



HTS6 High-Precision Current Output Tilt Sensor

Product manual

V2.2-20260618

Technical Highlights

- ❖ Measuring range $\pm 1 \sim \pm 90^\circ$ selectable;
- ❖ Small measuring range accuracy 0.005° ;
- ❖ Resolution 0.001° ;
- ❖ Output mode 4~20mA;
- ❖ Wide voltage input 11.5~36V;
- ❖ Wide operating temperature $-40 \sim +85^\circ\text{C}$.



Production Introduction

The HTS6 series is a high-precision single/dual-axis tilt sensor, employing a 4-20mA standard industrial current signal output and supporting long-distance signal transmission up to 2000 meters. Based on advanced MEMS manufacturing processes, this product utilizes precise temperature compensation and nonlinear correction technology to achieve a measurement accuracy of 0.005° within a small range (see product specifications for large range parameters).

This series of tilt sensors innovatively applies dynamic zero-point calibration technology, enabling rapid start-up. It features high resolution, excellent data stability, and strong resistance to mechanical shock and vibration. The product employs an anti-RF interference design and electromagnetic shielding circuitry, significantly improving the anti-interference performance of the output signal. Compared to similar products, it not only boasts superior performance parameters but also ensures long-term stable and reliable operation under harsh conditions through the use of high-quality components and protective designs, including an industrial-grade MCU, a ruggedized circuit board, imported connecting cables, and a wide-temperature-range metal shielded housing.

Application Scope

Typical applications of this product series include: engineering machinery platform leveling systems, photovoltaic tracking bracket control systems, aerospace attitude reference systems, and precision instrument leveling devices.



Performance Parameters

HTS6		Condition	Parameter			
Measurement Range		-	±10°	±30°	±60°	±90°
Measurement Axis		-	X / XY Axis			
Zero Output		-	12mA			
Resolution ¹⁾		-	0.001°			
Accuracy	Maximum Absolute Error (MAE) ²⁾	Room Temp	0.005°	0.01°	0.02°	0.03°
	Root Mean Square Error(RMSE) ³⁾	Room Temp	0.003°	0.003°	0.005°	0.008°
Zero Temp Coefficient ⁴⁾		-40~85℃	0.0005°/℃			
Sensitivity Temp Coefficient ⁵⁾		-40~85℃	≤100ppm/℃			
Power-On Startup Time		0.5S				
Response Frequency		20Hz				
Electromagnetic Compatibility		According to EN61000 and GBT17626				
Insulation Resistance		≥100MΩ				
Shock Resistance		100g@11ms, 3 Axial Direction (Half Sinusoid)				
Vibration Resistance		10grms, 10~1000Hz				
Protection Class		IP67				
Cables		Standard 2m cable, wire diameter 6.8mm, wire weight < 155g				
Weight		≤270g (excluding cable)				

1) **Resolution:** The smallest identifiable angular change within the effective measurement range, reflecting its ability to monitor minute tilt fluctuations.

2) **MAXE:** refers to the biggest error of the product within the range and at multiple angle points.

3) **RMSE:** refers to the root mean square difference between the measured value and the actual angle of the product within the range and for multiple times (more than 16 times).

4) **Zero Temp Drift Coefficient:** the change rate of the indication value relative to normal temperature within the rated operating temperature range of the sensor at the zero degree.

5) **Sensitivity Temp Drift Coefficient:** The percentage change rate with temperature of the full-scale indication relative to the full-scale indication at room temperature of the sensor in its rated operating temperature range.

Electrical Parameters

Parameter		Condition	Min	Typical Value		Max	Unit
Supply voltage		Standard	11.5	12	24	36	V
Operating current		No load		40			mA
Output load	11.5~36V	Resistivity	0	240		320	Ω
	14.5~36V	Resistivity	0	470		500	Ω
Operating temp			-40			+85	℃
Storage temp			-40			+85	℃

Ordering and Selecting

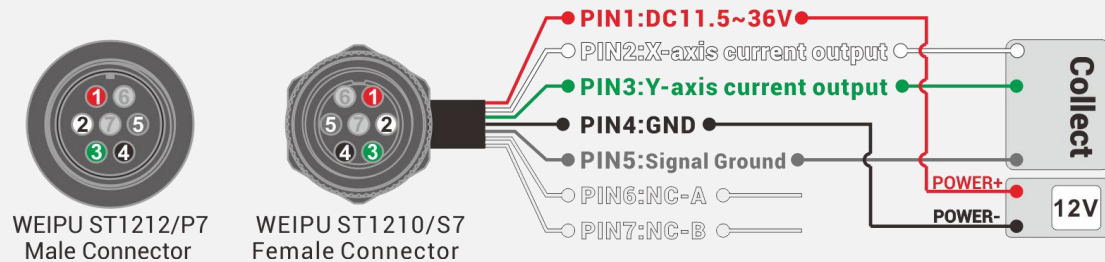
Model	Measuring axis	Range	Current output	Installation direction
HTS6	X: X-axis	10: $\pm 10^\circ$	A1: 4~20mA	H:Horizontal installation
	Y: Y-axis	15: $\pm 15^\circ$		HD:Horizontal downwards
	D: Dual-axis	30: $\pm 30^\circ$		V:Vertical installation
		45: $\pm 45^\circ$		VL:Vertical leftwards
		60: $\pm 60^\circ$		VR:Vertical rightwards
		90: $\pm 90^\circ$		

