

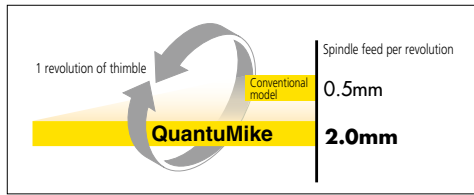
Micrometer

The origin of Mitutoyo's trustworthy brand of small tool instruments

QuantuMike

SERIES 293 — IP65 Micrometer with 2mm/rev Spindle Feed

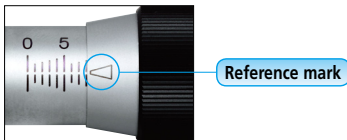
- Advanced pioneering technology has created the next generation of micrometer, the most revolutionary advance in micrometer technology since James Watt invented the instrument.
- Faster measurement is achieved by using a coarser thread which feeds the spindle by 2mm per revolution of the thimble. This increase in thread lead has been made possible thanks to new high precision thread-cutting and testing techniques.



- QuantuMike is equipped with a function lock feature to prevent the origin point being moved by mistake during measurement.



- A graduated scale is provided on the sleeve for use with a reference mark on the thimble so that every millimeter displacement can be checked to provide extra confidence.



- The patented ratchet thimble mechanism* helps ensure repeatable results by transmitting microvibrations along the spindle to the contact face to provide a constant measuring force and encourage good contact with the workpiece. The ratchet works from the thimble as well as the speeder so it is always easy to use – even when making measurements one-handed. The sound of the ratchet provides the user with a sense of confidence and the speeder enables the rapid spindle feed needed when measuring widely different dimensions.

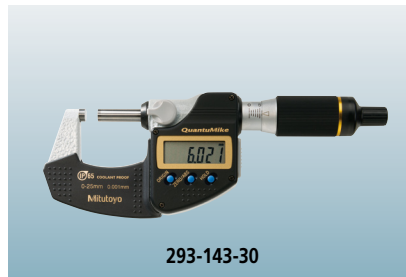
*Patent registered (in Japan, USA, China, Germany, UK and France)



Ratchet-induced microvibrations along the spindle help ensure repeatable measurements.



293-140-30



293-143-30



293-142-30



293-143-30



293-143-30

The name QuantuMike is from Quantum and Micrometer, reflecting our belief this tool represents a quantum leap in micrometer ergonomics.

- A statistical process control system and a measurement network system can be established to share information regarding quality with a model equipped with the data output function. (Refer to page A-3 for details.)
- There is a lineup of convenient Interface Input Tools which enable the conversion of measurement data to keyboard signals and directly input them to cells in off-the-shelf spreadsheet software such as Excel. (Refer to page A-5 for details.)
- Excellent resistance against oil, water and dust (IP65 protection level) enables this product to be used in machining situations that include splashing coolant fluid.
- Measuring faces: Carbide.



These marks indicate that a product has successfully passed IP65-level testing, which is carried out by the independent German certification organization TÜV Rheinland.



An inspection certificate is supplied as standard. Refer to page X for details.

IP Codes

Level 6: Dust -proof.

No ingress of dust allowed.

Level 5: Protected against water jets.

Water projected in jets against the enclosure from any direction shall have no harmful effects.

Technical Data

Dust/Water protection level: IP65 (IEC60529)*2

Measuring force: 7 to 12N*3

Battery: **SR44** (1 pc), **938882**, for initial operational checks (standard accessory)

Length standard: Electromagnetic rotary sensor

Battery life: Approx. 1.2 years under normal use

Standard accessories: Reference bar, 1 pc

(except for 0-25mm (0-1") models)

Spanner (**No. 301336**), 1 pc

*2 Rustproofing shall be applied after use.

*3 Measuring force when using the speeder ratchet (Apply a measuring force in the same condition as for measurement and then set the origin.)

Functions

Origin point setting (ABS length measurement system):

Pressing the ORIGIN button resets the ABS origin at the current spindle position. Origin values can be set depending on each size.

Zero setting (INC length measurement system):

A brief press on the ZERO/ABS button sets display to zero at the current spindle position and switches to the incremental (INC) measuring mode. A longer press resets to the ABS measuring mode.

Hold:

Pressing the HOLD button freezes the current value in the display. This function is useful for preserving a measurement in situations of poor visibility when the instrument must be moved away from the workpiece before the reading can be recorded.

Function lock:

This function allows the ORIGIN (origin point setting) function and the ZERO (zero setting) function to be locked to prevent these points being reset accidentally.

