SPECIFICATIONS

Item No.：TL740D

Desc.：Angular Gyro Sensor

Production implementation standard reference

- Enterprise quality system standards: ISO9001: 2008 standard (certification number: 128101)
- Gyro accelerometer test Standard : QJ 2318-92 gyro accelerometer test method
- Software development reference standard: GJB 2786A-2009 military software development General requirements
- Product environmental testing standards: GJB150
- Electromagnetic anti-interference test standards: GB / T 17666
- Version:Ver.01
- Date: Apr. 11th, 2016

TL740D-Angular Gyro Sensor

General Description

TL740D is RION company newly developed horizontal azimuth angular gyro sensor based on latest MEMS inertial measurement platform , by means of the dynamic attitude algorithm for the angular velocity of gyroscope ,it can simultaneously output carrier's azimuth angle .The product inernal integrated RION's Patent Inertial navigation algorithm, through the model of attitude angle data fusion , can solve the gyro short time drift problem as much as possible .

This product is specially used for robot car, AVG vehicle azimuth orientation, attitude control and other related applications of the UAV, instead of the traditional robot vehicle magnetic bar guide shortcomings, no need at the site layout of magnetic stripe, is the necessary navigation components for the next generation of robot vehicle automatic tracing and driving.

Key Features

- Azimuth angle output
- Strong vibration resistance
- Light weight
- Long life,strong stability
- Cost-effective
- All solid state
- Compact & light design
- RS232/RS485 output optional
- DC9~36V power supply

Application

- AGV truck
- Car Navigation
- 3D virtual reality
- Platform stability
- Auto safety system
- UAV
- Turck-mounted satellite antenna equipment
- Industrial control
- Robot

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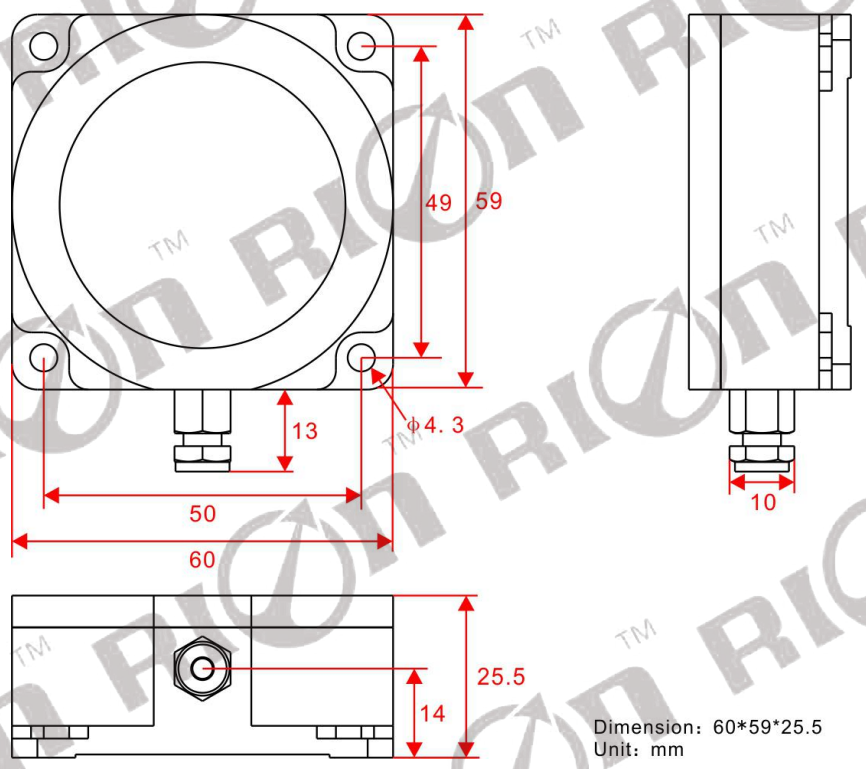
Technical Data

