

LINEAR HEIGHT

PRE 1286(3)



**High Performance 2D Measurement System with
Exceptional Accuracy of $(1.1+0.6L/600)\mu\text{m}^*$**

(* L = measured height in mm)

Mitutoyo

High Performance 2D New Linear Height Series LH-600E/EG

Feature 1: World-class accuracy

Achieved accuracy: $(1.1 + 0.6L/600) \mu\text{m}$

Excellent accuracy has been achieved by using a high-accuracy scale unit and high-accuracy guiding mechanism manufactured in our dedicated scale plant. Displacement accuracy when measuring a height of 600 mm: 1.7 μm

Feature 2: Superior ease of operation

Easy operation with a single touch of a key

Each frequently-used measurement type is initiated by one dedicated icon-type command key. Even a novice can immediately start measurement without instruction.

Color TFT LCD

This has improved legibility and operability.

Unlimited USB memory

Compatible models support more than 2 GB of USB memory.

High-accuracy air suspension assists measuring

The Linear Height can move without friction over a surface plate using an air bearing incorporated in the base, powered by the small built-in compressor. A semi-floating mode is also provided that allows measurement with the gage barely floating with no influence on the measuring accuracy.

This mode is effective in operations such as scanning measurement of a hole or shaft on a large workpiece and displacement measurements performed while moving the gage. Additionally, the power grip model (518-352D-21 LH600EG) has improved handling operability.

Feature 3: Numerous functions and options

Powerful measurement/calculation functions (See page 4 for details.)

Numerous types of measurement such as displacement/straightness squareness are possible in addition to basic measurement functions including height and circle measurement. This gage is also equipped with the 2-D measurement function, tolerance judgment function, and others.

Standardization of measuring procedures

Teaching the gage a series of measuring operations for a workpiece is possible (Repeat function). This function is very effective when measuring large batches of workpieces. Upon execution of the Repeat function, the probe automatically moves to the next measurement position (height). If an operation procedure manual is available, measurement can be standardised.

Supporting quality control with statistical processing functions

GO/NG judgment is performed real-time on measured data. Up to 60,000 pieces of data can be stored in the database, on which can be performed various statistical calculations such as average, standard deviation and process capability. Quality control is also supported by graphic display of histograms.

Highly capable data processing unit

The high-performance CPU supports future software upgrading. Measurement results are output in CSV format, thus allowing users to reuse those results with their own software.

Versatile external interfaces

A printer interface is provided, which is installed in the main unit to connect a thermal printer or A4 size printer. The USB interface allows a USB memory to back up and restore part programs and measured data that have been stored. Moreover, the RS-232C interface can output measurement results to an external device such as a PLC (Power Line Communications).

Numerous optional probes

This gage is provided with various types of probes and interchangeable styli flexibly compatible with complicated workpiece profiles and various measurement features. Mitutoyo's lineup of options offers various interchangeable styli for $\varnothing 5$ mm ball probes, depth probes, dial indicator holders, etc. The optional probes extend their flexibility with an M2/M3 threaded shank that allows various CMM styli to be attached.

Reflective-type linear encoder & guide achieve world-class accuracy

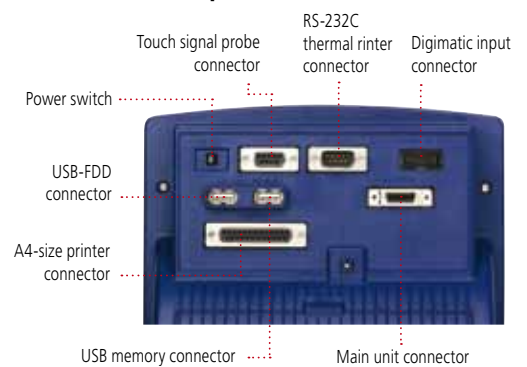
Numerous accessories compatible with many types of workpiece and measurement features provided in addition to standard $\varnothing 5$ mm ball probes

High-accuracy air bearing that can be operated in semi-floating mode while making highly accurate measurements and fully floating mode for frictionless travel over a surface plate



Diverse interfaces
Printer USB
RS-232C Digimatic input

[Rear panel (connectors)]



