

English

Portable Surface Texture  
Measuring Instrument



## HANDYSURF +

35 | 40 | 45

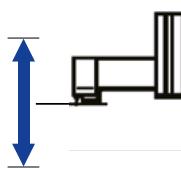


New HANDYSURF<sup>+</sup>, reborn with sophisticated design  
Portable surface texture measuring instrument for global use  
responding to diverse everyday needs

# HANDYSURF<sup>+</sup>



**Resolution 0.0007  $\mu\text{m}$**   
**Measuring range**  
**+160  $\mu\text{m}$  ~ -210  $\mu\text{m}$**

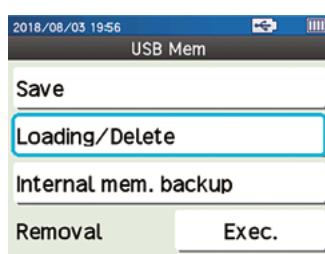


High resolution with wide measuring range,  
no need to set up measuring range

The previous HANDYSURF required setting of a narrow measuring range when measuring with a high resolution, but HANDYSURF<sup>+</sup> has evolved! The instrument has the Z direction measuring range of 370  $\mu\text{m}$ , which is the widest in class, and achieved a resolution as high as 0.0007  $\mu\text{m}$  over the entire range.



Compact Printer  
(Option)



By connecting to the USB memory stick (option), it is possible to save and read measurement conditions and results.

Connectable to the compact printer, USB memory stick and PC with built-in USB connector

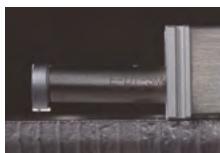
With the USB connector, it is possible to print measurement results to the optional compact printer, save measurement conditions and results on USB memory sticks and recharge the instrument from the USB port of a PC or with a USB battery.

Select from 3 HANDYSURF<sup>+</sup> driver units, according to workpiece and measurement location



**35 (Standard type)**

The standard-type measurable with different attitudes including horizontal, inclined, vertical and ceiling surfaces.



**40 (Retract type)**

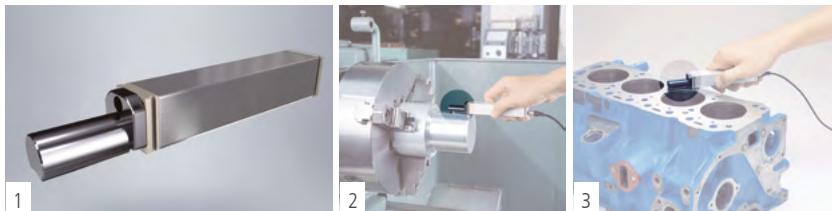
Retract-type that reduces damage to the stylus and pickup by raising the pickup while waiting for measurement or at ending. It can be used as a detector incorporated into an automatic machine.



**45 (transverse trace-type)**

The transverse trace-type where the pickup moves sideways. Narrow areas, such as crankshaft pins and journals, that were difficult to measure before can now be measured.

## Nose Piece for Flat Surfaces / Cylinders (Option)



1. Nose Piece for Flat Surfaces E-WJ-S88A
2. Nose Piece for Cylinders E-WJ-S85A
3. Flat or cylindrical surfaces too small for measuring can be easured by holding the instrument in hand.

## Usage example of magnetic stand (Option)



Magnet stand E-ST-MAC  
Post-mount E-CS-S26A  
Post-mount holder 0102050

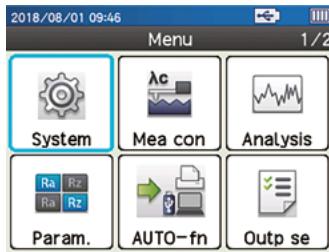
## Superior Operability



1.



3.



2.



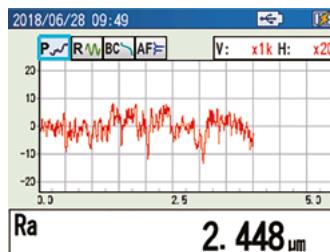
4.

2.4 inch color LCD has significantly improved the visibility.

Moreover, 6 buttons and newly developed UI have achieved simple and intuitive operations.

1. Color LCD
2. Menu screen
3. Home screen
4. Measurement condition setting display

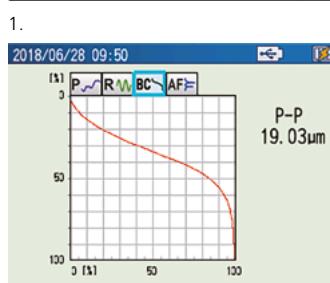
## Multiple analysis capabilities



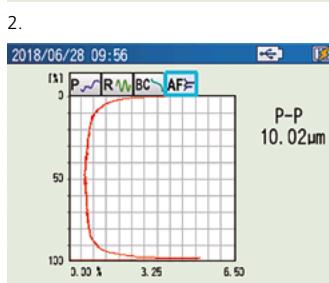
1.



