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Find the *Keyence LS-3100* at our website: *Click HERE*

Multi-functional Laser Scan Micrometers

LS-3100 Series

Features

- Simultaneous 2-point measurement
- Dual display capabilities
- 4 segment modes
- Industry-standard interfaces

Measuring range

Fine measuring - 0.08 to 30 mm dia. (0.003" to 1.18")

Standard - 0.3 to 30 mm dia. (0.01" to 1.18")

Wide range - 0.8 to 60 mm dia. (0.03" to 2.36")



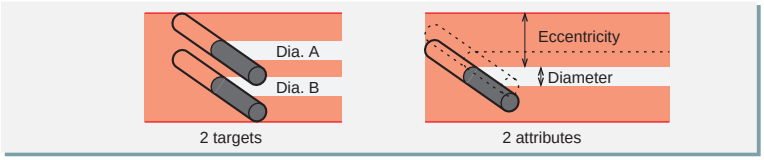
CE

Refer to P.523 for a list of products complying with EMC directive.

Description

Simultaneous 2-point measurement and dual display

The LS-3100 can simultaneously measure two attributes of one target, or one attribute of two targets, with a single scanning head.
Both results are displayed simultaneously.



Connect 2 scanning heads to one controller

When two scanning heads are employed, the LS-3100 can perform the following eight calculations for greater application flexibility.

X & Y, X + Y, X - Y

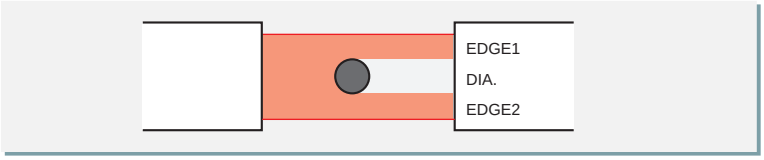
$$\frac{X+Y}{2}, \frac{X-Y}{2}, -X \& -Y, -(X+Y), -\left(\frac{X+Y}{2}\right)$$

Measure targets from 80 µm 3.12 Mil to 600 mm 23.62"

A 0.1 µm 0.004 Mil resolution enables accurate measurement of targets up to 60 mm 2.36" in diameter. A variety of targets ranging from extra fine optical fibers to large diameter pipes can be measured with high accuracy.

4 segment modes

Four segment modes are available; DIA, EDGE1, EDGE2, SEG (m, n). Up to 2 segment modes may be in operation at the same time.



Reliable measurement of transparent targets

The LS-3100 accurately detects the edges or borders where the target interrupts the laser beam and processes the detection signal using a microcomputer, thus enabling transparent as well as opaque targets to be measured. Highly accurate measurement can be performed without special operations or adjustments even for transparent objects.

Multi-functional

The LS-3100 provides the following functions for maximum versatility:

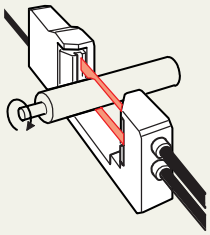
- Storage of up to 10 tolerance and parameter settings
- 7-level comparator/3-level comparator
- Display units selectable (mm/in)
- Auto-zero
- Offset
- Number of averaging measurements
- Analog voltage output scaling
- Parameter protection (lock)

Versatile interfaces

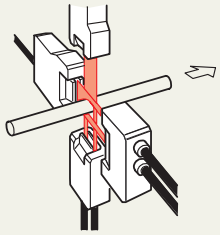
The LS-3100 Series features a variety of interfaces to meet your needs. RS-232C, Analog voltage output, and Control I/O interfaces are standard. Optional GP-IB and BCD interfaces are also available.

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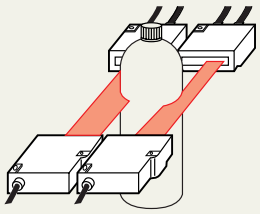
Applications



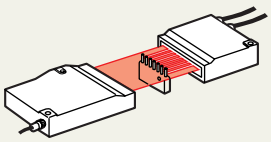
Simultaneous measurement of roller diameter and eccentricity



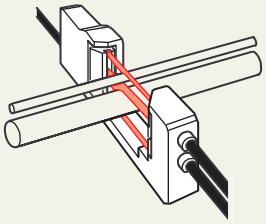
Measurement of electrical wire $\left(\frac{X+Y}{2}\right)$



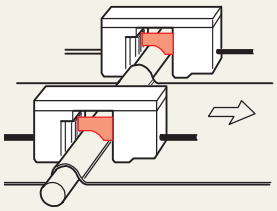
Measurement of transparent target outer diameter



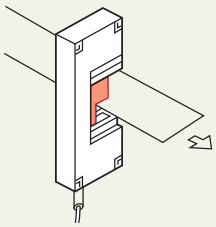
Measurement of IC lead pitch (Segment m, n)



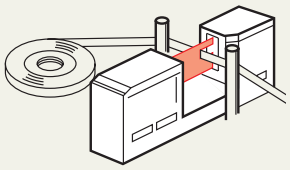
Simultaneous measurement of gap and diameter of multiple targets



Measurement of sheet thickness (X-Y)

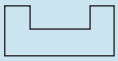
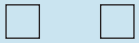


