MIS341 Series

Dual Axis Voltage Output Tilt Switches

Technical manual

V3.0

MIS341
Dual Axis Voltage Output Inclination Switch

Introduction

The MIS341 series is a dual-axis inclination switch with a measuring range of ±90°, introduced by BWSENSING. When the measured inclination is greater than the alarm threshold value, the output line becomes closed (also can be disconnected), usually if the measured inclination does not exceed the alarm threshold value, the output line is normally open (also can be normally closed). The alarm threshold value can be set according to the actual situation of the user. The product is small in size, high in consistency and stability, and the working temperature reaches industrial level -40℃-85℃. This product supports external zero setting function, after installation in the use of the environment, without connecting to the computer through the serial port, you can also realize the zero setting, it is a cost-effective tilt switch.

Feature

- Dual-axis inclination monitoring optional
- Alarm threshold can be set arbitrarily
- Single line output alarm
- Wide voltage input 9~36V
- Support external zero setting function
- High vibration resistance >2000g
- High resolution : 0.01°
- Wide-temperature operation -40°C to +85°C
- Accuracy: 0.1°
- IP67 Protection level

Application

- Hydraulic lift table
- High voltage power line tower monitoring
- Aerial work vehicle
- Cloud platform leveling
- Tilt-based

Product Feature

Electrical index

Parameter	Condition	Min	Typ	Max
Power voltage(V)		9	12	36
Working current(mA)	Horizontal no-load		40 (DC12V)	
NC Maximum current(mA)				
Operating temperature(℃)		-40		85
Storage temperature(℃)		-55		100

Performance index

Parameter	Condition	MIS341
Measurement Range (°)		＜±90
Accuracy (°)		0.1（＜±80；0.2（± 80-90）
Measurement axis		X、Y
Alarm axis		X、Y
Zero temperature drift (°/℃)	-40~85℃	±0.01
Response frequency (Hz)		100
Communication cable		10-core cable, single 0.15mm²
Weight (g)		About 220 (cable 1.5m,without package)

Resolution: The smallest change in the measured value that the sensor can detect and distinguish within the measurement range.
Accuracy: The root mean square error of the actual angle and the sensor measurement angle measured multiple times (≥16 times).

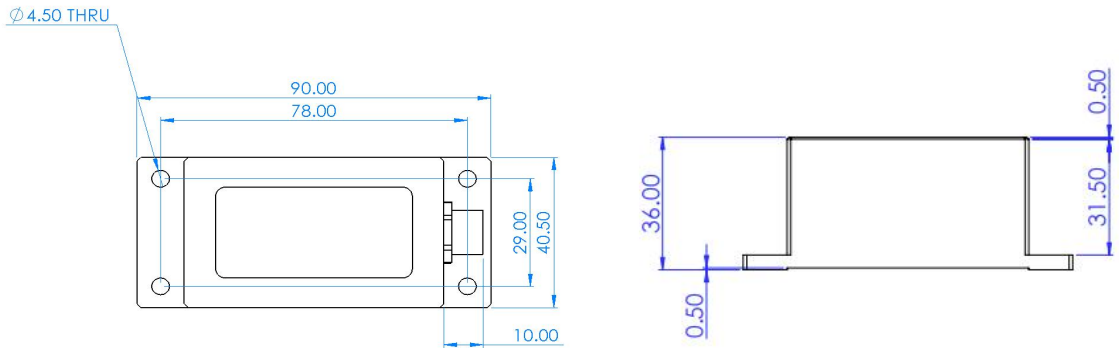
Product Feature

Mechanical properties

Connector	Metal joint（cable 1.5m)
Protect level	IP67
Shell material	Magnesium aluminum alloy anodizing
Installation	Four M4 screws

