SST500 Inclinometer

Vigor Technology

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Features

- Up to ±0.001° bias stability within 12 months
- Bias temperature drift achieve ±0.0005°/℃
- Optimization design based on CAE & EDA
- High reliability & flexibility
- Multi-functional management software
- Less than ±3″ bias
- Less than ±1.5″ absolute linearity error
- Kinds of land & aerospace application interfaces
- 3 classes: Industry class, Universal military class, High-quality military class
- Up to 15000 hours of MTBF
- Successfully applied to missile launch, radar, aerospace and other military projects
- Customized product available

Descriptions

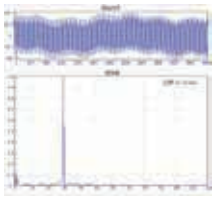
SST500 inclinometer is a revolutionary tilt measurement product, fully absorbs and learns from high precision military inertial navigation technology, precise fusion with machine-electric & inertial test technologies, applied to variety of high-class industrial & military applications.

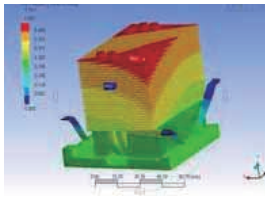
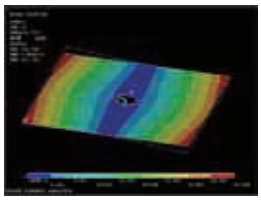
SST500 inclinometer adopts inertial navigation grade servo accelerometer, with <0.1μg resolution, >25Hz frequency response, >120dB signal-noise ratio. Achieve ± 1.3" accuracy at room temperature.

SST500 performs excellent dynamic characteristics, long-term stability, and environmental adaptability, experienced with various static & quasi-static long-term works under industrial & military harsh environment.

Thanks Vigor's engineers for making complete modal testing for whole body & key components, to minimize interference from outside shock & vibration.

To maximize reliability of SST500 inclinometer, modeling analysis, regulated software & hardware reliability design, selected proven components directory, finite element analysis (thermal reliability analysis, structural reliability analysis) and FMEA, have been made to ensure the optimal performance and stability as well.



Applications

Military: missile launch, rocket launch, military radar, mobile communication equipmert, fire control system, bunkers monitoring, flight test, laser/video equipment, navigation system, etc.

Civil: large-scale bridge, tunneling guidance equipment, space observations, precision machine tools, optical instrument, etc.






Referenced Standards

- GB/T 191 SJ 20873 General requirements for Inclinometer & levelmeter (China)
- GBT 18459 Methods for Calculation the Main static performance specifications for transducers(China)
- JJF 1059 Evaluation and Express of Uncertainty in Measurement(China)
- JJF 1094 Evaluation of the Characteristics of Measuring Instruments(China)
- JJF 1116 Calibration Specification for Linear Accelerometer used precision Centrifuger(China)
- QJ 2318 The test method of gyro & accelerometer(China)
- GJB 2786A General Requirements for Military Software Development(China)
- GJB 2884 General Specification for Three-Axis angular motion simulator(China)
- EN61000-4-11 Voltage dips &Voltage variations
- MIL-HDBD-338B
- ISO 5348 IDT
- MIL-STD-810F-501.4
- MIL-STD-810F-502.4
- MIL-STD-810F-503.4
- MIL-STD-810F-506.4
- MIL-STD-810F-510.4
- MIL-STD-810F-514.5
- MIL-STD-810F-516.5
- IEC60529 IP
- EN61000 -4-2 ESD
- EN61000-4-3 RS
- MIL-STD-810F-507.4
- EN61000-4-4 EFT
- EN61000-4-5 SURGE
- EN61000-4-6 CS
- EN61000-4-8 PFMF
- ISTA-2A

