



SPECIFICATIONS

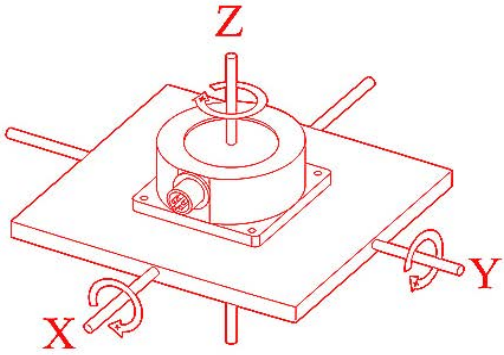
Item No.: TL632D

Description: MEMS Digital Type Gyroscope

Production implementation standard reference

- Enterprise quality system standards: ISO9001: 2008 standard (certification number: 128101)
- Tilt sensor production standards: GB / T 191 SJ 20873-2003 inclinometer general specification of Level
- The Academy of metrology and quality inspection Calibrated in accordance to: JJF1119-2004 Electronic Level calibration Specification
- Software development reference standard: GJB 2786A-2009 military software development General requirements
- Product environmental testing standards: GJB150
- Electromagnetic anti-interference test standards: GB / T 17626
- Version: Ver.09
- Date: 2014.5.9

TL632D- MEMS Digital Type Gyroscope



General Description

TL632D is a gyroscope (angle rate sensor) based on the micro mechanical principle, a miniature inertial devices for mainly measuring the angular velocity of a moving object. Product internal with the silicon ultrafine precision ring sensing technology so that it has a high-performance, waterproof, anti-vibration, light weight, anti-electromagnetic interference characteristics and etc. Uninterrupted the machine with self-test technology, the filtering algorithm and the first time in the country by eliminating resonance technology to solve the influence on data because of the surrounding noise or vibration interference source to the ordinary gyroscope. TL632D add another international temperature sensor compensation technology to solve the temperature drift impact problems, with over-temperature stability and long life characteristics etc. to realize the domestic similar products technology-leading technology.

Products with high cost-effective, small volume ,more advantages than the FOG in application fields, is now widely used in the automotive, military, marine, moving objects, position control & attitude control, and other applications that require precise angle measurement occasions !

Key Features

- High performance drift stability
- Low noise
- Light weight
- Long life, strong stability
- Cost-effective
- Excellent vibration performance
- All solid state
- Compact & light design
- RS232/RS485/SPI output optional
- Wide temperature range
- DC+9~36V power supply
- Temperature drift< $\pm 0.2^{\circ}/\text{sec}$

Application:

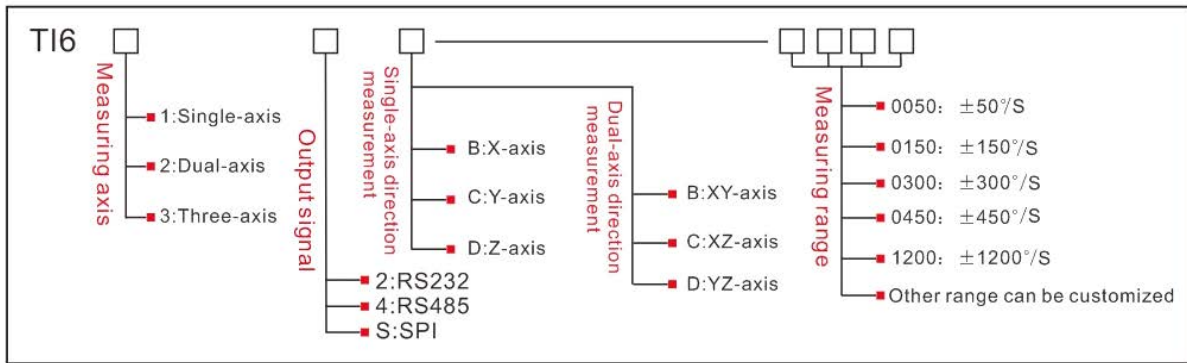
- Military & Industry
- Navigation
- Car navigation
- Platform stability
- Auto safety system
- Remote control helicopters
- Turck-mounted satellite antenna equipment
- Industrial control
- Equipments
- GPS combination
- Camera stability
- Robot
- 3D virtual reality
- Ships electronic needle error compensation on inclined(angle rate)induction equipment



