

**SOKKIA**

**Series 50RX**

Reflectorless Total Stations

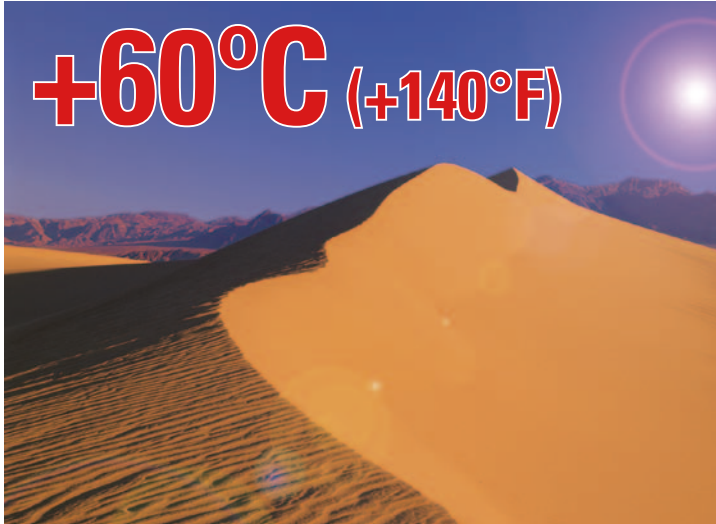
# Ultimate in Reliability

All Weather - All Temperature - Consistent Speed



# Challenging Environments Measure the

The Series50RX operates in heat or frost, in sand or snow, in powder dust or Enhanced RED-tech II EDM consistently measures to a wide variety of objects



## Environmentally Durable

The Series50RX total stations offer the industry's highest durability that withstands the severest climates as well as the harshest work site conditions.

## Maximum Reliability in Extreme Temperatures

In addition to the standard and Low Temperature models, the High Temperature models are also available for use in extreme heat.

### High Temperature Models

- The Series50RX sets a new standard for use of a total station in extremely high temperatures.
- Dependably operates in the heat of up to +60°C (+140°F).
- Ideal for use in deserts, equatorial regions and tropical reefs.

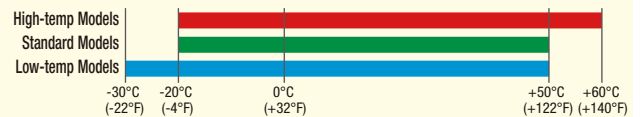


### Low Temperature Models

- Ensures operations in freezing climates as low as -30°C (-22°F).
- Large external Ni-MH batteries are available as options for long-term operation in low temperatures.



### Operating temperature range



\*High Temperature Models and Low Temperature Models are available on built-to-order basis.

## Highest Protection against Dust and Water

The Series50RX withstands the finest powder dust as well as the hardest driving rain. The industry-leading IP66 protection provides unparalleled reliability in the harshest work site conditions.

### Dust-tight

- IP6x is the highest grade of protection against ingress of solid foreign objects.
- The IEC international standard defines IP6x as a "dust-tight" enclosure that does not allow any dust penetration.
- Shuts out powder dust, sand, mud and other fine particles that are commonly seen in construction sites and desert areas.

### Water-protection

- IPx6 rating means the instrument is protected against powerful water jets from any direction.
- The Series50RX does not allow penetration of heavy rain, dripping water in tunnels and underground sites, and water from sprinklers, etc.

# Dimensions of Reliability

driving rain with unprecedented dependability.  
without downtime.



SF14  
Wireless keyboard

## Enhanced RED-tech II EDM

Further enhanced RED-tech II EDM provides pinpoint precision in reflectorless measurement as well as greater range with consistent measurement speed.



## 400m (1,310ft.) Reflectorless Range

Extended reflectorless measurement range increases work efficiency by reducing shift of instrument locations.

- Measures from the industry's shortest distance -30cm (1ft.). Ideal for measurements to benchmarks close to the instrument or to points on the ground in archaeological survey.
- Narrow visible laser beam is also used as a laser pointer; the EDM precisely measures the point the laser dot indicates.

### Beam spot size

Distance	10m (33ft.)	40m (130ft.)
Spot size	6.5 x 7mm (.26 x .28in.)	19 x 14mm (.75 x .55in.)

- Laser output level is automatically switched to Class 1 specifications in "prism" and "reflective sheet" modes to ensure safety.

## 1.7 seconds – Max. 4.2 seconds

With refined digital signal processing algorithms, the Series50RX reduced variation of reflectorless measurement time due to the ranges and object types by 30 percent\*.

- 1.7 seconds – typical initial measurement time.
- 4.2 seconds – maximum time before results are displayed.
- Consistent, high-speed measurement eliminates operator's stress and increases overall productivity.

\* Compared to the previous models.

## World-proven, Time-tested Angle Reading System

Sokkia's innovative absolute encoder system provides unsurpassed, extra long-term reliability that has been proven in all worksite conditions across the globe since its introduction in 2002.

