SOKKIA

FX Series
FUNCTIONAL X-ELLENCE STATION

Totally Functional

- **Windows® CE is Ready in a Lightweight, Compact Body**
- **MAGNET™ Field On-Board Application Software**
- **RED-tech Technology Reflectorless EDM**
- **Long-range *Bluetooth®* Technology**
- **Advanced Angle Measurement System**
- **Long-lasting Battery**
- **Waterproof, Rugged, and Operator Friendly**

TS shield

Exclusive TSshield technology built-in

World's First integrated support service

High Performance in a Compact Size.

TSshield™

Every FX total station is equipped with a telematics-based multifunction communications module providing the ultimate security and maintenance capabilities for your investment.

If an activated instrument is lost or stolen, you can send a coded signal to the instrument and disable it – Your total station is secure anywhere in the world!

And, in the same module, you have daily connectivity to cloud-based Sokkia servers that can inform you of available software updates and firmware enhancements.

* For more detail of TSshield, please refer to the TSshield's leaflet.

Windows® CE is Ready in a Lightweight, Compact Body

- Windows® CE 6.0 provides a comfortable operating environment.
- Completely new on-board application MAGNET™ Field is installed as a standard feature.

MAGNET™

- **Cloud-based Solutions for Precise Positioning***
  MAGNET™ is a software family that uses the "cloud" to seamlessly connect data in the field and office. Real-time connections. When you need it. Where you need it. For data exchange, communications, asset tracking and more.
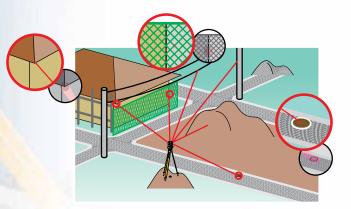 * Available when using an optional controller.
- **MAGNET™ Field**
  Data collection, stakeout, roads, and coordinate geometry.
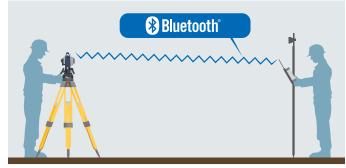
MAGNET™ Field

RED-tech Technology Reflectorless EDM

- Fast distance measurement of 0.9s regardless of object.
- Sokkia traditional pinpoint precision in reflectorless distance measurement.
- Reflectorless operation from 30cm to 500m.
- Coaxial EDM beam and laser-pointer provide fast and accurate aiming.
- Ensures accuracy even with reflective sheets.

The ultra-narrow EDM beam can precisely measure walls, corners, manholes on the road surface, even chain-link fences and tree branches.

Long-Range *Bluetooth*® Technology*

- The FX series of total stations features *Bluetooth*® Class 1 wireless technology for reliable data communications.
- All FX data is instantly available at the *Bluetooth*®-equipped controller.
  * Offered as an option in some areas.

Advanced Angle Measurement System

- FX features Sokkia's original absolute encoders that provide long-term reliability in any job site condition. Dual-axis compensator ensures stable measurements even when setup on uneven terrain.
- Sokkia's traditional motion clamp and tangent screw are employed to ensure stable angle measurement.
- FX-101 and FX-102 feature groundbreaking IACS (Independent Angle Calibration System) technology for extremely reliable angle measurement.

Long Lasting Battery Life

- Uses the same high capacity battery as MDTS and GNSS.
- One battery provides 20 hours of power.

Waterproof, Rugged, and Operator Friendly

- IP65 dustproof / waterproof rating.
- Metal chassis and heavy duty handle.
- Standard usage temperature range -20 to +50°C. Low temperature models can be used as low as -30°C[*2] and high temperature models up to +60°C.[*2]
- New STAR key instantly brings up functions.
- Trigger key lets you take a series of measurements without taking your eye off the telescope.
- Control panel consists of 10-key pad with color LCD touch screen display.[*2]
- USB type A / mini B as well as serial ports.

- Green / Red telescope guide light enhances work efficiency in a range up to 150m.

- Optional laser plummet with five brightness levels is equipped for quick instrument setting in all lighting conditions.[*3]

  * 1) Low and High temperature models available as options.
  * 2) Face 2 is only touch screen display. Control panel location may vary depending on region or model.
  * 3) Offered as an option in some areas.