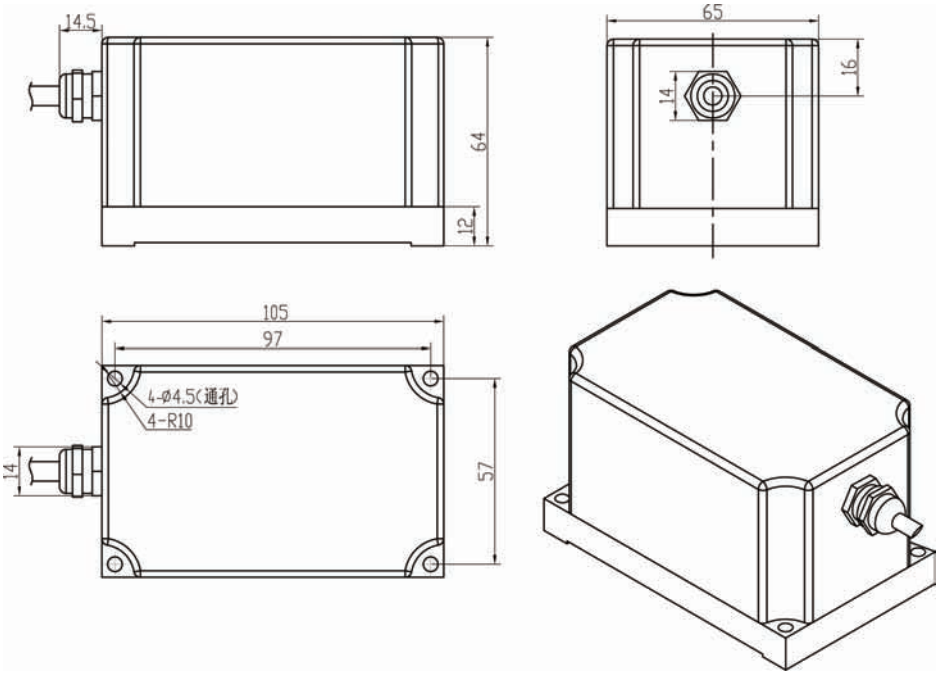
Performances

Table 1 Specifications

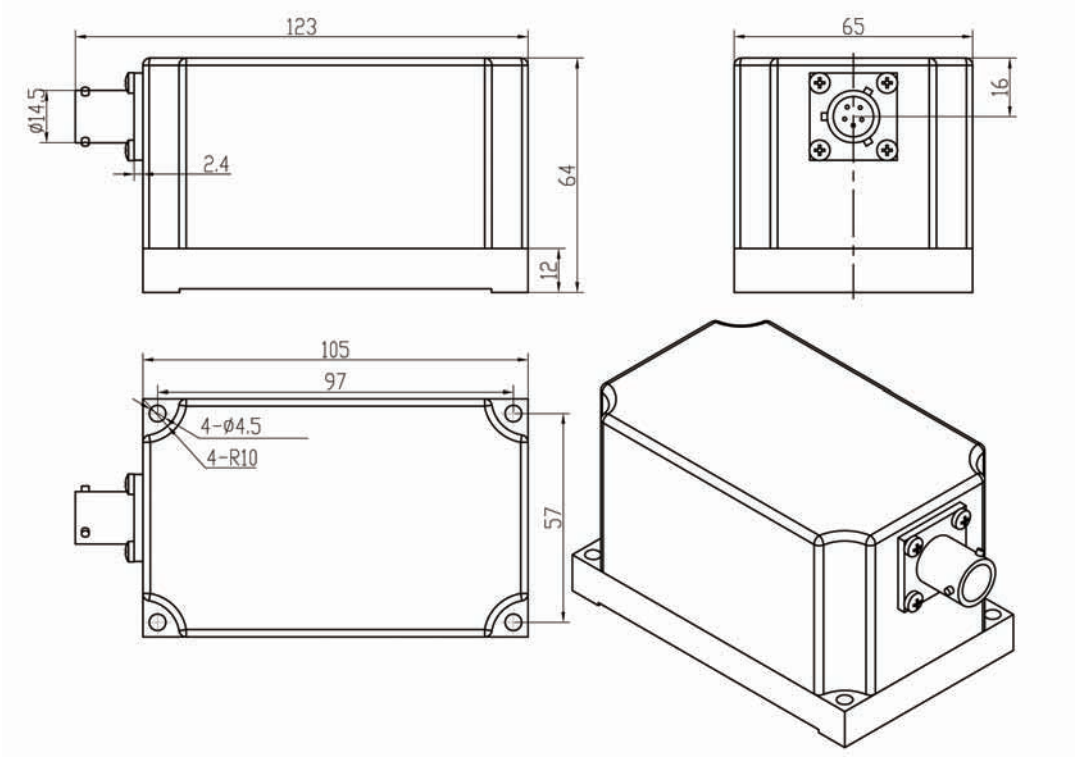
Measurement range		±1°	±5°	±10°	±15°	±30°	±45°	±60°
Absolute linearity error(@20℃)		±1.5″	±5″	±10″	±10″	±15″	±25″	±40″
Resolution		0.1″	0.2″	0.5″	0.5″	0.6″	1″	2″
Axis		Single/Double						
Bias repeatability	Industry class	±3.6″	±3.6″	±3.6″	±3.6″	±10″	±18″	±18″
	Universal military class	±3″						
	High-quality military class	±2″						
Bias stability	Industry level @ 6 months	±10″	±10″	±10″	±10″	±18″	±18″	±30″
	Universal military class @ 6 months	±3.6″						
	High-quality military class @ 12 months	±3.6″						
Bias	Industry class	±10″	±10″	±10″	±10″	±18″	±18″	±30″
	Universal military class	±8″						
	High-quality military class	±3.6″						
Bias temperature drift. /℃	Industry class @-20~65℃	±5″	±5″	±5″	±10″	±15″	±20″	±25″
	Universal military class @-40~85℃	±0.5″	±0.5″	±0.5″	±1″	±1″	±2″	±2″
	High-quality military class @-55~125℃	±0.5″	±0.5″	±0.5″	±1″	±1″	±2″	±2″
Sensitivity temperature drift ppm/℃	Industry class @-20~65℃	±35	±35	±40	±40	±50	±50	±60
	Universal military class @-40~85℃	±30	±20	±20	±10	±10	±10	±10
	High-quality military class @-55~125℃	±30	±20	±20	±10	±10	±10	±10
Cross-axis sensitivity	Industry class	±0.1%FS						
	Universal military class	±0.05%FS						
	High-quality military class	±0.02%FS						
Misalignment	Industry class	≤2mrad.						
	Universal military class	≤0.5mrad.						
	High-quality military class	≤0.05mrad.						
Response time	Industry class	0.3~1.0s(depends on requested accuracy)						
	Universal military class	0.1~1.0s(depends on requested accuracy)						
	High-quality military class	0.1~1.0s(depends on requested accuracy)						
Cold start warming time	Industry class	180s						
	Universal military class	120s						
	High-quality military class	60s						
Output	Industry class	Interface:RS232, RS485, CAN update rate:5Hz						
	Universal military class	Interface:RS422,CAN update rate:10Hz,20Hz,50Hz,						
	High-quality military class	Interface:MIL-STD-1553B, ARINC429, IEEE1394, IBIS, or depend on request						
EMC	Industry class	According to EN 61000 or GBT17626						
	Universal military class	GJB 151A or MIL STD-461						
	High-quality military class	GJB 151A,or MIL STD-461,or depend on request						

