SOKKIA

NEW

Series30R

SET330R · SET530R · SET630R

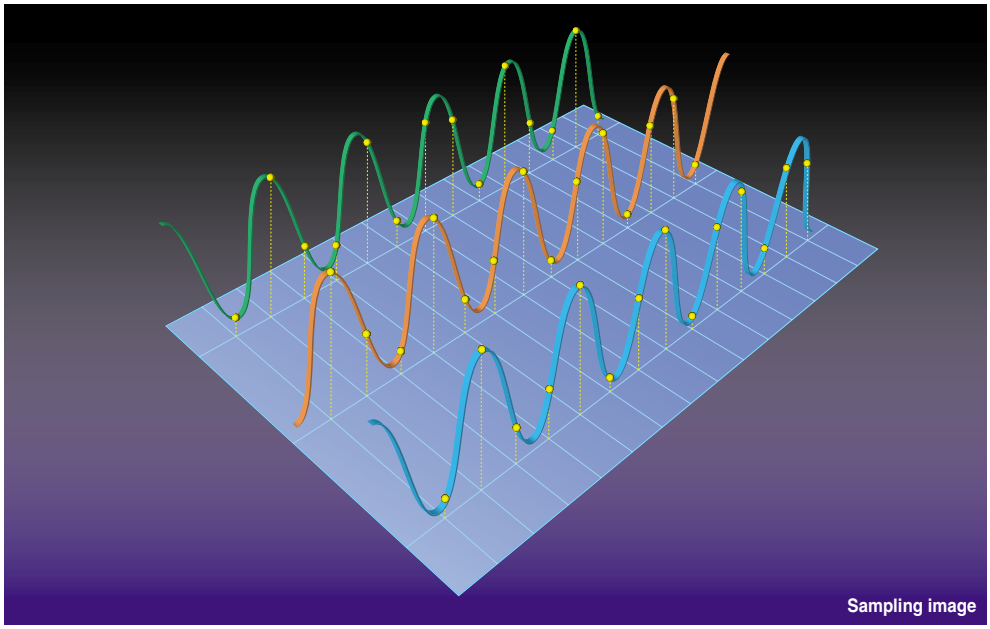
Reflectorless Total Stations

A New Level of Speed & Precision for Reflectorless Total Stations

Innovative Technology Makes Reflectorless

The Series30R merges state-of-the-art reflectorless measurement technology and diverse functions within a compact body.

The fusion of tradition and innovation, RED-tech* EDM



Sampling image

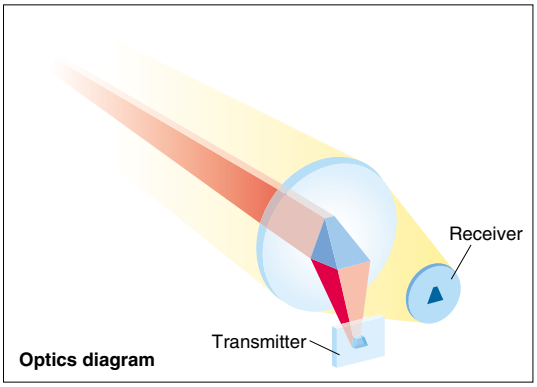
For over thirty years, Sokkia has been on the cutting edge of EDM instrumentation. And now, with the introduction of our new digital signal processing technology, Sokkia forges ahead once again. RED-tech EDM works by sampling the measuring beam with an A/D converter, and then using advanced software to calculate distances. This ensures the selection of the calculation method most suited to the condition of the measuring beam, and increases measurement accuracy—and speed—as a result.

The Series30R also features new optics with an improved light path that captures light with minimal loss. Also, objects that were once difficult to measure are handled with high precision thanks to a new highly tunable optical filter, which can capture many samples of beams carrying the correct measurement information. The fusion of these advanced digital and optical technologies opens the door to unprecedented distance measuring possibilities.