E.g: HTS6X10-A1-H: X-axis / Range $\pm 10^\circ$ / 4~20mA output / Horizontal installation.

Interface Definition

Pin/Thread Color	Definition	Description
PIN1 / Red	DC11.5~36V	Power supply positive terminal
PIN2 / White	X_OUT	X-axis current output
PIN3 / Green	Y_OUT	Y-axis current output
PIN4 / Black	GND	Power supply negative terminal
PIN5 / Gray	signal ground	Signal ground
PIN6 / ----	NC	No connection
PIN7 / ----	NC	No connection

* **Signal ground:** The ground of the circuit that collects and measures the current output signal of the sensor.



Indicator light operation instructions

When the product is powered on and connected to transmit data, the red indicator light remains constantly lit.

Angle output calculation formula

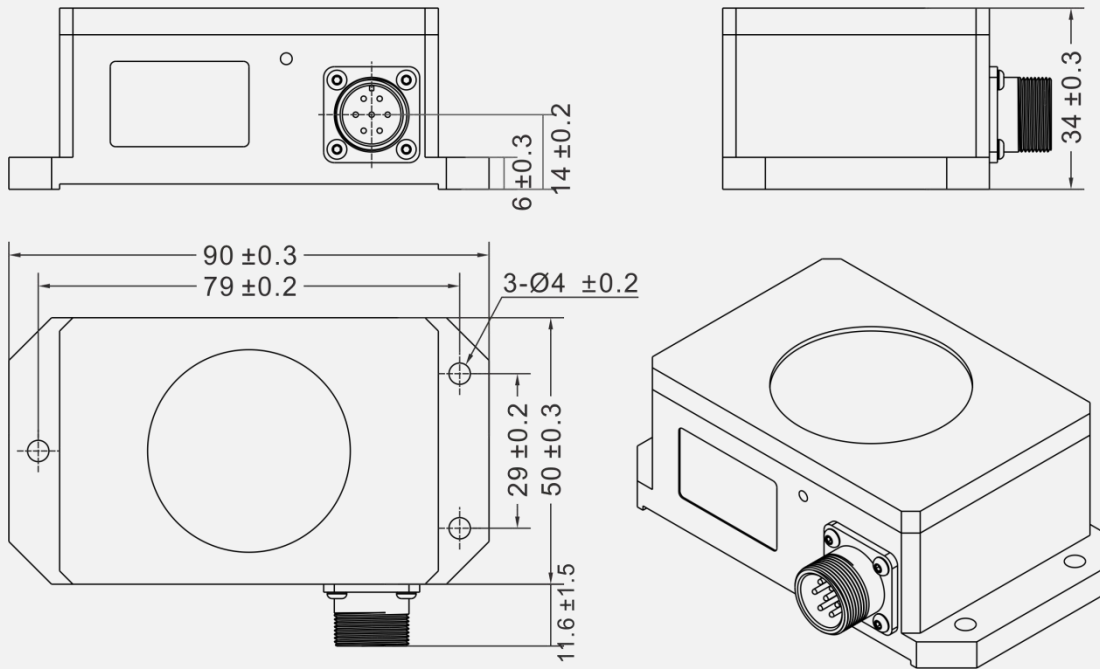
Angle = (Output Current - Zero-Point Position Current) ÷ Angle Sensitivity

Angle sensitivity = Output current range ÷ Angle measurement range

Example: HTS6X-10-A1-H ($\pm 10^\circ$ Measurement range 4~20mA output current range)

