HELUKABEL®

HELUWIND WK-SERIE

Cable & Accessories for Wind Turbines

2009

www.helukabel.de

Welcome to HELUKABEL®

Cables & Wires

Custom Cables

Media Technology

Data-, Network- & Bus Technology

Robotics

Cable Accessories

We are one of the leading German cable companies offering a comprehensive range of products and accessories.

Today, we design, manufacture and supply cables for all markets and applications.
Our extensive warehouse stock contains over 33,000 items, allowing us to handle your delivery needs.

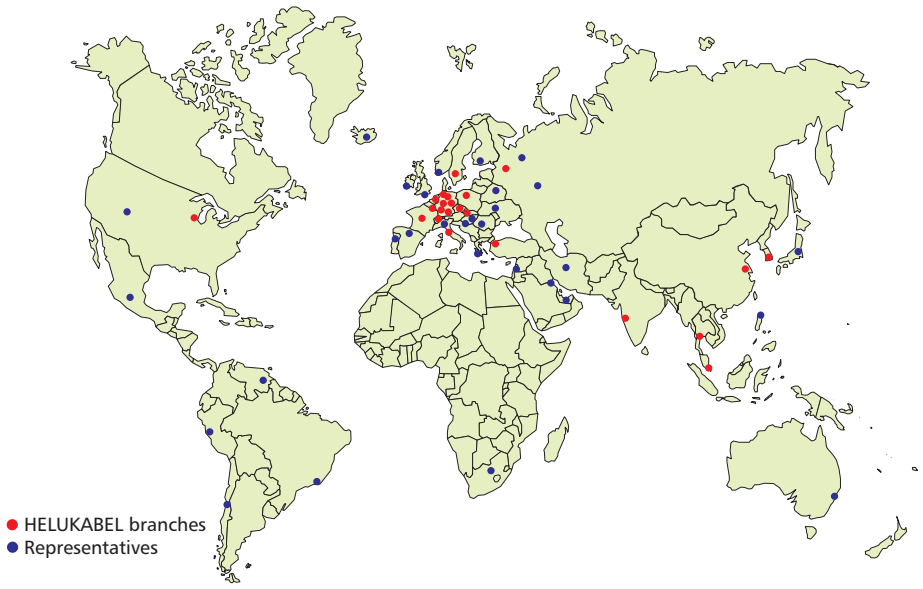
Headquaters Hemmingen

Our state-of-the-art logistic centre has an accelerated paperless order processing system integrated with an information databank linked together to a warehouse conveyor centre that is unique in the industry.

Daily, the automated processing system handles several hundred customized orders "just in time" from a 16,600 pallet staging area.

In our production facility in Windsbach we manufacture approximately 4,500 tons of cables and wires annually, which is equal to approximately 25,000 km of cable.
Our products include shielded, unshielded and steel wire-reinforced control cables with a PVC/PUR jacket or thermoplastic elastomer, halogen-free and heat-resistant cables.
We also manufacture custom cables.

This brochure gives you a comprehensive overview of the most important HELUKABEL® wind energy products. Our sales team would be happy to advise and assist you.



Contents

Achieving Success through Quality and Innovation

Product certificates document our quality level.

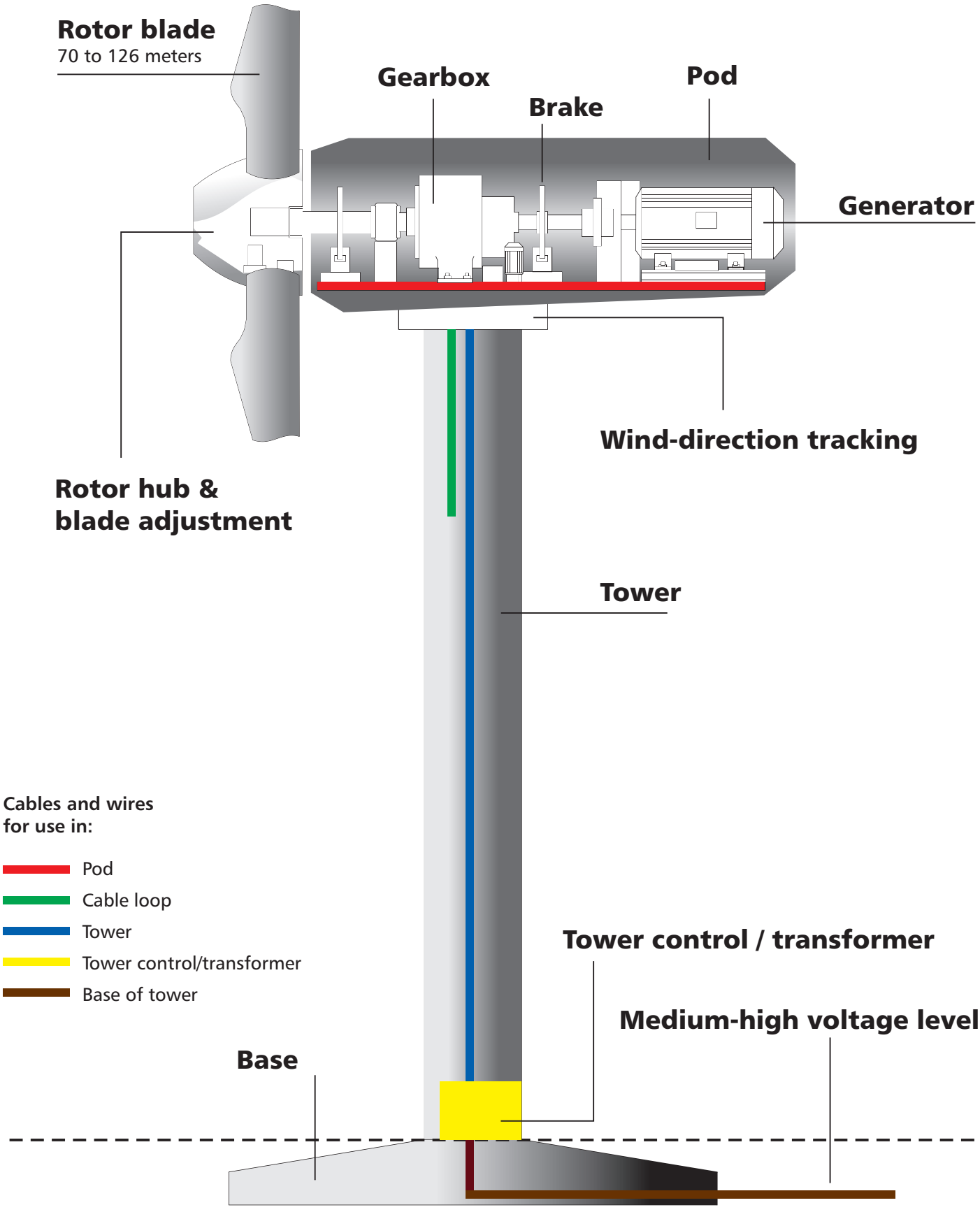
ISO 9000ff is used as the basis for quality management processes carried out at HELUKABEL®. Product certificates issued by accredited institutions make it easier for you to evaluate HELUKABEL®.
Our quality improvement process enables us not only to maintain a consistently high quality standard, it also ensures continued new product development.

We are committed to protect the environment.


KABEL HELUWIND WK 135-T UL-Style 2023


UWIND WK 103w-T
CE
34 FT1
CE
HELUKA

Functional view of Wind Turbines



WIND POWER CABLE, HELUWIND WK-series

	Usage, see chart on page 3	UL-Style	CSA	CE	HAR	VDE pending	FT4	FT1 (contains FT2)	nominal voltage according to UL	nominal voltage according to VDE	halogen-free	oil resistant II**	extensive oil resistant	UV-resistant	temp. non-flexing from (in °C)	temp. non-flexing to (in °C)	temp. flexing from (in °C)	temp. flexing to (in °C)	Torsion angle +/- 150° per meter	Torsion angle +/- 140° per meter	Torsion angle +/-90° per meter	can be found on page
HELUWIND WK 101k-T				X				X		0,6/ 1kV				X	-40	+80	-40	+80			X	9
HELUWIND WK 103w-Torsion		10678 21179	cRUus	X				X	1000V(*)	0,6/ 1kV		X (*)	X	X	-40	+90	-35	+90		X		10
HELUWIND WK 103w EMV D-Torsion		10678 21179	cRUus	X				X	1000V(*)	0,6/ 1kV		X (*)	X	X	-40	+90	-35	+90			X	11
HELUWIND WK 103k-Torsion		10107 2570	cRUus	X				X	600V	0,6/ 1kV			X	X	-40	+80	-40	+80		X		12
HELUWIND WK 103k EMV D-Torsion		10107 2570	cRUus	X				X	600V	0,6/ 1kV			X	X	-40	+80	-40	+80			X	13
HELUWIND WK 104				X						300/ 600V				X	-5	+80	-5	+80				9
HELUWIND WK 105 HELUWIND WK 105 EMV-D		10553/ 20234	cRUus	X				X	1000V	0,6/ 1kV	X	X		X	-50	+90	-40	+80				14 15
HELUWIND WK 115-T HELUWIND WK 115 D-EMV T		10553/ 20234	cRUus	X				X	1000V	0,6/ 1kV	X	X		X	-50	+90	-40	+80	X			16 17
HELUWIND WK 135 T HELUWIND WK 135D-EMV T		10553/ 20234	cRUus	X		X	X (*)		1000V	0,6/ 1kV	X	X		X	-40	+90	-40	+90	X			18 19
HELUWIND WK Brandmeldekabel-T				X				X		24V	X		X		-50	+90	-40	+80	+/- 215°			20
HELUWIND WK DLO 2kV		UL 44	X				X	X	2000V					X	-45	+90						21
HELUWIND WK H07BN4-F WIND-T				X	X					450/ 750V				X	-45	+90	-35	+90	X			22
HELUWIND WK THERMFLEX 105°C EMV				X				X		0,6/ 1kV				X	-20	+105	-5	+105			X	23
HELUWIND Thermflex 145				X						0,6/ 1kV	X			X	-55	+145	-20	+120				24
WK (N)A2XH				X						0,6/ 1kV	X			X	-30	+90	-5	+50				25
HELUWIND WK NTSCGEWOEU-T				X						3,6/ 6kV				X	-40	+90	-40	+90	+/- 100°			26

* in preparation
** in accordance with UL 1277, Table 11.2

Control cables

	Usage, see chart on page 3	UL-Style	CSA	CE	HAR	with VDE Reg.-No	FT1 equivalent to IEC 60332-1	nominal voltage according to UL	nominal voltage according to VDE	halogen-free	oil resistant II	UV-resistant	temp. non-flexing from (in °C)	temp. non-flexing to (in °C)	temp. flexing from (in °C)	temp. flexing to (in °C)	copper-shielded
JZ-500				X		X	X		300/ 500V		X		-40	+80	-5	+80	
F-CY-JZ				X		X	X		300/ 500V		X		-40	+80	-5	+80	X
Y-CY-JZ				X		X	X		300/ 500V		X		-40	+80	-5	+80	X
JZ-500 HMH JZ-500 HMH-C				X			60332-3		300/ 500V	X			-40	+70	-15	+70	X
MEGAFLEX 500 MEGAFLEX 500-C				X			60332-3		300/ 500V	X	X*	X	-40	+90	-30	+90	X
JZ-600 JZ-600-Y-CY				X			X		0,6/ 1kV		X	X	-40	+80	-5	+80	X
JZ-600 HMH JZ-600 HMH-C				X			60332-3		0,6/ 1kV	X		X	-40	+70	-15	+70	X
JZ-600-UL JZ-600-Y-CY-UL		X	X	X			X	1kV	0,6/ 1kV		X	black	-40	+80	-5	+80	X
JZ-602 JZ-602-CY		X	X	X			X	600V			X		-40	+90	-5	+90	X
JZ-603 JZ-603-CY		X	X	X	X		X	600V	300/ 500V		X		-40	+70	-5	+70	X
JZ-604 TC JZ-604 YCY TC		X	X	X			FT4	600V			X	X	-25	+75	-5	+75	X
HELUTHERM 145 MULTI HELUTHERM 145 MULTI-C				X			60332-3		300/500V bis 1,0mm² 450/750V ab 1,5mm²	X	sX	X	-55	+145	-35	+120	X

For further information please refer to our Cables & Wires catalogue.

*** DIN VDE 0473 Teil 811-2-1**

Power distribution cables

Medium and low voltage cables	see pages 34 and 35 or look in our main catalogue for cables and wires.

Single conductors

	Usage, see chart on page 3	UL-Style	CSA	CE	HAR	with VDE Reg.-No	FT1 equivalent to IEC 60332-1	nominal voltage according to UL	nominal voltage according to VDE	halogen-free	oil resistant II	UV-resistant	temp. non-flexing from (in °C)	temp. non-flexing to (in °C)	temp. flexing from (in °C)	temp. flexing to (in °C)	copper-Shielded
HELUTHERM 145 600V UL/CSA		X	X	X			60332-3	600V	0,6/ 1kV	X	X	X	-45	+145	-35	+120	
H07V-K				X	X		X		450/ 750V				-30	+80	-5	+70	
FÜNFNORM HAR-UL-CSA-AWM-MTW		X	X	X	X		X	750V DC 600V AC	300/500V to 1,0mm² 450/750V from 1,5mm²				-10	+105	+5	+90	
H07Z-K				X	X		X		450/ 750V	X			-40	+90	-40	+90	
Single 602-RC / Single 602-RC-CY		X	X	X			X	600V	0,6/ 1kV		X		-40	+90	-5	+90	X

Computer data cables

LIYY TRONIC / LIY-CY TRONIC-CY				X			X		350/ 500V		X		-40	+80	-5	+80	X
DATAFLAMM / DATAFLAMM-C				X			X		350/ 500V	X			-40	+70	+5	+70	X
DATAFLAMM-C-PAAR				X			X		350/ 500V	X			-40	+70	+5	+70	X
LIYY UL / LIY-CY UL		X	X	X			X	300V			X		-20	+80	-20	+80	X
LIYY-TP UL / LIYCY-TP UL		X	X	X			X	300V			X		-20	+80	-10	+80	X
SUPERTRONIC-PURö				X					350/ 500V		X	X	-40	+70	-5	+70	
SUPERTRONIC-C-PURö				X					350/ 500V	X	X	X	-50	+70	-40	+70	X
SUPERTRONIC 330 PURö / SUPERTRONIC 330 C-PURö		X	X	X			X	300V		X	X	X	-50	+80	-40	+80	X
SUPER-PAAR-TRONIC-C-PUR				X					350V	X	X	X	-50	+70	-40	+70	X
SUPER-PAAR-TRONIC 340-C-PUR		X	X	X			X	350V		X	X	X	-50	+80	-40	+80	X

For further information please refer to our Cables & Wires catalogue.

Torsion test in the test tower in the Windsbach factory.

We perform torsion tests in our test appliance in the Windsbach factory to examine the torsion propertie in the WK series cables.

In our 8-metre tall girder mast, the loop is reproduced 1:1 to the wind turbine. Here, specially made drive and control engineering runs the most varied torsion cycles and programs based on real circumstances (rotary movement of the nacelle). In a specifically designed cable bracket from the company Roxtec, up to 20 cables can be mounted and tested simultaneously.

The cables are constantly loaded in the test plant with the greatest possible torsion of up to +/- 150° per metre.
The test conditions are a many times more extreme than in reality.
The verification of torsion across the entire loop length essentially determines the continuous development and improvement process of the HELUWIND WK series.

HELUWIND WK 101k-Torsion*, WK 104 UV-resistant

RoHS

Technical data

Temperature range

WK 101k-T:	flexing	-40°C to +80°C
	fixed installation	-40°C to +80°C
WK 104:	fixed installation	-5°C to +80°C
Nominal voltage:		
WK 101k-T:	according to VDE U_0/U 0,6/1kV	
WK 104:	300/500 V	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	WK 101k-T: 10 x cable diameter WK 104: 20 x cable diameter	
Torsion application*:	+/- 90° per 1m (WK 101k-T)	
Approvals:	CE conformed	
Flame test:	FT1	

Properties

· UV-resistant
· RoHS conformity

Construction

· special stranded copper wire, bare as per DIN VDE 0295 Cl. 5 (WK 101k-T + WK 104)
· special insulation, black:
PVC flexible at low temperatures (WK 101k-T)
PVC (WK 104)
· special jacket compound:
PVC flexible at low temperatures (WK 101k-T)
PVC (WK 104)
· jacket colour: black

Application

The HELUWIND WK series was specifically designed for use in wind turbines.
We supply the leading wind turbine manufacturers with our cables.

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK 101k-Torsion (flexible at low temperatures)

Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx	Cu weight kg/km	weight kg/km approx.
78167	2x1,5	7,5	28,8	65
78168	3x4	12,0	116,0	250
78169	1x240	31,2	2304,0	2800
78170	1x300	37,0	2880,0	3800
705406	1x95	21,9	912,0	1230
705407	1x120	23,1	1152,0	1540
705408	1x150	27,2	1140,0	1870
705409	1x185	29,4	1176,0	2300
705410	1x400	39,3	3840	4500

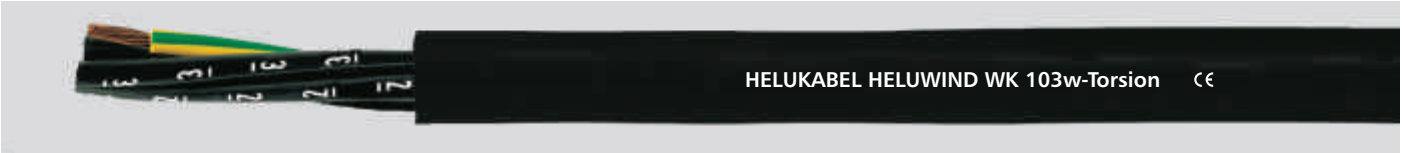
WK 104 (only fixed installation, LWL = POF 980/1000)

Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx	Cu weight kg/km	weight kg/km approx.
78181	2x2,5+10x1,5 +4 LWL	28,0	340,0	300
700161	19x1+4 LWL	16,0	183,0	480
705166	5x9+4 LWL	11,0	48,0	184

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK 103w-Torsion

UV-resistant, UL/CSA-Style 10678/21179 Single-/Multicore



RoHS

Technical data

Temperature range:	flexing	-35°C to +90°C
	fixed installation	-40°C to +90°C
	installation	-20°C to +90°C
Nominal voltage:	according to VDE U_0/U 0,6/1kV	
	according to UL 1000V, for remanufactures	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	10 x cable diameter	
Torsion application:	+/-140° per 1m for unshielded types	
Approvals:	UL-Style 10678* to 400mm² Singlecore	
	UL-Style 21179 Multicore,	
	cRUus*, CE conformed	
Flame test:	FT1	

Properties

- UV-resistant
- RoHS conformity
- multiclimatical app.
- torsion tested
- flame-retardant
- oil-resistant · recyclable
- **easy to tailor**

Construction

- special stranded copper wire, bare as per DIN VDE 0295
- special insulation PVC heat-resistant
- conductor colours, black with numbers + gnye
- multicore types cabled
- special jacket compound PVC heat-resistant
- jacket colour: black

Application

The HELUWIND WK 103 series was specifically designed for use in wind turbines.
We supply the leading wind turbine manufacturers with our cables.