* REvolutionary Digital processing technology

Sokkia's traditional optics

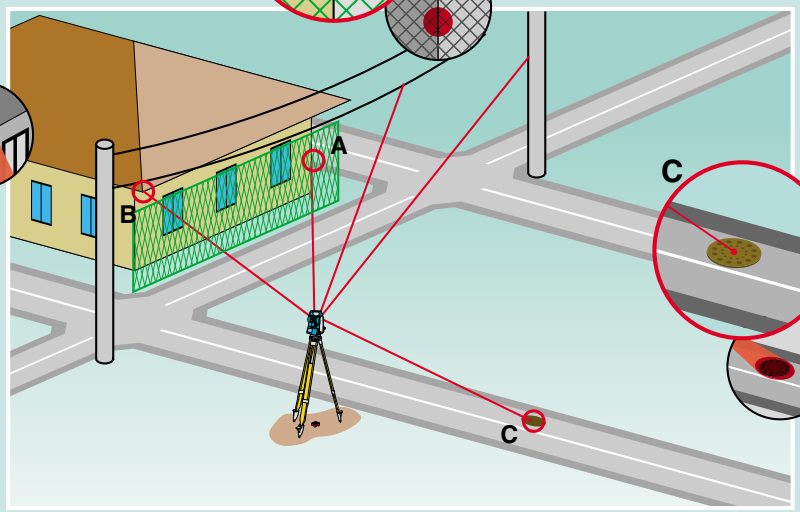
Sokkia's traditional optics have never been more refined. Light is projected from the middle of an objective lens and received along its periphery. When combined with a narrow measuring beam, this design enables pinpoint measurement, and is highly effective even with narrow objects.



Optics diagram

EDM More Powerful Than Ever

Small-diameter visible laser for pinpoint accuracy



A
Series30R: The narrow laser beam enables accurate measurements through obstacles such as chain-link fences, tree branches, etc.
Broader beam models: Both the fence and wall get measured, which leads to erroneous measurement.

B
Series30R: The measuring beam is narrow, so distances to walls and corners can be measured with pinpoint accuracy.
Broader beam models: A wide measuring beam hits points near and far at the same time, resulting in inaccurate measurement.

C
Series30R: Measurements at small incident angles, such as with manholes on the road surface, are handled with high precision by the narrow laser measuring beam.
Broader beam models: Wider measuring beams end up covering a larger area than expected at small incident angles, resulting in measurements that are too long or short.

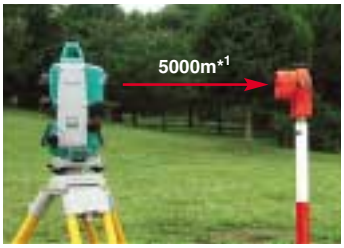
The Series30R employs a small-diameter visible laser to obtain measurements with pinpoint accuracy. Fine objects, as well as the corners of walls and other structures, can be measured precisely. You can also make accurate measurements through obstacles such as fences and tree branches. Accuracy is ±(3 + 2 ppm x D) mm, with a continuous measurement speed of 1.3 seconds (in fine measurement mode). Distances of 100 m (320 ft.) can be measured.* This level of performance, in combination with the diverse programs of the Series30R, is sure to expand the scope of your surveying capabilities.

* When using the white side of a KODAK Gray Card.

Laser-pointer function

The visible laser beam can be used as a convenient laser pointer function which enables interior leveling works, vertical alignment, setting out, and much more.

