Surftest

Performs brilliantly in many situations such as in the quality control room, on the factory floor and on the production line.



SPECIFICATIONS

Model No. Standard drive unit Retractable drive unit Transverse tracing drive uni Model No. SJ-210 SJ-			
Model No. SJ-210 SJ-2	Model No.		
mm 178-560-01 178-560-02 178-562-01 178-562-02 178-562-01			
Order No. mm 178-560-01 178-560-02 178-562-01 178-562-02 178-564-01 178-564-01 178-564-01 178-564-01 178-565-0			
inch/mm 178-561-01 178-561-02 178-563-01 178-563-02 178-565-01 178-565-01	Order No. mm		
	inch/mm		
X-axis 16.0 mm 5.6 mm	X-axis		
Range 360 μm (-200 μm to +160 μm)	ranges Detector Range		
Range/Resolution 360 µm / 0.02 µm, 100 µm / 0.006 µm, 25 µm / 0.002 µm	Range/Resolution		
Measuring force / Stylus tip shape Depends on the Order No.: 0.75 mN/60°, 2 µmR (when the Order No. ends with "-01") 4 mN/90°, 5 µmR (when the Order No. ends with "-02")	Measuring force / Stylus tip shape Depends on the 4		
Applicable standards JIS1982/ JIS1994/ JIS2001/ ISO1997/ ANSI/ VDA	Applicable standards		
Assessed profile Primary profile, Roughness profile, DF profile, Roughness motif profile	Assessed profile		

Surftest SJ-310 SERIES 178 — On-site Surface Roughness Tester

SPECIFICATIONS

Mitutoyo

		Standard	drive unit	Retractable drive unit		Transverse tracing drive unit	
Model No.		SJ-310	SJ-310	SJ-310	SJ-310	SJ-310	SJ-310
		(0.75 mN type)	(4 mN type)	(0.75 mN type)	(4 mN type)	(0.75 mN type)	(4 mN type)
Ordor No	mm	178-570-01	178-570-02	178-572-01	178-572-02	178-574-01	178-574-02
UIUEI NO.	inch/mm	178-571-01	178-571-02	178-573-01	178-573-02	178-575-01	178-575-02
. X-	X-axis		16.0	mm		5.6 mm	
ranges	Range			360 μm (-200 μm to +160 μm)			
ranges	²⁵ Detector Range/Resolution 360 μm / 0.02 μm, 100 μm / 0.006 μm, 25 μm / 0.002 μm						
Measuring force / Stylus tip shape		Depends on the Order No.: 0.75 mN/60°, 2 µmR (when the Order No. ends with "-01") 4 mN/90°, 5 µmR (when the Order No. ends with "-02")					ds with " -01 ")
Applicable	standards	JIS1982/ JIS1994/ JIS2001/ ISO1997/ ANSI/ VDA					
Assessed p	orofile	Primary profile, Roughness profile, DF profile, Roughness motif profile, Waviness motif profile					ess motif profile

MeasurLink[®] ENABLED Data Management Software by Mitutoyo

Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details).

Compact type all-in-one surface roughness tester has evolved by meeting customer demands

- The color LCD can display not only calculation results and measurement conditions, but also surface roughness waveforms. In addition, bigger character size contributes to visibility.
- Built-in rechargeable battery allows measurement without a mains power supply connection.

SURFT	EST SJ-210 Series
	roughness waveforms right there on the color LCD screen. • Ingrave doing in laws, Data, and the Langest Data. • Programmed doing in the Color Data in the International Science Scie
	Mitutovo

Refer to the Surftest SJ-210 series Catalog (No. E4388) for more details.

MeasurLink[®] ENABLED Data Management Software by Mitutoyo

MeasurLink[®] **ENABLED** Data Management Software by Mitutoyo Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details).

