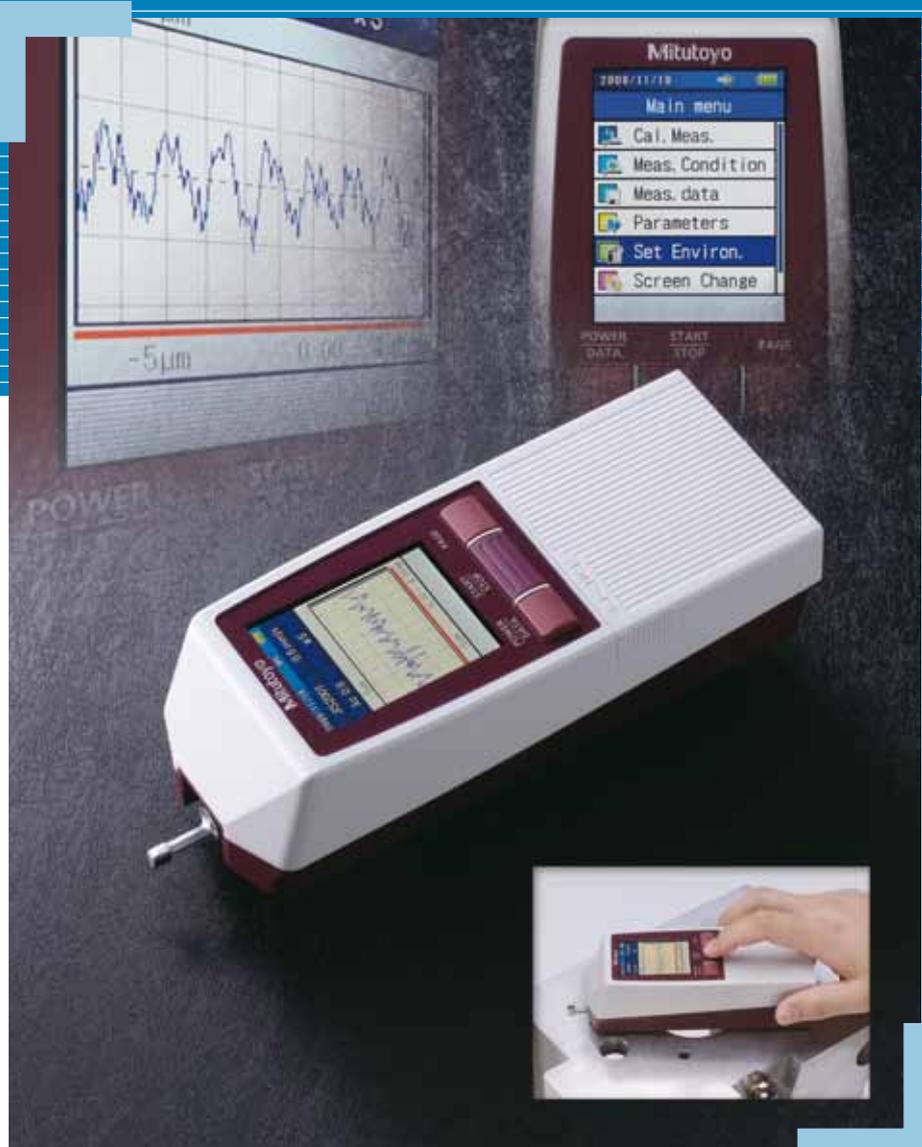


SURFTEST SJ-210

PRE1344(2)



Portable skid system for measuring surface roughness in the production environment

The concept

Easy to use

2.4-inch color graphic LCD with backlight

The color LCD provides excellent readability and an intuitive display that's easy to negotiate. The LCD also includes a backlight for improved visibility in dark environments.

Simple key layout

The Surfctest SJ-210 can be operated easily using the keys on the front of the unit and under the sliding cover.

Highly functional

Advanced data storage capabilities

Up to 10 measurement conditions and one measured profile can be stored in the internal memory.

MicroSD-Card

An optional memory card can be used as an extended memory to store large quantities of measured profiles and conditions.

Password protection

Access to each feature can be password-protected, which prevents unintended operations and allows you to protect your settings.

Extensive analysis and display features

Complies with many industry standards

The Surfctest SJ-210 complies with the following standards: JIS (JIS-B0601-2001, JIS-B0601-1994, JIS B0601-1982), VDA, ISO-1997, and ANSI.

