	575	263	–
	12 x 2.5	21.5 – 24.9	269	800	450	–
	18 x 2.5	25.5 – 28.5	406	1.095	675	–
	24 x 2.5	29.0 – 33.0	545	1.490	900	–
	30 x 2.5	31.0 – 34.5	682	1.700	1.125	–
Power cable RG I 0.6/1 kV	4 G 4	16.5 – 19.0	143	460	240	–
	4 G 6	18.4 – 20.5	211	615	360	–
	4 G 10	22.0 – 25.5	367	920	600	–
	4 G 16	25.0 – 27.6	588	1.310	960	–
	4 G 25	29.6 – 34.0	886	1.890	1.500	–
	4 G 35	33.5 – 36.4	1.323	2.490	2.100	
Power cable RG I 0.6/1 kV	5 G 6	20.4 – 23.0	264	725	450	–
	5 G 10	24.5 – 26.7	460	1.140	750	–
	5 G 16	27.6 – 29.7	736	1.480	1.200	–

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

Conductix-Wampfler Cable RG-D
Order information

Type of cable	Number of conductors and cross section [mm²]	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required(2
Control & Data cable RG-D | 0.6/1kV	12 x 2.5 + 12 x 1.5 C*	31.0 – 35.0	586	1.420	450	•
	19 x 2.5 + 5 x 1.5 C*	30.0 – 34.0	590	1.700	713	-
	25 x 2.5 + 5 x 1.5 C*	31.0 – 35.0	823	1.680	938	-
	26 x 2.5 + 10 x 1 C*	36.2 – 39.4	720	2.150	975	•

* individually screened 1.5 mm² conductors

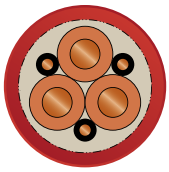
(2 The Minimum Order Quantity varies between 300 m and 500 m, please contact us.

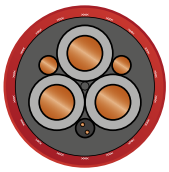
Conductix-Wampfler Cable RG / RG-D
Technical data

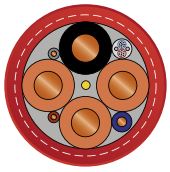
Electrical parameters	rated voltage	UoU = 600/1000V
	maximum permitted AC operating voltage	UoU = 700/1200V
	maximum permitted DC operating voltage	UoU = 900/1800V
	ampacity	according to table data, otherwise according to VDE 0298 part 4
	AC test voltage power	2.5 kV
	AC test voltage Control	2.0 kV
Thermal parameters		
	ambient temperature	flexing -25°C to +80°C for temperatures below -25°C please consult with us fixed -40°C to +80°C
	maximum permitted operating temperature at conductor	90°C
	short-circuit temperature at conductor	200°C
Mechanical parameters		
	minimum radii for continuous flexing	6 x Ø for reeling 7,5 x Ø diversion rollers / assemblies
	minimum distance between 2 changes of direction (e.g. S shaped track curves)	20 x Ø
	tensile load bearing capacity	according to data table
Chemical parameters		
	LBS-free / silicone free	yes
	combustion behaviour	of low flammability according to DIN VDE 0482 part 265-2-1; IEC 60332-1
	resistant to ozone	yes
	resistant to humidity	yes
	UV-resistant	yes
	resistant to moisture	yes
	halogen free	no
	resistant to Sulfur	yes
	resistant to Urea	yes
Materials		
	insulation	EPR (ethylene-propylene-rubber) or comparable compounds according to VDE
	inner sheath	PCP (polychloroprene) or comparable compounds according to VDE
	outer sheath	abrasion-resistant PCP (polychloroprene) or comparable compounds acc VDE
	color	black
Design features		
	conductor	tinned copper,class 5 according to DIN VDE 0295 or IEC 60228
	stranding	in layers, maximum 3 layers
	conductor coding	according to DIN VDE 0293 part 308, > 5 conductors black with white numbers with green/yellow earth conductor
Standards & Design codes		
	(N)SHTOEU-J	adapted to DIN VDE 0250
		(N) adapted to VDE standard
		SHT 1 kV cable suitable for use on reels
		OE oil-resistant outer sheath according VDE 0472 part 803
		U outer sheath of low flammability according to DIN VDE 0472 part 804

Conductix-Wampfler Cable WG / WG-D

Rubber round reeling cable







- High torsional rigidity through the use of a supporting mesh vulcanized between inner and outer sheaths
- Easy separation of individual layers of core insulation thanks to a special EPR-based compound
- Small & favourable reel dimensions as a result of minimized cable diameter & weight
- High capacity of data transfer with 12 optic fibers in the standard range
- Best mechanical stability of core insulation sheathings thanks to simultaneous 3-layer extrusion
- Very high tensile strength resulting from compact and ideally interconnected reinforcements with high-quality materials

Particularly suitable,

- if small to medium dynamic loads are expected during reel operation
- if the reeling duty cycle is in the low to medium range
- if a reliable and durable, yet cost effective cable is desired
- if the cable is requested to operate maximum through one diversion roller assembly
- if 12 optic fibers or more are required
- if the operating temperatures do not exceed 80°C

CONDUCTIX WAMPFLER WG ... mm² 6/10 KV ww-yyyy

Characteristics

Resilient cable suitable for use on reels
Main application: motorized cable reels

Typical applications
- container cranes main power supply with low mounting heights (< 7 m) and low to medium travel speeds
- heavy mining equipment
- Stackers & Reclaimers
- Ship unloaders

Electrical parameters

Rated voltage	Uo/U = 6.0 / 10.0 kV
	Uo/U = 8.7 / 15.0 kV
	Uo/U = 12.0 / 20.0 kV

Other voltage ranges available on request

Mechanical load-bearing capacity

Travel speed	up to 120 m/min (> 120 m/min on request)
Minimum bending radii	12 x Ø on the reel 15 x Ø at deflection pulley 20 x Ø at S-type directional changes

Thermal / Chemical specifications

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

Important features
- flame retardant
- CFC-free
- oil-resistant
- UV-resistant
- LBS-free / silicone-free
- resistant to humidity

Design features

Conductor	highly flexible, finely stranded (more flexible then category 5 according to DIN VDE 0295)
Sheath	wear-resistant PCP (polychloroprene) compound
Core insulation	triple and simultaneously extruded insulation constructed of HV-EPR, semiconducting inner and outer layer
Type	R-(N)TSCGEWOEU / R-(N)TSCGEWOEU-FO

Conductix-Wampfler Cable WG
Order information

Type of cable	Number of conductors and cross section [mm²]	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 WG I 6/10 kV	3 x 25 x 3G25/3	39 – 42	960	2.400	1.875	•
	3 x 35 x 3G25/3	42 – 45	1.248	2.800	2.625	•
	3 x 50 x 3G25/3	45 – 48	1.680	3.690	3.750	•
	3 x 70 x 3G35/3	51 – 55	2.352	4.480	5.250	•
	3 x 95 x 3G50/3	55 – 59	3.216	5.400	7.125	•
	3 x 120 x 3G70/3	59 – 63	4.128	6.700	9.000	•
	3 x 150 x 3G70/3	64 – 68	4.992	7.680	11.250	•
Power cable WG I 8.7/15 kV	3 x 25 x 3G25/3	42 – 45	960	2.700	1.875	•
	3 x 35 x 3G25/3	45 – 49	1.248	3.100	2.625	•
	3 x 50 x 3G25/3	49 – 53	1.680	3.960	3.750	•
	3 x 70 x 3G35/3	53 – 57	2.352		5.250	•
	3 x 95 x 3G50/3	58 – 62	3.216	6.050	7.125	•
	3 x 120 x 3G70/3	63 – 67	4.128	7.265	9.000	•
	3 x 150 x 3G70/3	66 – 70	4.992	8.500	11.250	•
Power cable WG I 12/20 kV	3 x 25 x 3G25/3	44 – 47	960	2.950	1.875	•
	3 x 35 x 3G25/3	47 – 50	1.248	3.250	2.625	•
	3 x 50 x 3G25/3	51 – 55	1.680	4.050	3.750	•
	3 x 70 x 3G35/3	56 – 60	2.352	4.850	5.250	•
	3 x 95 x 3G50/3	60 – 64	3.216	6.450	7.125	•
	3 x 120 x 3G70/3	66 – 70	4.128	7.700	9.000	•
	3 x 150 x 3G70/3	69 – 73	4.992	8.550	11.250	•

Pre-confectioned cable terminations available on request, please also refer to page 71

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

Conductix-Wampfler Cable WG-D

Order information

Type of cable	Number of conductors and cross section [mm²]			Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required(2
Power & Data cable WG-D I 6/10 kV	3x25+2	G	25/2+12F0	39 – 42	960	2.400	1.875	-
	3x35+2	G	25/2+12F0	42 – 45	1.248	2.800	2.625	-
	3x50+2	G	25/2+12F0	45 – 48	1.680	3.690	3.750	•
	3x70+2	G	35/2+12F0	51 – 55	2.352	4.480	5.250	•
	3x95+2	G	50/2+12F0	55 – 59	3.216	5.400	7.125	•
	3x120+2	G	70/2+12F0	59 – 63	4.128	6.700	9.000	•
	3x150+2	G	70/2+12F0	64 – 68	4.992	7.680	11.250	•
Power & Data cable WG-D I 8.7/15 kV	3x25+2	G	25/2+12F0	42 – 45	960	2.700	1.875	•
	3x35+2	G	25/2+12F0	45 – 49	1.248	3.100	2.625	•
	3x50+2	G	25/2+12F0	49 – 53	1.680	3.960	3.750	•
	3x70+2	G	35/2+12F0	53 – 57	2.352		5.250	•
	3x95+2	G	50/2+12F0	58 – 62	3.216	6.050	7.125	•
	3x120+2	G	70/2+12F0	63 – 67	4.128	7.265	9.000	•
	3x150+2	G	70/2+12F0	66 – 70	4.992	8.500	11.250	•
Power & Data cable WG-D I 12/20 kV	3x25+2	G	25/2+12F0	44 – 47	960	2.950	1.875	•
	3x35+2	G	25/2+12F0	47 – 50	1.248	3.250	2.625	•
	3x50+2	G	25/2+12F0	51 – 55	1.680	4.050	3.750	•
	3x70+2	G	35/2+12F0	56 – 60	2.352	4.850	5.250	•
	3x95+2	G	50/2+12F0	60 – 64	3.216	6.450	7.125	•
	3x120+2	G	70/2+12F0	66 – 70	4.128	7.700	9.000	•
	3x150+2	G	70/2+12F0	69 – 73	4.992	8.550	11.250	•

Pre-confectioned cable terminations available on request, please also refer to page 71

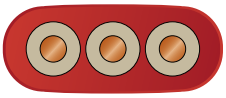
(2 The Minimum Order Quantity is 300 m, please contact us.

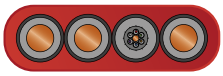
Conductix-Wampfler Cable WG / WG-D
Technical data

Electrical parameters	rated voltage Uo/U	3.6 / 6.0 kV	6.0 / 10.0 kV	8.7 / 15.0 kV	12.0 / 20.0 kV	
	maximum permitted AC operating voltage Uo/U	4.2 / 7.2 kV	7.0 / 12.0 kV	10.2 / 18.0 kV	14.0 / 24.0 kV	
	maximum permitted DC operating voltage Uo/U	5.4 / 10.8 kV	9.0 / 18.0 kV	13.0 / 26.0 kV	18.0 / 36.0 kV	
	ampacity	according to table data, otherwise according to DIN VDE 0298 part 4				
	AC test voltage	according to DIN VDE 0250 part 813				
Thermal parameters	ambient temperature	flexing -25°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	12 x Ø on the reel 15 x Ø at a track curve 20 x Ø at an S-track curve				
	torsional stress	± 100 °/m				
	tensile load-bearing capacity	20 N/mm^2 conductor cross section during operation for flexing cables				
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				
	UV-resistant	yes				
	oil-resistant	yes				
	resistant to humidity	yes				
Materials	insulation	Inner conducting layer consists of a semiconducting rubber, compound (according to DIN VDE 0207 part 20), outer conducting layer of conducting rubber, to be able to be stripped cold (simple stripping method)				
	sheathing system	Inner sheath consisting of a special red EPR compound, 5GM3, with polyester reinforced braid for protection against torsional forces. Braid is vulcanized between the inner and outer sheaths in a sandwich structure. Outer sheath of abrasion-resistant PCP based compound offering excellent resilience, 5GM5				
Design features	conductor	electrolytic copper, flexible conductor category 5, according to DIN VDE 0295				
	stranding	conductors in layers stranded with small lay, earth conductor divided into three parts in the interstices (without optic fibers) or two halfes in the interstices (with optic fibers)				
	conductor coding	black insulation with white numbers				
Standards		acording to DIN VDE 0250 part 813				
Design codes	R-(N)TSCGEWOEU R-(N)TSCGEWOEU-FO	R- cable suitable for use on reels (N) adapted to a standard TS heavy duty cable CGE conducting non-metallic covering surrounding the insulation of the outer conductors W resistant to atmospheric corrosion OE oil-resistant outer sheath U outer sheath of low flammability according to DIN VDE 0472 part 804 (fire-proof) FO with fiber optic				
Fiber optic			Mono-Mode	Multi-Mode	Multi-Mode	
	fiber type (core-Ø / fiber-Ø)		E9/125	50/125	62.5/125	
	damping	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		-	0.20 ± 0.02	0.27 ± 0.02	
	dispersion	at 1300 nm	3.5 ps/nm km	-	-	
		at 1550 nm	18.0 ps/nm km	-	-	
	band width	at 850 nm	400 MHz km	400 MHz km	200 MHz km	
		at 1300 nm	60 - 1.500 MHz km	60 - 1.500 MHz km	600 MHz km	

Conductix-Wampfler Cable WGF / WGF-D

Rubber flat reeling cable with / without fiber optics





- Flexible flat rubber reeling cable reeling cable with or without data transmission for use on connecting movable machines and material handling equipment
- robust design for applications with mechanical stresses, suitable for use on motorized reels with frequent bending in ONE PLANE ONLY
- suitable for medium acceleration and travel speed

Particularly suitable,

- for monospiral reels with limited installation space
- for motorized reels with max speed 120 m/min
- for use outdoors, but also for dry, humid and wet rooms