Parameters	TL740D
Mesuring range	Azimuth Angle (±180)
Acquisition bandwidth (Hz)	>100
Resolution（°）	0.01
Azimuth accuracy (°/min)	<0.1
Nonlinear	0.1% of FS
Max angle rate (°/s)	⩾300
Starting time（s）	30（Static）
Input Voltage(V)	+9~36V
Current (mA)	60(12V)
Working Temp.(℃)	-40 ~ +85
Storage Temp(℃)	-40 ~ +85
Vibration（g）	5g~10g
Impact（g）	200g pk，2ms，½sine
Working life	10 years
Output rate	5Hz、15Hz、25Hz、50Hz can set
Output signal	RS232 or RS485
MTBF	⩾50000 hours /times
Insulation resistance	⩾100 Megohm
Impact resistance	100g@11ms、3Times/Axis(half sinusoid)
Anti-vibration	10grms、10～1000Hz
Protecting	IP67
Connector	**matched with 1m cable**
Weight	160g(without cable)

Ordering information

TL740D-232	RS232 output mode
TL740D-485	RS485 output mode

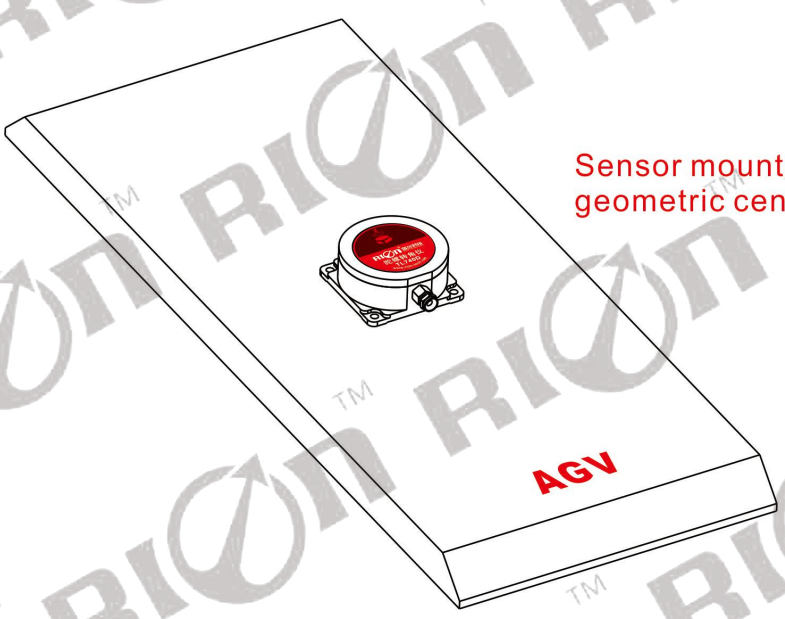
Dimension



Dimension：60*59*25.5
Unit：mm

Notice

1.The angular gyro sensor should be mounted in the center position of the measured object , in order to reduce the influence of linear acceleration on the measurement accuracy. See below diagram as ref.