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK 103w-Torsion (heat-resistant) (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
704809	4x0,34	22	7,1	29,0	86,0
704810	4x0,5	20	7,4	33,4	99,0
704811	6x0,5	20	8,6	51,2	121,0
704812	10x0,5	20	10,8	48,0	165,0
704813	12x0,5	20	11,1	84,0	208,0
704814	3x0,75	18	7,3	22,0	77,0
704815	4x0,75	18	7,9	29,0	100,0
704816	5x0,75	18	8,6	36,0	120,0
704817	7x0,75	18	10,0	51,0	170,0
704818	10x0,75	18	11,0	72,0	200,0
704819	12x0,75	18	11,8	87,0	220,0
704820	14x0,75	18	12,5	101,0	238,0
704821	16x0,75	18	13,2	116,0	271,0
704822	18x0,75	18	13,9	130,0	310,0
704823	21x0,75	18	15,2	152,0	380,0
704824	25x0,75	18	16,9	180,0	490,0
704825	32x0,75	18	18,2	231,0	560,0
704826	36x0,75	18	19,1	260,0	620,0
704827	40x0,75	18	20,5	288,0	729,0
704828	41x0,75	18	20,8	296,0	750,0
704829	50x0,75	18	23,5	441,0	990,0
704830	4x1	17	8,3	39,0	100,0
704831	5x1	17	9,0	48,0	110,0
704832	7x1	17	10,5	68,0	140,0
704833	10x1	17	13,0	96,0	220,0
704834	12x1	17	13,2	116,0	240,0
704835	14x1	17	13,4	135,0	280,0
704836	16x1	17	14,1	154,0	310,0
704837	18x1	17	15,1	173,0	360,0
704838	21x1	17	16,7	202,0	410,0
704839	25x1	17	18,4	240,0	500,0
704840	32x1	17	19,8	308,0	590,0
704841	36x1	17	20,6	346,0	700,0
704842	40x1	17	22,4	384,0	800,0
704843	41x1	17	22,4	394,0	810,0
704844	50x1	17	24,6	480,0	980,0
704845	2x1,5	16	7,9	29,0	75,0
703920	3x1,5	16	8,0	44,0	110,0
703921	4x1,5	16	8,9	58,0	131,0
703922	5x1,5	16	9,7	72,0	165,0
704366	7x1,5	16	12,0	101,0	210,0
704846	10x1,5	16	13,1	144,0	270,0
704847	12x1,5	16	14,3	173,0	360,0
704848	14x1,5	16	14,9	202,0	420,0
704849	16x1,5	16	15,7	231,0	450,0
704850	18x1,5	16	16,8	260,0	510,0

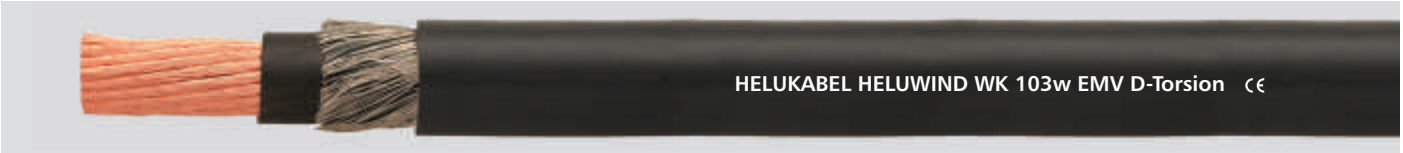
WK 103w-Torsion (heat-resistant) (JZ)

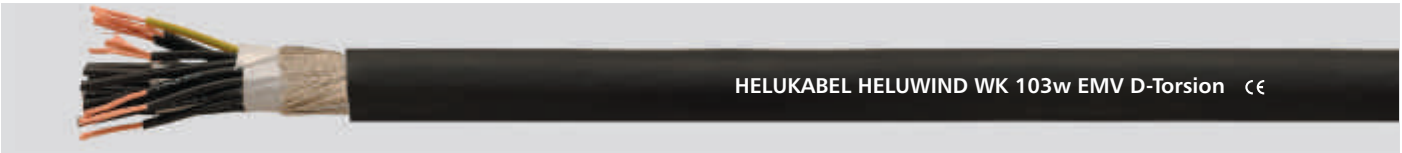
Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
704851	21x1,5	16	17,8	303,0	590,0
704852	25x1,5	16	20,6	360,0	700,0
704853	32x1,5	16	22,2	460,0	900,0
704854	36x1,5	16	23,1	519,0	980,0
704855	40x1,5	16	25,0	576,0	1030,0
704856	41x1,5	16	25,0	591,0	1050,0
704857	50x1,5	16	27,7	720,0	1200,0
704267	3x2,5	14	8,9	72,0	151,0
703925	4x2,5	14	9,7	96,0	230,0
703926	5x2,5	14	10,9	120,0	250,0
704858	7x2,5	14	14,4	168,0	360,0
704859	10x2,5	14	15,8	240,0	480,0
704367	12x2,5	14	16,3	288,0	580,0
705040	19x2,5	14	16,3	456,0	580,0
704368	3x4	12	10,8	116,0	250,0
703930	4x4	12	12,0	154,0	270,0
704269	5x4	12	13,6	192,0	370,0
704860	7x4	12	15,9	269,0	530,0
704861	12x4	12	19,6	461,0	740,0
704862	3x6	10	13,1	173,0	340,0
704863	4x6	10	14,6	231,0	460,0
704864	5x6	10	16,3	288,0	550,0
704865	7x6	10	19,6	404,0	780,0
704866	4x10	8	17,4	384,0	670,0
703932	5x10	8	20,1	480,0	870,0
704867	7x10	8	23,5	672,0	1150,0
704868	4x16	6	20,7	615,0	1000,0
703933	5x16	6	25,4	768,0	1250,0
704869	4x25	4	25,2	960,0	1580,0
704870	5x25	4	28,2	1200,0	1900,0
704871	4x35	2	31,4	1344,0	2100,0
704872	5x35	2	35,4	1680,0	2600,0
704873	4x50	1	36,7	1920,0	2800,0
704287	1x35	2	12,9	336,0	460,0
704288	1x50	1	15,6	480,0	630,0
704289	1x70	2/0	17,9	672,0	880,0
704874	1x95	3/0	21,9	912,0	1230,0
704291	1x120	4/0	23,1	1152,0	1540,0
704875	1x150	300	27,2	1440,0	1870,0
704293	1x185	350	27,5	1776,0	2300,0
704294	1x240	500	31,2	2304,0	2970,0
704295	1x300	600	34,2	2880,0	3730,0
704876	1x400	750	39,3	3840,0	4500,0

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK 103w EMV D-Torsion

shielded, UV-resistant, UL/CSA-Style 10678/21179 Single-/Multicore





RoHS

Technical data

Temperature range	flexing	-35°C to +90°C
	fixed installation	-40°C to +90°C
	installation	-20°C to +90°C
Nominal voltage:	according to VDE U_0/U 0,6/1kV	
	according to UL 1000V, for remanufactures	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	10 x cable diameter	
Torsion application:	+/-90° per 1m	
Approvals:	UL-Style 10678* to 400mm² Singlecore UL-Style 21179 Multicore, cRUus*, CE conformed	
Flame test:	FT1	

Properties

· UV-resistant
. RoHS conformed
· multiclimatical app.
· torsion tested
· flame-retardant
· oil-resistant · recyclable
· **easy to tailor**

Construction

· special stranded copper wire, bare as per DIN VDE 0295
· special insulation PVC heat-resistant
· conductor colours, black with numbers + gnye or colour code DIN 47100
· multicore types cabled
· tinned copper wrapped at EMV-shielded types
· special jacket compound PVC heat-resistant
· jacket colour: black

Application

The HELUWIND WK 103 series was specifically designed for use in wind turbines.
We supply the leading wind turbine manufacturers with our cables.

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK 103w EMV D-Torsion (heat-resistant) (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
704752	(4x0,34)	22	7,7	32,0	91,0
704755	(4x0,5)	20	8,0	37,8	105,0
704758	(6x0,5)	20	9,2	53,6	130,0
704762	(10x0,5)	20	11,4	73,0	170,0
704763	(12x0,5)	20	11,7	88,4	220,0
704764	(3x0,75)	18	7,7	43,2	97,0
704765	(4x0,75)	18	8,3	52,6	122,0
704767	(5x0,75)	18	9,0	63,0	145,0
704369	(7x0,75)	18	9,7	98,0	200,0
704769	(4x2x0,75)	18	12,7	91,0	211,0
704768	(8x0,75)	18	10,7	93,0	220,0
704771	(12x0,75)	18	12,2	126,9	257,5
704774	(18x0,75)	18	14,4	179,0	400,0
704775	(12x2x0,75)	18	17,6	223,0	520,0
704268	(25x0,75)	18	17,8	256,0	552,0
704778	(41x0,75)	18	21,2	393,0	795,0
704779	(50x0,75)	18	23,5	441,0	900,0
704784	(2x1,5)	16	6,8	44,0	86,0
704785	(3x1,5)	16	8,8	68,0	133,0
704786	(4x1,5)	16	9,4	87,8	159,0
704788	(5x1,5)	16	10,3	104,0	195,0
704790	(7x1,5)	16	11,9	140,8	247,0
704792	(12x1,5)	16	14,7	226,8	410,0
704793	(3x2,5)	14	10,4	104,4	210,0
704794	(4x2,5)	14	11,2	132,7	264,0
704795	(5x2,5)	14	12,3	161,0	288,0
704796	(7x2,5)	14	14,8	223,1	411,0
704797	(12x2,5)	14	18,2	350,6	638,0
705039	(12x2,5)	14	18,2	350,6	638,0
704798	(5x4)	12	13,6	237,4	382,0
704799	(7x4)	12	16,3	325,0	582,0
704800	(12x4)	12	20,0	532,1	806,0
704801	(5x6)	10	17,4	341,0	640,0
704802	(4x10)	8	17,8	445,6	727,0
704803	(5x10)	8	19,8	550,2	935,0
704804	(4x16)	6	21,1	692,2	1072,0
704805	(5x16)	6	24,4	854,4	1330,0
704806	(4x25)	4	26,0	1059,0	1664,0
704807	(5x25)	4	28,6	1327,0	2014,0
704808	(4x50)	1	37,0	2080,0	3200,0

WK 103w EMV D-Torsion (heat-resistant) (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
703147	(1x70)	2/0	19,8	739,0	950,0
703148	(1x95)	3/0	22,5	989,0	1280,0
703041	(1x120)	4/0	25,0	1242,0	1570,0
702418	(1x120)	4/0	25,0	1242,0	1570,0
703149	(1x150)	300	27,8	1534,0	2000,0
703150	(1x185)	350	30,1	1917,0	2450,0
703151	(1x240)	500	33,0	2451,0	3150,0
703152	(1x300)	600	39,0	3027,0	3920,0
703153	(1x400)	750	43,0	4026,0	5100,0
703154	(1x500	1000	46,5	4986,0	6200,0
703155	(1x630)	630	51,0	6234,0	7600,0

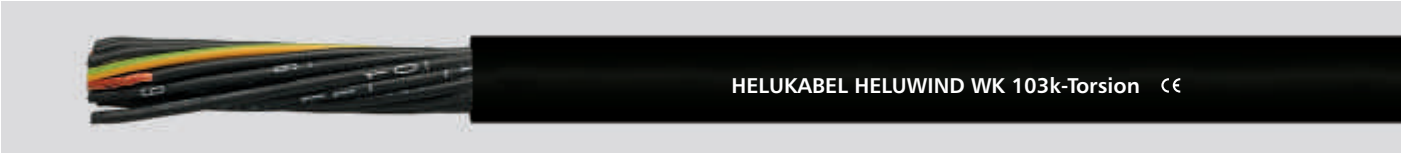
WK 103w EMV D-Torsion (heat-resistant) (DIN 47100)

704749	(2x2x0,25)	24	8,9	27,0	90,0
704750	(4x2x0,25)	24	9,9	39,0	115,0
704751	(5x2x0,25)	24	11,1	46,0	130,0
704753	(2x2x0,34)	22	9,6	35,0	110,0
704754	(4x2x0,34)	22	11,0	47,0	130,0
704756	(2x2x0,5)	20	9,8	39,0	115,0
704757	(4x0,5)	20	8,0	37,8	105,0
704759	(6x0,5)	20	9,2	53,6	130,0
704760	(4x(2x0,5))	20	11,5	111,0	190,0
704761	(4x2x0,5)	20	11,3	42,0	150,0
704766	(2x2x0,75)	18	10,4	54,0	130,0
704770	(4x2x0,75)	18	12,7	91,0	211,0
704772	(12x0,75)	18	12,2	126,9	257,5
704773	(8x2x0,75)	18	17,1	170,0	410,0
704776	(12x2x0,75)	18	17,6	223,0	520,0
704777	(32x0,75)	18	18,8	294,0	610,0
704780	(4x1,0)	17	8,7	56,0	110,0
704781	(6x1,0)	17	10,2	82,0	150,0
704782	(8x1,0)	17	11,7	106,0	210,0
704783	(12x1,0)	17	13,3	150,0	280,0
704787	(2x2x1,5)	16	12,1	90,0	180,0
704789	(3x2x1,5)	16	14,0	120,0	235,0
704791	(4x2x1,5)	16	14,6	150,0	210,0

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK 103k-Torsion

UV-resistant, UL/CSA-Style 10107/2570 Single-/Multicore



RoHS

Technical data

Temperature range	flexing	-40°C to +80°C
	fixed installation	-40°C to +80°C
Nominal voltage:	according to VDE U_0/U 0,6/1kV	
	according to UL 600V (1000V in preparation)	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	10 x cable diameter	
Torsion application:	+/-140° per 1m for unshielded types	
Approvals:	UL-Style 10107* to 400mm² Singlecore	
	UL-Style 2570 Multicore,	
	cRUus*, CE conformed	
Flame test:	FT1	

Properties

· UV-resistant
. RoHS conformed
· multiclimatical app.
· flame-retardant
· torsion tested
· oil-resistant
· recyclable
· **easy to tailor**

Aufbau

· special stranded copper wire, bare as per DIN VDE 0295
· special insulation PVC flexible at low temperatures
· conductor colours, black with numbers + gnye
· multicore types cabled
· special jacket compound flexible at low temperatures
· jacket colour: black

Application

The HELUWIND WK 103 series was specifically designed for use in wind turbines.
We supply the leading wind turbine manufacturers with our cables.

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK 103k-Torsion (flexible at low temperatures) (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
704940	4x0,34	22	7,1	29,0	86,0
704941	4x0,5	20	7,4	33,4	99,0
704942	6x0,5	20	8,6	51,2	121,0
704943	10x0,5	20	10,8	48,0	165,0
704944	12x0,5	20	11,1	84,0	208,0
704945	3x0,75	18	7,3	22,0	77,0
704946	4x0,75	18	7,9	29,0	100,0
704947	5x0,75	18	8,6	36,0	120,0
704948	7x0,75	18	10,0	51,0	170,0
704949	10x0,75	18	11,0	72,0	200,0
704950	12x0,75	18	11,8	87,0	220,0
704951	14x0,75	18	12,5	101,0	238,0
704952	16x0,75	18	13,2	116,0	271,0
704953	18x0,75	18	13,9	130,0	310,0
704954	21x0,75	18	15,2	152,0	380,0
704955	25x0,75	18	16,9	180,0	490,0
704956	32x0,75	18	18,2	231,0	560,0
704957	36x0,75	18	19,1	260,0	620,0
704958	40x0,75	18	20,5	288,0	729,0
704959	41x0,75	18	20,8	296,0	729,0
704960	50x0,75	18	23,5	441,0	990,0
704961	4x1	17	8,3	39,0	100,0
704962	5x1	17	9,0	48,0	110,0
704963	7x1	17	10,5	68,0	140,0
704964	10x1	17	13,0	96,0	220,0
704965	12x1	17	13,2	116,0	240,0
704966	14x1	17	13,4	135,0	280,0
704967	16x1	17	14,1	154,0	310,0
704968	18x1	17	15,1	173,0	360,0
704969	21x1	17	16,7	202,0	410,0
704970	25x1	17	18,4	240,0	500,0
704971	32x1	17	19,8	308,0	590,0
704972	36x1	17	20,6	346,0	700,0
704973	40x1	17	22,4	384,0	800,0
704974	41x1	17	22,4	394,0	810,0
704975	50x1	17	24,6	480,0	980,0
704976	2x1,5	16	7,9	29,0	75,0
704977	3x1,5	16	8,0	44,0	110,0
704978	4x1,5	16	8,9	58,0	131,0
704979	5x1,5	16	9,7	72,0	165,0
704980	7x1,5	16	12,0	101,0	210,0
704981	10x1,5	16	13,1	144,0	270,0
704982	12x1,5	16	14,3	173,0	360,0
704983	14x1,5	16	14,9	202,0	420,0
704984	16x1,5	16	15,7	231,0	450,0