Technical Data

Parameters	TL632D-050	TL632D -150	TL632D -300
Measuring range (°/s)	±50	±150	±300
Measuring axis	X、Y、Z (optional)	X、Y、Z (optional)	X、Y、Z (optional)
Bandwidth(Hz)	>2000	>2000	>2000
Resolution(°/s)	0.1	0.1	0.1
Nonlinear	0.1% of FS	0.1% of FS	0.1% of FS
Temperature compensation	Full temperature area	Full temperature area	Full temperature area
Temperature drift °/sec	< ±0.2°/sec,	< ±1.0°/sec,	< ±3.0°/sec,
Start time (ms)	5	5	5
Input voltage(V)	+9~36V	+9~36V	+9~36V
Current(mA)	60	60	60
Working temperature (°C)	-40 to +85	-40 to +85	-40 to +85
Store temperature (°C)	-55to +100	-55to +100	-55to +100
Shock (g)	5g~10g	5g~10g	5g~10g
Impact (g)	200g pk, 2ms, ½sine	200g pk, 2ms, ½sine	200g pk, 2ms, ½sine
Working life	11 years	11 years	11years
Output rate	5Hz、15Hz、35Hz、50Hz、100H、300H can be set		
Output signal	RS232/RS485/RS422/TTL/SPI		
MTBF	≥50000 hours/times		
Insulation resistance	≥100M		
Shockproof	100g@11ms、3Times/Axis(half sinusoid)		
Anti-vibration	10grms、10~1000Hz		
Protection class	IP67		
Connector	5 pins air-plug, matched with 1M cable		
Weight	110g(without cable)		

Ordering Information

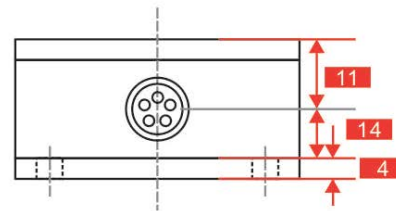
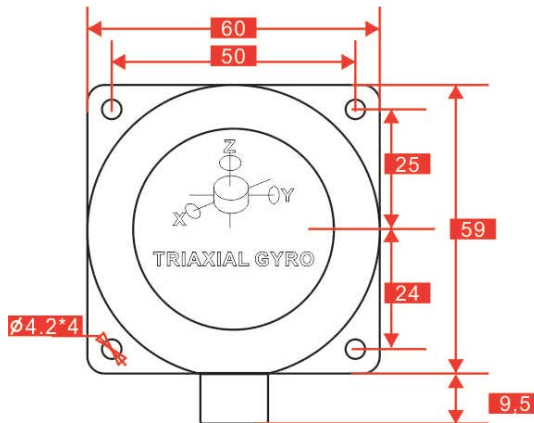


E.g: TL612D-0050: Single-axis、RS232 output、Z axis direction measurement、 $\pm 50^\circ/\text{s}$ Selection

TL622B-0050: Dual-axis、RS232 output、XY Axis direction measurement、 $\pm 50^\circ/\text{s}$ Selection

TL632B-0050: Three-axis、RS232 output、XYZ Axis direction measurement、 $\pm 50^\circ/\text{s}$ Selection

Dimension



TOP VIEW

UNIT:mm

FRONT VIEW

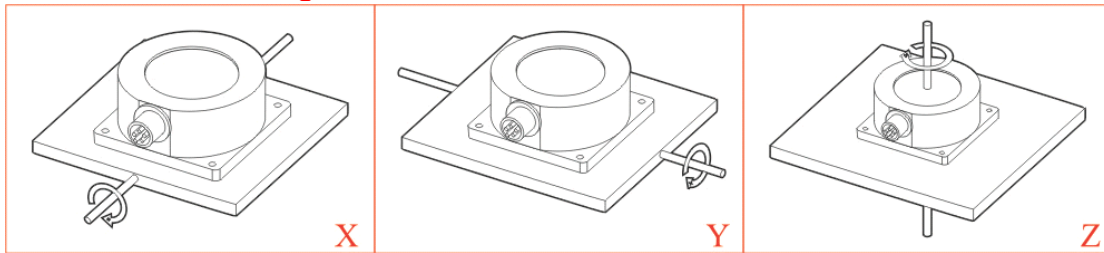
Size: L60mm *W59 mm *29mm

Mechanical Parameters



- Connector: Waterproof air-plug
- Protection class: IP67
- Enclosure material: Aluminum Ox
- Installation: 4XM4 screws