Control of sheet edges



Measurement of target width

Selection Chart

Scanning head shape	Measuring range	Measuring accuracy	Light source (Semiconductor laser)	Controller: Display resolution 0.1 µm 0.004 Mil	Scanning head
	0.08 mm 0.003" – 30 mm 1.18"	±2 µm ±0.08 Mil	760 nm (Infrared)	LS-3100, LS-3100D[1]	LS-3034
	0.3 mm 0.01" – 30 mm 1.18"				LS-3032
			670 nm (Red)		LS-3036
	0.8 mm 0.003" – 60 mm 2.36"	±3 µm ±0.12 Mil	670 nm (Red)		LS-3060
	0.08 mm 0.003" – 30 mm 1.18"	±2 µm ±0.08 Mil	760 nm (Infrared)		LS-3033 SO (8073)
	0.5 mm 0.02" – 30 mm 1.18"				LS-3033

1. The LS-3100D is a controller to which two sets of the scanning heads can be connected.

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LS-3100 Multi-functional Laser Scan Micrometers

Specifications

Standard controller

Type			Fine measuring		Standard			Wide range
Scanning head type			Single-body	Separate	Single-body	Separate	Single-body	Separate
Model	Scanning head		LS-3034	LS-3033 SO (8073)	LS-3032	LS-3033	LS-3036	LS-3060
	Standard controller		LS-3100					
Measuring range	Scanning head		0.08 to 30 [1.] 0.003" to 1.18"	0.08 to 30 [1.] 0.003" to 1.18"	0.3 to 30 0.01" to 1.18"	0.5 to 30 0.02" to 1.18"	0.3 to 30 0.01" to 1.18"	0.8 to 60 0.03" to 2.36"
	Controller		mm/inch selectable					
Minimum target width			0.08 0.003"	0.08 0.003"	0.3 0.01"	0.5 0.02"	0.3 0.01"	0.8 0.03"
T and R distance			60 2.36"	120 4.72" (Fixed)	60 2.36"	120 ± 40 4.72" ± 1.57"	60 2.36"	200 ± 50 7.87" ± 1.97"
Light source			Infrared semiconductor laser				Red semiconductor laser	
	Wavelength		780 nm	780 nm	780 nm	780 nm	670 nm	670 nm
	Class	FDA	Class I	Class I	Class I	Class I	Class II	Class II
		IEC	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Measuring accuracy			± 2 µm max.[2.] 0.08 Mil	± 2 µm max.[2.] 0.08 Mil	± 2 µm max.[2.] 0.08 Mil	± 2 µm max.[2.] 0.08 Mil	± 2 µm max.[2.] 0.08 Mil	± 3 µm max.[3.] 0.1 Mil
Repeatability			0.3 µm 0.01 Mil	0.3 µm 0.01 Mil	0.3 µm 0.01 Mil	0.3 µm 0.01 Mil	0.3 µm 0.01 Mil	0.5 µm 0.02 Mil
Display resolution			0.1 µm 0.004Mil	0.1 µm 0.004Mil	0.1 µm 0.004Mil	0.1 µm 0.004Mil	0.1 µm 0.004Mil	0.1 µm 0.004Mil
Laser scan rate			400 scans/s	400 scans/s	400 scans/s	400 scans/s	400 scans/s	400 scans/s
Laser scan velocity			63 m/s 206.7'	63 m/s 206.7'	63 m/s 206.7'	63 m/s 206.7'	63 m/s 206.7'	126 m/s 413.4'
Laser scan range			Approx. 33 mm 1.30"					Approx. 65 mm 2.56"
Measured value			Main display: 7-segment green LED (8 digits) Sub display: 16 character x 2 line LCD (Backlight color: yellow-green)					
Minimum display unit			0.1 µm 0.004 Mil /0.2 µm 0.008 Mil					
Display range			-999.9999 to 9999.9999					
Target position indicator			Green LED (7 levels)					
Comparator output indicator			Green LED x 3 (HI/GO/LO)					
Laser emission indicator			Green LED x 2 (HEAD 1/ HEAD 2)					
Control I/O			Hold synchronous, LASER REMOTE, PROGRAM SELECT (Program Nos. 1 to 5)					
			Non-voltage input (contact/solid state)					
	Analog voltage		± 6 V, Output impedance: 0 Ω					
	Contact output		Relay output: 3PST-NO contact, 250 VAC, 2 A (resistive load)					
36-pin connector I/O	Control input		Hold synchronous, AUTO ZERO SET/ RESET, PROGRAM SELECT (Program Nos. 1 to 5)					
			TTL level, negative logic					
	Control output	7-level/ 3-level	40 mA max. (30 V max.)					
Interface port			RS-232C/GP-IB (optional)/ BCD (optional)					
Power supply			85 to 264 VAC, 50/60 Hz					
Power consumption			40 VA max.	40 VA max.	40 VA max.	40 VA max.	40 VA max.	40 VA max.
Ambient temperature	Scanning head		0 to +45°C	0 to +45°C	0 to +45°C	0 to +45°C	0 to +40°C	0 to +40°C
	Controller		0 to +40°C	0 to +40°C	0 to +40°C	0 to +40°C	0 to +40°C	0 to +40°C
Weight	Scanning head [4.]		0.8 kg	T: 0.5 kg R: 0.4 kg	0.8 kg	T: 0.5 kg R: 0.4 kg	0.8 kg	Approx. 2.5 kg (base included)
	Controller		Approx. 4.6 kg					

1. When the outer diameter is measured.
2. When a rod 10 mm 0.39" in diameter is measured in a 2 x 20 mm 0.08" x 0.79", 4 x 20 mm 0.16" x 0.79", or 10 x 20 mm 0.39" x 0.79" measuring area.
3. When measuring a rod 20 mm 0.79" in diameter in a 20 x 40 mm 0.79" x 1.57" measuring area.
4. 'T' indicates a transmitter, 'R' indicates a receiver.