Advanced handheld tester that is easy to operate and meets a variety of needs

- Equipped with a large, touch-screen color graphic LCD for intuitive operation and excellent ease of use.
- High-speed thermal printer (whose printing speed is approx. 1.5 times that of conventional models) is provided as standard. Allows landscape mode printing to match the display on the LCD.

SURF	EST SJ-310 Series
Catalog No. E15013	

Mitutoyo

Refer to the Surftest SJ-310 series Catalog (No. E15013) for more details.

Optional Accessories for Surftest SJ-210/310

Stylus profiles

5 µmR/90°

60.7

Stylus

φ

Remarks

diameter: ø4.5 mm

2 µmR/60° Minimum measurable hole

Detector Standard detectors

Stylus profiles Veasuring force

5 µmR/90° drive unit

10 µmR/90° Dedicated to the retractable de

φ9

Stylus profiles*

2 µmR/60°

5 µmR/60°

φ9

59 5

Stylus

178-296 0.75 mN 2 µmR/60° Dedicated to the

178-387 0.75 mN 2 µmR/60° Dedicated to the

178-386 4 mN 5 µmR/90° transverse drive unit

Remarks

standard/retractable

transverse tracing

Order No.

O

178-390 4 mN

178-391 4 mN

1.5

Order No.

Gear-tooth surface detectors

* Tip radius / Tip angles

16.4

4.8

178-388 0.75 mN

178-398 4 mN

Tip radius / Tip angles

12.6

Measuring

• Small hole detectors



Unit: mm



Deep groove detectors



Order No. Measuring

178-383 0.75 mN

Tip radius / Tip angles

178-392

force

4 mN

16.2

4.8

Optional Accessories for Drive Units

•Nosepiece for flat surfaces



V-type adapter

No. 12AAE644 • Transverse tracing type standard accessory. ·Dedicated to the transverse tracing drive unit.



• Extension rod (50 mm) (Note: Only one rod can be used.) No. 12AAA210 •Not applicable to upward measurement.

(

 Not available for the Extension rod 50 mm No. 12AAA210 transverse tracing drive unit

 Adapter for flat surface No. 12AAA219 Not available for the transverse tracing

Mounting spigot diameter is 8 mm No. 12AAA220 Mounting spigot diameter is 9.5 mm. No. 12AAA217 Standard accessory for the standard/retractable drive unit of the SJ-310 series Not available for the transverse tracing drive unit

Adapter for flat surface

No. 12AAA219



Standard accessory for the standard/retractable drive unit of the SJ-310 series •Not available for the transverse tracing drive unit Point-contact adapter • Transverse tracing type standard accessory. ·Dedicated to the transverse tracing drive



• Extension cable (1 m) No. 12BAA303 •For the connection between the calculation display unit and drive unit

Support feet set

Support feet set No. 12AAA216

No. 12AAE643

П

unit.



L-4

No. 12AAA216 · Standard accessory for the standard/retractable drive unit of the SJ-310 series •Not available for the transverse tracing drive unit Adjustment range is 28 mm from bottom face.

Height gage adapter



Height gage ada No. 12AAA222



drive unit

 Magnetic stand adapter No. 12AAA221









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Performs brilliantly in many situations such as in the quality control room, on the factory floor and on the production line.

Surftest SJ-410 SERIES 178 — Compact Surface Roughness Tester



Data Management Software by Mitutoyo



SPECIFICATIONS

Model No.		SJ-4	411	SJ-412			
Order No	mm	178-580-01	178-580-02	178-582-01	178-582-02		
Order NO.	inch/mm	178-581-01	178-581-02	178-583-01	178-583-02		
Measuring	X-axis	25	mm	50 mm			
range	Z-axis (detector)	800 μm, 80 μm, 8 μm Up to 2,400 μm when using an optional stylus.					
	Resolution	0.01 µm (800 µm range), 0.001 µm (80 µm range), 0.0001 µm (8 µm range)					
	Stylus tip shape (Angle/Radius)	60°/2 µm	90°/5 µm	60°/2 µm	90°/5 μm		
Detector	Measuring force	0.75 mN	4 mN	0.75 mN	4 mN		
	Radius of skid curvature	40 mm					
	Measuring methods	Skidless / Skidded (switchable)					
Applicable standards		JIS1982 / JIS1994 / JIS2001 / ISO1997 / ANSI / VDA					