Displays assessed profiles and graphical data

In addition to calculation results, the Surfctest SJ-210 can display sectional calculation results and assessed profiles, load curves, and amplitude distribution curves.



SURETEST SJ-210

SURFTEST SJ-210

Display

- Color graphic LCD
- Large, 2.4-inch LCD
- Backlight

Operation

- Keys to change settings are located in the area under the sliding cover
- The arrow keys support intuitive navigation
- Important functions are directly accessible

Drive unit

The drive unit can be separated from the display unit by using a cable, allowing more flexible measurement. The driver can be separated and reattached in one simple step. There are many different kinds of drivers and detectors available.

Languages

The display interface supports 16 languages.



Rechargeable NiMH Battery

The built-in high-capacity battery excels in a short charging time and enables approx. 1000 measurements.

Connections

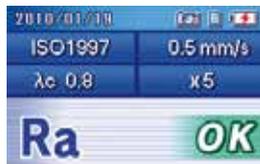
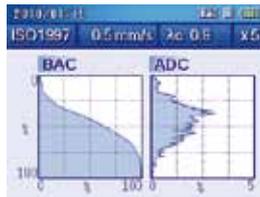
- Data can be transferred to and from a computer via the high-speed USB interface.
- Large quantities of data can be stored on the optional MicroSD card

Powerful

Optimal functionality and versatility

The highly visible 2.4-inch color graphic LCD with backlight lets you see the screen easily even in dark environments.

- Pass/fail results are displayed in color.
- Assessed profiles, load curves, and amplitude distribution curves can be displayed in addition to calculation results. Assessed profiles can also be zoomed up and down.
- The display mode can be freely switched between portrait and landscape.
- Calculation results are displayed in large characters.



Advanced data storage capabilities

- Up to 10 measurement conditions can be stored in the internal memory. Conditions can be quickly read according to the workpiece.
- An optional memory card can be used as an extended memory to store large quantities of measured profiles and conditions.

Many interface options:

A USB interface is equipped as standard. The SurfTest SJ-210 also provides an RS-232C output, Digimatic output, printer output, and footswitch input.



Mitutoyo

Advanced features

- The multilingual display interface supports 16 languages, which can be freely switched.
- Access to features can be password-protected.
- A quick-charge, long-life battery is provided.

Easy setting

Displayed settings can be easily changed by pressing the left and right arrow keys under the sliding cover. For example, these keys can be used to switch the cut-off value (λ_c) and the number of sampling lengths (N) on the measurement screen.



Setting parameters and recalculating results

The required parameters can be selected from the screen. The sub-menu also lets you specify detailed settings such as the tolerance. After completing measurement, the parameters can be changed and calculation can be executed again* using the new parameters.

Parameter		
Norm	ISO1997	
Profil	R	
Ra	Rq	Rz
Rp	Rv	Rsk
Rku	Rc	RSm
RΔq	Rmr	Rmr (c)
Rδc	Rt	Rz1max
Rk	Rpk	Rvk

*May not be possible, depending on the measurement conditions.

Drive Units

Excellent flexibility

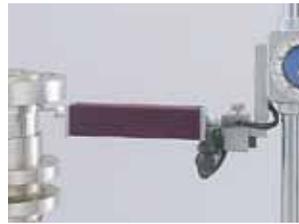
Capable of performing measurements in any orientation, including vertical and upside-down. Optional accessories, such as a height gage adapter, allow measurements to be performed efficiently in various situations and setups.



Compact system with inserted driver



Driver separate



Use in height measurement device



Use for traverse measurement device

Driver usable as insert or separately

The driver can be separated from the display unit and reattached in one easy step.



Different drivers expand the range of application



Standard drive unit
Popular standard drive unit



Retractable drive unit
The detector is in the retracted position at rest so it is immune from damage when inserted into a feature whose profile cannot be easily seen, such as a blind hole, etc.



Transverse tracing drive unit
Best suited for measurement of narrow, shrouded workpiece features such as crankshaft, EDM parts, etc.

Carrying case

A convenient carrying case is supplied as standard for protecting the instrument in the field.



