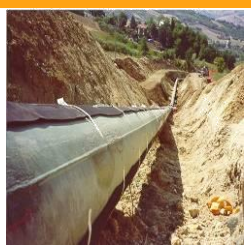
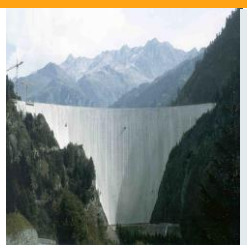
14.2013 DITEMP HARSH RAMAN OTDR

For distributed temperature sensing

GENERAL DESCRIPTION

The DiTemp® Harsh is a unique tool for the measurement of distributed temperature over several kilometers in harsh environment (from desert to arctic). It is a powerful diagnostic instrument for the identification and localization of potential problems. It allows the monitoring of local temperature at thousands locations by mean of a single optical fiber and in just one measurement. Its inherent high stability and self-referenced principle of operation, allows on-line or off-line long-term monitoring of large structures.

TECHNICAL DESCRIPTION

The measuring principle is based on the RAMAN effect and the Optical Time Domain Reflectometry (OTDR) method. Laser pulses are coupled into the fibers where the photons interact with the molecules of the fiber material. Some photons are scattered backwards and they carry information on the thermal motion of the molecules they were scattered by. Consequently, the spectrum of the backscattered light carries information on temperature of the fibers. This effect can be used to measure temperature along the optical fiber.

The spectral analysis is combined with measuring the propagation time of the laser pulses along the fiber (radar principle) as the speed of light in the fiber is known. Scanning the entire length of the fiber by short intervals (e. g. 1m) the temperature profile along the fiber is determined. It is important to know that the measured temperature of each interval is the average temperature of that individual fiber section. Due to the high speed of light, fiber lengths of many kilometers can be scanned within fractions of a second.

The system consists of reading unit, sensing cable and accessories. The optical fibers, which are integrated into robust cables, are the temperature sensitive elements and allow the measurement of temperature profiles at arbitrary times, quasi-continuously with a high spatial and temperature resolution along the cable. This is a requirement for the investigation of thermal processes.

The system is used in a wide range of applications that require distributed temperature sensing, such as temperature monitoring of concrete in massive structures, waste disposal sites, on- and off-shore sites in gas and oil industry, hot spots, cold spots and leakage detection of flow lines and reservoirs, building installations, just to name a few.

FEATURES

- **Harsh environment operation**
- **Short measuring time**
- **Up to 12 km**
- **Multiple channel**
- **Low power**
- **Long term stability**
- **Cost effective**
- **Remote control**
- **Server based data collector**
- **Non-volatile on board memory**

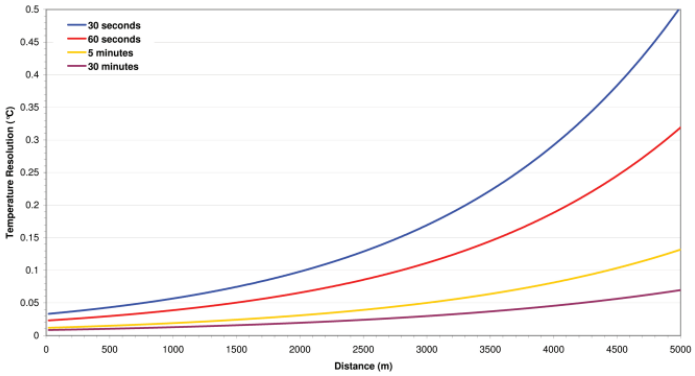
TECHNICAL FEATURES

- **Distance range**
  - **Harsh SR →** 0 -5 km
  - **Harsh XR →** 0 – 12 km
- **Spatial resolution**
  - **Harsh SR →** 2 m
  - **Harsh XR →** 2 m
- **Sampling resolution**
  - **Harsh SR →** 1 m
  - **Harsh XR →** 1 m
- **Temperature resolution →** see below
- **Number of channels →** 4 ch in-built mux
- **Fiber typology →** MMF 50/125 μm (ITU.T G.651)

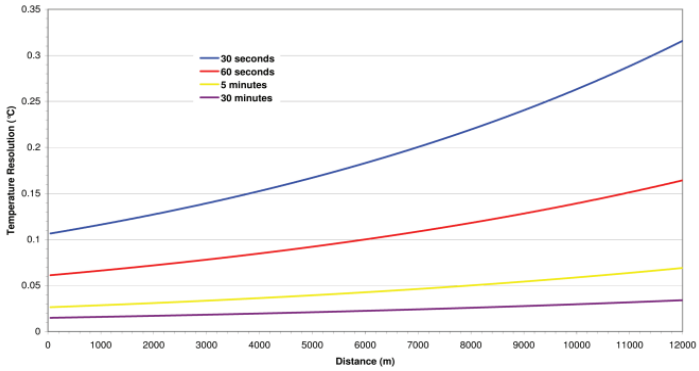
TECHNICAL SPECIFICATIONS

- **Operating temperature**
  - **Harsh SR →** -40°C to +65°C
  - **Harsh XR →** -5°C to +65°C
- **Storage Temperature →** -5°C to +80°C
- **DC Power →** 12V or 24V
- **Power consumption**
  - **Harsh SR →** 0.5 W stand-by, 18 W operating
  - **Harsh XR →** 0.5 W stand-by, 24 W operating
- **Dimension (HxWxD) →** 114.5 x 303.5 x 365.7 mm
- **Weight →**7 kg
- **Communication options →** Satellite / Wireless modem, GSM modem, Direct link PC, Serial SR-232, Wired Ethernet

Harsh SR



Harsh XR



CERTIFICATION AND COMPLIANCE

Classified to EN 60825-1 (2007) as a class 1M laser product CE compliant.

BS EN 61010-1:2001; BS EN 61326-1:2006; BS EN55022:1998; BS EN61000-4-3:2006; FCC CFR47 pt15 (USA), ICES-003 (Canada)

ACCESSORIES AND ORDERING INFORMATION

- **14.2013 DiTemp Harsh Reading Unit**
- **20.2010 DiView Data Management Software**

Roctest Ltd. · 665 Pine Avenue, Saint-Lambert, QC, J4P 2P4 CANADA · **Phone** 1-450-465-1113 · **Fax** 1-450-465-1938 · info@roctest.com · **www.roctest.com**
Telemac SA · 10, avenue Eiffel, 77220 Gretz-Armainvilliers, FRANCE · **Phone** +33-1-64-06-40-80 · **Fax** +33-1-64-06-40-26 · info@telemac.fr · **www.telemac.fr**
Smartec SA · Via Pobiette 11, CH-6928 Manno, SWITZERLAND · **Phone** +41 91 610 1800 · **Fax** +41 91 610 1801 · smartec@smartec.ch · **www.smartec.ch**

Products and specifications are subject to change without notice. © Roctest Ltd., 2011