

# **Fiber Sensing Cables**

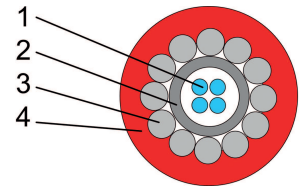
# **BRUsens Safety Sensing Cables**

# BRUsafety LHD metallic

**3\_50\_1\_007**

**Subline**Fiber optic temperature sensing cable, for fire detection, extra small, armored with stainless steel loose tube and armoring wires, fast thermal response and FRNC outer sheath, fast thermal response, for up to 2 fibers.

**LLK-BSSA M 3.8 mm**



**Application**

- Temperature
- Raman
- Indoors and/or outdoors, harsh environment
- In conduits or attached to structures
- Stand-alone

**Technical data at 20°C**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Max. crush resist- ance N/cm	Installation Max. tensile strength N	Operation Max. tensile strength N
2F	2	3.8	30	600	1500	1000

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm
2F	20xD	15xD

**Optical fiber data (cabled) at 20°C**

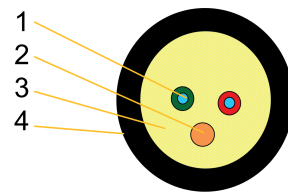
Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤3.0	≤1.0	NA	700	500
MMF 62.5/125	≤3.5	≤1.0	NA	200	500

# BRUsafety LHD non-metallic

**3\_50\_1\_008**

**LLK-BSSA N 4.0 mm**

SublineFiber optic temperature sensing cable, for fire detection, extra small, non-metallic with tight buffered fiber, aramid yarn strength members and FRNC outer sheath, fast thermal response, for up to 2 fibers.



**Application**

- Temperature
- Raman
- In conduits or attached to structures

**Technical data at 20°C**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
2F	2	4.0	17	1000	800

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
2F	20xD	15xD	100

**Optical fiber data (cabled) at 20°C**

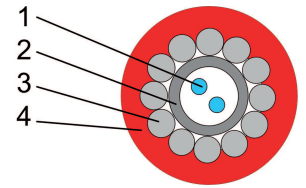
Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤3.0	≤1.0	NA	700	500
MMF 62.5/125	≤3.5	≤1.0	NA	200	500

# BRUsens temperature -180°C to 85°C

3\_50\_1\_024

SublineFiber optic temperature sensing cable, cryogenic environment, extra small, armored with stainless steel loose tube, stainless steel strength members and FRNC outer sheath, fast thermal response, for up to 2 fibers.

LLK-BSTE 85°C 3.8 mm



**Application**

- Temperature e.g. for LNG
- Raman, Brillouin, FBG etc.
- Indoors and/or outdoors, harsh environment
- Direct burial in soil or in conduits

**Technical data at 20°C**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
1F/2F	2	3.8	32	1500	1100

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
1F/2F	20xD	15xD	900

**Optical fiber data (cabled) at 20°C**

Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤3.5	≤1.5	NA	300	300
MMF 62.5/125	≤3.5	≤1.0	NA	150	300
SMF	NA	≤1.0	≤0.9	NA	NA

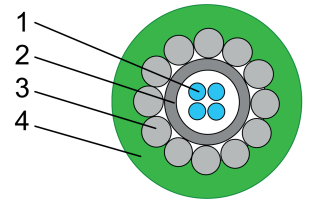
# **BRUsens Acoustic Sensing Cables**

# BRUsens DAS 4.5 mm AC3 metallic

**3\_50\_4\_001**

SublineFiber optic acoustic sensing cable, extra small, with stainless steel central metal loose tube, stainless steel strength members and PA outer sheath, good acoustic response, for up to 4 fibers.