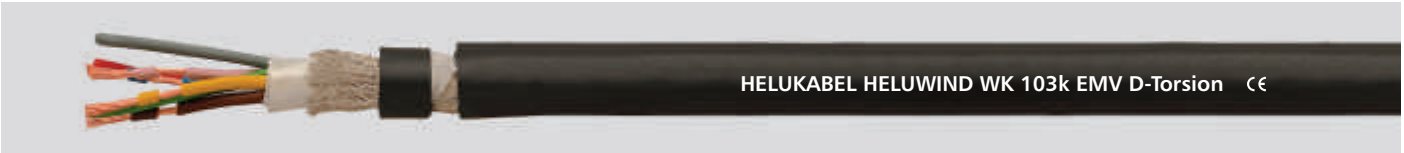
WK 103k-Torsion (flexible at low temperatures) (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
704985	18x1,5	16	16,8	260,0	510,0
704986	21x1,5	16	17,8	303,0	590,0
704987	25x1,5	16	20,6	360,0	700,0
704988	32x1,5	16	22,2	460,0	900,0
704989	36x1,5	16	23,1	519,0	980,0
704990	40x1,5	16	25,0	576,0	1030,0
704991	41x1,5	16	25,0	591,0	1050,0
704992	50x1,5	16	27,7	720,0	1200,0
704993	3x2,5	14	8,9	72,0	151,0
704994	4x2,5	14	9,7	96,0	230,0
704995	5x2,5	14	10,9	120,0	250,0
704996	7x2,5	14	14,4	168,0	360,0
704997	10x2,5	14	15,8	240,0	480,0
704998	12x2,5	14	16,3	288,0	580,0
705038	12x2,5	14	16,3	288,0	580,0
704999	3x4	12	10,8	116,0	250,0
705000	4x4	12	12,0	154,0	270,0
705001	5x4	12	13,6	192,0	370,0
705002	7x4	12	15,9	269,0	530,0
705003	12x4	12	19,6	461,0	740,0
705004	3x6	10	13,1	173,0	340,0
705005	4x6	10	14,6	231,0	460,0
705006	5x6	10	16,3	288,0	550,0
705007	7x6	10	19,6	404,0	780,0
705008	4x10	8	17,4	384,0	670,0
705009	5x10	8	20,1	480,0	870,0
705010	7x10	8	23,5	672,0	1150,0
705011	4x16	6	20,7	615,0	1000,0
705012	5x16	6	25,4	768,0	1250,0
705013	4x25	4	25,2	960,0	1580,0
705014	5x25	4	28,2	1200,0	1900,0
705016	4x35	2	31,4	1344,0	2100,0
705017	5x35	2	35,4	1680,0	2600,0
705018	4x50	1	36,7	1920,0	2800,0
705015	1x35	2	12,9	336,0	460,0
705019	1x70	2/0	17,9	672,0	880,0
705020	1x95	3/0	21,9	912,0	1230,0
705021	1x120	4/0	23,1	1152,0	1540,0
705022	1x150	300	27,2	1440,0	1870,0
705023	1x185	350	29,4	1776,0	2300,0
705024	1x240	500	31,2	2304,0	2970,0
705025	1x300	600	35,0	2880,0	3730,0
705026	1x400	750	39,3	3840,0	4500,0

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK 103k EMV D-Torsion

shielded, UV-resistant, UL/CSA-Style 10107/2570 Single-/Multicore



RoHS

Technical data

Temperature range:	flexing	-40°C to +80°C
	fixed installation	-40°C to +80°C
Nominal voltage:	according to VDE U_0/U 0,6/1kV	
	according to UL 600V (1000V in preparation)	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	10 x cable diameter	
Torsion application:	+/-90° per 1m for shielded types	
Approvals:	UL-Style 10107* to 400mm² Singlecore	
	UL-Style 2570 Multicore,	
	cRUus*, CE conformed	
Flame test:	FT1	

Properties

- UV-resistant
- RoHS conformity
- multiclimatical app.
- flame-retardant
- torsion tested
- oil-resistant
- recyclable
- **easy to tailor**

Construction

- special stranded copper wire, bare as per DIN VDE 0295
- special insulation PVC flexible at low temperatures
- conductor colours, black with numbers + gnye or colour code DIN 47100
- multicore types cabled
- tinned copper wrapped at shielded types
- special jacket compound flexible at low temperatures
- jacket colour: black

Application

The HELUWIND WK 103 series was specifically designed for use in wind turbines.
We supply the leading wind turbine manufacturers with our cables.

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK 103k EMV D-Torsion (flexible at low temperatures) (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
704880	(4x0,34)	22	7,7	32,0	91,0
704883	(4x0,5)	20	8,0	37,8	105,0
704886	(6x0,5)	20	9,2	53,6	130,0
704890	(10x0,5)	20	11,4	73,0	170,0
704891	(12x0,5)	20	11,7	88,4	220,0
704892	(3x0,75)	18	7,7	43,2	97,0
704893	(4x0,75)	18	8,3	52,6	122,0
704895	(5x0,75)	18	9,0	63,0	145,0
704896	(7x0,75)	18	9,7	82,8	200,0
704898	(4x2x0,75)	18	12,7	91,0	211,0
704897	(8x0,75)	18	10,7	93,0	220,0
704900	(12x0,75)	18	12,2	126,9	257,5
704903	(18x0,75)	18	14,4	179,0	400,0
704904	(12x2x0,75)	18	17,6	223,0	520,0
704906	(25x0,75)	18	17,8	256,0	552,0
704908	(41x0,75)	18	21,2	370,8	795,0
704909	(50x0,75)	18	23,5	441,0	900,0
704914	(2x1,5)	16	6,8	44,0	86,0
704915	(3x1,5)	16	8,8	68,0	133,0
704916	(4x1,5)	16	9,4	87,8	159,0
704918	(5x1,5)	16	10,3	104,0	195,0
704920	(7x1,5)	16	11,9	140,8	247,0
704922	(12x1,5)	16	14,7	226,8	410,0
704923	(3x2,5)	14	10,4	104,4	210,0
704924	(4x2,5)	14	11,2	132,7	264,0
704925	(5x2,5)	14	12,3	161,0	288,0
704926	(7x2,5)	14	14,8	223,1	411,0
704927	(12x2,5)	14	18,2	350,6	638,0
705037	(12x2,5)	14	18,2	350,6	638,0
704928	(5x4)	12	13,6	237,4	382,0
704929	(7x4)	12	16,3	325,0	582,0
704930	(12x4)	12	20,0	532,1	806,0
704931	(5x6)	10	17,4	341,0	640,0
704932	(4x10)	8	17,8	445,6	727,0
704933	(5x10)	8	19,8	550,2	935,0
704934	(4x16)	6	21,1	692,2	1072,0
704935	(5x16)	6	24,4	854,4	1330,0
704936	(4x25)	4	26,0	1059,0	1664,0
704937	(5x25)	4	28,6	1327,0	2014,0
704938	(4x50)	1	37,0	2080,0	3200,0

WK 103k EMV D-Torsion (flexible at low temperatures) (JZ)

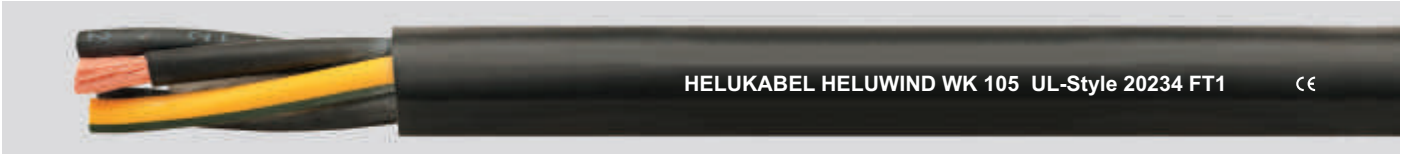
Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
78177	(1x70)	2/0	19,8	739,0	950,0
74006	(1x95)	3/0	21,2	989,0	1200,0
78178	(1x120)	4/0	25,0	1250,0	1400,0
78179	1x150)	300	28,4	1740,0	2000,0
78180	(1x185)	350	30,1	1904,0	2450,0
703328	(1x240)	500	32,5	2451,0	3150,0
704939	(1x300)	600	39,0	3027,0	3920,0

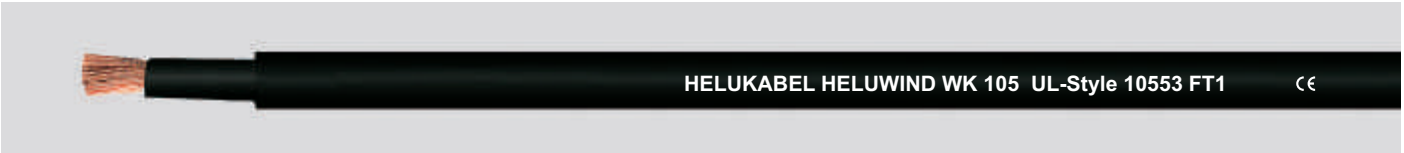
WK 103k EMV D-Torsion (flexible at low temperatures) (DIN 47100)

704877	(2x2x0,25)	24	8,9	27,0	90,0
704878	(4x2x0,25)	24	9,9	39,0	115,0
704879	(5x2x0,25)	24	11,1	46,0	130,0
704881	(2x2x0,34)	22	9,6	35,0	110,0
704882	(4x2x0,34)	22	11,0	47,0	130,0
704884	(2x2x0,5)	20	9,8	39,0	115,0
704885	(4x0,5)	20	8,0	37,8	105,0
704887	(6x0,5)	20	9,2	53,6	130,0
704888	(4x(2x0,5))	20	11,5	69,2	190,0
704889	(4x2x0,5)	20	11,3	42,0	150,0
704894	(2x2x0,75)	18	10,4	54,0	130,0
704899	(4x2x0,75)	18	12,7	91,0	211,0
704901	(12x0,75)	18	12,2	126,9	257,5
704902	(8x2x0,75)	18	17,1	170,0	410,0
704905	(12x2x0,75)	18	17,6	223,0	520,0
704907	(32x0,75)	18	18,8	294,0	610,0
704910	(4x1,0)	17	8,7	56,0	110,0
704911	(6x1,0)	17	10,2	82,0	150,0
704912	(8x1,0)	17	11,7	106,0	210,0
704913	(12x1,0)	17	13,3	150,0	280,0
704917	(2x2x1,5)	16	12,1	90,0	180,0
704919	(3x2x1,5)	16	14,0	120,0	235,0
704921	(4x2x1,5)	16	14,6	150,0	210,0

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK 105 halogen-free, FT1,
UV-resistant, UL/CSA-Style 10553 / 20234 Single-/Multicore, 0,6/1kV, 80°C





RoHS

Technical data

Temperature range:	flexing	-40°C to +80°C
	fixed instal. as per VDE	-50°C to +90°C
	fixed instal. as per UL	-50°C to +80°C
Nominal voltage:	acc. to VDE U_0/U 0,6/1kV, acc. to UL 1000V	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	10 x cable diameter	
Approvals:	UL-Style 10553 Singlecore	
	UL-Style 20234 Multicore	
	cRUus, CE conformed	
Flame test:	FT1 (contains FT2)	

Properties

- RoHS conformity
- multiclimatical app.
- extremely abrasion resistant
- non-adhesive
- extremely oil-resistant
- UV-resistant
- halogen-free
- recyclable

Construction

- special stranded copper wire, bare as per DIN VDE 0295
- special conductor insulation
- conductor colours, black with numbers + gnye
- multicore types cabled
- special jacket compound, non-adhesive
- jacket colour: black

Application

The HELUWIND WK 105 series was specifically designed for use in wind turbines.
We supply the leading wind turbine manufacturers with our cables.

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK 105 (JZ)

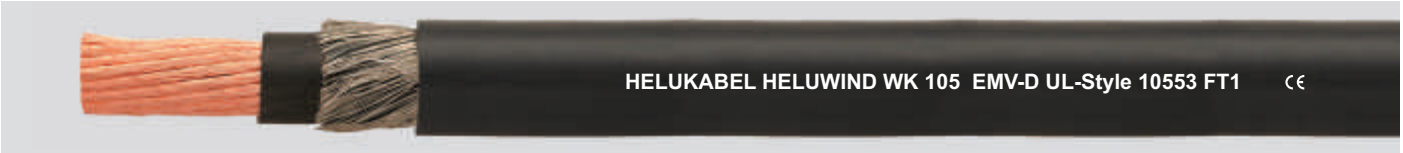
Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
703544	4x0,5	20	7,4	33,4	99,0
703546	6x0,5	20	8,6	49,8	121,0
703179	10x0,5	20	10,8	48,0	165,0
703548	12x0,5	20	11,1	82,0	204,0
703181	3x0,75	18	7,3	22,0	77,0
703182	4x0,75	18	7,9	29,0	100,0
703183	5x0,75	18	8,6	36,0	120,0
703184	7x0,75	18	10,0	51,0	170,0
704545	10x0,75	18	11,0	72,0	200,0
703185	12x0,75	18	11,8	87,0	220,0
704546	14x0,75	18	12,5	101,0	238,0
704547	16x0,75	18	13,2	116,0	271,0
704548	18x0,75	18	13,9	130,0	310,0
704549	21x0,75	18	15,2	152,0	380,0
703186	25x0,75	18	16,9	180,0	490,0
704550	32x0,75	18	18,2	231,0	560,0
704551	36x0,75	18	19,1	260,0	620,0
704552	40x0,75	18	20,5	288,0	729,0
703187	41x0,75	18	20,8	296,0	750,0
704553	50x0,75	18	23,5	441,0	990,0
704554	4x1	17	8,3	39,0	100,0
704555	5x1	17	9,0	48,0	110,0
704556	7x1	17	10,5	68,0	140,0
704557	10x1	17	13,0	96,0	220,0
704558	12x1	17	13,2	116,0	240,0
704559	14x1	17	13,4	135,0	280,0
704560	16x1	17	14,1	154,0	310,0
704561	18x1	17	15,1	173,0	360,0
704562	21x1	17	16,7	202,0	410,0
704563	25x1	17	18,4	240,0	500,0
704564	32x1	17	19,8	308,0	590,0
704565	36x1	17	20,6	346,0	700,0
704566	40x1	17	22,4	384,0	800,0
704567	41x1	17	22,4	394,0	810,0
704568	50x1	17	24,6	480,0	980,0
704569	2x1,5	16	7,9	29,0	75,0
702855	3x1,5	16	8,0	44,0	110,0
702856	4x1,5	16	8,9	58,0	131,0
703188	5x1,5	16	9,7	72,0	165,0
702858	7x1,5	16	12,0	101,0	210,0
704570	10x1,5	16	13,1	144,0	270,0
703189	12x1,5	16	14,3	173,0	360,0
704571	14x1,5	16	14,9	202,0	420,0
704572	16x1,5	16	15,7	231,0	450,0
704573	18x1,5	16	16,8	260,0	510,0
704574	21x1,5	16	17,8	303,0	590,0

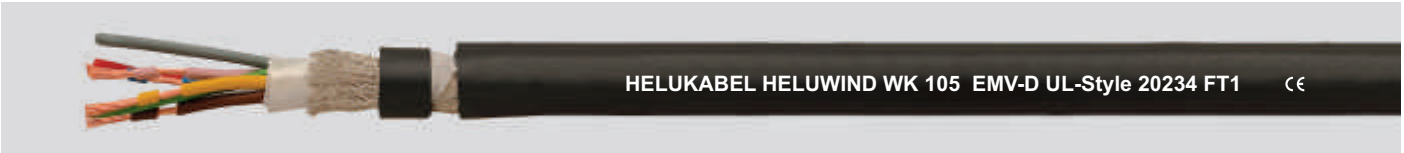
WK 105 (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
704575	25x1,5	16	20,6	360,0	700,0
704576	32x1,5	16	22,2	460,0	900,0
704577	36x1,5	16	23,1	519,0	980,0
704578	40x1,5	16	25,0	576,0	1030,0
704579	41x1,5	16	25,0	591,0	1050,0
704580	50x1,5	16	27,7	720,0	1200,0
703190	3x2,5	14	10,0	72,0	180,0
703191	4x2,5	14	9,7	96,0	230,0
702857	5x2,5	14	10,9	120,0	250,0
702859	7x2,5	14	14,4	168,0	360,0
704581	10x2,5	14	15,8	240,0	480,0
703192	12x2,5	14	16,3	288,0	580,0
705042	12x2,5	14	16,3	288,0	580,0
704582	3x4	12	10,8	116,0	250,0
704583	4x4	12	12,0	154,0	270,0
702860	5x4	12	13,2	192,0	340,0
703193	7x4	12	15,9	269,0	530,0
703194	12x4	12	19,6	461,0	740,0
704584	3x6	10	13,1	173,0	340,0
704585	4x6	10	14,6	231,0	460,0
704586	5x6	10	16,3	288,0	550,0
704587	5x6	10	16,3	288,0	550,0
704588	5x6	10	16,3	288,0	550,0
704589	7x6	10	19,6	404,0	780,0
703195	4x10	8	17,4	384,0	670,0
703196	5x10	8	20,1	480,0	870,0
704590	7x10	8	23,5	672,0	1150,0
703197	4x16	6	20,7	615,0	1000,0
702854	5x16	6	25,4	768,0	1250,0
703198	4x25	4	25,2	960,0	1580,0
703199	5x25	4	28,2	1200,0	1900,0
704592	4x35	2	31,4	1344,0	2100,0
704593	5x35	2	35,4	1680,0	2600,0
704594	4x50	1	35,5	1920,0	2600,0
704595	4x50	1	35,5	1920,0	2600,0
704591	1x35	2	12,9	336,0	460,0
703200	1x70	2/0	19,2	672,0	930,0
703201	1x95	3/0	21,9	912,0	1230,0
703202	1x120	4/0	24,3	1152,0	1520,0
703203	1x150	300	27,2	1440,0	1870,0
703204	1x185	350	29,4	1776,0	2300,0
703205	1x240	500	32,3	2304,0	2900,0
703206	1x300	600	38,3	2880,0	3650,0
704596	1x400	750	39,3	3840,0	4500,0

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK 105 EMV-D halogen-free, FT1,
UV-resistant, UL/CSA-Style 10553 / 20234 Single-/Multicore, 0,6/1kV, 80°C





RoHS

Technical data

Temperature range:	flexing	-40°C to +80°C
	fixed instal. as per VDE	-50°C to +90°C
	fixed instal. as per UL	-50°C to +80°C
Nominal voltage:	acc. to VDE U_0/U 0,6/1kV, acc. to UL 1000V	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	10 x cable diameter	
Approvals:	UL-Style 10553 Singlecore UL-Style 20234 Multicore cRUus, CE conformed	
Flame test:	FT1 (contains FT2)	

Properties

- RoHS conformity
- multiclimatical app.
- extremely abrasion resistant
- non-adhesive
- extremely oil-resistant
- UV-resistant
- halogen-free
- recyclable

Construction

- special stranded copper wire, bare as per DIN VDE 0295
- special conductor insulation
- conductor colours, black with numbers + gnye or colour code DIN 47100
- multicore types cabled
- tinned copper wrapped
- special jacket compound, non-adhesive
- jacket colour: black

Application

The HELUWIND WK 105 series was specifically designed for use in wind turbines.
We supply the leading wind turbine manufacturers with our cables.

