

Metallic cables and ropes

3_6_0



General Information				Applications							Data Sheet
Cable type	Cable design	Max. number of fibres	Rodent protection	WAN applications	Optical ground wire (OPGW) for high-voltage lines	Temporary applications, e.g. events, TV, etc.	Industrial environment	Tunnels, bore-hole applications	Chemical environment	Sensing technology	Data sheet
BRUsteel	Stainless steel loose tube	8	✗			✗	✗	✗	✗	✗	3_7_4
BRUsens	Stainless steel loose tube	8	✗				✗	✗	✗	✗	3_7_3
Telecom Rope	Stainless steel loose tube	108	✗	✗	(✗)		✗	✗			3_6_1
SewerLINK / Submarine	Stainless steel loose tube	144	✗	✗			✗	✗	✗		3_7_1
OPGW Aldrey	Stainless steel loose tube	144	✗	✗	✗						3_8_1
OPGW Aldrey-Stalum	Stainless steel loose tube	144	✗	✗	✗						3_8_2
Centro	Stainless steel loose tube	48	✗	✗	✗				✗		3_8_3

General Information		Methods of Deployment		Termination		Data Sheet
Cable type		Aerial installation, bullet-proof	Direct laying in lakes and rivers	Direct termination with connectors and FIBER-QUICK®	Splice in termination box / joint	Data sheet
BRUsteel			✗	✗	✗	3_7_4
BRUsens				✗	✗	3_7_3
Telecom Rope	✗				✗	3_6_1
SewerLINK / Submarine			✗		✗	3_7_1
OPGW Aldrey	✗				✗	3_8_1
OPGW Aldrey-Stalum	✗				✗	3_8_2
Centro	✗				✗	3_8_3

BRUsteel

3_7_4

Flexible mini fibre optic cable - armoured, with stainless steel loose tubes with up to 8 fibres, metal strength members and outer sheath

LLK-BST, patented

Construction:

- PA outer sheath
- Steel wires
- Gel-filled steel loose tube
- Fibres with primary coating

Description:

- Central steel loose tube
- High permissible tensile strength
- High crush resistance
- Longitudinally and laterally watertight
- Excellent rodent protection
- Compact design, high flexibility
- Low weight
- Robust sheath
- Halogen-free cable sheath
- Connected with standard dead-ends and suspension fittings

Application:

- Indoors, indoors and outdoors, outdoors
- Broadcast, FTTH and sensing applications
- Temporary applications
- Self-supporting applications

Temperature range:

- Operating temperature: -40° ... +70°C
- Storage temperature: -40° ... +70°C
- Installation temperature: -5° ... +50°C

Jacket colour:

- Blue similar to RAL 5005

Standards:

- IEC 60794
- Standards, see also data sheet 3_0_9

Remarks:

- Fibre and loose tube colour acc. to data sheet 3_0_3
- Instructions for installation and use see data sheet 3_6_0
- Accessories (on request):
 - Pre-assembled cables with:
 - Standard ferrule connector
 - Connector with IP protection class
 - Dead-ends
 - Repair kit
- Cable is available with different fibre types 2_1_2x_x and 2_1_3x_x
- Special labelling of outer sheath on request



Technical data

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Max. tensile strength	
				short term N	long term N
1F	1	3.4	18	1000	750
2F	2	3.8	25	1500	1100
4F	4	3.8	25	1300	900
8F	8	4.8	46	3500	2600

Type	Min. bending radius		Max. crush resistance N/cm
	with tensile mm	without tensile mm	
1F	20xD	15xD	2000
2F	20xD	15xD	960
4F	20xD	15xD	800
8F	20xD	15xD	1000



BRUsens

3_7_3

Fibre optic sensing cable with stainless steel loose tube for max. 8 fibres and stainless steel armouring. The cable is extremely robust, flexible, easy to deploy up to 300°C. It can be used as temperature or strain sensor

LLK-BS, patented

Construction:

- Stainless steel wires
- Stainless steel loose tube

Description:

- Sensing cable to use for oil, gas or water leakage detection, fire, heat monitoring of critical assets or power cables, etc.
- Central stainless steel loose tube with up to 8 fibres
- High permissible tensile strength
- High crush resistance
- Longitudinally and laterally watertight
- Excellent rodent protection
- Compact design, high flexibility
- Very lightweight

Application:

- Indoors, indoors and outdoors, outdoors
- Sensing applications

Temperature range:

Operating temperature: -55° ... +85°C

Storage temperature: -60° ... +85°C

Installation temperature: -5° ... +50°C

The minimum operating temperature for cables with one fibre is -40°C.