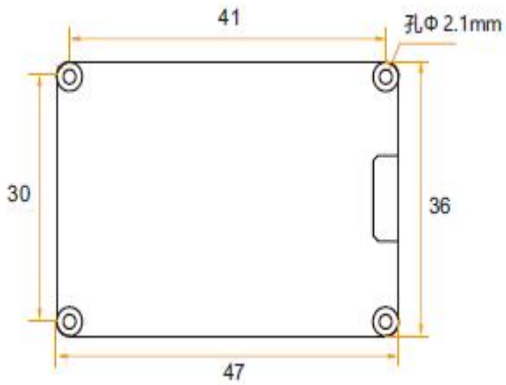
Package product size

Product size：L90*W40.5*H36（mm）



Bare board product size

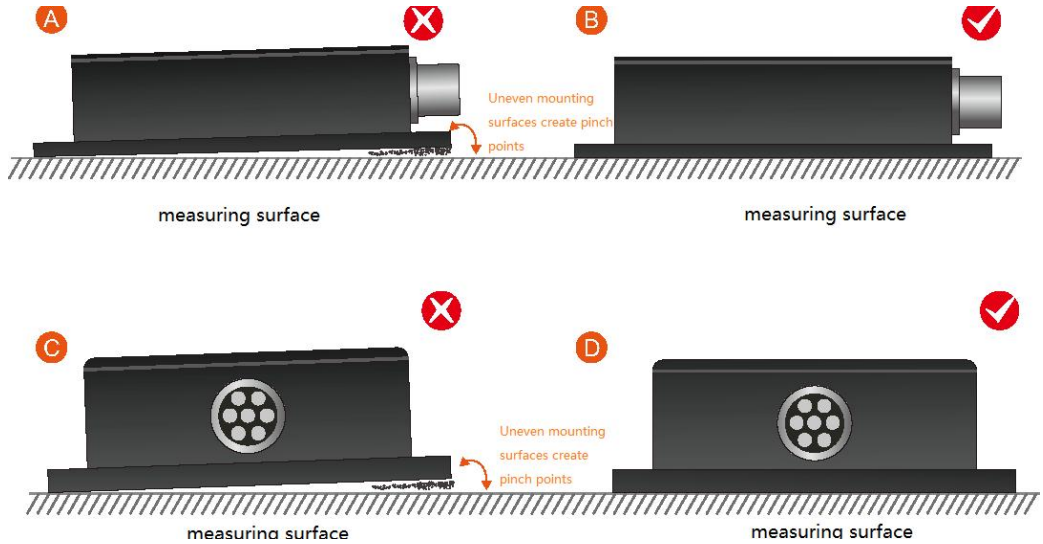
Product size: L47 * W36 * H15 (mm) length and width may have ± 1mm error, please prevail in kind!



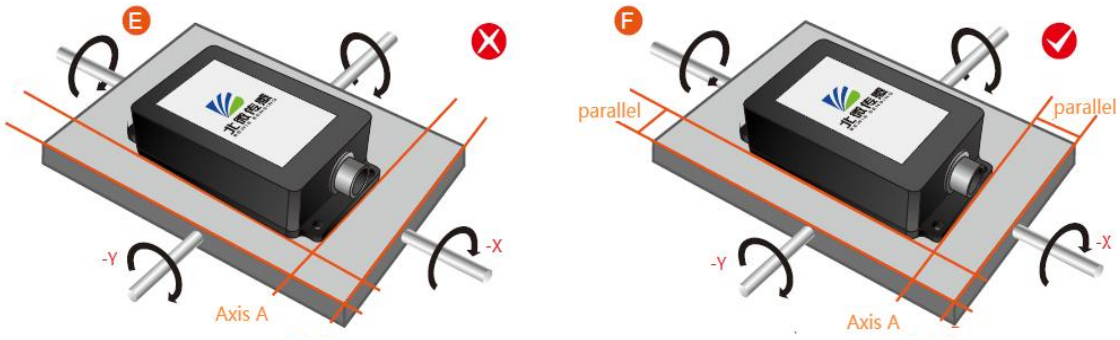
Installation

The correct installation method can avoid measurement errors. When installing the sensor, please do the following:

First of all, make sure that the sensor mounting surface is completely close to the measured surface, and the measured surface should be as level as possible. There should be no included angles as shown in Figure A and Figure C. The correct installation method is shown in Figure B and Figure D.



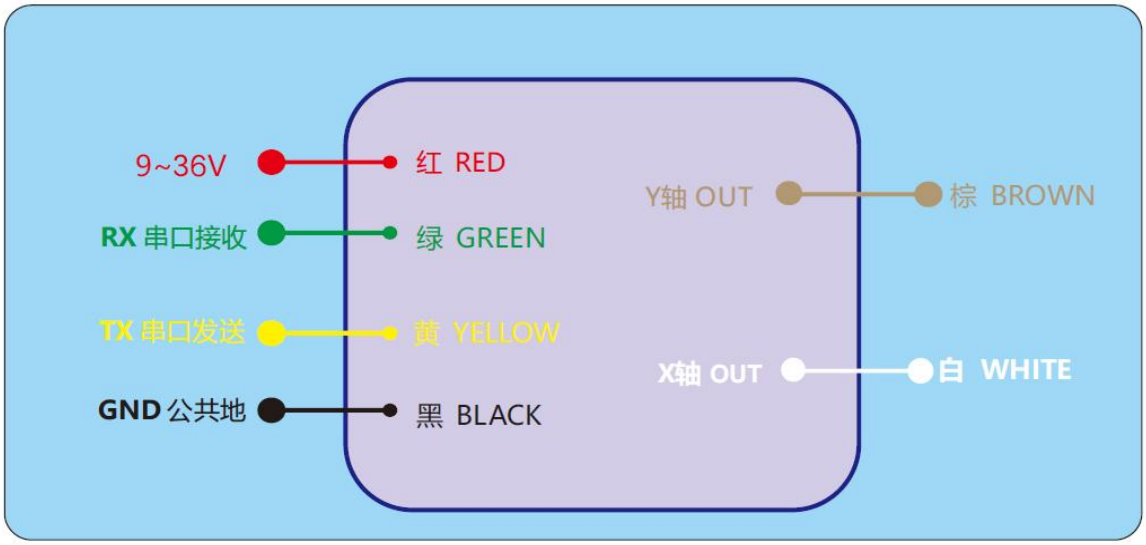
Secondly, the bottom line of the sensor and the axis of the measured object cannot have an angle as shown in Figure E, and the bottom line of the sensor should be kept parallel or orthogonal to the axis of rotation of the measured object during installation. This product can be installed horizontally or vertically (vertical installation needs to be customized), and the correct installation method is shown in Figure F.