Not suitable,

- for bending over more than one plane or s-shape

Characteristics

Cable designed for continuous standard duty environment, specially adapted for use on monospiral with continuous bending IN ONE PLANE ONLY

Typical applications
- movable equipment e.g. Stacker / Reclaimer
- all horizontal operating machinery with travel speed up to 120 m/min
- material handling machines in rough chemical environment e.g. Urea, Sulfur

Electrical parameters

Rated voltage	Uo/U =	3.6 / 6 kV
	Uo/U =	6.0 / 10.0 kV
	Uo/U =	8.7 / 15.0 kV

Mechanical load-bearing capacity

Travel speed	up to 120 m/min
Minimum bending radii	according to DIN VDE recommendation D = 1,5 x height of flat reeling cable (d)

Tensile load-bearing capacity 15 N/mm² (please refer to table)

Thermal / Chemical specifications

Ambient temperature	- flexing	-35°C... +80°C
	- fixed	-50°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
- UV-resistant
- low flammability according to IEC 60332-1
- LBS-free/silicone free

Design features

Conductor	flexible copper class 5
Sheath	abrasion-resistant rubber compound EPR, min 5GM5
Core insulation	special rubber compound
Type	(N)TSFLCGEWOEU
Brand Index	Rheyfirmflat, Panzerflat

Special versions available on request

Conductix-Wampfler Cable WGF
Order information

Type of cable	Number of conductors and cross section [mm²]	Geometry d – B(1 min/max [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required(2
Flat Power cable WGF I 3.6/6 kV	3 x 35 + 3 x 25 / 3E	25.5 – 68.2 28.5 – 72.2	1.346	3.25	1.575	•
	3 x 50 + 3 x 25 / 3E	28.0 – 74.1 31.0 – 78.1	1.838	3.98	2.250	•
	3 x 70 + 3 x 25 / 3E	29.7 – 79.2 32.7 – 83.2	2.573	4.87	3.150	•
	3 x 95 + 3 x 50 / 3E	31.7 – 84.7 34.7 – 89.7	3.518	5.92	4.275	•
	3 x 120 + 3 x 70 / 3E	35.1 – 92.9 38.1 – 97.9	4.515	7.42	5.400	•
Flat Power cable WGF I 8.7/15 kV	3 x 35 + 3 x 25 / 3E	28.7 – 76.2 31.7 – 80.2	1.346	3.82	1.575	•
	3 x 50 + 3 x 25 / 3E	30.2 – 80.7 33.2 – 84.7	1.807	4.44	2.250	•
	3 x 70 + 3 x 25 / 3E	33.3 – 87.5 36.3 – 92.5	2.573	5.61	3.150	•
	3 x 95 + 3 x 50 / 3E	35.3 – 93.5 38.3 – 98.5	3.518	6.7	4.275	•
	3 x 120 + 3 x 70 / 3E	37.3 – 99.5 40.3 – 104.5	4.515	8.0	5.400	•

Pre-confectioned cable terminations available on request, please also refer to page 71

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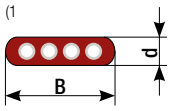

(2 The Minimum Order Quantity varies between 300 m and 500 m, please contact us.

Conductix-Wampfler Cable WGF-D

Order information

Type of cable	Number of conductors and cross section [mm²]	Geometry d – B[1 min/max [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity required[2
Flat Power cable WGF-D I 3.6/6 kV	3 x 35 + 4 x 25 / 4E + 1 x (6F0)	24.5 – 83.5 27.5 – 88.5	1.346	3.700	1.575	•
	3 x 50 + 4 x 25 / 4E + 1 x (6F0)	27.0 – 90.9 30.0 – 95.9	1.838	4.530	2.250	•
	3 x 70 + 4 x 35 / 4E + 1 x (6F0)	28.7 – 97.7 31.7 – 102.7	2.573	5.590	3.150	•
	3 x 95 + 4 x 50 / 4E + 1 x (6F0)	30.6 – 105.3 33.6 – 110.3	3.518	6.720	4.275	•
Flat Power cable WGF-D I 6/10 kV	3 x 35 + 4 x 25 / 4E + 1 x (6F0)	25.3 – 86.7 28.3 – 91.7	1.346	3.870	1.575	•
	3 x 50 + 4 x 25 / 4E + 1 x (6F0)	27.8 – 94.1 30.8 – 99.1	1.838	4.730	2.250	•
	3 x 70 + 4 x 35 / 4E + 1 x (6F0)	29.5 – 100.9 32.5 – 105.9	2.573	5.800	3.150	•
	3 x 95 + 4 x 50 / 4E + 1 x (6F0)	31.4 – 108.5 34.4 – 113.5	3.518	6.940	4.275	•
Flat Power cable WGF-D I 8.7/15 kV	3 x 35 + 4 x 25 / 4E + 1 x (6F0)	28.5 – 96.6 31.5 – 101.9	1.346	4.610	1.575	•
	3 x 50 + 4 x 25 / 4E + 1 x (6F0)	30.0 – 102.9 33.0 – 107.9	1.838	5.340	2.250	•
	3 x 70 + 4 x 35 / 4E + 1 x (6F0)	31.7 – 109.7 33.7 – 114.7	2.573	6.460	3.150	•

Pre-confectioned cable terminations available on request, please also refer to page 71

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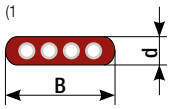


(2 The Minimum Order Quantity varies between 300 m and 500 m, please contact us.

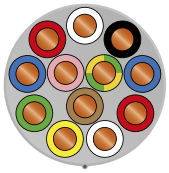
Conductix-Wampfler Cable WGF / WGF-D
Technical data

Electrical parameters	rated voltage	UoU = 600/1000V
	maximum permitted AC operating voltage	UoU = 8700/1500V
	maximum permitted DC operating voltage	UoU = 1200/2000V
	ampacity	according to table data, otherwise according to VDE 0298 part 4 (1)
	AC test voltage	11 kV - 17 kV - 24 kV
Thermal parameters	ambient temperature	flexing -25°C to +80°C for temperatures below -35°C please consult with us fixed -50°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	recommendation cable D = 1.5 x height of cable (d)
	tensile load bearing capacity	according to data table
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
	resistant to moisture	yes
	oil resistant	yes
	halogen free	no
	resistant to Sulfur	yes
	resistant to Urea	yes
Materials		
	insulation	EPR (ethylene-propylene-rubber) or comparable rubber compounds according to VDE
	outer sheath	abrasion-resistant sheath quality 5GM5 or comparable compounds acc VDE 078.21
	color	red
Design features	conductor	tinned electrolytic copper, flexible, class 5 or according to DIN VDE 0295 - IEC 60228
	conductor coding	cores lay in parallel, earth core equally concentric over phase cores with fiber optic additional core
Standards		
		according to DIN VDE 0250
Design Codes		(N)TSFLCEWOEU

(1) Current-carrying capacity:
Higher values can be permissable in specific cases.
Please consult with us.

Conductix-Wampfler Cable C800

PVC extra flexible round cable for reeling applications and machine wiring



- Standardized special PVC cable for reeling purposes
- Multiconductor for control, signal and power transfer
- Multi-colored conductors visible through special transparent outer pvc jacket
- Easy jacket removal due to integrated tear-up cord

Particularly suitable,

- on spring reels and extension reels with minimum bending radius
- as a compact solution with higher tensile loads

Not or restricted suitable,

- for level wind reeling applications
- for installations with deflecting pulley (please consult with us)
- for use in water

CONDUCTIX WAMPFLER C800.... mm² 0.6/1 KV ww-yyyy

Characteristics

Cable designed for compact reeling applications and machine wiring

Typically used on applications – specially spring reels - with limited space and economically driven requirements

Electrical parameters

Rated voltage	Uo/U = 0.6 / 1 kV

Mechanical load-bearing capacity

Travel speed	up to 60 m/min horizontal
Minimum bending radii	static 3 x Ø dynamic 8 x Ø

Thermal specifications

Ambient temperature	flexing:	-10°C... +60°C
	fixed:	-10°C... +60°C

Highest allowance on operational temperature at conductor: 80°C

Important features

- oil resistant
- UV-resistant
- low flammability according to IEC 60332-1, class 3 (not tested)
- voltage test IEC 60502-1

Design features

Conductor	steel and copper strands up to 3 mm² copper for sections > 3 mm²
Core	mass-colored core insulation, marking according NF C 32090 ch 7.3 CEI 502
Sheath	Transparent PVC sheath with integrated tear-up cord for easy jacket removal

Short length of lay for higher flexibility

NOT suitable on level wind reeling applications

Anchor devices	use adapted devices only, dedicated cable mesh grips and spring shock absorbers
Type	C800

Conductix-Wampfler Cable C800
Order information

Type of cable	Number of conductors and cross section [mm²]	Outer – Ø max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/m]	Permitted tensile load [N]	Minimum Order Quantity required
Control cable C800 I 0.6/1 kV	2 x 1	5.7	19.2	0.046	40	-
	3 G 1	6.0	28.8	0.059	60	-
	4 G 1	6.8	38.4	0.075	80	-
	6 G 1	8.0	57.6	0.110	120	-
	8 G 1	9.7	76.8	0.157	160	-
	10 G 1	10.6	96.0	0.181	200	-
	12 G 1	12.2	115.2	0.232	240	-
	15 G 1	12.9	144.0	0.260	240	-
Control or Power cable C800 I 0.6/1 kV	3 G 2	7.1	57.6	0.093	120	-
	4 G 2	8.0	76.8	0.120	160	-
	5 G 2	8.7	96.0	0.149	200	-
	6 G 2	9.8	115.2	0.181	240	-
	4 G 3	10.4	115.2	0.199	240	-

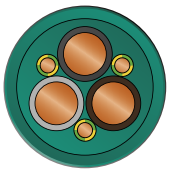

CONDUCTIX
Wampfler

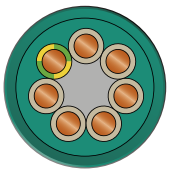
Conductix-Wampfler Cable C800
Technical data

Electrical parameters	rated voltage	UoU = 600/1000V
	maximum permitted AC operating voltage	UoU = 700/1200V
	maximum permitted DC operating voltage	UoU = 900/1800V
	AC test voltage	according to IEC 60502-1
Thermal parameters		
	ambient temperature	flexing -10°C to +60°C fixed -10°C to +60°C
	maximum permitted operating temperature at conductor	80°C
	short-circuit temperature at conductor	110°C
Mechanical parameters		
	minimum radii for continuous flexing	6 x Ø on spool
	tensile load bearing capacity	according to data table
Chemical parameters		
	combustion behaviour	of low flammability according to DIN VDE 0482 part 265-2-1; IEC 60332-1
	resistant to ozone	no
	resistant to humidity	yes
	UV-resistant	yes
	resistant to moisture	yes
	oil resistant	yes
	halogene free	no
Materials		
	insulation	special PVC compound
	inner sheath	special PVC compound
	outer sheath	special PVC compound
	color	transparent
Design features	conductor	flexible copper, category 5 according to DIN VDE 0295 / IEC 60228
	conductor coding	colored, code norm NFC 32090, CH 7.3, CE 502
Brand		Conductix-Wampfler

Conductix-Wampfler Cable GPM-RF

PUR round reeling cable





- Flexible reeling cable designed for heavy duty reeling applications
- Stringent characteristics of the insulation cover and the double sheath make this cable suitable for use on reeling systems for power supply of moving machines
- Wear resistant polyurethane sheath plus high flexibility in combination with the use of best materials demonstrate excellent mechanical features

Particularly suitable,

- for spring and motorized reels with max speed of 90 m/min
- higher dynamic loads act on the system
- for use outdoors, but also for dry, humid and wet rooms
- the priority is a cost-effective, yet reliable system
- the operating temperatures range from -25°C up to 60°C
- for all spool types in accordance with the minimum bending radius;

Not or restricted suitable,

- for level wind reeling applications
- for installations with deflecting pulley (please consult with us)
- for use in water

CONDUCTIX WAMPFLER GPM-RF... mm² 0.6/1 KV ww-yyyy

Characteristics

Cable designed for continuous heavy duty environment, specially adapted for use on random winding reels and monospiral reels

Typical applications
- power supply to all horizontally operating machinery with travel speed up to 90 m/min

Electrical parameters

Rated voltage	Uo/U = 0.6 / 1 kV

Mechanical load-bearing capacity

Travel speed	up to 90 m/min horizontal
Minimum bending radii	6 x Ø on spool 9 x Ø on guiding device 4 x Ø on anti-tension drum

On pulley not recommended – please consult with us

Tensile load-bearing capacity 20 N/mm² (please refer to table)

Thermal / Chemical specifications

Ambient temperature	flexing:	-25°C... +60°C
	fixed:	-30°C... +60°C

Highest allowance on operational temperature at conductor: 80°C

Short circuit temperature at conductor: 200°C

Important features
- halogene free
- resistant to ozone
- oil resistant
- UV-resistant
- low flammability according to IEC 60332-1, class 3 (not tested)
- voltage test IEC 60502-1

Design features

Conductor	flexible copper class 5 acc: IEC60228 / VDE 0295 / BSI 6360
Sheath	highly abrasion-resistant polyurethane sheath
4 G core ins	phase special crosslinked elastomer earth special crosslinked elastomer,
3+3 E core ins	phase special crosslinked elastomer earth polypropylene
Multi core ins	polypropylene
Jacket color	RAL 6032 (green)

Conductix-Wampfler Cable GPM-RF
Order information

Type of cable	Number of conductors and cross section [mm²]	Outer – Ø min./max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/km]	Permitted tensile load [N]	Minimum Order Quantity
Control cable GPM-RF I 0.6/1 kV	7 G 2.5	13.0 – 15.0	155	280	350	10 m
	12 G 2.5	15.0 – 17.5	260	410	600	10 m
	20 G 2.5	29.0 – 21.0	445	660	1.000	10 m
	24 G 2.5	21.0 – 24.0	533	820	1.200	10 m
	30 G 2.5	22.0 – 24.0	648	900	1.500	10 m
	39 G 2.5	25.0 – 28.0	855	1.160	1.950	10 m
Power cable GPM-RF I 0.6/1 kV	4 G 10	16.0 – 18.0	384	550	800	10 m
	4 G 16	19.3 – 21.5	614	850	1.280	10 m
	4 G 25	23.9 – 26.5	960	1.300	2.000	10 m
	3 x 25 + 3 G 6	23.2 – 25.8	856	1.200	1.500	20 m
	3 x 35 + 3 G 6	26.6 – 29.5	1.030	1.500	2.100	20 m
	3 x 50 + 3 G 10	29.5 – 32.5	1.500	2.150	3.000	20 m
	3 x 70 + 3 G 16	34.0 – 37.5	2.222	3.100	4.200	20 m
	3 x 95 + 3 G 16	39.0 – 42.0	2.814	3.750	5.700	30 m
	3 x 120 + 3 G 25	44.0 – 47.0	3.570	4.900	7.200	20 m
	3 x 150 + 3 G 25	49.0 – 52.5	4.380	5.900	9.000	(1
	3 x 185 + 3 G 35	54.4 – 58.8	6.750	7.400	11.100	(1