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK 105 EMV-D (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
702861	(4x0,34)	22	7,7	32,0	91,0
703176	(4x0,5)	20	8,0	37,8	105,0
703178	(6x0,5)	20	9,2	53,6	130,0
703177	(4x(2x0,5))	20	11,5	69,2	190,0
703547	(10x0,5)	20	11,4	73,0	170,0
703180	(12x0,5)	20	11,7	88,4	220,0
703549	(3x0,75)	18	7,7	43,2	97,0
703550	(4x0,75)	18	8,3	52,6	122,0
703551	(5x0,75)	18	9,0	63,0	145,0
703552	(7x0,75)	18	9,7	82,8	200,0
703558	(4x2x0,75)	18	12,7	88,0	218,0
703553	(8x0,75)	18	10,7	93,0	220,0
703554	(12x0,75)	18	12,2	126,9	257,5
703555	(18x0,75)	18	14,4	179,0	400,0
704531	(12x2x0,75)	18	17,6	223,0	520,0
703556	(25x0,75)	18	17,3	238,3	544,0
703557	(41x0,75)	18	21,2	370,8	795,0
704534	(50x0,75)	18	23,5	441,0	900,0
704539	(2x1,5)	16	6,8	44,0	86,0
703559	(3x1,5)	16	8,8	68,0	133,0
703560	(4x1,5)	16	9,4	87,8	159,0
703561	(5x1,5)	16	10,3	104,4	195,0
703562	(7x1,5)	16	11,9	140,8	247,0
703563	(12x1,5)	16	14,7	226,8	410,0
703564	(3x2,5)	14	10,4	104,4	210,0
703565	(4x2,5)	14	11,2	132,7	264,0
703566	(5x2,5)	14	12,3	161,0	288,0
703567	(7x2,5)	14	14,8	223,1	411,0
703568	(12x2,5)	14	18,2	350,6	638,0
705041	(12x2,5)	14	18,2	350,6	638,0
703569	(5x4)	12	13,6	237,4	382,0
703570	(7x4)	12	16,3	325,0	582,0
703571	(12x4)	12	20,0	532,1	806,0
704543	(5x6)	10	17,4	341,0	640,0
703572	(4x10)	8	17,8	445,6	727,0
703573	(5x10)	8	19,8	550,2	935,0
703574	(4x16)	6	21,1	692,2	1072,0
703575	(5x16)	6	24,4	854,4	1330,0
703576	(4x25)	4	25,6	1050,7	1664,0
703577	(5x25)	4	28,6	1323,1	2014,0
704544	(4x50)	1	36,0	2070,0	3150,0

WK 105 EMV-D (JZ)

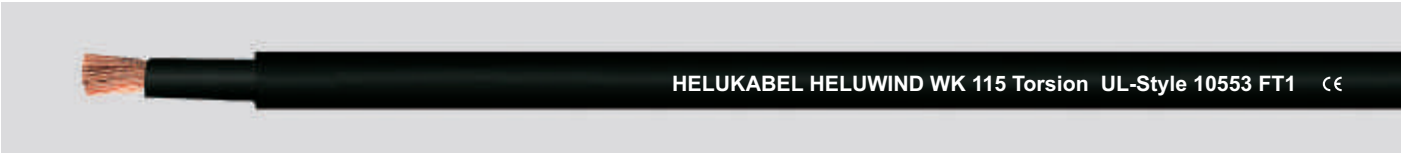
Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
703578	(1x70)	2/0	19,6	741,1	994,0
703579	(1x95)	3/0	22,3	993,0	1305,0
703580	(1x120)	4/0	24,7	1241,6	1603,0
703581	(1x150)	300	27,6	1548,0	1970,0
703582	(1x185)	350	29,8	1900,2	2415,0
703583	(1x240)	500	32,7	2444,4	3030,0
703584	(1x300)	600	38,7	3026,9	3786,0

WK 105 EMV-D (DIN 47100)

704518	(2x2x0,25)	24	8,9	27,0	90,0
704519	(4x2x0,25)	24	9,9	39,0	115,0
704520	(5x2x0,25)	24	11,1	46,0	130,0
704521	(2x2x0,34)	22	9,6	35,0	110,0
704522	(4x2x0,34)	22	11,0	47,0	130,0
704523	(2x2x0,5)	20	9,8	39,0	115,0
704524	(4x0,5)	20	8,0	37,8	105,0
704525	(6x0,5)	20	9,2	53,6	130,0
704526	(4x2x0,5)	20	11,3	42,0	150,0
704527	(2x2x0,75)	18	10,4	54,0	130,0
704528	(4x2x0,75)	18	12,7	88,0	218,0
704529	(12x0,75)	18	12,2	126,9	257,5
704530	(8x2x0,75)	18	17,1	170,0	410,0
704532	(12x2x0,75)	18	17,6	223,0	520,0
704533	(32x0,75)	18	18,8	294,0	610,0
704535	(4x1,0)	17	8,7	56,0	110,0
704536	(6x1,0)	17	10,2	82,0	150,0
704537	(8x1,0)	17	11,7	106,0	210,0
704538	(12x1,0)	17	13,3	150,0	280,0
704540	(2x2x1,5)	16	12,1	90,0	180,0
704542	(4x2x1,5)	16	14,6	150,0	210,0
704541	(3x2x1,5)	16	14,0	120,0	235,0

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK 115-Torsion halogen-free, FT1,
UV-resistant, UL/CSA-Style 10553 / 20234 Single-/Multicore, 0,6/1kV, 80°C



RoHS

Technical data

Temperature range:	flexing	-40°C to +80°C
	fixed instal. as per VDE	-50°C to +90°C
	fixed instal. as per UL	-50°C to +80°C
Nominal voltage:	acc. to VDE U_0/U 0,6/1kV, acc. to UL 1000V	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	10 x cable diameter	
Torsion application:	+/-150° per 1m	
Approvals:	UL-Style 10553 Singlecore UL-Style 20234 Multicore cRUus, CE conformed	
Flame test:	FT1 (contains FT2)	

Properties

- RoHS conformity
- multiclimatical app.
- extremely abrasion resistant
- non-adhesive
- torsion tested
- extremely oil-resistant
- UV-resistant
- halogen-free
- recyclable

WK 115-Torsion (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
703585	4x0,34	22	7,1	29,0	86,0
703586	4x0,5	20	7,4	32,4	98,0
704622	4x0,5	20	7,4	34,0	98,0
703588	6x0,5	20	8,6	51,2	123,0
703211	10x0,5	20	10,8	48,0	165,0
703590	12x0,5	20	10,6	81,0	208,0
703213	3x0,75	18	7,3	22,0	77,0
703214	4x0,75	18	7,9	29,0	100,0
704623	4x0,75	18	7,9	29,0	100,0
703215	5x0,75	18	8,6	36,0	120,0
703216	7x0,75	18	10,0	51,0	170,0
703525	8x0,75	18	10,3	58,0	160,0
704624	10x0,75	18	11,0	72,0	200,0
703217	12x0,75	18	11,8	87,0	220,0
704625	14x0,75	18	12,5	101,0	238,0
704626	16x0,75	18	13,2	116,0	271,0
703526	18x0,75	18	13,9	130,0	310,0
704627	21x0,75	18	15,2	152,0	380,0
703218	25x0,75	18	16,9	180,0	490,0
704628	32x0,75	18	18,2	231,0	560,0
704629	36x0,75	18	19,1	260,0	620,0
704630	40x0,75	18	20,5	288,0	729,0
703219	41x0,75	18	20,8	296,0	750,0
704631	41x0,75	18	20,8	296,0	750,0
704632	50x0,75	18	23,5	441,0	990,0
704633	4x1	17	8,3	39,0	100,0
704634	5x1	17	9,0	48,0	110,0
704635	7x1	17	10,5	68,0	140,0
704636	10x1	17	13,0	96,0	220,0
704637	12x1	17	13,2	116,0	240,0
704638	14x1	17	13,4	135,0	280,0
704639	16x1	17	14,1	154,0	310,0
704640	18x1	17	15,1	173,0	360,0
704641	21x1	17	16,7	202,0	410,0
704642	25x1	17	18,4	240,0	500,0
704643	32x1	17	19,8	308,0	590,0
704644	36x1	17	20,6	346,0	700,0
704645	40x1	17	22,4	384,0	800,0
704646	41x1	17	22,4	394,0	810,0
704647	50x1	17	24,6	480,0	980,0
704648	2x1,5	16	7,9	29,0	75,0
703220	3x1,5	16	8,0	44,0	110,0
704649	3x1,5	16	8,0	44,0	110,0
703221	4x1,5	16	8,9	58,0	131,0
703222	5x1,5	16	9,7	72,0	165,0
703223	7x1,5	16	12,0	101,0	210,0

Construction

- special stranded copper wire, bare as per DIN VDE 0295
- special conductor insulation
- conductor colours, black with numbers + gnye
- multicore types cabled
- special jacket compound, non-adhesive
- jacket colour: black

Application

The HELUWIND WK 115-Torsion series was specifically designed for use in wind turbines.
We supply the leading wind turbine manufacturers with our cables.
CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK 115-Torsion (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
704650	10x1,5	16	13,1	144,0	270,0
703224	12x1,5	16	14,3	173,0	360,0
704651	14x1,5	16	14,9	202,0	420,0
704652	16x1,5	16	15,7	231,0	450,0
704653	18x1,5	16	16,8	260,0	510,0
704654	21x1,5	16	17,8	303,0	590,0
704655	25x1,5	16	20,6	360,0	700,0
704656	32x1,5	16	22,2	460,0	900,0
704657	36x1,5	16	23,1	519,0	980,0
704658	40x1,5	16	25,0	576,0	1030,0
704659	41x1,5	16	25,0	591,0	1050,0
704660	50x1,5	16	27,7	720,0	1200,0
703225	3x2,5	14	10,0	72,0	180,0
704661	3x2,5	14	10,0	72,0	180,0
703226	4x2,5	14	9,7	96,0	230,0
703227	5x2,5	14	10,9	120,0	250,0
703228	7x2,5	14	14,4	168,0	360,0
704662	10x2,5	14	15,8	240,0	480,0
703229	12x2,5	14	16,3	288,0	580,0
705044	12x2,5	14	16,3	288,0	580,0
704663	3x4	12	10,8	116,0	250,0
704664	4x4	12	12,0	154,0	270,0
703230	5x4	12	13,2	192,0	340,0
703231	7x4	12	15,9	269,0	530,0
703232	12x4	12	19,6	461,0	740,0
704665	3x6	10	13,1	173,0	340,0
704666	4x6	10	14,6	231,0	460,0
704667	5x6	10	16,3	288,0	550,0
704668	7x6	10	19,6	404,0	780,0
703233	4x10	8	17,4	384,0	670,0
703234	5x10	8	20,1	480,0	870,0
704669	7x10	8	23,5	672,0	1150,0
703235	4x16	6	20,7	615,0	1000,0
703236	5x16	6	25,4	768,0	1250,0
703237	4x25	4	25,2	960,0	1580,0
703238	5x25	4	28,2	1200,0	1900,0
704671	4x35	2	31,4	1344,0	2100,0
704672	5x35	2	35,4	1680,0	2600,0
704673	4x50	1	35,5	1920,0	2600,0
704670	1x35	2	12,9	336,0	460,0
703239	1x70	2/0	19,2	672,0	930,0
703240	1x95	3/0	21,9	912,0	1230,0
703241	1x120	4/0	24,3	1152,0	1520,0
703242	1x150	300	27,2	1440,0	1870,0
703243	1x185	350	29,4	1776,0	2300,0
703244	1x240	500	32,3	2304,0	2900,0
703245	1x300	600	38,3	2880,0	3650,0
704674	1x400	750	39,3	3840,0	4500,0

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK 115 D-EMV Torsion halogen-free, FT1,
UV-resistant, UL/CSA-Style 10553 / 20234 Single-/Multicore, 0,6/1kV, 80°C

Technical data

Temperature range:	flexing	-40°C to +80°C
	fixed instal. as per VDE	-50°C to +90°C
	fixed instal. as per UL	-50°C to +80°C
Nominal voltage:	acc. to VDE U_0/U 0,6/1kV, acc. to UL 1000V	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	10 x cable diameter	
Torsion application:	+/-150° per 1m	
Approvals:	UL-Style 10553 Singlecore	
	UL-Style 20234 Multicore	
	cRUus, CE conformed	
Flame test:	FT1 (contains FT2)	

Properties

- RoHS conformity
- multiclimatical app.
- extremely abrasion resistant
- non-adhesive
- torsion tested
- extremely oil-resistant
- UV-resistant
- halogen-free
- recyclable

Construction

- special stranded copper wire, bare as per DIN VDE 0295
- special conductor insulation
- conductor colours, black with numbers + gnye or colour code DIN 47100
- multicore types cabled
- tinned copper wrapped
- special jacket compound, non-adhesive
- jacket colour: black

Application

The HELUWIND WK 115-Torsion series was specifically designed for use in wind turbines.
We supply the leading wind turbine manufacturers with our cables.

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK 115 D-EMV Torsion (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
703207	(4x0,34)	22	7,7	32,0	91,0
703208	(4x0,5)	20	8,0	37,8	105,0
703210	(6x0,5)	20	9,2	53,6	130,0
703209	(4x(2x0,5))	20	11,5	69,2	190,0
703589	(10x0,5)	20	11,4	73,0	170,0
703212	(12x0,5)	20	11,7	88,4	220,0
703591	(3x0,75)	18	7,7	43,2	97,0
703592	(4x0,75)	18	8,3	52,6	122,0
703593	(5x0,75)	18	9,0	63,0	145,0
703594	(7x0,75)	18	9,7	82,8	200,0
703531	(4x2x0,75)	18	12,7	88,0	210,0
703799	(8x0,75)	18	10,7	85,0	185,0
703596	(12x0,75)	18	12,2	126,9	257,5
703798	(18x0,75)	18	14,4	170,0	345,0
703598	(25x0,75)	18	17,3	238,3	544,0
703521	(41x0,75)	18	21,2	370,8	795,0
704612	(50x0,75)	18	23,5	441,0	900,0
703600	(3x1,5)	16	8,8	68,0	133,0
703601	(4x1,5)	16	9,4	87,8	159,0
703602	(5x1,5)	16	10,3	104,4	195,0
703603	(7x1,5)	16	11,9	140,8	247,0
703604	(12x1,5)	16	14,7	226,8	410,0
703605	(3x2,5)	14	10,4	104,4	210,0
703606	(4x2,5)	14	11,2	132,7	264,0
703607	(5x2,5)	14	12,3	161,0	288,0
703608	(7x2,5)	14	14,8	223,1	411,0
703609	(12x2,5)	14	18,2	350,6	638,0
705043	(12x2,5)	14	18,2	350,6	638,0
703610	(5x4)	12	13,6	237,4	382,0
703611	(7x4)	12	16,3	325,0	582,0
703612	(12x4)	12	20,0	532,1	806,0
704620	(5x6)	10	17,4	341,0	640,0
703613	(4x10)	8	17,8	445,6	727,0
703614	(5x10)	8	19,8	550,2	935,0
703615	(4x16)	6	21,1	692,2	1072,0
703616	(5x16)	6	24,4	854,4	1330,0
703617	(4x25)	4	25,6	1050,7	1664,0
703618	(5x25)	4	28,6	1323,1	2014,0
704621	(4x50)	1	36,0	2070,0	3150,0

WK 115 D-EMV Torsion (JZ)

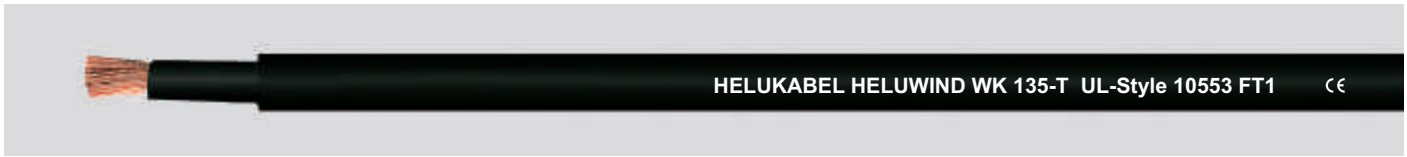
Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
703619	(1x70)	2/0	19,6	741,1	994,0
703620	(1x95)	3/0	22,3	993,0	1305,0
703621	(1x120)	4/0	24,7	1241,6	1603,0
703622	(1x150)	300	27,6	1548,0	1970,0
703623	(1x185)	350	29,8	1900,2	2415,0
703624	(1x240)	500	32,7	2444,4	3030,0
703625	(1x300)	600	38,7	3026,9	3786,0

WK 115 D-EMV Torsion (DIN 47100)

704597	(2x2x0,25)	24	8,9	27,0	90,0
704598	(4x2x0,25)	24	9,9	39,0	115,0
704599	(5x2x0,25)	24	11,1	46,0	130,0
704600	(2x2x0,34)	22	9,6	35,0	110,0
704601	(4x2x0,34)	22	11,0	47,0	130,0
704602	(2x2x0,5)	20	9,8	39,0	115,0
704603	(4x0,5)	20	8,0	37,8	105,0
704604	(6x0,5)	20	9,2	53,6	130,0
704605	(4x2x0,5)	20	11,3	42,0	150,0
704606	(2x2x0,75)	18	10,4	54,0	130,0
704607	(4x2x0,75)	18	12,7	88,0	210,0
704608	(12x0,75)	18	12,2	126,9	257,5
704609	(8x2x0,75)	18	17,1	170,0	410,0
704610	(12x2x0,75)	18	17,6	223,0	520,0
704611	(32x0,75)	18	18,8	294,0	610,0
704613	(4x1,0)	17	8,7	56,0	110,0
704614	(6x1,0)	17	10,2	82,0	150,0
704615	(8x1,0)	17	11,7	106,0	210,0
704616	(12x1,0)	17	13,3	150,0	280,0
704617	(2x2x1,5)	16	12,1	90,0	180,0
704618	(3x2x1,5)	16	14,0	120,0	235,0
704619	(4x2x1,5)	16	14,6	150,0	210,0

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK 135-Torsion FT4*, UV-resistant, suitable for Offshore,
UL/CSA-Style 10553 / 20234, single-/multicore 0,6/1kV, 90°C (80°C to UL)



RoHS

Technical data

Temperature range:	flexing	-40°C to +90°C
	fixed instal. as per VDE	-40°C to +90°C
	fixed instal. as per UL	to +80°C
Nominal voltage:	acc. to VDE U_0/U 0,6/1kV, acc. to UL 1000V also for 1200 V DC capable	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	10 x cable diameter	
Torsion application:	bis +/-150° per 1m	
Approvals:	UL-Style 10553 singlecore UL-Style 20234 multicore cRUus, CE conformed	
Flame test:	FT4* in preparation	

Properties

- halogen-free
- global application
- extremely abrasion resistant
- extreme flame-retardant
- torsion tested
- suitable for Offshore
- extremely oil-resistant
- UV-resistant · recyclable
- multiclimatical app.
- for CCV-application
- **easy to tailor**

Construction

- special stranded copper wire, bare as per DIN VDE 0295
- special conductor insulation
- conductor colours, black with numbers + gnye
- multicore types cabled
- special jacket compound, non-adhesive
- jacket colour: black

Application

The HELUWIND WK 135-Torsion series was specifically designed for use in wind turbines. We supply the leading wind turbine manufacturers with our cables.