Finally, the mounting surface of the sensor and the surface to be measured must be tightly fixed, smooth in contact, and stable in rotation, and measurement errors due to acceleration and vibration must be avoided.

Electrical connection

Wire Color	RED	BLACK	GREEN	YELLOW	WHITE	PURPLE	棕色 BROWN
	1	3	4	5	6	7	8
function	VCC DC 9-36V	GND	Receive RXD	Send TXD	X axis OUT	NC	Y 轴 OUT



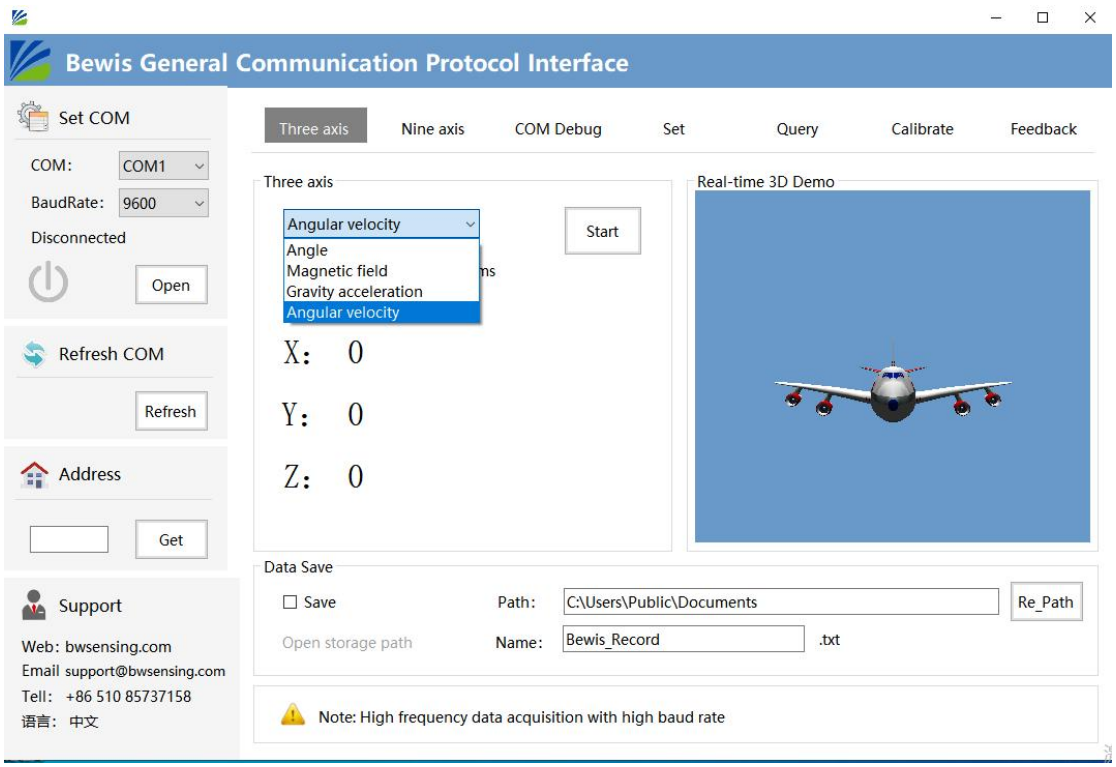
Debugging software

You can download the serial debugging assistant directly on the official website (technical service -> download area), or you can use the more convenient and intuitive host computer software.

The DIS331 supporting serial port debugging software can connect the inclinometer on the computer by itself to display the angle. The software debugging interface is shown in the figure below. Using the inclination to debug the upper computer, it can easily display the current X direction inclination angle, and can also modify and set other parameters.

Steps:

① Correctly connect the serial port hardware of the inclinometer and connect the power.
② Select the computer serial port and baud rate, then click Connect Serial.
③ Click Start, and the current tilt angle of the inclinometer in X and Y directions will be displayed on the screen.



Order information

Product model	Communication mode	Package situation
MIS341	RS232	IP67 package/Metal joint
MIS341	TTL	IP67 package/Metal joint

Executive standard

- National standard (draft) for static calibration of biaxial inclination sensors
- GB/T 191 SJ 20873-2003 General Specification for Tiltmeters and Leveling Devices

MIS341 Series

Dual Axis Voltage Output

Inclination Switch

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