Surftest SJ-500/SV-2100 SERIES 178 — Dedicated Control Unit Type Surface Roughness Tester

MeasurLink[®] ENABLED

Data Management Software by Mitutoyo



MeasurLink[®] ENABLED Data Management Software by Mitutoyo



Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details).



Dramatic improvement on compact type surface roughness testers

- Equipped with a large, touch-screen color graphic LCD to achieve both intuitive operation and high operability
- Skidded and skidless measurement are switchable to perform optimum evaluation according to the measurement setup.
- Achieves the performance of a desktop type surface roughness tester in combination with the simplified stand and associated optional accessories.



Mitutoyo

Refer to the Surftest SJ-410 series Catalog (No. E15014) for more details.



Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details).



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

High precision and high performance type surface roughness tester with a dedicated control unit, offering a userfriendly display and simple operation.

- Equipped with a 7.5-inch, color TFT LCD, large color icons and touch panel controls, the display unit is easy to read and simple to operate.
- A built-in joystick on the control unit allows quick and easy positioning. The manual adjustment knob allows fine positioning of a small stylus for measuring small holes.
- In addition to the roughness parameters compliant with ISO/JIS/ANSI/VDA surface roughness standards, contour analysis is also available.

SPECIFICATIONS

Model No.		SJ-500 SV-2100M4 SV-2100S4 SV-2100H4 SV-210				SV-2100W4		
Stand type (Optional) Manual stand					Motorized stand			
Measuring	Z1-axis (detector)	800 µm, 80 µm, 8 µm						
range	X-axis	50 mm	100 mm					
Resolution	X-axis	0.05 µm						
	Z1-axis (detector)	0.01 µm (800 µm), 0.001 µm (80 µm), 0.0001 µm (8 µm)						
	Z2-axis (column)	—	— 1 µm					
Assessed profile		Primary profile, Roughness profile, Waviness profile, DF profile, Roughness motif profile, Waviness motif profile						

Note: While the appearance of the natural stone measuring table varies according to the source, the high stability for which this material is known can always be relied upon. Note: Stand for **SJ-500** is optional.

L-5



MeasurLink' ENABLED

Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details).



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

Highly precise, high-performance surface roughness testers that use the advantages of sophisticated analysis software. The SJ-500P is a stand-alone instrument whereas the SV-2100M4 is a benchtop machine incorporating a precision column with manual drive.

• Simple setup for surface roughness measuring conditions.

A simple input function is used to calculate according to ISO/JIS roughness standard drawing instruction symbols. Complicated measuring settings can easily be entered by selecting a drawing instruction symbol from the surface roughness menu.



Mitutoyo

Refer to the Surftest SJ-500/SV-2100 Catalog (No. E15006) for more details.



Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details). SUILINK' ENABLED



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

Equipped to measure a variety of parameters.

A precision surface roughness tester supported by a wide range of optional accessories for a versatile benchtop surface-analysis solution.

- The analysis unit is equipped with the FORMTRÁCEPAK Surface Roughness / Contour analysis program.
- Detectors with standard or low measuring force, 4 mN or 0.75 mN, are selectable whether the instrument is equipped with the inclinable drive unit or not.
- The 700 mm Z2-axis (column) range models are new to the lineup.

Surftest SJ-500P/SV-2100M4 **Data Processing Unit (PC) Surface Roughness Testers**





SV-2100M4 (PC type)

FORMTRACEPAK: Best-selling Surface Roughness Analysis Program

Best-selling dedicated software for surface roughness measurement and analysis. Features a flexible printer format and creation of an original inspection certificate.

