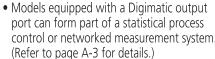
# **Micrometer**

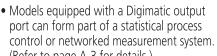
The origin of Mitutoyo's trustworthy brand of small tool instruments

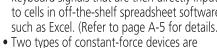
## **Coolant Proof Micrometers** SERIES 293 — with Dust/Water Protection Conforming to IP65 Level

- World's highest performing micrometer overall.
- Extended battery life of approximately 2.4
- Ergonomic anti-slip frame cover and front panel for more comfortable hand-held measurements.
- Ratchet thimble provides better operability for one-handed operation.
- Oil-resistant material used for all plastic parts.



- Interface Input Tools are available that enable the conversion of measurement data to keyboard signals that are then directly input to cells in off-the-shelf spreadsheet software such as Excel. (Refer to page A-5 for details.)
- available: Ratchet Stop and Ratchet Thimble.

















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**

Flatness: 0.3µm/.000012"

Dust/water protection level: IP65 (IEC60529) \*2 Measuring force: 5 to 10N (ratchet thimble type is 7 to 12N.)\*3

SR44 (1 pc), 938882, Battery:

for initial operational checks

(standard accessory)

Approx. 2.4 years under normal use Length standard: Electromagnetic rotary sensor

Standard accessories: Reference bar, 1 pc (except for 0-25mm (0-1") models)

Spanner (301336), 1 pc

\*2 Rustproofing shall be applied after use.

\*3 Refer to page B-6 for details.

#### **Optional accessories**

(Only for models with data output function) Connecting cables with output switch

1m: 05CZA662 2m: 05CZA663

**USB Input Tool Direct** 

USB-ITN-B (2m): 06ADV380B

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

02AZD790B

For foot switch: 02AZE140B Refer to page B-68 for details



These are dedicated connecting cables for Coolant Proof

### **SPECIFICATIONS**

	Order No	Range	Resolution	Accuracy*	Parallelism	Constant-force device	Mass
with SPC data output	293-230-30	0 - 25mm	0.001mm	±1µm	1µm	With ratchet stop	270g
	293-231-30	25 - 50mm					330g
	293-232-30	50 - 75mm			2µm		470g
	293-233-30	75 - 100mm		±2µm			625g
	293-250-30	100 - 125mm			3µm		600g
	293-251-30	125 - 150mm					740g
	293-252-30	150 - 175mm		±3µm			800g
	293-253-30	175 - 200mm			4µm		970g
	293-254-30	200 - 225mm					1100g
	293-255-30	225 - 250mm		±4µm			1270g
	293-256-30	250 - 275mm					1370g
	293-257-30	275 - 300mm			5µm		1590g
	293-234-30	0 - 25mm		±1µm	1µm	- With ratchet thimble	280g
	293-235-30	25 - 50mm					340g
	293-236-30	50 - 75mm			2µm		480g
	293-237-30	75 - 100mm		±2µm	Ζμιτι		635g
without SPC data output	293-240-30	0 - 25mm	0.001mm	±1µm	1µm	· With ratchet stop	270g
	293-241-30	25 - 50mm					330g
	293-242-30	50 - 75mm			2µm		470g
	293-243-30	75 - 100mm		±2µm			625g
	293-244-30	0 - 25mm		±1µm	1µm	With ratchet thimble	280g
	293-245-30	25 - 50mm					340g
	293-246-30	50 - 75mm			2µm		480g
	293-247-30	75 - 100mm		±2µm			635g

<sup>\*</sup> Excluding quantizing error

# Metric

to ABS mode.
<b>Zero-setting</b> (INC 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

Origin point setting (ABS measurement system): Resets the ABS origin at the current spindle position to the minimum value of the measuring range and switches

#### Hold:

**Functions** 

Pressing the HOLD button freezes the current value in the display. This function is useful for preserving a measurement in situations of poor visibility where the instrument must be moved away from the workpiece before the reading can be recorded. **Data output**\*<sup>4</sup>:

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

\*4: Only models with the data output function

### Auto power ON/OFF:

The reading on the LCD disappears after this instrument is idle for about 20 minutes, but the reading and measurement mode are retained. Turning the spindle causes the reading to reappear.

#### 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.

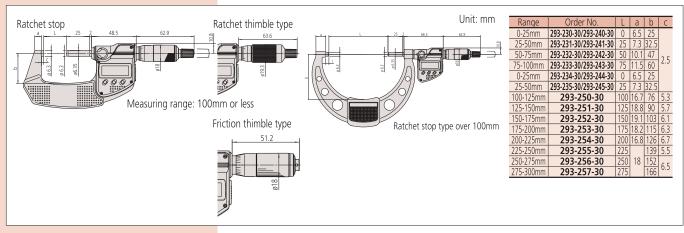
#### Function lock

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. Inch/Motric

	incn/ivietric	ı					
	Order No	Range	Resolution	Accuracy*	Parallelism	Constant-force device	Mass
with SPC data output	293-330-30	0 -1"	.00005" /0.001mm	±.00005"	.00004"	With ratchet stop	270g
	293-331-30	1" - 2"					330g
	293-332-30	2" - 3"			.00008"		470g
	293-333-30	3" - 4"		±.0001"			625g
	293-350-30	4" - 5"	.0001" /0.001mm		.00012"		600g
	293-351-30	5" - 6"					740g
	293-352-30	6" - 7"		±.00015"			800g
	293-353-30	7" - 8"			.00016"		970g
	293-354-30	8" - 9"					1100g
	293-355-30	9" -10"		±.0002"			1270g
	293-356-30	10" - 11"					1370g
	293-357-30	11" - 12"			.0002"		1590g
	293-334-30	0 -1"	.00005" - /0.001mm	±.00005"	.00004"	With ratchet thimble	280g
	293-335-30	·				With friction thimble	275g
	293-336-30	1" - 2"					335g
	293-340-30	0 - 1"	.00005" - /0.001mm	±.00005"	.00004"	With ratchet stop	270g
	293-341-30	1" - 2"					330g
	293-342-30	2" - 3"					470g
without SPC	293-343-30	3" - 4"		±.0001"	.00000		625g
data output	293-344-30	0 - 1"		±.00005"	.00004"	With ratchet thimble	280g
	293-345-30	1" - 2"					340g
	293-346-30	2" - 3"			.00008"		480g
	293-347-30	3" - 4"		±.0001"			635g
	293-348-30	0 -1"		±.00005"	.00004"	With friction thimble	275g

<sup>\*</sup> Excluding quantizing error

### **DIMENSIONS**



<sup>•</sup> All-Digit preset type: models over 125mm (5") measuring range

All-Digit preset type: models over 125mm (5") measuring range