SETX

SOKKIA CLASSIC

SOKKIA

A New Epic to a Legacy of Breakthrough Technology

Far from home, in the most demanding worksites, you need to rely on toughness and accuracy to pull you through. In the middle of the desert, deep in the heart of the jungle, or on a windswept mountain top, new discoveries are made and new trails are blazed. This is what surveying is all about.

Nobody knows this like SOKKIA, which is why we made the SOKKIA CLASSIC SET X total station, a rugged partner in a journey into undiscovered territory.

SETX

SET1X, SET2X, SET3X, SET5X

RED-tech EX - Superior Distance Accuracy in any Situation

RED-tech reflectorless EDMs are acclaimed for high-precision pinpoint accuracy and the flexibility to measure from distances as close as 30cm (1ft.). SET X features RED-tech EX, the latest in SOKKIA's innovative reflectorless measurement technology. RED-tech EX is the result of evolving RED-tech technology, and the reflectorless measurement range has been further extended to 500m (1,640ft.) while maintaining the same high level of accuracy. Of course, the ability to measure from 30cm (1ft.) remains unchanged.

RED Ex -tech
REvolutionary Digital processing EDM technology

This high precision measurement technology has more intelligent signal processing, offering distance measurement with greater stability and fewer constraints. RED-tech EX performs fast, highly accurate measurement of building corners, through fences, and to prisms and reflective sheets.

Single Optimized Beam

RED-tech EX uses only one visible red laser beam for measuring and pointing, allowing you to visually confirm the exact measurement point.

Enhanced Encoder

SET X features SOKKIA's original absolute encoders based on SOKKIA's digital level RAB (RAndom Bi-directional) Code technology. Highly stable, dependable encoders have been further refined making superior high accuracy angle measurement possible. SET1X and SET2X feature groundbreaking IACS (Independent Angle Calibration System) technology for extremely reliable angle measurement.

IP65 Environmental Protection

SET X offers the highest in environmental protection for Windows CE total stations. SET X has an IP65 rating, meaning it is able to withstand the harshest conditions in the most demanding jobsites. SET X maintains its IP65 rating even with the external battery connected.

IP

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.

User-friendly Design

Ergonomic Handle

SET X features a redesigned ergonomic handle and new attachment mechanism. The handle facilitates a tight grip for use in severe conditions. The handle can be easily and quickly removed for vertical and near vertical measurements and securely reattached in a flash.

Bluetooth® Wireless Technology

SET X features Class 1 *Bluetooth* wireless technology for license-free long range data communication. Enjoy a wireless connection with your data collector or tablet PC for expanded data collection possibilities and seamless data handling.

Guide Light Unit

SET X comes standard with a guide light unit to assist in setting out measurements. The guide light unit consists of two different color LED's emitted from a single aperture and can be easily determined at both long and short ranges. A special flashing pattern is also included to assist users with color weakness.

Color Display/Illuminated Keyboard

SET X has a color LCD touch screen display. The display has high angle visibility and subtle contrast for maximum visibility even in direct sunlight. The full alphanumeric keyboard has concave keys that can be easily pressed by hand or with the stylus and is illuminated to let you see what you are doing under any environmental condition.

Trigger Key

SET X features an ergonomically placed trigger key that greatly facilitates taking measurement while looking through the telescope and even while turning the fine motion screws. Measurement can be taken at any time with just the push of a button.

Rechargeable Li-ion Battery

SET X offers a flexible power system to support long hours in the field. SET X comes standard with 2 BDC58 rechargeable Li-ion batteries. Each standard accessory battery provides 12 hours of operational time for a total of 24 hours of battery life. The optionally available BDC61 external battery offers an astounding 35 hours of operation. The combination of the two provides enough power to work for a week without having to stop and recharge. SET X has no problem measuring long hours on remote jobsites.

A BDC46B battery can also be used with the provided SB178 adapter.

MULTIPLE DATA INTERFACES

Multiple data interfaces provide seamless data handling and transmission.

CompactFlash Card Slot

Support for Type II cards up to 1GB. SD cards can be used with an adapter.

USB Port

1GB FAT32 USB format is supported. A USB card reader can be used to further broaden useable media possibilities.