SPECIFICATIONS

Type of data	processing unit	PC type				
Model No.		SJ-500P	SV-2100M4			
Elevating shaft mechanism of stand		*1	Manual operation only			
Measuring	X-axis	50 mm	100 mm			
range	Z1-axis (detector)	800 μm/80 μm/8 μm				
Z2-axis (column) travel range		—	350 mm			
X-axis		0.05 µm				
Resolution	Z1-axis (detector)	0.01 µm (800 µm), 0.001 µm (80 µm), 0.0001 µm (8 µm)				
	Z2-axis (column)	—	—			
Drive speed	X-axis	0 to 20 mm/s or manual operation	0 to 40 mm/s or manual operation			
Drive speed	Z2-axis (column)	—	Manual operation only			
Applicable standards		JIS1982/ JIS1994/ JIS2001/ ISO1997/ ANSI/ VDA				
Assessed profile		Primary profile, Roughness profile, Waviness profile, Filtered waviness profile, Rolling circle waviness profile, Rolling circle center line waviness profile, Envelope residual profile, DIN4776 profile, Roughness motif profile, Waviness motif profile				

*1: The simplified stand or manual column stand is available as an optional accessory. Note: While the appearance of the natural stone measuring table varies according to the source, the high stability for which this material is known can always be relied upon.

Surftest SV-3200 SERIES 178 — Desktop Surface

MeasurLink[®] ENABLED

Data Management Software by Mitutoyo



SV-3200L4 (with options)

SPECIFICATIONS

Model No.		SV-3200S4	SV-3200H4	SV-3200W4	SV-3200L4	SV-3200S8	SV-3200H8	SV-3200W8	SV-3200L8	
Measuring range/ Resolution	Z1-axis		800 µm/0.01 µm, 80 µm/0.001 µm, 8 µm/0.0001 µm							
	Travel range of the X-axis	100 mm				200 mm				
	X-axis straightness	(0.05+0.001L)µm (L: Measuring length (mm))				(0.1+0.002L)µm (L: Measuring length (mm))				
Drive unit	Measuring speed	0.02, 0.05, 0.1, 0.2, 0.5,				I.0, 2.0, 5.0, 10, 20 mm/s				
Drive unit	Z2-axis (column)	300 mm (motorized)*1	500 mm (n	notorized)*1	700 mm (motorized)*1	300 mm (motorized)*1	500 mm (m	notorized)*1	700 mm (motorized)*1	
Assessed profile		Primary profile, Ro	oughness profile, V Envelop	Vaviness profile, Filt pe residual profile, I	tered waviness prof DIN4776 profile, Ro	ile, Rolling circle w bughness motif pro	aviness profile, Rol file, Waviness moti	ling circle center lir f profile	ne waviness profile	
			*1. Manual operation	on is also available						

Note: While the appearance of the natural stone measuring table varies according to the source, the high stability for which this material is known can always be relied upon



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Performs brilliantly in many situations such as in the quality control room, on the factory floor and on the production line.

Surftest Extreme SV-3000CNC/SV-M3000CNC SERIES 178 — CNC Surface Roughness Testers



SV-M3000CNC

(Surface Roughness Tester with built-in Y-axis.)

(The photo represents a special specification model.)

MeasurLink[®] ENABLED

Data Management Software by Mitutoyo

SV-3000CNC (Inclinable drive unit + Y-axis table)

SPECIFICATIONS



Note: While the appearance of the natural stone measuring table varies according to the source, the high stability for which this material is known can always be relied upon.

