

SOKKIA

SET2100

SET3100

SET4100

SERIES 100 TOTAL STATIONS

Versatile total station employing reflective sheet targets and a 3,000-point internal memory!

Geodisical



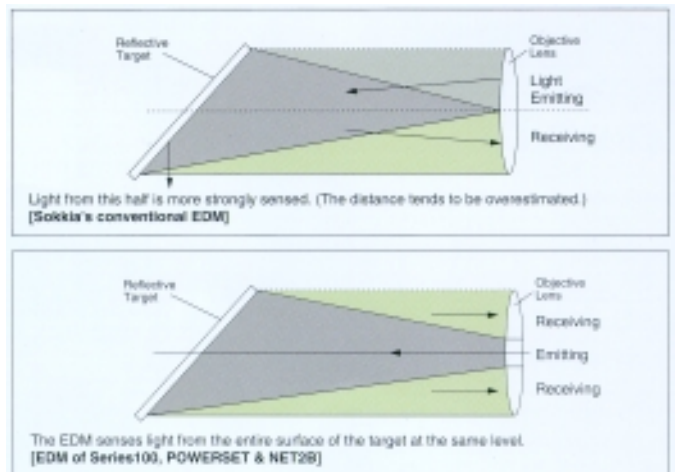
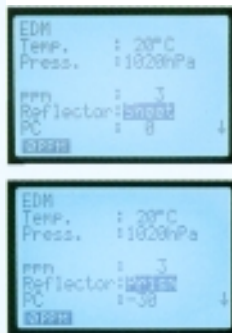


With Series 100 total stations you can measure distances with Sokkia's innovative reflective sheet targets as well as with conventional glass prisms. Reflective sheet targets are far less expensive than glass prisms and can be quickly and easily set up in locations where glass prisms cannot. Sokkia's variety of reflective sheet targets - the quality and versatility of which have been proven with the MONMOS-NET2B precision industrial measurement system - will extend the boundaries of your survey work.

MICRO-PRISM REFLECTIVE SHEET TARGETS MAKE SURVEYING EASIER, FASTER AND ENABLE A MORE FLEXIBLE APPROACH.

■ Unique EDM designed for use with both reflective sheet targets and glass prisms.

Conventional EDM's rely on vertical or horizontal partitioning of the lens, of which one half is used as the light emitter and the other half as the light receiver. This design works well with glass prisms, but it does not accommodate reflective sheet targets. When measuring the sheet targets, inclination of the sheet (setup angle) causes variations in the returned light that render measurement either impossible or erroneous. The Series 100 incorporates an innovative optical system in which the central portion of the objective lens acts as the light emitter and the surrounding portion acts as the receiver. With this system, errors introduced by inclination of the target are obviated (providing it is set within $\pm 30^\circ$) resulting in measurements accurate to $\pm(4+3\text{ppm} \times D)\text{mm}$. With the glass prisms, Series 100 can measure the distance with an accuracy of $\pm(2+2\text{ppm} \times D)\text{mm}$.



• Measuring Ranges

Model	Size (mm)	Measuring distance (when targets face in right angle)		
		SET2100	SET3100	SET4100
RS10N	10x10	1m~40m	1m~30m	1m~25m
RS50N	50x50	1m~90m	1m~80m	1m~60m
RS90N	90x90	1m~120m	1m~100m	1m~80m

■A variety of reflective sheet targets makes possible tricky survey situations which were previously impossible.

•RS series Reflective Sheets

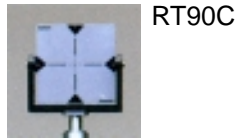
0.4 mm thick, self-adhesive sheets that adhere at a touch to almost any dry surface.