Advantages of WK 135-Torsion over H07BN4-F

- burning behavior as per FT4 and IEC 60332-3-24
- increased wear-resistance · recyclable

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK 135-Torsion (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
703668	4x0,34	22	7,1	29,0	88,0
703669	4x0,5	20	7,4	34,0	98,0
703671	6x0,5	20	8,6	49,0	122,0
703289	10x0,5	20	10,8	48,0	165,0
703673	12x0,5	20	11,1	84,0	208,0
703291	3x0,75	18	7,3	22,0	77,0
703292	4x0,75	18	7,9	29,0	100,0
703293	5x0,75	18	8,6	36,0	120,0
703294	7x0,75	18	10,0	51,0	170,0
704699	10x0,75	18	11,0	72,0	200,0
703295	12x0,75	18	11,8	87,0	220,0
704700	14x0,75	18	12,5	101,0	238,0
704701	16x0,75	18	13,2	116,0	271,0
704702	18x0,75	18	13,9	130,0	310,0
704703	21x0,75	18	15,2	152,0	380,0
703296	25x0,75	18	16,9	180,0	490,0
704704	32x0,75	18	18,2	231,0	560,0
704705	36x0,75	18	19,1	260,0	620,0
704706	40x0,75	18	20,5	288,0	729,0
703297	41x0,75	18	20,8	296,0	750,0
705427	50x0,75	18	23,5	441,0	990,0
704707	4x1	17	8,3	39,0	100,0
704708	5x1	17	9,0	48,0	110,0
704709	7x1	17	10,5	68,0	140,0
704710	10x1	17	13,0	96,0	220,0
704711	12x1	17	13,2	116,0	240,0
704712	14x1	17	13,4	135,0	280,0
704713	16x1	17	14,1	154,0	310,0
704714	18x1	17	15,1	173,0	360,0
704715	21x1	17	16,7	202,0	410,0
704716	25x1	17	18,4	240,0	500,0
704717	32x1	17	19,8	308,0	590,0
704718	36x1	17	20,6	346,0	700,0
704719	40x1	17	22,4	384,0	800,0
704720	41x1	17	22,4	394,0	810,0
704721	50x1	17	24,6	480,0	980,0
704722	2x1,5	16	7,9	29,0	75,0
703298	3x1,5	16	8,4	44,0	110,0
703299	4x1,5	16	8,9	58,0	131,0
703300	5x1,5	16	9,9	72,0	165,0
703301	7x1,5	16	12,0	101,0	210,0
704723	10x1,5	16	13,1	144,0	270,0
703302	12x1,5	16	14,3	173,0	360,0
704724	14x1,5	16	14,9	202,0	420,0
704725	16x1,5	16	15,7	231,0	450,0

WK 135-Torsion (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
704726	18x1,5	16	16,8	260,0	510,0
704727	21x1,5	16	17,8	303,0	590,0
704728	25x1,5	16	20,6	360,0	700,0
704729	32x1,5	16	22,2	460,0	900,0
704730	36x1,5	16	23,1	519,0	980,0
704731	40x1,5	16	25,0	576,0	1030,0
704732	41x1,5	16	25,0	591,0	1050,0
704733	50x1,5	16	27,7	720,0	1200,0
703303	3x2,5	14	9,3	72,0	180,0
703304	4x2,5	14	9,7	96,0	230,0
703305	5x2,5	14	10,9	120,0	250,0
703306	7x2,5	14	14,4	168,0	360,0
704734	10x2,5	14	15,8	240,0	480,0
703307	12x2,5	14	16,3	288,0	580,0
705046	19x2,5	14	16,3	456,0	580,0
704735	3x4	12	10,8	116,0	250,0
704736	4x4	12	12,0	154,0	270,0
703308	5x4	12	13,2	192,0	340,0
703309	7x4	12	15,9	269,0	530,0
703310	12x4	12	19,6	461,0	740,0
704737	3x6	10	13,1	173,0	340,0
704738	4x6	10	14,6	231,0	460,0
704471	5x6	10	16,3	288,0	550,0
704739	7x6	10	19,6	404,0	780,0
703311	4x10	8	17,4	384,0	670,0
703312	5x10	8	19,4	480,0	930,0
704740	7x10	8	23,5	672,0	1150,0
703313	4x16	6	23,2	615,0	1100,0
703314	5x16	6	25,8	768,0	1390,0
703315	4x25	4	26,5	960,0	1650,0
703316	5x25	4	29,7	1200,0	1990,0
704742	4x35	2	31,4	1344,0	2100,0
704743	5x35	2	35,4	1680,0	2600,0
704744	4x50	1	35,5	1920,0	2600,0
704741	1x35	2	12,9	336,0	460,0
703317	1x70	2/0	19,2	672,0	930,0
703318	1x95	3/0	21,9	912,0	1230,0
703319	1x120	4/0	24,3	1152,0	1520,0
703320	1x150	300	24,7	1440,0	1870,0
703321	1x185	350	26,1	1776,0	2300,0
703322	1x240	500	30,2	2304,0	2900,0
703323	1x300	600	32,8	2880,0	3520,0
704745	1x400	750	39,3	3840,0	4500,0

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK 135 D-EMV Torsion FT4*, suitable for Offshore,
UV-resistant, UL/CSA-Style 10553 / 20234, single-/multicore 0,6/1kV, 90°C (80°C to UL)

RoHS

Technical data

Temperature range:	flexing	-40°C to +90°C
	fixed instal. as per VDE	-40°C to +90°C
	fixed instal. as per UL	to +80°C
Nominal voltage:	acc. to VDE U_0/U 0,6/1kV, acc. to UL 1000V also for 1200 V DC capable	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	10 x cable diameter	
Torsion application:	bis +/-150° per 1m	
Approvals:	UL-Style** 10553 Singlecore UL-Style** 20234 Multicore cRUus, CE conformed	
Flame test:	FT4* in preparation	

Properties

- halogen-free
- global application
- extremely abrasion resistant
- extreme flame-retardant
- torsion tested
- suitable for Offshore
- extremely oil-resistant
- UV-resistant · recyclable
- multiclimatical app.
- for CCV-Application
- **easy to tailor**

Construction

- special stranded copper wire, bare as per DIN VDE 0295
- special conductor insulation
- conductor colours, black with numbers + gnye or colour code DIN 47100
- multicore types cabled
- tinned copper wrapped
- special SSH jacket compound, non-adhesive
- jacket colour: black

Application

The HELUWIND WK 135 D-EMV Torsion series was specifically designed for use in wind turbines. We supply the leading wind turbine manufacturers with our cables.

Advantages of WK 135-Torsion over H07BN4-F

- burning behavior as per FT4 and IEC 60332-3-24
- increased wear-resistance · recyclable

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK 135 D-EMV Torsion (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
703285	(4x0,34)	22	7,7	32,0	91,0
703286	(4x0,5)	20	8,0	37,8	105,0
703288	(6x0,5)	20	9,2	53,6	130,0
703287	(4x(2x0,5))	20	11,5	111,0	190,0
703672	(10x0,5)	20	11,4	73,0	170,0
703290	(12x0,5)	20	11,7	88,4	220,0
703674	(3x0,75)	18	7,7	43,2	97,0
703675	(4x0,75)	18	8,3	52,6	122,0
703676	(5x0,75)	18	9,0	63,0	145,0
703677	(7x0,75)	18	9,7	82,8	200,0
704685	(4x2x0,75)	18	12,7	91,0	220,0
703678	(8x0,75)	18	10,7	93,0	220,0
703679	(12x0,75)	18	12,2	126,9	257,5
703680	(18x0,75)	18	14,4	179,0	400,0
704688	(12x2x0,75)	18	17,6	223,0	520,0
703681	(25x0,75)	18	17,3	238,3	544,0
703682	(41x0,75)	18	21,2	370,8	795,0
704038	(50x0,75)	18	23,5	441,0	900,0
704167	(2x1,5)	16	6,8	44,0	86,0
703684	(3x1,5)	16	8,8	68,0	133,0
703685	(4x1,5)	16	9,4	87,8	159,0
703686	(5x1,5)	16	10,3	104,4	195,0
703687	(7x1,5)	16	11,9	140,8	247,0
703688	(12x1,5)	16	14,7	226,8	410,0
703689	(3x2,5)	14	10,4	104,4	210,0
703690	(4x2,5)	14	11,2	132,7	264,0
703691	(5x2,5)	14	12,3	161,0	288,0
703692	(7x2,5)	14	14,8	223,1	411,0
703693	(12x2,5)	14	18,2	350,6	638,0
705045	(12x2,5)	14	18,2	350,6	638,0
703694	(5x4)	12	13,6	237,4	382,0
703695	(7x4)	12	16,3	325,0	582,0
703696	(12x4)	12	20,0	532,1	806,0
704697	(5x6)	10	17,4	341,0	640,0
703697	(4x10)	8	17,8	445,6	727,0
703698	(5x10)	8	19,8	550,2	935,0
703699	(4x16)	6	23,6	696,5	1176,0
703700	(5x16)	6	26,2	863,0	1428,0
703701	(4x25)	4	26,9	1059,4	1742,0
703702	(5x25)	4	30,1	1327,4	2108,0
704698	(4x50)	1	36,0	2070,0	3150,0

WK 135 D-EMV Torsion (JZ)

Part no.	No. cores x Cross-sec. mm²	AWG / MCM	Outside Diameter approx. mm	Cu weight kg/km	weight kg/km approx.
703703	(1x70)	2/0	19,6	741,1	994,0
703704	(1x95)	3/0	22,3	993,0	1305,0
703705	(1x120)	4/0	24,7	1241,6	1603,0
703706	(1x150)	300	27,6	1548,0	1970,0
703707	(1x185)	350	29,8	1900,2	2415,0
703708	(1x240)	500	32,7	2444,4	3030,0
703804	(1x300)	600	34,0	3300,0	4310,0

WK 135 D-EMV Torsion (DIN 47100)

704675	(2x2x0,25)	24	8,9	27,0	90,0
704676	(4x2x0,25)	24	9,9	39,0	115,0
704677	(5x2x0,25)	24	11,1	46,0	130,0
704678	(2x2x0,34)	22	9,6	35,0	110,0
704679	(4x2x0,34)	22	11,0	47,0	130,0
704680	(2x2x0,5)	20	9,8	39,0	115,0
704681	(4x0,5)	20	8,0	37,8	105,0
704682	(6x0,5)	20	9,2	53,6	130,0
704683	(4x2x0,5)	20	11,3	42,0	150,0
704684	(2x2x0,75)	18	10,4	54,0	130,0
704040	(4x2x0,75)	18	12,7	91,0	220,0
704686	(12x0,75)	18	12,2	126,9	257,5
704687	(8x2x0,75)	18	17,1	170,0	410,0
704039	(12x2x0,75)	18	17,6	223,0	520,0
704689	(32x0,75)	18	18,8	294,0	610,0
704690	(4x1,0)	17	8,7	56,0	110,0
704691	(6x1,0)	17	10,2	82,0	150,0
704692	(8x1,0)	17	11,7	106,0	210,0
704693	(12x1,0)	17	13,3	150,0	280,0
704694	(2x2x1,5)	16	12,1	90,0	180,0
704695	(3x2x1,5)	16	14,0	120,0	235,0
704696	(4x2x1,5)	16	14,6	150,0	210,0

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK Fire Alarm Cable-Torsion

halogen-free, FT1, 24V

RoHS

Technical data

Temperature range:	
flexing	-40°C to +80°C
fixed installation	-50°C to +90°C
Nominal voltage:	24V
Test voltage:	Conductor/conductor 1500V conductor/shield 800V
Minimum bending radius:	10 x cable diameter
Torsion application:	3 x 360° on 5m
Approvals:	IEC 60332-1, test type B as per VDE 0472 Part 804, CE-conformed
Flame test:	FT1

Properties

· very good oil and petrol-resistance as per DIN VDE 0250 and 0472
· very resistant to acids, alkali and solvents
· RoHS conformed

Construction

· special stranded copper wire, bare as per DIN VDE 0295 Cl. 6
· special polyester conductor insulation
· conductor colours, black with numbers 1 - …
· Conductors stranded
· () = Shielding
· special PUR jacket compound, non-adhesive
· jacket colour, red RAL 3000

Application

This fire alarm cable was specifically developed for the torsion application in the loop for wind turbines.
We supply the leading wind turbine manufacturers with our cables.

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK Fire Alarm Cable-Torsion

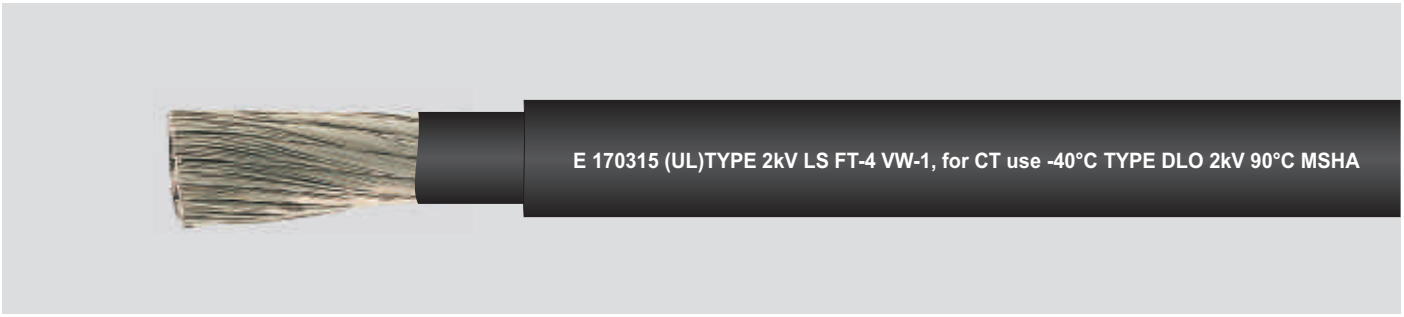
Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx	Cu weight kg/km	weight kg/km approx.
702485	(4x0,75)	6,6	49,0	82

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

Photo: HELUKABEL®

HELUWIND WK DLO 2kV

FT4, UV-resistant, UL44 1kV, 90°C, VW-1, LS, MSHA



Technical data

Temperature range: flexing -40°C to +90°C

Nominal voltage: DLO 2000V

Approvals: UL44, CSA, ICEA S-68-516/NEMA WC-8, MSHA, VW-1, FOR CT USE. LS CERTIFIED

Flame test: FT4, FT1

Properties

· UV-resistant
· RoHS conformed

Construction

· special stranded copper wire, tinned as per ASTM B-172, ASTM B-33
· special wrapping
· special EPR insulation
· special CPE jacket compound, non-adhesive
· jacket colour: black

Application

The HELUWIND WK DLO type was specifically designed for use in wind turbines up to a nominal voltage of 2kV.
We supply the leading wind turbine manufacturers with our cables.

WK DLO 2kV

Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx	Cu weight kg/km	weight kg/km approx.
703156	1x14	5,9	22,0	37
703157	1x12	6,3	33,0	69
703158	1x10	7,2	61,0	100
702513	1x8	8,2	82,8	142
703159	1x6	10,1	140,0	200
703160	1x4	11,5	237,0	286
703161	1x2	12,6	339,0	370
703162	1x1	16,1	510,0	637
703163	1x1/0	17,5	465,0	715
703862	1x2/0	18,5	656,0	830
703164	1x3/0	20,2	930,0	1104
702863	1x4/0	21,7	1103,0	1298
702514	1x262	24,8	1280,0	1590
703165	1x313	26,4	1590,0	1872
703166	1x373	28,2	1900,0	2176
703167	1x444	30,0	2272,0	2570
702515	1x535	32,2	2608,0	3046
703168	1x646	34,8	3300,0	3600
703169	1x777	37,0	3970,0	4290
703170	1x929	39,5	4780,0	5144
703171	1x1111	44,4	5690,0	6070

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

Photo: HELUKABEL®

HELUWIND WK H07BN4-F WIND-Torsion

Torsion +/- 150°/1m, UV-resistant, 750V/90°C

RoHS

Technical data

Temperature range: Ambient temperature at least -45°C to +90°C at the conductor
Nominal voltage: 450/750V
Test voltage: 3000V
Min. bending radius: 6 x cable diameter
Torsion application: +/-150° / 1m
Approvals: CE conformed

Properties

· UV-resistant
· RoHS conformed

Construction

· special stranded copper wire, bare as per DIN VDE 0295 Cl. 5
· special EPR insulation, black
· special EPR jacket compound
· jacket colour: black

Application

The HELUWIND WK H07BN4-F Wind-Torsion cable is the special version for the torsion application in wind turbines.
We supply the leading wind turbine manufacturers with our cables.

WK H07BN4-F WIND-Torsion

Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx	Cu weight kg/km	weight kg/km approx.
703402	1x25	13,1	240	516
703403	1x35	14,6	336	670
703404	1x50	17,1	480	840
703390	1x70	19,2	672	1112
703391	1x95	22,0	912	1520
703392	1x120	24,4	1152	1880
703393	1x150	28,0	1440	2513
703394	1x185	30,0	1776	2272
703395	1x240	34,0	2304	3534
703396	1x300	36,1	2880	4020
703397	1x400	41,5	3840	5640
703398	1x500	46,0	4800	6000
703399	1x630	54,0	6048	6900

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

Photo: HELUKABEL®

HELUWIND WK THERMFLEX 105°C EMV-Torsion

Torsion +/- 90°/1m, UV-resistant, shielded

RoHS

Technical data

Temperature range:	flexing	-5°C to +105°C
	fixed installation	-20°C to +105°C
Nominal voltage:	according to VDE U_0/U 0.6/1kV	
Test voltage 50 Hz:	3000 V	
Min. bending radius:	10 x cable diameter	
Torsion application:	+/-90° per 1m	
Approvals:	CE conformed	
Flame test:	FT1	

Properties

· UV-resistant
· RoHS conformed

Construction

· special stranded copper wire, bare as per DIN VDE 0295 Cl. 5
· special insulation PVC heat-resistant, black
· tinned copper wrapped
· special jacket compound PVC heat-resistant
· jacket colour: black

Application

The HELUWIND WK THERMFLEX 105°C series was specifically designed for use in wind turbines.
We supply the leading wind turbine manufacturers with our cables.