**LLK-BSAC 4.5 mm AC3**



**Application**

- Acoustic
- Rayleigh scattering
- Outdoors, harsh environment
- Direct burial in soil, attached to structures or in conduits, subsea

**Technical data**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
2F/4F	4	4.5	32	1000	700

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
2F/4F	20xD	15xD	600

**Optical fiber data (cabled) at 20°C**

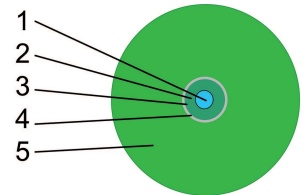
Fiber Type	Attenuation dB/km 1310 nm	Attenuation dB/km 1550 nm
SMF	≤0.36	≤0.25

# BRUsens DAS 3.2 mm AC1 FIMT

**3\_50\_4\_002**

SublineFiber optic acoustic sensing cable, extra small, with stainless steel central metal tube with one optical fiber, metal tube as strength member and PA outer sheath, good acoustic response.

**LLK-BSAC 3.2 mm AC1**



**Application**

- Acoustic
- Rayleigh scattering, Raman, Brillouin
- Outdoors, harsh environment
- Direct burial in soil, attached to structures or in conduits

**Technical data**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
1F	1	3.2	10.5	350	150

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
1F	64 (20xD)	48 (15xD)	250

**Optical fiber data (cabled) at 20°C**

Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
SMF	NA	≤0.4	≤0.25	NA	NA

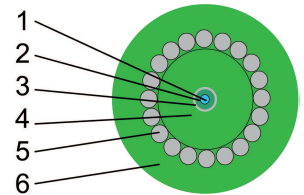


# BRUsens DAS 6.6 mm AC2 Harsh

**3\_50\_4\_003**

**Subline**Fiber optic acoustic sensing cable, with stainless steel central metal tube with one optical fiber, metal tube as hermetic seal member, galvanized steel armoring and PA outer sheath, good acoustic response.

**LLK-BSAC 6.6 mm AC2**



**Application**

- Acoustic
- Rayleigh scattering, Raman, Brillouin
- Outdoors, harsh environment
- Direct burial in soil, attached to structures or in conduits, subsea

**Technical data**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
1F	1	6.6	70	3500	2600

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
1F	132 (20xD)	99 (15xD)	700

**Optical fiber data (cabled) at 20°C**

Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
SMF	NA	≤0.4	≤0.25	NA	NA

Subject to change without notice

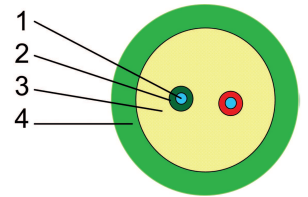
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# BRUsens DAS 6.5 mm AC4 non-metallic

3\_50\_4\_004

**Subline**Fiber optic acoustic sensing cable, non metallic, with tight buffered optical fibers, aramid strain relief and PUR outer sheath, good acoustic response, for up to 4 fibers.

LLK-BSAC 6...6.5 mm AC4



**Application**

- Acoustic
- Temperature mobile
- Rayleigh scattering
- Outdoors, harsh environment
- Attached to structures or in conduits

**Technical data**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
2F	2	6.0	31	2000	800
4F	4	6.5	34	2000	800

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm	Repeated bending Cycles
2F	15xD	10xD	450	450
4F	15xD	10xD	450	450

**Optical fiber data (cabled) at 20°C**

Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1064 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm
SMF	NA	NA	≤0.36	≤0.25

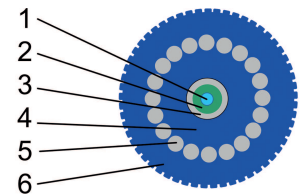
# **BRUsens Strain Sensing Cables**

# BRUsens DSS 7.2mm V3 grip

3\_50\_2\_002

SublineFiber optic strain sensing cable, extra robust, with central metal tube, metallic armoring wires and structured PA outer sheath, one optical fiber, strain range up to 1% (10000  $\mu$ strain).