Boldness of cross hair line	Normal	Thin	Plain (no lines)
5 x 5 mm	-	RS05T	-
10 x 10 mm	RS10N	RS10T	-
15 x 15 mm	RS15N	RS15T	-
20 x 20 mm	RS20N	RS20T	-
30 x 30 mm	RS30N	RS30T	-
50 x 50 mm	RS50N	-	-
70 x 70 mm	RS70N	-	-
90 x 90 mm	RS90N	-	-
230 x 230 mm	-	-	RS00



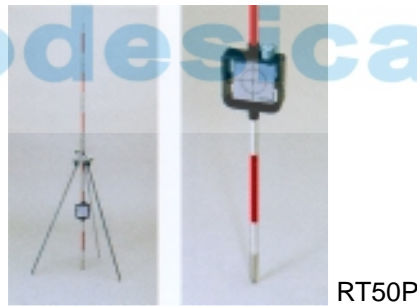
•Detachable Rotary Target RT90C

90 x 90 mm, 360° rotating sheet target. The RT90C can be mounted on a tribrach with the AP41 adapter, or mounted directly to prism pole AP61.



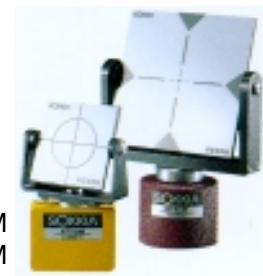
•Pin Pole Target RT50P

50 x 50 mm, 360° rotating sheet target. The RT50P can be connected to narrow pin poles.



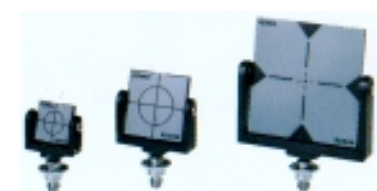
•Magnetic Rotary Targets RT50M•RT90M

Incorporating a powerful magnet base, these can be mounted on a steel surface in seconds. Full 360° rotation. The RT50M is 50 x 50 mm, RT90M is 90 x 90 mm.



•Grip Anchor Targets RT30G10•RT50G10•RT90G10

Fully rotative targets with 10 mm dia. male screws. They can be mounted in M10 female bolt holes. The RT30G10 is 30 x 30 mm, RT50G10 is 50 x 50 mm, and RT90G10 is 90 x 90 mm.



•Two-Point Target 2RT500

For the measurement of hidden points (please refer to page 8 "Two-Distance Offset" for measurement procedures). The distance between the two targets is 500 mm, and the total length can be extended by adding poles. The measuring range is the same as for a 50 x 50 mm sheet target



•Reflective Staff RF3

A levelling staff with a special reflective surface. Very quick to sight, for horizontal angle and horizontal distance applications. It can also be used as a normal levelling staff for reading heights.

RT30G10•RT50G10•RT90G10

Reflective Staff RF3

*Prism constant of all the reflective targets is "0".



Sokkia's latest mechanical, optical and electronic technologies are embodied in the Series 100 within the ultra-light body that weighs in at only 5.4 kg/11.9 lb. The basic structural design is the same as found in the POWERSET series - one of the most sophisticated total stations ever developed.

■Miniaturized Telescope

The compact telescope considerably eases the sighting of targets compared with the bulky telescope usually encountered in conventional total stations. This benefit is especially appreciated by the surveyor wearing a hardhat. The offset between the peep sight and telescope is minimized, so the short-range sighting is easier and faster.

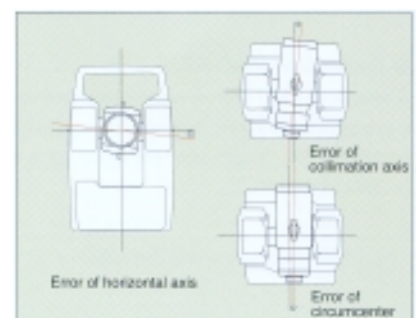
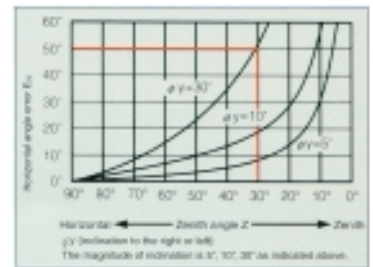
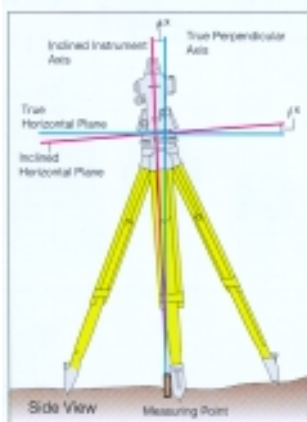
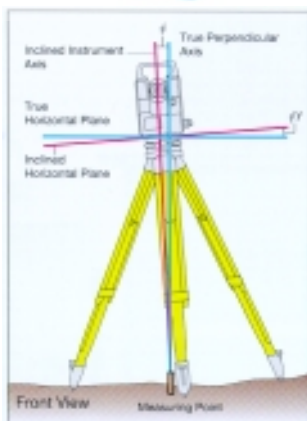
■Ultra-light Total Station

