Coolant-proof Micrometer

SERIES 293 — with Dust/Water Protection Conforming to IP65 Level

FEATURES

- IP65 protection level, enabling use in environments exposed to cutting oil, etc*. *Anti-corrosion treatment is required after use.
- Measurement data output function is available with a water-resistant connection
- Auto power ON/OFF function.
- A nonslip surface with raised dots is employed for the frame cover and surface panel to achieve stable handheld measurement.
- Certificate of inspection* is included. (2" /50mm or less range models)** *It is not the type used to obtain calibration certificates. ** except 293-349-30
- With a standard bar except for 0-1"/0-25mm model.
- •Supplied in fitted case. Plastic case up to 6"/150mm, wooden box over 6"/150mm.







Oil-resistant materials are used in all plastic components.



Measurement data output function is available with a water-resistant connection cable.













Certificate of inspection

Technical Data

Accuracy: Refer to the list of specifications.

.00005"/0.001mm or 0.001mm (up to 4" models) .0001" / 0.001mm (over 4" models) Resolution:

Flatness:

.000012"/0.3µm .00004"/1µm for models up to 2"/50mm Parallelism: .00008"/2µm for models up to 4"/100mm

.00012"/3µm for models up to 7"/175mm .00016"/4µm for models up to 11"/275mm .0002"/5µm for models over 12"/300mm

Measuring faces: Carbide tipped

Display:

Battery: SR44 (1 pc.), **938882**Battery life: Approx. 2.4 years under normal use

Dust/Water protection level: IP65

Origin-set, Zero / ABS, Hold, Auto power on/off, Data output (output models),

inch/mm conversion (on inch/metric models only)

Low voltage, Counting value composition error

Optional Accessories

05CZA662: SPC cable with data switch (40"/1m) 05CZA663: SPC cable with data switch (80"/2m)



SPECIFICATIONS

Metric With ratchet stop					
Range	Resolution	Order No.	Accuracy		
0 - 25mm	0.001mm	293-230-30 / 293-240-30*	±1µm		
25 - 50mm	0.001mm	293-231-30 / 293-241-30*	±1µm		
50 - 75mm	0.001mm	293-232-30 / 293-242-30*	±1µm		
75 - 100mm	0.001mm	293-233-30 / 293-243-30*	±2µm		
100 - 125mm	0.001mm	293-250-30	±2µm		
125 - 150mm	0.001mm	293-251-30	±2µm		
150 - 175mm	0.001mm	293-252-30	±3µm		
175 - 200mm	0.001mm	293-253-30	±3µm		
200 - 225mm	0.001mm	293-254-30	±3µm		
225 - 250mm	0.001mm	293-255-30	±4µm		
250 - 275mm	0.001mm	293-256-30	±4µm		
275 - 300mm	0.001mm	293-257-30	±4µm		

*without SPC data output

Metric With ratchet thimble						
Range	Resolution	Order No.	Accuracy			
0 - 25mm	0.001mm	293-234-30 / 293-244-30*	±1µm			
25 - 50mm	0.001mm	293-235-30 / 293-245-30*	±1µm			
50 - 75mm	0.001mm	293-236-30 / 293-246-30*	±1µm			
75 - 100mm	0.001mm	293-237-30 / 293-247-30*	±2µm			

*without SPC data output

Metric Micrometer Set				
Range	Order No.	Included in set		
0-50mm (2pcs. Set)	293-966-30	293-230-30, 293-231-30, 25mm CERA block, plastic case		
0-75mm (3pcs. Set)	293-962-30	293-230-30, 293-231-30, 293-232-30, 2 standard bars, plastic case		
0-100mm (4pcs. Set)	293-963-30	293-230-30, 293-231-30, 293-232-30, 293-233-30, 3 standard bars, wooden box		

