



Line Laser Sensor

Non-contact sensor for CNC 3D coordinate measuring machines that has enabled high-speed measurement

Line laser sensor is mounted on 3D coordinate measuring machines of SVA series.

The efficiency of form measurement by measuring the surface greatly reduces the inspection and measurement time.

It is possible to measure compound workpieces with different reflectivity or gloss workpieces (mirror surface) with a high reflectivity without any spray.



Line Laser Sensor

Applicable models



SVA

CVA

FUSION NEX

Mounted on SVA, CVA and FUSION NEX (Existing machine can be retrofit)

Feature

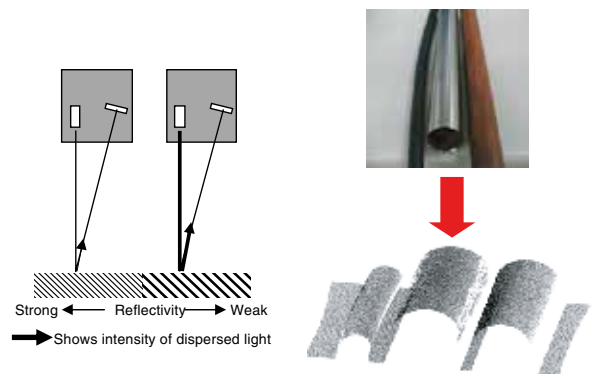
- It is made possible to measure almost all kinds of workpieces without spray because the light receiving unit is adjusted automatically. Workpieces with different reflectivity can be measured at the same time without adjusting light amounts.
- Measurement width/measurement pitch can be chosen while realizing the reduction in measurement time.
- Data acquisition of up to 30,000 points in 90 lines per second. Thereby, compared with the conventional point measurement, measurement time has been reduced to 1/120, and form measurement by surface measurement can be made efficient.
- Design that cannot be easily influenced by external disturbing light. Depending on the intensity of reflected light, valid data is selected on software. Unreliable data obtained under the influence of external disturbing light is deleted.

Light receiving intensity automatic adjustment by the feedback control of outgoing radiation light

When measuring the compound workpiece with different reflectivity, a laser sensor detects the intensity of received light and controls the power of outgoing radiation light automatically.

By this feedback control, it automatically adjusts the suitable intensity of received light. For this reason, fine adjustment of the quantity of light is unnecessary.

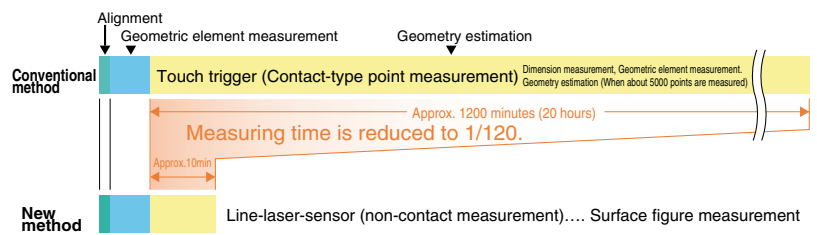
Moreover, it is made possible to measure a workpiece with a low reflectivity or a workpiece with a high reflectivity (glossy surface) that cannot be measured conventionally, and therefore, various workpiece measurements can be dealt with flexibly.



Workpieces without spray and different reflectivity (black pipe, stainless steel pipe (mirror surface), and painted pipe) can be measured simultaneously.

Considerable reduction in measurement time

For the measurements that require a tremendous amount of time by the conventional point-to-point measurement of touch trigger system, it is possible to acquire large data, such as 30,000 points per second, in a brief time using a non-contact system line laser sensor. This has reduced the measurement time to 1/120 compared with the conventional point measurement, and the increase in efficiency of the form measurement by surface measurement has been realized.

