

SOKKIA

Series20

SET220 · SET320 · SET520 · SET620

Total Stations



**Made for the
Toughest Job**



Advanced technologies and unmatched robustness extend your surveying field.

■ Unparalleled Robustness

- The Series20 total stations boast the industry's highest protection against dust and water. The "IP66" body withstands dust, mud, moisture, water splashes, sudden showers, snow, and other harsh conditions at any job site.
- The "SET520 - Low-temperature Model**" operates in climates as low as -30°C (-22°F) without compromising performance at high temperatures.



**SET520 - Low-temperature Model is available on built-to-order basis.

IP 66

Protection against ingress of solid foreign objects
Highest level: 6
7 levels: 0 to 6.
X: unspecified.

Protection against ingress of water
Highest level: 8
9 levels: 0 to 8.
X: unspecified.

The International Electrotechnical Commission standard IEC 60529 describes a system for classifying degrees of protection provided by enclosures of electrical equipment. The IP Code consists of the letters IP and two numerals. Larger numbers represent greater levels of protection.



■ The New Laser Distance Meter Extends Survey Ranges

- A new laser diode is employed for the EDM signal source to increase the measurement range 30% farther than previous models.
- The Series20 measures up to 3,500m (11,480ft.) with a single prism in 2mm + 2ppm accuracy.
- A variety of convenient reflective sheet targets can be used at up to a 150m (490ft.) range for maximum flexibility.

■ An Advanced Angle Measurement System for Maximum Reliability

- The Series20 total stations are loaded with absolute encoders that employ the RAB code (RANdom Bi-directional code) which was originally developed for digital levels. Through the use of advanced signal processing, stable and reliable angle measurement data can be obtained.
- Market-proven, dual-axis compensator with extended working range of $\pm 4'$ (± 74 gon).



■ Password-Protection for Security

- The instruments require a password to be input before starting operations.
- Your own password can be assigned or changed to prevent unauthorized use.

■ Increased Operating Time

- The operating time is increased by 25% compared to the previous models.
- One Li-ion detachable battery supplies power for 10 continuous hours (1,200 points), enough for almost a full day's work.
- Two batteries are included as standard, providing power for 20 hours. **



■ SF14 Optional Wireless Keyboard

- Full alphanumeric keys greatly facilitate data entry, and soft keys allow measurement operation without touching the total station.
- SF14 is available as an option. **



■ Simplified Keyboard for Easy Operation

- Operations are simple with an easy-to-follow "MENU" display.
- The four "softkeys" assignment can be freely customized for faster operations.
- The Series20 features displays and keyboards on both faces. **



■ Outstanding Mobility

- Compact and lightweight body provides outstanding mobility.
- Easily carried by hand to places inaccessible to vehicles.

■ Data Storage Options

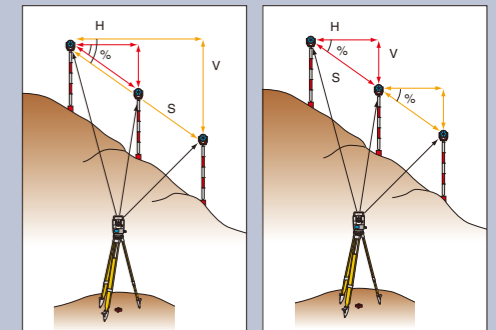
- Standard internal memory stores approx. 10,000-point data.
- An optional CF card unit for additional memory storage is available. **



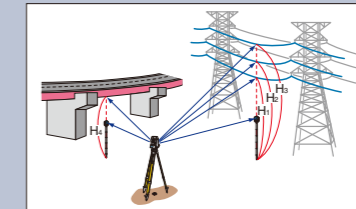
Wide variety of software

● Missing Line Measurement (MLM)

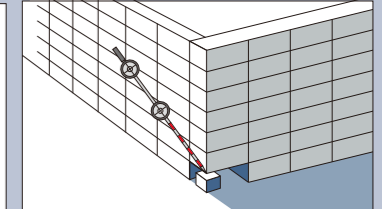
Calculates distances and slope in % between two targets.



● Remote Elevation Measurement (REM)

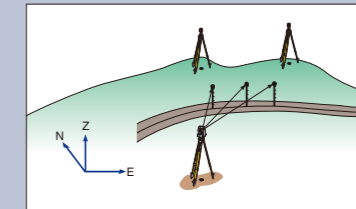


● Offset (Distance/Angle/Two-Distance)



Measures the hidden points.

● Setting Out



3D setting out with N, E & Z or N & Z coordinates.