Standards:

- IEC 60794

Remarks:

- Instructions for installation and use see data sheet 3_6_0
- Accessories (on request):
 - Pre-assembled cables with:
 - Standard ferrule connector
 - Connector with IP protection class
 - Dead-ends
 - Repair kit
- Cable is available with different fibre types 2_1_2x_x and 2_1_3x_x
- Other types on request



Technical data

Type	no. of fibres	Cable ø mm	Weight kg/km	Max. tensile strength	
				short term N	long term N
LLK-BS 1F	1	1.6	11	1000	750
LLK-BS 2F	2	2.2	17	1500	1100
LLK-BS 4F	4	2.2	17	1300	900
LLK-BS 8F	8	2.8	31	3200	1600

Type	Min. bending radius		Max. crush resistance N/cm	Max. ambient pressure Pa
	with tensile mm	without tensile mm		
LLK-BS 1F	40	30	1000	800x10 ⁵
LLK-BS 2F	55	45	700	700x10 ⁵
LLK-BS 4F	55	45	600	700x10 ⁵
LLK-BS 8F	70	55	600	550x10 ⁵

Options:

Fibres for extended high and low temperature range as well as various materials possible



Telecom rope

3_6_1

Rope with integrated fibre optic

LLK-TSnCd

Construction:

- Galvanised steel wires
- Gel-filled stainless steel loose tubes
- Fibres with primary coating

Temperature range:

Operating temperature: -40° ... +80°C
 Storage temperature: -40° ... +80°C
 Installation temperature: -5° ... +50°C

Description:

- Up to 3 stranded stainless steel loose tubes with up to 108 fibres
- High corrosion resistance
- Connected with standard dead-ends and suspension fittings

Application:

- Communication networks
- Industry

Standards:

- EN 187200
- IEC 60794

Remarks:

- Fibre and loose tube colour acc. to data sheet 3_0_3
- Instructions for installation and use see data sheet 3_6_0
- Identification of loose tubes by colour coded threads
- Other types on request
- Other materials on request



Technical data

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Permanent tension N/mm²	Theor. breaking load kN
7 mm	12	7.0	≤242	1100	≥44
10 mm	24	10.0	≤476	1100	≥89
12 mm	60	12.5	≤734	1100	≥139
16 mm	108	16.0	≤1192	1100	≥227
19 mm	60	18.3	≤1592	1100	≥326

Type	Min. bending radius	
	with tensile mm	without tensile mm
7 mm	20xD	15xD
10 mm	20xD	15xD
12 mm	20xD	15xD
16 mm	20xD	15xD
19 mm	20xD	15xD



SewerLINK / Submarine Cable

3_7_1

Submersible cable SewerLINK / Submarine with integrated fibre optic for FTTS® (Fiber through the Sewer) or submarine application

LLK-SSnCd(F2YD)

Galvanised steel wires and stainless steel loose tubes. Interstices filled with moisture-blocking compound, outer sheath with HDPE

Construction:

- PE outer sheath
- Moisture barrier (compound)
- Galvanised steel wires
- Gel-filled stainless steel loose tubes
- Fibres with primary coating

Description:

- Up to 4 stranded stainless steel loose tubes with up to 144 fibres (standard)
- Special designs available with up to 432 fibres
- High corrosion resistance
- High permissible tensile strength
- High crush resistance
- Longitudinally and laterally watertight
- Excellent rodent protection
- Compact design
- Robust sheath
- Halogen-free cable sheath

Application:

- Laying directly underwater and in chemically aggressive environments

Temperature range:

