SPECIFICATIONS

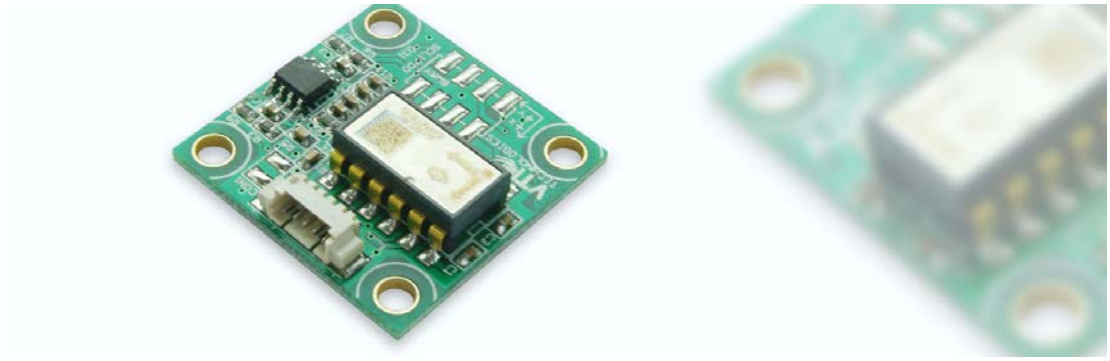
Item No.：SCA1900

Description：Voltage Type Dual-axis Inclinometer Module

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:2014.4.28

SCA1900- Voltage Type Dual-axis Inclinometer Module



General Description

SCA1900T is a dual axis inclinometer module with analog voltage output, adopts VTI MEMS control unit by measuring the static gravity field changes then convert into inclination change, the changes in mode output voltage (0-5V),mainly used to measure the inclination of the object with respect to the horizontal plane.Resolution is0.0025deg,accuracy specification please refer to the page 3 of product technical data .

This product uses non-contact measurement principle, can real-time output current posture inclination, Simple to use, and no need to retrieve the relative changed surface to install.Latest MEMS inclinometer productive technology production, high-precision, small size, strong resistance to external electromagnetic interference ability, the ability to withstand shock and vibration. It is the ideal choice for industrial equipment, platform measuring attitude!

Features

- ●Dual-Axis Inclinometer(Single axis are optional)
- ●Accuracy: refer to the technical data
- ●Output interface :0～5V
- ●Resolution: 0.0025°
- ●Measuring Range : ±1～±85°optional
- ●DC 5V voltage input
- ●Wide temperature working: -40～+85℃
- ●Small Volume : 30×30×5mm（customized）

Application:

- ●Engineering vehicles automatic leveling
- ●Aerial platform vehicle,lifter safety & protection
- ●Underground drill posture navigation
- ●Based on the angle direction measurement
- ●Bridge & dam detection
- ●Medical facilities angle control
- ●Shield pipe jacking application
- ●Geological equipment inclined monitoring
- ●Directional satellite communications antenna pitching angle measurement

Ordering information:

Item No.	Description	Output corresponding: 0V-5V
SCA1900-XXX	Note: XXX means angle measuring range optional number XXX from10deg～85deg range optional	

Electronic Characteristics

Parameters	Conditions	Min	Standard	Max	Unit
Power supply	Unregulated voltage		+5		V
Working current			5		mA
Output overload	Resistive	10			kΩ
	Capacitive			20	nF
Working temperature		-40		+85	℃
Store temperature		-55		+100	℃

Technical Data

Parameters	Conditions	SCA1900-05	SCA1900-15	SCA1900-30	SCA1900-85	Unit
Measuring range		±05	±15	±30	±85	°
Measuring axis		X-Y	X-Y	X-Y	X-Y	
Zero position		2.5	2.5	2.5	2.5	V
ZERO temperature drift	-25～85°	±0.008	±0.008	±0.008	±0.008	°/℃
Whole Measuring range output voltage range		0～5	0～5	0～5	0～5	V
Response frequence		20	20	20	20	Hz
Output noise density	DC..100HZ	0.0008	0.0008	0.0008	0.0008	°/√Hz
Resolution	Bandwidth10 Hz	0.0025	0.0025	0.0025	0.0025	°
Accuracy	Indoor temperature	0.05	0.08	0.2	0.5	°
Sensitivity	Formula 1	0.5	0.1667	0.0833	0.0278	V/°
	Formula 2	28.685	9.660	5	2.5	V/G
Weight	25g（bare board）					

* This Technical data only list±05°、±15°、±30°、±85° standard measuring range，other measuring range all can customize according to customer's request.

