

**SOKKIA**

**NET05**

**NET1**

**Automated 3D STATION**

**Specifications**

**December, 2008**

Model		NET05	NET1
Telescope		Fully transiting, coaxial optics for sighting, distance measuring, Auto-Pointing and Auto-Tracking	
Length		173 mm (6.8 in.)	
Objective aperture	Sighting	45 mm (1.8 in.)	
	EDM, Auto-pointing/-tracking	48 mm (1.9 in.)	
Magnification		30x	
Resolving power		2.5"	
Image		Erect	
Field of view		1°30' (26 m @ 1,000 m)	
Minimum focus		1.3 m (4.3 ft.)	
Reticle glass		Infinity mark printed	
Reticle illumination		Built-in, 5 brightness levels	
Angle measurement		Absolute rotary encoder scanning. Both circles adopt diametrical detection.	
Unit (selectable)		Degree / Gon / Mil	
Display resolution (selectable)	Degree	0.2" / 0.5"	0.5" / 1"
	Gon	0.00005 / 0.0001 gon	0.0001 / 0.0002 gon
	Mil	0.001 / 0.002 mil	0.002 / 0.005 mil
Accuracy (ISO 17123-3:2001)	H&V	0.5"	1"
		0.15 mgon	0.3 mgon
		0.0025 mil	0.005 mil
Measurement mode	H	Clockwise / counterclockwise, selectable. 0 set, Hold, Angle input, available	
	V	Zenith 0 / Horizontal 0 / Horizontal 0±, or Slope in %, selectable	
IACS		Provided (Independent Angle Calibration System)	
Automatic dual-axis compensator		Dual-axis liquid tilt sensor, Working range: ±4' (±74 mg) Out-of-range warning provided	
Collimation compensation		On / Off, selectable	
Distance measurement		Modulated laser, phase comparison method	
Signal source		Red laser diode, Wavelength: 690 nm (visible)	
Laser output*1	Reflectorless mode	Class 2 (max. 0.99 mW)	Class 3R (max. 5 mW)
	Prism/Sheet mode	Class 1 equivalent (max. 0.22 mW)	
Measuring range*2	With one AP prism	1.3 to 3,500 m (4.3 to 11,480 ft.)	1.3 to 3,500 m (4.3 to 11,480 ft.)
	With CP compact prism	1.3 to 800 m (4.3 to 2,620 ft.)	1.3 to 1,000 m (4.3 to 3,280 ft.)
	With reflective sheet (RS50N-R)*3	1.3 to 200 m (4.3 to 650 ft.)	1.3 to 300 m (4.3 to 980 ft.)
	Reflectorless*4	0.3 to 40 m (1.0 to 130 ft.)*5	0.3 to 200 m (1.0 to 650 ft.)*6
Measuring mode (selectable)		Fine (single / repeat / average), Rapid (single / repeat), Tracking	
Unit (selectable)		Meter / Foot / US foot / US foot + inch	
Display resolution (selectable)	Fine / Rapid mode	0.0001 / 0.001 m (0.001 / 0.01 ft., 1/16 / 1/8 in.)	
	Tracking mode	0.001 m (0.01 ft., 1/8 in.)	
Accuracy*2 (ISO 17123-4:2001)	With prism	(0.8 + 1ppm x D) mm	(1 + 1ppm x D) mm
	With reflective sheet target*3	(0.5 + 1ppm x D) mm	(1 + 1ppm x D) mm
	Reflectorless*4	(1 + 1ppm x D) mm*5	(3 + 1ppm x D) mm*6
Measuring time*7	Fine mode	Every 0.9s or less (initial 2.4s or less)	
	Rapid mode	Every 0.6s or less (initial 2.0s or less)	
	Tracking mode	Every 0.4s or less (initial 1.3s or less)	
Prism constant correction		-99.9 to +99.9 mm (0.1 mm increments) (0 mm fixed in reflectorless mode)	
Atmospheric correction		Input temperature (°C/°F), pressure (hPa/mmHg/inchHg) and humidity (1% increments) / Input ppm	
Refraction & earth-curvature correction		K=0.14 / K=0.20 / None, selectable	

\*1 IEC60825-1 Amd.2:2001 / FDA CDRH 21 CFR Part 1040.10 and 11 (Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001.)

\*2 D=measuring distance, unit:mm. With using SOKKIA genuine prisms and targets. Under good conditions: No haze, visibility about 40 km (25 miles), overcast, no scintillation.

\*3 When squarely aligned with the target.