Operating temperature: -40° ... +60°C

Storage temperature: -40° ... +60°C

Installation temperature: -5° ... +50°C

Jacket colour:

- Black similar to RAL 9005
- Other colours on request

Standards:

- IEC 60794

Remarks:

- Fibre and loose tube colour acc. to data sheet 3_0_3
- Instructions for installation and use see data sheet 3_6_0
- Cable is available with different fibre types 2_1_2x_x and 2_1_3x_x
- Identification of loose tubes by colour coded threads
- Other types on request



Technical data

Type	Max. no. of fibres units	Cable ø mm	Weight in water kg/km	Theor. breaking load kN
16 mm	60	16.7	≥561	≥139
20 mm	108	20.2	≥889	≥227
22 mm	144	22.4	≥1161	≥296

Type	Min. bending radius		Max. crush resistance N/cm
	with tensile mm	without tensile mm	
16 mm	20xD	15xD	2000
20 mm	20xD	15xD	2000
22 mm	20xD	15xD	2000



OPGW

3_8_1

Aldrey aerial ground wire with integrated fibre optic

LLK-ESnCxAY

Construction:

- Aldrey wires
- Gel-filled stainless steel loose tubes
- Fibres with primary coating

Temperature range:

- Operating temperature: -40° ... +80°C
Storage temperature: -40° ... +80°C
Installation temperature: -5° ... +50°C

Description:

- Up to 4 stranded stainless steel loose tubes with up to 144 fibres
- High mechanical and electrical capacity
- 3 or 4 layer construction
- Connected with standard dead-ends and suspension fittings

Standards:

- EN 50182
- IEC 60794
- IEEE 1138

Application:

- Rope with fibre optic (OPGW) for medium to extra high-voltage networks

Remarks:

- Instructions for installation and use see data sheet 3_6_0
- Other types on request
- Cable is available with different fibre types 2_1_2x_x and 2_1_3x_x
- Identification of loose tubes by colour coded threads
- Other types on request



Technical data

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Theor. breaking load min. kN
200AY	72	18.3	≤562	51
300AY	108	22.8	≤859	80
350AY	120	24.4	≤993	93
360AY	144	24.4	≤1006	93
400AY	144	25.9	≤1108	104

Type	Min. bending radius	
	with tensile mm	without tensile mm
200AY	20xD	15xD
300AY	20xD	15xD
350AY	20xD	15xD
360AY	20xD	15xD
400AY	20xD	15xD

Electrical data

Type	Short circuit current (0.5 s) kA	Short circuit current (1.0 s) kA
200AY	≥23.4	≥16.9
300AY	≥36.6	≥26.4
350AY	≥42.5	≥30.7
360AY	≥42.4	≥30.6
400AY	≥47.4	≥34.2



OPGW

3_8_2

Aerial ground wire with integrated fibre optic

LLK-ESnCxAy/yACS

Construction:

- Aldrey wires
- ACS wires
- Gel-filled stainless steel loose tubes
- Fibres with primary coating

Temperature range:

- Operating temperature: -40° ... +80°C
 Storage temperature: -40° ... +80°C
 Installation temperature: -5° ... +50°C

Description:

- Up to 4 stranded stainless steel loose tubes with up to 144 fibres
- High mechanical and electrical capacity
- 2 or 3 layer construction
- Connected with standard dead-ends and suspension fittings

Application:

- Rope with fibre optic (OPGW) for medium to extra high-voltage networks

Standards:

- EN 50182
- IEC 60794
- IEEE 1138

Remarks:

- Fibre and loose tube colour acc. to data sheet 3_0_3
- Instructions for installation and use see data sheet 3_6_0
- Other types on request
- Cable is available with different fibre types 2_1_2x_x and 2_1_3x_x
- Identification of loose tubes by colour coded threads
- Other types on request


Technical data

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Theor. breaking load min. kN
50AY/30ACS	60	12.0	≤353	39
95AY/55ACS	108	16.0	≤615	69
120AY/70ACS	120	18.0	≤774	87
129AY/75ACS	144	18.5	≤816	92

