KATSURA OPTO SYSTEMS

The world's first innovation &
production of probity

Integrated Displacement Tilt Sensor
SH-3000 series

Precision measurement is not just about removing variability,

it is also opening up new possibilities.

Development Background

Is it possible to simultaneously measure displacement in addition to tilt measurement using the autocollimator method? The displacement tilt sensor was developed in response to such customer requests.

We have developed an easy-to-use product by integrating the sensor head and processor unit into a single unit, making it lighter and smaller, and simplifying its integration into equipment.

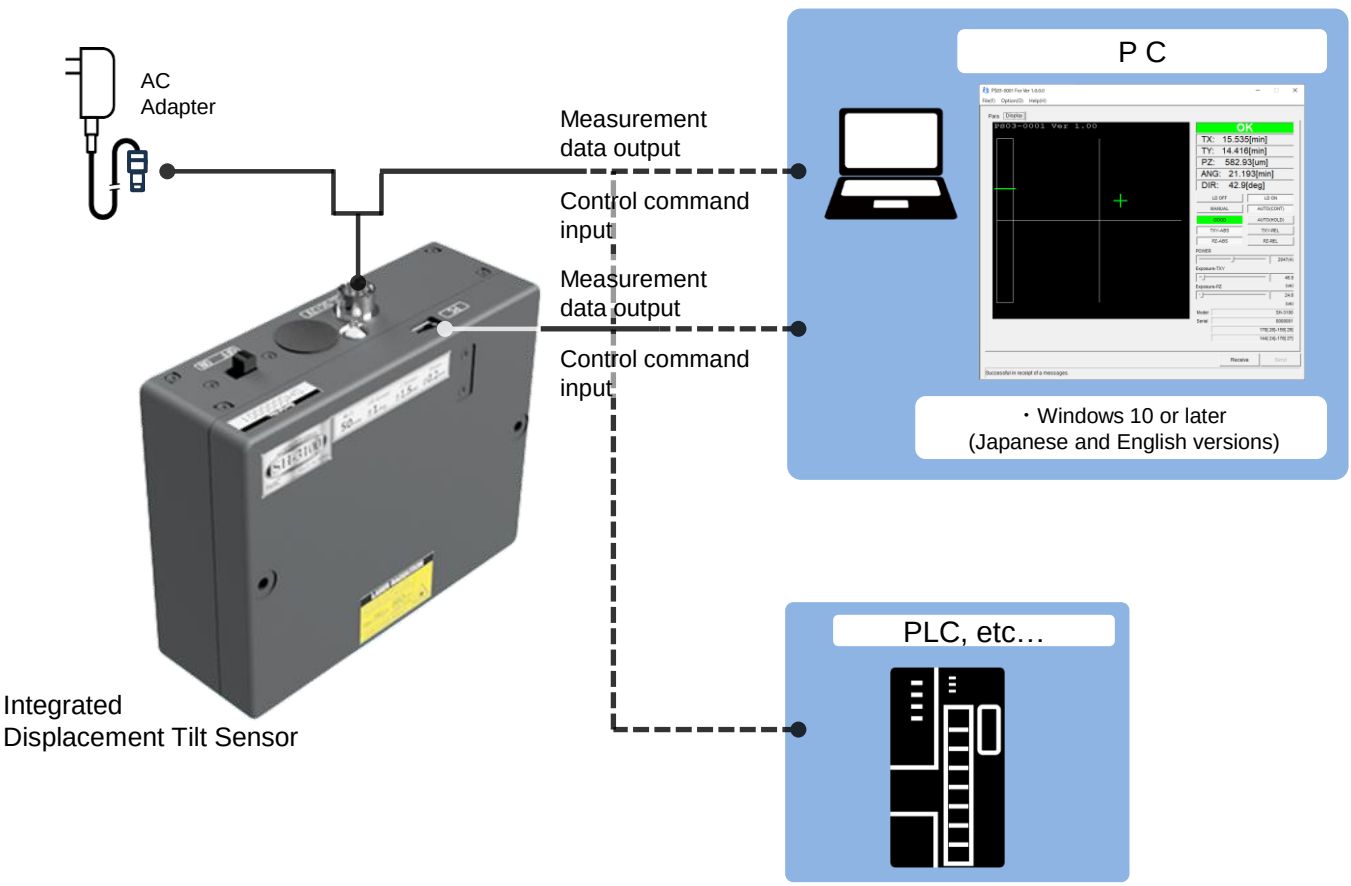
Features

1. Triangulation and autocollimator measurement methods in one.

2. Integrated sensor and processor for even faster measurements (1K data/s).

3. Simultaneous measurement of displacement and inclination [Patent No. 5330114].

System



Configuration

1.Integrated Displacement Tilt Sensor /SH-3100

2. Cable/KE-0074*

3. AC Adpter/FH-8531

4. USB Cable(Mini-B)/KE-0014

5. CD-ROM(Utility)

*When using a serial converter for USB port, USB-CVRS9HN from Sanwa Supply Co.

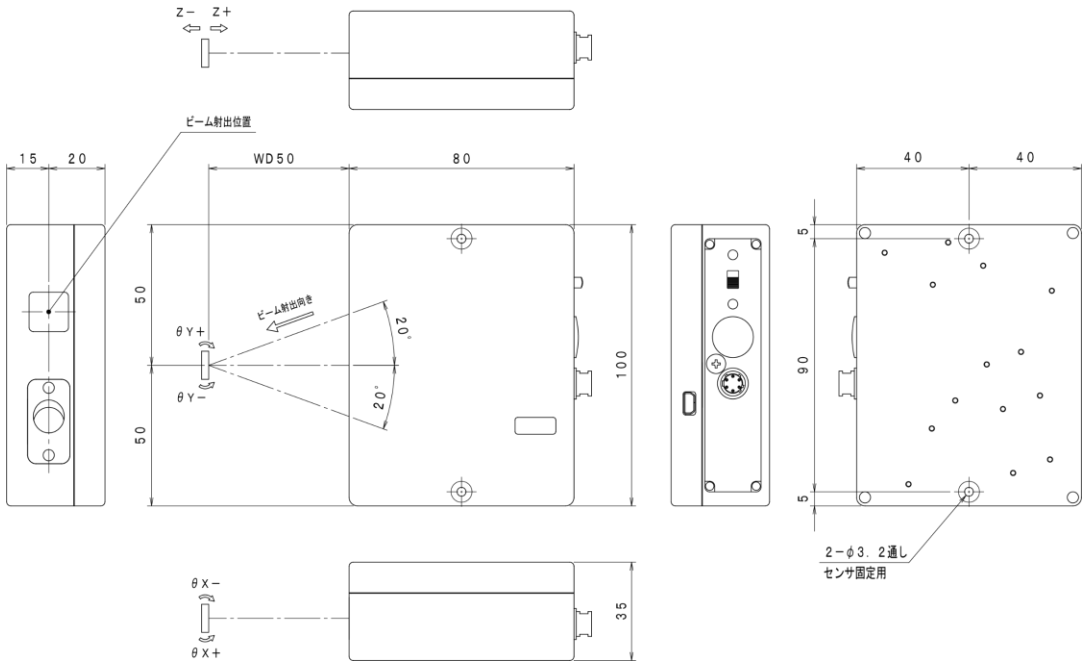
Specification

Item		Integrated Displacement Tilt Sensor			
