

Micrometers

SERIES 293 – IP65 Digimatic Micrometer

- Based on new waterproof structural technology, this micrometer provides IP65 protection levels, enabling use in environments that include cutting oil, etc.*
- * Anti-corrosion treatment is required after use.
- $\pm 1 \mu\text{m}$ instrumental error (75 mm/3" or less measuring range models).
- Measuring data output function is available with a water-resistant data cable to maintain the IP65 protection level.
- Oil-resistant materials are used in all plastic components.
- Auto power ON/OFF function.
- Further-Increased operability thanks to easy-to-read LCD with 30% more character area.
- Models equipped with a Digimatic output port can form part of a statistical process control or networked measurement system.
- 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.
- Two types of constant-force devices are available: Ratchet Stop and Ratchet Thimble.
- Measuring faces: Carbide



293-230



293-334



293-230

293-231

293-233

293-232

Technical Data

Flatness:	0.3 μm / .000012"
Dust/water protection level:	IP65 (IEC60529) *2
Measuring force:	5 to 10N
Battery life:	Approx. 1.2 years under normal use
Standard accessories:	Setting standard, 1 pc (except for 0-25 mm (0-1") models) Button type silver oxide battery (SR44, 938882), 1 pc Spanner (301336), 1 pc

*2 Anti-corrosion treatment is required after use.

Functions

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 to ABS mode.

Zero setting (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.

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 where the instrument must be moved away from the workpiece before the reading can be recorded.

Data output:

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

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 the unlikely event of a display overflow or calculation error, an error message is displayed and measurement stops. Measurement cannot continue until the error is corrected. Also, if the battery voltage drops below a certain point, the battery indicator will turn on before measurement becomes impossible, warning the user that the battery needs to be replaced.

Function lock*3:

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.

*3 All-digit preset type only.



293-354-10

Optional Accessories

(Only for models with data output function)

05CZA662: SPC data cable with pushbutton (1 m)
£58.50

05CZA663: SPC data cable with pushbutton (2 m)
£70.40

06ADV380B: USB Input Tool Direct USB-ITN-B (2 m)
£106.00

02AZD790B: SPC data cable for U-WAVE-T (160 mm)
£52.20

02AZE140B: SPC data cable for U-WAVE-T and footswitch
(160/500 mm)
£119.00



There are dedicated SPC data cables for Coolant Proof micrometers.



SPECIFICATIONS

Metric							
Code No.	Range	Resolution	Accuracy*	Parallelism	Constant-force device	Mass	Price
With SPC data output							
293-230	0-25 mm (0-1")	0.001 mm (.00005")	±1 µm (±.00005")	1 µm (.00004")	Ratchet stop	270 g	£207.00
293-231	25-50 mm (1-2")					330 g	£220.00
293-232	50-75 mm (2-3")			470 g		£251.00	
293-233	75-100 mm (3-4")			625 g		£350.00	

Inch/Metric										
Code No.	Range	Resolution	Accuracy*	Parallelism	Constant-force device	Mass	Price			
With SPC data output										
293-330	0-25 mm (0-1")	0.001 mm (.00005")	±1 µm (±.00005")	1 µm (.00004")	Ratchet stop	270 g	£207.00			
293-331	25-50 mm (1-2")					330 g	£220.00			
293-332	50-75 mm (2-3")			470 g		£251.00				
293-333	75-100 mm (3-4")			625 g		£320.00				
293-350-10	100-125 mm (4-5")	0.001 mm (.0001")	±2 µm (±.0001")	3 µm (.00012")	Ratchet stop	600 g	£390.00			
293-351-10	125-150 mm (5-6")					740 g	£395.00			
293-352-10	150-175 mm (6-7")			800 g		£430.00				
293-353-10	175-200 mm (7-8")			970 g		£440.00				
293-354-10	200-225 mm (8-9")			1100 g		£450.00				
293-355-10	225-250 mm (9-10")			1270 g		£460.00				
293-356-10	250-275 mm (10-11")			1340 g		£470.00				
293-357-10	275-300 mm (11-12")			1540 g		£490.00				
293-334	0-25 mm (0-1")			0.001 mm (.00005")		±1 µm (±.00005")	1 µm (.00004")	Ratchet thimble	275 g	£207.00
293-335	0-25 mm (0-1")							Friction thimble	275 g	£250.00
293-336	25-50 mm (1-2")	335 g	£220.00							

Without SPC data output							
293-340	0-25 mm (0-1")	0.001 mm (.00005")	±1 µm (±.00005")	1 µm (.00004")	Ratchet stop	270 g	£139.00
293-341	25-50 mm (1-2")					330 g	£195.00
293-342	50-75 mm (2-3")			470 g		£230.00	
293-343	75-100 mm (3-4")			625 g		£259.00	
293-344	0-25 mm (0-1")	0.001 mm (.00005")	±1 µm (±.00005")	1 µm (.00004")	Ratchet thimble	275 g	£139.00
293-345	25-50 mm (1-2")					335 g	£195.00
293-346	50-75 mm (2-3")			475 g		£230.00	
293-347	75-100 mm (3-4")			639 g		£259.00	
293-348	0-25 mm (0-1")	±1 µm (±.00005")	1 µm (.00004")	Friction thimble	275 g	£139.00	

* Excluding quantizing error.

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

DIMENSIONS

Ratchet stop type		Ratchet / Friction thimble type		Unit: mm				
				Range	L	a	b	c
				0-25 mm	0	2.8	9	25
				25-50 mm	25	2.8	9.8	32
				50-75 mm	50	2.8	12.6	47
				75-100 mm	75	2.8	14	60
				100-125 mm	132.8	5.3	16.7	76
				125-150 mm	158.2	5.7	18.8	90
				150-175 mm	183.6	6.1	19.1	102
				175-200 mm	208.8	6.3	18.2	115
				200-225 mm	234.2	6.7	16.8	127
				225-250 mm	258	5.5	18	139
				250-275 mm	284	6.5	18	152
				275-300 mm	309	6.5	18	166