

# PSS-31931x<sub>(x:1~5)</sub>

## Static Tilt/Inclination Sensor






Polysense PSS-31931x (x: 1~5) is a sensor used for Structure Health Monitoring which export different tilt angle ranges, accuracy and resolutions for different structure health.

PSS-31931x is the sensor which can work with WxS smart sensor's hardware platform under the iEdge 4.0 OS powered SW-defined sensor's technology where different data transmission technologies are supported: Wifi, LoRaWan, NB-IoT, and LTE Cat1/M.

### Product features

- ❖ Dual axis/three-axis tilt sensor
- ❖ Built in high-precision converter, outputs tilt angle value through N-order filtering algorithm
- ❖ Multiple angle range options
- ❖ Equipped with temperature compensation and high repeatability
- ❖ anti-electromagnetic interference

### Product parameters

Parameters					
Product Number	PSS-319311	PSS-319312	PSS-319313	PSS-319314	PSS-319315
Product picture					
Axis	3-Axis	2-Axis	2-Axis	2-Axis	2-Axis
Axial	X/Y/Z	X/Y	X/Y	X/Y	X/Y
Detection range	±10/15/30/45/60/90/180°	±10/15/30/45/60/90°	±10/15/30/45/60/90°	±5/10/15/30°	±5/10/15/30°
Resolution esolution	0.005°	0.005°	0.005°	0.0007°	0.0005°
Accuracy	±10° :0.01°	±10° :0.02°	±10° :0.01°	±5° :0.005°	±5° :0.001°
	±30° :0.02°	±30° :0.03°	±30° :0.02°	±10° :0.006°	±10° :0.002°
	±60° :0.03°	±60° :0.04°	±60° :0.03°	±15° :0.0065°	±15° :0.003°
	±90° :0.05°	±90° :0.05°	±90° :0.05°	±30° :0.007°	±30° :0.005°
Zero temperature drift	±0.001°/°C	±0.005°/°C	±0.001°/°C	±0.0007°/°C	±0.0005°/°C
Sensitivity temperature coefficient	≤100ppm/°C	≤100ppm/°C	≤100ppm/°C	≤50ppm/°C	≤50ppm/°C
Frequency response	100Hz				
Long term stability	±10° :<0.013°	±10° :<0.023°	±10° :<0.013°	±5° :<0.006°	±5° :<0.002°
	±30° :<0.022°	±30° :<0.035°	±30° :<0.022°	±10° :<0.007°	±10° :<0.003°
	±60° :<0.031°	±60° :<0.045°	±60° :<0.031°	±15° :<0.007°	±15° :<0.004°
	±90° :<0.054°	±90° :<0.054°	±90° :<0.054°	±30° :<0.008°	±30° :<0.006°
Power on	0.2s				

start-up time					
Response time	0.01s				
Average working time	≥45000Hour/time				
Impact resistance	20000g/time, 0.5ms, 3 times/axis				
Anti vibration	10grms,10~1000Hz				
Insulation resistance	≥100M Ω				
<b>Interface</b>					
Output signal	RS485/TTL				
<b>Machinery</b>					
Size	46*35*8mm	46*35*8mm	46*35*8mm	68*48*13mm	68*43*13mm
Operating temperature	-40℃~85℃				
IP grade	IP66	IP66	IP66	IP67	IP67
<b>Power</b>					
Power	9~36V	9~36V	9~36V	11~36V	11~36V

## Application

SHM: Structure Health Monitoring area: Railway locomotive monitoring, precision machine tool level monitoring, wind tower tilt monitoring, bridge and dam monitoring, railway gauge leveling, exploration and surveying equipment, crane inclination control, industrial automation attitude control, high-precision platform leveling, engineering machinery inclination measurement.

## Ordering Guide

- ❖ PSS-31931x sensor is a sensor only; it needs to be used with WxS terminals to built into different product series;
- ❖ WxS terminal supports up to 8 PSS sensors by default;
- ❖ According to the use case, the enclosure and antenna of the WxS terminal will be replaced to ensure the product quality and performance.
- ❖ Example of combined products as follows:
  - W xS7800-31931x WiFi Version Static Tilt&Inclination Sensor &RTU 2-in-1 Terminal
  - WxS8800-31931x LoRaWAN Version Static Tilt&Inclination Sensor &RTU 2-in-1 Terminal
  - WxS9800-31931x NB-IoT Version Static Tilt&Inclination Sensor &RTU 2-in-1 Terminal
  - WxS9900-31931x LTE CatM Version Static Tilt&Inclination Sensor &RTU 2-in-1 Terminal
  - WxSC800-31931x LTE Cat1 Version Static Tilt&Inclination Sensor &RTU 2-in-1 Terminal
  - WxSD800-31931x LTE Cat4 Version Static Tilt&Inclination Sensor &RTU 2-in-1 Terminal
  - CxS1800-31931x Ethernet (RJ45) Version Static Tilt&Inclination Sensor &RTU 2-in-1 Terminal