LLK-BSST V3 7.2 mm



**Application**

- Strain
- Soil movement
- Pipeline monitoring
- Stuctural monitoring
- Brillouin, FBG
- Outdoors, harsh environment, subsea
- Direct burial in soil, concrete

**Technical data**

Type	Max. no. of fibres units	Cable $\phi$ mm	Weight kg/km	Installation Max. tensile strength N	Typical Load at 1 % elongation N
1F	1	7.2	75	600	1600

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
1F	144 (20xD)	108 (15xD)	500

**Optical fiber data (cabled) at 20°C**

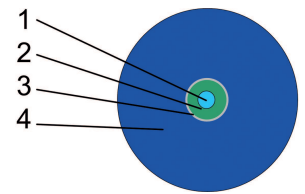
Fiber Type	Attenuation dB/km 1550 nm	Temperature sensitivity $df_B/dT$ Typical Brillouin parameters BOTDR or BOTDA at 1550 nm MHz/°C	Strain sensitivity $df_B/dT\epsilon$ Typical Brillouin parameters BOTDR or BOTDA at 1550 nm MHz/°C	Centr. Brillouin Freq. Typical Brillouin parameters BOTDR or BOTDA at 1550 nm GHz
SMF	$\leq 0.5$	1.1	450	10.6

# BRUsens DSS 3.2mm V4 metallic

**3\_50\_2\_003**

SublineFiber optic strain sensing cable, mini, flexibel, armored with central metal tube, PA outer sheath, one optical fiber, strain range up to 1% (10000  $\mu$ strain).

**LLK-BSST V4 3.2 mm**



**Application**

- Strain
- Soil movement
- Pipeline monitoring
- Stuctural monitoring
- Precision measurement and alarm systems
- Brillouin, FBG
- Outdoors, harsh environment, subsea
- Direct burial in soil, concrete, composite structures

**Technical data**

Type	Max. no. of fibres units	Cable $\phi$ mm	Weight kg/km	Installation Max. tensile strength N	Typical Load at 1 % elongation N
1F	1	3.2	10.5	260	470

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
1F	64 (20xD)	48 (15xD)	250

**Optical fiber data (cabled) at 20°C**

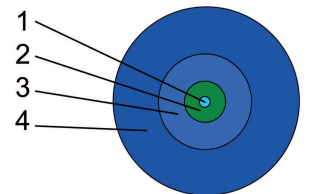
Fiber Type	Attenuation dB/km 1550 nm	Temperature sensitivity $df_B/dT$ Typical Brillouin parameters BOTDR or BOTDA at 1550 nm MHz/°C	Strain sensitivity $df_B/dT\epsilon$ Typical Brillouin parameters BOTDR or BOTDA at 1550 nm MHz/°C	Centr. Brillouin Freq. Typical Brillouin parameters BOTDR or BOTDA at 1550 nm GHz
SMF	$\leq 0.5$	1.1	450	10.6

# BRUsens DSS 2.8mm V1 non-metallic

**3\_50\_2\_004**

SublineFiber optic strain sensing cable, extra small, lightweight, sensitive, non metallic, one optical up buffered fiber, protection and strain transfer layer, EPR outer sheath, strain range up to 1% (10000  $\mu$ strain).

**LLK-BSST V1 2.8 mm**



**Application**

- Strain
- Soil movement
- Pipeline monitoring
- Stuctural monitoring
- Precision measurement and alarm systems

**Technical data**

Type	Max. no. of fibres units	Cable $\varnothing$ mm	Weight kg/km	Installation Max. tensile strength N	Typical Load at 1 % elongation N
1F	1	2.8	5.9	5	26

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
1F	$\leq 0.5$	$\approx 4.2$	10.5

**Optical fiber data (cabled) at 20°C**

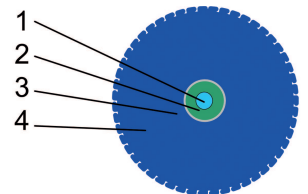
Fiber Type	Attenuation dB/km 1550 nm	Temperature sensitivity $df_B/dT$ Typical Brillouin parameters BOTDR or BOTDA at 1550 nm MHz/°C	Strain sensitivity $df_B/dT\epsilon$ Typical Brillouin parameters BOTDR or BOTDA at 1550 nm MHz/°C	Centr. Brillouin Freq. Typical Brillouin parameters BOTDR or BOTDA at 1550 nm GHz
SMF	$\leq 0.5$	$\approx 4.2$	$\approx 450$	10.5

# BRUsens DSS 3.2mm V9 grip

**3\_50\_2\_005**

SublineFiber optic strain sensing cable, mini, flexible, armored with central metal tube, structured PA outer sheath, one optical fiber, strain range up to 1% (10000  $\mu$ strain).