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

Conductix-Wampfler Cable GPM-RF
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					
	AC test voltage	according to IEC 60502-1					
		7 G 2.5	**12 G 2.5**	**20 G 2.5**	**24 G 2.5**	**30 G 2.5**	**39 G 2.5**
	current carrying capacity max [A] (1)	20	16	13	12	11	10.0
	voltage drop [V/A.km] (2)	14.0	14.0	14.0	14.0	14.0	14.0
	resistance max [Ohm/km] (3)	7.98	7.98	7.98	7.98	7.98	7.98
		4 G 10	**4 G 16**	**4 G 25**	**3x25+3G6**	**3x35+3G6**	**3x50+3G10**
	current carrying capacity max [A] (1)	75	100	127	127	158	192
	voltage drop [V/A.km] (2)	3.46	2.22	1.46	1.46	1.06	0.76
	resistance max [Ohm/km] (3)	1.91	1.21	0.78	0.78	0.55	0.39
			3x70+3G16	**3x95+3G25**	**3x120+3G20**	**3x150+3G25**	**3x185+3G35**
	current carrying capacity max [A] (1)		246	298	346	395	450
	voltage drop [V/A.km] (2)		0.56	0.44	0.36	0.31	0.26
	resistance max [Ohm/km] (3)		0.27	0.21	0.16	0.13	0.11
Thermal parameters	ambient temperature	flexing -25°C to +60°C fixed -30°C to +60°C					
	maximum permitted operating temperature at conductor	80°C					
	short-circuit temperature at conductor	200°C					
Mechanical parameters	minimum radii for continuous flexing	6 x Ø on spool 4 x Ø on anti-tension drum 9 x Ø on guiding device – PULLEY NOT RECOMMENDED					
	tensile load bearing capacity	according to data table					
Chemical parameters	combustion behaviour	of low flammability according to DIN VDE 0482 part 265-2-1; IEC 60332-1					
	resistant to ozone	yes					
	resistant to humidity	yes					
	UV-resistant	yes					
	resistant to moisture	yes					
	oil resistant	yes					
	halogene free	Yes					
Materials	insulation power	4G & 3+3 phase: special cross linked elastomer 4G earth: special cross linked elastomer 3+3 earth: polypropylene					
	insulation multi conductor control	polypropylene insulation					
	inner sheath	special polyurethane compound					
	outer sheath	special polyurethane compound					
	color	green RAL 6032					
Design features	conductor	flexible copper, category 5 according to DIN VDE 0295 / IEC 60228					
	stranding	4G & 3+3: Short length of lay and assembled conductors around a polypropylene reinforced filler multi conductor control: short length of lay and assembled conductors around an elastomer filler					
	conductor coding	4G & 3+3: green/yellow, brown, black, grey multi conductor control: green yellow, black with printed numbers					
Brand		Conductix-Wampfler					
Marking		CONDUCTIX-WAMPFLER GPM-RF …G…. mm^2 0.6/1 KV ww-yyyy					

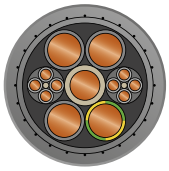
(1) cable laid straight on the ground at +30°C

(2) cos phi = 0,8 / temperature of cores = +90°C

(3) DC resistance of a core at +20°C

Conductix-Wampfler Cable RXP / RXP-D

Heavy duty PUR round reeling cable



- Maximum load bearing capacity due to an additional embedded support element in the center of the design
- Compact and very robust double sheath design, with embedded braid in between inner and outer sheath to answer highest torsional forces
- Short length of lay for better rigidity and excellent resilience
- Sandwich double sheath, outer sheath with special compounds providing very high wear resistance

Particularly suitable,

- for high tensile loads in combination with very high speeds occur
- if extreme torsional forces must be absorbed in addition to higher speed
- if cable is operating in these severe conditions continuously and subjected to guide rollers
- if reel sizes need to be kept to the smallest possible size due to space limitations
- if the priorities are reliability and durability

Characteristics

Cable designed for heavy duty environment with high tensile strength for use on reels, particularly suitable on motorized cable reels

Typical applications
Horizontal and vertical applications operating at higher speed and higher acceleration:
- transfer cars
- lifting equipment
- bulk material handling machinery
- automated parking systems

Electrical parameters

Rated voltage	Uo/U = 0.6 / 1 kV

Mechanical load-bearing capacity

Travel speed	up to 180 m/min horizontal
Minimum bending radii	6 x Ø reeling 7.5 x Ø for rollers

Minimum distance for S-type forced guide pulley 20 x Ø

Excellent tensile load bearing capacity due to additional support element and double sheath design (please refer to table)

Thermal / Chemical specifications

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

Highest allowance on operational temperature at conductor: 90°C

Short circuit temperature at conductor: 200°C

Important features
- resistant to ozone
- oil resistant
- UV-resistant
- low flammability according to IEC 60332-1
- LBS-free/silicone free

Design features

Conductor	flexible copper class 5
Sheath	wear-resistant PUR compound
Core	halogene free polyester or similar
Type	12YHRDT11YH/12HRDTC11YH
Brand Index	Trommelflex PUR-HF Rheycord-PUR-R or equal

Special versions available on request
UL/ CSA approbation available on request

Conductix-Wampfler Cable RXP
Order information

Type of cable	Number of conductors and cross section [mm²]	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 RXP I 0.6/1 kV	4 G 1.5	10.0 – 11.2	61	155	150	-
	5 G 1.5	10.6 – 11.8	81	178	188	-
	7 G 1.5	12.1 – 13.5	115	218	263	-
	12 G 1.5	15.4 – 17.0	196	363	450	-
	18 G 1.5	16.3 – 18.1	271	459	675	-
	24 G 1.5	18.7 – 20.9	392	590	900	-
	30 G 1.5	21.6 – 24.0	450	720	1.125	-
	42 G 1.5*	28.5 – 30.5	624	1.192	2.200	-
	4 G 2.5	11.1 – 12.3	99	208	250	-
	5 G 2.5	11.8 – 13.0	125	230	313	-
	7 G 2.5	13.3 – 14.7	180	315	438	-
	12 G 2.5	18.5 – 20.5	308	485	750	-
	18 G 2.5	18.5 – 20.5	451	679	1.125	-
	24 G 2.5	21.2 – 23.6	616	860	1.500	-
	30 G 2.5	25.4 – 28.2	771	1.080	1.875	-
Power cable RXP I 0.6/1 kV	4 G 4	12.2 – 13.6	160	281	400	-
	4 G 6	13.3 – 14.9	241	372	600	-
	4 G 10	17.1 – 18.9	404	615	1.000	-
	4 G 16	19.9 – 22.1	645	924	1.600	-
	4 G 25	22.9 – 25.5	1.005	1.270	2.500	-
	4 G 35	27.2 – 30.0	1.417	1.778	3.500	-
	5 G 4	13.1 – 14.5	200	318	500	-
	5 G 6	14.5 – 16.1	317	435	750	-
	5 G 10	18.5 – 20.5	528	704	1.250	-
	5 G 16	21.8 – 24.2	816	1.067	2.000	-
	5 G 25	27.5 – 30.5	1.428	1.590	3.125	•
	14 G 4	22.7 – 25.3	616	819	1.400	-
	20 G 4	24.3 – 25.9	768	1.100	1.600	•
	7 G 6*	20.0 – 21.4	429	715	1.050	-

* Yellow outer sheath

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

Conductix-Wampfler Cable RXP-D

Order information

Type of cable		Number of conductors and cross section [mm²]	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	[1	4 x (2 x 1)C	14,4-15,0	111	253	200	-
	[1	6 x (2 x 1)C	21,0-23,0	265	597	300	-
RXP-D I 0.6/1 kV	[1	4 x 2 x AWG22	12,6-13,6	586	164	300	-
		12 G 62.5/125µ	13-15		170	200	-
Control + Data cable							
		19 G 2.5 + 5 x 1.5 C	21,2-23,8	563	850	1.188	-
		12 x 4 G 2.5 + 2 x 2 x 0.25 CAN	39,0-41,0	1.420	2.298	3.000	-
RXP-D I 0.6/1 kV							
	[1	4 G 6 + 4 x (2 x 1.5) C	22,3-24,3	525	851	600	-
		4 G 16 + 2 x (4 x 1.5) C	24,0-25,6	840	1.184	1.600	-
	[1	4 G 35 + 2 x (4 x 1.5) C	33,5-36,5	1.635	2.380	3.500	-
	[1	13 G 4 + 2 x (2 x 1) C	24,3-26,9	575	943	1.500	-
	[1	17 G 4 + 2 x (2 x 1) C	26,7-29,5	701	1.127	1.500	-
	[1	25 G 4 + 2 x (2 x 1) C	32,6-36,2	1.020	1.637	2.250	•
Power+ Data cable							
	[1	5 G 6 + 2 x (2 x 1) C	19,3-21,3	345	670	750	-
	[1	13 G 6 + 2 x (2 x 1) C	28,4-31,4	838	1.266	1.500	•
RXP-D I 0.6/1 kV	[1	17 G 6 + 2 x (2 x 1) C	30,3-33,5	1.070	1.556	2.250	•
	[1	25 G 6 + 2 x (2 x 1) C	38,1-42,2	1.500	2.270	2.500	•
	[1	5 G 16 + 4 x (2 x 0,75) C	29,0-30,5	889	1.468	1.600	-
	[1	5 G 6 + 12 FO	19-21	288	500	600	-
	[1	5 G 16 + 12 FO	25-28	768	1.100	1.600	•
	[1	5 G 25 + 12 FO	30-33	1.200	1.600	2.500	•
	[1	5 G 35 + 12 FO	33-36	1.680	2.100	3.500	•

[1 Brand: Conductix-Wampfler

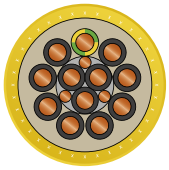
[2 The Minimum Order Quantity varies between 300 m and 500 m, please contact us.

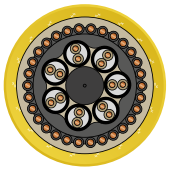
Conductix-Wampfler Cable RXP / RXP-D
Technical data

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	3.5 kV
Thermal parameters	ambient temperature	flexing -40°C to +80°C for temperatures below -30°C please consult with us fixed -50°C to +90°C
	maximum permitted operating temperature at conductor	90°C
	short-circuit temperature at conductor	200°C
Mechanical parameters	minimum radii for continuous flexing	6 x Ø for reeling 7.5 x Ø fixed diversion rollers / assemblies
	minimum distance between 2 changes of direction (e.g. S shaped track curves)	20 x Ø
	tensile load bearing capacity	according to data table
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
	suitability for temporary use in water	yes, up to depth of 50 m, for permanent use in water please consult with us
	oil resistant	yes
	halogen free	yes
	resistant to Urea	no
Materials		
	insulation	based on polyester or comparable compounds
	inner sheath	polyurethane
	supporting element	textile element centrally embedded
	outer sheath	wear-resistant polyurethane
	color	black
Design features		
	conductor	bare electrolytic copper, category 5 according to DIN VDE 0295
	reinforcement	central strain relief from textile threads
	stranding	in layers, maximum 3 layers, short length of lay
	conductor coding	according to DIN VDE 0293 part 308, up to 5 cores colored, >5 cores white with black numbers or vice-versa, with green/yellow earth conductor
Design Codes	12YHRDT11YH	12YH core insulation based on polyster, halogene free RDT round cables for use on reels 11YH material for inner and outer sheathing polyurethane, halogene free

Conductix-Wampfler Cable RXG / RXG-D

Heavy duty rubber round reeling cable





- Maximum torsional rigidity and high load bearing capacity due to an additional embedded braid in between inner and outer sheath
- Insensitive to external mechanical load due to a robust and wear-resistant rubber sheathing material
- Very high rigidity as a result of a very small stranding lay
- High axial rigidity due to optimally interlinked inner and outer sheaths in a 2-layer "sandwich" structure
- Specially concepted composite versions for control and data transmission as well as control and fiber optic available

Particularly suitable,

- if very high combined tensile and bending loads occur during the operation (e.g. spreader)
- if extreme torsional forces exist, which must be absorbed
- if very high speed and acceleration exist and require compact and robust design to cope
- if cable is operating through diversion rollers

Characteristics

Highly resilient round cables with high tensile strength for use on reels
Main application: motorized cable reels

Typical applications
- vertical applications operating at high speed and acceleration
- horizontal applications > 120 m/min
- continious heavy duty operation e.g. cranes in ports
- floating grab dredger with water submersion

Electrical parameters

Rated voltage	Uo/U = 0.6 / 1 kV

Mechanical load-bearing capacity

Travel speed	up to 240 m/min horizontal reeling up to 120 m/min vertical reeling (> 180 m/min on request)
Minimum bending radii	6 x Ø for reeling 7.5 x Ø on diversion rollers assemblies 20 x Ø for s-shaped track curves
Minimum distance for S-type forced guide pulley	20 x Ø
Tensile load-bearing capacity	30 N/mm² for higher tensile load capacity cables please refer to product line RXX.