Specifications

Model No.	(Type of detector)	Standard drive unit type		Retractable drive unit type		Transverse tracing drive unit type	
		SJ-210 (0.75mN type)	SJ-210 (4mN type)	SJ-210 (0.75mN type)	SJ-210 (4mN type)	SJ-210 (0.75mN type)	SJ-210 (4mN type)
Order No.	mm	178-560-01	178-560-02	178-562-01	178-562-02	178-564-01	178-564-02
	inch/mm	178-561-01	178-561-02	178-563-01	178-563-02	178-565-01	178-565-02
Measuring range	X axis	17.5 mm				5.6 mm	
	Z axis (Detector)	360 μm (-200 μm to +160 μm)					
	Range / Resolution	360 μm / 0.02 μm, 100 μm / 0.006 μm, 25 μm / 0.002 μm					
Measuring speed		Measuring: 0.25 mm/s, 0.5 mm/s, 0.75 mm/s Returning: 1 mm/s					
Measuring force / Stylus tip		0.75mN type: 0.75mN / 2 μmR 60°, 4 mN type: 4mN / 5μmR 90°					
Skid force		Less than 400mN					
Applicable standards		JIS '82 / JIS '94 / JIS '01 / ISO '97 / ANSI / VDA					
Assessed profiles		Primary profile / Roughness profile / DF profile / Roughness profile-Motif					
Evaluation parameters		Ra, Rc, Ry, Rz, Rq, Rt, Rmax, Rp, Rv, R3z, Rsk, Rku, Rc, Rpc, Rsm, Rz1max, S, HSC, RzJIS, Rppi, RΔa, RΔq, Rlr, Rmr, Rmr(c), Rdc, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Vo, Rpm, tp, Htp, R, Rx, AR, Possible Customize					
Analysis graphs		Bearing area curve / Amplitude distribution curve					
Filters		Gaussian, 2CR75, PC75					
Cut off length	λ_c	0.08, 0.25, 0.8, 2.5 mm					
	λ_s	2.5, 8 μm					
Sampling length		0.08, 0.25, 0.8, 2.5 mm					
Number of Sampling lengths (xn)		x1, x2, x3, x4, x5, x6, x7, x8, x9, x10, arbitrary length (0.3 to 16.0mm: 0.01mm interval)				x1, x2, x3, x4, x5, x6, x7, x8, x9, x10, arbitrary length (0.3 to 5.6 mm: 0.01 mm interval)	
LCD dimensions		36.7 x 48.9 mm					
Display languages		Japanese, English, German, French, Italian, Spanish, Portuguese, Korean, Traditional Chinese, Simplified Chinese, Czech, Polish, Hungarian Turkish, Swedish, Dutch					
Calculation result display		Vertical display: 1 parameter / 3 parameter / trace to measurements Horizontal display: 1 parameter / 4 parameter / trace to measurements (Horizontal display is invertable)					
Printing function (Dedicated printer is required separately.)		Measurement conditions / Calculation results / Calculation results for each sampling length / Assessed profile / Bearing area curve / Amplitude distribution curve / Environment setting information					
External I/O		USB I/F, Digimatic Output, Printer Output, RS-232C I/F, Foot SW I/F					
Functions	Customization	Desired parameters can be selected for calculation and display					
	GO/NG judgment	By max value / 16 % / Standard deviation					
	Storage of measurement condition	Save the conditions at power OFF					
	Storage	Internal memory: Measurement condition (10 sets), Measured profile (1 set) Memory card (Option): 500 measurement conditions, 10000 measured profiles, 500 display images Text file (Measurement conditions / Measured profile / Assessed profile / Bearing area curve / Amplitude distribution curve)					
	Calibration	Auto-calibration with the entry of numerical value / Average calibration with multiple measurement (Max.5 times) is available					
Power-saving function		Auto-sleep off function (10-600sec)					
Power supply		Two-way power supply: battery (rechargeable Ni-MH battery) and AC adapter *Charging time: about 4 hours (may vary due to ambient temperature) *Endurance: about 1000 measurements (differs slightly due to use conditions / environment)					
Size (WxDxH)	Display unit	52.1 x 65.8 x 160 mm					
	Drive unit	115 x 23 x 26 mm					
Mass		About 500g (Display unit + Drive unit + Standard detector)					

Scope of delivery SurfTest SJ-210 Standard- and R-Vorschub

- Display unit
- Standard or R-driver
- Standard stylus tip
- Connecting cable for detached use of driver
- Calibration standard 178-601
- Plate for calibration standard
- Carrying bag
- Protective sheets (for display)
- AC adapter
- Operating instructions
- Quick reference