SFX

SET X includes SOKKIA's original SFX technology for convenient data transfer to anywhere in the world using an internet-capable mobile phone.

Waterproof Multi Port

Data transmission and external power connection are available in a single waterproof port. The port boasts an environmental rating of IP65 with data and battery cables connected.

Standard Accessories

BDC58 rechargeable Li-ion batteries (2 pcs.) ● CDC68 charger with EDC113A/113B/113C AC power cable ● SB178 battery adapter for BDC46B batteries ● Stylus (2 pcs.) ● CP9 tubular compass ● Lens hood ● Lens cap ● Plumb bob ● Tool kit ● Wiping cloth ● Vinyl cover ● Operator's manual ● Carrying case ● Shoulder strap ● Laser caution sign board

Optional Accessories

For more information, please consult your local sales representative.

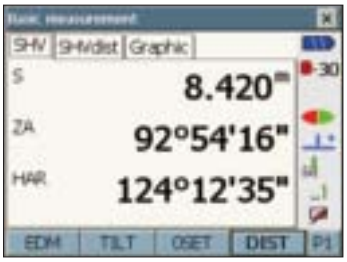
SDR Onboard Software adds a New Dimensi

SDR Program

Built on knowledge from surveyors and previous generations of SDR electronic fieldbooks, the SET X SDR program is Windows CE-based data collection software that increases functionality by providing powerful surveying programs with an easy-to-follow workflow, customizable settings and a graphic interface. SDR program offers a full range of job file handling capacity, customizable feature code lists with point-sorting capabilities and the ability to export data to industry standard formats.

Status Bar

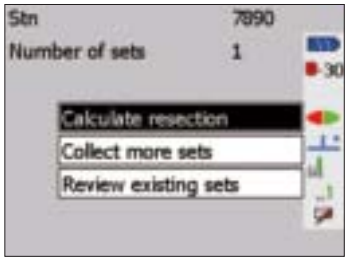
The status bar constantly displays the status of the instrument. Select and configure instrument settings at any time with just a touch of your finger or using the stylus. Battery life, target type, measurement mode and tilt are just a few of the many options that can be seen at a glance.



BASIC

In Basic mode, SET X has the functionality to take basic measurements.

- Coordinate Measurement
- Setting Out
- Offset Measurement
- Remote Elevation Measurement
- Missing Line Measurement
- Resection
- Surface Area Calculation

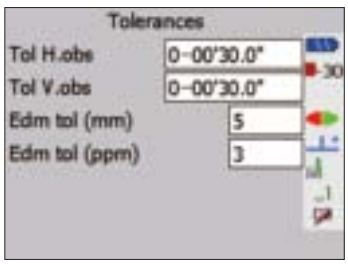


Resection

Resection uses least squares adjustment techniques to determine the coordinates of an unknown point.

FUNC

The Functions menu option is used to set up and start a survey job and controls SDR program settings.



Tolerances

Specify the required tolerances. SET X checks observations for consistency and notifies you of measurements that exceed the set tolerances.

on to Traditional Wisdom

SURV

The Survey menu provides the programs frequently used in the field for data collection.

- Topography
- Traverse Adjustment
- Resection
- Set Collection
- Set Review
- Building Face Survey
- Collimation
- Remote Elevation
- Keyboard Input

Traverse Adjustment

Traverse adjustment allows you to specify a sequence of stations through which a traverse can be calculated and adjusted. Observations do not need to be in order of the traverse route.

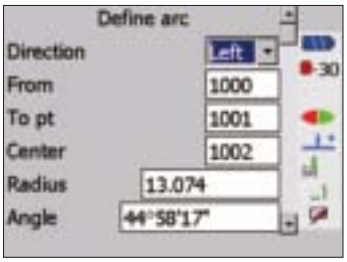
COGO

COGO performs coordinate geometry calculations and setting out field work, dramatically increasing productivity for construction and civil engineering applications.

- Set Out Coords
- Set Out Line
- Set Out Arc
- Resection
- Inverse
- Areas
- Intersections
- Point Projection
- Taping from Baseline
- Transformation
- Keyboard Input

Set Out Arc

Set Out Arc provides an arc calculator to define curves from almost any combination of parameters. Points along the arc can be coordinated and directly set out.



