

Features

- The inclination and azimuth sensor manufactured in-house
- The inclination sensor is made using liquid capacitive sensor technology, it has high accuracy, impact resistance, and reliability
- High accuracy: ± 0.1 for inclination, ± 0.3 for azimuth
- High shock resistance
- High temperature : $-5 \sim 125^{\circ}\text{C}$
- Extended logging time
- Compact design
- Extended memory capacity

Applications

- Pipe conveyed logging (PCL)

The offline pipe conveyed logging (PCL) inclinometer ITA is designed for continuous measurement of the azimuth, inclination, and toolface of the borehole instrument as a function of depth when working in the openhole of vertical and horizontal wells. Delivery of the inclinometer to the bottomhole is carried out on a rigging tool.

Operating conditions of the pipe conveyed logging inclinometer ITA: openhole of vertical and horizontal wells with a temperature from -5 to 125°C and hydrostatic pressure of up to 80 MPa, drilled for oil and gas and a depth of up to 5000 m.

Data is being recorded in downhole against time in memory mode to subsequently produce a log at the surface through a time/depth conversion process. The resulting log is comparable in quality to logs obtained through conventional methods.

Inside the device, there is a high-capacity battery that allows you to make up to 18 measurements on the well without wasting time on recharging the batteries.

For the development of the pipe conveyed logging offline inclinometer ITA, advanced technologies have been used, which have been researched and improved by the company for many years. As part of the device capacitive tilt sensors and magnetometers of our own production are used, which are characterized by high accuracy and small dimensions.

Inclinometer ITA is a standard implementation scheme presented in the form of a 3-axis fluxgate magnetometer and a 3-axis capacitive tilt sensor. The output values are the azimuth, inclination, toolface (roll) angles, three magnetic components, three gravitational components, and temperature readings.

The ITA includes:

- Downhole device.
- Computer.
- Software.





PHISICAL		
Outside Diameter (OD)	mm	73/90/102
Lenght	mm	2065
Connecting thread		3-76 ⁽¹⁾
ENVIRONMENTAL		
Temperature Operating	°C	-5...125
Maximum Operating pressure	Mpa	80
Axial compressive and tensile load	T	<5(10)
Shock survival (0.5 ms, half sine)	g	3500
PERFOMANCE		
Continuous operation time in measurement mode by memory overflow	h	36(42)
Battery life	h	212(106+106)
Measuring range of magnetic azimuth	deg	0-360
Measuring range of magnetic components	μT	±70
Measuring range of inclination	deg	0-180
Measuring range of toolface	deg	0-360
Measuring range of temperature	°C	0-125
Toolface (Roll) absolute accuracy	deg	±0.5°
Azimat absolute accuracy		
inclination 90°		±0.3°
inclination 10°	deg	±1.0°
inclination 5°		±2.0°
Inclination absolute accuracy	deg	±0.1°
Temperature absolute accuracy	°C	± 2°
Linearity error of measurement of magnetic components (over the entire temperature range)	%	<0.1

1. By agreement