**LLK-BSST V9 3.2 mm**



**Application**

- Strain
- Soil movement
- Pipeline monitoring
- Stuctural monitoring
- Precision measurement and alarm systems
- Brillouin, FBG
- Outdoors, harsh environment, subsea

**Technical data**

Type	Max. no. of fibres units	Cable $\varnothing$ mm	Weight kg/km	Installation Max. tensile strength N	Typical Load at 1 % elongation N
1F	1	3.2	10.5	260	470

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
1F	64 (20xD)	48 (15xD)	250

**Optical fiber data (cabled) at 20°C**

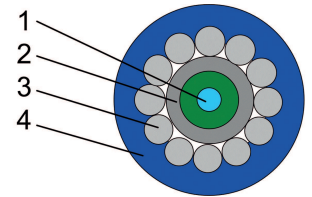
Fiber Type	Attenuation dB/km 1550 nm	Temperature sensitivity $df_B/dT$ Typical Brillouin parameters BOTDR or BOTDA at 1550 nm MHz/°C	Strain sensitivity $df_B/dT\epsilon$ Typical Brillouin parameters BOTDR or BOTDA at 1550 nm MHz/°C	Centr. Brillouin Freq. Typical Brillouin parameters BOTDR or BOTDA at 1550 nm GHz
SMF	$\leq 0.5$	1.1	450	10.6

# BRUsens DSS 3.5mm V0 alarm

3\_50\_2\_006

SublineFiber optic strain sensing cable, mini, flexible, armored with central metal tube tube, metallic armoring wires and HDPE outer sheath, one optical fiber, strain range up to 1% (10000  $\mu$ strain).

LLK-BSST V9 3.2 mm



**Application**

- Strain
- Soil movement
- Pipeline monitoring
- Stuctural monitoring
- Alarm systems
- Brillouin, FBG
- Outdoors, harsh environment, subsea
- Direct burial in soil, concrete

**Technical data**

Type	Max. no. of fibres units	Cable $\phi$ mm	Weight kg/km	Installation Max. tensile strength N	Typical Load at 1 % elongation N
1F	1	3.5	19	700	tbd

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
1F	70 (20xD)	53 (15xD)	800

**Optical fiber data (cabled) at 20°C**

Fiber Type	Attenuation dB/km 1550 nm	Temperature sensitivity $df_B/dT$ Typical Brillouin parameters BOTDR or BOTDA at 1550 nm MHz/°C	Strain sensitivity $df_B/dT\epsilon$ Typical Brillouin parameters BOTDR or BOTDA at 1550 nm MHz/°C	Centr. Brillouin Freq. Typical Brillouin parameters BOTDR or BOTDA at 1550 nm GHz
SMF	$\leq 0.4$	1.1	450	10.6



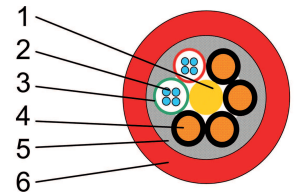
# **BRUsens Temperature heatable Cables**

# BRUsens AHFO DTS 14.5mm 2Ω

3\_50\_1\_021

SublineFiber optic temperature sensing cable, heatable, with stranded plastic loose tubes, 4 x 2.5 mm<sup>2</sup> copper conductors, glass fiber strength members and HDPE outer sheath, good thermal response, for up to 2 x 24 fibers.