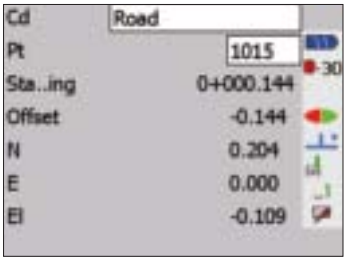
ROAD

Roading is a comprehensive solution that provides powerful programs for road construction.

- Select Road
- Set Out Road
- Set Out Road Surface
- Road Topo
- Cross-Section Survey
- Define Road
- Review Road
- Define Template
- Review Template

Road Topo

Perform a topographical survey relative to a defined road.



SETX Reflectorless Total Stations

SET1X · SET2X · SET3X · SET5X

SPECIFICATIONS

Model		SET1X	SET2X	SET3X	SET5X
Telescope		Fully transiting, coaxial sighting and distance measuring optics			
		Length: 173mm (6.8in.), Objective aperture: 45mm (1.8in.) (EDM 48mm (1.9in.)), Magnification: 30x, Resolving power: 2.5", Image: Erect, Field of view: 1°30' (26m/1,000m), Minimum focus: 1.3m (4.3ft.), Reticle glass: ∞ mark printed, Reticle illumination: 5 brightness levels			
Angle measurement		Absolute encoder scanning. Both circles adopt diametrical detection.			
Unit		Degree / Gon / Mil, selectable			
Display resolutions (selectable)		0.5" / 1", 0.1 / 0.2mg, 0.002 / 0.005mil		1" / 5", 0.2 / 1mg, 0.005 / 0.02mil	
Accuracy (ISO 17123-3)		1" / 0.3mg / 0.005mil	2" / 0.6mg / 0.01mil	3" / 1mg / 0.015mil	5" /1.5mg / 0.025mil
IACS (Independent Angle Calibration System)		Provided		n/a	
Measurement mode		H: Clockwise / Counterclockwise, selectable. V: Zenith 0 / Horizontal 0 / Horizontal 0±90° / Slope in %, selectable			
Automatic dual-axis compensator		Dual-axis liquid tilt sensor, Working range: ±4' (±74 mg)			
Collimation compensation		Yes / No, selectable			
Fine motion screws		Fine / Coarse 2-speed motion			
Distance measurement		Modulated laser, phase comparison method with red laser diode.			
Laser output		Reflectorless mode: Class 3R (max. 5W), Prism/Sheet mode: Class 1 equivalent (max. 0.22W)			
Unit		Meters / feet / US feet, selectable			
Measuring range (slope distance)	Reflectorless*1 (using Kodak Gray Card)	0.3 to 500m (1 to 1,640ft.) (White side, 90% reflective) 0.3 to 250m (1 to 820ft.) (Gray side, 18% reflective)			
	With reflective sheet target*2	RS90N-K: 1.3 to 500m (4.3 to1,640ft.)			
	With mini prisms	Under average conditions*3: w/ CP01: 1.3 to 2,500m (4.3 to 8,200ft.), w/OR1PA: 1.3 to 500m (4.3 to 1,640ft.)			
	With 1 AP prism	Under average conditions*3: 1.3 to 5,000m (4.3 to 16,400ft.), Under good conditions*4: 1.3 to 6,000m (4.3 to 19,680ft.)			
	With 3 AP prisms	Under average conditions*3: to 8,000m (to 26,240ft.), Under good conditions*4: to 10,000m (to 32,800ft.)			
Display resolutions	Fine mode	0.0001 / 0.001m (0.001 / 0.01ft.)		0.001m (0.01ft.)	
	Rapid single / Tracking	Rapid single: 0.001m (0.01ft.) / Tracking: 0.01m (0.1ft.)			
Accuracy (D=measuring distance, unit:mm)	Reflectorless*1/*5 (Fine mode)	0.3 to 200m (1 to 650ft.): (3 + 2ppm x D)mm Over 200 to 350m (over 650 to 1,140ft.): (5 + 10ppm x D)mm Over 350 to 500m (over 1,140 to 1,640ft.): (10 + 10ppm x D)mm			
	Reflectorless*1/*5 (Rapid mode)	0.3 to 200m (1 to 650ft.): (6 + 2ppm x D)mm Over 200 to 350m (over 650 to 1,140ft.): (8 + 10ppm x D)mm Over 350 to 500m (over 1,140 to 1,640ft.): (15 + 10ppm x D)mm			
	With reflective sheet target*2	Fine: (3+2ppm x D)mm, Rapid: (6+2ppm x D)mm			
	With prism Fine mode	(2+2ppm x D)mm			
	With CPS12 precision prism system	(1.5+2ppm x D)mm	n/a		