The Series 100 is the lightest in its class, weighing a mere 5.4 kg /11.9 lb. - including tribrach, handle and battery. Carrying the instrument is no longer an arduous task.

■Simultaneous Automatic Compensation for the Vertical, Horizontal and Sighting Axes.

Since it was first introduced with the Series C total stations in 1989, Sokkia's dual-axis compensator has proven its reliability and accuracy at survey sites all over the world. Deviations of both the X and Y axes are monitored by the dual-axis tilt sensor, and corrections for horizontal and vertical angle readings are automatically computed and applied. This makes levelling of the instrument easier and less time-consuming. The collimation function automatically corrects the deviations of the horizontal, vertical and sighting axes.

ACCURATE, DURABLE AND SOPHISTICATED HARDWARE PACKAGED IN AN ULTRA-LIGHT BODY.



■Graphic Bulls-Eye Level Facilitates Levelling.

A graphically displayed bulls-eye lets you quickly and efficiently level the instrument.



■Two-Speed Controls

All rotating knobs, such as the telescope focusing ring and the vertical and horizontal fine motion screws, rotate at two speeds for fine and coarse control. These knobs are coated with durable non-slip rubber to give a comfortable and sure grip.

■Nickel-Metal Hydride Battery

The rechargeable Ni-MH battery lasts about 32%* longer than conventional Ni-Cd batteries. When fully charged, battery life is about 5.5 hours, or approximately 660 measurements.** As two batteries are provided as standard equipment, the Series 100 can be operated for a total of 11 hours - more than enough for an average day's work. Recharging takes only 70 minutes or less, making it easy to prepare for the next day's work.



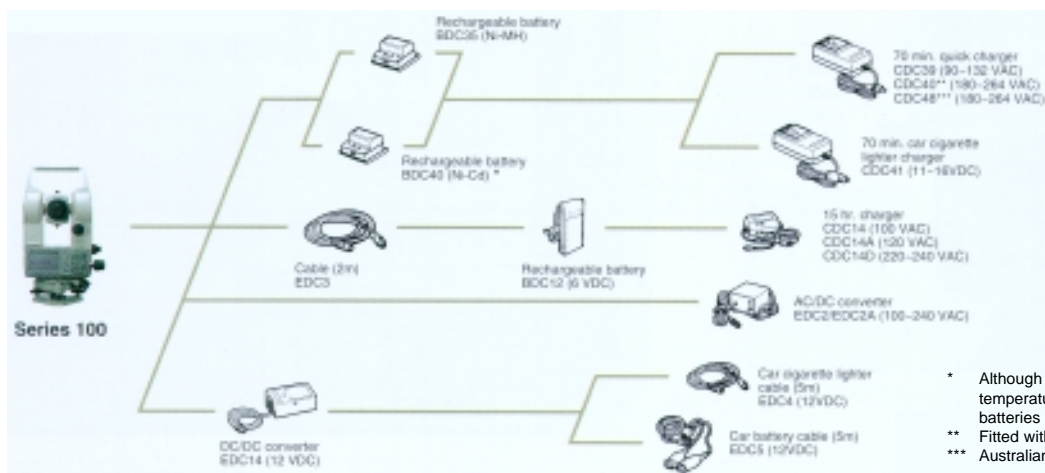
Ni-MH
Ni-Cd

* Sokkia's tests.