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2-head controller

Type			Fine measuring		Standard			Wide range
Scanning head type			Single-body	Separate	Single-body	Separate	Single-body	Separate
Model	Scanning head		LS-3034	LS-3033 SO (8073)	LS-3032	LS-3033	LS-3036	LS-3060
	2-head controller		LS-3100D					
Measuring range	Scanning head		0.08 to 30 [1.] 0.003" to 1.18"		0.3 to 30 0.01" to 1.18"	0.5 to 30 0.02" to 1.18"	0.3 to 30 0.01" to 1.18"	0.8 to 60 0.03" to 2.36"
	Controller		mm/inch selectable					
Minimum target width			0.08 0.003"	0.08 0.003"	0.3 0.01"	0.5 0.02"	0.3 0.01"	0.8 0.03"
T and R distance			60 2.36"	120 4.72" (Fixed)	60 2.36"	120 ± 40 4.72" ± 1.57"	60 2.36"	200 ± 50 7.87" ± 1.97"
Light source			Infrared semiconductor laser				Red semiconductor laser	
	Wavelength		780 nm	780 nm	780 nm	780 nm	670 nm	670 nm
	Class	FDA	Class I	Class I	Class I	Class I	Class II	Class II
		IEC	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Measuring accuracy			± 2 µm max.[2.] 0.08 Mil	± 2 µm max.[2.] 0.08 Mil	± 2 µm max.[2.] 0.08 Mil	± 2 µm max.[2.] 0.08 Mil	± 2 µm max.[2.] 0.08 Mil	± 3 µm max.[3.] 0.01 Mil
Repeatability			0.3 µm 0.01 Mil	0.3 µm 0.01 Mil	0.3 µm 0.01 Mil	0.3 µm 0.01 Mil	0.3 µm 0.01 Mil	0.5 µm 0.02 Mil
Display resolution			0.1 µm 0.004 Mil	0.1 µm 0.004 Mil	0.1 µm 0.004 Mil	0.1 µm 0.004 Mil	0.1 µm 0.004 Mil	0.1 µm 0.004 Mil
Laser scan rate			400 scans/s	400 scans/s	400 scans/s	400 scans/s	400 scans/s	400 scans/s
Laser scan velocity			63 m/s 206.7'	63 m/s 206.7'	63 m/s 206.7'	63 m/s 206.7'	63 m/s 206.7'	126 m/s 413.4'
Laser scan range			Approx. 33 mm 1.30"					Approx. 65 mm 2.56"
Measured value			Main display: 7-segment green LED (8 digits) Sub display: 16 character x 2 line LCD (Backlight color: yellow-green)					
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Display range			-999.9999 to 9999.9999					
Target position indicator			Green LED (7 levels)					
Comparator output indicator			Green LED x 3 (HI/GO/LO)					
Laser emission indicator			Green LED x 2 (HEAD 1/ HEAD 2)					
Control I/O			**Hold synchronous, LASER REMOTE, PROGRAM SELECT (Program Nos. 1 to 5)**					
			Non-voltage input (contact/solid state)					
	Analog voltage		± 6 V, Output impedance: 0 Ω					
	Contact output		Relay output: 3PST-NO contact, 250 VAC, 2 A (resistive load)					
36-pin connector I/O	Control input		**Hold synchronous, AUTO ZERO SET/ RESET, PROGRAM SELECT (Program Nos. 1 to 5)**					
			TTL level, negative logic					
	Control output	7-level/ 3-level	40 mA max. (30 V max.)					
Interface port			RS-232C/GP-IB (optional)/ BCD (optional)					
Power supply			85 to 264 VAC, 50/60 Hz					
Power consumption			40 VA max.	40 VA max.	40 VA max.	40 VA max.	40 VA max.	40 VA max.
Ambient temperature	Scanning head		0 to +45°C	0 to +45°C	0 to +45°C	0 to +45°C	0 to +40°C	0 to +40°C
	Controller		0 to +40°C	0 to +40°C	0 to +40°C	0 to +40°C	0 to +40°C	0 to +40°C
Weight	Scanning head [4.]		0.8 kg	T: 0.5 kg R: 0.4 kg	0.8 kg	T: 0.5 kg R: 0.4 kg	0.8 kg	Approx. 2.5 kg (base included)
	Controller		Approx. 4.6 kg					

1. When the outer diameter is measured.
2. When a rod 10 mm 0.39" in diameter is measured in a 2 x 20 mm 0.08" x 0.79", 4 x 20 mm 0.16" x 0.79", or 10 x 20 mm 0.39" x 0.79" measuring area.
3. When measuring a rod 20 mm 0.79" in diameter in a 20 x 40 mm 0.79" x 1.57" measuring area.
4. 'T' indicates a transmitter, 'R' indicates a receiver.