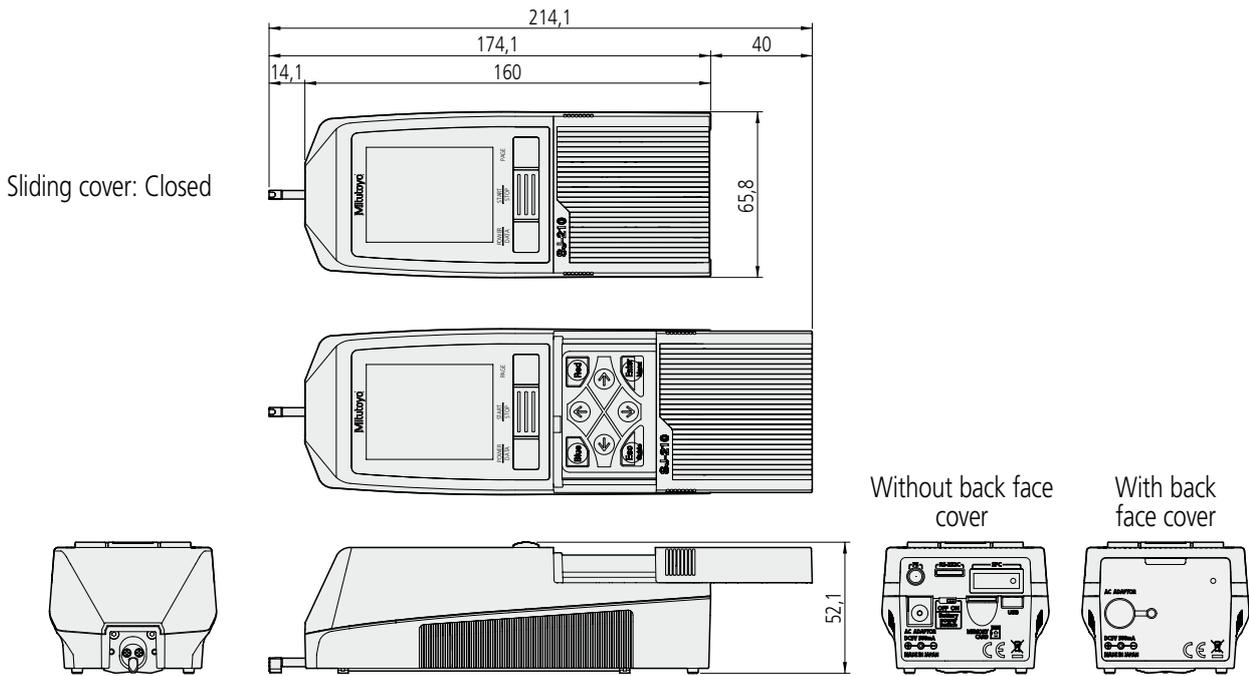
Scope of delivery SurfTest SJ-210 S-Vorschub

- Display unit
- S-driver
- Standard stylus tip for S-driver
- Connecting cable for detached use of driver
- Calibration standard 178-605
- Plate for calibration standard
- Carrying bag
- Protective sheets (for display)
- V-adapter
- Point-contact adapter
- AC adapter
- Operating instructions
- Quick reference