Thermal / Chemical specifications

Ambient temperature	flexing:	-35°C... +80°C
	fixed:	-50°C... +80°C

Special compounds for low temperature ranges up to -50°C available on request

Important features
- resistant to ozone
- waterproof
- oil-resistant
- UV-resistant
- LBS-free / silicone-free
- of low flammability

Design features

Conductor	particularly flexible class 5 or „FS"
Sheath	wear-resistant rubber compound base material PCP or equal
Sheath Color	yellow or black
Core insulation	special rubber compound based on EPR
Type	(N)SHTOEU-J
Brand Index	Cordaflex SMK, Panzerflex-VS, Rheycord RTS or equal

Conductix-Wampfler Cable RXG
Order information

Type of cable	Number of conductors and cross section [mm²]	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 RXG I 0.6/1 kV	5 x 1.5	13.0-14.6	75	280	225	-
	7 x 1.5	15.2-17.2	106	385	315	•
	12 x 1.5	21.4-23.4	182	710	540	-
	18 x 1.5	21.3-23.3	272	760	810	-
	24 x 1.5	23.8-26.8	363	990	1.080	-
	30 x 1.5	26.6-29.6	454	1.220	1.350	•
	36 x 1.5	26.5-29.5	543	1.260	1.620	•
	44 x 1.5	29.5-32.5	664	1.530	1.980	•
	56 x 1.5	34.9-37.9	845	2.050	2.520	•
	4 x 2.5	13.2-14.8	101	305	300	-
	5 x 2.5	14.2-15.8	126	355	375	-
	7 x 2.5	16.6-18.6	176	510	525	-
	12 x 2.5	23.4-25.4	302	920	900	-
	18 x 2.5	23.3-25.3	454	1.005	1.350	-
	24 x 2.5	26.2-29.2	605	1.320	1.800	-
	30 x 2.5	29.4-32.4	756	1.660	2.250	-
	36 x 2.5	30.3-33.3	907	1.720	2.700	-
	44 x 2.5	34.1-37.1	1.109	2.230	3.300	-
	56 x 2.5	40.1-43.1	1.408	2.940	4.200	•
Power cable RXG I 0.6/1 kV	4 x 4.0	16.0-18.0	161	455	480	•
	4 x 6.0	17.4-19.4	242	575	720	•
	4 x 10.0	21.6-23.6	424	905	1.200	•
	4 x 16.0	23.7-26.7	645	1.240	1.920	-
	4 x 25.0	28.5-31.5	1.020	1.850	3.000	-
	5 x 4	17.4-19.4	201	430	600	•
	5 x 6	19.0-21.0	302	690	900	-
	5 x 10	23.4-25.4	503	1.080	1.500	-
	5 x 16	26.1-29.1	805	1.500	2.400	-
	3 x 35 + 3 x 16/3	28.5-31.5	1.220	2.160	3.150	•
	3 x 50 + 3 x 25/3	34.4-37.4	1.764	2.850	4.500	-
	3 x 70 + 3 x 35/3	39.7-42.7	2.470	3.920	6.300	•
	3 x 95 + 3 x 50/3	44.3-47.3	3.377	5.020	8.550	•
	3 x 120 + 3 x 70/3	51.0-55.0	4.334	6.630	10.800	•
	3 x 150 + 3 x 70/3	53.9-57.9	5.242	7.690	13.500	•
	3 x 185 + 3 x 95/3	58.9-62.9	6.552	9.310	16.650	•
	3 x 240 + 3 x 120/3	67.4-71.4	8.870	12.200	21.600	•
Power cable RXG I 0.6/1 kV Low Temperature max. -50 °C [3]	3 X 50 + 3 X 25/3	32.9 - 36.0	1.680	2.520	3.000	•
	3 X 70 + 3 X 35/3	38.9 - 42.0	2.352	3.490	4.200	•
	3 X 95 + 3 X 50/3	42.4 - 46.5	3.216	4.460	5.700	•
	3 X 120 + 3 X 70/3	47.9 - 52.0	4.128	5.640	7.200	•
	3 X 150 + 3 X 70/3	51.7 - 55.8	4.992	6.710	9.000	•
	3 X 185 + 3 X 95/3	56.2 - 60.3	6.240	7.860	11.100	•
	3 X 240 + 3 X 120/3	64.2 - 68.3	8.064	10.800	14.400	•

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

[3] Also available with fiber optic on request

Conductix-Wampfler Cable RXG-D

Order information

Type of cable		Number of conductors and cross section [mm²]	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 RXG – D I 0.6/1 kV		6 x (2 x 1) C	28.9 – 31.9	460	1.330	360	-
		9 x (2 x 1) C	31.0 – 33.0	350	1.200	450	•
		12 G 62.5 -125	14.0 – 16.0	-	240	2.000	-
		24 G 62.5 -125	14.0 – 16.0	-	240	2.000	•
		12 G 50 - 125	14.0 – 16.0	-	240	2.000	•
		24 G 50 - 125	14.0 – 16.0	-	240	2.000	•
		12 E 9 - 125	14.0 – 16.0	-	240	2.000	•
Control + Data cable RXG-D I 0.6/1 kV		12 x 2.5 + 12 x 1 CE	26.2 – 29.2	545	1.230	900	•
		19 x 2.5 + 5 x 1 CE	26.2 – 29.2	585	1.290	1.575	-
		25 x 2.5 + 5 x 1 CE	29.4 – 32.4	736	1.620	975	-
	(1	24 x 2.5 + 6 x (2 x 1) C	37.0 – 40.0	825	2.000	1.800	-
		30 x 1.5 + 7 x (2 x 1) C	42.5 – 45.5	612	2.800	1.350	•
	(1	4 x 2.5 + 12 FO	21.0 – 24.0	96	620	300	•
	(1	12 x 2.5 + 12 FO	23.0 – 25.0	288	830	900	-
	(1	22 x 2.5 + 18 FO	27.0 – 29.0	528	1.120	16.050	•
	(1	34 x 2.5 + 12 FO + 12 FO	34.0 – 37.0	816	1.900	2.550	•
	(1	45 x 2.5 + 12 FO + 12 FO	36.0 – 39.0	1.080	2.100	3.375	•
Power + Data cable RXG-D I 0.6/1 kV		3 x 25 + 2 x 16/2 + 12 FO	31.5 - 34.5	894	1.340	1.500	•
		3 x 35 + 2 x 16/2 + 12 FO	31.5 - 34.5	1.181	1.794	2.100	•
		3 x 50 + 2 x 25/2 + 12 FO	37.5 - 40.5	1.680	2.516	3.000	•
		3 x 70 + 2 x 35/2 + 12 FO	39.0 - 42.0	2.352	3.494	4.200	•
		3 x 95 + 2 x 50/2 + 12 FO	43.0 - 46.0	3.216	4.466	5.700	•
		3 x 120 + 2 x 70/2 + 12 FO	48.0 - 52.0	4.128	5.640	7.200	•
		3 x 150 + 2 x 70/2 + 12 FO	52.0 - 56.0	4.992	6.713	9.000	•
		3 x 185 + 2 x 95/2 + 12 FO	56.0 - 61.0	6.240	7.865	11.100	•
		3 x 240 + 2 x 120/2 + 12 FO	64.0 - 70.0	8.064	10.800	14.400	•
Power + Control cable RXG-D I 0.6/1 kV		5 x 25 + 12 x 1.5	41.4 – 42.2	1.517	2.950	3.750	•

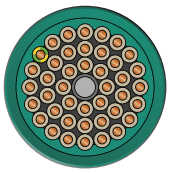
(1 Brand: Conductix-Wampfler

(2 The Minimum Order Quantity varies between 300 m and 600 m, please contact us.

Conductix-Wampfler Cable RXG / RXG-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	2.5 kV
Thermal parameters	ambient temperature	flexing -35°C to +80°C special compounds for low temperature ranges up to -50°C available on request fixed -50°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	6 x Ø for reeling 7.5 x Ø fixed diversion rollers / assemblies
	minimum distance between 2 changes of direction (e.g. S shaped track curves)	20 x Ø
	tensile load bearing capacity	according to data table
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
	suitability for temporary use in water	yes, up to depth of 50 m, for permanent use in water please consult with us
	oil resistant	yes
	halogen free	no
Materials	insulation	ethylene-propylene-rubber (EPR)
	inner sheath	polychloroprene (PCP)
	supportive braid	protective braid against torsional stress
	outer sheath	wear resistant polychloroprene (PCP), yellow
Design features		
	conductor	bare electrolytic copper, category 5 according to DIN VDE 0295
	reinforcement	central plastic reinforcement for maximum mechanical properties
	stranding	conductors stranded in layers very short lay
	conductor coding	according to DIN VDE 0293 part 308, 6 or more conductors black with white numbers with green/yellow
Standards		adapted to DIN VDE 0250
Design Codes	(N)SHTOEU-J	(N) adapted to VDE standard SHT 1 kV cable suitable for use on reels OE oil-resistant outer sheath according VDE 0472 part 803 U outer sheath of low flammability according to DIN VDE 0472 part 804

Conductix-Wampfler Cable TRA
PUR round reeling cable



- Flexible Conductix-Wampfler reeling cable designed for heavy duty applications
- Its wear resistant double polyurethane sheath concept with an embedded textile anti twisting braid result in this flexible reeling cable with excellent mechanical characteristics.
- Slim, yet resilient and therefore also suitable for vertical applications

Particularly suitable,

- for spring and motorized reels with maximum speed of 200 m/min
- if high dynamic loads act on the system
- for use outdoors, but also for dry, humid and wet rooms
- if the priority is a heavy duty robust and compact system
- if the operating temperatures range from -25°C up to 60°C
- for all spool types in accordance with the minimum bending radius;

CONDUCTIX WAMPFLER TRA.... mm² 0.6/1 KV www-yyyy

Characteristics

Cable designed for continuous heavy duty operation, specially adapted for use on motorized reels, monospiral, random winding and also level wind reels.

Typical applications
- power and control supply to all horizontally and vertically operating machinery with travel speed up to 200 m/min maximum
- Portal Cranes, Shiploaders, Stacker/Reclaimer

Electrical parameters

Rated voltage	Uo/U = 0.6 / 1 kV

Mechanical load-bearing capacity

Travel speed	up to 200 m/min horizontal & vertical
Minimum bending radii	6 x Ø on spool 9 x Ø on guiding device 4 x Ø on anti-tension drum

On pulley not recommended – please consult with us

Tensile load-bearing capacity 25 N/mm² (please refer to table)

Thermal / Chemical specifications

Ambient temperature	flexing:	-25°C... +60°C
	fixed:	-30°C... +60°C

Highest allowance on operational temperature at conductor: 80°C

Short circuit temperature at conductor: 200°C

Important features
- halogene free
- resistant to ozone
- oil resistant
- UV-resistant
- low flammability according to IEC 60332-1, class 3 (not tested)
- voltage test IEC 60502-1

Design features

Conductor	flexible copper class 5 according to IEC60228 / VDE 0295 / BSI 6360
Sheath	highly abrasion-resistant polyurethane sheath
5 G Core insulation	polypropylene
Multi core insulation	polypropylene
Jacket color	RAL 6032 (green)

Conductix-Wampfler Cable TRA
Order information

Type of cable	Number of conductors and cross section [mm²]	Outer – Ø min. – max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/m]	Permitted tensile load [N]	Minimum Order Quantity required(2
Control cable TRA I 0.6/1 kV	7 G 2.5	13.3 – 14.7	156	300	525	20 m
	12 G 2.5	20.5 – 22.6	268	650	900	20 m
	20 G 2.5	21.0 – 23.1	448	800	1.500	20 m
	24 G 2.5	24.3 – 26.8	533	1.000	1.800	20 m
	28 G 2.5	26.0 – 28.4	672	1.150	2.100	20 m
	42 G 2.5	30.0 – 33.1	947	1.600	3.150	20 m
	54 G 2.5	33.2 – 36.7	1.312	2.000	4.050	20 m
Power cable TRA I 0.6/1 kV	5 G 10	19.5 – 20.5	480	700	1.500	•
	5 G 16	23.0 – 24.0	768	1.005	2.400	•
	5 G 25	27.5 – 28.0	1.200	1.600	3.750	•

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



Conductix-Wampfler Cable TRA
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						
	AC test voltage	according to IEC 60502-1						
		7G2,5	**12G2,5**	**20G2,5**	**24G2,5**	**28G2,5**	**42G2,5**	**54G2,5**
	current carrying capacity max [A] (1)	20	16	13	12	11	10	9
	voltage drop [V/A.km] (2)	14.0	14.0	14.0	14.0	14.0	14.0	14.0
	resistance max [Ohm/km] (3)	7.98	7.98	7.98	7.98	7.98	7.98	7.98
		5G10	**5G16**	**5G25**				
	current carrying capacity max [A] (1)	75	100	127				
	voltage drop [V/A.km] (2)	3.36	2.15	1.42				
	resistance max [Ohm/km] (3)	7.98	7.98	7.98				
Thermal parameters	ambient temperature	flexing -25°C to +60°C fixed -30°C to +60°C						
	maximum permitted operating temperature at conductor	80°C						
	short-circuit temperature at conductor	200°C						
Mechanical parameters	minimum radii for continuous flexing	6 x Ø on spool 4 x Ø on anti-tension drum 9 x Ø on guiding device – PULLEY NOT RECOMMENDED						
	tensile load bearing capacity	according to data table						
Chemical parameters	combustion behaviour	of low flammability according to DIN VDE 0482 part 265-2-1; IEC 60332-1						
	resistant to ozone	yes						
	resistant to humidity	yes						
	UV-resistant	yes						
	resistant to moisture	yes						
	oil resistant	yes						
	halogene free	yes						
Materials	insulation	5 G: polypropylene multi conductor control: polypropylene						
	inner sheath	special polyurethane compound						
	outer sheath	special polyurethane compound						
	color	green RAL 6032						
Design features	conductor	flexible copper, category 5 according to DIN VDE 0295 / IEC 60228						
	stranding	5 G: with central element of reinforcement: extruded elastomer cord with KEVLAR ropes multi conductor control: with reinforced KEVLAR filler						
	conductor coding	5 G: green/yellow, blue, brown, black, grey multi conductor control: green/yellow, black with printed numbers						
Brand		Conductix-Wampfler						
Marking		CONDUCTIX-WAMPFLER TRA …G…. mm^2 0.6/1 KV ww-yyyy						

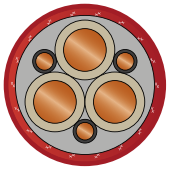
(1) cable laid straight on the ground at +30°C

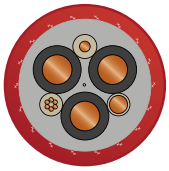
(2) cos phi = 0,8 / temperature of cores = +90°C