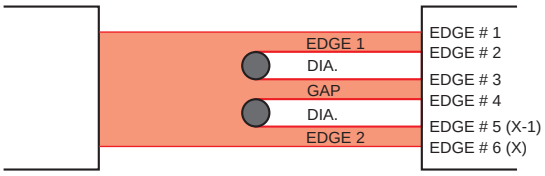
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LS-3100 Multi-functional Laser Scan Micrometers

Functions

Four segment modes

Targets placed within the measuring area interrupt the laser beam, thus creating light and dark regions. The border between the light and dark regions is referred to as an “edge”. Also, each dark or light region is called a “segment”.



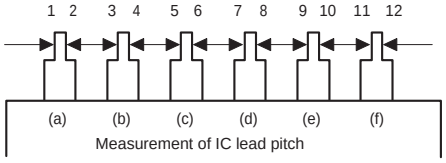
1. DIA
This mode is used for outer diameter measurements. When there is only one target in the measuring area, its outer diameter is measured. When there are two or more targets, the distance between the upper edge of the uppermost target and the lower edge of the lowermost target is measured. In the figure above, the distance between edge #2 and edge #5(X-1) is measured.

2. EDGE 1
The width of the uppermost region where the laser beam is not interrupted is measured. This mode is for target displacement measurement. In the figure above, the distance between edge #1 and edge #2 is measured.

3. EDGE 2
The width of the lowermost region where the laser beam is not interrupted is measured. In the figure above, the distance between edge #5(X- 1) and edge #6(X) is measured.

4. SEG (m, n)
The distance between two specified edges is measured. Respectively for “m” and “n”, a number between 1 and 126 can be specified.

Example: In the figure below, if SEG (5.6) is specified, the diameter of IC lead (c) is measured. If SEG (6,7) is specified, the distance between leads (c) and (d) is measured.



Measurement of IC lead pitch

Four measurement modes

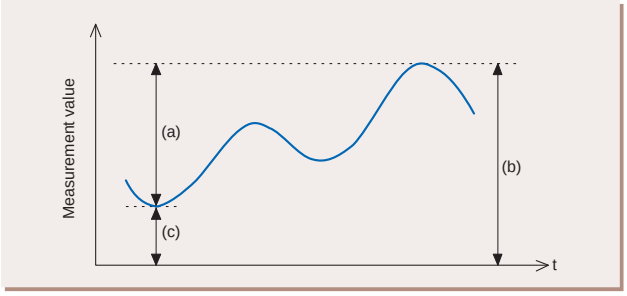
From the following four measurement modes, the desired mode can be selected and set by simply pressing a key.

• NORMAL
Measured value is displayed or output as is.

• P-P (PEAK to PEAK) ..... (a)
The difference between the maximum (peak) and minimum (bottom) values measured during a specified period is displayed and output.

• PEAK (PEAK HOLD) ..... (b)
The maximum value measured during a specified period is displayed and output.

• BOTTOM (BOTTOM HOLD) ..... (c)
The minimum value measured during a specified period is displayed and output.



Calculation function

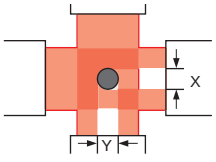
By substituting two measured values obtained by simultaneous 2-point measurement for X and Y, various calculations can be performed. The following eight calculation modes are available;

(1) X & Y, (2) X + Y, (3) X - Y, (4) $\frac{X+Y}{2}$, (5) $\frac{X-Y}{2}$,
(6) -X & -Y, (7) -(X + Y), (8) - $\left(\frac{X+Y}{2}\right)$

Example: Measuring the average of X/Y axes of wire

$\left(\frac{X+Y}{2}\right)$

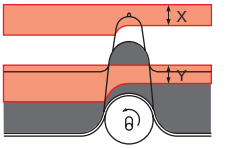
By mounting two scanning heads at right angles as shown below, the X and Y axes diameters can be measured on the same level.



Measurement of (X + Y)

Example: Measuring sheet thickness using a roller (X - Y)

By measuring the distance to the roller surface and to the sheet surface, the difference between the values can be calculated and the sheet thickness is obtained.

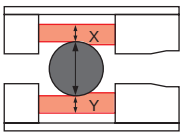


Measurement of sheet thickness

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Example: Measuring the outer diameter of a pipe of 60 mm 2.36" or bigger in diameter. [-(X + Y)]

By subtracting X (the distance to the upper end of the pipe) and Y (the distance to the lower end of the pipe) from the distance between the upper and lower ends of the two scanning heads' measuring areas (offset value), the diameter of the pipe can be obtained.



Measurement of large target diameter

Versatile functions for control and protection

Storage of settings

Up to 10 different tolerance or parameter settings can be stored. Even when the target type is changed, these settings can be called up to match target type by simply pressing a key.