MTBF	Industry class	≥5000h/times
	Universal military class	≥10000h/times
	High-quality military class	≥15000h/times
Power supply	Industry class	9~36VDC(unregulated),≤80mA@24VDC
	Universal military class	12~48VDC(unregulated),≤80mA@24VDC
	High-quality military class	12~48VDC(unregulated),consumption depends on request
Shock	Industry class	100g@11ms,3 axis,6directions,half-sine,1times/axis, total 6 times
	Universal military class	100g@11ms,3 axis,6directions,square wave,2times/axis, total 12 times
	High-quality military class	100g@11ms,3 axis,6directions,square wave,3times/axis, total 18 times
Vibration	Industry class	3grms, 20~2000Hz,random
	Universal military class	5grms, 20~2000Hz,random,1g,1oct/min,20~2000Hz,sine
	High-quality military class	6grms, 20~2000Hz,random,2g,1oct/min,20~2000Hz,sine
Rapid temperature change test	Industry class	-40~85℃ range,10℃ /min ratio
	Universal military class	-40~85℃ range,15℃ /min ratio
	High-quality military class	-60~125℃ range,15℃ /min ratio
Storage temperature test	Industry class	-40~85℃ range, 24h,according to GJB/MIL or depend on request
	Universal military class	-40~125℃ range, 2×24 h,according to GJB/MIL or depend on request
	High-quality military class	-60~125℃ range, 7×24 h,according to GJB/MIL or depend on request
Housing	Industry class	6061-T6 aluminum housing,316N base
	Universal military class	Full 316N,10 cycles of heat treatment
	High-quality military class	Full 316N,10 cycles of heat treatment,6months natural stress release, or depends on request
Connecting	Industry class	Military connector or metal pigtail with 2m shield 7-wire cable (heavy duty up to 30kg)
	Universal military class	Military full stainless steel connector, or full stainless steel pigtail with 2m shield 7-wire cable (heavy duty up to 50kg)
	High-quality military class	Military full stainless steel connector, or full stainless steel pigtail with 2m shield 7-wire cable (heavy duty up to 50kg)
Protection	Industry class	IP65
	Universal military class	IP67
	High-quality military class	Depends on request
Operation temperature range	Industry class	-40~85℃
	Universal military class	-40~85℃
	High-quality military class	-55~125℃
Storage temperature range	Industry class	-40~85℃
	Universal military class	-60~125℃
	High-quality military class	-60~125℃
Weight	Industry class	2Kg
	Universal military class	3Kg
	High-quality military class	Depends on request
Size	Industry class	105x65x64mm(without connector and pigtail)
	Universal military class	105x65x64mm(without connector and pigtail)
	High-quality military class	Depends on request
Temperature sensor (internal)	Industry class	Range-50~125℃ , accuracy ±1℃
	Universal military class	Range-50~125℃ , accuracy ±1℃
	High-quality military class	Range-60~125℃ , accuracy ±1.5℃

Dimensions (mm)

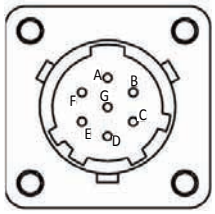


Picture 1 Mechanical draft
(Pigtail, suitable to industry class & universal military class)



Picture 2 Mechanical draft
(Military connector, suitable to industry class & universal military class)

Wiring



Picture 3 Connector socket
(view from outside)

Table 2 Wiring definition

Socket pin	Pigtail cable	Output(single or double axis)			
		RS232	RS485	RS422	CAN
A	Red	Power +	Power +	Power +	Power +
B	Black	Power -	Power -	Power -	Power -
C	Green	Signal GND	Signal GND	Signal GND	Signal GND
D	Yellow	NC	NC	RS422-RXD+	CANH
E	White	NC	NC	RS422-RXD-	CANL
F	Blue	RS232-TXD	RS485-A	RS422-TXD+	NC
G	Brown	RS232-RXD	RS485-B	RS422-TXD-	NC

Note: 1. Don't connect signal GND and Power GND together.
2. Other outputs on request.

Ordering