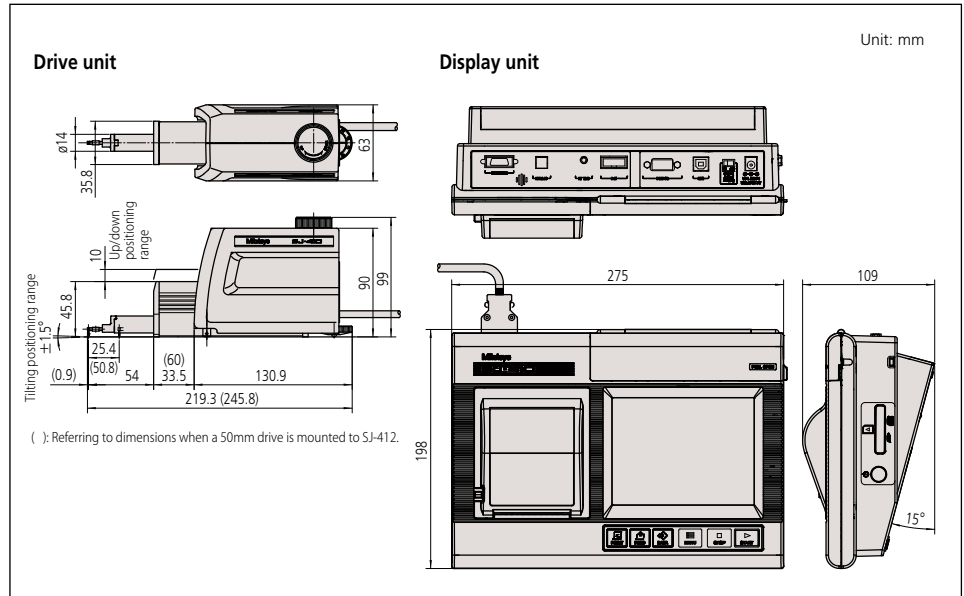


Surftest SJ-410

SERIES 178 — Portable Surface Roughness Tester

DIMENSIONS



Free Communication Software SJ-Tools

Output software based on Microsoft-Excel* for controlling the devices and reproducing and storing the measurement data.

*Microsoft-Excel is not included in the scope of supply.

Complete with exclusive accessories.

- Measurement device control
- Definition of measurement variables
- Graphic representation of the profile
- Storage of measurement results
- Documentation of measurement results

Optional cables (Required for software communication)

- 12AAD510:** USB PC connecting cable (USB cable)
- 12AAA882:** RS-232C connecting cable