Analog voltage output scaling

Measured values are converted into an analog voltage between -6 V and +6 V as desired. By properly matching the measuring range and the voltage range above, even a minute change in measured values can be monitored at a high accuracy without being affected by noise interference.

Offset

By adding an offset value to the measured value, the measured value can be changed to the desired reference value.

Auto-zero

The value displayed on the front panel can quickly be set to "0.0000" with just the touch of a key.

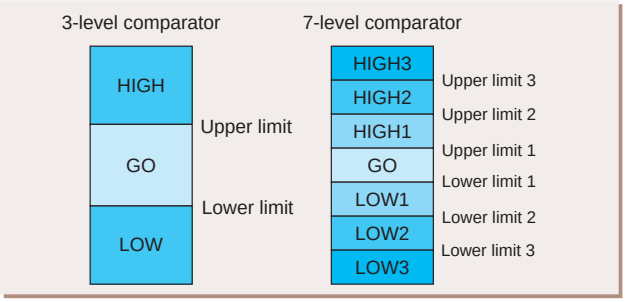
Output hold

The displayed value and output value can be retained with just the touch of a key. Use this function to read the measured value directly from the display or confirm the measured value after a measurement.

3-level/7-level comparator



The measured value is compared to the preset upper and lower limits and the comparison result is output in 3 levels, HIGH, GO, or LOW. And, the corresponding LED (HIGH, GO, or LOW) lights according to the result. This comparator output is sent through the RS-232C interface, analog outputs, and relays (comparator output terminals). 7-level comparator output can be accessed using the control I/O.

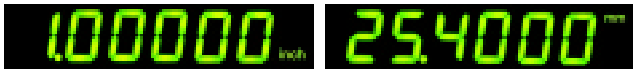


Parameter lock

Various measurement parameters can be locked to prevent inadvertent alterations.

Display unit selectable

The display can be set to display values in millimeters or inches with just the touch of a key.

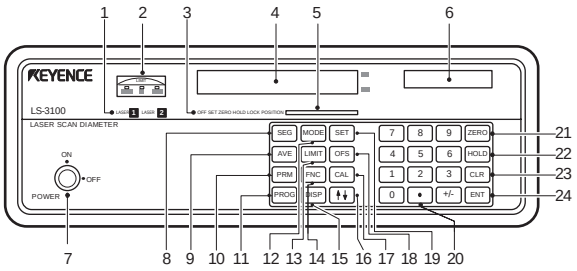


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LS-3100 Multi-functional Laser Scan Micrometers

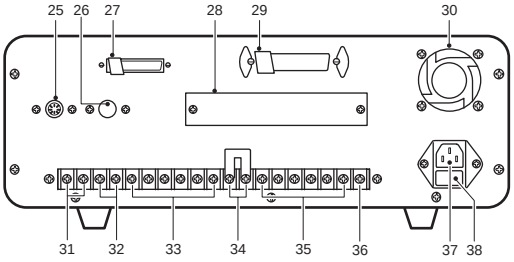
Part Names and Functions

Front Panel



1 Laser emission indicator LED
2 Comparator output LEDs
3 Current setting indicator
4 Main display (CH1)
5 Target position indicator
6 Sub-display (CH2)
7 Key-operated power switch
8 SEGMENT key
9 AVERAGE key (for number of measurements)
10 PARAMETER key
11 PROGRAM key
12 MODE key
13 LIMIT key (for 3-level comparator output)
14 FUNCTION key
15 DISPLAY key
16 UP/DOWN key
17 CALIBRATION key
18 OFFSET key
19 SET key
20 Numeric keys
21 AUTO ZERO key
22 HOLD key
23 CLEAR key
24 ENTER key

Rear Panel

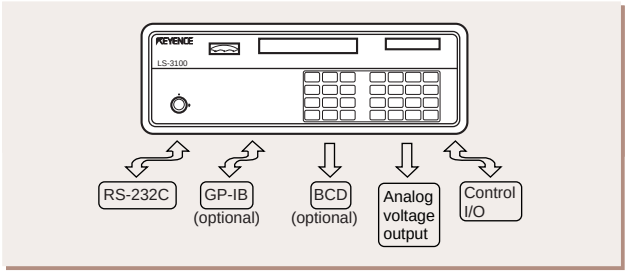


25 SCANNING HEAD connector
26 SCANNING HEAD connector (when 2 are installed)
27 RS-232C connector
28 Expansion I/O port (used when option board is installed)
29 36-pin connector (Control I/O)
30 Cooling fan
31 Analog voltage output terminals
32 Hold synchronous input terminals
33 Program selection input terminals
34 Laser emission control input terminals
35 Comparator limit output terminals
36 Frame ground terminal
37 Power supply connector
38 Fuse holder (2 A)

Connections

Interfaces

Interfaces enable the LS-3100 Series to connect to external equipment. This enables systems such as a comprehensive data management system to be created.



• RS-232C

For communication with a computer, data transfer, and remote setting of parameters.

• GP-IB (optional)

Accommodates up to 15 physical devices in a system, simplifying large-scale integration.

• BCD output (optional)

Interfaces to a printer or programmable logic controller to perform high-speed data processing.