Auto power ON/OFF:

The reading on the LCD disappears after this instrument is idle for approx. 20 minutes, but the origin point is retained. Turning the spindle causes the reading on the LCD to reappear.

Data output*4:

Models equipped with this function have an output port for transferring measurement data to a Statistical Process Control (SPC) system.

Error alarm:

In case of an overflow on the LCD or a computing error, an error message appears on the LCD, and the measuring function stops. This prevents an instrument from giving an erroneous reading. Also, when the battery voltage drops to a certain level, the low-battery-voltage alarm annunciator appears well before the micrometer becomes unusable.

*4: Only for the models with SPC data output

Optional accessories

(Only for models with data output function)

Connecting cables with output switch

1m: **No. 05CZA662**

2m: **No. 05CZA663**

USB Input Tool Direct

USB-ITN-B (2m): No. 06ADV380B

Connecting cables for **U-WAVE-T** (160mm)

No. 02AZD790B

For foot switch: **No. 02AZE140B**

Refer to page B-68 for details.



SPECIFICATIONS

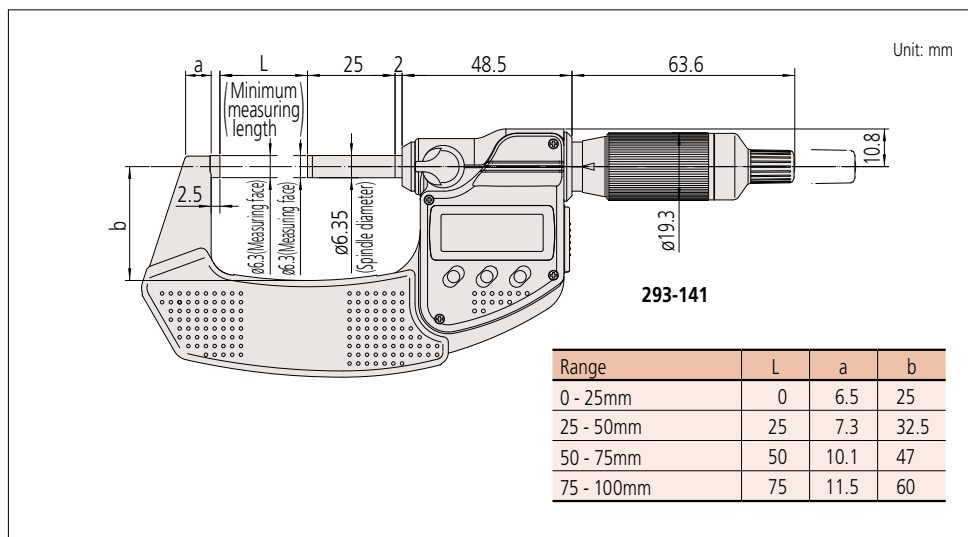
Metric							
	Order No.	Range	Resolution	Accuracy*1	Flatness	Parallelism	Mass
with SPC data output	293-140-30	0 - 25mm	0.001mm	±1μm	0.3μm	1μm	265g
	293-141-30	25 - 50mm					325g
	293-142-30	50 - 75mm		±2μm		2μm	465g
	293-143-30	75 - 100mm					620g
without SPC data output	293-145-30	0 - 25mm		±1μm		1μm	265g
	293-146-30	25 - 50mm					325g
	293-147-30	50 - 75mm		±2μm		2μm	465g
	293-148-30	75 - 100mm					620g

*1 Excluding quantizing error

Inch/Metric							
	Order No.	Range	Resolution	Accuracy*1	Flatness	Parallelism	Mass
with SPC data output	293-180-30	0 - 1"	.00005"/ 0.001mm	±.00005"	.000012"	.00004"	265g
	293-181-30	1" - 2"					325g
	293-182-30	2" - 3"		±.0001"		.00008"	465g
	293-183-30	3" - 4"					620g
without SPC data output	293-185-30	0 - 1"		±.00005"		.00004"	265g
	293-186-30	1" - 2"					325g
	293-187-30	2" - 3"		±.0001"		.00008"	465g
	293-188-30	3" - 4"					620g

*1 Excluding quantizing error

DIMENSIONS



Measuring time on a 6-stepped workpiece with one hand

Thanks to the quick movement, positioning times are reduced by 60%* and measuring times by 35%* compared with a conventional micrometer.

*According to Mitutoyo's comparison test data for measuring time on typical workpieces.