\*4 With Kodak Gray Card White Side (90% reflective). Reflectorless range/accuracy may vary according to measuring objects, observation situations and environmental conditions.

\*5 When brightness on measured surface is 5,000 lx. or less (indoor or twilight conditions). When squarely aligned with the target.

\*6 When brightness on measured surface is 30,000 lx. or less (no direct sunlight).

\*7 Time of reflectorless measurement may vary according to measuring objects, observation situations and environmental conditions.

Model		NET05	NET1
Motor drive		DC motor drive with self-locking free rotation system	
Motion range		360°	
Max. rotation speed (at 20°C (68°F))		45°/s	
Typical rotation time (at 20°C (68°F), compensator Off)		Approx. 11.5s for 180° rotation	Approx. 10s for 180° rotation
Fine motion		Variable speed jog dials	
Auto-pointing & Auto-tracking <sup>*8</sup>		Pulse laser transmitter and CCD detector integrated in telescope with co-axial optics	
Signal source		Infrared laser diode, Wavelength: 830 nm (invisible)	
Laser class <sup>*1</sup>		Class 1	
Auto-Pointing range	With 1 AP prism	2 to 1,000 m (6.5 to 3,280 ft.)	
	With ATP1/ATP1S 360° prism	2 to 600 m (6.5 to 1,960 ft.)	
	With CP compact prism	1.3 to 700 m (4.3 to 2,290 ft.)	
	With OR1PA pin pole prism	1.3 to 500 m (4.3 to 1,640 ft.)	
	With reflective sheet target <sup>*9</sup>	5 to 50 m (16.4 to 160 ft.) with RS50N-R (50x50 mm) reflective sheet	
Auto-Pointing motion range	H	360°	
	V	70° elevation, 40° depression (horizontal 0°)	
Auto-Pointing time <sup>*10</sup>		4 to 10s	
Auto-Pointing accuracy (standard deviation)	With AP/CP/OR1PA prism	1.5 mm (to 100 m), 3" (100 m and over) (Typical: 0.5 mm @ 5 m, 0.8 mm @ 30 m, 1 mm @ 50 m)	
	With ATP1/ATP1S 360° prism	2 mm (to 100 m), 3" (100 m and over)	
	With reflective sheet target <sup>*9</sup>	2 mm (to 50 m)	
Auto-Tracking range	With 1 AP prism	800 m (2,620 ft.)	
	With ATP1/ATP1S 360° Prism	500 m (1,640 ft.)	
	With CP compact prism	600 m (1,960 ft.)	
	With OR1PA pin pole prism	400 m (1,310 ft.)	
Auto-Tracking motion range	H	360°	
	V	70° elevation, 40° depression (horizontal 0°)	
Max. Auto-Tracking speed	Motion speed	14°/s	
	Prism speed	5 m/s (18 kmph) @ 20 m, 25 m/s (90 kmph) @100 m 16.4 ft./s (11.2 mph) @ 65 ft., 82 ft./s (56 mph) @ 320 ft.	

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\*8 Environmental conditions: No haze, visibility over 20 km (12 miles), slightly overcast, no scintillation, brightness 30,000 lx. or less.

\*9 When the measuring beam's incidence angle is within ±15° to the target surface, indoor conditions with sufficient contrast between the target and background.

\*10 When the target is in the telescope's field of view. At 100 m (320 ft.) with a prism, at 50 m (160 ft.) with a reflective sheet RS50N-R.

Interface and Data management		
Operating system		Windows CE Ver. 5.0
Application software	Standard	SDR Level 5, Periodic Monitoring Program, Mesh-scan Survey
	Optional	SDR4000 3D Measurement Basic Program for 3D Stations
Display		3.5 in. transreflective TFT QVGA color LCD with backlight (9 brightness levels), touch screen
Keyboard		Alphanumeric, 32 keys with backlight
Control panel layout		On single face (Models with both-face control panels are available on built-to-order basis.)
Trigger key		On right instrument support
Data storage	Internal memory	64MB (more than 1MB available for data)
	Memory card drive	Compact Flash Type II (3.3 V, max. 4 GB) SD card (with CF adapter max. 1 GB) USB memory (max. 4 GB)
Interface		Serial RS-232C (baud rate: 1,200 to 38,400 bps) USB1.1 Host (Type A), Client (Type mini B)
Bluetooth wireless communication		Ver.1.2, Class 1 (built into optional handles RC-TS3 and H-BT1)
SFX wireless data transfer		Provided
Calendar clock		Calendar (Year, Month, Day), Clock (Hour, Minute, Second)