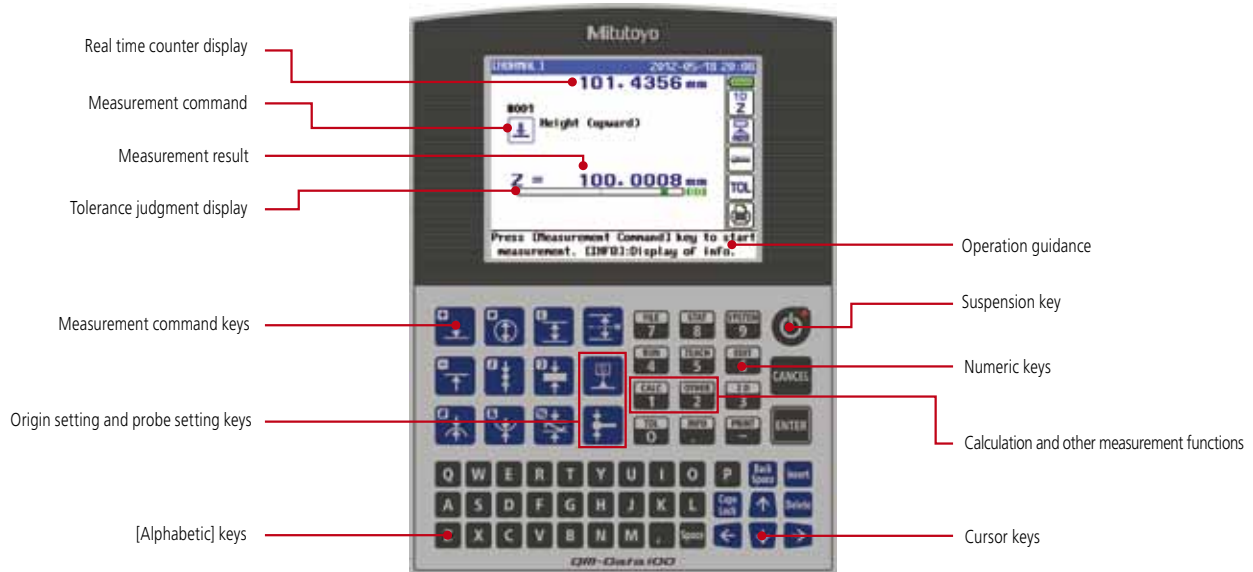
144,78 mm (5.7 inch) color TFT LCD display

Icon-type command keys provide simple one-touch operation to drive powerful functionality

A complete cordless system with a built-in compressor and battery, allowing frictionless movement on a surface plate

Functions

The touch of a single key automatically runs the instrument until the last result is displayed. This eliminates the need to execute key operations at each step in the measurement process, allowing you to concentrate 100% on workpiece inspection.



Single-touch Basic functions

	Measures the height of an upward-facing surface.		Measures the diameter and center of a hole.		Measures the width and center of an inner diameter.		Measures the width and center position between two elements.
	Measures the height of a downward-facing surface.		Measures the diameter and center of a shaft.		Measures the width and center of an outer diameter.		Sets the ABS origin (absolute reference origin) or INC origin (incremental origin defined by the user), switches between ABS/INC origins and sets the offset ABS origin.
	Measures the maximum height of a downward or upward-facing surface.		Measures the minimum height of a downward or upward-facing surface.		Measures the difference between maximum height and minimum height of an upward or downward facing surface.		Sets the probe type, measures the probe diameter, inputs the probe diameter, saves the probe, loads the probe and shifts the probe position.
	Performs calculation, including angle.		Displays a comment when operations are paused, measures the position of a hole with a tapered probe a.s.o.		Suspends or resumes system operation.		

Other functions

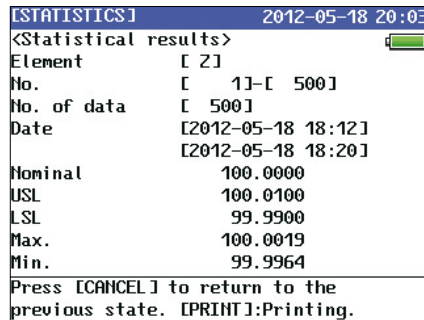
2-D measurement	2-D origin setting, X-/Y-axis setting, Element recall, Polar coordinate recall, Coordinate distance calculation, 2-D distance calculation, 2 elements intersection-angle calculation, 3 elements intersection-angle calculation, Pitch-circle calculation
Tolerance judgment function	Tolerance/nominal value setting, Tolerance judgment result output, Warning functions
User-support functions	Switching resolution, Power saving function, Switchable measurement speed, Semi-floating measurement
Part-program functions	Creating/editing/executing a part program
Statistical processing functions	Basic statistical processing, Histogram
Accuracy-compensation functions	Temperature compensation, Scale factor

Screen Display Examples

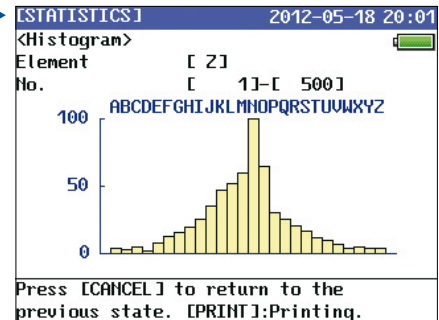
Printer Output Examples

The measurement operation is supported with graphics on the large LCD.

