

JTL-50FT Fiber Optic Gyroscope Inclinometer

Summary

JTL-50FT fiber optic gyroscope Inclinometer is using high-precision fiber optic gyroscope as a measuring element of the new inclinometer instrument to measure borehole inclination and azimuth for magnetic mines and iron sleeve specially designed drill inclinometer hole for angle magnetic mines and iron casing vertical or directional bore and high-precision measuring azimuth; widely used in metallurgy, engineering, hydrology, oil, coal, geological borehole logging areas.

The instrument is made of the ground control box, inclinometer probe, shock full flow guide shoe and laptop computers and other components, designed to be portable; equipped with a special software to display and print the borehole inclinometer data tables, drawing drilling plan, section, side projection and spatial trajectories.

I. Main technical specifications

1. Measuring range:

Angle: $0^{\circ} \sim 50^{\circ}$

Azimuth: $0^{\circ} \sim 360^{\circ}$

The high-side tool face angle: $0^{\circ} \sim 360^{\circ}$

Orientation tool face angle: $0^{\circ} \sim 360^{\circ}$

2. Measurement accuracy:

Angle measurement error: $\leq \pm 0.2^{\circ}$

Azimuth measurement error: $\leq \pm 2^{\circ}$ (angle $3^{\circ} \sim 50^{\circ}$)

$\leq \pm 3^{\circ}$ (angle $1^{\circ} \sim 3^{\circ}$)

The high-side tool face angle: $\leq \pm 1^{\circ}$ (angle $3^{\circ} \sim 90^{\circ}$)

Orientation tool face angle: $\leq \pm 2^{\circ}$ (angle $0^{\circ} \sim 50^{\circ}$)

3. Measuring depth: 1500 m (temperature $<60^{\circ}\text{C}$)

4. Pressure: 25MPa

5. Measurement: measuring point

6. Power: Single phase 220V $\pm 10\%$ / 50HZ

7. Power consumption: about 75W

8. Environmental temperature: $-10^{\circ}\text{C} \sim 55^{\circ}\text{C}$

9. Instrument cable: four-core cable (resistance $<85\Omega / 100\text{m}$)

10. Dimensions and weight: Downhole probe: $\Phi 54\text{mm} \times 1680\text{ mm}$
(can be customized $\Phi 50\text{mm} \times 1680\text{ mm}$)

Ground control box: $370\text{mm} \times 160\text{mm} \times 290\text{ mm} / 6\text{kg}$.



II. Basic working principle and features

1. FOG is an effect achieved by an optical SAGNAC advanced element angular rate measurements, mainly used in missile navigation and guidance, ship navigation and attitude control, positioning and orientation system. Compared with the conventional mechanical and electronic gyroscope, it has the characteristics of solid state structure, short start-up time, high dynamic range, high reliability, long life time.

2. The instrument uses a high-precision FOG azimuth measuring device, small size, long life, shock and vibration, small zero drift. It is the ideal directional sensor for measuring the azimuth angle in the magnetic mine area and the iron casing, that is, the shortcoming of the power tuning gyroscope is avoided and the advantage of the power tuned gyroscope is improved.

3. The instrument uses a high-precision dual-axis tilt sensor as an angle measuring device, after 24 AD samples obtained after data processing vertex data.

4. The optimized tool surface angle measurement method can accurately measure the orientation of the tool face angle and high-side tool face angle of the magnetic and non-magnetic mining area.

5. Application-optimized digital signal processing to optimize the measurement system to accurately measure the angle and azimuth, the measurement results to achieve high precision requirements; Dynamic Compensation technology to eliminate gyroscope zero drift, zero drift precision measurements.

6. Application of the technology of long wire transmission in digital communication, reliable transmission of long cable digital signal, and improve the anti-interference ability of the instrument.

7. Do not need to ground directional, you can always measure the true north azimuth drilling, saving time and effort, to ensure the accuracy of measurement.

8. The ground control box angle, azimuth, tool face angle, and signal transmitted to the computer after mixing depth.

9. Computer ground data processing, display, save and draw a plane projection, can print three-dimensional trajectory map.