Dimensions

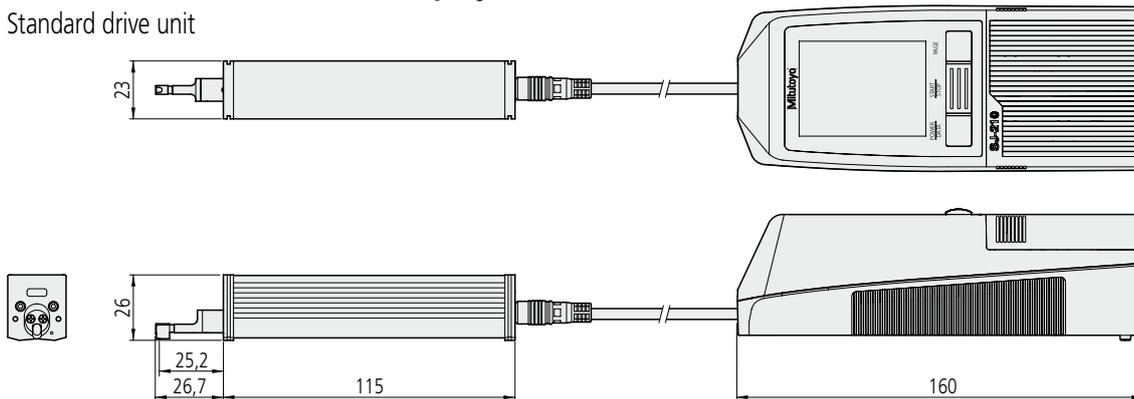
Display unit

Drive unit stored inside display unit

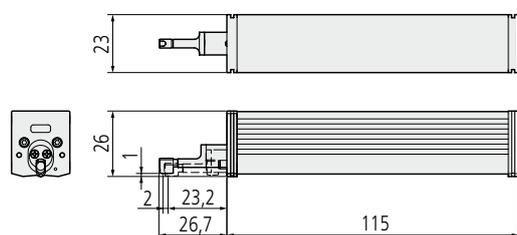


Drive unit not stored inside display unit

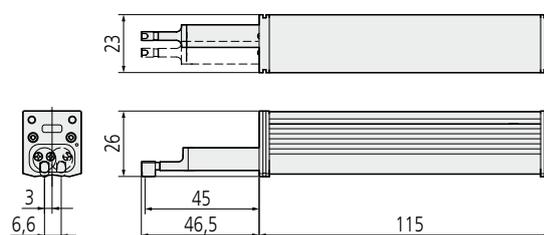
Standard drive unit



Retractable drive unit

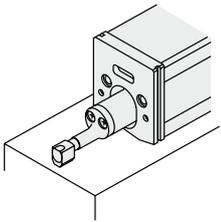


Transverse tracing drive unit



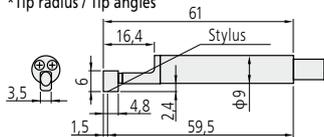
Detectors

Standard detectors

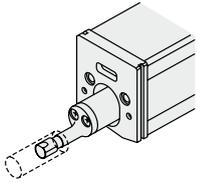


Order No.	Measuring force	Stylus profiles*	Remarks column
178-296	0.75mN	2 μm/60°	Dedicated to the standard/retractable drive unit
178-390	4 mN	5 μm/90°	
178-387	0.75mN	2 μm/60°	Dedicated to the transverse tracing drive unit
178-386	4 mN	5 μm/90°	
178-391	4 mN	10 μm/90°	Dedicated to the standard/retractable drive unit

*Tip radius / Tip angles

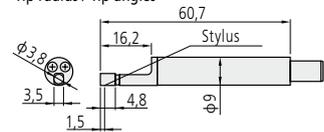


Small hole detectors

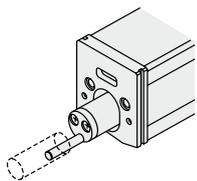


Order No.	Measuring force	Stylus profiles*	Remarks column
178-383	0.75mN	2 μm/60°	Minimum measurable hole diameter: ø 4.5 mm
178-392	4 mN	5 μm/90°	

*Tip radius / Tip angles

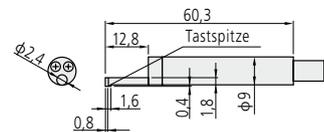


Extra small hole detectors

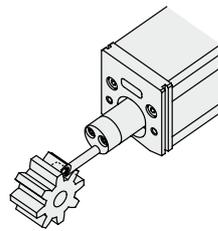


Order No.	Measuring force	Stylus profiles*	Remarks column
178-384	0.75mN	2 μm/60°	Minimum measurable hole diameter: ø 2.8 mm
178-393	4 mN	5 μm/90°	

*Tip radius / Tip angles

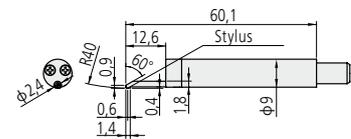


Gear-tooth surface detectors

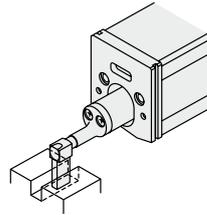


Order No.	Measuring force	Stylus profiles*
178-388	0.75mN	2 μm/60°
178-398	4 mN	5 μm/90°

*Tip radius / Tip angles

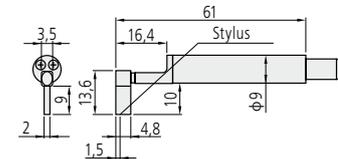


Deep groove detectors



Order No.	Measuring force	Stylus profiles*	Remarks column
178-385	0.75mN	2 μm/60°	Not available for the transverse tracing drive unit
178-394	4 mN	5 μm/90°	