** In the Fine and Single measurement modes at measurement intervals of 30 seconds.



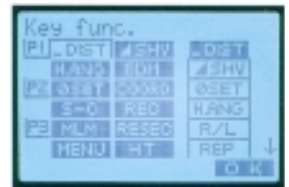
CDC39



* Although Ni-MH batteries can be used in temperatures ranging from -20°C to +50°C, Ni-Cd batteries last longer in temperatures below 0°C
 ** Fitted with a Euro plug (two round pins)
 *** Australian type



The Series 100 is operated using soft-function keys, edit keys and 10-keys for easy input of coordinates and codes, and the key assignment function enables keyboard customization for ease and efficiency. The 3,000-point internal memory provides convenient and secure data storage.



KEYBOARD CUSTOMIZATION AND 3,000-POINT INTERNAL MEMORY HELP YOU GET THE JOB DONE QUICKLY AND EFFICIENTLY.

Keyboard customization enhances field work.

The Series 100 offers optimum keyboard flexibility. Any keyboard layout can be configured. For example, functions can be assigned to any key position on any page, and unused functions can be temporarily deleted. Powerful "softkeys" and "edit-keys" in conjunction with the 10-keys greatly facilitate the input of coordinate values, feature codes, and other data.

Indication of prism constant, atmospheric correction, battery level and compensation status.

Current mode is displayed.

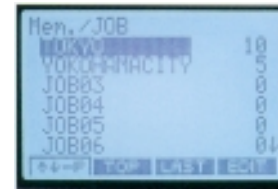
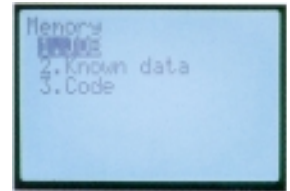
The display LCD has wide temperature characteristics thus does not require a heater even at low temperatures, resulting in longer battery life.

The LCD display shows the following information:

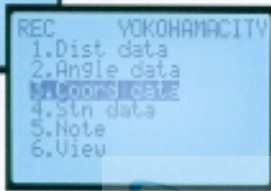
- Mode: Dist
- PC: -30
- PPM: 1
- Distance: 48.922m
- Angle 1: 89° 40' 02"
- Angle 2: 351° 00' 45"
- Status: P
- Bottom bar: SDIST, SHV, H.ANG, EDM

■Generous 3,000-point internal memory safely stores data.

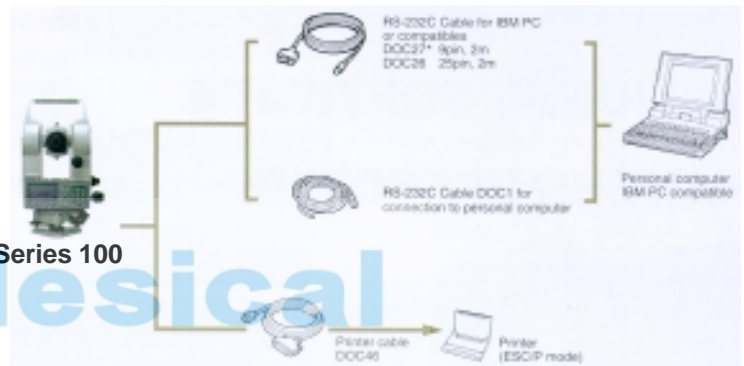
The Series 100 has a large internal memory capable of holding a full 3,000 data points. Multiple Job Files allow a maximum of twenty four (24) different files for different jobs. Point numbers can be inputted alphanumerically. Forty (40) feature codes (max. 16 characters each) can be stored in the memory for easy recall for recording. Measurement and recording are performed simultaneously with a single touch of the "AUTO" key. Known-point coordinates can be inputted directly from the keyboard or uploaded by COMMS software. Stored data is output in SDR33 format. A printer can be connected directly to the Series 100 for data printing. Any printer compatible with the ESC/P mode and having a parallel port can be used.