LLK-BSTH 85°C 14.5 mm



**Application**

- Temperature

**Technical data**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
6D30	2x24	14.5	240	5000	3000

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm	Electrical resistance per conductor Ω/km
6D30	20xD	15xD	300	7.4

**Optical fiber data (cabled) at 20°C**

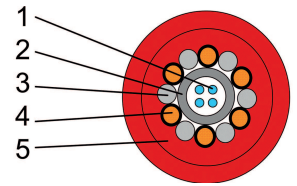
Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤2.7	≤0.8	NA	400	600
SMF	NA	≤0.36	≤0.25	NA	NA

# BRUsens AHFO DTS 4.0mm 25Ω

3\_50\_1\_022

SublineFiber optic temperature sensing cable, heatable, small, with central loose tube, 0.83 mm<sup>2</sup> copper conductor for active sensing, stainless steel strength members and double layer PA outer sheath, fast thermal response, for up to 4 fibers.

LLK-BSTH 85°C 4.0 mm



**Application**

- Temperature
- Moisture and flow detection
- Temperature heatable
- Raman, Brillouin
- Outdoors, harsh environment
- Direct burial in soil or in conduits

**Technical data**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
4F (2F MM / 2F SM)	4	4.0	28	1000	700

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm	Electrical resistance Ω/km	Continuous operation current A
4F (2F MM / 2F SM)	20xD	15xD	300	8	25

**Optical fiber data (cabled) at 20°C**

Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1064 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤3.0	≤2.6	≤1.0	NA	400	600
SMF	NA		≤0.36	≤0.25	NA	NA

# **BRUsens Temperature Sensing Cables**

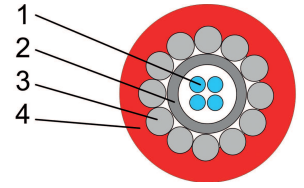
## BRUsens Temperature Sensing Cables

# BRUsens DTS STL PA

3\_50\_1\_001

Fiber optic temperature sensing cable, extra small, armored with stainless steel loose tube, stainless steel strength members and PA outer sheath, fast thermal response, for up to 8 fibers.

LLK-BSTE 85°C 3.4 ...4.8 mm



### Technical data at 20°C

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Max. crush resist- ance N/cm	Installation Max. tensile strength N	Operation Max. tensile strength N
1F	1	3.4	18	1200	800	600
2F	2	3.8	26	600	1500	1000
4F	4	3.8	26	600	1500	1000
8F	8	4.8	46	800	3000	2000

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Hydrostatic pressure resistance x 100 kPa (bar)
1F...8F	20xD	15xD	300

### Optical fiber data (cabled) at 20°C

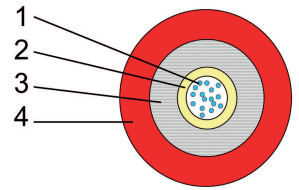
Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤3.0	≤1.0	NA	700	500
MMF 62.5/125	≤3.5	≤1.0	NA	200	500
SMF	NA	≤0.36	≤0.25	NA	NA

# BRUsens DTS + Data 8.5mm non-metallic

3\_50\_1\_019

SublineFiber optic temperature sensing cable, extra small, non metallic with central loose tube, glass fiber strength members and FRNC flame retardant, halogen free outer sheath, fast thermal response, for up to 12 fibers.

LLK-BSTE 85°C 8.5 mm



### Application

- Temperature
- Communication cable for sensing
- Temperature compensation for Brillouin
- Monitoring of high voltage cables
- Raman, Brillouin
- Indoors and/or outdoors, harsh environment
- Direct burial in soil or in conduits

### Technical data

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N	Combustion energy MJ/m
1D25	12	8.5	65	2000	1500	1.0

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
1D25	20xD	15xD	300

### Optical fiber data (cabled) at 20°C

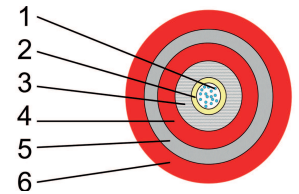
Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤3.0	≤1.0	NA	400	600
MMF 62.5/125	≤3.5	≤1.0	NA	200	500
SMF	NA	≤0.36	≤0.25	NA	NA

# BRUsens DTS + Data 13.2mm

**3\_50\_1\_020**

**Subline**Fiber optic temperature sensing cable, with central loose tube, extra armoring with corrugated steel tape, glass fiber strength members and halogen free HDPE inner and outer sheath, good thermal response, for up to 24 fibers.