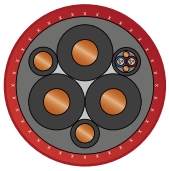
(3) DC resistance of a core at +20°C

Conductix-Wampfler Cable HVR / HVR-D

Rubber round reeling cable







- High torsional rigidity and excellent overall resilience due to special synthetic rubber compound used for inner and outer sheath
- Anti twisting secured through embedded braid between inner and outer sheath made of synthetic yarns with very high tensile load
- Excellent abrasion behavior because of highly durable special heavy duty rubber compound 5GM5
- Reliable data transmission through integrated optical fibre elements (HVR-D version) 12, 24 fibres in loose tubes

Particularly suitable,

- if medium to high dynamic loads are expected during reel operation
- for continuous operation under high loads is to be expected
- if a reliable, robust and very durable cable is required
- if the cable is required to operate through several diversion roller assemblies
- if the operating temperatures can be down to -30°C

CONDUCTIX WAMPFLER HVR ...HVR-FO.... mm² 0.6/1 KV ww-yyyy

Characteristics

Very resilient cable suitable for use on reels
Main application: motorized cable reels

Typical applications
- container cranes main power supply, high travel speeds, high mounting location
- heavy equipment in mining
- Stackers & Reclaimers
- ship unloaders

Electrical parameters

Rated voltage	Uo/U = 3,6 / 6,0 kV
	Uo/U = 6.0 / 10.0 kV
	Uo/U = 8.7 / 15.0 kV
	Uo/U = 12.0 / 20.0 kV

Higher voltage grades available on request

Mechanical load-bearing capacity

Travel speed	up to 180 m/min (> 180 m/min on request)
Minimum bending radii	12 x Ø on the reel 15 x Ø at deflection pulley 20 x Ø at S-type directional changes

Thermal / Chemical specifications

Ambient temperature	- flexing	-30°C... +80°C
	- fixed	-50°C... +80°C

Unlimited resistance to atmospheric corrosion

Important features
- flame retardant
- CFC-free
- oil-resistant
- UV-resistant
- LBS-free / silicone-free

Design features

Conductor	highly flexible, finely stranded (cat. 5 according to EN/IEC60228)
Sheath	high wear-resistant synth. rubber compound
Core insulation	base material EPR-MV in a sandwich process of high-voltage quality
Type	(N)TSCGEWOEU / (N)TSCGEWOEU-FO
Brand	Conductix-Wampfler

Conductix-Wampfler Cable HVR
Order information

Type of cable	Number of conductors and cross section [mm²]	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 HVR 3.6/6 up to 8.7/15 kV	3 x 25 + 3 X 25/3	41.0 – 43.0	1.008	2.540	3.000	•
	3 x 35 + 3 X 25/3	42.0 – 44.0	1.296	2.825	3.000	•
	3 x 50 + 3 X 25/3	46.0 – 49.0	1.728	3.460	3.000	•
	3 x 70 + 3 X 35/3	50.0 – 53.0	2.477	4.400	4.200	•
	3 x 95 + 3 X 50/3	55.0 – 58.0	3.197	5.570	7.125	•
	3 x 120 + 3 X 70/3	on request				•
	3 x 150 + 3 X 70/3	on request				•

Note: Special low temperature versions- 45° C available on request

(2 The Minimum Order Quantity is **250 m**, please contact us.

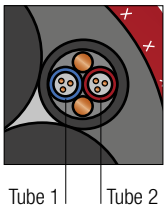
Conductix-Wampfler Cable HVR-D
Order information

Type of cable	Number of conductors and cross section [mm²]	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 HVR-FO I 3.6/6 up to 8.7/15 kV	3x25+2 x 25/2+12FO (1	41.0 – 43.0	1.008	2.600	3.000	•
	3x35+2 x 25/2+12FO (1	42.0 – 45.0	1.296	2.840	3.000	•
	3x50+2 x 25/2+24FO	46.0 – 49.0	1.728	3.475	3.000	•
	3x70+2 x 35/2+24FO	50.0 – 53.0	2.477	4.430	4.200	•
	3x95+2 x 50/2+24FO	55.0 – 58.0	3.197	5.500	7.125	•
	3x120+2 x 70/2+24FO	on request				•
	3x150+2 x 70/2+24FO	on request				•

Note: Special low temperature versions- 45° C available on request

(1 For overall dimensional reasons, smaller sized tube for FO
(2 The Minimum Order Quantity is 250 m, please contact us.

Tube colors of FO-Type combinations



Option 1	**12 FO + 12 FO** arranged in two tubes			
	Type	**Color**		**Color Code** (acc.ANSI/TIA/EIA-598)
	12E9		yellow	fiber 1-12
	12G50		green	fiber 1-12
	12G62,5		blue	fiber 1-12

Option 2	**24 FO** (one type) arranged in two tubes			
	Selection	**Color**		**Color Code** (acc.ANSI/TIA/EIA-598)
	Tube 1	see above		fiber 1-12
	Tube 2		red	fiber 13-24

Conductix-Wampfler Cable HVR / HVR-D
Technical data

Electrical parameters	rated voltage Uo/U		6.0 / 10.0 kV	8.7 / 15.0 kV	12.0 / 20.0 kV
	maximum permitted AC operating voltage Uo/U		7.0 / 12.0 kV	10.2 / 18.0 kV	14.0 / 24.0 kV
	maximum permitted DC operating voltage Uo/U		9.0 / 18.0 kV	13.0 / 26.0 kV	18.0 / 36.0 kV
	ampacity		according to table data, otherwise according to DIN VDE 0298 part 4		
	AC test voltage		according to DIN VDE 0250 part 813		
Thermal parameters	ambient temperature		flexing -30°C to +80°C fixed -50°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		12 x Ø on the reel 15 x Ø at deflection pulley 20 x Ø minimum distance at S-type directional changes		
	torsional stress		± 25°/m		
	tensile load-bearing capacity		20 N/mm^2 conductor cross section during operation for flexing cables		
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		
	UV-resistant		yes		
	oil-resistant		yes		
	resistant to humidity		yes		
Materials	insulation & field control		inner semi conductive stress control layer; insulation EPR compound (-HV), outer semi-conductive insulation shield layer (easy strip), all three layers are applied and cross linked in one process		
	sheathing system		inner sheath extruded sheath of GM1b synthetic rubber compound filling the interstices. Outer sheath chlorinated heavy duty rubber compound 5GM5, color red		
Design features	conductor		finely stranded tin-plated electrolytic copper offering high flexibility (exceeding DIN VDE 0295 category 5)		
	stranding		conductors in layers stranded, earth conductor divided into three parts in the interstices (without optic fibers) or halved in the interstices (with optic fibers)		
	conductor coding		black insulation with white numbers		
Standards	optical fiber cable		adapted to DIN VDE 0250 part 814, VDE Reg.-No. 9809 adapted to IEC 9314T.3, DIN VDE 0888		
Design codes	(N)TSCGEWOEU (N)TSCGEWOEU-FO		(N) adapted to a standard TS heavy duty cable CGE conducting non-metallic covering surrounding the insulations outer conductor W resistant to atmospheric corrosion OE oil-resistant outer sheath U outer sheath of low flammability according to DIN EN60332-1-2 FO with fiber optic		
Fiber optic			Mono-Mode	Multi-Mode Gigalite II(*	Multi-Mode Gigalite II(*
	fiber type (core-Ø / fiber-Ø)		E9/125	50/125	62.5/125
	attenuation	at 850 nm	-	≤ 2.6 dB/km (Nom.)	≤ 3.0 dB/km (Nom.)
			-	≤ 0.8 dB/km (Max.)	≤ 3.5 dB/km (Max.)
		at 1310 nm	≤ 0.35 dB/km (Nom.)	≤ 0.8 dB/km (Nom.)	≤ 0.8 dB/km (Nom.)
			≤ 0.40 dB/km (Max.)	≤ 1.0 dB/km (Max.)	≤ 1.5 dB/km (Max.)
		at 1550 nm	≤ 0.20 dB/km (Nom.)	-	-
			≤ 0.28 dB/km (Max.)	-	-
	numeric aperture		0.14 ± 0.02	0.20 ± 0.015	0.275 ± 0.02
	chromatic dispersion 1285-1330 nm ps/nm km		≤ 3.5 ps/nm km	-	-
	chromatic dispersion 1550 nm ps/nm km		≤ 18 ps/nm km	-	-
	band width	at 850 nm	-	> 600 MHz km	> 500 MHz km
		at 1300 nm	-	> 1.200 MHz km	> 500 MHz km

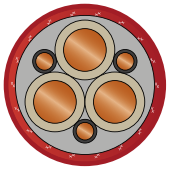
(* Gigalite versions on request.

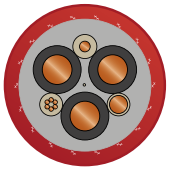
Color Coding:

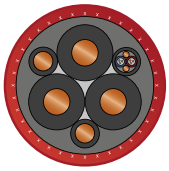
62.5/125 fibres acc.: TIA/EIA-492AAAA-A and IEC/CEI 60793-2-10 type A1b I OM1 fibre type (TIA)
50/125 fibres acc.: TIA/EIA-492AAAB and IEC/CEI 60793-2-10 type A1a.1, ITU-T G.651.1 I OM2 fibre type (TIA)
E9/125 fibres acc.: Reference standard ITU-T G.652D

Conductix-Wampfler Cable WXG / WXG-D

Rubber round reeling cable







- Maximum torsional rigidity due to supporting polyester fibers vulcanized into the sheath
- High electric strength resulting from special insulation materials designed for high-voltage applications
- Fast and easy termination due to an outer layer consisting of semiconducting and cold-strip NBR (easy strip)
- Durable and stabilized stranded bond due to EPR core element and reinforcement in the center of the cable
- Reliable data transmission via integrated fiber-optic cores in 6, 12, 18 or more fibers available
- Unique combination of resilience and resistance by the use of a 3-layer “sandwich” design
- Excellent resilience with the use of very flexible extremely short lay cores

Particularly suitable,

- if medium to high dynamic loads are expected during reel operation
- for continuous operation under high loads is to be expected
- if a reliable, robust and very durable cable is required
- if the cable is required to operate through several diversion rollers assemblies
- if the maximum availability of the equipment is the most important criteria
- if the operating temperatures can reach down to -35°C

Characteristics

Very resilient cable suitable for use on reels
Main application: motorized cable reels

Typical applications
- container cranes main power supply, high travel speeds, high mounting location
- heavy equipment in mining
- Stackers & Reclaimers
- ship unloaders

Electrical parameters

Rated voltage	Uo/U = 6.0 / 6 kV
	Uo/U = 8.7 / 15.0 kV
	Uo/U = 12.0 / 20.0 kV

higher voltage grades available on request

Mechanical load-bearing capacity

Travel speed	up to 240 m/min (> 240 m/min on request)
Minimum bending radii	12 x Ø on the reel 15 x Ø at deflection pulley 20 x Ø minimum distance at S-type directional changes

Thermal / Chemical specifications

Ambient temperature	- flexing -35°C... +80°C
	- fixed -50°C... +80°C

Unlimited resistance to atmospheric corrosion

Important features
- flame retardant
- CFC-free
- oil-resistant
- UV-resistant
- LBS-free / silicone-free
- suitable for limited use in water

Design features

Conductor	highly flexible, finely stranded (exceeding cat. 5 according to DIN VDE 0295)
Sheath	high wear-resistant PCP compound (polychloroprene)
Core insulation	base material EPR in a sandwich process of high-voltage quality
Type	R-(N)TSCGEWOEU / R-(N)TSCGEWOEU-FO
Brand Index	Protolon SMK, Rheyfirm RTS or equal

Conductix-Wampfler Cable WXG
Order information

Type of cable	Number of conductors and cross section [mm²]			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 WXG I 6/10 kV	3 x 25	+	3 G 25/3	38.4 – 41.4	1.008	2.380	1.500	-
	3 x 35	+	3 G 25/3	40.9 – 43.9	1.411	2.880	2.100	-
	3 x 50	+	3 G 25/3	44.4 – 47.4	1.764	3.480	3.000	•
	3 x 70	+	3 G 35/3	49.4 – 53.4	2.621	4.590	4.200	•
	3 x 95	+	3 G 50/3	53.7 – 57.7	3.377	5.660	5.700	•
	3 x 120	+	3 G 70/3	57.2 – 61.2	4.334	6.830	7.200	•
	3 x 150	+	3 G 70/3	62.5 – 66.5	5.242	8.180	9.000	•
Power Cable WXG 8.7/15 kV	3 x 25	+	3 G 25/3	41.8 – 44.8	1.008	2.670	1.500	•
	3 x 35	+	3 G 25/3	44.4 – 47.4	1.411	3.130	2.100	•
	3 x 50	+	3 G 25/3	47.9 – 50.9	1.764	3.810	3.000	•
	3 x 70	+	3 G 35/3	52.9 – 56.9	2.621	4.960	4.220	•
	3 x 95	+	3 G 50/3	57.2 – 61.2	3.377	6.070	5.700	•
	3 x 120	+	3 G 70/3	62.1 – 66.1	4.334	7.480	7.200	•
	3 x 150	+	3 G 70/3	65.9 – 69.9	5.242	8.630	9.000	•
Power Cable WXG I 12/20 kV	3 x 25	+	3 G 25/3	44.8 – 47.8	1.008	2.940	1.500	•
	3 x 35	+	3 G 25/3	47.4 – 50.4	1.411	3.420	2.100	•
	3 x 50	+	3 G 25/3	51.8 – 55.8	1.764	4.300	3.000	•
	3 x 70	+	3 G 35/3	55.9 – 59.9	2.621	5.300	5.250	•
	3 x 95	+	3 G 50/3	61.9 – 65.6	3.377	6.660	5.700	•
	3 x 120	+	3 G 70/3	65.1 – 69.1	4.334	7.800	7.200	•
	3 x 150	+	3 G 70/3	69.0 – 73.0	5.242	9.060	9.000	•

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

Conductix-Wampfler Cable WXG-D

Order information

Type of cable	Number of conductors and cross section [mm²]	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 WXG-D I 6/10 kV	3x25+2 x 25/2+6FO	40.7 – 43.7	1.008	2.610	1.500	•
	3x35+2 x 25/2+6FO	42.7 – 45.7	1.411	3.010	2.100	•
	3x50+2 x 25/2+6FO	46.1 – 49.1	1.764	3.680	3.000	•
	3x70+2 x 35/2+6FO	51.1 – 55.1	2.621	4.810	4.200	•
	3x95+2 x 50/2+6FO	56.1 – 60.1	3.377	6.000	5.700	•
	3x120+2 x 70/2+6FO	60.9 – 64.9	4.334	7.410	7.200	•
	3x150+2 x 70/2+6FO	64.8 – 68.8	5.242	8.750	9.000	•
Power Cable WXG-D I 8.7/15 kV	3x25+2 x 25/2+6FO	43.5 – 46.5	1.008	2.860	1.500	•
	3x35+2 x 25/2+6FO	46.1 – 49.1	1.411	3.330	2.100	•
	3x50+2 x 25/2+6FO	50.5 – 54.5	1.764	4.210	3.000	•
	3x70+2 x 35/2+6FO	55.2 – 59.2	2.621	5.270	4.200	•
	3x95+2 x 50/2+6FO	60.9 – 64.9	3.377	6.640	5.700	•
	3x120+2 x 70/2+6FO	64.4 – 68.4	4.334	7.870	7.200	•
	3x150+2 x 70/2+6FO	68.8 – 72.8	5.242	9.130	9.000	•
Power Cable WXG-D I 12/20 kV	3x25+2 x 25/2+6FO	46.6 – 49.6	1.008	3.150	1.500	•
	3x35+2 x 25/2+6FO	50.1 – 54.1	1.411	3.810	2.100	•
	3x50+2 x 25/2+6FO	54.1 – 58.1	1.764	4.610	3.000	•
	3x70+2 x 35/2+6FO	58.2 – 62.2	2.621	5.640	4.200	•
	3x95+2 x 50/2+6FO	64.0 – 68.0	3.377	7.050	5.700	•
	3x120+2 x 70/2+6FO	68.0 – 72.0	4.334	8.360	7.200	•
	3x150+2 x 70/2+6FO	73.3 – 77.3	5.242	9.840	9.000	•

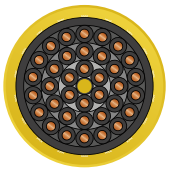
(2 The Minimum Order Quantity varies between 300 m and 500 m, please contact us.

