SJ6000 Laser Interferometer Measurement System

Portable case and tripod

Structure of the case

Description

Laser interferometer is recognized as a high precision, high sensitive measuring method by applying light wavelength as criterion, and is widely used in high-end manufacturing domain.

SJ6000 laser interferometer insists of high-frequency Helium-Neon laser generator from a USA supplier, high-precision environmental compensation modules, high-precision laser interference signal processing system, high-performance computer control system. By applying with thermal frequency stabilization technology of laser dual-longitudinal mode and geometric parameters interference optical path design, SJ6000 can output long-term stable and high-precision(0.05ppm) laser quickly(about 6 minutes) which has powerful anti-interference performance. With different prism modules, it can measure linearity, angle, straightness, Flatness and perpendicularity, in addition it can analyze dynamic characteristics.

SJ6000 has many advantages, such as high precision, high speed, high resolution, long range.

Features

1. High precision:

Resolution of SJ6000 is up to nanoscale based on laser interference technology, with high precision environmental compensation module, the influence of environmental factors such as temperature, atmospheric pressure, relative humidity and material temperature are eliminated on the measurement results; The design of separating interferoscope from the host avoids heat distortion of interferoscope, which ensures the stability of interference optical path.

2.Applications:

(1)High precision measurement of geometric parameters such as linear, angle, straightness, perpendicularity, parallelism and flatness.

(2)Calibrate linear positioning accuracy and repetitive positioning accuracy of precision motion equipment, such as CNC machine tool, CMM, etc.

(3)Calibrate rotary axis of machine tools.

(4)The error compensation file can be automatically generated according to the compensation setting by users.

(5)Support manual or automatic environmental compensation.

3.Software:

(1)User-riendly interface

(2)Various application modules

(3)Operation with guide

(4)Simplified record management

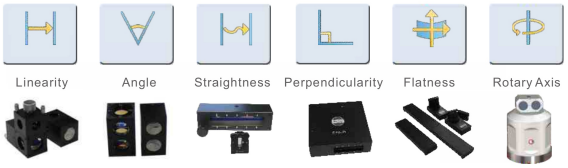
(5)Support the customization of enterprise-specific template

4.Standards:

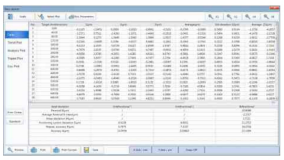
Built-in standards up to 13, including GB, ISO, BS, ANSI, DIN, JIS, etc, which satisfy most needs of users. Data can be analysis and process according to different kinds of machine tool's standards, finally generates the corresponding curve chart and data report.

Necessary configuration for linearity measurement

Whole prism accessories



Software interface



Parameters

System parameters:

1. Measuring method: single frequency
2. Laser frequency accuracy: 0.05ppm
3. Dynamic capture rate：50kHz
4. Warm-up time：about 6 min
5. Operating temperature：(0~40)℃
6. Environment temperature：(0~40)℃，humidity：0~95%
7. Storage temperature：-20℃~70℃

Environmental sensors:

1. Atmospheric temperature sensor : ±0.1℃ (0~40)℃, resolution: 0.01℃
2. Material temperature sensor: ±0.1℃ (0~40)℃, resolution: 0.01℃
3. Atmospheric humidity sensor: ±5% (0~95%)
4. Atmospheric pressure sensor: ±0.1kPa (65~115)kPa

Linear measurement:

1. Measuring range: (0~80)m
2. Measuring accuracy：0.5ppm (0~40)℃
3. Measuring resolution: 1nm
4. Maximum measuring speed：4m/s

Angle measurement:

1. Axial range: (0~15)m
2. Measuring range：±10″
3. Measuring accuracy：±(0.02%R+0.1+0.024M)″ (R is indicating value, unit: "; M is measured length in m)
4. Measuring resolution：0.1″

Flatness measurement:

1. Axial range: (0~15) m
2. Flatness measuring range：±1.5 mm
3. Measuring accuracy：±(0.2%R+0.02M^2) μm (R is indicating value in μm; M is measured length in meters)
4. Substrate size：180mm adjustable, 360mm adjustable
5. Measuring resolution：0.1μm

Straightness measurement:

Item	Axis range	Measuring range	Accuracy	Resolution
Short straightness	(0.1~4)m	±3.0mm	±(0.5+0.25%R+0.15M^2)μm	0.01μm
Long straightness	(1~20)m	±3.0mm	±(5.0+2.5%R+0.015M^2)μm	0.1μm
Note: R is indicating value in μm; M is measured length in meters				

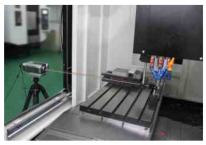
Perpendicularity measurement:

Item	Axis range	Measuring range	Accuracy	Resolution
Short straightness	(0.1~3)m	±3/M mm/m	±(2.5+0.25%R+0.8M)μm/m	0.01μm
Long straightness	(1~15)m	±3/M mm/m	±(2.5+2.5%R+0.08M)μm/m	0.01μm
Note: R is indicating value of perpendicularity in μm; M is measured length in meters				

Rotary axis measurement:

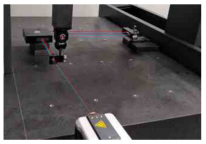
1. Measuring range of angle: 0-360°
2. Max axis rotation speed：10rpm
3. Pitch accuracy of precision turntable：±1″
4. Resolution：0.1″
5. Power supply: Li-battery
6. Communication type: Bluetooth
7. Weight: 1.9kg
8. Size: Φ112*H148mm

Typical application



Precision machine tools calibration

Guide rail calibration of automation equipment



CMM calibration

Linear slide calibration

Rotary axis calibration of Machine tool

Straightness calibration of Guide rail

Standard

ISO230-1997	1997 ISO standard
ISO230-2006	2006 ISO standard
ISO 230-2-2014	2014 ISO standard
ANSI B5.54-2005	National standard of US
ASME B89.1.12M-1990	ASME standard of US
NMTBA	NMTBA standard of US
BS 3800-2-1991	UK standard of machine tools
BS 4656-16-1985	UK standard of machine tools
JIS B6330	National standard of Japan
GB 17421-2000	National standard of China
VDI 3441	GER standard of machine tools
JIS B7513	Precision surface plates

Configuration

1. SJ6000 host machine 1 pc
2. Environmental compensation device 1 set
3. Optical prism
   - For linear measurement (0~80m) 1 set
   - For precision linear measurement(small one, optional) 1 set
   - For angle measurement(optional) 1 set
   - For long(1-20m) straightness measurement (optional) 1 set
   - For short(0.1-4m) straightness measurement (optional) 1 set
   - For long(1-15m) perpendicularity measurement (optional) 1 set
   - For short(0.1-3m) perpendicularity measurement (optional) 1 set
   - For flatness measurement (optional) 1 set
   - For rotary axis measurement (optional) 1 set
4. Measuring Software 1 pc
5. Laptop computer 1 pc
6. Portable suitcase 1 pc
7. Universal tripod 1 pc
8. Pan/tilt holder 1 pc
9. Magnetic bases for prism module 1 set
10. User Manual 1 pc
11. Product certification and Warranty card 1 set