2.



3.

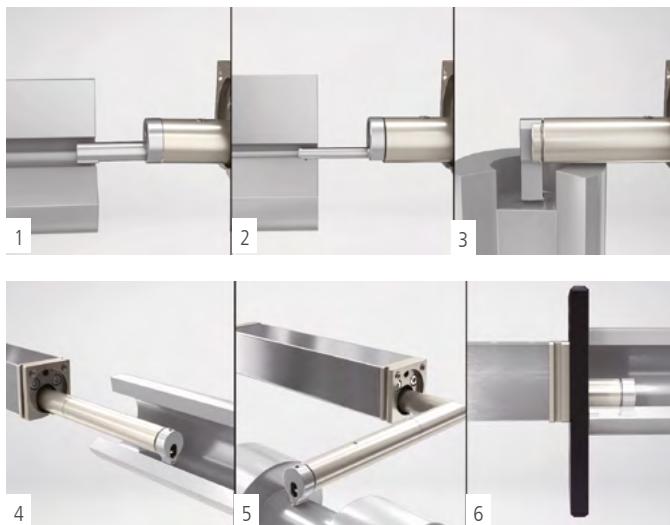


4.

Graphic representation of measurement results enables their on-site verification with parameter and waveform. Moreover, despite being a portable instrument, it is capable of a variety of analyses including analyses of BAC, ADC, peak count and motifs. By setting the conditions in advance, OK/NG judgment can be performed automatically.

1. Example of surface roughness (Ra) measurement
2. Example of OK/NG judgment of measurement result
3. Example of BAC analysis
4. Example of ADC analysis

## Multiple options responding to various situations



1. Pickup for fine hole
2. Pickup for extra fine hole
3. Pickup for deep groove
4. Long hole extension
5. Adapter for horizontal
6. Adapter for bore measurement

E-WJ-S86A

## Calibration Plate

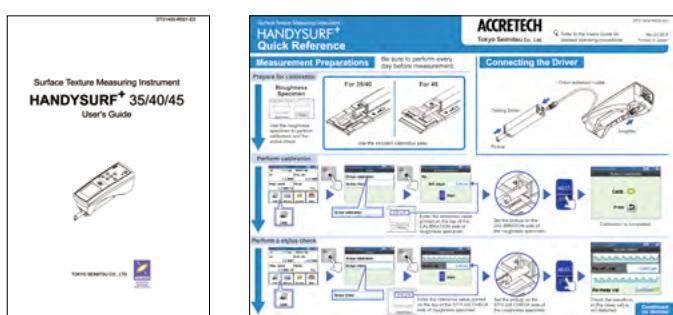


HANDYSURF<sup>+</sup> 35/40

HANDYSURF<sup>+</sup> 45

A standard specimen for surface texture and a driver selected are set to the standard calibration plate. Calibration can be conducted easily without need of height and inclination adjustment of the driver as before.

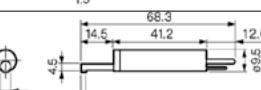
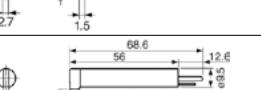
## User's Guide / Quick Reference



User's guide (left) and Quick Reference (right)

An easy-to-understand user's guide, as with general home appliances, is in the CD-ROM. A quick reference with the summary of basic operating procedure is also included in the package both on paper and as data in the CD-ROM so that users do not need to create written procedures.

## Specifications

Name	Model	External view	Specifications	Remarks
Pickup	E-DT-SM10A		Rtip 5 µm, 90°conical diamond, 4 mN (For 35-40)	<ul style="list-style-type: none"> <li>• For general measurement</li> <li>• Standard accessory</li> </ul>
	E-DT-SM49B		Rtip 2 µm, 60°conical diamond, 0.75 mN (For 35-40)	
	E-DT-SM39A		Rtip 5 µm, 90°conical diamond, 4 mN (For 45)	
	E-DT-SM11B		Rtip 5 µm, 90°conical diamond, 4 mN (For 35-40)	<ul style="list-style-type: none"> <li>• For fine hole</li> <li>• Min. inner diameter: Ø 5 mm</li> </ul>
	E-DT-SM50B		Rtip 2 µm, 60°conical diamond, 0.75 mN (For 35-40)	
	E-DT-SM12A		Rtip 5 µm, 90°conical diamond, 4 mN (For 35-40)	<ul style="list-style-type: none"> <li>• For extra fine hole</li> <li>• Min. inner diameter: Ø 3 mm</li> </ul>
	E-DT-SM51B		Rtip 2 µm, 60°conical diamond, 0.75 mN (For 35-40)	
	E-DT-SM13A		Rtip 5 µm, 90°conical diamond, 4 mN (For 35-40)	<ul style="list-style-type: none"> <li>• For deep groove</li> <li>• Max. depth: 7 mm</li> </ul>
	E-DT-SM52B		Rtip 2 µm, 60°conical diamond, 0.75 mN (For 35-40)	