Long-distance measurement with reflectors



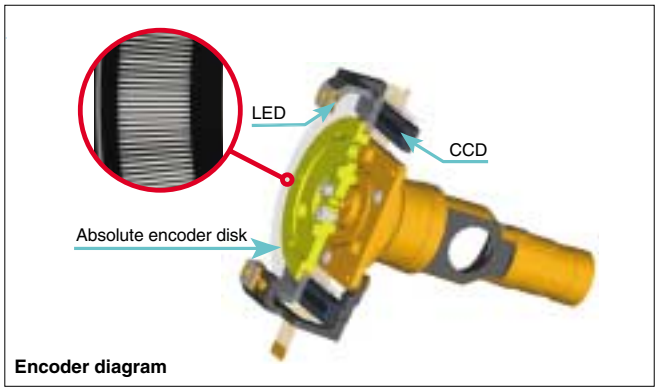
Measure long distances by directing the laser beam at a prism. When using a single AP prism, you can measure as far as 5,000m (16,400 ft.)* at once, with an accuracy of ±(2 + 2 ppm x D) mm. In addition, reflective sheet targets may be used to get measurements of up to 500 m (1,640 ft.)** with ±(3 + 2 ppm x D) mm precision. Choose from Sokkia's wide selection of sheet targets to suit your needs. Rotating pin-pole targets, two-point targets for measuring hidden points, and many other innovative reflective targets are available.

* SET330R/SET530R in good weather conditions.
** When using RS90N-K.

Laser beam image is simulated.

A Durable Partner That Gives Heavy-Duty Support for Daily Surveying Needs

Sokkia's original absolute encoder



Encoder diagram

The Series30R models are equipped with Sokkia-developed absolute encoders. These encoders feature the RAB (RAndom Bi-directional) code technology first used in the SDL30 digital level, which provides high stability and reliability. You do not need to reset for 0 indexing at the start of a job, so surveying can begin from the moment you turn on the power. Work efficiency is also boosted by the immediate display of azimuth whenever you restart the total station.

Triple-axis compensation for high reliability

Vertical and horizontal angles are compensated for by a dual-axis compensator that detects the tilt of the total station in two directions. In addition, a collimation function corrects the deviation of the telescope's mechanical axis. Working together, these features offer maximum reliability with angle measurements.

Exceptional durability

Featuring advanced protection against water and dust, the Series30R total stations are ideal for use in inclement weather, humid environments, or at dusty work sites. (IP66 compliant)

Laser beam image is simulated.

SF14 wireless keyboard (Optional for SET330R/530R)

This wireless keyboard has a total of 37 keys (including alphanumeric keys, softkeys, and measurement controls), to enable quick and easy data entry of point names and coordinate values. Protection against dust and water is another advantage, as you can use the keyboard without worry in the rain or at a dusty construction site. (IP44 compliant)

FOF sensors

Sokkia's original and extremely compact FOF (Fiber made of Optical Filter material) sensors are mounted on two sides of the SET330R/530R for communication with the SF14 wireless keyboard. These sensors are extremely resistant to light interference, and have a wide signal reception range to allow comfortable use of the keyboard.

FOF sensor

Large internal memory

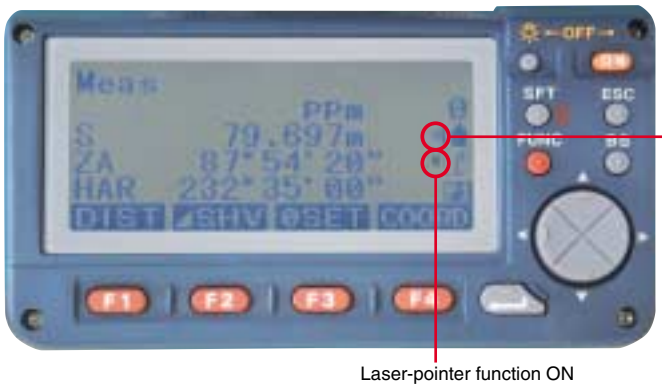
The Series30R can store approximately 10,000 data points, including known points and other information. To facilitate concurrent use at different work sites, data may be sorted into 10 different job files.

CompactFlash memory card unit (Optional for SET330R/530R)

A card unit for commercially available CompactFlash memory cards can be added as an option to the SET330R or SET530R. 72,000 points (eighteen 4,000-point files) can be stored with an 8MB memory card, while a 16MB memory card provides 144,000 points of data storage (thirty-six 4,000-point files).