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK THERMFLEX 105°C EMV-Torsion

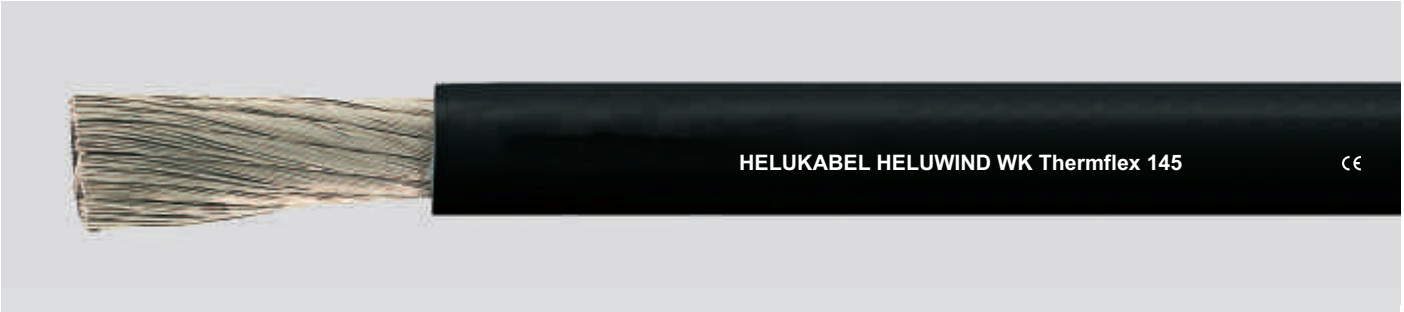
Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx	Cu weight kg/km	weight kg/km approx.
703444	1x70	19,8	739,0	950
703445	1x95	22,5	997,0	1280
703446	1x120	25,0	1242,0	1570
703447	1x150	27,8	1534,0	2000
703448	1x185	30,1	1904,0	2450
703449	1x240	33,0	2451,0	3150

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

Photo: HELUKABEL®

HELUWIND WK THERMFLEX 145

halogen-free, +145°C



RoHS

Technical data

Temperature range:	flexing	-20°C to +120°C
	non-flexing	-55°C to +145°C
Nominal voltage:	U_0/U600/1000V	
Test voltage:	3000V	
Insulation resistance:	min. 100 MOhm x km	
Minimum bending radius:	for flexible use 12.5 - 15 x cable diameter	

Properties

- Halogen-free, no release of corrosive or toxic gases
- Reduced propagation of fire
- Minimal smoke generation
- Good abrasion-resistance
- Good resistance to oils and weathering
- Resistant to UV radiation and ozone
- Thermal class B
- The materials used are silicone and cadmium-free and free of substances harmful to paint adhesion
- RoHS conformed
- **easy to tailor**

THERMFLEX 145

Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx	Cu weight kg/km	weight kg/km approx.
75486	1x6	5,4	58,0	70
75487	1x10	6,8	96,0	119
75488	1x16	8,5	154,0	180
75489	1x25	10,3	240,0	270
75490	1x35	11,8	336,0	373
75491	1x50	13,9	480,0	528
75492	1x70	16,0	672,0	728
75493	1x95	18,5	912,0	966
75494	1x120	20,5	1152,0	1230
75495	1x150	22,1	1440,0	1530
71437	1x185	24,8	1776,0	1880
75496	1x240	27,7	2304,0	2500

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

Construction

- Tinned stranded copper wire, fine wire stranded as per DIN VDE 0295 cl. 5 or IEC 60228 cl. 5
- Special insulation, polyolefin-copolymer halogen-free, flame retardant
- Jacket colour: black

Application

This special cable is used as a generator connecting cable in wind-power installations.

Other areas of application:

- Connecting cable, thermal class B (130°C) for motors, Transformers, relays, coils, magnets, etc.
- Aggregate connections in the automobile industry.
- Halogen-free wiring of switchgear and control cabinets
- Connecting cable for heating equipment
- Supply line for high power lighting for industry, sports centres and street lighting.

CE= The product conforms to the EC low-voltage directive 73/23EEC or 93/68EEC

WK (N)A2XH
0,6/1kV halogen-free

RoHS

Technical data

Temperature range:	fixed installation	- 30°C	to + 90°C
	processing	- 5°C	to + 50°C
	Operating temperature on conductor max. 90°C		
Nominal voltage:	0,6/1kV		
Test voltage:	4kV		
Min. bending radius:	15 x line diameter		
Approvals:	manufactured based on VDE standards, CE-conform		
Flame test:	accordig to DIN VDE 0482 Teil 266-2, BS 4066, Part 3 / EN 50266-2 / IEC 60332-3 (corresponds to DIN VDE 0472 Part 804 Test type C)		
Smoke Density:	according to DIN VDE 0482 Teil 268, HD 606, EN 50268-12 / IEC 61034-12, BS 7622 Part 12 (corresponds to DIN VDE 0472 Teil 816)		
Corrosivity of Fire effluents:	according to VDE 0482 Teil 267 / DIN EN 50267-2-2 / IEC 60754-2 (corresponds to DIN VDE 0472 Teil 813)		
Halogen-free:	according to DIN VDE 0482 Teil 267 / EN 50267-2-1 / EC 60754-1 (corresponds to DIN VDE 0472 Teil 815)		

Properties
· sun resistant

Construction
· aluminium conductor multi-conductor according to DIN VDE 0295 Cl. 2
· core insulation cross-linked PE
· core colour black
· jacket thermoplastic polyolefin mixture
· jacket colour: black

Application
Power lines for permanent routing in tower.

WK (N)A2XH

Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx	Cu weight kg/km	weight kg/km approx.
705031	1x185	22,0	537,0	960,0
705032	1x240	24,2	696,0	1208,0
705033	1x300	26,9	870,0	1342,0
705034	1x400	29,9	1160,0	1843,0

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

HELUWIND WK-NTSCGEWOEU-Torsion
3,6/6kV

RoHS

Technical data

Temperature range::	min. - 40°C flexing + 90°C at the conductor
Nominal voltage:	3,6/6kV
Test voltage:	10kV
Min. bending radius:	10 x cable diameter
Torsion application:	max. +/- 100° je 1 metre freely suspended
Approvals:	based on DIN VDE 0250-813 CE conformed

Properties
· UV-resistant
· ozone-resistant
· oil-resistant
· torsionable

Construction
· tinned stranded copper wire according to DIN VDE 0295
· spezial EPR insolation
· core identification black
· inner and outer conducting layer
· filler insulation in multi-core
· jacket made of CM or CR
· jacket colour: black

Application
Twistable medium-voltage line for energy transmission – also in the loop.

WK-NTSCGEWOEU Torsion

Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx	Cu weight kg/km	weight kg/km approx.
705029	1x240	42,8	2304,0	3100,0
705030	1x300	44,9	2880,0	3800,0

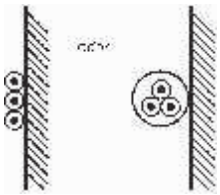
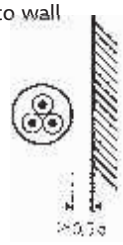
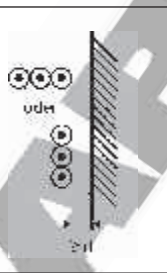
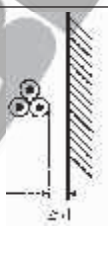
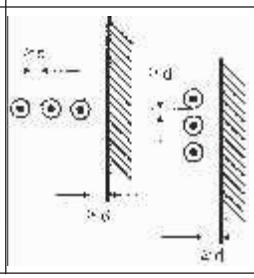
Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

Photo: HELUKABEL®

Current ratings for HELUWIND

WK 103w-T, WK 105*, WK 115-T*, WK 135-T* *** acc. to UL to 80°C, acc. to VDE to 90°C**

Operating temperature at conductor 90°C; Ambient temperature 30°C

Type designation	NI2XY, N2XY, N2X2Y N2XH, N2XCH[1)] NHXH FE180, NHXCH FE180[1)] NHXHX FE180, NHXCHX FE180[1)] NHXHX, NHXCHX[1)]				NI2XY, N2XY, N2X2Y N2XH NHXH FE180 NHXHX FE180 NHXHX				
Installation: • directy • in open air	Singlecore or multicore cables or single or multicore sheathed cables on a wall		Multicore cables or multicore sheathed cables with a space of minimum 0,3 x diameter d to wall		Single core cables or single core sheathed cables with a space of minimum 1 x diameter d to wall				
					with contact			with gap d	
									
	direct installation		installation in open air						
Instalation method[2)]	C		E		F			G	
Number of loaded cores	2	3	2	3	2	3			
Cross-section, mm²	Current ratings in Ampere (A)								
1,5	24	22	26	23	–	–	–	–	–
2,5	33	30	36	32	–	–	–	–	–
4	45	40	49	42	–	–	–	–	–
6	58	52	63	54	–	–	–	–	–
10	80	71	86	75	–	–	–	–	–
16	107	96	115	100	–	–	–	–	–
25	138	119	149	127	161	141	135	182	161
35	171	147	185	158	200	176	169	226	201
50	209	179	225	192	242	216	207	275	246
70	269	229	289	246	310	279	268	353	318
95	328	278	352	298	377	342	328	430	389
120	382	322	410	346	437	400	383	500	454
150	441	371	473	399	504	464	444	577	527
185	506	424	542	456	575	533	510	661	605
240	599	500	641	538	679	634	607	781	719
300	693	576	741	621	783	736	703	902	833
400	–	–	–	–	940	868	823	1085	1008
500	–	–	–	–	1083	998	946	1253	1169
630	–	–	–	–	1254	1151	1088	1454	1362

Conversion factors for deviating ambient temperature, grouping, installation under the ceiling, multicore cables and insulated wires see DIN VDE 0298 part 4.

[1)] The current ratings are valid for cables with concentric conductor, only for multicore versions

[2)] for further installation methods – see DIN VDE 0298 part 4

Current ratings for HELUWIND

WK 103w-T, WK 105*, WK 115-T*, WK 135-T* *** acc. to UL to 80°C, acc. to VDE to 90°C**

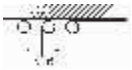
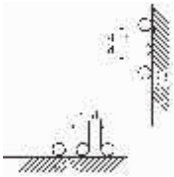
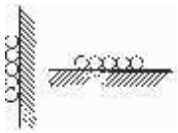
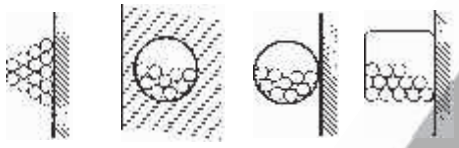
Conversion factors for deviating ambient temperature

Permissible operating temperature	40°C	60°C	70°C	80°C	85°C	90°C
Ambient tempera-ture °C	Conversion factors, used to the current ratings data in tables of the following pages					
10	1,73	1,29	1,22	1,18	1,17	1,15
15	1,58	1,22	1,17	1,14	1,13	1,12
20	1,41	1,15	1,12	1,10	1,09	1,08
25	1,22	1,08	1,06	1,05	1,04	1,04
30	1,00	1,00	1,00	1,00	1,00	1,00
35	0,71	0,91	0,94	0,95	0,95	0,96
40	–	0,82	0,87	0,89	0,90	0,91
45	–	0,71	0,79	0,84	0,85	0,87
50	–	0,58	0,71	0,77	–	0,82
55	–	0,41	0,61	0,71	–	0,76
60	–	–	0,50	0,63	–	0,71
65	–	–	0,35	0,55	–	0,65
70	–	–	–	0,45	–	0,58
75	–	–	–	0,32	–	0,50
80	–	–	–	–	–	0,41
85	–	–	–	–	–	0,29

Photo: HELUKABEL®

Current ratings – Conversion factors

For grouping on the wall, on the floor, in insulation tubes or in conduit and under the ceiling

Number of multicore cables or number of a.c. or 3-phase circuits of single core cables	1	2	3	4	5	6	7	8	9	10	12	14	16	18	20
Installation method	Conversion factors														
One layer under the ceiling with contact 	0,95	0,81	0,72	0,68	0,66	0,64	0,63	0,62	0,61	0,61	0,61	0,61	0,61	0,61	0,61
One layer under the ceiling, with a space equal to the outer diameter d 	0,95	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85
One layer on the wall or on the floor with a space equal to the outer diameter d 	1,00	0,94	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90
One layer on the wall or on the floor with contact 	1,00	0,85	0,79	0,75	0,73	0,72	0,72	0,71	0,70	0,70	0,70	0,70	0,70	0,70	0,70
Bunched directly on the wall, on the floor, in insulating tubes or trunking or in the wall 	1,00	0,80	0,70	0,65	0,60	0,57	0,54	0,52	0,50	0,48	0,45	0,43	0,41	0,39	0,38

○ Symbol for one single core or one multicore cable

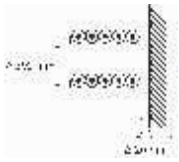
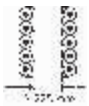
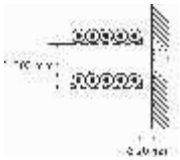
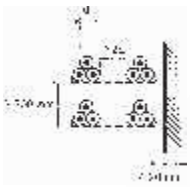
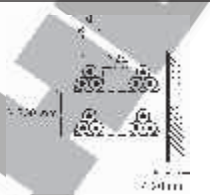
Notes:

- when these factors are to be applied for the calculation of power ratings, the same type of cables and with equal loaded cores in the same installation method shall correspond. At the same time the cross-section are permitted to differ maximum one grade of cross-section.
- If the actual horizontal-space between the adjacent cables is more than double of the outer diameter, no reduction factor is necessary.
- The same reduction factors are to be applied for grouping of two or three-core or multicore cables. For a system consisting of two or as well as three-core cables, fristly the total number of cables will be assumed as the number of circuits. For that the applicable factor is to be used either in the tables for two-cores loaded cables or the tables for three-cores loaded cables.

If the grouping of single core cables consist of n loaded single core cables, the rating factor shall be determinated for n/2 or n/3 circuits and applied to the current carrying capacity of two or three loaded cores.

Current ratings – Conversion factors

For grouping of single core cables or cables on troughs and trays

Number of three-phase systems with single core cables		Used as multiplier for the ratings value for	Number of throughs or trays	1	2	3
Installation method				Conversion factors		
Perforated cable troughs	with contact 	Three-cores cable in horizontal-surface arrangement	1	0,98	0,91	0,87
			2	0,96	0,87	0,81
			3	0,95	0,85	0,78
	with contact 	Three-cores cable vertical-surface arrangement	1	0,96	0,86	–
			2	0,95	0,84	–
Cable trays	with contact 	Three-cores cable in horizontal-surface arrangement	1	1,00	0,97	0,96
			2	0,98	0,93	0,89
			3	0,97	0,90	0,86
Perforated cable troughs		Three-core cables in vertical-surface triangle arrangement	1	1,00	0,98	0,96
			2	0,97	0,93	0,89
			3	0,96	0,92	0,86
			1	1,00	0,91	0,89
			2	1,00	0,90	0,86
Cable trays			1	1,00	1,00	1,00
			2	0,97	0,95	0,93
			3	0,96	0,94	0,90

Note:
The conversion factors are used only for cables of one layer grouping arrangement. These are not valied when the cables are installed with contact one upon another or the given sprees between the cable toughs or cable trays are not followed. In such cases the conversion factors can be reduced.
To parallel current circuits each group of three conductors of the parallel circuit is regarded as single circuit.

Fiber-Optic Cable, Network & Bus Technology for Wind Power

We offer an extensive range of products for the networking of heterogeneous systems using glass fiber and copper-based technology: products for passive applications developed by us, and active components, from well-known manufacturers.

Cables for the pods

Product designation	Dimension	Part No.
CAN BUS UL	1x2x0,22 mm	81286
CAN BUS UL	4x1x0,22 mm	81287
CAN BUS PUR	1x2x0,25 mm	81911
CAN BUS PUR	4x1x0,25 mm	81912
PROFIBUS UL	1x2x0,64 mm	81903
PROFIBUS PUR	1x2x0,64 mm	81905
POF PUR	1 P 980/1000	81611
POF PUR	2 P 980/1000	81882
POF PUR	4 P 980/1000	80630
POF Hybrid	2 P 980/1000 + 2x1,0	82032
POF Hybrid	2 P 980/1000 + 3x1,5	82033
POF Hybrid	4 P 980/1000 + 19x1,0	81243

Cables for the tower

Product designation	Dimension	Part No.
TORDIERFLEX PUR	4x2x AWG 26/19	800067
PROFInet UL	2x2x AWG 22/1	800653
HCS cables UL	2K 200/230	801733HCS
HCS cables PUR	2K 200/230	800980
Universal cable FRNC	4-12 G 50/125 (62,5/125)	DNB P. 19
Breakout cable FRNC	4-12 G 50/125 (62,5/125)	DNB P. 15
Mobile cable	4 G 50/125 (62,5/125)	80534

Cables for the infrastructure

Product designation	Dimension	Part No.
Outdoor cable A-DQ(ZN)B2Y	4-48 G 50/125 (62,5/125)	DNB P. 24
Outdoor cable A-DQ(ZN)B2Y	4-48 E 9/125 (62,5/125)	DNB P. 25

DNB: Catalogue Data, Network & Bus Technology

Fiber-Optic cabling made easy - Pre-assembled fiber-optic cable systems

No special knowledge or tools are requires to install HELUCOM® Fiber Optics Cable. The cable is pre-assembled and can be connected immediately after it has been laid. The pulling aid is connected to the pull cable. As a result, it is possible to lay the cable together with the pre-assembled splitter just as you would lay a standard cable.
Pre-assembled cables save considerable installation time.

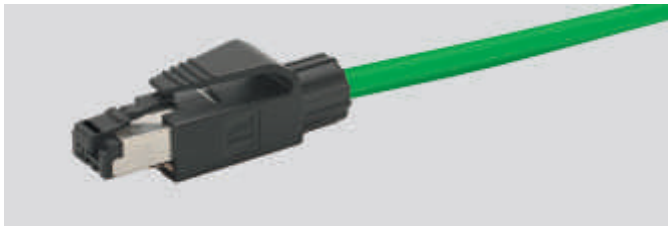
You can find more information in our data, network and bus technology catalogue, on page 176 ff.