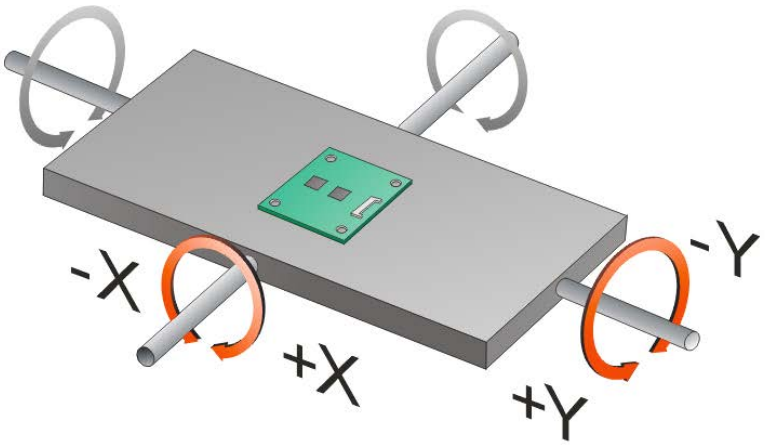
Key words:

Resolution： Refers to the sensor in measuring range to detect and identify the smallest changed value.

Accuracy : Refers to the rms value error between the actual angle and the sensor measured angle of several times ((≥ 16).

Measuring Directions&Fix

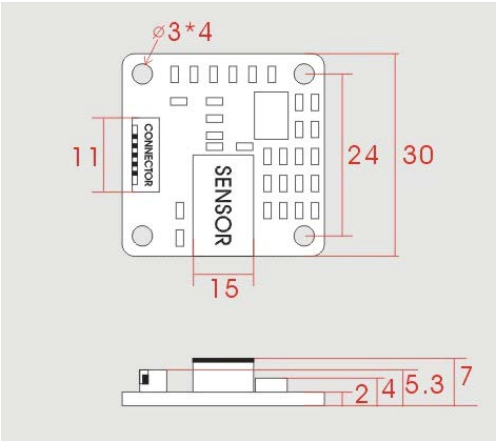
The installation must guarantee the product bottom is parallel to measured face，and reduce the influence of dynamic and acceleration to the sensor. This product can be installed horizontally or mounted vertically ,mounted vertically selection is only applicable to the single axis module, pls install horizontally for measuring range ≤60° products,for installation please refer to the following scheme：



Electrical Connection

Line color function	Pin1	Pin2	Pin3	Pin4	Pin5
	DC 5V Power positive	NC NC	GND Power negative	X OUT X axis voltage output	Y OUT Y axis voltage output

Dimension



Size：L30mm×W30mm×H7mm

Voltage output & Angle convert formula

Formula 1：Angle= (output voltage－ZERO position voltage)÷Angle sensitivity.
Angle sensitivity: please refer to Page 3 technical data , unit is mV/°

Formula 2 $$\text{Inclination angle} = \arcsin\left(\frac{\text{Vout} - \text{Offset}}{\text{Sensitivity}}\right)$$

Note: When the the inclination measuring range within lower than 15 degrees, the angle calculation method using the formula 1.

When the inclination angle measuring range bigger than 15 degrees or over, due to the inclination of measuring the Earth's gravitational pull original amount,Inclination and the output voltage into a sinusoidal relationship, the angle calculation method using the formula 2.

Vout: tilt sensor measuring output voltage value

Offset: ZERO positon voltage (2.5V)

Sensitivity: please refer to Page 3 technical data , different formula corresponding to different sensitivity .

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