Model		NET05	NET1
<b>General</b>			
Laser-pointer function <sup>*11</sup>	Light source	Red laser beam for distance measurement	
	Lighting mode (selectable)	On / Off, selectable	
Target illumination <sup>*11</sup>	Light source	White LED (Class 1)	
	Lighting mode (selectable)	Blink / On / Off, selectable, 3 brightness levels	
	Illumination angle range	±45' or more	
	Offset from telescope center	46.3 mm (1.82 in.)	
Laser radiation indicator		Provided (icon on LCD display, red LED on telescope)	
Sensitivity of levels	Plate level	20" / 2 mm	
	Circular level	10' / 2 mm	
	Graphic display range	±2.5' (±45 mgon, ±0.75 mil) / inner circle ±4.5' (±81 mgon, ±1.35 mil) / outer circle	
	Digital display range	±4'30" (±83.35 mgon, ±1.333 mil)	
Optical plummet	Magnification	7x	
	Image	Erect	
	Minimum focus	0.3 m (11.8 in.) from tribrach bottom	
Tribrach		Detachable (WA100A)	
Dust and water protection		IP64 (IEC 60529:2001) (RS-232C serial cable or external power cable connection maintains IP64)	
Operating temperature		-10 to +50°C (14 to +122°F)	
Storage temperature		-30 to +70°C (-22 to +158°F)	
Instrument height		236 mm (9.3 in.) from tribrach bottom	
Size with handle & battery	Standard models (single control panel)	201 (W) x 202 (D) x 375 (H) mm (W8.0 x D8.0 x H14.8 in.)	
	Models with both-face control panels <sup>*12</sup>	201 (W) x 220 (D) x 375 (H) mm (W8.0 x D8.7 x H14.8 in.)	
Weight with handle & battery	Standard models (single control panel)	7.6 kg (16.8 lb.) with handles H-BC1 / H-BT1	
		7.7 kg (17.0 lb.) with handles RC-TS3 / RC-TS3A	
	Models with both-face control panels <sup>*12</sup>	7.7 kg (17.1 lb.) with a handle H-BC1 7.8 kg (17.2 lb.) with handles H-BT1 / RC-TS3 / RC-TS3A	

<sup>\*11</sup> The laser-pointer and the target illumination do not work simultaneously.

The both lights are automatically switched off during distance measurement, Auto-Pointing and Auto-Tracking.

<sup>\*12</sup> Available on built-to-order basis.

Power supply		7.2 to 12V DC
Standard battery	BDC58 detachable battery	Li-ion rechargeable battery, 7.2 V, 4.3 Ah, 195 g (6.9oz.) 2 pcs. included as standard
Optional batteries	BDC60 external battery	Ni-MH rechargeable battery, 7.2 V, 6.5 Ah, 1.7kg (3.8 lb.)
	BDC61 external battery	Ni-MH rechargeable battery, 7.2 V, 13 Ah, 2.9 kg (6.4 lb.)
Continuous use in Auto-Pointing mode <sup>*13</sup>	BDC58 detachable battery	Approx. 3 hours (approx. 6 hours using two standard batteries)
	BDC60 external battery	Approx. 4.5 hours
	BDC61 external battery	Approx. 9 hours
CDC68 quick charger for BDC58 standard battery	Recharging time	Approx. 4 hours for one BDC58 at 25°C (77°F) (Two batteries can be recharged consecutively)
	Input voltage	100 to 240 V AC (50/60Hz) <sup>*14</sup>
	Relevant batteries	BDC58, BDC46, BDC46A and BDC46B
CDC71 charger for external batteries	Recharging time	Approx. 3.5 hours for BDC60, Approx. 7 hours for BDC61, at 25°C (77°F)
	Input voltage	11 to 16 V DC (EDC117 AC adapter or EDC115 car cigarette lighter cable required)
Remaining battery level display		4 levels + Low level message (for BDC58, BDC60, BDC61)
Automatic power cut-off		5/10/15/30 minutes after operation / none, selectable
External power input		7.2 to 12 V DC
Remote power On/Off		The instrument can be powered On and Off by external devices via serial RS-232C port or Bluetooth wireless connection <sup>*15</sup>

<sup>\*13</sup> Auto-pointing by both faces (180° H&V rotation) and fine-single distance measurement every 30s at 20°C (68°F).

<sup>\*14</sup> Use with an appropriate AC power cable.

<sup>\*15</sup> Bluetooth connection: power On for up to 30 minutes.

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