- Extremely simplified optical and mechanical structure maximizes reliability even in the harshest environmental conditions.
- Advanced coding and digital processing technologies have given the Series50RX the capability to automatically detect and correct misreading of encoder patterns.
- The 2" model incorporates IACS (Independent Angle Calibration System) for the highest reliability yet.

## Quick Operation in All Conditions

Easy-to-use control panel is clearly viewable both in direct sunlight and in underground construction sites.

- The LCD display automatically maintains optimal contrast and visibility using a built-in temperature sensor.
- Fully backlit keys greatly facilitate operation in low lighting conditions.
- The SF14 wireless keyboard is optionally available for 2", 3" and 5" models.



## Guide Light Speeds Up Setting-out Tasks

Green/Red guide light is built into the telescope as a standard feature.

- The lateral position of a prism can be easily determined in a wide range of 1.3 to 150m (4.3 to 490ft.).
- A special flashing pattern is also included to assist users with color perception disability.



## Security and Data Management

- Password function prevents unauthorized use.
- 10,000-point internal memory
- SD/SDHC card
- USB memory devices
- An optional built-in Bluetooth® module for wireless connection with a data collector.



## Built-in Laser Plummet (option)

Built-in laser plummet allows for quick instrument setting.

- 5 brightness levels for optimum visibility.



# Series50RX Specifications

Reflectorless Total Stations SET250RX·SET350RX·SET550RX·SET650RX

Model	SET250RX	SET350RX	SET550RX	SET650RX
Telescope	Fully transiting, coaxial sighting and distance measuring optics			
Magnification / Resolving power	30x / 2.5"			26x / 3.5"
Others	Length: 171mm (6.7in.), Objective aperture: 45mm (1.8in.) (48mm (1.9in.) for EDM), Image: Erect, Field of view: 1°30' (26m/1,000m), Minimum focus: 1.3m (4.3ft.), Reticle illumination: 5 brightness levels			
Angle measurement	Absolute rotary encoder scanning, both circles adopt diametrical detection			
Display resolution	1" / 5", 0.0002 / 0.001gon, 0.005 / 0.02mil, selectable			
Accuracy (ISO 17123-3:2001)	2" / 0.6mgon / 0.01mil	3" / 1mgon / 0.015mil	5" / 1.5mgon / 0.025mil	6" / 1.9mgon / 0.03mil
IACS (Independent Angle Calibration System)	Provided			
Measurement mode	H	Clockwise / Counterclockwise, 0 set, Hold, Angle input, Repetition		
	V	Zenith 0 / Horizontal 0 / Horizontal 0± / Slope in %		
Dual-axis compensator / Collimation compensation	Dual-axis liquid tilt sensor, working range: ±6' (±111mgon) / Collimation compensation available			
Fine motion screws	2-speed motion		1-speed motion	
Distance measurement	Modulated laser, phase comparison method with red laser diode (690nm)			
Laser output <sup>1</sup>	Reflectorless mode: Class 3R / Prism/sheet mode: Class 1			
Measuring range	Reflectorless <sup>3</sup>	0.3 to 400m (1.0 to 1,310ft.)		
(under average conditions <sup>*2</sup> )	Reflective sheet <sup>*4</sup>	RS90N-K: 1.3 to 500m (4.3 to 1,640ft.), RS50N-K: 1.3 to 300m (4.3 to 980ft.), RS10N-K: 1.3 to 100m (4.3 to 320ft.)		
	Mini prisms	CP01: 1.3 to 2,500m (8,200ft.), OR1PA: 1.3 to 500m (1,640ft.)		
	One AP prism	1.3 to 4,000m (4.3 to 13,120ft.) / Under good conditions <sup>*5</sup> : 1.3 to 5,000m (16,400ft.)		
	Three AP prisms	to 5,000m (16,400ft.) / Under good conditions <sup>*5</sup> : to 6,000m (19,680ft.)		
Unit	Meter, Foot, Foot + inch, US foot, US foot + inch			
Display resolution	Fine/Rapid: 0.001m / 0.01ft. / 1/8in. Tracking: 0.01m / 0.1ft. / 1/2in.			
Accuracy <sup>*2</sup>	Reflectorless <sup>3</sup>	0.3 to 200m: (3 + 2ppm x D) mm, over 200 to 350m: (5 + 10ppm x D) mm, over 350 to 400m: (10 + 10ppm x D) mm		
(ISO 17123-4:2001)	Reflective sheet <sup>*4</sup>	(3 + 2ppm x D) mm		
	AP/CP prism	(2 + 2ppm x D) mm		
Measuring mode	Fine (single / repeat / average), Rapid (single / repeat), Tracking			
Measuring time <sup>*6</sup>	Fine: 0.9s (initial 1.7s), Rapid: 0.7s (initial 1.4s), Tracking: 0.3s (initial 1.4s)			
Measuring beam spot size in reflectorless mode	Height x Width	3 x 5mm@2m, 6.5 x 7mm@10m, 19 x 14mm@40m .12 x .2in.@6.6ft., .26 x .28in.@33ft., .75 x .55in.@131ft.		
Corrections	Earth curvature & refraction (K=0.142/0.20/none) / Sea level correction / Scale factor (0.5 to 2.0)			
Interface and Data management				
Display / Keyboard	Graphic LCD, 192 x 80 dots, backlight, contrast adjustment / Alphanumeric keyboard, 27 keys with backlight			
Control panel location	On both faces			On one face
Data storage	Internal memory	Approx. 10,000 points		
	Plug-in memory device	SD card and SDHC card (max. 4GB) / USB flash memory (max. 4GB)		
Interface	Serial RS-232C (baud rate: 1,200 to 38,400bps)			
Bluetooth modem (option) <sup>*7</sup> / SFX data transfer	Bluetooth Class 2, Ver.1.2. / SFX data transfer via Bluetooth connection with a cellular phone supporting GPRS			
General				
Laser-pointer <sup>*8</sup>	Coaxial red laser using EDM beam			
Guide light <sup>*9</sup>	Green LED (524nm) and Red LED (626nm), Operating range: 1.3 to 150m (4.3 to 490ft.), Class 1 LED			
Levels	Plate level	30" / 2mm		40" / 2mm
	Graphic / Circular	Graphic display range: ±6' (inner circle), Digital display range: ±6'30" / Circular level: 10' / 2mm		
Laser plummet (option)	Red laser diode (635nm±10nm), Beam accuracy: ≤1.0mm@1.3m, Class 2 laser product			
Optical plummet	Magnification: 3x, Minimum focus: 0.3m (11.8in.) from tribrach bottom			
Dust and water protection / Tribrach	IP66 (IEC 60529:2001) / Detachable tribrach (WA200)			
Operating temperature	Standard models	-20 to +50°C (-4 to +122°F)		
	High Temperature models <sup>*9</sup>	-20 to +60°C (-4 to +140°F) <sup>*10</sup>		
	Low Temperature models <sup>*9</sup>	-30 to +50°C (-22 to +122°F)		
Size with handle & battery	W166 x D180 x H341mm (W6.5 x D7.1 x H13.5in.)			W166 x D173 x H341mm (W6.5 x D6.8 x H13.5in.)
Weight with handle & battery	Standard/High Temp. models	5.6kg (12.3 lb.)	5.5kg (12.1 lb.)	5.4kg (11.9 lb.)
	Low Temperature models	5.6kg (12.3 lb.)		-
Power supply				
Battery	BDC46B detachable battery	Li-ion rechargeable battery (7.2V, 2.4Ah), two batteries included in 2", 3", 5" models, one for 6" model		
Operating time (distance & angle) <sup>*11</sup>	BDC46B detachable battery	Approx. 8.5 hours, approx. 12.5 hours in angle measurement only		
	External battery (option) <sup>*12</sup>	BDC60: approx. 25 hours, BDC61: approx. 50 hours		
External power <sup>*12</sup>	Input voltage	6.0 to 8.0V DC		
Automatic power cut-off	5/10/15/30 minutes after operation / none, selectable			
Software				
Onboard programs	Resection, 3D Coordinate Measurement, Setting-out, Set-out Line, Set-out Arc, Point Projection, Intersection, Traverse Adjustment, Single-distance offset, Two-distance offset (hidden point), Offset-angle, MLM (Missing Line Measurement), REM (Remote Elevation Measurement), Area Calculation			