SPECIFICATIONS

Model No.		SV-M3000CNC			
	Measuring rang	e	200 mm		
X1 axis (drive unit)	Resolution		0.05 μm		
	Scale type		Reflective-type linear encoder		
	Drive speed	CNC mode	Max. 200 mm/s		
	Drive speed	Joystick mode	0 to 50 mm/s		
	Measuring spee	d	0.02, 0.05, 0.1, 0.2, 0.5, 1.0, 2.0 mm/	S	
	Straightness	When using a standard detector	0.5 µm/200 mm		
	Measuring rang	e	500 mm		
	Resolution		0.05 μm		
Z2-axis (column)	Scale type		Reflective-type linear encoder		
	Drive speed	CNC mode	Max. 200 mm/s		
	Drive speed	Joystick mode	0 to 50 mm/s		
	Measuring rang	e	800 mm		
	Resolution		0.05 μm		
	Scale type		Reflective-type linear encoder		
Vavic	Drive speed	CNC mode	Max. 200 mm/s		
1-0112	Drive speed	Joystick mode	0 to 50 mm/s		
	Measuring spee	d	0.02 to 2 mm/s		
	Straightnoss	When using a standard detector holder	Narrow range 0.5 µm/50 mm		
	Straightness	when using a standard detector holder	Wide range 2 µm/800 mm		
	Base size (width	xdepth)	600×1500 mm		
Base unit	Base material		Steel		
	Maximum table	loading	300 kg		

L-7



Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details).



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

- The X1-, Y- and Z2-axes have a maximum drive speed of 200 mm/s.
 This parmits high speed positioning that co
- This permits high-speed positioning that can potentially result in a large increase in the throughput of multiple-profile / multipleworkpiece measurement tasks.
- Capable of inclined plane measurement through 2 axis simultaneous control in X and Y.
- For models equipped with the α axis, it is possible to perform continuous measurement over horizontal and inclined surfaces by power-tilting the drive unit.
- It is possible to expand the measuring range for multiple workpieces through positioning in Y.
- All connecting cables are incorporated into the measuring instrument to eliminate any inconvenience from loose cables during measurement.
- Since the Z1-axis detector incorporates an anti-collision safety device, the machine will automatically stop if the detector touches a workpiece or jig.
- Surftest Extreme **SV-M3000CNC** (CNC Surface Roughness Tester with the movable Y-axis table) that handles measurement of large/heavy workpieces, such as engine blocks or crankshafts, is also available.
- Optional external control function (Ext I/O) through bidirectional communication (RS-232C) with the PLC (programmable logic controller) is available.



Refer to the CNC Form Measuring Instrument Series Catalog (No. E4284) for more details.



• FORMTRACEPAK functions offer total support for controlling the measurement system, surface roughness analysis, contour analysis, contour tolerancing, and inspection report creation.

Surface Roughness/Contour Analysis Program FORMTRACEPAK



Contour measurement

• Contour analysis

A wide variety of commands, which form the basic elements for analysis, are provided, including those for points (10 types), lines (6 types) and circles (6 types). A rich set of commands that combine these elements to calculate angles, pitches and distances as well as performing contour tolerancing and design value generation are also provided as standard features. These functions, combined with the function that enables you to customize the calculation command buttons by hiding less frequently used commands, help you to tailor the window according to the user's environment.



- Contour-tolerancing as a standard feature
- Design value generation
- Data combination
- Simple pitch calculation

Surface roughness measurement

• Surface roughness analysis

FORMTRACEPAK can perform surface roughness analyses that conform to various standards such as ISO, JIS, ANSI and VDA.

For comparing measurement values with the tolerance limits, you can use the 16% rule or the maximum value rule.

Furthermore, since FORMTRACEPAK comes with parameter calculation functions as well as a rich set of graphic analysis functions, it can be widely utilized for everything from routine quality control to R&D applications. It also includes many other functions such as the function for eliminating (compensating) shapes, such as slopes and radiused surfaces (R-surfaces), and data deletion.



- Micro contour analysis
- Simple input using drawing symbols
- Multiple-point measurement
- Analysis using multiple-point measurements
- Reference length dialog box
- Analysis condition modification with preview
- R-surface automatic measurement