• Analog voltage output

Provides analog voltage output in proportion to measurements for high-speed data analysis. The scaling function adjusts the analog output to the level appropriate to the desired measuring range, ensuring accurate monitoring of fine differences in measuring data.

• Control I/O

A 3-level or 7-level tolerance range is standard for all models. This feature also enables remote operation of such functions as program change and auto-zero setting.

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RS-232C interface (equipped as standard)

Enables communication with a computer, data transfer, and remote setting.

Conforms to EIA (Electronic Industries Association) RS-232C.

Communication parameters

Duplex	Full
Synchronization	Start-stop
Data format	ASCII
Data length	8 bits
Stop bit length	1 bit
Parity check	None
Baud rate	75/150/300/600/1200/2400/4800/9600/19200 bps

GP-IB interface (optional)

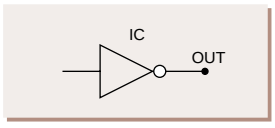
Accommodates up to 15 physical devices in a system.
Conforms to IEEE standard 488-1978.

Data format	**ASCII**
Logic level	Logic 0 "High" condition: +2.4 V min. Logic 1 "Low" condition: +0.4 V max. (2-way transceiver used)
Number of connectable devices	15 max. (including controller)
Total cable length	20 m 65.6' max.
Cable length between devices	4 mm 0.16" max.

BCD I/O interface (optional)

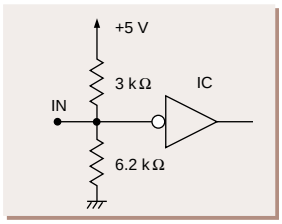
Output

TTL level, positive logic (74LS04 equivalent)



Input

TTL level, negative logic (74LS19 equivalent)



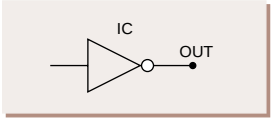
Analog voltage output terminals

Outputs analog voltage in proportion to measurement.
± 6 V ±120 mm 4.72" to ± 6 V ± 0.012 mm 0.0007"
(output impedance: 0 Ω, current capacity: 10 mA)

Control I/O

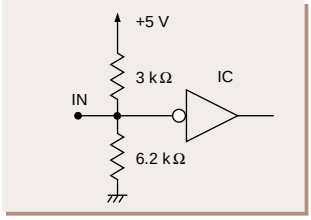
Output

- TTL open-collector (7406 equivalent)
- Maximum applied voltage: 30 V
- Maximum sink current: 40 mA



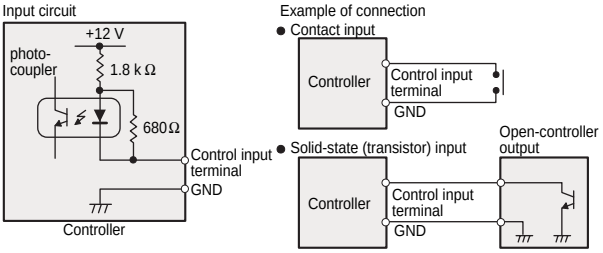
Input

- TTL level, negative logic (74LS19 equivalent)



Terminal block I/O

Control input



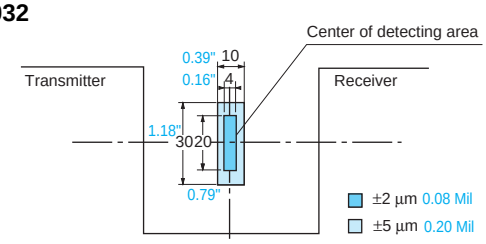
Control output

HIGH, LOW, GO output
Relay contact 3PST-NO, 250 VAC 2 A (resistive load)

Characteristics

Measuring area vs. accuracy (typical example)

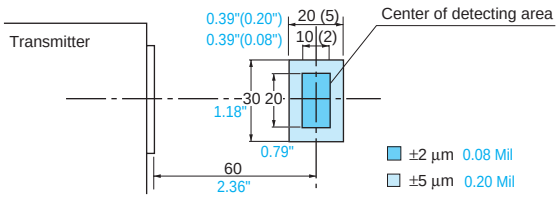
LS-3032



When a rod 10 mm 0.39" in diameter is measured.
(reference temperature: 20°C)

Temperature	0°C	10°C	20°C	30°C	40°C
Drift	+2.2 µm +0.09 Mil	+1.1 µm +0.04 Mil	0	-1.4µm -0.06 Mil	-3.2 µm -0.13 Mil

LS-3033/LS-3033SO(8073)



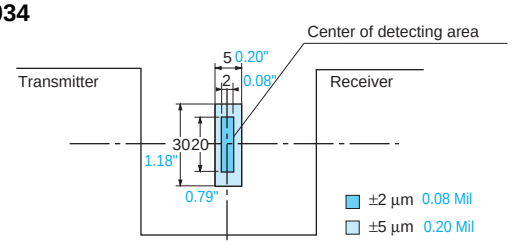
When a rod 10 mm 0.39" in diameter is measured with a transmitter-to-receiver distance set to 120 mm 4.72".
(reference temperature: 20°C)

Temperature	0°C	10°C	20°C	30°C	40°C
Drift	+2.6 µm +0.10 Mil	+1.3 µm +0.05 Mil	0	-1.4 µm -0.06 Mil	-3.2 µm -0.13 Mil