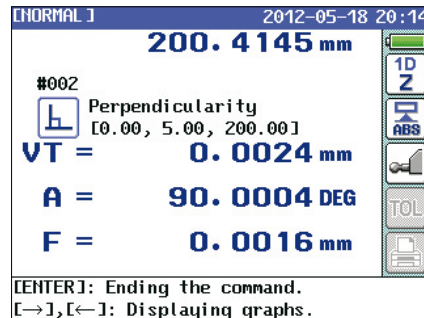
Statistical
processing result



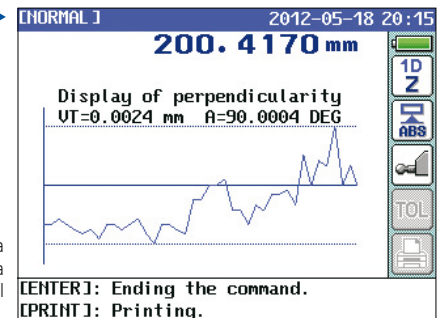
Histogram
processing result



Squareness
measurement result:
Numeric display

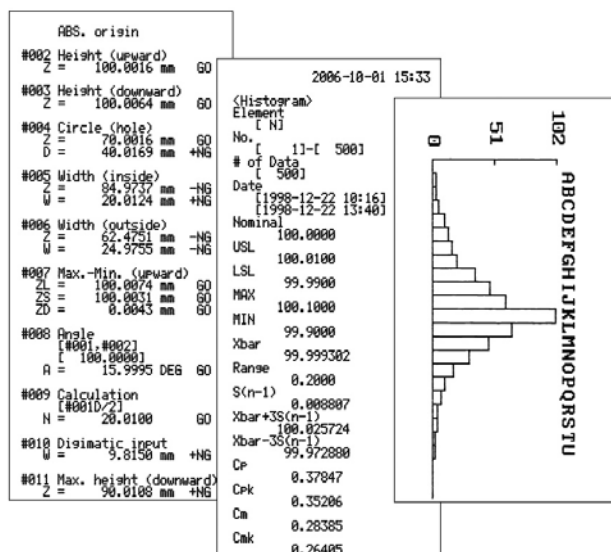


Squareness
measurement result:
Graphical display

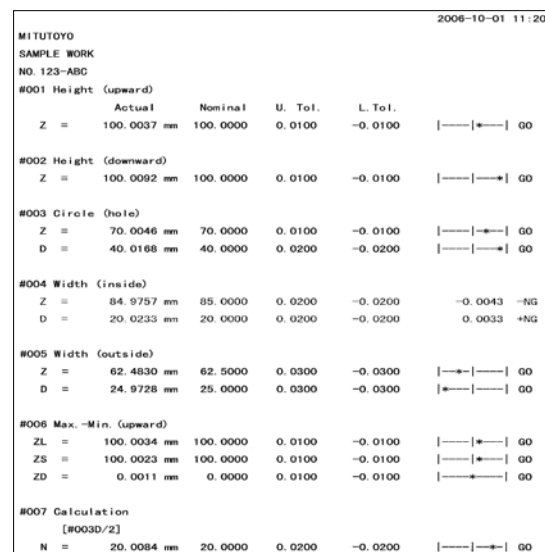


A thermal printer that can be attached to the Linear Height main unit is available as an optional accessory. Result data can also be output to a commercial A4 size printer.