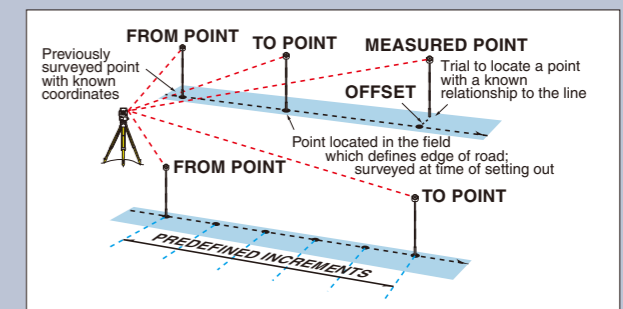
● 3-D Coordinate Measurement

● Resection

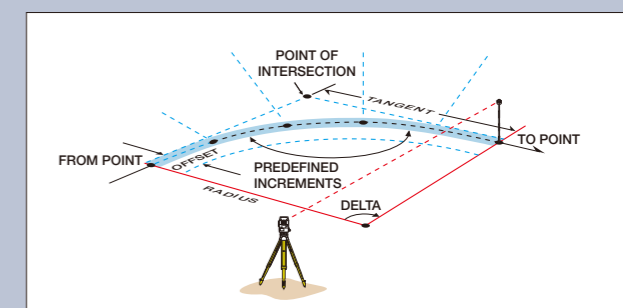
Determines the azimuth and coordinates of unknown instrument station.

● Area Calculation

● Set Out Line and Point Projection



● Set Out Arc



Series20

**Not available with SET620 models.

Total Stations

Model	SET220	SET320	SET520	SET620
Telescope	Fully transiting, coaxial sighting and distance measuring optics			
Magnification / Resolving power	30x / 3"			26x / 3.5"
Others	Length: 170mm (6.7in.), Objective aperture: 45 mm (1.8 in.) [EDM: 48 mm (1.9 in.)], Image: Erect, Field of view: 1°30' (26m/1,000m), Minimum focus: 1.0m (3.3 ft.), Reticle illumination: Built-in			
Angle measurement	Absolute rotary encoder scanning. Both circles adopt diametrical detection.			
Display resolutions (selectable)	Degree: 1" / 5", Gon: 0.0002 / 0.001gon, Mil: 0.005 / 0.02mil			
Accuracy (ISO17123-3:2001)	H&V	2" / 0.6mgon / 0.01mil 3" / 1mgon / 0.015mil 5" / 1.5mgon / 0.025mil 6" / 1.9mgon / 0.03mil		
Measuring time	0.5s or less, continuous			
Measurement mode	H:	Clockwise / counterclockwise, selectable. 0 set, Hold, Angle input, Repetition, available		
Measurement mode	V:	Zenith 0 / Horizontal 0 / Horizontal 0± / Slope in %, selectable		
Automatic dual-axis compensator	Dual-axis liquid tilt sensor, Working range ±4' (±74mg, ±1.18mil), "Out-of-range" warning display			
Collimation compensation	On / Off, selectable			
Fine motion screws	Fine/Coarse 2-speed	1-speed motion		
Distance measurement	Modulated laser, phase comparison method			
Signal source / Laser output*1	Near infrared laser diode, Wavelength: 780nm (invisible) / Class 1			
Measuring range*2	With OR1PA pin pole prism	1 to 600m (3.3 to 1,960ft.)		
	With CP compact prism	1 to 1,000m (3.3 to 3,280ft.)		
	With 1 AP prism	1 to 3,000m (3.3 to 9,840ft.), Under good conditions*3 : 1 to 3,500m (3.3 to 11,480ft.)		
	With 3 AP prisms	to 4,000m (13,120ft.), Under good conditions*3 : to maximum display 4,199.999m (13,779.52ft.)		
	With reflective sheet target*4	RS90N-K: 2 to 150m (3.3 to 490ft.), RS50N-K: 2 to 60m (3.3 to 190ft.), RS10N-K: 2 to 25m (3.3 to 80ft.)		
Measuring mode (selectable)	Fine (single / repeat / average), Rapid (single / repeat), Tracking			
Unit (selectable)	Meters / Feet / US feet / US feet + inch			
Display resolutions (selectable)	Fine & Rapid modes: 0.001m (0.01ft., 1/8in.) / Tracking mode: 0.01m (0.1ft., 1/2in.)			
Accuracy*2 (ISO17123-4:2001)	With prism	Fine mode: (2 + 2ppm x D)mm / Rapid mode: (5 + 5ppm x D)mm		
(D=measuring distance, unit:mm)	With reflective sheet target*4	Fine mode: (4 + 3ppm x D)mm / Rapid mode: (5 + 5ppm x D)mm		
Measuring time	Fine mode	Every 1.6s, Initial 2.8s (Initial 2.4s at EDM standby mode)		
	Rapid mode	Every 0.8s, Initial 2.3s (Initial 1.9s at EDM standby mode)		
	Tracking mode	Every 0.3s, Initial 1.8s (Initial 1.4s at EDM standby mode)		
Prism constant correction / Atmospheric correction	-99 to +99mm (1mm steps). / Temperature-pressure input / ppm input			
Earth-curvature and refraction correction	K=0.142 / K=0.20 / None, selectable			
Sea level correction / Scale factor setting	Sea level correction: Yes / No, selectable / Scale factor setting: 0.5 to 2.0			
Interface and Data management				
Display	LCD graphic display, 192 x 80 dots, screen size: 71.5 x 31mm, with backlight and 16 contrast levels			
Keyboard	4 softkeys and 11 keys (total 15 keys)			
Control panel layout	On both faces			On single face
Wireless keyboard	Option (SF14 wireless keyboard with infrared communication)			-
Data storage	Internal memory	About 10,000 points		
	Memory card drive	Option (SCRC2A Compact Flash card drive)		
Interface	Asynchronous serial, RS-232C compatible, baud rate : 1,200 to 38,400 bps			
Printer output	Centronics compatible (DOC46 optional printer cable required)			
General				
Sensitivity of levels	Plate level	30"/2mm*5	30"/2mm	40"/2mm
	Circular level / LCD display	10"/2mm / Graphic display range: ±4' (±74mgon), Digital display range: ±4'30" (±83mgon)		
Optical plummet	Image: Erect, Magnification: 3x, Minimum focus: 0.3 m (0.98 ft.) from tribrach bottom			
Tribrach	Detachable (WA100)			
Dust and water protection	IP66 (IEC 60529:2001)			
Operating temperature	Standard models	-20 to +50°C (-4 to +122°F)		
	Low-temperature model*6	-	-30 to +50°C (-22 to +122°F)	-
Storage temperature	-30 to +70°C (-22 to +158°F)			
Instrument height	236mm (9.3in.) from tribrach bottom			
Size (with handle and battery)	W 165 x D 170 x H 341 mm (W 6.5 x D 6.7 x H 13.5 in.)			
Weight (with handle and battery)	5.2 kg (11.5 lb.)			5.0 kg (11.1 lb.)
Power supply	7.2V DC			
Battery	BDC46B detachable battery (standard)	Li-ion rechargeable battery, 7.2V, 2.45Ah, 103g (3.6oz.). 2pcs. included (1pc.in SET620). Continuous use*7: Approx. 10 hours (1,200 points), Approx. 13.5 hours for angle measurement only		
Remaining battery level display	4 levels + Low level message			
Automatic power cut-off	5/10/15/30 minutes after operation / Off, selectable			

