Mitutoyo

Specifications

Model No.		SJ-411		SJ-412	
Order No.	mm	178-580-11	178-580-12	178-582-11	178-582-12
	inch/mm	178-581-11	178-581-12	178-583-11	178-583-12
Measuring range	X axis	25 mm		50 mm	
	Z axis (detector)	800 µm, 80 µm, 8 µm Up to 2,400 µm when using an optional stylus.			
Detector	Detection method	Differential inductance			
	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
	Measuring force	0.75 mN	4 mN	0.75 mN	4 mN
	Radius of skid curvature	40 mm			
	Measuring methods	Skidless/Skidded (switchable)			
Drive unit (X axis)	Measuring speed	0.05, 0.1, 0.2, 0.5, 1.0 mm/s			
	Drive speed	0.5, 1, 2, 5 mm/s			
	Straightness	0.3 µm/25 mm		0.5 µm/50 mm	
Up/down inclination unit	Vertical travel	10 mm			
	Inclination adjustment angle	±1.5°			
Applicable standards		JIS 1982/JIS 1994/JIS 2001/ISO 1997/ANSI/VDA			
Parameter		Ra, Rq, Rz, Ry, Rp, Rv, Rt, R3z, Rsk, Rku, Rc, RPc, RSm, Rmax[*1], Rz1max[*2], S, HSC, RzJIS[*3], Rppi, R∆a, R∆q, Rlr, Rmr, Rmr (c), Rσc, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Vo, λa, λq, Lo, Rpm, tp[*4], Htp[*4], R, Rx, AR, W, AW, Wx, Wte Customizable			
Filtered profile		Primary profile, Roughness profile, DF profile, Waviness profile, Roughness motif profile, Waviness motif profile			
Analysis graph		Material ratio curve, Profile height amplitude distribution curve			
Data compensation functions		Parabola, Hyperbola, Ellipse, Circle, Tilt, No compensation			
Filter		2CR, PC75, Gaussian			
Cutoff value	λc	0.08, 0.25, 0.8, 2.5, 8 mm			
	λs[*5]	2.5, 8, 25 µm			
Sampling length		0.08, 0.25, 0.8, 2.5, 8, 25 mm			
Number of intervals		×1, ×2, ×3, ×4, ×5, ×6, ×7, ×8, ×9, ×10, ×11, ×12, ×13, ×14, ×15, ×16, ×17, ×18, ×19, ×20			
Arbitrary length		0.1 to 25 mm		0.1 to 50 mm	
Calculation display unit	Customization	Selection of display/evaluation roughness parameter			
	Simplified contour analysis function	Step, Step quantity, Area, Coordinate difference			
	DAT (Digimatic Adjustment Table) function	Helps to level workpiece prior to skidless measurement			
	Real sampling function	Inputs the displacement of the detector while stopping the drive unit			
	statistical processing	Calculates the maximum value, minimum value, average value, standard deviation, pass rate and histogram for each parameter.			
	Judgment[*6]	Maximum value rule, 16 % rule, mean value rule, standard deviation (1σ, 2σ, 3σ)			
	Storing measurement condition	Max. 10 (calculation display unit)			
	Print function (Built-in thermal printer)	Measurement condition/Calculation result/Judgment result/Calculation result per segment/Tolerance value/Evaluation curve/Graphic curve/ Material ratio curve/Profile height amplitude distribution curve/Environmental setting items/Statistical result (Histogram)			
	Display language	16 languages (Japanese, English, German, French, Italian, Spanish, Portuguese, Korean, Chinese (simplified/traditional), Czech, Polish, Hungarian, Turkish, Swedish, Dutch)			
	Storage function	Built-in memory: Measurement condition (Up to 10) Memory card (optional): 500 measurement conditions, 10000 measured profiles, 500 display images, 10000 text files, 500 statistical data, 1 backup file of device setting data, 10 data of Trace 10			
	External I/O functions	USB I/F, Digimatic output, RS-232C I/F, Foot switch I/F			
Power supply	Battery Charging time/Endurance	Built-in battery (rechargeable Ni-MH battery) /AC adapter Charging time of the built-in battery: about 4 hours (may vary due to ambient temperature) Endurance: about 1000 measurements (differs slightly due to use conditions/environment)			
	Max. power consumption	50 W			
External dimensions (W×D×H)	Calculation display unit	275×198×109 mm			
	Up/down inclination unit	130.9×63×99 mm			
	Drive unit	128×35.8×46.6 mm		154.5×35.8×46.6 mm	
Mass	Calculation display unit	1.7 kg			
	Up/down inclination unit	0.4 kg			
	Drive unit	0.6 kg		0.64 kg	
Standard Accessories		Detector[*7]/Standard stylus[*8] 178-601 Roughness specimen (Ra3 µm) 270732 Receipt paper (Standard type: 5-roll set) 12BAL402 Protective sheet for the LCD (×1 sheet) 12BAG834 Touch pen 12AAN041 Carrying case		AC adapter, Power cable, Flat-blade screwdriver, Phillips screwdriver, Hex wrench, Strap for the touch pen, Operation manual, One-sheet manual, Warranty card	

*1 Calculation is available only when selecting the VDA, ANSI, or JIS 1982 standards.
*2 Calculation is available only when selecting the ISO 1997 standard.
*3 Calculation is available only when selecting the JIS 2001 standard.
*4 Calculation is available only when selecting the ANSI standard.
*5 Not available when selecting the JIS 1982 standard.
*6 Only the mean value rule is available for the ANSI standard. 16 % rule is not available when selecting the VDA standard.
*7 Depending on the Order No. of the **SJ-410** Series main unit, **178-396** or **178-397** is provided as standard.
*8 Standard stylus (**12AAC731** or **12AAB403**) supporting the provided detector is provided as standard.
Note 1: Refer to pages 12 to 13 for details of Detector, Stylus and Nosepiece.
Note 2: To denote your AC line voltage add the following suffixes (e.g. **178-580-11A**). A for 120 V, C for 100 V, D for 230 V, E for 230 V (for UK), DC for 220 V (for China), K for 220 V (for Korea)