

Micrometer

Coolant Proof Micrometers SERIES 293 — IP65 Digimatic Micrometer

- Accurate and highly environmentally resistant, assisting with many types of measurements.
- Ratchet thimble provides better operability for one-handed operation.
- Oil-resistant material used for all plastic parts.
- Models equipped with a Digimatic output port can form part of a statistical process control or networked measurement system.



293-230-30

SPECIFICATIONS

Metric										
Code No.	Range (mm)	Resolution (mm)	Measuring force*1 (N)	Maximum permissible error J_{MPE} (μm)	Parallelism (μm)	Flatness (μm)	Constant measuring force	Mass (g)		
With SPC data output										
293-230-30	0 - 25	0.001	5 - 10	±1	1	0.3	With ratchet stop	270		
293-231-30	25 - 50			7 - 12	±2			2	330	
293-232-30	50 - 75				±1			1	470	
293-233-30	75 - 100				±2			2	625	
293-234-30	0 - 25		7 - 12		±1		1	With ratchet thimble	280	
293-235-30	25 - 50			±2	2		340			
293-236-30	50 - 75			75 - 100	±1		1		480	
293-237-30	75 - 100				±2		2		635	
Without SPC data output										
293-240-30	0 - 25	0.001	5 - 10	±1	1	0.3	With ratchet stop	270		
293-241-30	25 - 50			7 - 12	±2			2	330	
293-242-30	50 - 75				±1			1	470	
293-243-30	75 - 100				±2			2	625	
293-244-30	0 - 25		7 - 12		±1		1	With ratchet thimble	280	
293-245-30	25 - 50			±2	2		340			
293-246-30	50 - 75			75 - 100	±1		1		480	
293-247-30	75 - 100				±2		2		635	
Inch / Metric										
Code No.	Range (in)	Resolution	Measuring force*1 (N)	Maximum permissible error J_{MPE} (in)	Parallelism (in)	Flatness (in)	Constant measuring force	Mass (g)		
With SPC data output										
293-330-30	0 - 1	0.00005 in / 0.001 mm	5 - 10	±0.00005	0.00004	0.000012	With ratchet stop	270		
293-331-30	1 - 2			7 - 12	±0.0001			0.00008	330	
293-332-30	2 - 3				5 - 10			±0.00005	0.00004	470
293-333-30	3 - 4							±0.0001	0.00008	625
293-334-30	0 - 1		7 - 12				±0.00005	0.00004	With ratchet thimble	280
293-335-30	1 - 2			5 - 10			±0.00005	0.00004		275
293-336-30	1 - 2				±0.00005		0.00004	335		
Without SPC data output										
293-340-30	0 - 1	0.00005 in / 0.001 mm	5 - 10	±0.00005	0.00004	0.000012	With ratchet stop	270		
293-341-30	1 - 2			7 - 12	±0.0001			0.00008	330	
293-342-30	2 - 3				5 - 10			±0.00005	0.00004	470
293-343-30	3 - 4							±0.0001	0.00008	625
293-344-30	0 - 1		7 - 12				±0.00005	0.00004	With ratchet thimble	280
293-345-30	1 - 2			5 - 10			±0.0001	0.00008		340
293-346-30	2 - 3				±0.00005		0.00004	480		
293-347-30	3 - 4			5 - 10	±0.00005		0.00004	With friction thimble		635
293-348-30	0 - 1		±0.00005		0.00004		275			

- Dust/water protection level: IP65 (IEC60529)*2
 - Power source: SR44 battery (1 pc.), **938882** included as standard (for operational checks)
 - Battery life: Approx. 2.4 years under normal use
 - Position detection method: Electromagnetic rotary sensor
 - Standard accessories: Setting standard, 1 pc. (except for 0 to 25 mm (0 to 1 in) models), Spanner (**301336**), 1 pc.
- *1 Measuring force when using the speeder ratchet (Apply a measuring force in the same condition as for measurement and then set the origin.)
- *2 Rustproofing shall be applied after use.
- Note: All digits of models over 125 mm (5 in) measuring range are presettable.