*1 IEC60825-1 2nd edition:2007 / FDA CDRH 21 CFR Part 1040.11 Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

*2 Average conditions: Slight haze, visibility about 20km (12 miles), sunny periods, weak scintillation.

*3 Good conditions: No haze, visibility about 40 km (25miles), overcast, no scintillation.

*4 When the measuring beam's incidence angle is within 30° in relation to the reflective sheet target.

*5 20" / 2 mm plate level is available as a factory option.

*6 Low-temperature Model is available on built-to-order basis.

*7 Fine and single distance measurements every 30s at 25°C (77°F).

Standard Accessories

BDC46B rechargeable battery: 2 pcs. (SET620: 1 pc.) ● CDC68 quick charger with EDC113A/113B/113C power cable ● CP7 tubular compass ● Lens hood ● Lens cap ● Plumb bob ● Tool kit ● Operator's manual ● Carrying case and shoulder strap

Optional Accessories

SF14*1 wireless keyboard ● SCRC2A*1 CF card unit ● BDC57*2 external Ni-MH battery, EDC3A*2 power cable for BDC57 (2m), EDC7A*2 power cable for BDC57 (0.5m), CDC14*1 battery charger for BDC57 ● EDC2A*1 AC power adapter (100 to 240V) ● OF3A solar filter ● DE25 diagonal eyepiece ● EL7 eyepiece (40x) ● EL6 eyepiece for SET620 (30x) ● DOC46 printer cable ● DOC26 (25 pins, female), DOC 27 (9 pins, female) interface cables

*1 Not available with SET620.

*2 Low-temperature compatible (not available with SET620).

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