Inch/Metric With ratchet stop

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005"/0.001mm	293-330-30 / 293-340-30*	±.00005"
1" - 2" / 25.4 - 50.8mm	.00005"/0.001mm	293-331-30 / 293-341-30*	±.00005"
2" - 3" / 50.8 - 76.2mm	.00005"/0.001mm	293-332-30 / 293-342-30*	±.00005"
3" - 4" / 76.2 - 101.6mm	.00005"/0.001mm	293-333-30 / 293-343-30*	±.0001"
4" - 5" / 101.6 - 127.0mm	.0001"/0.001mm	293-350-30	±.0001"
5" - 6" / 127.0 - 152.4mm	.0001"/0.001mm	293-351-30	±.0001"
6" - 7" / 152.4 - 177.8mm	.0001"/0.001mm	293-352-30	±.00015"
7" - 8" / 177.8 - 203.2mm	.0001"/0.001mm	293-353-30	±.00015"
8" - 9" / 203.2 - 228.6mm	.0001"/0.001mm	293-354-30	±.00015"
9" - 10" / 228.6 - 254.0mm	.0001"/0.001mm	293-355-30	±.0002"
10" - 11" / 254.0 - 279.4mm	.0001"/0.001mm	293-356-30	±.0002"
11" - 12" / 279.4 - 304.8mm	.0001"/0.001mm	293-357-30	±.0002"

*without SPC data output

Inch/Metric	With ratchet thimble
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Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	293-334-30 / 293-344-30*	±.00005"
0 - 1" / 0 - 25.4mm	.0001" / 0.001mm	293-349-30*	±.0001"
1" - 2"/ 25.4 - 50.8mm	.00005" / 0.001mm	293-345-30*	±.00005"
2" - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	293-346-30*	±.00005"
3" - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	293-347-30*	±.0001"

*without SPC data output

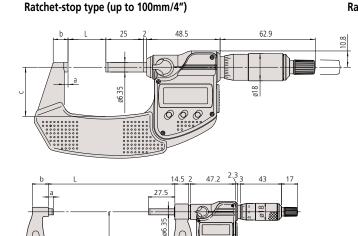
Inch/Metric With friction thimble

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	293-335-30 / 293-348-30*	±.00005"
1" - 2"/ 25.4 - 50.8mm	.00005" / 0.001mm	293-336-30	±.00005"

*without SPC data output

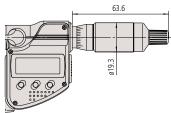
Inch/Metric Micrometer Set .00005" / 0.001mm graduation mod			
Range	Order No.	Included in set	
0 - 3" / 0 - 76.2mm	293-960-30	293-330-30, 293-331-30, 293-332-30,	
(3 pcs. set)		2 standard bars, plastic case	
0 - 4" / 0 - 101.6mm	293-961-30	293-330-30, 293-331-30,	
(4 pcs. set)		293-332-30, 293-333-30,	
		3 standard bars, wooden box	

DIMENSIONS AND MASS





Ratchet-thimble type and friction-thimble type



Range (Metric / Inch)	L	a	b	С	Mass (g)
0 - 25mm / 0-1"	0	2.5	9	(25)	270
25 - 50mm / 1-2"	25	2.5	9.8	(32.5)	330
50 - 75mm / 2-3"	50	2.5	12.6	(47)	470
75 - 100mm / 3-4"	75	2.5	14	(60)	625
100 - 125mm / 4-5"	132.8	5.3	16.7	(76.5)	600
125 - 150mm / 5-6"	158.2	5.7	18.8	(91)	740
150 - 175mm / 6-7"	183.6	6.1	19.1	(103.1)	800
175 - 200mm / 7-8"	208.8	6.3	18.2	(115.3)	970
200 - 225mm / 8-9"	234.2	6.7	16.8	(126.8)	1100
225 - 250mm / 9-10"	258	5.5	18	(139.8)	1270
250 - 275mm / 10-11"	284	18	28	(152.3)	1340
275 - 300mm / 11-12"	309	18	28	(166)	1540

Unit: mm

Digimatic Micrometer

SERIES 293



SPECIFICATIONS

Metric With ratchet stop				
Range	Resolution	Order No.	Accuracy	
300 - 325mm	0.001mm	293-582	±6µm	
325 - 350mm	0.001mm	293-583	±6µm	
350 - 375mm	0.001mm	293-584	±6µm	
375 - 400mm	0.001mm	293-585	±7μm	
400 - 425mm	0.001mm	293-586	±7μm	
425 - 450mm	0.001mm	293-587	±7μm	
450 - 475mm	0.001mm	293-588	±8µm	
475 - 500mm	0.001mm	293-589	±8µm	