Feature code list - Feature codes can be easily recalled for recording.



Recording menu.



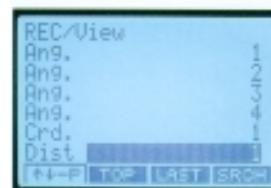
Geodesical



Recording angle and distance data.



Recording coordinate data.



Viewing recorded data.



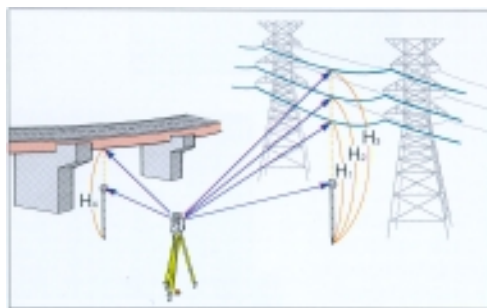
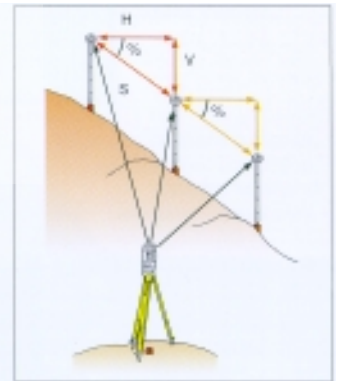
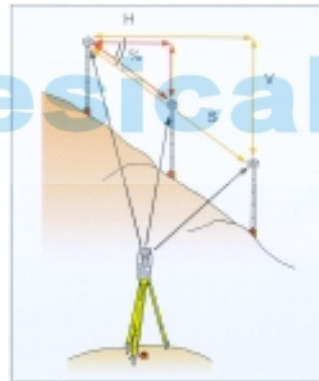
The Series 100 is equipped with practical and user-friendly software that enhances your daily survey work. Each function can be operated by easy-to-use softkeys without the need to constantly refer to the operator's manual. This level of user-friendliness makes the Series 100 easy to operate, even for a beginner.

PRACTICAL, FUNCTIONAL SOFTWARE ENHANCES EFFECTIVE SURVEYING.

Geodesical

■Missing Line Measurement (MLM)

The Series 100 measures horizontal distance, slope distance, height difference, and slope in percent (%) between two prisms, all at the touch of a key.



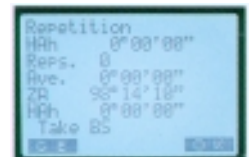
■Remote Elevation Measurement(REM)

The Series 100 can be used to easily determine the height of a point where a prism cannot be placed. The system sights a prism directly above or below the target point, and then sights the desired point.



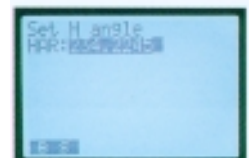
■Angle Repetition

For enhanced accuracy in the measurement of horizontal angles, the Series 100 can be used for repetitive measuring. It then calculates and displays the average of the angle measurements.



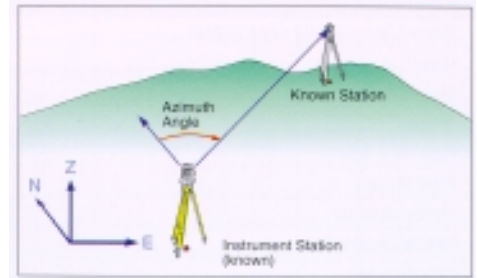
■Horizontal Angle Input

Any desired horizontal angle can be inputted by 10-key operation.



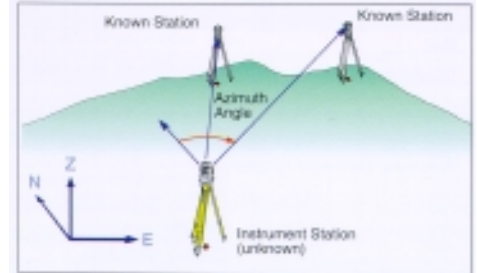
■Azimuth Angle Setting

Using the coordinates of the instrument station and a backlight point, the Series 100 can automatically set the horizontal angle to the azimuth of the backsight.