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LS-3100 Multi-functional Laser Scan Micrometers

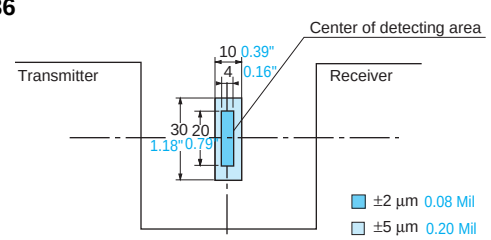
LS-3034



When a rod 10 mm 0.39" in diameter is measured.
(reference temperature: 20°C)

Temperature	0°C	10°C	20°C	30°C	40°C
Drift	+2.6 µm +0.10 Mil	+1.3 µm +0.05 Mil	0	-1.4 µm -0.06 Mil	-3.2 µm -0.13 Mil

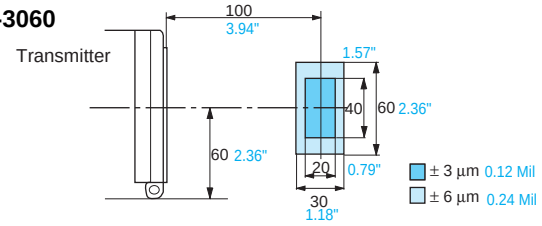
LS-3036



When a rod 10 mm 0.39" in diameter is measured.
(reference temperature: 20°C)

Temperature	0°C	10°C	20°C	30°C	40°C
Drift	+3.7 µm +0.15 Mil	+1.7 µm +0.07 Mil	0	-1.7 µm -0.07 Mil	-3.5 µm -0.14 Mil

LS-3060



When a rod 20 mm 0.79" in diameter is measured.
(reference temperature: 20°C)

Temperature	0°C	10°C	20°C	30°C	40°C
Drift	+8.6 µm +0.34 Mil	+4.3 µm +0.17 Mil	0	-4.2 µm -0.17 Mil	-8.4 µm -0.34 Mil

Hints on Correct Use

Detectable objects

Different target shapes and luster can sometimes produce measurement errors. To correct this, measure a known target and use the calibration key.

Measuring conditions

When the target is vibrating, the measured value will fluctuate. To attain accurate measurement, average a greater number of measurements.

Compatibility

Controllers and scanning heads, and transmitters and receivers are calibrated as pairs. Therefore, to meet specifications, combine units having the same serial number.

Connecting to a computer

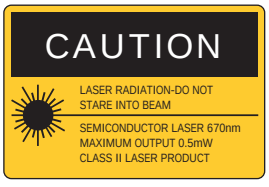
When connecting the LS-3100 controller to a computer, use a standard RS-232C connecting cable.

Warning

The LS-3100 Series conforms to FDA and IEC standards as follows:

Model	LS-3034	LS-3033 SO (8073)	LS-3032	LS-3033	LS-3036	LS-3060
FDA	Class I				Class II	
IEC	Class 1					

FDA Class II



IEC Class 1



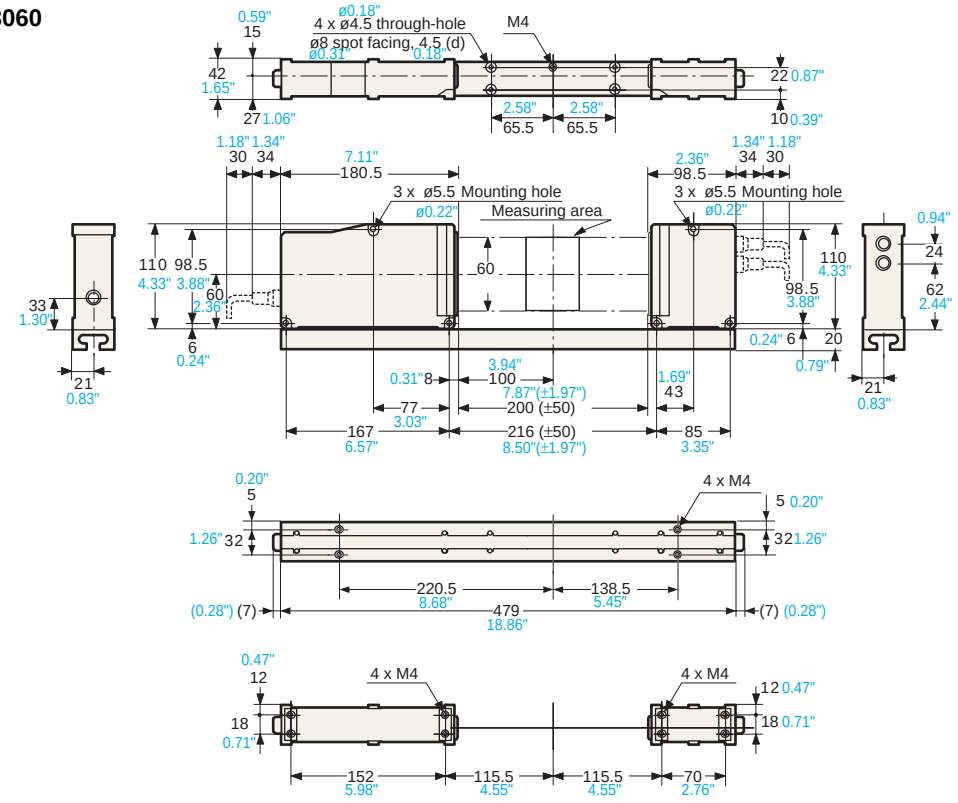
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Dimensions