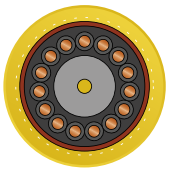
Conductix-Wampfler Cable WXG / WXG-D
Technical data

Electrical parameters	rated voltage Uo/U		6.0 / 10.0 kV	8.7 / 15.0 kV	12.0 / 20.0 kV
	maximum permitted AC operating voltage Uo/U		7.0 / 12.0 kV	10.2 / 18.0 kV	14.0 / 24.0 kV
	maximum permitted DC operating voltage Uo/U		9.0 / 18.0 kV	13.0 / 26.0 kV	18.0 / 36.0 kV
	ampacity		according to table data, otherwise according to DIN VDE 0298 part 4		
	AC test voltage		acording to DIN VDE 0250 part 813		
Thermal parameters	ambient temperature		flexing -25°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		200°C		
Mechanical parameters	minimum bending radii allowing for free movement		12 x Ø on the reel 15 x Ø at deflection pulley 20 x Ø minimum distance at S-type directional changes		
	torsional stress		± 25 °/m		
	tensile load-bearing capacity		20 N/mm^2 conductor cross section during operation for flexing cables		
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		
	UV-resistant		yes		
	oil-resistant		yes		
	resistant to humidity		yes		
Materials	insulation		base material ethylene-propylene-rubber (EPR), suitable for high-voltage (3GI3 minimum)		
	field control		Inner conducting layer consists of semiconducting EPR, outer conducting layer of semiconducting NBR, to be able to be stripped cold (simple stripping method)		
	sheathing system		Inner sheath consisting of a red EPR compound (5GM3 submersible) with polyester reinforced braid for protection against torsional forces. Braid is vulcanized between the inner and outer sheaths in a sandwitch structure. Middle and outer sheath are abrasion and tear resistant PCP (5GM5) based compounds offering excellent resilience (colour: bright red)		
Design features	conductor		finely stranded tin-plated electrolytic copper offering high flexibility (exceeding DIN VDE 0295 category 5)		
	stranding		conductors in layers stranded with lay 7 x D (core diameter), earth conductor divided into three parts in the interstices (without optic fibers) or halved in the interstices (with optic fibers)		
	conductor coding		black insulation with white numbers		
Standards	optical fiber cable		adapted to DIN VDE 0250 part 814, VDE Reg.-No. 9809 adapted to IEC 9314T.3, DIN VDE 0888		
Design codes	(N)TSCGEWOEU (N)TSKCGEWOEU-FO		(N) adapted to a standard TS heavy duty cable K rubber cross in the core of the cable CGE conducting non-metallic covering surrounding the insulations outer conductor W resistant to atmospheric corrosion OE oil-resistant outer sheath U outer sheath of low flammability according to DIN VDE 0472 part 804 (fire-proof) FO with fiber optic		
Fiber optic			Mono-Mode	Multi-Mode	Multi-Mode
	fiber type (core-Ø / fiber-Ø)		E9/125	50/125	62.5/125
	damping	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		0.14 ± 0.02	0.20 ± 0.02	0.275 ± 0.02
	dispersion	at 1300 nm	< 3.5 ps/nm km	-	-
		at 1550 nm	< 3.5 ps/nm km	-	-
	band width	at 850 nm	-	> 400 MHz km	> 400 MHz km
		at 1300 nm	-	> 1.200 MHz km	> 600 MHz km

Conductix-Wampfler Cable RXX

Rubber round reeling cable extra heavy duty





- Maximum load bearing capacity due to an additional embedded support element in the center of the design
- Compact and very robust double sheath design, with embedded braid in between inner and outer sheath to answer for highest torsional forces
- Short length of lay for better rigidity
- Sandwich double sheath, outer sheath with special compounds providing very high wear resistance

Particularly suitable,

- for very high tensile loads in combination with very high speeds occur e.g. Spreader reel application (vertical)
- if extreme torsional forces must be absorbed in addition to high loads and high speed
- if cable is operating in these severe conditions continuously and subjected to guide rollers

Characteristics

Cable designed for extra heavy duty environment with very high tensile strength for use on reels, particularly suitable application: motorized cable reels

Typical applications
- vertical applications operating at high speed and high acceleration (Spreader reels)
- vertical applications operating at high tensile load and contact with water (grab dredger, floating dredgers)

Electrical parameters

Rated voltage	Uo/U = 600 / 1000 V

Mechanical load-bearing capacity

Travel speed	up to 240 m/min vertical reeling * up to 300 m/min data cable
Minimum bending radii	6 x Ø reeling 7.5 x Ø for rollers
Minimum distance for S-type forced guide pulley	20 x Ø
Tensile load-bearing capacity	30 N/mm² (please refer to table)

Thermal / Chemical specifications

Ambient temperature	flexing:	-35°C... +80°C
	fixed:	-50°C... +80°C

Highest allowance on operational temperature at conductor: 90°C

Short circuit temperature at conductor: 200°C

Important features
- resistant to ozone
- water proof
- oil resistant
- UV-resistant
- low flammability
- LBS-free/silicone free

Design features

Conductor	flexible copper class 5 or FS
Sheath	wear-resistant rubber compound
Core	insulation special thermoplast with high mechanical stability and excellent insulating features (Special versions available on request)
Type	(N)SHTOEU-J
Brand	Cordaflex SMK-V, Rheycord RTS Spreader or equal

Conductix-Wampfler Cable RXX
Order information

Type of cable	Number of conductors and cross section [mm²]	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 RXX I 0.6/1 kV	49 G 1	26.6 – 29.6	580	1.260	3.200	•
	24 G 2.5	26.2 – 29.2	672	1.340	3.600	-
	30 G 2.5	29.4 – 32.4	848	1.680	4.100	•
	44 G 2.5	34.1 – 37.1	1.243	2.280	5.100	-
	56 G 2.5	40.1 – 43.1	1.567	3.030	6.000	•
Data Cable RXX-D	24 G 50 - 125 SR	17.0 – 19.0	-	350	4.000	•
	24 G 62.5 -125 SR	17.0 – 19.0	-	350	4.000	•

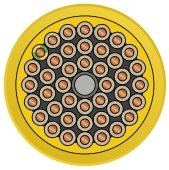
(2 The Minimum Order Quantity varies between 300 m and 500 m, please contact us.

Conductix-Wampfler Cable RXX
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	2,5 kV
Thermal parameters	ambient temperature	flexing -35°C to +80°C
		for temperatures below -35°C please consult with us
		fixed -50°C to +80°C
	maximum permitted operating temperature at conductor	90°C
	short-circuit temperature at conductor	200°C
Mechanical parameters	minimum radii for continuous flexing	6 x Ø for reeling
		7,5 x Ø diversion rollers / assemblies
	minimum distance between 2 changes of direction (e.g. S shaped track curves)	20 x Ø
	torsional stress	t ± 50° /m
	tensile load bearing capacity	according to data table
		design with additional embedded strain relief
		particularly suitable for simultaneous tensile and torsional stresses
Chemical parameters	LBS-free / silicone free	yes
	combustion behaviour	of low flammability according to DIN VDE 0482 part 265-2-1; IEC 60332-1
	resistant to ozone	yes
	resistant to humidity	yes
	UV-resistant	yes
	suitability for temporary use in water	yes, up to depth of 50 m; for permanent use in water please consult with us
	oil resistant	yes
	halogen free	no
	resistant to Sulfur	yes
	resistant to Urea	yes
Materials		
	insulation	EPR (ethylene-propylene-rubber) or comparable compounds according to VDE
	inner sheath	PCP (polychloroprene) or comparable compounds according to VDE
	supportive braid for torsional stresses	special plastic brins
	outer sheath	wear-resistant PCP (polychloroprene) or comparable compounds acc VDE
	color	yellow
Design features		
	conductor	bare electrolytic copper, very flexible, category 5 according to DIN VDE 0295
	reinforcement	central special strain relief for highest tensile load bearing
	stranding	in layers, maximum 3 layers, short length of lay
	conductor coding	according to DIN VDE 0293 part 308, black with white numbers or vice-versa, with green/yellow earth conductor
Standards & Design codes	(N)SHTOEU-J	adapted to DIN VDE 0250
		(N) adapted to VDE standard
		SHT 1 kV cable suitable for use on reels
		OE oil-resistant outer sheath according VDE 0472 part 803
		U outer sheath of low flammability according to DIN VDE 0472 part 804

Conductix-Wampfler Cable TRA-RF

PUR round reeling cable



- Flexible Conductix-Wampfler reeling cable designed for extra heavy duty applications
- Its highly wear resistant double polyurethane sheath concept with an embedded textile anti twisting braid inbetween the two sheaths result in this flexible reeling cable with particularly robust mechanical characteristics
- Due to an inner polyurethane sheath and the additional central reinforcement element from extruded elastomer cord with Kevlar ropes it is especially apt for high reeling speeds in combination with high tensile loads

Particularly suitable,

- for spring and motorized reels with max speed of 200 m/min maximum and higher dynamic loads
- for use outdoors, but also for dry, humid and wet rooms
- if the priority is a heavy duty robust and durable compact system
- for operating temperatures range from -25°C up to 60°C
- for all spool types in accordance with the minimum bending radius
- for use with deflection pulley

CONDUCTIX WAMPFLER TRA.... mm² 0.6/1 KV ww-yyyy

Characteristics

Cable designed for continuous extra heavy duty operation, specially adapted for use on motorized reels in vertical application.

Typical applications
- power supply to all horizontal & vertical operating machinery with travel speed up to 200 m/min max.
- Portal Cranes especially spreaders

Electrical parameters

Rated voltage	Uo/U = 600 / 1000 V

Mechanical load-bearing capacity

Travel speed	up to 200 m/min horizontal & vertical
Minimum bending radii	6 x Ø on spool 9 x Ø on guiding device 4 x Ø on anti-tension drum
Tensile load-bearing capacity	30 N/mm² (please refer to table)

Thermal / Chemical specifications

Ambient temperature	flexing:	-25°C... +60°C
	fixed:	-30°C... +60°C

Highest allowance on operational temperature at conductor: 80°C

Short circuit temperature at conductor: 200°C

Important features
- halogene free
- rresistant to ozone
- oil resistant
- UV-resistant
- low flammability according to IEC 60332-1, class 3 (not tested)
- voltage test IEC 60502-1

Design features

Conductor	flexible copper class 5 acc IEC60228 / VDE 0295 / BSI 6360
Sheath	highly abrasion-resistant double polyurethane sheath, textile anti twisting braid
Insulation	polyethylene
Coding	black insulation, white numbered
Central reinforcement element	extruded elastomer cord with KEVLAR ropes
Jacket color	RAL 1021 (yellow)

Conductix-Wampfler Cable TRA-RF
Order information

Type of cable	Number of conductors and cross section [mm²]	Outer – Ø min. – max. [mm]	Cu – Number approx. [kg/km]	Weight approx. [kg/m]	Permitted tensile load [N]	Minimum Order Quantity required(2
Power cable	24 x 2.5	26.8 – 27.8	576	1.100	1.800	•
	42 x 2.5	32.5 – 34.1	1.008	1.620	3.150	20 m

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

Conductix-Wampfler Cable TRA-RF
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	
	AC test voltage	according to IEC 60502-1	
		24 G 2.5	**42 G 2.5**
	current carrying capacity max [A] (1)	20	16
	voltage drop [V/A.km] (2)	14.0	14.0
	Resistance max [Ohm/km] (3)	7.98	7.98
Thermal parameters	ambient temperature	flexing -25°C to +60°C	
		fixed -30°C to +60°C	
	maximum permitted operating temperature at conductor	80°C	
	short-circuit temperature at conductor	200°C	
Mechanical parameters	minimum radii for continuous flexing	6 x Ø on spool	
		4 x Ø on anti-tension drum	
		9 x Ø on guiding device	
	tensile load bearing capacity	according to data table	
Chemical parameters	combustion behaviour	low flammability according to class C3 (not tested) IEC 60332-1	
	resistant to ozone	yes	
	resistant to humidity	yes	
	UV-resistant	yes	
	resistant to moisture	yes	
	oil resistant	yes	
	halogene free	yes	
Materials	insulation	black polypropylene	
	inner sheath	special polyurethane compound	
	double outer sheath	textile anti twisting braid embedded in between	
	Color	Yellow RAL 1021	
Design features	conductor	flexible copper, category 5 according to DIN VDE 0295 / IEC 60228	
	stranding	with central element of reinforcement: extruded elastomer cord with KEVLAR ropes	
	conductor coding	Black insulation, white numbers	
Brand		Conductix-Wampfler	
Marking		CONDUCTIX-WAMPFLER TRA-RF …G…. mm^2 0.6/1 KV ww-yyyy	

(1) cable laid straight on the ground at +30°C

(2) cos phi = 0,8 / temperature of cores = +90°C

(3) DC resistance of a core at +20°C

Technical Exhibit

Introduction
Low-voltage and high-voltage cables for moving systems and lifting gear must be selected according to their intended use. Here, in particular the cable guidance system (spiral winding, cylindrical winding, with/without guiding funnel, etc.) and the specified operational and installation conditions must be taken into consideration.