Model		SH-3100		SH-3200	
Measurement Sample		Optical plane(reflectance 80% more)			
Working Distance		50±0.5mm*1			
Measurement Method		Autocollimator, Triangulation			
measurement Item		Tilt（ΘX,ΘY）	Displacement（Z）	Tilt（ΘX,ΘY）	Displacement（Z）
Measurement Area		**+/-60arcmin** (Circular Range)	**+/-1.5mm**	**+/-90arcmin** (Circular Range)	**+/-5mm**
Repeatability*2		0.009arcmin	0.15μm	0.013arcmin	0.53μm
Linearity*3		+/-0.2% of F.S. （+/-0.24arcmin equates）	+/-0.075% of F.S. （+/-2.25μmequates）	+/-0.125% of F.S. （+/-0.225arcmin equates）	+/-0.075% of F.S. （+/-7.5μm equates）
Idling Time		15min			
Source	Wavelength Beam Class Beam Diameter	660+/-10nm JIS C6802 Class 1 φ0.2mm or less*4			
Digital Out 1	Interface Terminals	RS-232C Standard (compliant) Hirose Electric: HR10A-7R-6P(73)*5			
Digital Out 2	Interface Terminals	USB 2.0(USB to RS-232C) USB Mini-B Female			
Digital Out 1, 2 Common	Baudrate Data Output Minimum Output Unit	38400,57600,115200,230400,460800,921600bps 1,000times/sec*6 Tilt0.001arcmin,Displacement0.01μm			
Power		AC100～240V 50/60Hz(Included AC Adapter）*7			
Power Consumption		Max 5W*8			
Ambient Operating Temperature		10～35℃（No condensation.）*9			
Size (Without Protrusions)		W100×D80×H35mm			
Weight		0.33kg		0.34kg	