**LLK-BSTE 85°C 13.2 mm**



**Application**

- Temperature
- Communication cable for sensing
- Temperature compensation for Brillouin
- Monitoring of high voltage cables
- Raman, Brillouin
- Indoors and/or outdoors, harsh environment
- Direct burial in soil or in conduits

**Technical data**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
1D25	12	13.2	180	2000	1500
1D30	24	13.2	185	2000	1500

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
1D25/1D30	20xD	15xD	300

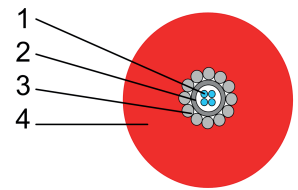
## BRUsens Temperature Sensing Cables

# BRUsens DTS 6.0mm

3\_50\_1\_023

Fiber optic temperature sensing cable, small, armoured with stainless steel loose tube, metal strength members and thick HDPE outer sheath, fast thermal response, for up to 4 fibers.

LLK-BSTE 85°C 6.0 mm



### Technical data

Type	Max. no. of fibres units	Cable $\phi$ mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
4F	4	6.0	42	1300	900

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
4F	20xD	15xD	800

### Optical fiber data (cabled) at 20°C

Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	$\leq 3.0$	$\leq 1.0$	NA	400	600
MMF 62.5/125	$\leq 3.5$	$\leq 1.0$	NA	200	500
SMF	NA	$\leq 0.36$	$\leq 0.25$	NA	NA

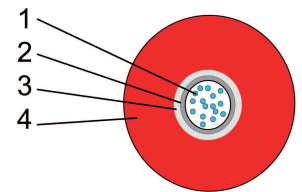


# BRUsens DTS + Data 6.4mm

**3\_50\_1\_029**

SublineFiber optic temperature sensing cable, with central metal loose tube, glass fiber strength members and HDPE outer sheath, fast thermal response, for up to 24 fibers.

**LLK-BSTE 85°C 6.4 mm**



**Application**

- Temperature
- Communication cable for sensing
- Temperature compensation for Brillouin
- Raman, Brillouin, FBG etc.
- Outdoors, harsh environment
- Direct burial in soil or in conduits

**Technical data**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
1C2.7	24	6.4	45	2500	2000

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
1C...3C	20xD	15xD	300

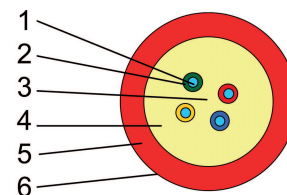
**Optical fiber data (cabled) at 20°C**

Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤3.0	≤1.0	NA	700	500
MMF 62.5/125	≤3.5	≤1.0	NA	200	500
SMF	NA	≤0.36	≤0.25	NA	NA

# BRUsens DTS 6.0mm non-metallic

3\_50\_1\_015

Fiber optic temperature sensing cable, mini, non-metallic, highly flexible for easy deployment, with up to 4 sensing fibers.



**Technical data**

Type	Max. no. of fibres units	Cable $\phi$ mm	Weight kg/km	short term Max. tensile strength N	long term Max. tensile strength N
2F	2	6.0	31	2000	800
4F	4	6.5	34	2000	800

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm	Repeated bending Cycles
2F	15xD	10xD	450	450
4F	15xD	10xD	450	450

**Optical fiber data (cabled)**

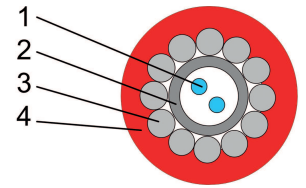
Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	$\leq 3.0$	$\leq 1.0$	NA	400	600
MMF 62.5/125	$\leq 3.5$	$\leq 1.0$	NA	200	500
SMF	NA	$\leq 0.36$	$\leq 0.25$	NA	NA

# BRUsens temperature 150°C

**3\_50\_1\_002**

SublineFiber optic mid temperature sensing cable, extra small, armored with stainless steel loose tube, stainless steel strength members and TPE outer sheath, fast thermal response, for up to 2 fibers.