FX Series
Functional X-ellence Station
FX-101/FX-102/FX-103/FX-105/FX-107

Model		FX-101	FX-102	FX-103	FX-105	FX-107
Telescope						
Magnification / Resolving power		30x / 2.5"				30x / 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						
Display Resolution		0.5" / 1" (0.0001 / 0.0002gon, 0.002 / 0.005mil)	1" / 5" (0.0002 / 0.001gon, 0.005 / 0.02mil)			
Accuracy (ISO 17123-3:2001)		1"	2"	3"	5"	7"
IACS (Independent Angle Calibration System)		Provided		-		
Dual-axis compensator / Collimation compensation		Dual-axis liquid tilt sensor, working range: ±6' (±111mgon) / Collimation compensation available				
Distance Measurement						
Laser output[1]		Reflectorless mode: Class 3R / Prism / sheet mode: Class 1				
Measuring range (under average conditions[2])	Reflectorless[3]	0.3 to 500m (1.0 to 1,640ft.)				
	Reflective sheet[4]/[5]	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[6]: 5,000m (16,400ft.)				
	Three AP prisms	to 5,000m (16,400ft.) / Under good conditions[6]: to 6,000m (19,680ft.)				
Display Resolution		Fine/Rapid: 0.001m / 0.01ft. / 1/8in. Tracking: 0.01m / 0.1ft. / 1/2in.				
Accuracy[2] (ISO 17123-4:2001) (D=measuring distance in mm)	Reflectorless[3]	(3 + 2ppm x D) mm[7]				
	Reflective sheet[4]	(3 + 2ppm x D) mm				
	AP/CP prism	(2 + 2ppm x D) mm				
Measuring time[8]		Fine: 0.9s (initial 1.7s), Rapid: 0.7s (initial 1.4s), Tracking: 0.3s (initial 1.4s)				
OS, Interface and Data management						
Operating system / Application		Microsoft Windows® CE 6.0 / MAGNET™ Field				
Display / Keyboard		3.5inch, Semi-transmissive TFT QVGA color LCD with LED backlight, Touch screen, Automatic brightness control / 26 keys with backlight				
Control panel location[9]		On both faces (Face 2 is only touch screen display)			On one face	
Trigger key		On right instrument support				
Data storage	Internal memory	500MB internal memory (includes memory for program files)				
	Plug-in memory device	USB flash memory (max. 8GB)				
Interface		Serial RS-232C, USB2.0 (Type A / mini B)				
Bluetooth® modem (optional)[10]		*Bluetooth®* Class 1, Ver.2.1+EDR, Operating range: up to 300m (980ft.)[11]				
General						
Laser-pointer[12]		Coaxial red laser using EDM beam				
Guide light[12]		Green LED (524nm) and Red LED (626nm), Operating range: 1.3 to 150m (4.3 to 490ft.)[2]				
Levels	Graphic	6' (Inner Circle)				
	Circular level	10' / 2mm				
Optical plummet		Magnification: 3x, Minimum focus: 0.3m (11.8in.) from tribrach bottom				
Laser plummet (optional)		Red laser diode (635nm±10nm), Beam accuracy: ≤1.0mm@1.3m, Class 2 laser product				
Dust and water protection		IP65 (IEC 60529:2001)				
Operating temperature[13]		-4 to +122°F (-20 to +50°C)				
Size with handle[9]		Control panel on both faces: W7.5 x D7.5 x H13.7in. (W191 x D190 x H348mm) Control panel on one face: W7.5 x D6.9 x H13.7in. (W191 x D174 x H348mm)				
Weight with battery & tribrach		Approx. 12.6 lb. (5.7kg)				
Power supply						
Battery (BDC70)	Detachable battery	Li-ion rechargeable battery				
Operating time (20°C)	BDC70	Approx. 20 hours (single distance measurement every 30 seconds)				
	External battery[14] (Optional)	BDC60: approx. 24 hours, BDC61: approx. 49 hours (single distance measurement every 30 seconds)				

Standard Accessories

- FX main unit
- Battery (BDC70)
- Battery charger (CDC68)
- Power cable
- Lens cap
- Lens hood
- Tool pouch
- Screwdriver
- Lens brush
- Adjusting pin x2
- Cleaning cloth
- Operation manual
- USB memory stick
- Laser caution sign-board
- Carrying case
- Carrying strap

[1] IEC60825-1:Ed.2.0:2007 / FDA CDRH 21 CFR Part 1040.10 and 11 [2] Average conditions: Slight haze, visibility about 20km (12 miles), sunny periods, weak scintillation. [3] Fine mode. 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. [5] Measuring range in temperatures of -30 to -20°C (-22 to -4°F) with Low Temperature models and 50 to 60°C (122 to 140°F) with High 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.) [6] Good conditions: No haze, visibility about 40km (25 miles), overcast, no scintillation. [7] Measuring range:0.3 to 200m [8] Typical, under good conditions. Reflectorless measurement time may vary according to measuring objects, observation situations and environmental conditions. [9] Control panel location may vary depending on region or model. [10] Usage approval of Bluetooth wireless technology varies according to country. Please consult your local office or representative in advance. [11] No obstacles, few vehicles or sources of radio emissions/ interference in the near vicinity of the instrument, no rain. [12] The laser-pointer and the guide light do not work simultaneously. [13] Low Temperature models:-30 to 50 °C (-22 to 122°F) and High Temperature models:-20 to 60°C (-4 to 140°F, No direct sunlight) are available on built-to-order basis. [14] For FX-101, FX-102 and Low Temperature models.

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