Products measuring directions



Electrical Connection

5cables socket pin	Cable color	Single-axis Gyro		Dual-axis Gyro		Three-axis Gyro	
		RS232	RS485	RS232	RS485	RS232	RS485
1	Red	Power positive	Power positive	Power positive	Power positive	Power positive	Power positive
2	White	RXD	D+	RXD	D+	RXD	D+
3	Green	TXD	D-	TXD	D-	TXD	D-
4	Black	Power GND	Power GND	Power GND	Power GND	Power GND	Power GND
5	Blue	NC	NC	NC	NC	NC	NC

Product Protocol

1.DATA FRAME FORMAT:

(8 bits date, 1 bit stop, No check, Default baud rate 9600)

Identifier (1byte)	Date Length (1byte)	Address code (1byte)	Command word (1byte)	Date domain	Check sum (1byte)
68H					

Identifier: Fixed68H

Data length: From data length to check sum (including check sum) length

Address code: Accumulating module address, Default :00

Date domain will be changed according to the content and length of command word

Check sum: Data length、Address code、Command word and data domain sum,No carry.

Unit: G

二、COMMAND word analysis

Desc.	Meaning/Example	Description
0X04	Meanwhile reading the angle command E.g: 68 04 00 04 08	Data domain(0byte) No Data domain command
0X84	Sensor answer reply E.g: 68 0D 00 84 00 20 10 10 58 00 04 05 00 32	Data domain (9byte) AA AB BB CC CD DD EE EE EE AA AB BB: three character means X axis CC CD DD:three character means Y axis EE EF FF: three character means Z axis The angle on the left example is: X axis acceleration=020.10 g Y axis acceleration=-058.00g Z axis acceleration=405.00g 32: check sum , the sum of all the data in hexadecimal without prefix 68 , it is effective to take the low position if

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		for the decade .
0X0B	<p>Setting communication rate E.g: 68 05 00 0B 03 13</p> <p>The command setting is effective after power off then restart (power off with save function)</p>	<p>Data domain (1byte) Baud rate: default :9600 00 means 2400 01 means 4800 02 means 9600 03 means 19200 04 means 38400 05 means 115200</p>
0X8B	<p>Sensor answer reply command E.g: 68 05 00 8B 90</p>	<p>Data domain (1byte) Data domain in the number means the sensor response results 00 Success FF Failure</p>
0X0C	<p>Setting sensor output mode</p> <p>Response rule; Need upper computer send reading angle command , the sensor answer the corresponding angle Automatic output rule: The sensor with power on can Automatically output X,Y,z angle , output frequency base on what be setted, if you need output High frequency, please set baud rate as 115200 (Power off with save function) E.g: 68 05 00 0C 00 11</p>	<p>Data domain (1byte) Factory default: 00 00 Answer reply mode 01 5Hz Automatical output mode 02 15Hz Automatical output mode 03 25Hz Automatical output mode 04 35Hz Automatical output mode 05 50Hz Automatical output mode 06 100 Hz Automatical output mode 07 200 Hz Automatical output mode 08 300 Hz Automatical output mode</p>
0X8C	<p>Sensor answer reply command E.g: 68 05 00 8C 00 91</p>	<p>Data domain (1byte) Data domain in the number means the sensor response results 00 Success FF Failure</p>
0X0F	<p>Setting module address command</p> <p>The sensor default address is 00, 1, such as a plurality of sensor to be connected with a bus cable, e.g RS485.requires each sensor is set to a different address, in order to achieve control and response angle . 2, If successfully changed the new address, follow all of the commands and responding Packet address code has to switch to the new address code which already changed then to</p>	<p>Data domain (1byte) XX Module address Address from 00 to EF range Note: All products have a common address :FF, If forget the address what has been set during operation , can use FF address to operate the product can still normally respond</p>

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	<p>be effective, otherwise the sensor will not respond to commands.(power off with save function)</p> <p>E.g: 68 05 00 0F 01 15</p> <p>Setting the address to 01</p> <p>68 05 FF 0F 00 13</p> <p>Use the common address to reset address to 00</p>	
0X8F	<p>The sensor answer reply command</p> <p>E.g: 68 05 00 8F 94</p>	<p>Data domain (1byte) ,</p> <p>Data domain in the number means the sensor response results</p> <p>00 Success FF Failure</p>



※More products information, please refer to the company's Website : www.rion-tech.net



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✓ 倾角传感器 ✓ 倾角（调平）开关 ✓ 数显水平仪 ✓ 陀螺仪
✓ 三维电子罗盘 ✓ 加速度计 ✓ 航姿参考系统 ✓ 寻北仪

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