**LLK-BSTE 150°C 3.8 mm**



**Application**

- Temperature
- Raman, Brillouin, FBG etc.
- Outdoors, harsh environment
- Direct burial in soil or in conduits

**Technical data at 20°C**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Max. crush resist- ance N/cm	Installation Max. tensile strength N	Operation Max. tensile strength N
2F	2	3.8	28	600	1500	1000

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	at 150°C Hydrostatic pressure resistance x 100 kPa (bar)
2F	76 (20xD)	52 (15xD)	200

**Optical fiber data (cabled) at 20°C**

Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤3.0	≤1.0	NA	400	500
MMF 62.5/125	≤3.5	≤1.0	NA	160	500
SMF	NA	≤0.4	≤0.25	NA	NA

# BRUsens temperature 70°C high resolution

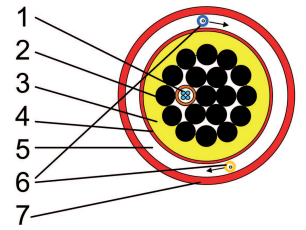
3\_50\_1\_006

**Subline**Fiber optic temperature sensing cable, high resolution, light weight, with two fibers in core and two fibers in outer layer with approx. 13:1 fiber to cable length ratio, non-metal strength member, PUR outer sheath, fast thermal response.

**Application**

- Temperature high resolution
- Raman
- Outdoors, harsh environment

LLK-BSTE 70°C N 26.6 mm



**Technical data at 20°C**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
2F+2F	2+2	26.6	500	1500	1500

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
2F+2F	530 (20xD)	400 (15xD)	200

**Optical fiber data (cabled) at 20°C**

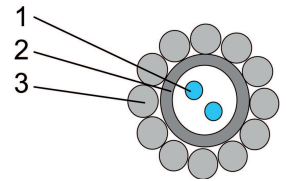
Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Attenuation dB/km 1550 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤3.0	≤1.0	NA	400	600

# BRUsens temperature -180°C to 85°C, cryogenic

3\_50\_1\_030

SublineFiber optic temperature sensing cable, cryogenic environment, extra small, armored with stainless steel loose tube, stainless steel strength members, fast thermal response, for up to 2 polyimide fibers.

LLK-BSTE 85°C 2.2 mm



**Application**

- Temperature e.g. for LNG
- Raman, Brillouin, FBG etc.
- Indoors and/or outdoors, harsh environment
- In conduits or attached to structures

**Technical data**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	long term Max. tensile strength N	short term Max. tensile strength N
2F	2	2.2	17	1500	1000

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Max. crush resistance N/cm
2F	20xD	15xD	600

**Optical fiber data (cabled) at 20°C**

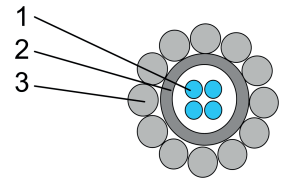
Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤3.5	≤1.5	300	300

# BRUsens temperature -40°C to 300°C

**3\_50\_1\_032**

**Subline**Fiber optic temperature sensing cable, extra small, armored with stainless steel loose tube, stainless steel strength members, fast thermal response, for 1 to 4 polyimide coated optical fibers.

**LLK-BSTE 300 °C 2.8 mm**



**Application**

- Temperature
- Raman, Brillouin, FBG etc.
- Indoors and/or outdoors, harsh environment
- In conduits or attached to structures

**Technical data**

Type	Max. no. of fibres units	Cable ø mm	Weight kg/km	Installation Max. tensile strength N	Operation Max. tensile strength N
1F...4F	4	2.8	25	1500	1000

Type	with tensile load Min. bending radius mm	without tensile load Min. bending radius mm	Hydrostatic pressure bar	Max. crush resistance N/cm
1F...4F	20xD	15xD	300	600

**Optical fiber data (cabled) at 20°C**

Fiber Type	Attenuation dB/km 850 nm	Attenuation dB/km 1300 / 1310 nm	Modal Bandwidth MHz x km 850 nm	Modal Bandwidth MHz x km 1300 nm
MMF 50/125	≤3.5	≤1.5	300	300