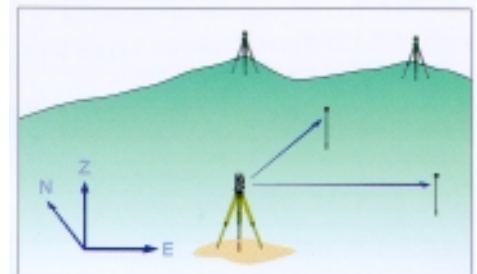
■Resection

With 2 to 10 known points, the Series 100 can be used to determine the azimuth and coordinates of the unknown instrument station. When using 2 known points, both angles and distances are measured. When using more than 3 points, the distance does not always have to be measured. The standard deviations for N and E are displayed. If the result is unsatisfactory, "Reobservation" or "Add-observation" can be selected.



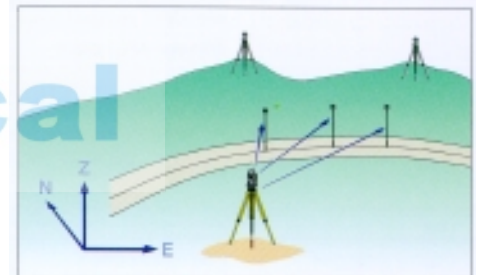
■3-D Coordinate Measurement

The Series 100 calculates 3-D coordinate values of measuring points. The operator may choose display settings: "N,E,Z" or "E,N,Z".

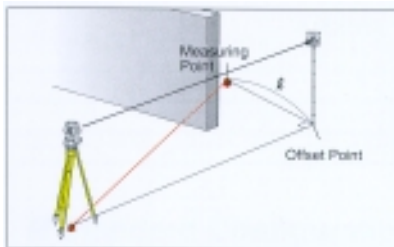
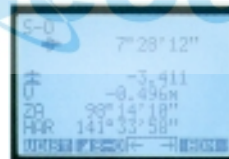


■Setting-Out

The Series 100 can be used to perform 3-dimensional setting-out with N, E and Z coordinates. The setting-out position is indicated graphically: right or left, forward or backward, up or down.

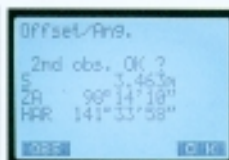
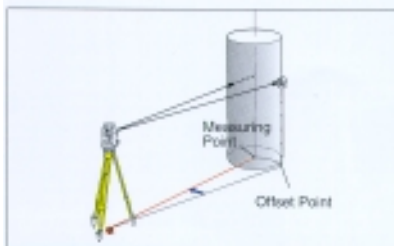


■Offset Measurements



■Offset/Distance

By inputting the distance and the direction between the measuring point and the prism, the Series 100 calculates the angles & distance or coordinates of the measuring point.

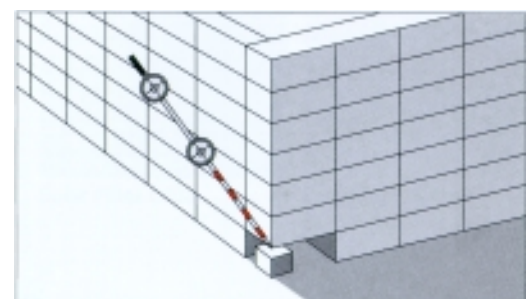


■Offset/Angle

Set the prism on the left or right side of the measuring point at the same distance from the Series 100. First measure the prism, then sight the measuring point. The Series 100 calculates the position of the measuring point.