It must also be ensured that the ends of cables are protected from the penetration of moisture and humidity. Thermal and/or chemical influences should equally be considered during selection of the cable type.

Flexible cables as shown here are generally NOT suitable for routing UNDERGROUND!
Temporary covering by sand, gravel or other, similar materials, is not considered underground.

When connecting to moving, mobile systems and lifting gear, flexible low- and high-voltage cables must be protected from damage due to fasteners, twists, kinks, and snarls. Another important topic is tension relief, which is covered thoroughly on page 68.

Voltage
For different cable voltages, the definitions in DIN VDE 0298 Part 3 apply, which will be excerpted below.

AC (alternating current)
DC (direct current)

Rated voltage
The rated voltage of an insulated high-tension cable is the voltage on which the design and testing of the cable is based, based on the electrical properties of the cable.
The rated voltage is specified in V or KV by the two values Vo and V.

Uo Effective value between an external conductor and the ground conductor
U Effective value between two external conductors of a multi-strand cable or a system of single-strand cables.

In systems with alternating current, the rated voltage of the cable must be at least equal to the rated voltage of the system in which it is used. This applies to both the value Uo as well as the value U.

In systems with direct current, it must be ensured that it does not exceed 1.5 times the permissible total voltage.

Operating voltage
This is the voltage applied locally and momentarily between the conductors and the ground of a high-tension system in undisturbed operation.

Cables with rated voltages Uo/U up to 450/750 V are suitable for use in three-phase, AC, and DC systems whose highest permanent permissible operating voltage does not exceed the rated voltage of the cable by more than 10%.

For cables with a rated voltage Uo/U ≥ 0.6/1 kV, this limit is 20%.

Test voltage
The corresponding specifications of DIN VDE 0250 apply.
We can provide electrical testing protocols upon request.

Conversion factors for the type of cabling configuration/application adapted to DIN VDE 0298 T4 08.03 table 27 (permanent operation at 30°C)

Type of cabling coiled on a reel	1-layer or spiral coil*	2-layers	3-layers	4-layers	5-layers
Conversion factors	0.80	0.61	0.49	0.42	0.38

In special cases Conductix-Wampfler may apply deviating, empirical values for the factors

Conversion factors for varying ambient temperatures according to DIN VDE 0298 T4 08.03, table 17 (other than 30°C free in the air)

Ambient temperature	**Conversion factors** according to the maximum permitted operating temperature of the conductor					
	60°C			90°C		
Cables for reels HV-trailing cables for reels	PVC **RV / C800**		PUR / Rubber **GPM-RF RP / RP-D WG / WG-D**	**HVR / HVR-FO RXP / RXP-D WGF / WGF-D**	**TRA / TRA-RF RXG / RXG-D, RXX WXG / WXG-D**	
10°C	1.29		1.15			
15°C	1.22		1.12			
20°C	1.15		1.08			
25°C	1.08		1.04			
30°C	1.00		1.00			
35°C	0.91		0.96			
40°C	0.82		0.91			
45°C	0.71		0.87			
50°C	0.58		0.82			
55°C	0.41		0.76			
60°C	-		0.71			
65°C	-		0.65			
70°C	-		0.58			
75°C	-		0.50			
80°C	-		0.41			
85°C	-		0.29			

The maximum permitted operating temperature of the conductor can be found in the respective data sheet.
Other permissible operating temperatures conversion tables - pls refer to DIN VDE 0298 Part 4

Conversion factors for multi core cables with cross sections up to 10 mm² according to DIN VDE0298 part 4

Number of charged cores	5	7	12	18	24	30	36	42	61
Conversion factors	0.75	0.65	0.53	0.44	0.40	0.37	0.36	0.35	0.30

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

	duration of 5 minutes							duration of 10 minutes						
On-time	**100 %**	**85 %**	**80 %**	**60 %**	**35 %**	**20 %**	**8 %**	**100 %**	**85 %**	**80 %**	**60 %**	**35 %**	**20 %**	**8 %**
Cross section conductor mm²	**Conversion factors**													
≤1.5	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	1.00	1.00	1.00	1.00	1.02	1.04	1.17
4	1.00	1.00	1.00	1.00	1.04	1.12	1.45	1.00	1.00	1.00	1.00	1.04	1.07	1.26
6	1.00	1.00	1.00	1.00	1.07	1.20	1.70	1.00	1.00	1.00	1.00	1.05	1.09	1.38
10	1.00	1.01	1.02	1.06	1.19	1.43	2.06	1.00	1.00	1.00	1.01	1.06	1.18	1.58
16	1.00	1.02	1.03	1.09	1.28	1.57	2.32	1.00	1.01	1.01	1.02	1.10	1.27	1.78
25	1.00	1.03	1.05	1.13	1.35	1.69	2.55	1.00	1.01	1.02	1.05	1.18	1.41	2.03
35	1.00	1.05	1.06	1.16	1.41	1.78	2.70	1.00	1.02	1.03	1.08	1.24	1.50	2.21
50	1.00	1.05	1.07	1.18	1.45	1.85	2.84	1.00	1.03	1.04	1.11	1.30	1.60	2.39
70	1.00	1.06	1.08	1.20	1.50	1.92	2.96	1.00	1.03	1.05	1.13	1.36	1.70	2.56
95	1.00	1.06	1.08	1.21	1.53	1.98	3.07	1.00	1.04	1.06	1.16	1.41	1.78	2.70
120	1.00	1.06	1.09	1.23	1.55	2.01	3.13	1.00	1.05	1.07	1.18	1.44	1.83	2.81
150	1.00	1.07	1.09	1.23	1.57	2.04	3.18	1.00	1.05	1.07	1.19	1.47	1.88	2.89
185	1.00	1.07	1.10	1.24	1.59	2.07	3.23	1.00	1.06	1.08	1.20	1.50	1.92	2.97
240	1.00	1.07	1.10	1.24	1.61	2.10	3.28	1.00	1.06	1.08	1.23	1.53	1.96	3.05

AWG – metric comparison table

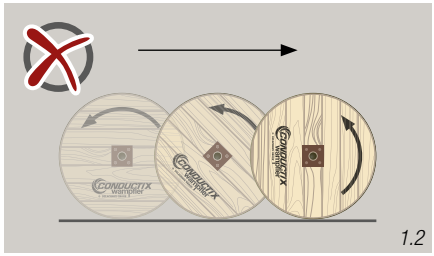
AWG	A (mm^2)	METRIC EQUIVALENT (mm^2)	AWG	A (mm^2)	METRIC EQUIVALENT (mm^2)
600 MCM	303.96	**300**	**11**	4.17209798	
500 MCM	253.35	**240**	**12**	3.3089268	**4**
000000 (6/0) (-5)	170.551278	**185**	**13**	2.62385153	
00000 (5/0) (-4)	135.250503	**150**	**14**	2.08066403	**2.5**
0000 (4/0) (-3)	107.219212	**120**	**15**	1.65033722	
000 (3/0) (-2)	85.0113364	**95**	**16**	1.30865829	**1.5**
00 (2/0) (-1)	67.4320879	**70**	**17**	1.03797296	
0 (1/0)	53.4880014		**18**	0.82293784	**1**
1	42.4085882	**50**	**19**	0.65268534	**0.75**
2	33.6239449	**35**	**20**	0.51757167	**0.75**
3	26.6651343		**21**	0.41041834	**0.5**
4	21.1491872	**25**	**22**	0.32562135	**0.34**
5	16.7657253		**23**	0.25811903	
6	13.2980199	**16**	**24**	0.20471469	**0.25**
7	10.5509025		**25**	0.162354	
8	8.36687352	**10**	**26**	0.12874594	**0.14**
9	6.63145758				
10	5.26144838	**6**			

Handling Instructions

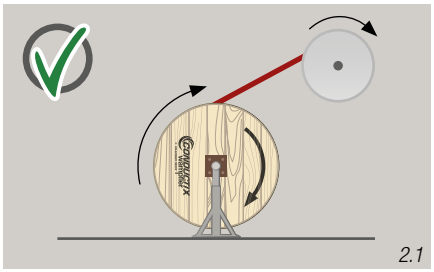
Fitting reel cables

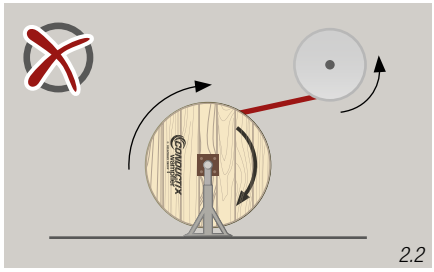
A transport reel with cables should always be rolled in the winding direction of the cable (usually marked with an arrow). *(1.1)*


1.1


1.2

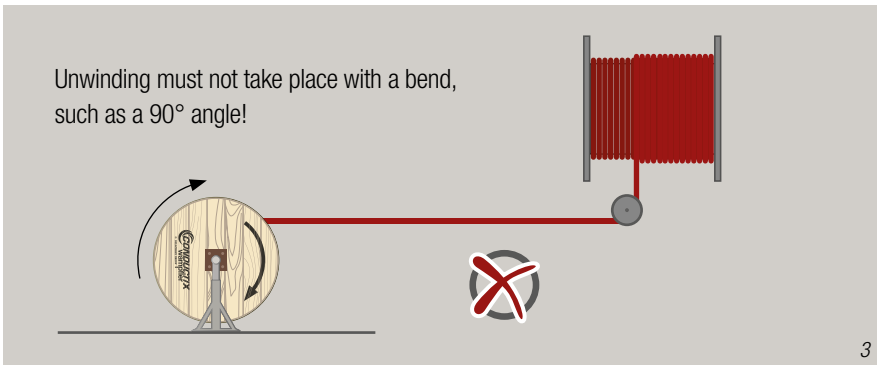
The unwinding of the transport reel onto a spiral reel should be carried out in accordance with *(2.1)*. The stranding direction specified by production must be observed during this process. Unwinding against the stranding direction *(2.2)* , that is, against the stranding and winding directions, can lead to a tendency for the strands to reverse direction in their bundles, hindering correct function and even leading to later failure of the cable.


2.1


2.2

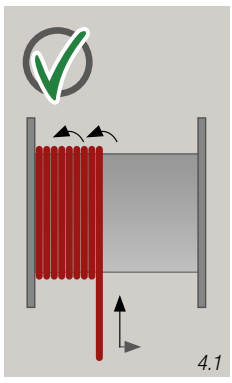
Stranding direction

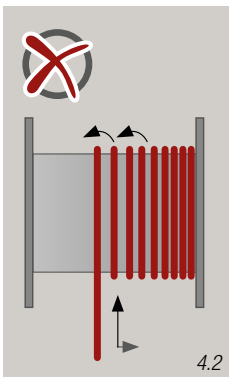
Our power cables are generally produced with a LEFTwards stranding direction. Control cables, however, are generally produced with a RIGHTwards stranding direction.



3

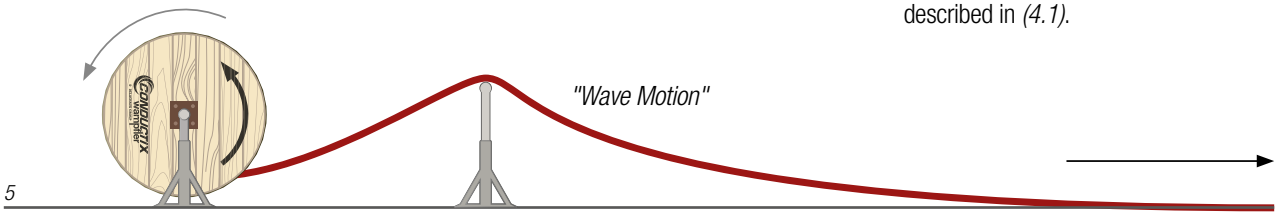
For reels that are cylindrical, therefore, we recommend starting the winding on the left side of the reel. *(4.1)* This leads to a more regular, cleaner winding, since the cable's stranding direction will cause it to tend towards the left. If you start the winding on the right, this can lead to irregular winding / placement of the cable on the reel. *(4.2)*


4.1


4.2

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 *(5)*, stretching it out, and removing the twist.

After stretching and untwisting, place the cable back onto the reel as described in *(4.1)*.



5

Installation guidelines

Strain relief

A moving reel cable should never be operated without sufficient tension relief. During winding, the strands should be able to move slightly within the cable in order to ensure compensation of length around the neutral strands.

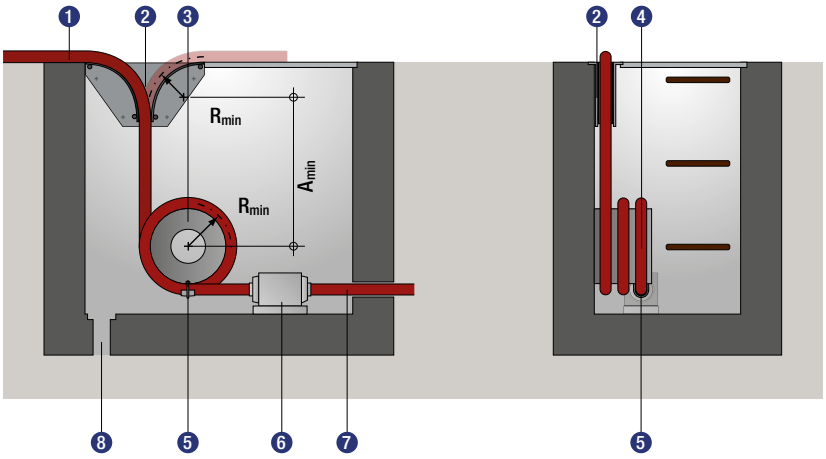
Correctly implemented tension relief will significantly lengthen the service life of the cable.