Status check at a glance

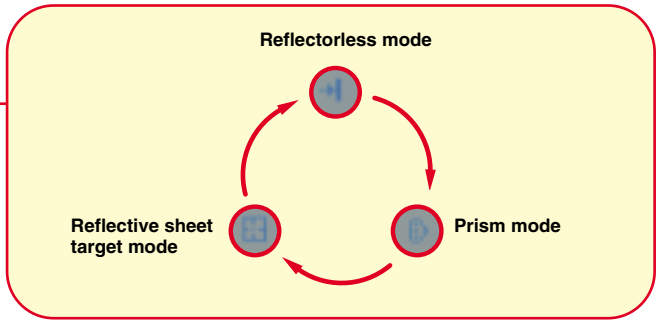
The built-in control panel has an easy-to-view LCD screen with 192 x 80 pixel resolution. Key information, such as EDM mode (reflectorless, prism, or reflective sheet target) and laser beam status, can be checked at a glance.



Laser-pointer function ON

One-touch target selection

There are no complicated operations when it comes to selecting targets. The Series30R total stations let you switch between reflectorless, prism, and reflective sheet target just by pressing the SFT key in sequence. The selected target is displayed on the operation panel for easy confirmation.



User-friendly keyboard and softkeys

The control panel also includes large, ergonomic buttons as well as four softkeys (F1-F4). Softkey functions are structured into 3 pages and 12 modes, and you are free to assign functions to any key you like. Productivity is enhanced through this balance of functionality and ease of use.

Password function for security

The Series30R includes a password-protection function for security purposes. You can assign your own password to the instrument to prevent unauthorized use.

Compact lithium-ion battery

Take 5 hours of continuous angle and distance measurements with the Series30R's rechargeable lithium-ion battery. Unlike Ni-Cd cells, the Series30R's battery can be fully recharged at any time, without diminishing its energy capacity. The BDC46A battery is commonly used for Sokkia's Series10 total stations, digital levels, and other equipment.

Ultra-light body

Weighing 5.3 kg (11.7 lbs.) with battery and tribrach, the Series30R total stations are always easy to handle.

Reflectorless | Sheet Target | Prism | Laser Pointer | Absolute | Compensator | Repetition | % | LCD Level | Ex-Keyboard* | RS-232C* | Printer-Out | Memory Card* | 10,000points | Li-ion | IP66

* SET330R • SET530R (Optional)

Packed with Versatile Functions for High Work Efficiency at Diverse Sites

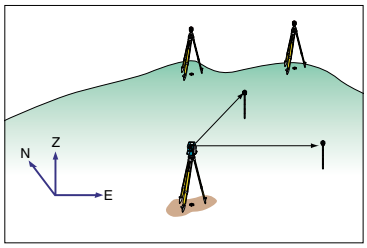
Missing Line Measurement (MLM)

At the touch of a key, the Series30R measures horizontal distance, slope distance, height difference and percentage of slope between two points.

Remote Elevation Measurement (REM)

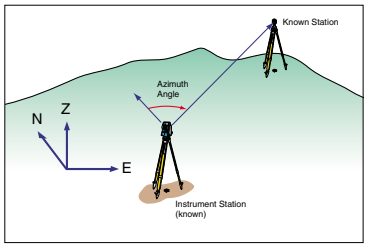
The Series30R easily determines the height of a point where distance cannot be measured directly. Sight a point either directly above or directly below the target point, and then sight the target point.

3-D Coordinate Measurement



The Series30R calculates 3-D coordinate values of measuring points and displays them either as N, E, Z or E, N, Z.

