

11.1040 DITEST SMARTUBE SENSOR

Fiber optic combined temperature & strain budget sensing cable



GENERAL DESCRIPTION

The DiTeSt SMARTube combined strain and temperature sensors are designed for distributed deformation (average strain) and temperature monitoring over long distances. The DiTeSt SMARTube sensor is especially suitable for detection of ground settlements and displacements in geotechnical applications such as dams, dikes, levees, embankments and slopes

TECHNICAL DESCRIPTION

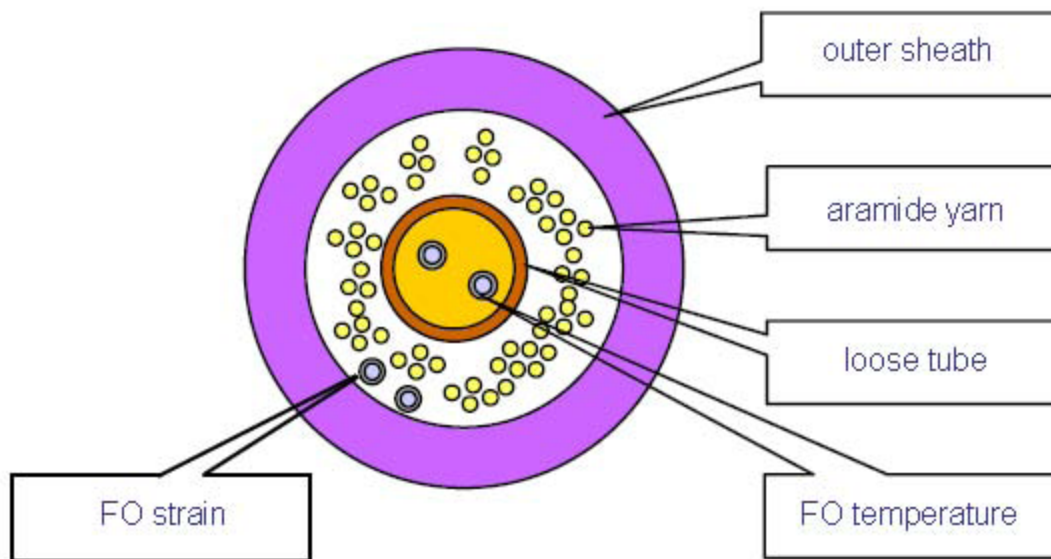
The DiTeSt SMARTube sensor consist of one or two single mode fibres well protected from environment inside a loose tube, and two single mode fibres friction-bonded in the cable and exposed to mechanical strain. The bonded fibers are used for strain monitoring, while the free fibers are used for temperature measurements (quantitative if sensor deformation $<0.2\%$, qualitative if sensor deformation $>0.2\%$) and to compensate temperature effects on the bonded fibers. Because of its construction, the SMARTube sensor cannot be used to quantify strain with high accuracy. It is mainly used to identify movement areas and their magnitude. For redundancy, two fibers are included for both strain and temperature monitoring. The sensor itself provides good mechanical, chemical and temperature resistance. The size of the tube makes the sensor easy to transport and install by embedding and clamping. The SMARTube sensor is designed for use in environments often found in civil, geotechnical and oil & gas applications. However, this sensor cannot be used in extreme temperature environments, nor in environments with high chemical pollution. It is not recommended for installation under permanent UV radiation (e.g. sunshine).

The SMARTube sensor is fully compatible with DiTeSt® system. It is delivered on spools and with all the necessary accessories such termination and connectors (E2000, FC-PC or other).



FEATURES

- Distributed temperature & strain sensing
- Multi functional
- Single cable design
- DiTeSt[®] compatible
- Mechanically reinforced
- Chemically resistant
- Easy and rapid installation
- Light weight and small dimensions



TECHNICAL CHARACTERISTIC AND PERFORMANCES

Strain monitoring fibers	2
Temperature monitoring fibers	2
Maximal length	□ 5 km
Strain range	-1.5% compression to +1.5% elongation
Temperature range	-20°C up to +65°C in long term operation
Calibration	only during production
Temperature compensation	compensated trough temperature sensing fibers (strain < 0.5%)
Dimensions	□ 5.4 mm outer diameter
Sensor weight	□ 22 kg / km
Minimal bending radius	□ 75 mm in installation, ~ 100 mm in explotation
Max tensile strain	1.5%
Max installation tension	1000 N
Max constant tension	400 N
Chemical resistance	good to fair
Optical connectors	E2000 APC with protected pigtails (other on request)

ORDERING INFORMATION

Length, optical connectors



environmental systems & services
 8 River Street, Richmond VIC 3121 Australia
 T + 61 3 8420 8999 | F + 61 3 8420 8900
 geotechnical@esands.com | www.esands.com