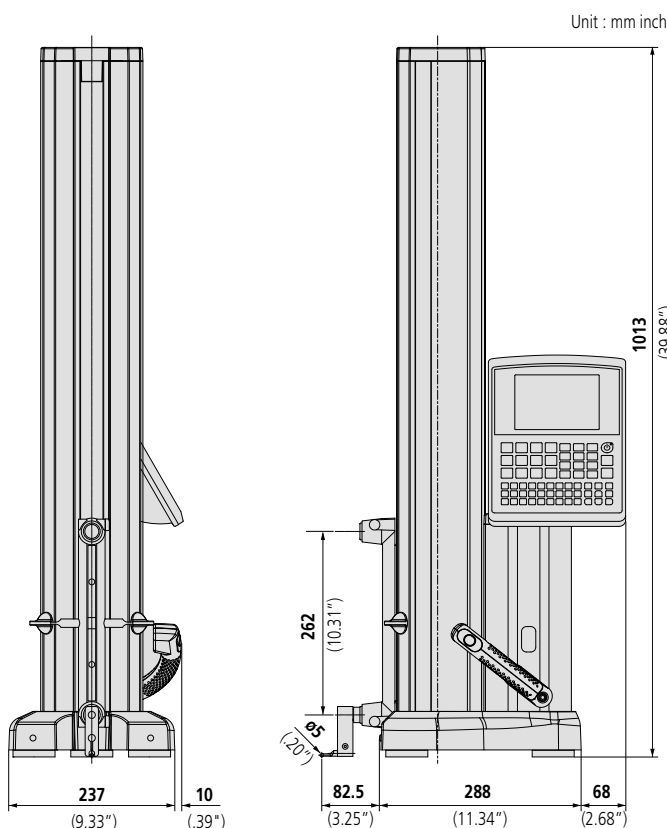
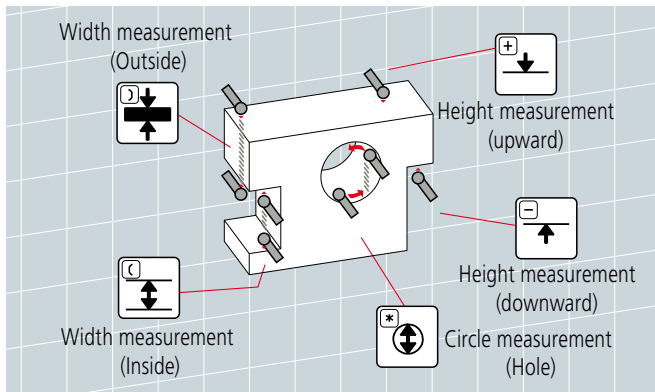
Thermal printer output



A4 printer output



Frequently used Measurements and Specifications



Standard accessories

- 5 mm-step probe
- Battery pack
- Clear cover
- Hex wrench
- Ball-diameter corrected block
- AC adapter
- Carrying handle
- Manual set
- Auxiliary weight (2 pcs.)
- Power cable for AC adapter
- Cap
- Inspection certificate

Order No.		518-351D-21	518-352D-21
Measuring range (Stroke)		0 - 972 mm (600 mm) 0 to 38" (24")	
Resolution		0.0001/0.001/0.01/0.1 mm (selectable) .000001/.00001/.0001/.001" (selectable)	
Accuracy (at 20)	Indication accuracy*1	(1.1 + 0.6L/600) μm, L = Measured length (mm)	
	Repeatability*1	Plane: 0.4 μm (2), Hole: 0.9 μm (2)	
	Perpendicularity (forward and backward)*2	5 μm (after compensation)	
	Straightness (forward and backward)*2	4 μm (mechanical accuracy)	
Guiding method		Roller bearing	
Driving method		Motor-driven (5,10,15,20,25,30,40 mm/s: 7 steps)/Manual	
Scale unit		Reflective-type linear encoder	
Measuring force		1N (automatic constant-force function)	
Balancing method		Counter weight balance	
Main unit moving mode		Full-floating (moving) / Semi-floating (measuring) air bearing	
Air source		Built-in compressor	
Monitor		144.78 mm (5.7 inch) COLOR TFT LCD (320 x 240 dots, with LED backlight)	
Max. number of programs		50	
Max. number of measured data		60,000 (Max. number of data is 30,000 / one program)	
Power supply		AC adapter / Battery (Ni-MH)	
Battery endurance	Operating*3	Approx. 5 hours (compressor duty cycle 25% max.)	
	Standby*3	Approx. 10 hours	
Battery charging time		Approx. 3 hours (usable during charge)	
Dimensions (WxDxH)		237x448x1013 mm	247x448x1013 mm
Mass		24 kg	24.5 kg
Operating temperature range		5 - 40 / 20 - 80% RH (without condensation)	

*1 Warranted when using the standard eccentric 5 mm probe.

*2 Warranted when using the Lever Head (MLH-521), Mu-Checker (M-511). Perpendicularity for horizontal direction is not defined. If the workpiece is cylindrical, measurement error may be observed.

*3 Optional large-capacity battery pack (12AAF675) for longer battery-powered operation (8 hours when operated and 16 hours on standby).

*4 Mitutoyo does not guarantee the operation of all commercial USB memories. Mitutoyo recommends those USB memories made by SanDisk Corporation or IO DATA DEVICE, INC. and that meet the following requirements.

