DATA SHEET

HALLIBURTON

RESERVOIR AND FRACTURE MONITORING | FIBER OPTIC MONITORING

FiberWatch® service DTS XE system

Extreme-environment distributed temperature sensing (DTS) system

FEATURES

- Patented dual-laser design for hydrogen darkening tolerance (hydrogen-tolerant/HT)
- Low power consumption and extended operating temperature range
- Real-time and configurable temperature measurement interval
- High spatial resolution with support of up to 16 sensing fibers
- Secure data telemetry and help control through internet connectivity

BENEFITS

- Effective operation on standard and severely hydrogen damaged fiber optics
- Designed for remote and off-grid operation
- Extended environmental operating range for projects with unique extreme hot or cold climate
- Augment well operation and optimization capability through continuous high-resolution temperature data in broad application range

Overview

The FiberWatch® service distributed temperature sensing extreme environment (DTS XE) system is designed to provide DTS results in the harshest environments. This system is specifically designed for remote locations in extreme cold or hot ambient conditions. It incorporates the Halliburton patented dual-laser technology to capture meaningful data during long-term monitoring to assess life-of-well performance.

Applications

The DTS XE system can be deployed in the following applications:

- Temperature monitoring for areas with limited surface infrastructure or access to grid power
- Conventional, unconventional, and improved oil recovery (EOR) wells
  - » Temperature monitoring for well operation, production optimization, conformance, pump and gas-lift monitoring, and wellbore integrity
- Geothermal
  - » Flow assurance, heat flux, and recovery optimization
- CCUS
  - » Injection phase management, wellbore integrity, and containment monitoring

FiberWatch® service DTS XE system specifications

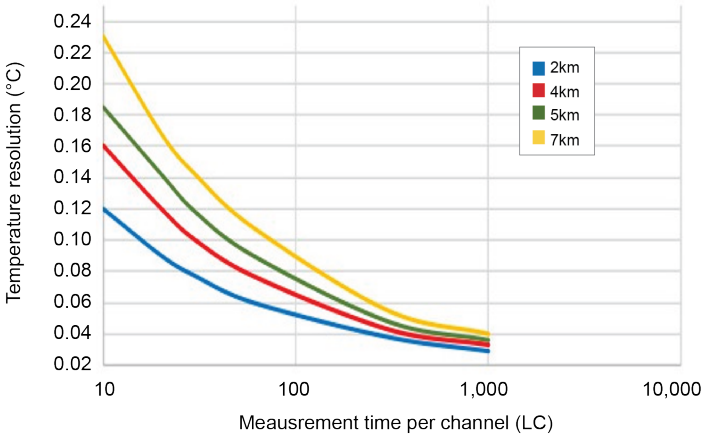
PERFORMANCE	DESCRIPTION
Maximum nominal range	5 km
Spatial resolution	1 m
Sampling resolution	0.5 m
Accuracy	±2°/3.6°F
Temperature resolution	Refer to performance curves
Measurement time per channel	10-second minimum (see performance curves)

FiberWatch® service DTS XE system

SPECIFICATIONS	DESCRIPTION
Operating temperature	-40 to 65°C (-40 to 149°F)
Storage temperature	-40 to 85°C (-40 to 185°F)
Data storage	128 GB
Fiber compatibility	50-µm graded index multimode fiber
Optical channels	1, 2, 4, 8, 12, 16, or 20 with E2000/APC connectors; single-ended configuration only
Laser safety	Lasers are certified as Class 1M per IEC 60825-1.2013
Certification	Low-voltage directive 2014/35/EU :exempt - voltage under 75 VDC Electromagnetic compatibility directive 2014/30/EU : CISPR 11:2009/A1:2010, IEC 61000-4-2:2008, IEC 61000-4-3:2006/A1:2007/A2:2010, IEC 61000-4-4:2004/Corr:2007/A1:2010, IEC 61000-4-5:2005/Corr:2009, IEC 61000-4-6:2008, IEC 61000-4-8:2009 hazardous area directive 2014/34/EU : IEC 60079-0:2012, IEC 60079-28:2015. Output suitable for Zone 1. [Ex op is T4 Gb] IIB and ATEX Ex II (2) G
Packaging	Systems are designed for extreme hot and cold ambient environments
Power	Solar or 18 to 36 VDC: 25 W Peak, 15 W Typical
Power save mode	Sleep mode available to save power in remote locations with low sun

SOFTWARE AND COMMUNICATIONS	DESCRIPTION
Communication	Encrypted channel over an IP network
Software	DTS Commander™; Microsoft® Windows® client application to configure, monitor, and process data from multiple DTS XE devices
Remote access	Full operator remote control and data access capabilities
Diagnostics	Real-time diagnostics for remote support and system health monitoring
Security	All network connections are authenticated and encrypted using Secure Shell (SSH) remote administration protocol

DTS XE Interrogator performance curves



Naming convention

DTS-VV-XX-YY-SF		
VV	Lasers	HT – dual laser, SL – single laser
XX	Channels	01, 02, 04, 08, 12, 16, 20
YY	Packaging	XE (extreme environment)
SF	SEAFOM hardware testing	SF

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