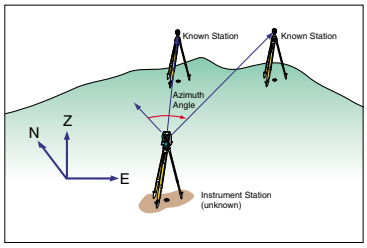
Automatic Azimuth Angle Setting



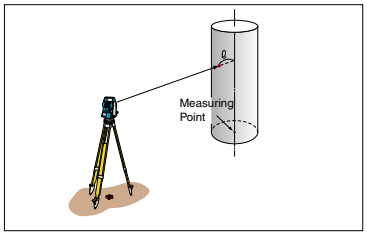
The Series30R can automatically set the horizontal angle to the azimuth of a back sight by using the coordinates of the instrument station and the back sight point.

Resection

The Series30R can determine the azimuth and coordinates of an unknown instrument station with 2 to 10 known points. When using two points, measure both angles and distances. When using three or more points, the distance is not required. Station elevation from known reference points (up to 10 points) can also be calculated and each deviation of multiple reference points is displayed. If a bad point is selected it can be recalculated, re-observed or replaced with a new point.



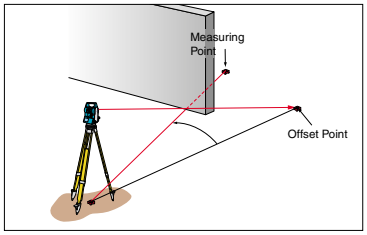
Offset/Distance



The Series30R calculates the angles and distance, or the coordinates of the measuring point by inputting the distance and direction between the measuring point and the offset point.

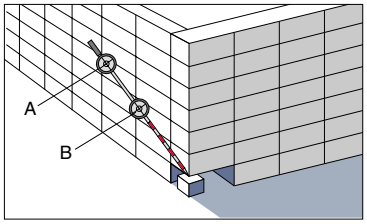
Offset/Angle

The Series30R automatically calculates the position of measuring points. First, measure a point on either side of the measuring point at the same distance from the Series30R instrument. Then sight the measuring point.

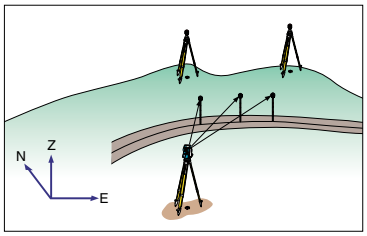


Two-Distance Offset

With the use of a 2RT500-K 2-point target, the Series30R can measure hidden points easily and efficiently. Set the two-point target on the measuring point (the target does not have to be perpendicular), measure targets A and B, and input the length between target B and the measuring point. The Series30R calculates the position of the measuring point in angles and distance, or in coordinate values.



Setting Out



The Series30R performs three-dimensional setting out with N, E and Z or E, N and Z coordinates. Directions and distances to the setting out position are indicated on the screen.

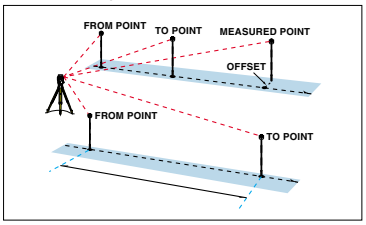
Laser beam image is simulated.

Set-out Line

The Set-out line program is used for setting out and checking alignment of curb lines, construction boards and grades of pipes. A baseline or an offset from baseline can be defined. When calculating the measuring point, it's possible to calculate and use the scaled down coefficient of the distance and surveyed value that was calculated using the known coordinate values of 2 points.

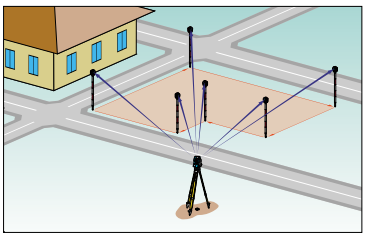
Point Projection

This program projects a point onto a line. It calculates the distance and offset of the point relative to the specified baseline, and it computes the coordinates of the intersection point, which can then be directly set out. Elevations are interpolated where possible.
When calculating the measuring point, it's possible to calculate and use the scaled down coefficient of the distance and surveyed value that was calculated using the known coordinate values of 2 points.