Conductix-Wampfler offers different systems for effective tension relief.

Both central and end feeds should ideally use **tension relief drums** (whether underground or above ground).
Here, it should particularly be ensured that the tension relief drums comply with the minimum bending radius $\mathbf{R_{min}}$ of the cable and that relief segments $\mathbf{A_{min}}$ are provided. (see tables)

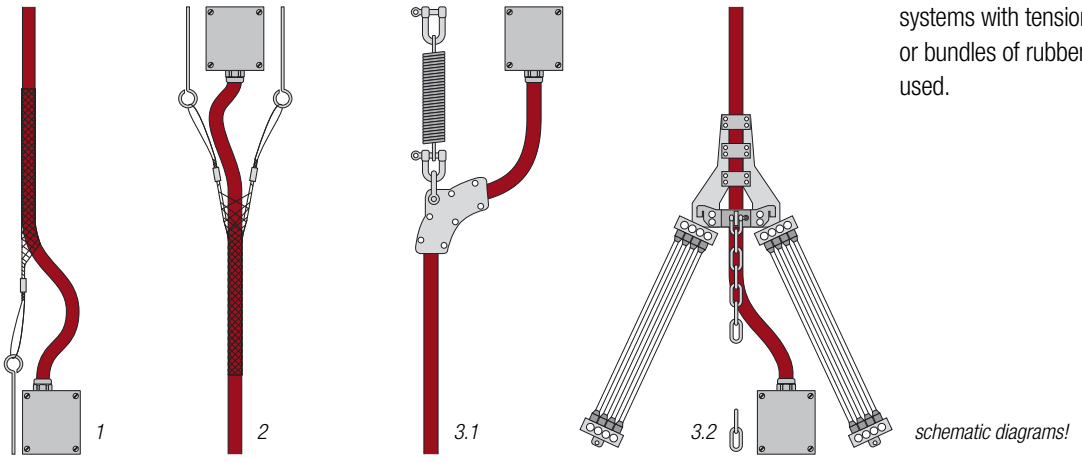
An optimum, force-fit installation of tension relief is only ensured when at least two full windings are in place on the motorized cable reel and on the tension relief drum!

1. Cable
2. Entry funnel with tension relief
3. Tension relief drum
4. Two full windings
5. Cable clamp
6. Connection boxes
7. Connector cable
8. Drainage



Another options for tension relief is in the use of **cable mesh grips**, which avoid point stresses on the strands in their stranding bundles. The correct cable mesh grip is selected according to the cable diameter. A cable mesh grip with an eye is the standard variant. *(1)*
For vertical applications with higher tension forces or if central feed is in use, the use of cable mesh grips with two eyes is recommended, since these can support the forces better due to their symmetrical arrangement. *(2)*

For impacts or extreme tension forces (for example, spreader applications), systems with tension relief springs *(3.1)* or bundles of rubber ropes *(3.2)* are used.



1 *2* *3.1* *3.2* *schematic diagrams!*

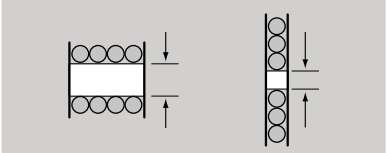
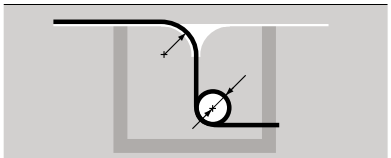
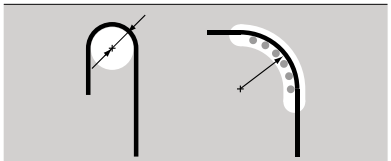
Minimum bending radii

Compliance with minimum bending radii primarily has a positive effect on the service life of the cable.

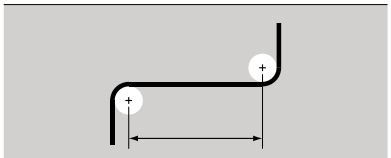
The table below lists the most important applications. The basis for the calculation of the minimum bending radius is the maximum outer diameter of the cable.

Compliance with ambient temperatures and stress relief is assumed.

Smallest permissible minimum bending radius R_{min}

Cable types	Reelable Low-voltage cables				Reelable high-voltage cables	Fiber optics smallest permissible bending radius
Rated voltage V_0/V	**≤ 0.6 kV/1 kV**				**> 0.6 kV/1 kV**	
Maximum outer diameter of the cable or maximum thickness of the flat cable (mm)	**≤ 8**	**8 – 12**	**12 – 20**	**> 20**		
For forced routing such as reel operation 	5 x diameter	5 x diameter	5 x diameter	6 x diameter	12 x diameter	250 mm
For introduction into a central feed, for example 	3 x diameter	4 x diameter	5 x diameter	5 x diameter	12 x diameter	250 mm
For forced routing such as reversing rollers 	7.5 x diameter	7.5 x diameter	7.5 x diameter	7.5 x diameter	15 x diameter	250 mm

Minimum distance between reversals

For doubled or S-shaped reversal 	20 x diameter	20 x diameter	20 x diameter	20 x diameter	20 x diameter	50 x diameter

Fiber optic cables

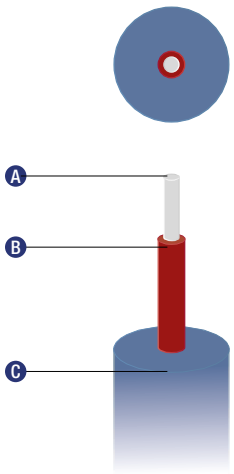
Fiber optic cables have become essential for today's telecommunications and data transmission applications.

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.

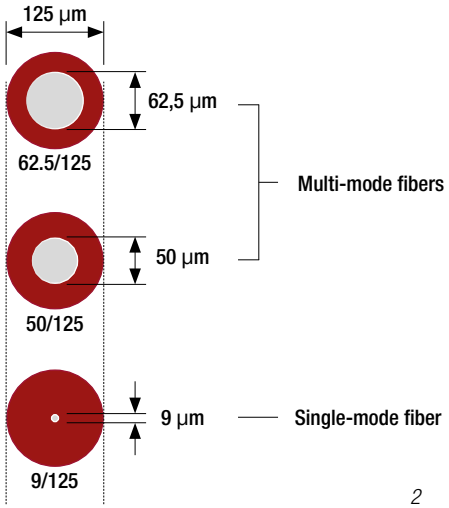
General features

- 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)

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.



1

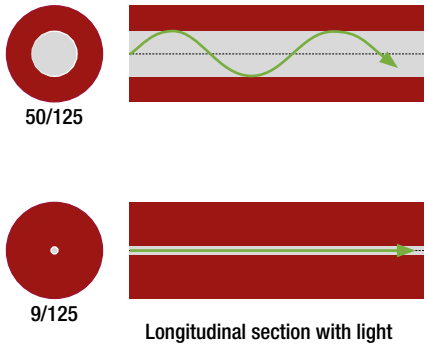


2

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

Multi-mode fibers with a gradient index fiber have a core of 50 or 62.5µm, 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 0.8dB (1300nm). Single-mode fibers have a smaller core of 9µm 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.

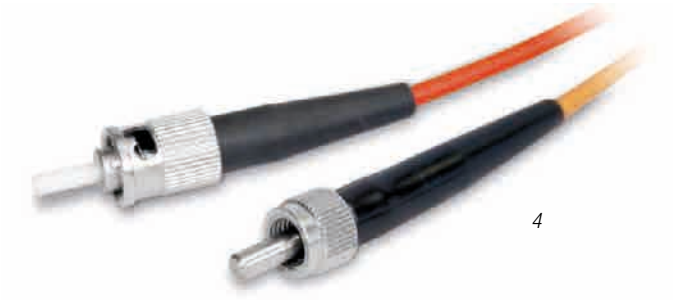


Longitudinal section with light dispersion
3

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)*:

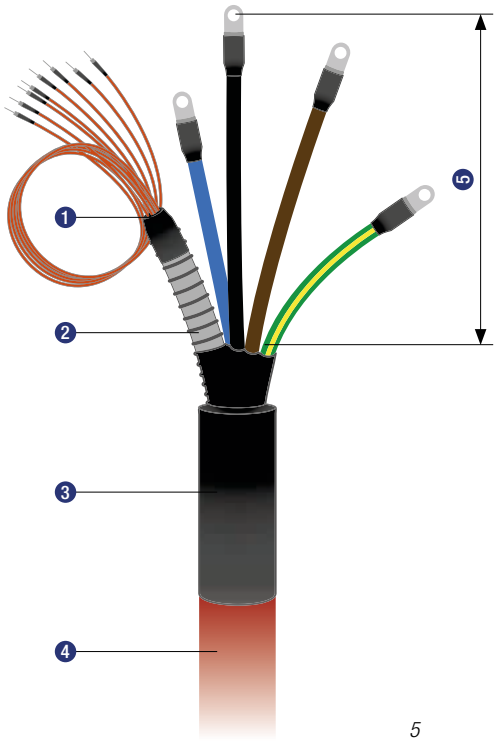
- ST: these are especially widespread in local networks (LAN). This connector is suitable for single-mode and multi-mode glass fiber cables.
- The SC connector can be used for multi-mode and monomode fibers. Its advantage over the ST connector is its push/pull technology, that is, the connector automatically interlocks when plugged in and unlocks when pulled out (ST = bayonet connection).
- The LC connector is a compact "small form factor" (SFF) connector. Other types are available upon request.



4

End seals

End seals on cables for low and high voltage protect against damage due to elevated field strength at the point of load (conducting insulation) as well as penetration of moisture and dust. They also provide a mechanical and electrical connection between the slip rings of the motorized reel and the connector boxes or transformer station provided on the site. *(5)*



5

For combined cables with fiber optics, the fiber optic element is led out separately and provided with the corresponding connector types *(4)* and a protective sleeve. Cable seeling ends can be preconfigured, mounted, and connected to the motorized cable reel upon delivery, or delivered separately on a transport drum.

1 Cast body
2 Protective sleeve
3 Shrink sleeve
4 Cable
5 Conductor connection lengths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wampfler
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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

Questionnaire | Specification Data

Cables

CONDUCTIX wampfler
Φ DELACHAUX GROUP

Technical datas

On which energy transmission system is the cable used? ☐ **Festoon System** ☐ **Reel** ☐ **Energy Guiding Chain**

		Cable 1	Cable 2	Cable 3	Cable 4	Cable 5
Cable Designation						
Number of cores						
Cross section [mm²]						
Length [m/ piece]						
Piece						
Cable type	flat					
	round					
Sheath Material	rubber					
	PVC					
	PUR					
	others					
Earth conductor	yes					
	no					
Screen	yes					
	no					

Is a combined solution preferred? ☐ yes ☐ no
if yes: ☐ Power + Control ☐ Power + Control + Data (FO) ☐ Power + Data (FO)

Application Data

- Travel speed: _____ [m/min]
- Acceleration: _____ [m/s²]
- Max. perm. operating temperature of the conductor: _____ [°C]
- Ambient temperature: _____ [°C]
  in operation: from _____ [°C] to _____ [°C]
  static: from _____ [°C] to _____ [°C]
- Other special conditions concerning the installation [e.g. cable guide]: _____
- Inrush current / max. power: _____ / _____ [kVA] / 100% DC
- Rated voltage: U_0 / U: _____ / _____ [kV]
- Bending radius: _____ [mm]
- Tensile load: _____ [N]
- Installation: ☐ Horizontal ☐ Vertical ☐ Fixed installation
  ☐ Connecting to: _____

Data transfer I Screen I FO

☐ Profi Bus ☐ CAN-Bus ☐ Industrial - Ethernet ☐ Others
- Screen specification: ☐ Overall screen ☐ Pairs ☐ Individual

FO, fiber type: ☐ 50/125µ ☐ 62,5/125µ ☐ E9/125µ

What data has to be transferred?: _____
Required data transfer rate: _____ [MBit/s]
Number of fibers: ☐ 6 ☐ 12 ☐ 18 ☐ 24

Operating Conditions

- Site: ☐ Indoors ☐ Outdoors ☐ Port ☐ Tropics ☐ Subtropics
- Degree of pollution: ☐ Little ☐ Medium ☐ Strong
- Aggressive media: ☐ Yes ☐ No
  Type: _____
  Concentration: _____
- Ambient Temperature: min. _____ [°C] max. _____ [°C]
- Humidity: _____ [%]
- Perm. wind speed during crane operation: _____ [m/s]
- Special chemical influences, e.g.
  ☐ Phosphates ☐ Sulphur ☐ Urea
- Other influences, e.g. ☐ Heavy pollution
  Type of pollution: _____

☐ Humidity ☐ Wetness ☐ Dust
if yes, which type? ☐ Corrosive ☐ Not corrosive
☐ Very hot: _____ °C ☐ Very cold: _____ °C

Your Applications – our Solutions

Cables from Conductix-Wampfler represent only one of the many solutions made possible by the broad spectrum of Conductix-Wampfler components for the transport of energy, data and fluid media. 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 all of Conductix-Wampfler's Business Units for hands-on engineering support - coupled with the perfect solution to meet your energy management and control needs.

Cable Reels

Motorized reels and spring reels by Conductix-Wampfler hold their own wherever energy, data and media have to cover the most diverse distances within a short amount of time - in all directions, fast and safe.

Festoon Systems

It's hard to imagine Conductix-Wampfler cable trolleys not being used in virtually every industrial application. They're reliable and robust and available in an enormous variety of dimensions and designs.

Conductor Rails

Whether they're enclosed conductor rails or expandable single-pole systems, the proven conductor rails by Conductix-Wampfler reliably move people and material.

Non-insulated Conductor Rails

Extremely robust, non-insulated conductor rails with copper heads or stainless steel surfaces provide the ideal basis for rough applications, for example in steel mills or shipyards.

Energy Guiding Chains

The "Jack of all trades" when it comes to transferring energy, data, air and fluid hoses. With their wide range, these energy guiding chains are the ideal solution for many industrial applications.

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!

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.

Reels, Retractors and Balancers

Whether for hoses or cables, as classical reels or high-precision positioning aids for tools, our range of reels and spring balancers take the load off your shoulders.

Jib Booms

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

Conveyor Systems

Whether manual, semiautomatic or with Power & Free – flexibility is achieved with full customization concerning layout and location.

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.com/contact-search

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