Connection equipment

In addition to the corresponding cables, passive connection components for copper and fiber-optic technology are needed for the network infrastructure. The components can be divided into two groups, independently of the transmission medium. On the one hand, there are jump and split devices and on the other hand there are patch cables or terminal cables. This includes system-conformed bus connecting cables, patch panels, outlet boxes, connector systems and patch cables.

· RJ 45 jumper cable PUR / IP20
· PROFIBUS jumper cable M12 / PUR
· Fiber-optic jumper cable ST/ST, 50/125, dx
· Modular Patch Panel (DIN rail)
· 19" Fiber-optic splice box
· POF jumper cable (duplex)

You can find more information in our data, network and bus technology catalogue, on page 164 ff.



You can find the entire range in our catalogue on data, network and bus technology.

Processing tools and measuring instruments

In addition to the various fiber-optic connector types, we supply wiring tools and measuring instruments for the pre-assembly of the POF and HCS fiber cables.

System measurements are carried out with the attenuation measuring instruments that have been tested. The optical power meter set consists of a transmitter and receiver. It determines the attenuation of pre-assembled cables. The adjustment to the different types of connectors is done using change adapters.

You can find more information in our data, network and bus technology catalogue, on page 226 ff.

Our activities are highlighted by the brands

HELUKAT® DATEN- UND NETZWERKTECHNIK
HELUCOM® DATEN- UND NETZWERKTECHNIK
HELUKAT® CONNECTING SYSTEMS
HELUCOM CONNECTING SYSTEMS

Power distribution cables

Medium voltage power cables

Medium voltage cables are used in wind parks as a connecting element between the wind power stations and the public power network.

In this product area, HELUKABEL® offers a wide assortment of cable types according to DIN VDE 0276-620 or IEC 60502-2 in the usual voltage levels **6/10 kV, 12/20kV und 18/30 kV.**

For the types of cables commonly used in wind parks, the following preferred cross-sections are available in the voltage levels 6/10 kV and 12/20 kV as in-stock items.

Large cross-sections with 630 RM/35 and 800RM/35 can be manufactured and supplied upon request.
You can find other dimensions in our main catalogue for cables and wires.

N2XS2Y 6/10kV

Part no.	No. cores x Cross-sec. mm²	Nominal voltage kV	Outside Diameter mm approx.	Cu weight kg/km	weight kg/km approx.
32481	1x50 rm /16	6/10	26	662	1520
32482	1x70 rm /16	6/10	28	860	1760
32483	1x95 rm /16	6/10	29	1098	2130
32484	1x120 rm /16	6/10	31	1340	2470
32486	1x150 rm /25	6/10	33	1725	3020
32488	1x185 rm /25	6/10	35	2059	3630
32490	1x240 rm /25	6/10	37	42587	4560
32491	1x300 rm /25	6/10	38	3163	3630

N2XS(F)2Y 12/20kV

Part no.	No. cores x Cross-sec. mm²	Nominal voltage kV	Outside Diameter mm approx.	Cu weight kg/km	weight kg/km approx.
32571	1x35 rm /16	12/20			
32572	1x50 rm /16	12/20	33	662	1400
32573	1x70 rm /25	12/20	35	854	1550
32574	1x95 rm /16	12/20	36	1094	1800
32575	1x120 rm /16	12/20	37	1334	2150
32576	1x150 rm /25	12/20	39	1723	2400
32577	1x185 rm /25	12/20	41	2059	2850
32578	1x240 rm /25	12/20	43	2587	3250
32579	1x300 rm /16	12/20	45	3163	3850
32580	1x400 rm /35	12/20	48	4234	4900

NA2XS2Y 12/20kV

Part no.	No. cores x Cross-sec. mm²	Nominal voltage kV	Outside Diameter mm approx.	Cu weight kg/km	Alu weight kg/km	weight kg/km approx.
32534	1x70 rm /16	12/20	30	182	203	980
32535	1x95 rm /16	12/20	33	182	276	1120
32536	1x120 rm /25	12/20	35	182	348	1210
32538	1x150 rm /25	12/20	37	283	435	1420
32540	1x185 rm /25	12/20	36	283	537	1570
32542	1x240 rm /25	12/20	40	283	696	1830
32543	1x300 rm /25	12/20	44	283	870	2070
32544	1x400 rm /35	12/20	47	394	1160	2460

NA2XS(F)2Y 12/20kV

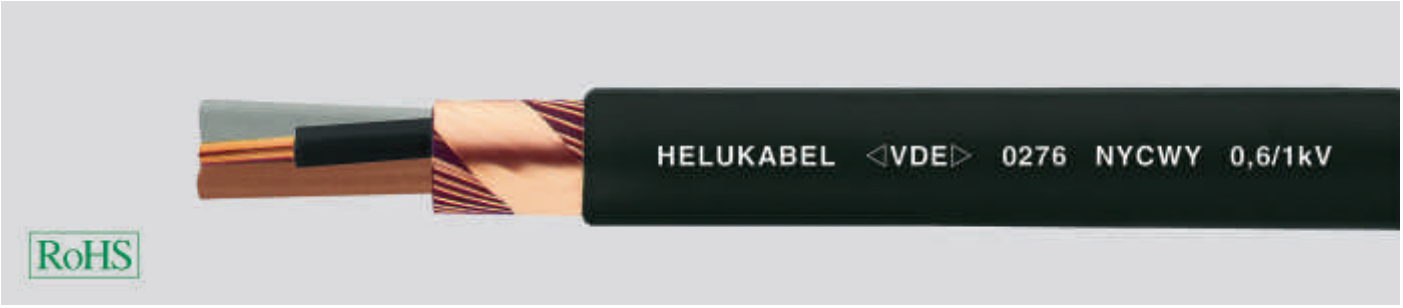
Part no.	No. cores x Cross-sec. mm²	Nominal voltage kV	Outside Diameter mm approx.	Cu weight kg/km	Alu weight kg/km	weight kg/km approx.
32612	1x70 rm /16	12/20	34	182	203	1030
32613	1x95 rm /16	12/20	36	182	276	1140
32614	1x120 rm /16	12/20	37	182	348	1250
32615	1x150 rm /25	12/20	39	283	435	1320
32616	1x185 rm /25	12/20	41	283	537	1570
32617	1x240 rm /25	12/20	43	283	696	1780
32618	1x300 rm /25	12/20	45	283	870	2100
32619	1x400 rm /35	12/20	48	394	1160	2480

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

Low-voltage cables

Low-voltage cables with 0.6/1kV are used for the internal wiring of the wind power stations and as tower output cables.

HELUKABEL® offers a wide assortment of cross-sections and numbers of conductors of cable types **NYY, NYCWY, NYCY, NAYY,** which satisfy all requirements.



Thanks to a comprehensive stock management system and logistics and cutting service, HELUKABEL® covers the entire range of power cables.

You can find other cable sizes in our main catalogue for cables and wires.

NYY-J 0,6/1kV

Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx.	Cu weight kg/km	weight kg/km approx.
32049	4x16 re	21,0	614	1045
32051	4x35 sm	27,5	1344	1760
32055	4x120 sm	42,5	4608	5300
32056	4x150 sm	47,5	5760	6400

NAYY-J 0,6/1kV

Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx.	Alu weight kg/km	weight kg/km approx.
32303	4x35 re	28,5	406	1120
32306	4x95 se	39,5	1102	2030
32307	4x120 se	44,0	1392	2400
32308	4x150 se	46,0	1740	3030
32309	4x185 se	51,0	2146	3650
32310	4x240 se	56,0	2784	4800

NYCY 0,6/1kV

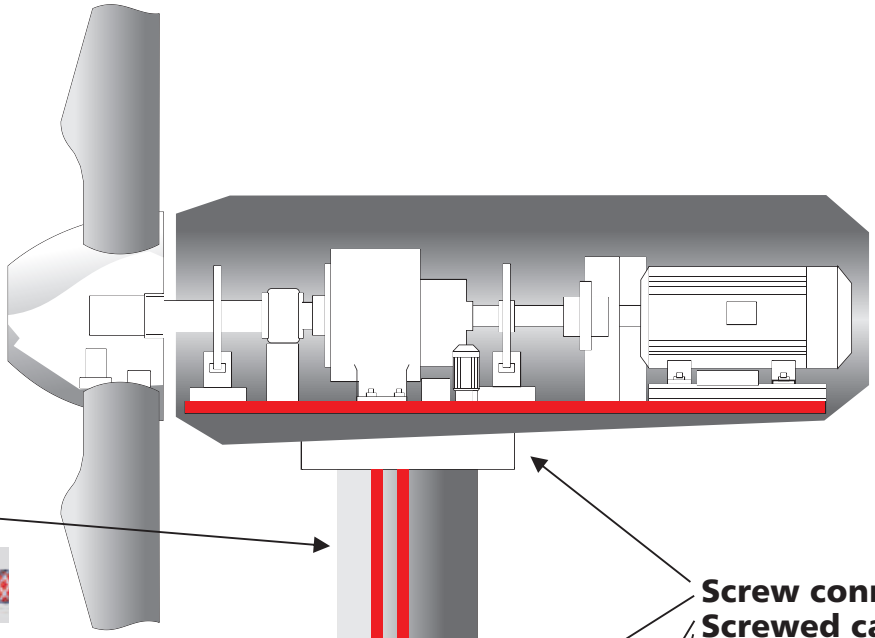
Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx.	Cu weight kg/km	weight kg/km approx.
32214	4x1,5 re/1,5	14,5	81	260
32215	4x2,5 re/2,5	15,5	128	350
32216	4x4 re/4	17,0	200	470
32217	4x6 re/6	18,5	297	590
32218	4x10 re/10	21,0	504	900
32219	4x16 re/16	23,0	796	1250

NYCWY 0,6/1kV

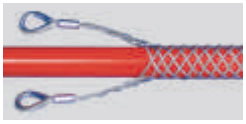
Part no.	No. cores x Cross-sec. mm²	Outside Diameter mm approx.	Alu weight kg/km	weight kg/km approx.
32283	4x16 re/16	23,5	796	1250
32285	4x35 sm/16	29,0	1526	2050
32291	4x185 sm/95	56,0	8159	9350
32292	4x240 sm/120	62,5	10546	11600

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

Functional view of accessories



Cable grips
Page 37



Screw connector BSM
Screwed cable lug BLMT
Page 39

Cable connection RSTI
Coupling plug RSTI-CC
Page 42

Multicore connectors
Junction box UAGA 1KV
Junction box VMDU 1KV
Page 43

MXSU screwed connector
SXSU compression connector
Page 43

Cable grips

Cable grips with thimble and press clamp

Material:
galvanized stranded wire

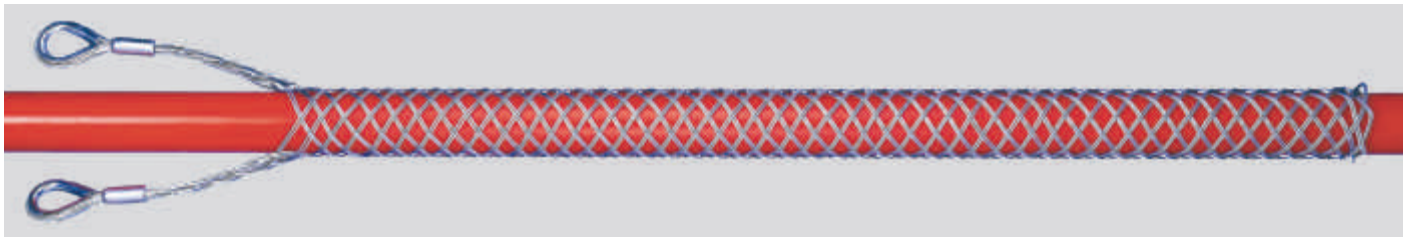
Application
This cable grip is used wherever cables with high tensile forces are routed.

Properties:
· self-tightening under tension load
· back-woven

Cable grips with thimble and press clamp

Min. interior diameter mm	Max. interior diameter mm	Length mm	Loadability in kN	Weight kg
6	10	600	2,2	0,07
10	15	600	3,4	0,08
15	20	600	6,8	0,14
20	25	600	6,8	0,15
25	30	1000	8,1	0,18
30	40	1250	11,7	0,4
40	50	1250	16,0	0,45
50	60	1500	16,0	0,6
60	70	1500	21,3	0,7
70	90	1500	27,9	0,9
90	110	1500	34,9	1,5

Cable fleeting grips with 2 thimbles, closed



Material:
galvanized stranded wire

Application
This cable grip is used as a cable installation grip e.g., wherever cables are suspended vertically.
Previously drawn cables can be re-drawn.

Properties:
· self-tightening under tension load
· back-woven

Cable fleeting grips with 2 thimbles, closed

Min. interior diameter mm	Max. interior diameter mm	Length mm	Loadability in kN	Weight kg
6	10	600	2,2	0,07
10	15	600	3,4	0,09
15	20	600	6,8	0,14
20	25	600	6,8	0,18
25	30	1000	8,1	0,3
30	40	1250	11,7	0,43
40	50	1250	16,0	0,5
50	60	1500	16,0	0,61
60	70	1500	21,3	0,83
70	90	1500	27,9	1,1
90	110	1500	34,9	1,2

Open version to lay on any point in the cable. Other dimensions available on enquiry.
We reserve the right to make technical changes. Prices on request.

Cable gland – HELUTOP®

HELUTOP® HT

The plastic cable gland with vibration protection.

Properties:
· Optimum strain relief through clamping plates
· Easy to assemble
· Large clamping areas

Technical data:
Protection classification: IP 68 - 5 bar
Temperature range: -30°C to +80°C
Testing standard: EN50262

Material:
· Halogen-free
· Silicone-free
· Cadmium-free
Shell: polyamide PA 6
Moulded seal: Neoprene

HELUTOP® HT-MS

The cable gland made of nickel-plated brass.

Properties:
· Optimum strain relief through clamping plates
· Easy to assemble
· Large clamping areas

Technical data:
Protection classification: IP 68 - 5 bar
Temperature range: -40°C to +100°C
Testing standard: EN50262

Material:
Shell: brass, nickel-plated
Terminal insert: polyamide PA 6
Moulded seal: Neoprene
O-ring: Buna-N

HELUTOP® MS-EP

The EMC and earthin gland with integrated contact system made of steel contact springs for safe, quick assembly and contacting.

Properties:
· Optimum strain relief through clamping plates
· No damage to the shielding braid during assembly or disassembly due to the rotating spring ring
· Large clamping areas

Technical data:
Protection classification: IP 68 - 5 bar
Temperature range: -40°C to +100°C
Testing standard: EN50262

Material:
Shell: brass, nickel-plated
Contact system: Copper-Beyllion
Terminal insert: polyamide PA 6
Moulded seal: Neoprene
O-ring: Buna-N

HELUTOP® HT-E

The stainless steel cable gland for use in high-stress applications.

Properties:
· Optimum strain relief through clamping plates
· Highly corrosion-resistant
· Highly durable
· Easy to assemble
· Large clamping areas

Technical data:
Protection classification: IP 68 - 5 bar
Temperature range: -40°C to +100°C
Testing standard: En50262

Material:
stainless steel 1.4305
Terminal insert: polyamide PA 6
Moulded seal: Neoprene
O-ring: Buna-N

Cable lugs

Cable lugs K1 and K2

Non-insulated cable lugs in ring design.

Material:
Copper
Tinned surface

Technical data:
Temperature range: up to +120°C

Cable lugs W 90°

Non-insulated cable lugs in ring design,
90° angled design.

Material:
Copper
Tinned surface

Technical data:
Temperature range: up to +120°C

Cable lugs W 45°

Non-insulated cable lugs in ring design,
45° angled design.

Material:
Copper
Tinned surface

Technical data:
Temperature range: up to +120°C

Mechanical lug BLMT

Mechanical lug BLMT for use with low voltage and medium voltage applications.
Suitable for connecting aluminium and CU conductors.

Material:
high strength AL alloy, tinned

Technical data:
Screws with multiple snap-off head

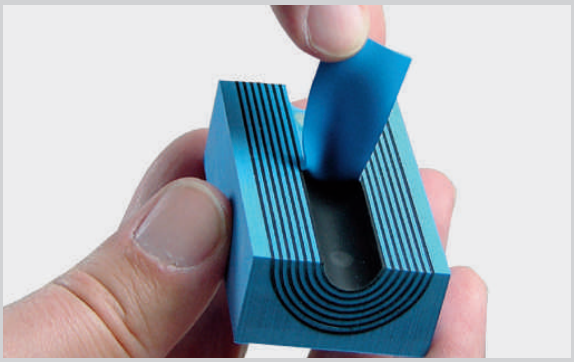
Mechanical connector BSM

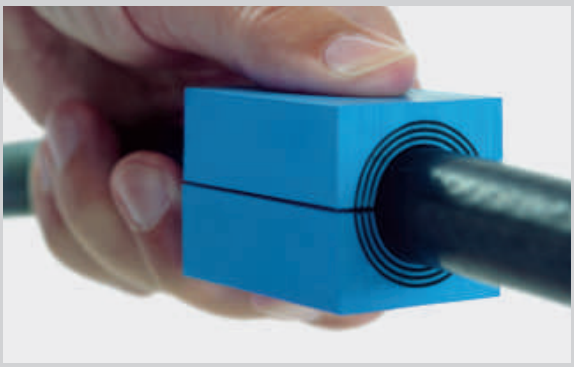
Mechanical connector BSM for use with low voltage and medium voltage applications.
Suitable for connecting aluminium and CU conductors.

Material:
high strength AL alloy, tinned

Technical data:
Screws with multiple snap-off head

The Roxtec Sealing Solution





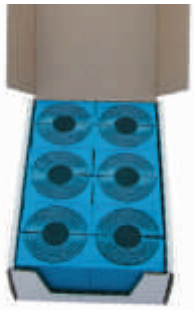
The Roxtec module partitions secure cable and pipe installations in demanding applications in wind-turbine plant engineering.

Special products for the housing insert and control-cabinet construction sectors are available.

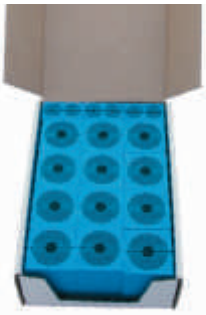
The solution:
Multidiameter™- the flexible, adaptable Roxtec delayering technology provides thousands of constructers, fitters and operators secure and sophisticated lead-throughs for cables and pipes.