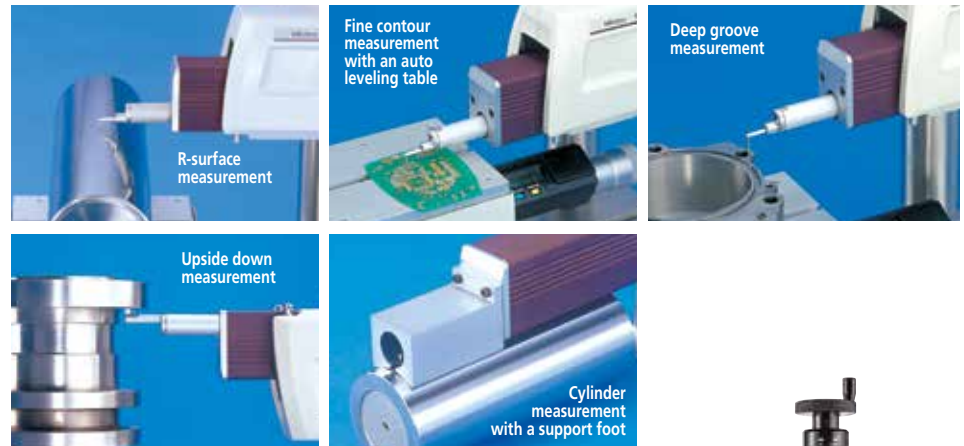
Optional Accessories

- 178-611:** Step gage (2 μ m, 10 μ m)
- 178-612:** Step gage (2 μ m, 10 μ m, 79 μ m, 394 μ m)
- 178-610:** Step gage (step: 1 μ m, 2 μ m, 5 μ m, 10 μ m)
- 12AAM556:** Height/tilt adjustment unit for SJ-410
- 178-039:** Manual column stand (granite base) (vertical travel: 250mm)
- 178-010:** Auto-set unit for **178-039**
- 178-020:** X axis adjustment unit for **178-039**
- 178-030:** Tilting adjustment unit (Inclination adjustment unit) for **178-039**
- 12AAB358:** Cylindrical surface adapter (workpiece dia.: 15 - 60mm)
- 178-016:** Leveling table (tilting: $\pm 1.5^\circ$, max. loading: 15kg)
- 178-048:** Leveling table with D.A.T function (mm) (tilting: $\pm 1.5^\circ$, max. loading: 15kg)
- 178-058:** Leveling table with D.A.T function (inch) (tilting: $\pm 1.5^\circ$, max. loading: 15kg)
- 178-043-1:** XY leveling table (25 x 25mm) (tilting: $\pm 1.5^\circ$, max. loading: 15kg, swiveling: $\pm 3^\circ$)
- 178-053-1:** XY leveling table (1" x 1") (tilting: $\pm 1.5^\circ$, max. loading: 15kg, swiveling: $\pm 3^\circ$)
- 178-042-1:** Digital XY leveling table (25 x 25mm) (tilting: $\pm 1.5^\circ$, max. loading: 15kg, swiveling: $\pm 3^\circ$)
- 178-052-1:** Digital XY leveling table (1" x 1") (tilting: $\pm 1.5^\circ$, max. loading: 15kg, swiveling: $\pm 3^\circ$)
- 178-049:** Digital XY leveling table (25 x 25mm) (max. loading: 15kg)
- 178-059:** Digimatic XY leveling table (1" x 1") (max. loading: 15kg)
- 178-019:** Precision vise for XY leveling table (jaw opening: 36mm)
- 998291:** Precision V-block for XY leveling table (workpiece dia.: 1 - 160mm)
- 12AAA841:** Memory card (8GB)
- 965014:** SPC cable (2m)
- 264-012-10:** Input tool (USB type)
- 264-504-5A:** DP-1VR
- : Detectors, Styli, and nosepieces (See pg. J-22/23.)

Consumables

- 12AAN040:** LCD protective sheet (10 sheets/set)
- 12AAA876:** Durable printer paper (25m, 5 rolls/set)
- 270732:** Printer paper (5 pack)
- 12AAN046:** Replacement battery
- 12AAJ088:** Footswitch

MEASUREMENT APPLICATIONS



Carrying case is a standard accessory.



Manual column stand
178-039

With optional accessories.

- 178-010:** Auto-set unit
- 178-020:** X-axis adjustment unit
- 178-030:** Tilting adjustment unit

Surftest SJ-410

SERIES 178 — Portable Surface Roughness Tester

FEATURES

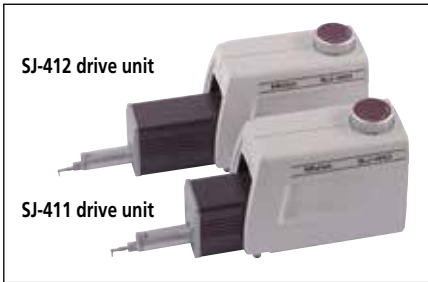
- Both skidded and skidless measurement are possible with this series. Equipped with 46 roughness parameters that conform to the latest ISO, DIN, ANSI, and JIS standards.
- A wide-range, high-resolution detector and a drive unit provide superior high-accuracy measurement in its class.

Detector

Measuring range: 800µm
Resolution: 0.000125µm (at 8µm range)

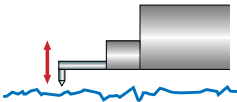
Drive unit

Straightness/traverse length
SJ-411: 0.3µm/25mm
SJ-412: 0.5µm/50mm



- A skidless detector and a curved surface compensation function provide efficient evaluation of cylinder surface roughness.

Skidless measurement



Surftest SJ-411

SPECIFICATIONS

Model No.	SJ-411	SJ-411	SJ-412	SJ-412
Order No. (inch/mm)	178-581-01A	178-581-02A	178-583-01A	178-583-02A
Detector measuring force	0.75mN	4mN	0.75mN	4mN
Evaluation range	25mm	25mm	50mm	50mm
Stylus tip	Tip angle	60°	90°	60°
	Tip radius	2µm	5µm	2µm

- Ultra-fine steps, straightness and waviness can be measured by using the skidless measurement function.
- The handheld data processing unit and the 5.7-inch color graphic LCD touch-panel provides superior readability and operability. The LCD also includes a backlight for improved visibility in dark environments.
- The excellent user interface provides intuitive and easy-to-understand operability.
- Measured data can be output to a PC with optional RS-232C or USB cable.
- Digital filter function for non-distorted roughness profiles.
- Go/no-go judgment function.
- Auto-calibration function.
- The display interface supports 16 languages, which can be freely switched.
- Simplified contour analysis function supports the four types of measurement: step, level change, area and coordinate difference.
- Access to each feature can be password-protected, which prevents unintended operations and allows you to protect your settings.
- The optional attachments for mounting on a column stand significantly increase the operability.