DIMENSIONS

Ratchet stop		Ratchet thimble type		Unit: mm			
Range (mm)	Code No.	L	a	b	c		
0 - 25	293-230-30/293-240-30	0	6.5	25		2.5	
25 - 50	293-231-30/293-241-30	25	7.3	32.5			
50 - 75	293-232-30/293-242-30	50	10.1	47			
75 - 100	293-233-30/293-243-30	75	11.5	60			
0 - 25	293-234-30/293-244-30	0	6.5	25			
25 - 50	293-235-30/293-245-30	25	7.3	32.5			

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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:

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:

The function that holds the display of value is useful when it is difficult to see the measured value at the measurement point. When the function is cancelled, the previous zero-set point or a measured value with reference to the origin is displayed.

Data output*:

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

* 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 indicator 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.

Optional Accessories

Refer to page 02-8.

Functions

Refer to page 02-7.

Optional Accessories

Only for models with data output function

Code No.	Type	Description
264-020	—	USB Input Tool Series USB Keyboard Signal Conversion Type IT-020U
05CZA662	B	Connection cable (1 m)
05CZA663	B	Connection cable (2 m)
06AFM380B	B	USB Input Tool Direct (2 m)
02AZD730G	IP67	U-WAVE-T
02AZD880G	Buzzer	U-WAVE-T
02AZE200	—	U-WAVE-T mounting bracket
02AZD790B	B	Connection cable for U-WAVE-T (160 mm)
02AZE140B	B	Connection cable for U-WAVE-T For foot switch
264-622	IP67	U-WAVE-TM
264-623	Buzzer	U-WAVE-TM
264-626	IP67	U-WAVE-TMB
264-627	Buzzer	U-WAVE-TMB
02AZF310	IP67	Connecting unit for U-WAVE-TM/TMB

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293-252-30

SPECIFICATIONS

Metric								
Code No.	Range (mm)	Resolution (mm)	Measuring force*1 (N)	Maximum permissible error J _{MPE} (μm)	Parallelism (μm)	Flatness (μm)	Constant measuring force	Mass (g)
With SPC data output								
293-250-30	100 - 125	0.001	5 - 10	±2	3	0.3	With ratchet stop	600
293-251-30	125 - 150			±3				4
293-252-30	150 - 175				±4			
293-253-30	175 - 200			970				
293-254-30	200 - 225			1100				
293-255-30	225 - 250			1270				
293-256-30	250 - 275			1370				
293-257-30	275 - 300			1590				
Inch / Metric								
Code No.	Range (in)	Resolution	Measuring force*1 (N)	Maximum permissible error J _{MPE} (in)	Parallelism (in)	Flatness (in)	Constant measuring force	Mass (g)
With SPC data output								
293-350-30	4 - 5	0.0001 in / 0.001 mm	5 - 10	±0.0001	0.00012	0.000012	With ratchet stop	600
293-351-30	5 - 6			±0.00015	0.00016			740
293-352-30	6 - 7							800
293-353-30	7 - 8			±0.0002	0.0002			970
293-354-30	8 - 9							1100
293-355-30	9 - 10							1270
293-356-30	10 - 11							1370
293-357-30	11 - 12							1590

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- *2 Rustproofing shall be applied after use.
- Note: All digits of models over 125 mm (5 in) measuring range are presettable.

DIMENSIONS

Unit: mm					
Range (mm)	Code No.	L	a	b	c
100 - 125	293-250-30	100	16.7	76	5.3
125 - 150	293-251-30	125	18.8	90	5.7
150 - 175	293-252-30	150	19.1	103	6.1
175 - 200	293-253-30	175	18.2	115	6.3
200 - 225	293-254-30	200	16.8	126	6.7
225 - 250	293-255-30	225	18	139	5.5
250 - 275	293-256-30	250		152	6.5
275 - 300	293-257-30	275		166	