

BRUsens DSTAS V13

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BRUsens BSSH V13

Distributed Fiber-Optic Sensing (DFOS) cable for Strain, Temperature and Acoustic Sensing (DSTAS) with up to four temperature- and/or acoustic-sensing optical fibers and two strain-sensing to measure strain up to 1% (10'000 µε)

Construction

- 1) PA outer sheath (option: smooth or structured)
- 2) Two strain-sensing optical fibers in metal tubes
- 3) Gel-filled 316L stainless steel Fiber In Metal Tube (FIMT) for temperature and/or acoustic sensing

Optical fibers

- Single-mode fibers for DSS and DAS
- Optional single- or multimode fibers for DTS

Description

- Hermetically sealed tubes
- Tight-buffered optical fibers for strain sensing
- Loose tube fibers for temperature and acoustic sensing
- Twisted tubes
- Good rodent protection
- Robust outer sheath
- Halogen-free cable sheath

Applications

- Brillouin Distributed Strain Sensing (DSS)
- Brillouin- or Raman-based Distributed Temperature Sensing (DTS)
- Rayleigh Distributed Acoustic Sensing (DAS)
- Structural Health Monitoring (SHM)

Technical data at 20°C

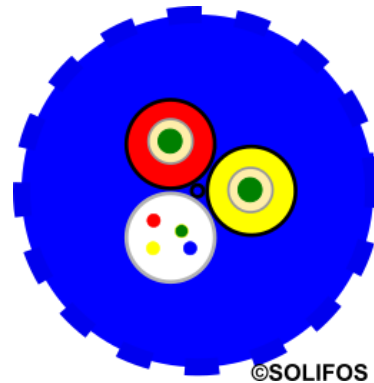
Type	Max. nb. of fibers	Cable ø mm	Weight kg/km	Crush res. N/cm	Max. tensile strength installation N	Typ. load at 1% elongation N
2x1 + 1	2 DSS + 1 DTS or DAS	5.9	46	300	400	1600
2x1 + 2	2 DSS + 2 DTS or DAS	5.9 / 6.5 (*)	46	300	400	1600
2x1 + 4	2 DSS + 2 DTS + 2 DAS	6.5	55	300	500	2000

(*) Please consult Solifos for the available design variants.

Type	Min. bending radius		Hydrostatic pressure resistance x100kPa (bar)
	with tensile load mm	without tensile load mm	
2x1 + 1	20xD	15xD	300
2x1 + 2	20xD	15xD	300
2x1 + 4	20xD	15xD	300

Attenuation (dB/km) at 20°C

	850 nm	1300 / 1310 nm	1550 nm
MMF 50/125	≤3.0	≤1.5	-
SMF (DTS, DAS)	-	≤0.4	≤0.25
SMF (DSS)	-	-	≤0.5



Temperature range

- Operating temperature: -30°C ... +70°C
- Storage temperature: -30°C ... +70°C
- Installation temperature: -5°C ... +50°C

Options

- Outer sheath: smooth or structured for enhanced grip

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Fibre Optic Sensing Cables

Typical Brillouin parameters BOTDR or BOTDA at 1550nm

	Temperature sensitivity df_B / dT	Strain sensitivity $df_B / d\epsilon$	Centr. Brillouin Freq.
SMF (DSS)	~ 2.1 MHz/°C (DSS)	~ 0.035 MHz/ μ strain	~ 10.7 GHz
SMF (DTS)	~ 1.2 MHz/°C (DTS)	~ 0 MHz/ μ strain	~ 10.8 GHz

Typical Rayleigh parameters at 1550nm

	Temperature sensitivity df_R / dT	Strain sensitivity $df_R / d\epsilon$
SMF (DSS)	~ -4.0 GHz/°C (DSS)	~ -0.11 GHz/ μ strain
SMF (DTS)	~ -1.3 GHz/°C (DTS)	~ 0 GHz/ μ strain

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