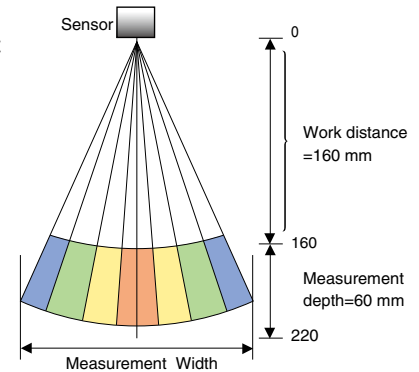


Mode and measurement area/pitch

Measurement width and data pitch differ from mode to mode.

It is possible to reduce the measurement time by choosing the mode suitable for a measurement workpiece.

| Mode | Pitch (mm) | Measurement width (mm) | Number of measurement lines per second |
|------|------------|------------------------|--|
| B | 0.24 | 62 | 60 |
| C | 0.48 | 109 | 45 |
| E | 0.12 | 62 | 60 |
| F | 0.12 | 24 | 90 |
| C+ | 0.48 | 144 | 45 |
| F/h | 0.06 | 24 | 60 |



Compound measurement by a probe automatic exchange system with a warming unit

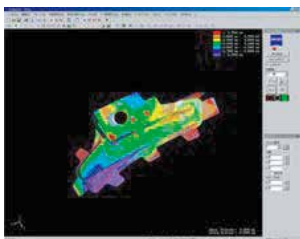
Automatic exchange of a contact type sensor and a line laser sensor is available. By using a contact type sensor and a line laser sensor properly, highly precise processing parts can also be measured. Moreover, it is available to start measurement immediately after storing a probe by a magazine warming system function.



Probe automatic exchange is available combined with PH10.

Software Composition

HOLOS

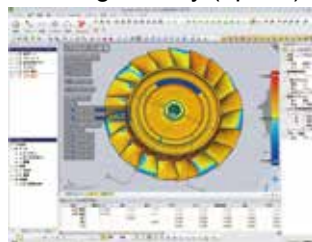


Free form curve measurement

Holos in combination with line laser sensor can measure a free curved surface with the design value of a CAD model etc, and comparative evaluation.

Moreover, point group data acquisition of an unknown free curved surface can be performed. Generation surface data used in CAD from point group data can be only carried out by DIMENSION and Rapidform.

Geomagic Verify (option)



Geometric form measurement

Geomagic Verify* extracts geometric form from the data measured by HOLOS automatically, and outputs an inspection result. It is possible to obtain the same result as that of the contact measurement using a group of measurement points. It is made possible to measure with a high efficiency the geometric elements by using the line laser sensor together.

* The product made by 3D Systems

DIMENSION (option)



Free curved surface generation program

DIMENSION is software that generates a NURBS curve or a NURBS surface from the group of 3D points, triangular patch, a free form curve, and a free form surface. It is possible to collect the group of point data both quickly and certainly from a workpiece to be measured to generate a surface.

DIMENSION is a best solution that solves the problem of reverse engineering.

■ Line laser sensor performance

| | | | |
|-----------------------------------|--------------------------|------------|---|
| Repeatability | σ | 20 μ m | (Variation of circular central coordinates) |
| | 2σ | 30 μ m | (Variation of the group of flat points) |
| Measuring pitch | 0.06 to 0.48 mm | | |
| Number of measurement speed lines | 45 lines/s to 90 lines/s | | |
| Max. number of sampling | 30780 points/s | | |
| Laser beam diameter | Φ 0.15 mm or less | | |

■ Line laser sensor specification

| | |
|--------------------------|---|
| Measurement laser | Red semiconductor laser 690 nm, Class 2 Following the output depending on the shade of a workpiece (FPC) |
| Environmental resistance | Ambient illuminance: 4000 Lx or less Ambient temperature: 10 to 40°C Ambient humidity: 20% to 90% (No condensation) |
| Dimensions, weight | 66 mm × 116.2 mm × 120 mm, 425 g |
| Connector | PH10M (RENISHAW) positioning head |