■Two-Distance Offset

With the Two-Point Target 2RT500, the Series 100 can measure the hidden point easily and efficiently. Set the Two-Point Target on the measuring point (the target does not have to be set perpendicular). Measure targets A and B respectively, and input the length between target B and the measuring point. The Series 100 calculates the position of the measuring point in angles and distance or coordinate values



Specifications

		SET2100	SET3100	SET4100
Telescope		Fully transiting. Coaxial sighting and distance measuring optics		
Dimensions (without peep sights)		L165 x W62 x H80 mm (L6.5 x W2.5 x H3.2 in.)		
Objective aperture		45 mm (1.8 in.) (EDM: 50 mm (2.0 in.))		
Magnification		30 x		
Image		Erect		
Resolving power		3"		
Field of view		1° 30' (26 m/1,000 m)		
Minimum focus		1.0m (3.3 ft.)		
Reticle illumination		Built-in. Bright / Dim, selectable		
Focusing ring		Fine / Coarse two speeds		
Angle measurement		Incremental rotary encoder with 0 index, diametrical detection		
Unit		Degree / Gon / Mil, selectable		
Display resolution		0.5" /0.1 mgon /0.002 mil 1" /0.2 mgon /0.005 mil	1" /0.2 mgon /0.005 mil 5" / 1 mgon /0.02 mil	
Accuracy (according to DIN18723)		2" /0.6 mgon	3" / 1 mgon	5" / 1.5 mgon
Automatic dual-axis compensator		On (V&H, V only) / Off selectable		
Type		Dual-axis liquid tilt sensor		
Range		±3' / ±55 mgon, with out-of-range warning display.		
Display resolution		Same as the angle display resolution currently selected.		
Graphic level		Digital / Graphic, selectable		
Collimation program		On / Off selectable		
Display mode		H V	Clockwise / Counterclockwise, selectable. Repetition, Angle-Input, 0 set are available. Zenith 0° / Horizontal 0° / Horizontal 0°±90°, selectable	
Distance measurement		Electro-optical with modulated infrared light		
Measuring range (slope distance)		Conditions	A: Average conditions: slight haze, visibility about 20 km (12 miles), sunny periods, weak scintillation. G: Good conditions: no haze, visibility about 40 km (25 miles), overcast, no scintillation. Maximum ranges are achieved with Sokkia CP/AP series prisms and reflective sheet target RS9ON (90 x 90 mm).	
Reflective sheet target RS9ON	A	1 m to 120 m (390 ft.)	1 m to 100 m (320 ft.)	1 m to 80 m (260 ft.)
With CP01 compact prism	A	1 m to 800 m (2,600 ft.)	1 m to 700 m (2,200 ft.)	1 m to 600 m (1,900 ft.)
With one AP01 prism	A	1 m to 2,400 m (7,800 ft.)	1 m to 2,200 m (7,200 ft.)	1 m to 1,600 m (5,200 ft.)
	G	1 m to 2,700 m (8,800 ft.)	1 m to 2,500 m (8,200 ft.)	1 m to 1,800 m (5,900 ft.)
With three AP01 prisms	A	1 m to 3,100m (10,100 ft.)	1 m to 2,900m (9,500 ft.)	1 m to 2,100m(6,800 ft.)
	G	1 m to 3,500 m (11,400 ft.)	1 m to 3,300 m (10,800 ft.)	1 m to 2,400 m (7,800 ft.)
With nine AP01 prisms	A	1 m to 3,700 m (12,100 ft.)	1 m to 3,500 m (11,400 ft.)	1 m to 2,500 m (8,200 ft.)
	G	1 m to 4,200 m (13,700 ft.)	1 m to 4,000 m (13,000 ft.)	1 m to 2,900 m (9,500 ft.)
Unit		Meters / Feet, selectable		
Display resolution	Fine measurement	0.0001 m /0.001 ft. 0.001m / 0.01 ft.	0.001 m /0.01 ft.	
	Rapid measurement	0.001 m /0.01 ft.		
	Tracking measurement	0.01 m /0.1 ft.		
	Maximum display range	9999.9999 m /32808.333 ft.	9999.999 m /32808.33 ft.	
Accuracy	With glass prisms	Fine meas.	±(2 + 2ppm x D) mm	
		Rapid meas.	±(5 + 5ppm x D) mm	
	With reflective sheet targets	Fine meas.	±(4 + 3ppm x D) mm	
		Rapid meas.	±(5 + 5ppm x D) mm	