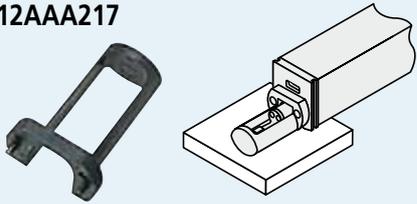
*Tip radius / Tip angles



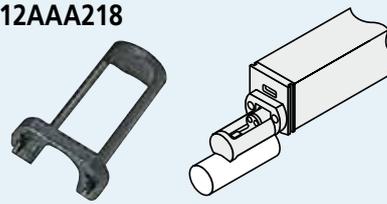
Optional Accessories

A myriad of accessories are available for the SJ-210. For example, even workpieces with a curved surface (cylindrical workpieces) or those whose measurement surface is smaller than the SJ-210 driver can be measured.

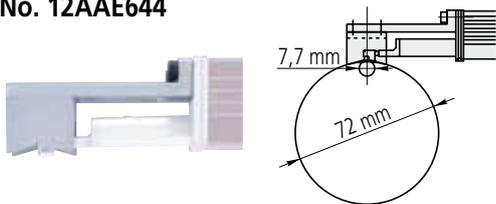
Nosepiece for fl at surface
No. 12AAA217



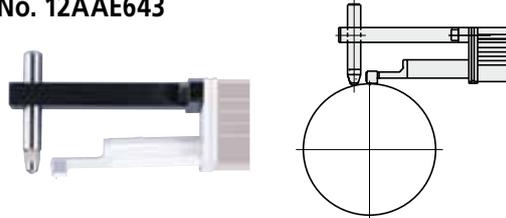
Nosepiece for cylindrical surface
No. 12AAA218



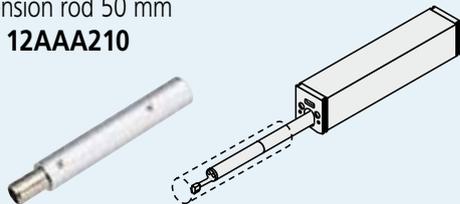
V-type adapter (standard equipment for S-driver)
No. 12AAE644



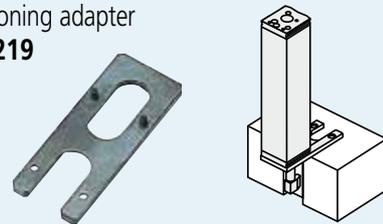
Point-contact adapter (standard equipment for S-driver)
No. 12AAE643



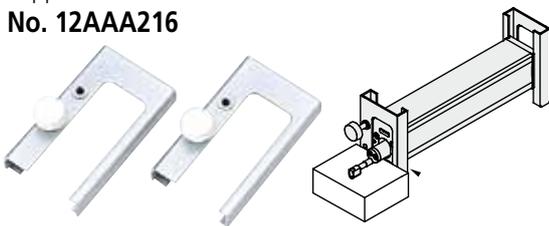
Extension rod 50 mm
No. 12AAA210



Vertical positioning adapter
No. 12AAA219



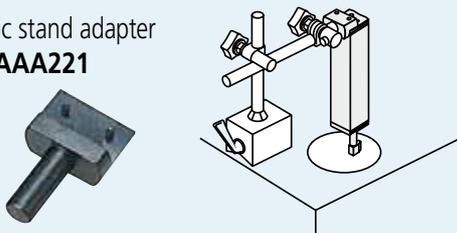
Support feet set
No. 12AAA216



Height gage adapter
No. 12AAA222



Magnetic stand adapter
No. 12AAA221



Granite stand
No. 178-039
 Driver adapter
No. 65GAA083



Note: The following special accessories cannot be used when the SJ-210 is equipped with the driver unit for traverse detection: support feet set, nosepiece for flat surfaces, nosepiece for cylindrical surfaces, vertical positioning adapter and extension rod.

Optional Accessories

Setting attachments

V type for measuring in the cylinder axis direction

The V-width is adjustable to the cylinder diameter facilitating axial measurement of a wide range of cylinder diameters. Adjustable range: $\varnothing 5 \sim 150$ mm



No. 178-033

Magnetic slider type

The magnet attached to the frame bottom surface allows taking hands-free measurement on the wall.