With our wide spectrum of frames and inserts you will achieve perfect sealing in every outer diameter. Even subsequent expansions to finished installations become problem-free.

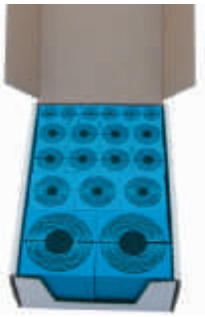
Multidiameter™ Module kits for frame size 6



RM Kit 601



RM Kit 602

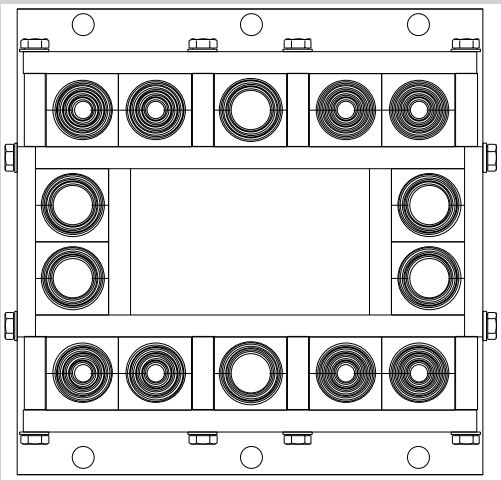


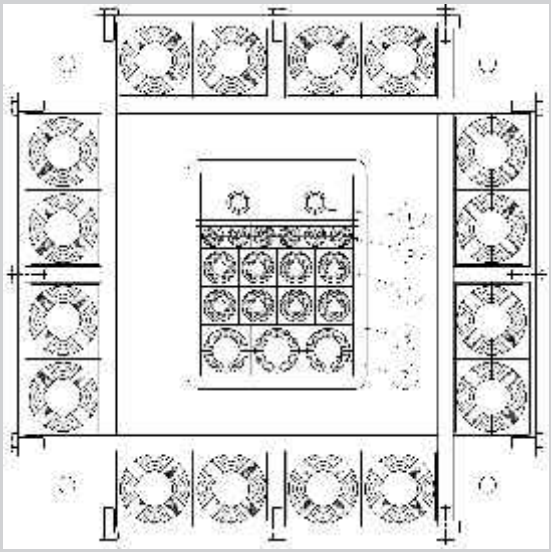
RM Kit 603

RM Kit 604

RM Kit 605

Example of use

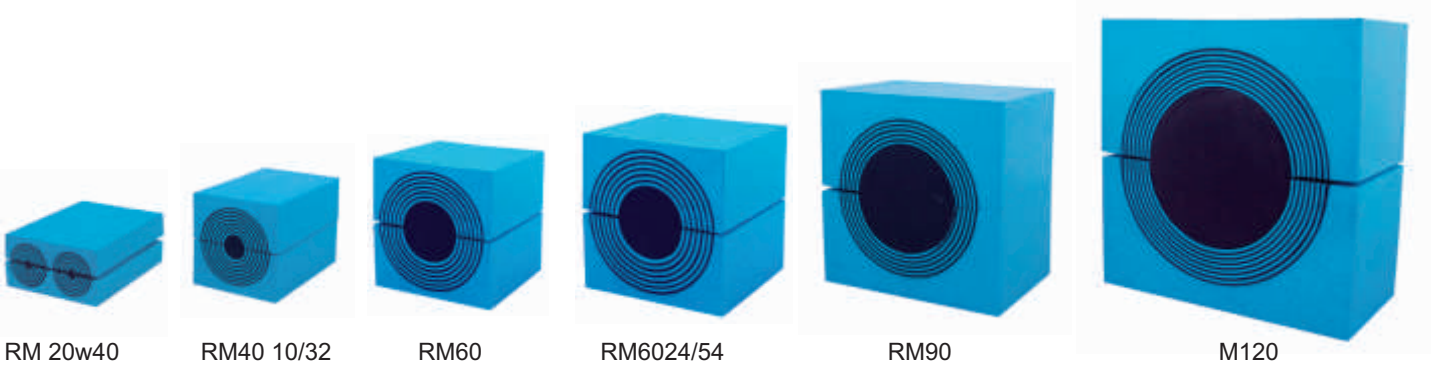




This layout facilitates separating power cables from signal and OWG connections

Separating the power cable in the cable retainers positively influences any arising stagnation temperatures.

Multidiameter™ Modules with core

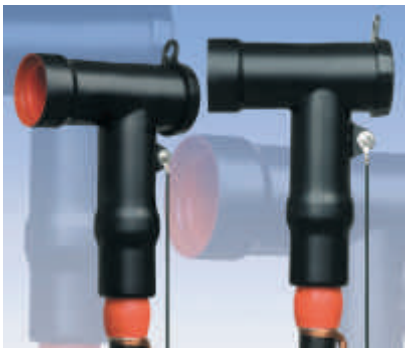


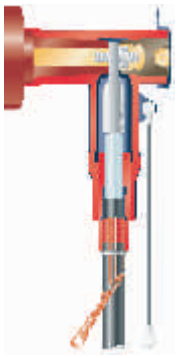
RM 20w40 | RM40 10/32 | RM60 | RM6024/54 | RM90 | M120

Cable fittings from Tyco Electronics Raychem GmbH

Cable connection RSTI

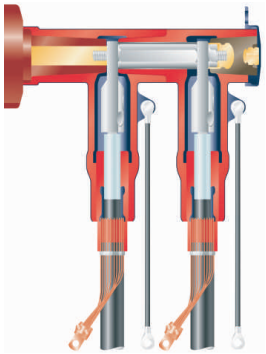
Screened, separable connection system RSTI,
630A up to 36kV, cross section: 25mm²- 630mm²for
SF6-insulated switchgear with 630A bushings, Type C,
630/1250A according to CENELEC HD506 S1, EN 50180 and
EN 50181





Coupling plug RSTI-CC

Screened, separable coupling connection system RSTI-CC,
630A up to 36kV, cross section: 25mm²- 630mm²in
combination with connection system RSTI for SF6-insulated
switchgear with 630A bushings, Type C, 630/1250A
according to CENELEC HD506 S1, EN 50180 and EN 50181



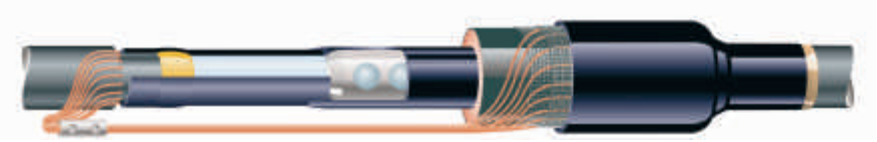
Typical application in a switching system

Cable fittings from Tyco Electronics Raychem GmbH

Medium-voltage power cables

Heat shrinkable joints MXSU

Heat shrinkable joints MXSU for polymeric insulated cables up to 36kV,
cross section: 25mm²- 500mm²incl. mechanical connectors



Heat shrinkable joints SXSU

Heat shrinkable joints SXSU for polymeric insulated cables up to 36kV,
cross section: 25mm²- 1200mm² for compression jointsr

Low-voltage power cables

Heat shrinkable joints UAGA

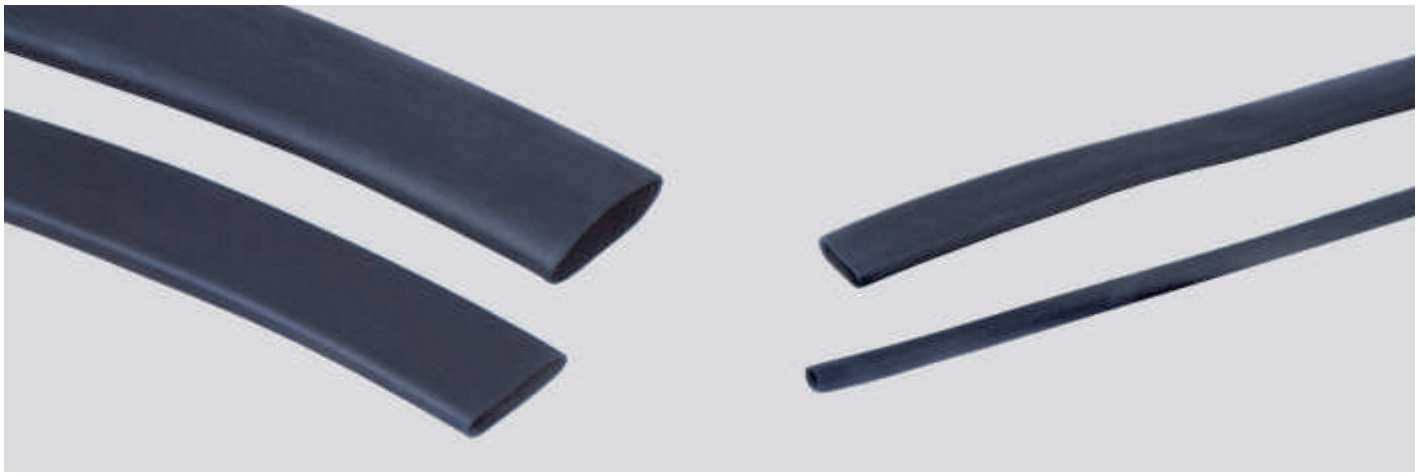
Heat shrinkable joints UAGA for polymeric insulated cables up to 1kV,
cross section: 1,5mm²- 300mm²

Heat shrinkable joints VMDU

Heat shrinkable joints VMDU for control cables,
cross section: 4 - 75 x 1,5mm²- 2,5mm²

Shrink-on tube SK-D

Shrink-on tube SK-D heavy walled with inner adhesive



Material:
Crosslinked Polyolefine with internal adhesive
Colour: black

Technical data
Temperature range: -55°C to +90°C
Shrinking temperature: +120°C
Shrinking rate: 3 : 1
Dielectric Strength: 20kV/mm
Adhesive softening point: +80°C to +90°C

Properties
· halogen-free

Application
For protection of cable joints and terminations for usage at low voltage (600V).

Shrink-on tube SK-D heavy walled with inner adhesive

Interior diameter befor Shrinking in mm	Interior diameter after Shrinking in mm	Wall thickness after Shrinking in mm	Rods to in m
8,9	3,0	1,8	1,22
13,0	4,1	2,4	1,22
19,1	6,1	2,4	1,22
27,9	8,9	3,0	1,22
38,1	11,9	4,1	1,22
50,8	16,0	4,1	1,22
68,1	22,1	4,1	1,22
89,9	30,0	4,1	1,22
119,9	39,9	4,2	1,22

Other dimensions available on enquiry. We reserve the right to make technical changes. Prices on request.

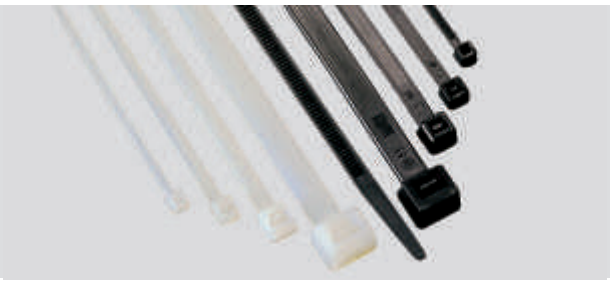
You can find detailed information in our new HELUTOP® brochure

- Product range of cable glands
· incl. lock nuts and adapters
· incl. expansions and reductions
- clear display
· Plastic, stainless steel, brass and EMC application
- detailed description
· incl. applications and assembly information

You can find detailed information in our accessories catalogue. This catalogue will give you a comprehensive overview of the products.

Further accessories

Cable ties



Cable ties T

Cable ties with plastic lugs for bundling and mounting cables and lines.

Material
polyamide 6.6
halogen-free, silicone-free

Technical data
Temperature range: -40°C to +80°C flammability according to UL94 V2

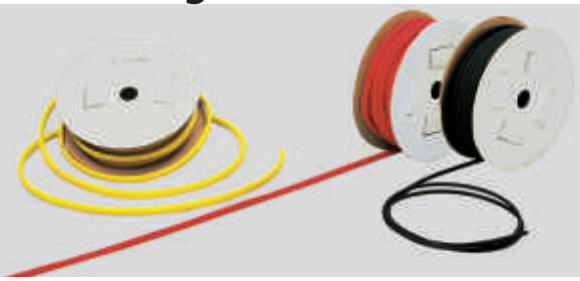
Cable ties E

Cable ties made of stainless steel with ball locking system for use under extreme stresses such as high temperatures, caustic environment, high tensile load.

Material
Stainless steel

Technical data
Temperature range: -80°C to +538°C Approvals: GL, DNV, Lloyd's, UL

Shrink tubing



Shrinking tubing SPSP coils

Polyolefine shrink tubing for restoring insulation, for sealing electrical components.

Material
PO (Polyolefine) self-clearing

Technical data
Temperature range: -55°C to +135°C
Shrinking temperature: +100°C, shrinkage rate: 2:1

Cable conduit

Helucond PA6-UL-F/B

Cable protecting hose, heavy, for high mechanical loads, high load capacity

Material
Mod. polyamide PA 6. halogen-free, cadmium-free.
black: UV-resistant. Flammability according to UL 94: V0

Technical data
Temperature range: -40°C to +120°C (briefly: up to +160°C)
Load/100mm for NW 16/17: approx.750 N

Quick plug coupling

For secure and fast connection, fitting for parallel coiled flexible tubes, type HELUcond

Material
PA

Technical data
Protection class: from IP 65

SH system mount

System mount for flexible tube HELUcond.
Universal system mount with optional brackets for external loads

Material
Polyamid PA 6. Halogen-free.
Flammability according to UL 94: HB

Technical data
Temperature range: -40°C to +110°C

Tools

Cable cutter KST 1

Cable cutter KST 1 with telescope grip
for cutting range up to 26 mm.

Crimping Pliers Type 807/1; 807/2

Crimping pliers for un-insulated barrel lugs (standard version)
with rotating profile disk, hexagon pressing.
Press range Type 807/1 – 6 to 50 mm²
Press range Type 807/2 – 10 to 120 mm²

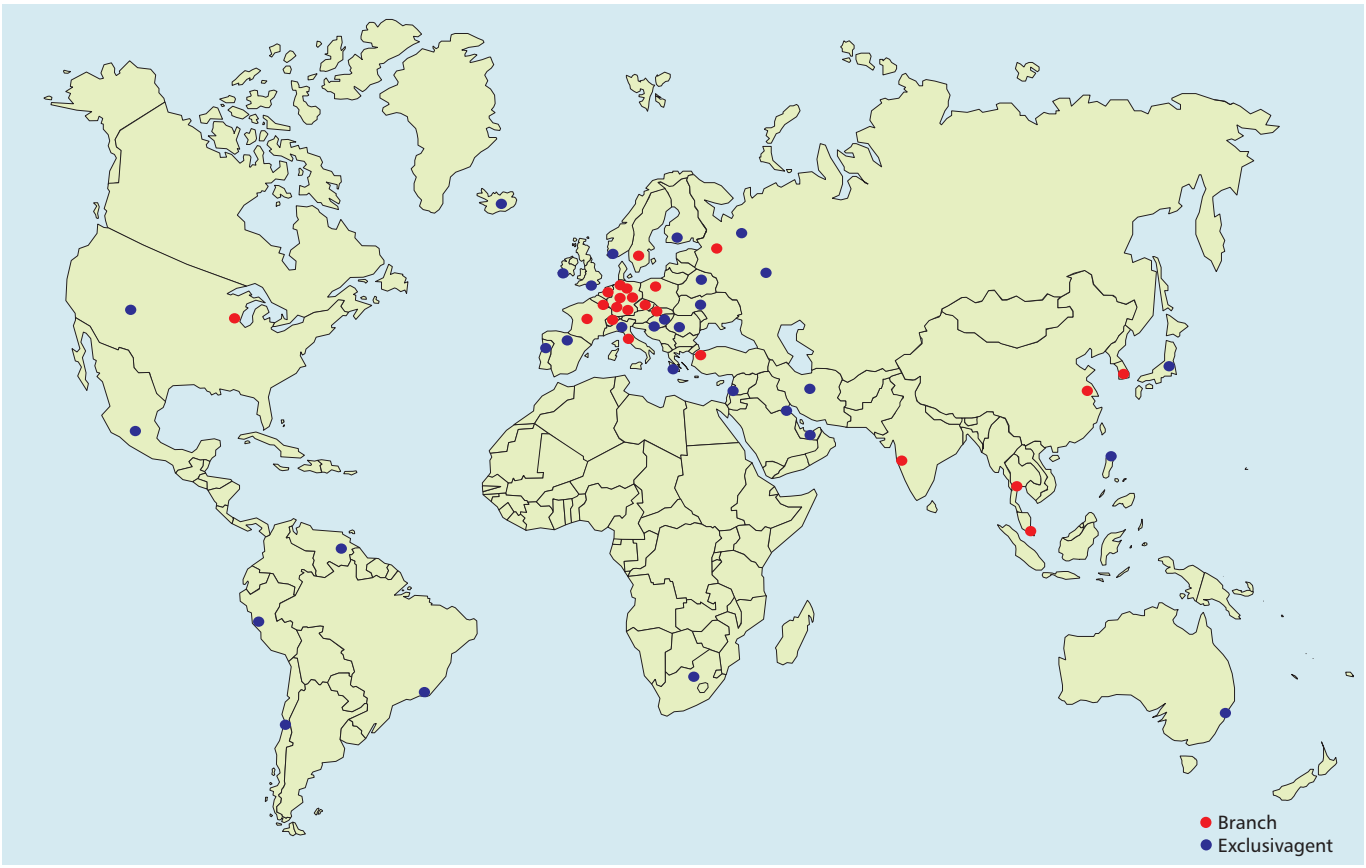
Crimping Pliers HELUTOOL PEW 8.84

· black-finished
· square crimp profile through synchronously driven crimp jaws
· 4 profiled crimping surfaces
· ergonomically designed two-component grip
· length 180 mm
· weight 380 g

Pliers K22

· convertible inserts
· crown revolving by 360°
· hinged
· telescopic handle
· length 560 mm to 860 mm
· weight 2,5 kg

Contact – International



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Yes, I want more information about HELUKABEL® products.

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- ☐ Cable Accessories
- ☐ Data-, Network- & Bus Technology
- ☐ Media Technology

We would like:

- ☐ General info
- ☐ Customer visit
- ☐ Quotation for: _____

Comment / note:

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