	With prism Rapid mode	(5+2ppm x D)mm			
Measuring time	Fine mode / Rapid / Tracking	0.9s (initial1.5s), 0.6s (initial 1.3s), 0.4s (initial 1.3s)			
Measuring mode		Fine (single, repeat, average), Rapid (single, repeat), Tracking			
Atmospheric correction, Prism constant correction		Temperature, Pressure, Humidity, ppm input available / -99 to +99mm (1mm steps). 0 fixed in reflectorless mode.			
Refraction & earth-curvature correction		Yes (K=0.14 / 0.20) / No, selectable			
OS, data storage and transfer					
Operating system / Application		Microsoft Windows CE / SDR Data Collection Software			
Data storage	Internal memory	64MB (More than 1MB available for data)			
	Memory card drive	Support up to 1GB, CF Type II (Ver. 3.3), SD card is available with CF type adapter			
Interface		Asynchronous serial RS232C compatible, Baud rate 1,200 to 38,400bps, USB1.1 Type A and Type miniB, Bluetooth (Class 1, ver. 1.2)			
SFX wireless data transfer		Provided			
General					
Display		3.5in. Transreflective TFT QVGA color LCD on single face (Face 1) with backlight (Bright / Dim selectable), 324x240 dots (active area: 72.5mm x 49.5mm), touch screen			
Keyboard		Alphanumeric, 32 keys with backlight			
Laser-pointer function		ON (auto off in 5 minutes) / OFF, selectable. (does not work simultaneously with the Guide Light)			
Guide Light		Two color LEDs, single aperture, Class 1 LED Product			
Sensitivity of levels	Plate level	20" / 2mm	30" / 2mm		
	Circular / Graphic	Circular level: 10' /2mm / Graphic LCD level: 4' / outer circle			
Optical plummet	Magnification	5.5x	3x		
Tribrach		Detachable			
Dust and water protection / Operating temperature		Conforms to IP65 (IEC 60529) / -20 to +50°C (-4 to +122°F)			
Instrument height / Size with handle and battery		236mm (9.3in.) from tribrach bottom / W 201 x D 202 x H 375 mm (W 8.0 x D 8.0 x H 14.8 in.)			
Weight with handle and battery		Approx. 7.0kg (15.4lb.), With optional F2 control panel: approx. 7.1kg (15.7lb.)			
Power supply		7.2V DC			
Battery	BDC58 (standard)	Li-ion rechargeable battery (4.3Ah, 2pcs. included standard)			
	BDC46B (optional)	Li-ion rechargeable battery (2.45Ah) (Use with the SB178 adapter included as a standard accessory)			
	External batteries (optional)	Ni-MH rechargeable battery, BDC60 (6.5Ah), BDC61 (13Ah)			
Continuous use at 20°C (68°F) (single measurement every 30 seconds)	BDC58	Approx. 12 hours			
	BDC46B	Approx. 6 hours			
	External batteries (optional)	BDC60: Approx. 17 hours, BDC61: Approx. 35 hours.			
Automatic power cut-off		30, 15, 10, 5 minutes after operation / Off, selectable			

Laser Class 3R conforms to: IEC 60825-1 Amd.2: 2001 / FDA CDRH 21 CFR Part1040.10 and 1040.11

*1 Reflectorless range/accuracy may vary according to measuring objects, observation situations and environmental conditions.

*2 When the beam's angle of incidence is within ±30° up and down / right and left in relation to the surface of the target.

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

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

*5 With Kodak Gray Card White Side (90% reflective).

LASER RADIATION
AVOID DIRECT EYE EXPOSURE
MAX 5mW LD 635-690nm
CLASS3R LASER PRODUCT
IEC 60825-1 Am.2 2001

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