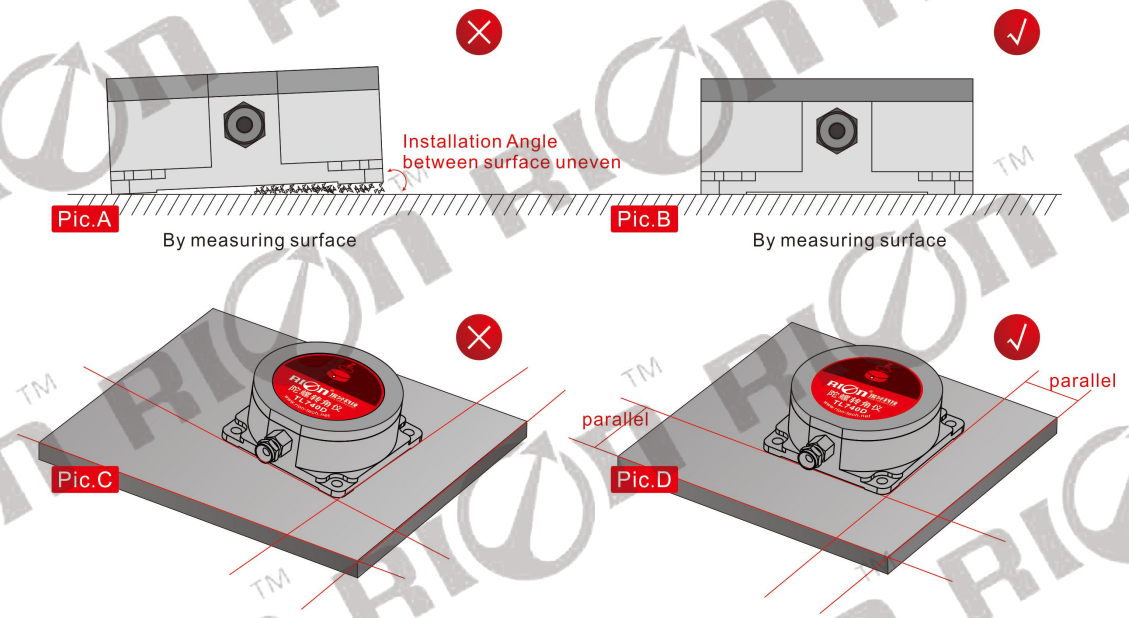


Sensor mounted in the geometric center postion

2. The installation of the instrument should be kept parallel to the surface of the measured object, and reduce the influence of the dynamic and acceleration on the angle meter. Incorrect installation will lead to measurement errors, with particular attention to "surface" and" line "

1） The mounting surface of the instrument fixing must be close, smooth and stable with the measured surface. If the mounting surface is not smooth, the angle error of angle measurement can be caused easily. See figure Pic.AB

2)The axis of the instrument must be parallel to the axis of measurement, and the two axis should not be included angle as far as possible , see figure Pic.CD



3. Do not shake violently during the use of the product, avoid violent vibration, away from the vibration source (if you can not avoid please install the shock absorber), so as not to affect the product measurement accuracy;

4. Try to avoid a sharp acceleration, arrest, sharp turn angular velocity greater than 300 DEG /s movement during use, so as not to affect the measurement precision of products.

5. After the switch is started, the angular gyro sensor needs to be static 20S, and the initial value of the measuring unit is restored, so as to ensure the measurement precision of the product. If there is no such operation, the product can also be used normally, but can not reach the normal precision standard .

Electrical Connection

1：RS232/RS485 cable wire difination :

Line Color	BLACK	WHITE	GREEN	RED
Functions	GND Power Negative	RS232(RXD) RS485(D+)	RS232(TXD) RS485(D-)	Vcc 9～36V Power Positive

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.

Note: Because of this product at startup need attitude calculation model of internal construction, so start the required time of 30 seconds, and need to maintain the "angle meter" static (no movment), if move the product within 30 seconds process, is re-start time of 30 seconds, after finishing the start process, automatic output data packet, can not output data packet in the start of 30seconds process .

二、Command analysis

Desc.	Meaning/Example	Description
0X84	**Sensor auto output angle** E.g: **68 0D 00 84 00 00 00 00 00 00 01 80 00 12**	Data domain（9byte） 01 80 00: 3 characters means Z axis azimuth angle The angle on the left example is : Z axis angle= 180.00deg AA : check sum , the sum of all the data in hexadecimal without prefix 68 , it is effective to take the low position if for the decade .
0X0B	**Setting Communication rate** **E.g: *68 05 00 0B 03 13*** The command setting is effective after power off then restart (power off with save function)	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
0X8B	**Sensor answer reply command** E.g: **68 05 00 8B 90**	Data domain（1byte） Data domain in the number means the sensor response results 00 Success FF Failure
0X0C	**Setting sensor output mode** Auto output mode: The sensor with power on can Automatically output angle , output rate 25HZ(factory	**Data domain** 01 5Hz Auto output mode 02 15Hz Auto output mode 03 25Hz Auto output mode 04 35Hz Auto output mode

	default). (Power off with save function) E.g: ***68 05 00 0C 00 11***	05 50Hz Auto output mode
0X8C	**Sensor answer reply command:** E.g: **68 05 00 8C 00 91**	Data Domain（1byte） Data domain in the number means the sensor response results 00 Success FF Failure
0X28	**azimuth angle "ZERO" command** when there has an error after azimuth angle long-term working ,you can send this command, after sending successfuly , the output of the azimuth angle back to zero E.g: ***68 04 00 28 2c***	Data domain None
0X28	**Sensor answer reply command** E.g: **68 05 00 28 00 2D**	Data Domain（1byte） Data domain in the number means the sensor response results 01 Success FF Failure

ESD Sensitive Device

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

(product specifications are to upgrade or change, without prior notice)

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•ATTITUDE AND HEADING REFERENCE SYSTEM •ELECTRONIC GYROSCOPE

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