Name	Model	External view	Specifications	Remarks
Magnetic stand	E-ST-MAC			
Post mount holder	010 2050			
Post mount	E-CS-S26A			• For Ø 6
Adapter for height gage	E-WJ-S93A		Cross-section surface on scribe of height gage: 9 mm x 9 mm	• Used with post mount, E-CS-S26A

 Standard inventory parts

Model		HANDYSURF <sup>+</sup>								
		35		40		45				
Measurement range	Z direction	-210 to +160 µm								
	Drive axis	X direction 16 mm				Y direction 4 mm				
	Movement type	Standard type		Retraction type		Horizontal tracing type				
	Evaluation Length	0.2 to 16 mm				0.2 mm to 4.0 mm				
	Measurement speed	0.5, 0.6, 0.75, 1.0 mm/s				0.6 mm/s				
	Sensing type	Differential inductance								
Tracing Driver	Measurement Method	Skid								
	Z direction resolution	0.0007 µm/-210 to +160 µm								
	Model	E-DT-SM10A	E-DT-SM49A	E-DT-SM10A	E-DT-SM49A	E-DT-SM39A				
	Stylus	Measurement force	4 mN	0.75 mN	4 mN	0.75 mN				
		Tip radius	$r_{tip} = 5 \mu m$	$r_{tip} = 2 \mu m$	$r_{tip} = 5 \mu m$	$r_{tip} = 2 \mu m$				
		Tip angle	90°cone	60°cone	90°cone	60°cone				
Pickup		tip material	Diamond							
	Calculation Standards	Comply with JIS2013/2001, JIS1994, JIS1982, ISO1997/2009, ISO13565, DIN1990, ASME2002/2009, ASME1995, CNOMO, ISO21920								
	Parameter	Profile Curve	$P_t, R_{max}, R_z, R_k, R_{pk}, R_{vk}, M_{r1}, M_{r2}, V_o, K, t_p$							
		Roughness Curve	$R_a, R_q, R_z, R_v, R_c, R_t, R_{Sm}, R_{Aq}, R_{Sk}, R_{ku}, R_{mr(c)}, R_{mr}, R_{6c}, R_{294}, R_{32}, R_{\Delta a}, R_y, S_m, S, t_p, PC, RPc$ JIS, RPc ISO, RPc EN, PC, PPI, Rp, Rmax, Mr1, Mr2, Rpk, Rvk, Rk, Vo, K, A1, A2, Rpm, $\Delta a$ , $\Delta q$ , Htp							
		Motif	$R, R_x, AR, W, W_x, AW, R_{ke}, R_{pk}, R_{vk}, NCRx, NR, CPM, SR, SAR, W_{te}, NW, SAW, SW, Mr1e, Mr2e, Vo, K$							
	Evaluation Curve	Profile Curve, Roughness Curve, ISO13565Special Roughness Curve, Roughness motif curve, Waviness motif curve, Upper envelope waviness curve								
Analysis item	Characteristics graph	Bearing area curve, Amplitude distribution curve								
	Filter type	Gaussian, 2RC (phase compensation), 2RC (non-phase compensation)								
	Cutoff value	$\lambda_c$	0.08, 0.25, 0.8, 2.5 mm							
Filter		$\lambda_s$	None, 2.5, 8 $\mu m$							
	Display	2.4-inch color liquid crystal panel								
	Data output	USB connectors for USB memory/printer connection x 1, Micro USB connector for USB communication x 1								
	Print output	Optional (external printer unit) / Thermal recording paper width: 58 mm (recording width: 48 mm)								
Amplification indicator	Language	English, German, French, Italian, Spanish, Portuguese, Czech, Polish, Hungarian, Turkish, Swedish, Dutch, Japanese, Chinese (Traditional Chinese/Simplified Chinese), Korean, Thai, Malay, Vietnamese, Indonesian,								
	Power Supply	Charging	Built-in battery (to be charged using AC adaptor, PC USB port, USB battery), charging period: 4 hours (about 1000 measurements can be taken when fully charged)							
Specifications	Voltage, frequency	AC100 to 240 V ±10%, 50/60 Hz, Single phase (Included AC adapter)								
	Power consumption	Maximum 10 W								
	External dimensions (W x D x H) / Weight	Amplification indicator: 184.5 x 68 x 57.4 mm/about 500 g for the entire system								



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