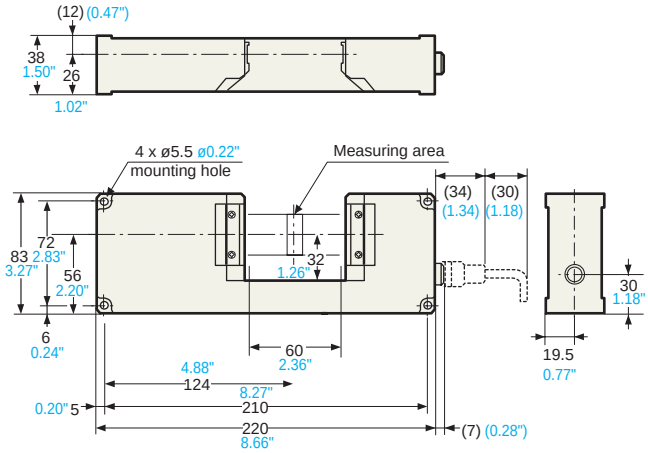
Unit: mm Inch

Scanning head

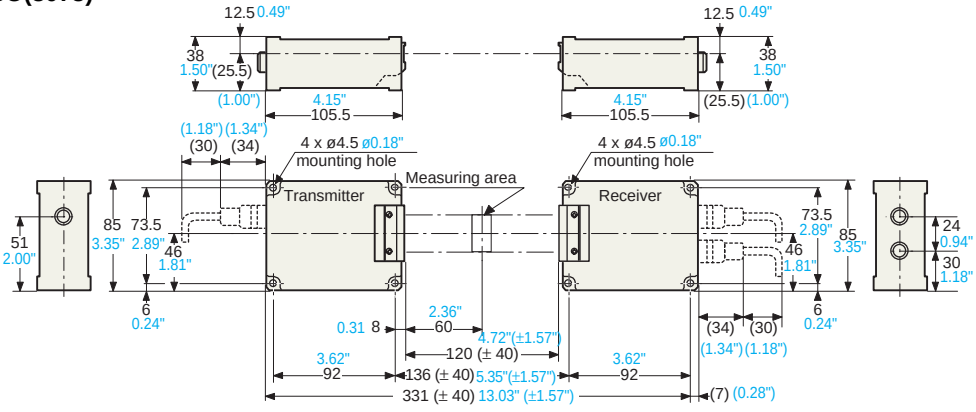
LS-3060



LS-3032/3034/3036



LS-3033/3033SO(8073)



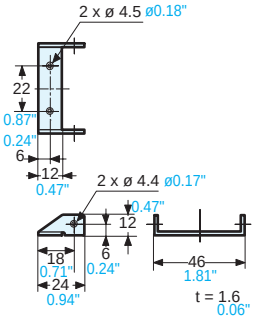
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LS-3100 Multi-functional Laser Scan Micrometers

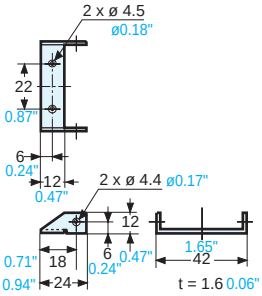
Unit: mm Inch

Scanning head mounting bracket (standard)

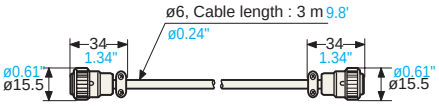
(For LS-3060)



(For LS-3032/3033/ 3033SO(8073)/3034)



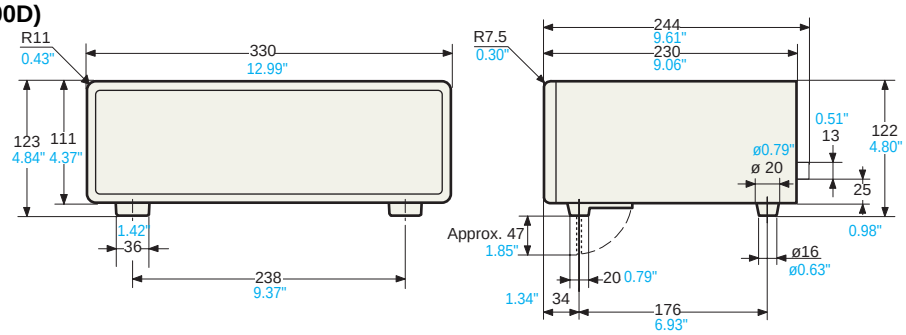
Connecting cable (3 m 9.8' long*, standard)



* For connecting the controller and scanning head.
For connecting the transmitter and receiver.
LS-3033/3033SO (8073) :3m 9.8'
LS-3060: 0.7m 2.3'

Controller

LS-3100 (LS-3100D)



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