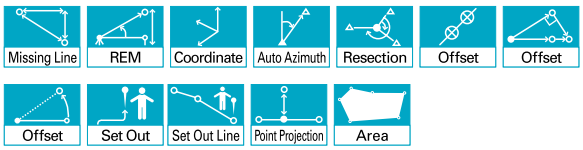


Set-out Line and Point Projection

Area Calculation



The Series30R can use measured points or stored data to calculate an area.



Standard accessories

BDC46A rechargeable battery (SET330R/SET530R: 2 pcs.; SET630R: 1 pc.) ● CDC61/62/64 quick charger ● CP7 tubular compass ● Lens hood ● Lens cap ● Plumb bob ● Tool kit ● Operator's manual ● Carrying case and shoulder strap

Optional accessories

SCRC2 CompactFlash card reader & writer ● DOC26 25-pin interface cable ● DOC46 printer cable (for connection to a Centronics compatible printer that supports ESC/PTM) ● DE25 diagonal eyepiece ● OF3A solar filter ● EL6 eyepiece (SET630R only; 30X telescope magnification)

For more information, please consult your local dealer.

Shifting Tribrach Model (Optional)

The SET530RS is available with shifting tribrach.

Series30R SET330R · SET530R · SET630R

REFLECTORLESS TOTAL STATIONS

SPECIFICATIONS

			SET330R	SET530R	SET630R
Telescope			Fully transiting, Coaxial sighting and distance measuring optics.		
Length			171mm (6.7in.)		
Objective aperture			45 mm (1.8 in.) [EDM: 48 mm (1.9 in.)]		
Magnification			30 x		26 x
Image			Erect		
Resolving power			3"		3.5"
Field of view			1°30' (26 m/1,000 m)		
Minimum focus			1.3m (4.3 ft.)		
Reticle illumination			Built-in. 5 brightness levels		
Angle measurement			Photoelectrical absolute rotary encoder scanning. Both circles adopt diametrical detection.		
Unit		H&V	Degree / Gon / Mil, selectable		
Display resolutions		H&V	1" / 5", 0.2mgon / 1mgon, 0.005 mil / 0.02 mil, selectable		
Accuracy (ISO/DIS12857-2 1997)		H&V	3" (1 mgon) (0.015mil)	5" (1.5 mgon) (0.02mil)	6" (1.9 mgon) (0.025mil)
Measurement mode		H	Clockwise / Counterclockwise, selectable ; 0 set, Hold, angle setting, repetition, available		
		V	Zenith 0°, Horizontal 0°, Horizontal 0° ±90°, slope in % , selectable		
Automatic dual-axis compensator			ON (V&H, only V) / OFF selectable		
		Type	Dual-axis liquid tilt sensor		
		Range	±3' (±55 mgon), " out-of-range " warning display provided		
		Display resolution	According to display resolution		
Collimation program			ON / OFF selectable		
Distance measurement			Modulated LASER, Laser diode, Coaxial EDM transmitting and receiving optics		
Measuring range (slope distance)			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.		
	Reflectorless*1	A	1.3 to 100 m (320 ft.)		1.3 to 100 m (320 ft.)
	With RS90N-K reflective sheet target	A	3 to 500 m (1,640 ft.)		3 to 500 m (1,640 ft.)
	With RS10N-K / RS50N-K	A	3 to 100 m (320 ft.) / 3 to 300 m (980 ft.)		3 to 100 m (320 ft.) / 3 to 300 m (980 ft.)
	With OR1PA pin pole prism	A	1.3 to 500 m (1,640 ft.)		1.3 to 500 m (1,640 ft.)
	With CP01 compact prism	A	1.3 to 800 m (2,620 ft.)		1.3 to 800 m (2,620 ft.)
	With one AP01 prism	A	1.3 to 4,000 m (13,100 ft.)		1.3 to 3,000 m (9,800 ft.)
		G	1.3 to 5,000 m (16,400 ft.)		1.3 to 4,000 m (13,100 ft.)
	With three AP01 prisms	A	5,000 m (16,400 ft.)		4,000 m (13,100 ft.)
		G	6,000 m (19,600 ft.)		5,000 m (16,400 ft.)
Unit			Meters / Feet / Inch, selectable		