■Electronic Field Books: SDR33 • SDR31

Thanks to its advanced two-way communications port, the Series 100's functions can all be accessed by external controller. For example, by connecting one of Sokkia's acclaimed Electronic Field Books (SDR33 or SDR31), complex field operations such as traverse adjustment, intersection, area calculations and roading can be carried out with remarkable ease.



		SET2100	SET3100	SET4100
Measuring time	Fine meas. (single/repeat)	Every 2.0 seconds (initial 4.2 seconds)		
	Rapid meas. (single/repeat)	Every 0.7 seconds (initial 2.9 seconds)		
	Tracking meas.	Every 0.5 seconds (initial 2.9 seconds)		
Atmospheric correction	Temperature range	-30°C to 60°C / -22°F to 140°F		
	Pressure range	500 hPa to 1,400 hPa / 375 mmHg to 1,050 mmHg / 14.8 inchHg to 41.3 inchHg		
	ppm range	-499ppm to 499 ppm		
	Humidity range	0% to 100%		
Prism constant correction		-99 mm to +99 mm (1 mm steps)		
Refraction & Earth-curvature correction		On / Off selectable (K=0.14 or K=0.20)		
Data recording				
Internal memory		About 3,000 points memory, both angles & distance data or coordinate data.		
Interface		Asynchronous serial RS-232C compatible. Baud rate up to 38,400 bps.		
Calendar, clock function		Provided		
General				
Display		LCD graphic displays on both faces. 120 x 64 dots, 20 characters x 8 lines.		
Keyboard		Alphanumeric keyboards on both faces.		
Clamps / Fine motion screws		Co-axial, Fine/Coarse two-speed motion		
Sensitivity of levels	Plate level	20" /2 mm	30" /2 mm	
	Circular level	10' /2mm		
Optical plummet		Image: Erect, magnification: 3x, minimum focus: 0.5 m (1.64 ft.)		
Operating temperature		-20°C to 50°C / -4°F to 122°F		
Water resistance		IPX2 (IEC 529/1989). Protected against normal precipitation.		
Size with handle and battery		W177 x D165 x H345 mm / W7.0 x D6.5 x H13.6 in.		
Tilting / Trunnion axis height		236 mm / 9.3 in. from tribrach bottom, 193 mm / 7.6 in. from tribrach dish.		
Weight with handle and battery		5.4 kg / 11.9 lbs.		
Weight of parts				
Power Supplies		BDC35 battery: 240g/8.5 oz, handle: 100g/3.5 oz, tribrach: 700g/1.5 lbs., case: 3.7kg/8.2 lbs.		
Operating voltage		6V DC		
Battery level display		4 steps with warning message.		
Automatic power cut-off		Provided		
BDC35 rechargeable battery		Ni-MH rechargeable battery, 2 pcs. supplied as standard.		
	Working duration at 25°C 77°F per piece	Angle & distance meas.: about 5.5 hours (about 660 points) (Fine/single measurement, measurement interval: 30 seconds)		
		Angle measurement only: about 7 hours		
	Charging time	About 70 minutes with CDC39, CDC40 or CDC48 chargers.		

*When the beam's incident angle is within $\pm 30^\circ$ in relation to the surface of the target.
Specifications not listed under specific instruments are identical to those appearing to the left.
Designs and specifications are subject to change without notice.

■ Standard Configuration

The Series 100 comes with a tribrach, two (2) rechargeable batteries BDC35, a quick charger CDC39/40/48, tubular compass CP7, sunshade, lens cap, plumb bob, vinyl cover, tool kit, operator's manual, carrying case and shoulder strap.



● Optional Accessories



Diagonal Eyepiece DE17A **Solar Filter OF3A** **Back Pack SC153**