No. 178-034

Inside diameter type

Greatly facilitates measurement of internal wall surfaces of, for example, a cylinder block.

- Applicable diameter: $\varnothing 75 \sim \varnothing 95$ mm
- Accessible depth: 30 ~ 135 mm



No. 178-035

Multifunction thermal printer set

Assessed profiles and calculation results and curves can be printed out by connecting the SJ-210-dedicated printer, which is palm sized (WxDxH: 93x125x70mm) and can run on an internal battery.

- Power supply can be selected. (AC adapter or battery pack)
- Printable items: Measurement conditions, calculation results, assessed profile, bearing area curve (BAC), amplitude distribution curve (ADC), and environment settings.



No. 178-421DDS

- incl. • **178-421DD** Multifunction thermalprinter
• **12AAL067** Connection cable
• **150273** Batterie pack

Digimatic mini processor DP-1VR

By connecting this printer to the Surfptest SJ-210's digimatic output, you can print calculation results, perform a variety of statistical analyses, draw a histogram or D chart, and also perform complicated operations for X-R control charts.



No. 264-504-5D

- SJ-210 to DP-1VR Connecting cable
Connecting cable 1 m **Nr. 936937**
Connecting cable 2 m **Nr. 965014**

Footswitch

A footswitch is used to trigger measurement. This tool is very useful in cases where you need to measure the same workpiece multiple times using jigs and other fixtures.



No. 12AAJ088

USB cable 2 m

For connection between the SurfTest SJ-210 and a PC by means of USB connector to use the USB-Communication-Tool.

Nr. 12AAL068

Data transfer

The SPC interface (Digimatic) permits software-neutral data transfer of results to a PC, e.g. directly via the USB-Input-Tool or via the U-WAVE wireless communication system.

Connecting cable SJ-210 SPC to USB

Nr. 06ADV380

U-WAVE wireless communication

For further information, please refer to our brochure "U-WAVE" PRE1330.

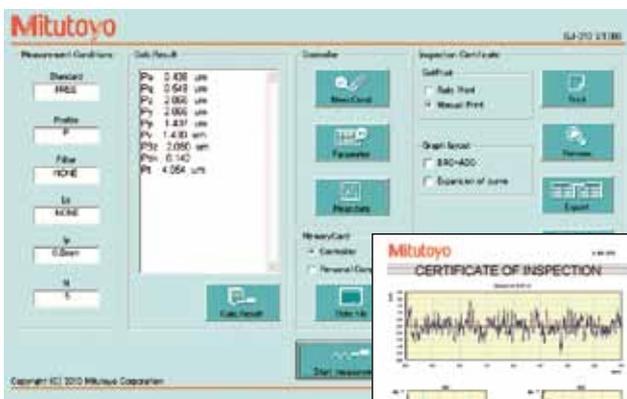
Protective sheets for the display

Protective sheet for the color LCD (5sets)

Nr. 12AAL066

USB-Communication-Tool

Test reports are easily and quickly generated with the USB-Communication-Tool – a Microsoft Excel based macro. The information transferred via USB connecting cable contains measurement conditions, measurement results, the graphic representation of the profile, BAC and ADC curves. A comment can be added and test reports generated either automatically or on demand. This tool is also able to exercise control over the SurfTest SJ-210; such as Start Measurement, Establish Measurement Conditions and Set Tolerance Limits. A variety of languages are ready for direct access.



* Required environment:

- Windows XP – Microsoft Excel 2000
- Windows Vista – Microsoft Excel 2002
- Windows 7 – Microsoft Excel 2007

* Windows OS and Microsoft Excel are products of Microsoft Corporation.

When using Mitutoyo surface roughness testers you will benefit from the competitive edge in experience and expertise of the world's leading expert in production measurement technology. Make use of the knowledge from decades to solve the tasks of tomorrow - applying highest standards regarding quality, performance and progressiveness.



Ask for the overview brochure "Surface Measurement".

Mitutoyo presents a practically structured range of advanced solutions for state of the art surface measurement.

Further information can be found in our product lounge Form measurement:
www.mitutoyo.eu

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- Vision Measuring Systems
- Form Measurement
- Optical Measuring
- Sensor Systems
- Test Equipment and Seismometers
- Digital Scale and DRO Systems
- Small Tool Instruments and Data Management

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