Display resolution		Fine meas.	0.001 m (0.01 ft. / 1/8 inch)		
		Tracking meas.	0.01 m (0.1 ft. / 1/2 inch)		
Accuracy (Fine meas.) (D=measuring distance; unit: mm)	Reflectorless*1		± (3 + 2ppm x D) mm		
	With reflective sheet target		± (3 + 2ppm x D) mm		
	With AP prism		± (2 + 2ppm x D) mm		
Measuring time		Fine meas.	Every 1.3 s (initial meas. 2.6 s)		
		Tracking meas.	Every 0.3 s (initial meas. 1.6 s)		
Measurement mode			Fine meas. (single/repeat/average) / Tracking		
Laser			Wavelength: 690nm, Max. output: 0.99mW (IEC Class 2, FDA Class II LASER)		
Atmospheric correction			(1) Temperature / pressure input, (2) ppm input, (3) w/o compensation, selectable		
Prism constant correction			-99 to +99 mm (1 mm steps)		
Refraction & earth-curvature correction			ON (K=0.142 / 0.20) / OFF, selectable		
Data storage and transfer					
Data storage	Internal memory		About 10,000 points		
	Compact flash memory card unit *2		Optional		—
Scale factor setting			0.5 to 2.0		
Interface			Asynchronous serial, RS-232C compatible, baud rate : 1,200 to 38,400 bps		
Printer output			Centronics compatible (w/optional DOC46 printer cable)		
General					
Laser-pointer function			ON (automatic off 5 minutes after operation) / OFF, selectable		
Display			Alphanumeric/graphic dot matrix LCD (192 x 80 dots) w/backlight, w/contrast adjustment, on both faces		Alphanumeric/graphic dot matrix LCD (192 x 80 dots) w/backlight, w/contrast adjustment, on one face
Keyboard			4 soft keys and 11 keys on both faces		4 soft keys and 11 keys on one face
Wireless keyboard			Optional		—
Sensitivity of levels	Plate level		30" / 2 mm		40" / 2 mm
	Circular level (in tribrach)		10' / 2mm		
	Graphic LCD level		3' / outer circle		
Optical plummet			Image: Erect, Magnification: 3x, Minimum focus: 0.3 m (0.98 ft.)		
Water and dust resistance			Conformity to class IP66 (IEC60529)		
Operating temperature			-20 to +50°C (-4 to +122°F)		
Tilting / Trunnion axis height			236mm (9.3in.) from tribrach bottom		
Size with handle and battery			W 165 x D 171 x H 341 mm (W 6.5 x D 6.7 x H 13.5 in.)		
Weight with handle and battery			5.3 kg (11.7 lb.)		
Power supply			Operating voltage : 7.2 V DC		
BDC46A detachable battery			Li-Ion rechargeable battery		
	Continuous use at 25°C (77°F) per battery *3		Angle & distance measurement: About 5 hours (About 600 points)		
	Recharging time per battery		Less than 2 hours with CDC61/62/64		
Battery level display			4 steps with warning message.		
Automatic power cut-off			30 / 15 / 10 / 5 minutes after operation / OFF, selectable		
Resume function			ON / OFF selectable (backed up for about 1 week)		

*1 With the white side of a KODAK Gray Card (Reflectivity : 90%). Range and/or accuracy may be varied according to measurement objects, observation situations and enviromental conditions.
*2 Flash memory card not included.The 8MB compact flash memory card provides approximately 72,000 points of data storage.
*3 Fine & single measurement, measurement interval: 30 seconds.

Sokkia is a sponsor of the International Federation of Surveyors

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