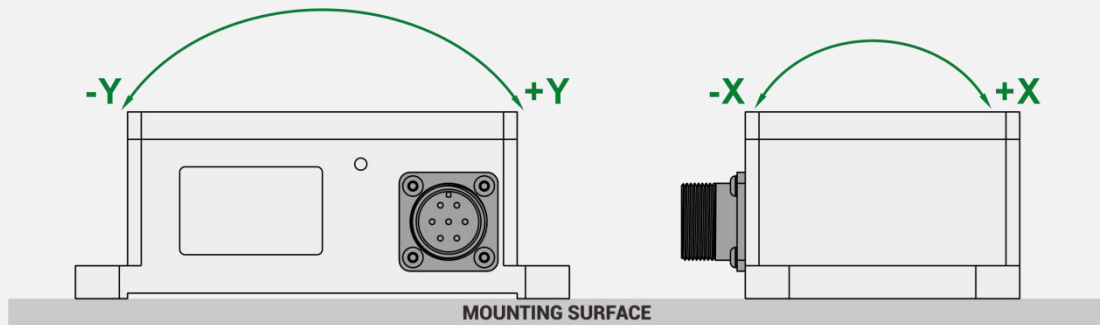
Angular sensitivity=(20-4)÷($+10^\circ$ -(-10°))= 16÷20=0.8 mA/°

✓ Product Dimensions

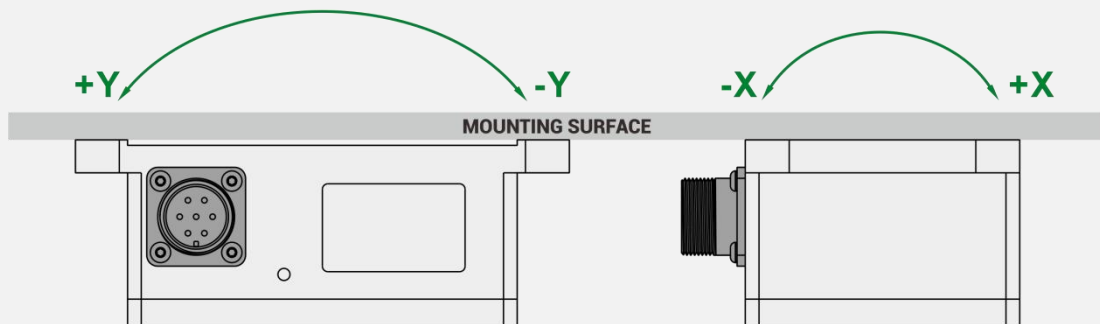


Case dimensions: L90×W61.6×H34mm
Recommended screws: 3 M4 screws

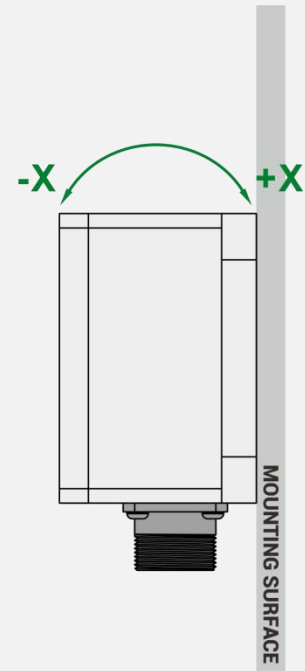
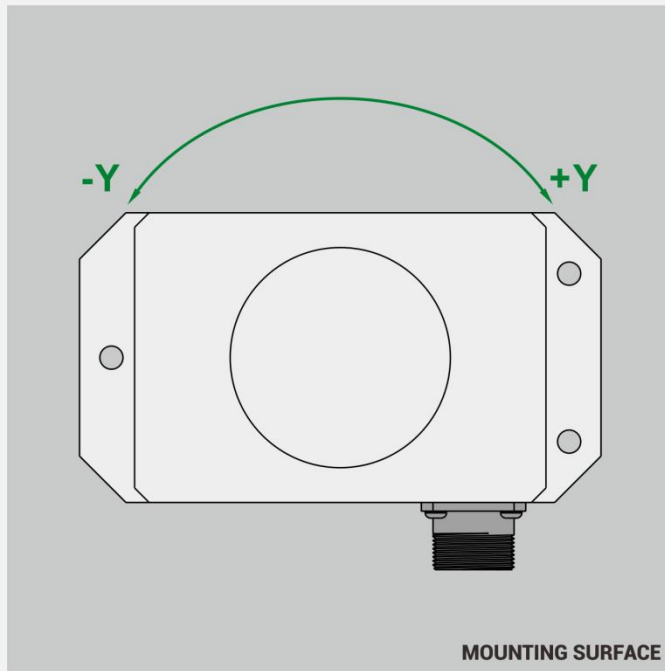
✓ Measurement Direction