Type	Min. bending radius	
	with tensile mm	without tensile mm
50AY/30ACS	20xD	15xD
95AY/55ACS	20xD	15xD
120AY/70ACS	20xD	15xD
129AY/75ACS	20xD	15xD

Electrical data

Type	Short circuit current (0.5 s) kA	Short circuit current (1.0 s) kA
50AY/30ACS	≥8.6	≥6.2
95AY/55ACS	≥15.3	≥11.0
120AY/70ACS	≥19.3	≥14.0
129AY/75ACS	≥20.4	≥14.7



Centro

3_8_3

Metallic aerial cable with central stainless steel loose tube with up to 48 integrated fibre optic

LLK-ESCxACS/yST

Construction:

- Steel, ACS or Aldrey wires
- Gel-filled stainless steel loose tubes
- Fibres with primary coating

Temperature range:

- Operating temperature: -40° ... +80°C
Storage temperature: -40° ... +80°C
Installation temperature: -5° ... +50°C

Description:

- Central stainless steel loose tubes with up to 48 fibres
- Compact structure
- Connected with standard dead-ends and suspension fittings

Standards:

- EN 50182
- IEC 60794
- IEEE 1138

Application:

- Ground wire with fibre optic (OPGW)
- Aerial cable with fibre optic (OPMW)

Remarks:

- Fibre and loose tube colour acc. to data sheet 3_0_3
- Instructions for installation and use see data sheet 3_6_0
- Other types on request
- Cable is available with different fibre types 2_1_2x_x and 2_1_3x_x
- Other types on request



Technical data

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Theor. breaking load min. kN
48F steel	48	9.2	367	76
48F ACS	48	9.2	308	56
40F Ay	40	16.0	345	61

Type	Min. bending radius	
	with tensile mm	without tensile mm
48F steel	20xD	15xD
48F ACS	20xD	15xD
40F Ay	20xD	15xD

Electrical data

Type	Short circuit current (0.5 s) kA	Short circuit current (1.0 s) kA
48F steel	2.8	2.1
48F ACS	4.2	3.0
40F Ay	4.7	3.4



BRUpowersteel

3_7_14

Hybrid field cable for harsh environments, with stainless steel loose tube for maximum 4 fibres and two coaxial conductors for electrical power transmission.

LLK-BPST, patented

Construction:

- Double layered outer PA sheath with extra abrasion resistance
- Armouring and strain relief made of stainless steel wires in combination with external copper conductor
- PA sheath
- Internal copper conductor
- Gel-filled stainless steel loose tube
- Fibres with primary coating

Description:

- Central stainless steel loose tube with 4 fibres, single- or multimode and two stranded coaxial copper wires
- High crush resistance
- High tensile strength
- Excellent rodent proof
- Compact design, high flexibility
- Very low weight
- Robust sheath halogen-free / RoHS compliant
- To brace with wedge clamps

Application:

- Indoor and outdoor
- Combination of power transmission and fibre-optic communication over long distances
- Temporary robust communication lines with power supplying to remote communication equipment
- Rapid deployment in harsh surroundings

Temperature range:

Operating temperature: -40° ... +70°C
Storage temperature: -40° ... +85°C

Jacket colour:

- Blue similar to RAL 5005

Standards:

- IEC 60794

Remarks:

Accessories offered:

- Pre-assembling with special hybrid military lens connectors with electrical contacts, delivered on various reels for easy deployment
- Adapting cables for customer's solutions
- Remote power supply RPS system
- Hand-reels, backpack- or vehicle reels
- Deployment aids, like wedge clamps, masts etc.
- Training for deployment, repair and cable testing
- Solution engineering and system design



Technical data

Type	Cable ø mm	Weight kg/km	Conductor cross-section mm²	Rated current A	operating voltage	
					kV (AC)	kV (DC)
LLK-BPST-4F	5.8	65	1.6	13	1.1	1.6

Type	Max. no. of fibres units	Min. bending radius		Max. tensile strength		Max. crush resistance N/cm
		with tensile mm	without tensile mm	short term N	long term N	
LLK-BPST-4F	4	20xD	15xD	2250	1250	800