Those that are not compliant with USB3.0

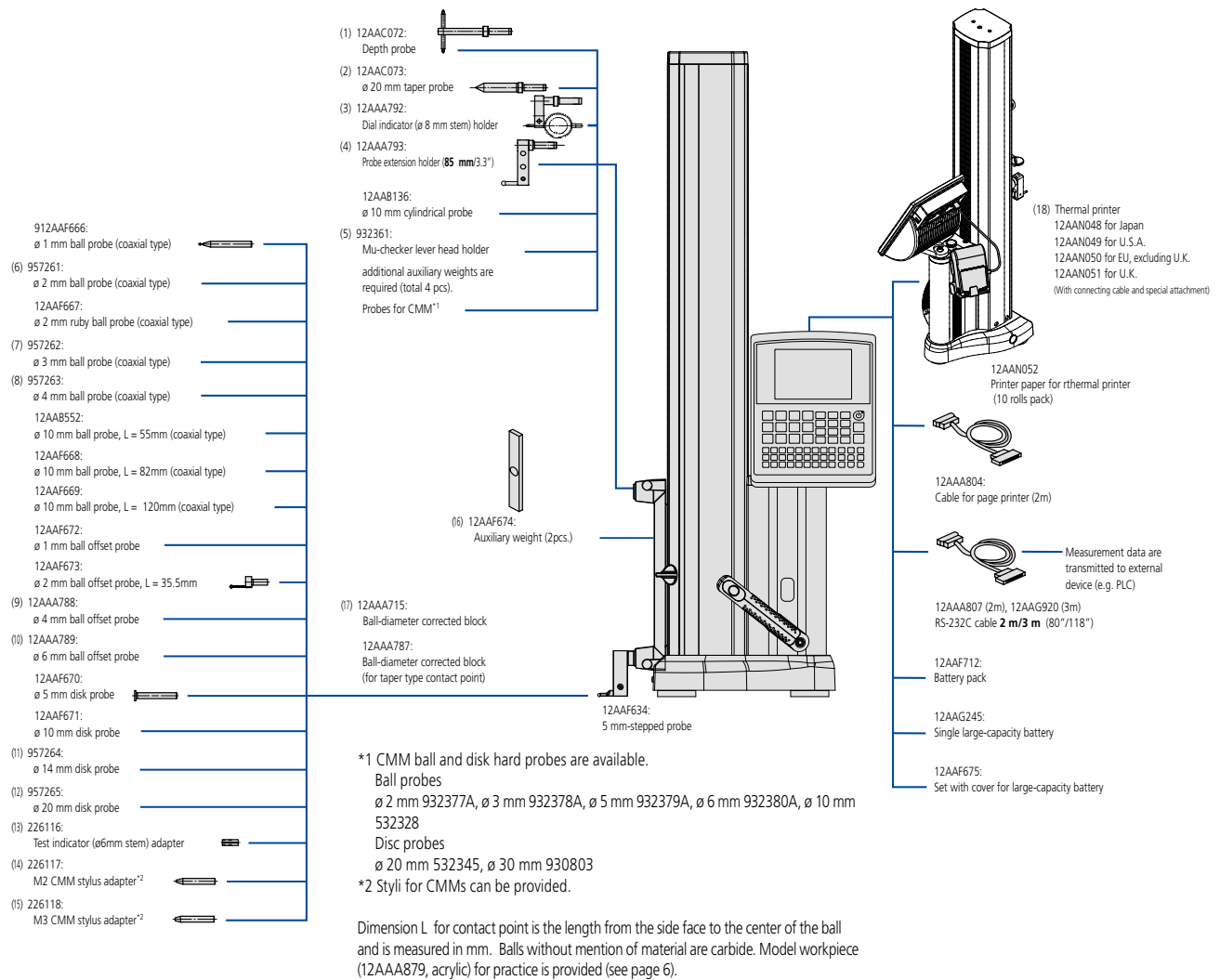
Those that have no security function such as encryption and fingerprint authentication

Those that have no write-protect switch function

It is recommended to use the Linear Height on a surface plate of high flatness accuracy.

Mitutoyo

Optional Accessories



■ Many kinds of optional probes enable many types of measurement



■ A choice of peripheral expand functionality



(18) Thermal printer

Coordinate Measuring Machines	1
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Form Measurement	3
Optical Measuring	4
Sensor Systems	5
Test Equipment and Seismometers	6
Digital Scale and DRO Systems	7
Small Tool Instruments and Data Management	8

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