\*1 IEC60825-1 Amd.2:2001 / FDA CDRH 21 CFR Part 1040.10 and 11 \*2 Average conditions: Slight haze, visibility about 20km (12 miles), sunny periods, weak scintillation. \*3 With Kodak Gray Card White Side (90% reflective). When brightness on measured surface is 30,000 lx. or less. Reflectorless range/accuracy may vary according to measuring objects, observation situations and environmental conditions. \*4 When the measuring beam's incidence angle is within 30° in relation to the reflective sheet target. Measuring range in temperatures of -30 to -20°C (-22 to -4°F) with Low Temperature models: RS90N-K: 1.3 to 300m (4.3 to 980ft.), RS50N-K: 1.3 to 180m (4.3 to 590ft.), RS10N-K: 1.3 to 60m (4.3 to 190ft.) \*5 Good conditions: No haze, visibility about 40km (25 miles), overcast, no scintillation. \*6 Typical, under good conditions. Reflectorless measurement time may vary according to measuring objects, observation situations and environmental conditions. \*7 Usage approval of Bluetooth wireless technology varies according to country. Please consult your local Sokkia office or representative in advance. \*8 The laser-pointer and the guide light do not work simultaneously. \*9 Low Temperature models and High Temperature Models are available on built-to-order basis. \*10 The instrument should be kept from direct sunlight at over +50°C (+122°F). \*11 Single distance measurement every 30 seconds at 25°C (77°F). \*12 Applicable to 2" model and Low Temperature models only.

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