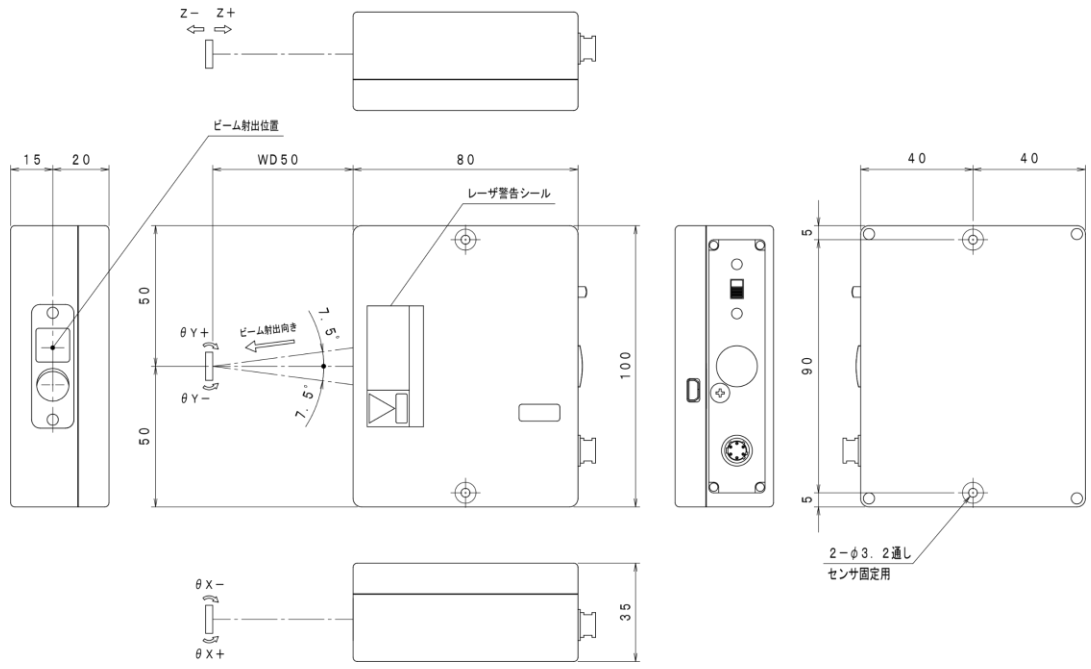
*1. Distance from the sensor end face.
*2. The range of variation of the value measured with our standard sample at the W.D. position in a stationary state is 6 σ. Measurement conditions: Average of 16 times.
*3. Error against the ideal straight line when our standard sample is measured. It may vary depending on the object to be measured.
*4. Diameter at 50mm working distance. (1/e² width)
*5. Terminal for power supply and RS-232C communication. Use dedicated cable KE-0074.
6. Continuous data output (communication command $START can only be executed on one of the digital output terminals 1 or 2) The number of outputs decreases when both digital output terminals are used simultaneously, another command is used, or the baud rate is set.
*7. Be sure to use the supplied AC adapter. Use of an AC adapter other than the supplied one is out of warranty.
*8. When using the supplied AC adapter.
*9. The temperature range that satisfies the overall specifications is 23±1℃.

Drawing

SH-3100



SH-3200



- The appearance and specifications of the product are subject to change without notice for improvement purposes.

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