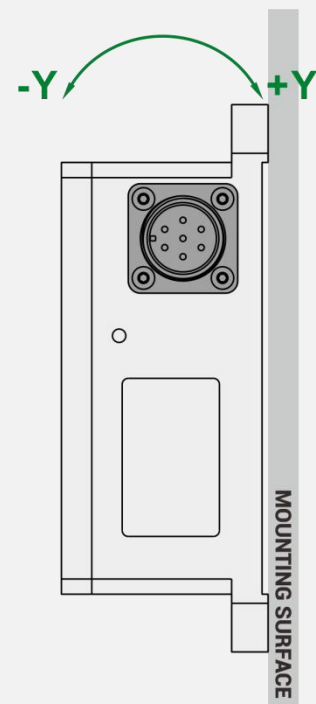
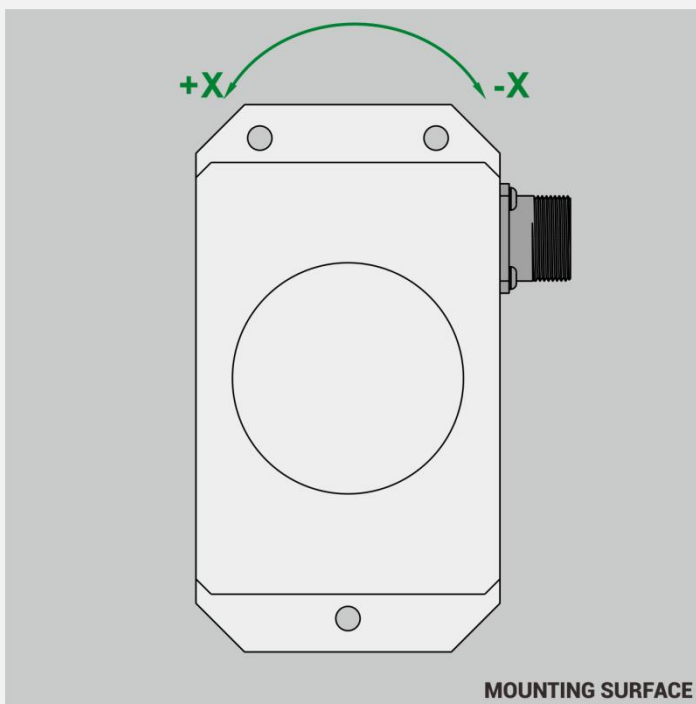
Horizontal installation



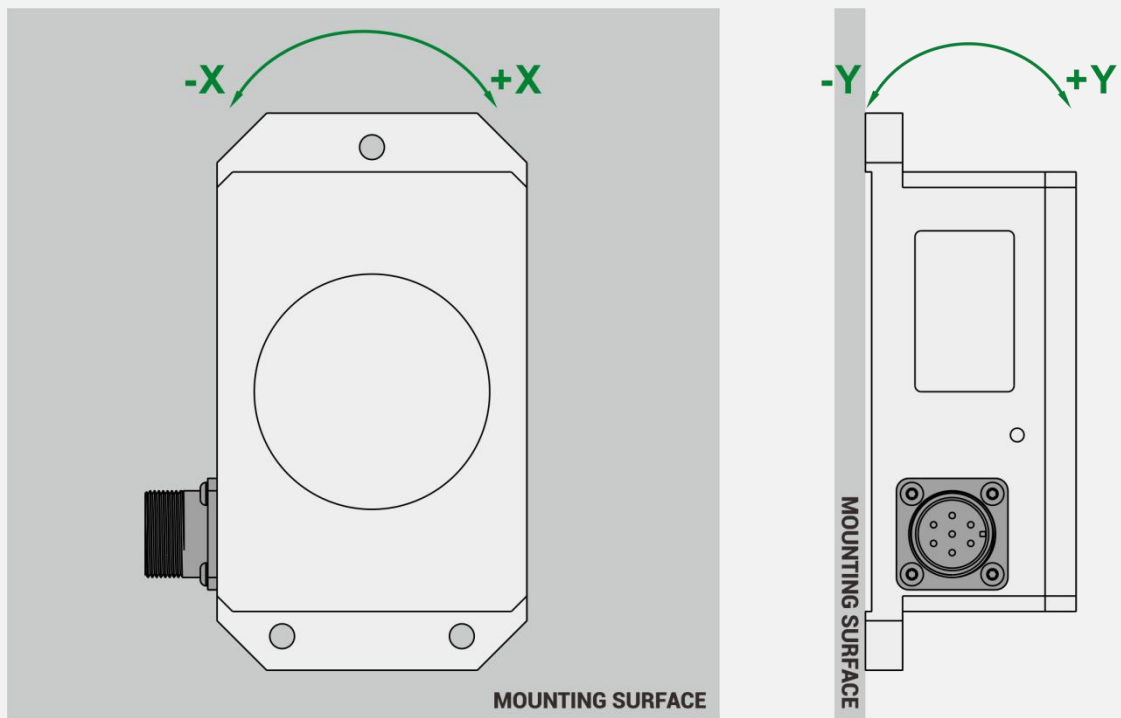
Horizontal-down installation



Vertical installation



Vertical-left installation



Vertical-right installation