Technical Data: X axis (drive unit)

Measuring range: 1" (25mm) (SJ-411), 2" (50mm) (SJ-412)
Measuring speed: .002, .004, .008, .02, .04"/s
(0.05, 0.1, 0.5, 1.0mm/s)
Return speed: .02, .04, .08"/s (0.5, 1.0, 2.0mm/s)
Traversing direction: Backward
Traverse linearity: 12 µin / 1" (0.3µm/25mm) (SJ-411),
20 µin / 2" (0.5µm/50mm) (SJ-412)
Positioning: ±1.5° (tilting), 10mm (up/down)
Detector Range / resolution: 800µm / 0.0125µm, 80µm /
0.00125µm, 8µm / 0.000125µm (up to
2400µm with an optional stylus)
Measurement method: Skidless / skidded
Measuring force: 0.75mN (4mN)
Stylus tip: Diamond, 60° / 2µmR
(90° / 5µmR)
Skid radius of curvature: 40mm
Type: Differential inductance
Power supply: Via AC adapter / rechargeable battery
Battery life: Max. app. 1000 measurements (w/o printing)
Recharge time: 4 hours Data output Via USB interface /
RS-232C interface / SPC output
Storage: Internal memory: Measurement condition (10 sets)
Memory card (Option): 500 measurement conditions, 10,000
measured profiles, 500 display images, Text file (Measurement
conditions / Measured profile / Assessed profile / Bearing area
curve / Amplitude distribution curve), 500 statistical data, etc.
Dimensions (WxDxH)
Display unit: 10.8x4.3x7.8" (275x109 x198mm)
Height-tilt adjustment unit: 5.16x2.48x3.9" (131x63x99mm)
Drive unit: 5.04x1.41x1.83" (128x36x47mm) (SJ-411),
6.1x1.41x1.83" (155x36x47mm) (SJ-412)
Mass Control unit: Approx. 3.75lb (1.7kg)
Height-tilt adjustment unit: Approx. .9lb (0.4kg)
Drive unit: 1.3lb(0.6kg) (SJ-411), 1.5lb(0.7kg)(SJ-412)

Evaluation Capability

Applicable standards: JIS'82, JIS'94, JIS'01, ISO'97, ANSI, VDA, Free
Assessed profiles: P (primary profile), R (roughness profile),
DF (DF profile), W (filtered waviness profile),
roughness motif, waviness motif
Evaluation parameters: Ra, Rq, Rz, Ry, Rp, Rv, Rt, R3z, Rsk, Rku,
Rc, Rpc, Rsm, Rmax(VDA, ANSI), Rz1max(ISO'97), S, HSC,
RzJIS(JIS'01), Rppi, RDa, RDaq, Rlr, Rmr, Rmr(c), Rdc, Rk, Rpk, Rvk,
Mr1, Mr2, A1, A2, Vo, λq, Lo, Rpm, tp(ANSI), Htp(ANSI), R, Rx, AR,
W, AW, Wx, Wte
Analysis graphs: Bearing Area Curve (BAC),
Amplitude Distribution Curve (ADC)
2CR, PC75, Gaussian
Digital filter: λc: .003, .01, .03, .1, .3"
(0.08, 0.25, 0.8, 2.5, 8mm)
λs: 100, 320, 1000µin
(2.5, 8, 25µm) (Availability of switching
depends of the selected standard.)
Sampling length: 0.08, 0.25, 0.8, 2.5, 8, 25*mm; or
arbitrary length in range 0.1 to 25mm
(0.1 to 50mm: SJ-412) in 0.01mm
increments
Number of sampling lengths: 1, 2, 3, ~20 (limited by traverse range)
Printer: Thermal type
Printing width: 48mm (paper width: 58mm)
Recording magnification
Vertical magnification: 10X to 100,000X, Auto
Horizontal magnification: 1X to 1,000X, Auto
Function
Customize: Selection of display/evaluation parameter
Data compensation: R-surface, Tilt compensation
Ruler function: Step, level change, area and coordinate
difference
D.A.T. function: Helps to level workpiece prior to skidless
measurement displacement detection mode
enables the stylus displacement to be
input while the drive unit is stopped.
Statistical processing: Max. value, Min. value, Mean value,
Standard deviation (s), Pass ratio, Histogram
GO/NG judgement: Maximum value rule, 16% rule, average
value rule, standard deviation (1σ, 2σ, 3σ)
Calibration: Auto-calibration with the entry of numerical
value /average calibration with multiple
measurement (Max. 12 times) is available.
Power saving function: Auto-sleep-function, Auto light-off of
Backlight by ECO mode.

* Only for SJ-412