Inch/Motric	Mith ratchet stop

Range	Resolution	Order No.	Accuracy
12" - 13" / 304.8 - 330.2mm	.0001" / 0.001mm	293-782	±.0003"
13" - 14" / 330.2 - 355.6mm	.0001" / 0.001mm	293-783	±.0003"
14" - 15" / 355.6 - 381.0mm	.0001" / 0.001mm	293-784	±.0003"
15" - 16" / 381.0 - 406.4mm	.0001" / 0.001mm	293-785	±.00035"
16" - 17" / 406.4 - 431.8mm	.0001" / 0.001mm	293-786	±.00035"
17" - 18" / 431.8 - 457.2mm	.0001" / 0.001mm	293-787	±.00035"
18" - 19" / 457.2 - 482.6mm	.0001" / 0.001mm	293-788	±.0004"
19" - 20" / 482.6 - 508.0mm	.0001" / 0.001mm	293-789	±.0004"

293-831-30

293-831-30 ±.0001"



Technical Data

Accuracy: Refer to the list of specifications. Resolution: .0001"/0.001mm or 0.001mm Flatness: .000024" / 0.6µm

Parallelism: .0002"/5µm for models up to 15"/375mm .00024"/6µm for models up to 19"/475mm

.00028"/ 7µm for models over 20"/ 500mm

Measuring faces: Carbide tipped

Display:

Battery: SR44 (2 pcs.), 938882

Battery life: Approx. 1.8 years under normal use

Preset, Zero-setting, Power ON/OFF, Data hold, Data output, inch/mm conversion (on inch/metric models only) Low voltage, Counting value composition error

Optional Accessories

SPC cable (40"/1m) Straight type SPC cable (80"/2m) Straight type 959149: 959150: **04AZB512**: SPC cable L-type (40"/1m) **04AZB513**: SPC cable L-type (80"/2m)



DIMENSIONS

28 18 L	28	55.3	Unit: mm 3 50 17
Range	L	a	Mass(g)
300 - 325mm/12-13"	353	187	2000
325 - 350mm/13-14"	378	199	2150
350 - 375mm/14-15"	403	212	2300
375 - 400mm/15-16"	428	224	2450
400 - 425mm/16-17"	453	236	2600
425 - 450mm/17-18"	478	248	2750
450 - 475mm/18-19"	503	261	2900
475 - 500mm/19-20"	528	273	3100

Digimatic Micrometer

FEATURES

- Provided only with zero set and in/mm (inch/metric models only) keys.
- A ratchet stop or friction thimble for a constant measuring force.
- Measurement readout with large characters on the LCD.
- No spindle clamp. No data output.
- Supplied in fitted plastic case.

DIMENSIONS AND MASS

SPECIFICATIONS

Ratchet stop

Metric	With rateriet stop		
Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	293-821-30	±2um



Inch/Metric With ratchet stop Resolution Order No. | Accuracy

.00005" / 0.001mm

Inch/Metric	With	friction	thimk	ole

0 - 1" / 0 - 25.4mm

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	293-832-30	±.0001"

0.18985

Unit: mm Friction thimble 146.1

MASS: 270g



Technical Data

Accuracy: Refer to the list of specifications Resolution: .00005"/0.001mm or 0.001mm Flatness:

.00003 /0.00111111 .000012" / 0.3μm .00008" / 2μm Parallelism: Measuring faces: Carbide tipped

Display:

Battery: SR44 (1 pc.), 938882

Battery life: Approx. 2.4 years under normal use

Origin-set, Automatic power on/off,

inch/mm conversion (on inch/metric models only)

Low voltage, Counting value composition error



MDH Micrometer

SERIES 293 — High-Accuracy Sub-Micron Digimatic Micrometer

Technical Data

Flatness: 0.3µm/.000012" 0.6µm/.000024 Parallelism: Measuring force: 7 to 9N

Lithium battery **05SAA217** (CR2032) x 1 Power supply: Battery life: Approx. two years when used under

normal conditions

Functions

Preset (ABS measurement system) Zero-setting (INC measurement system) Hold, Resolution switching, Function lock, On/off, Auto power off, Measurement data output, Error alarm

Optional Accessories

05CZA662: SPC cable with data switch (1m/40") 05CZA663: SPC cable with data switch (2m/80")





Function lock





FEATURES

- Enabling .000005"/ 0.1µm resolution measurement, this micrometer is ideal for customers who need to make highly accurate measurements with a handheld tool.
- A highly rigid frame and high-performance constant-force mechanism* enable more stable measurements, while the clicks emitted while the workpiece is being measured assure the operator that measurement is proceeding normally.
- * Patent pending in Japan, the United States of America, the European Union and China.
- Body heat transferred to the instrument is reduced by a (removable) heat shield, minimizing the error caused by thermal expansion of the frame when performing handheld measurements.
- The ABS (absolute) rotary sensor also eliminates the need to perform origin setting each time the power is turned on, letting you start measuring right away. With no possibility of overspeed errors, the High-Accuracy Digimatic Micrometer also delivers a high level of reliability.



SPECIFICATIONS

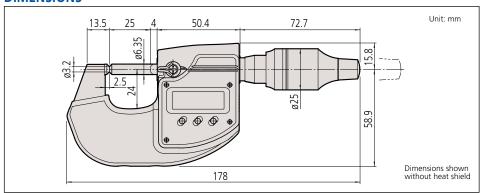
Metric

Order No.	Range	Resolution	Accuracy	Measuring surface	Mass
293-100	0 - 25mm	0.0001mm/ 0.0005mm (switchable)	±0.5µm	ø3.2mm	400g (440g w/Heat shield)

Inch/Metric

Order No.	Range	Resolution	Accuracy	Measuring surface	Mass
293-130	0 - 1" 0 - 25.4mm	.000005"/.00002" 0.0001mm/0.0005mm (switchable)	±.00002"	ø3.2mm	400g (440g w/Heat shield)

DIMENSIONS





QuantuMike

SERIES 293 — Coolant-proof Micrometer

FEATURES

- Faster measurement with 2mm per revolution instead of the standard 0.5mm.
- A patented ratchet thimble mechanism helps ensure repeatability.
- A function lock helps prevent error.
- IP-65 protection level.
- Certificate of inspection provided.
- With a standard bar except for 0-25mm/0-1" model.
- Supplied in fitted plastic case.



SPECIFICATIONS

Metric			
Range	Resolution	Order No.	Accuracy
0-25mm	0.001mm	293-140	1um
0-25mm	0.001mm	293-145*	1um
25-50mm	0.001mm	293-141	1um
25-50mm	0.001mm	293-146*	1um
50-75mm	0.001mm	293-142	2um
50-75mm	0.001mm	293-147*	2um
75-100mm	0.001mm	293-143	2um
75-100mm	0.001mm	293-148*	2um

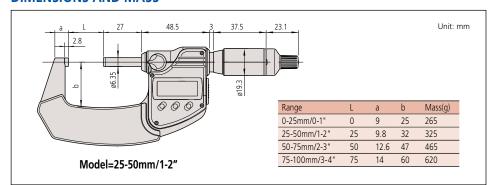
^{*} without SPC data output

Inch/Metric

Range	Resolution	Order No.	Accuracy
0-1"/0 - 25.4mm	.00005"/0.001mm	293-180	.00005"
0-1"/0 - 25.4mm	.00005"/0.001mm	293-185*	.00005"
1-2"/25.4 - 50.8mm	.00005"/0.001mm	293-181	.00005"
1-2"/25.4 - 50.8mm	.00005"/0.001mm	293-186*	.00005"
2-3"/50.8 - 76.2mm	.00005"/0.001mm	293-182	.0001"
2-3"/50.8 - 76.2mm	.00005"/0.001mm	293-187*	.0001"
3-4"/76.2 - 101.6mm	.00005"/0.001mm	293-183	.0001"
3-4"/76.2 - 101.6mm	.00005"/0.001mm	293-188*	.0001"

^{*} without SPC data output

DIMENSIONS AND MASS











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Certificate of inspection

Technical Data

Accuracy: Refer to the list of specifications Resolution: 0.001mm or .00005 "/0.001mm

Flatness: 0.3µm/.000012"

1µm/.00004" for models up to 50mm/2" Parallelism:

2µm/.00008" for models up to 100mm/4"

Measuring force: 7-12N Measuring faces: Carbide tipped LCD

Display:

Battery: SR44 (1 pc.), 938882

Battery life: Approx. 1.2 years under normal use Dust/Water protection level: IP65

Function

Origin-set, Zero / ABS, Hold, Function lock, Auto power on/off, Data output (output models),

inch/mm conversion (on inch/metric models only)

Low voltage, Counting value composition error Alarm:

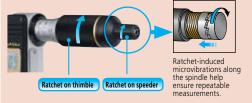
Optional Accessories

05CZA662: SPC cable with data switch (1m/40") **05CZA663**: SPC cable with data switch (2m/80")



516-529-26 Inspection Gage Block Set Rectangular Steel Gage Block 10 pc. blocks and 1 pc. optical parallel

516-319-26 Inspection Gage Block Set Rectangular Cera Gage Block 10 pc. blocks and 1 pc. optical parallel



Significant reduction in positioning time

