

DS series

 **TOPCON**

DS

Direct Aiming Station



**Compact Robotic Total Station
designed to be both versatile and agile**

Auto Tracking
Upgradable

- Auto Tracking Function*
- Auto Collimation Xpointing technology
- MAGNET™ Software On-board
- Powerful EDM of 1,000m in reflectorless mode
- Exclusive LongLink™ Communications
- Dust and Water Protection IP65
- TSshield™ Advanced Security and Maintenance

* Auto-Tracking function can be added by Upgrade Kit.

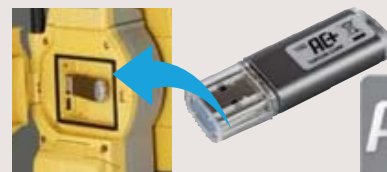
DS Direct aiming Station

Compact Robotic Total Station designed to be both versatile and agile



Auto tracking function enhances your productivity drastically

The DS series, with the auto tracking function, requires no operator at the total station – it locks and tracks prism constantly enabling the immediate measurement as soon as target prism is located at any point, also operator to control survey from the rover side. With the auto tracking function, time for alignment adjustment and focusing operations, required on the manual total station, are completely eliminated, thus increasing measurement speed and enhancing productivity of measurement work.



Upgrade Kit

The DS series can be upgraded with USB Upgrade Kit to add Auto Tracking capability.

Remarkable differences in productivities



TOPO

The Auto tracking function is very effective to perform TOPO survey. You just need to carry a prism pole with data collector and visit points to be measured. Numerous points can be measured and collected very quickly with such simple operation.



New Auto Collimation "Xpointing Technology" DS series

The Topcon DS unitizes Xpointing technology featuring a new intelligent algorithm that automatically aims to the prisms with precise by corrected angle readings.

The Xpointing technology works even in dim or dark conditions where the prism is difficult to be found. Whatever the job requires and wherever operators must go, the DS makes your job done easier and faster while still maintaining accuracy.



DS series Auto Tracking

Measure Record

1/3 the step!

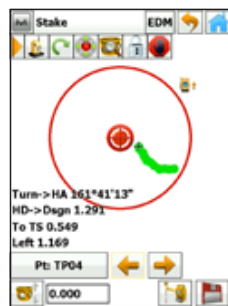
Manual Total Station

Rough Aiming Focus Horizontal Motion Vertical Motion Measure Record



Stake-out

Users also benefit from the auto tracking function for in stake-out survey work. It is so easy and quick to find stake-out points, by just following navigation on the screen of data collector, without communicating with operator at the instrument or moving along with the fixed direction. The more stake-out points you locate, you can get higher productivity compared with conventional instrument.



Exclusive LongLink™ Communications

Can be used to establish a wireless linkage with a data terminal at the prism side, up to 300m* distance away. Longlink™ provides the user the ability to enter code descriptors at the remote prism pole enabling more effective data collection, as well as graphical navigations in stakeout work.

*subject to environmental conditions for radio transmission

DSseries Auto Tracking

Travelling of Prism (Auto-Tracking + Navigation) Measure Stake-Out

Enhance productivity drastically!

Manual Total Station

Turn the Instrument to measurement point
 1 Travelling of Prism
 2 Rough Aiming
 3 Focus
 4 Vertical Motion
 5 Set prism position horizontally
 6 Measure
 Repeat the steps from 1 to 6
 Stake-Out



Fast and Powerful EDM

The 1,000m (3,280ft) reflectorless measurement can be achieved by the smaller beam spot size of the EDM. Measurements can be as fast as 0.9 seconds in the accurate fine mode to most object surfaces over the longer distance.

PRIMARY FEATURES



Small and Compact:
Easy to carry and setup.

Easy access to USB flash drive port:
An operator can easily import/export data from the office to the field in seconds.



Dust and Water Protection IP65:
Provides protection from dust and driving rain as well as other inclement weather conditions. Operates in temperatures from -20 to +50°C. (C and F needed)



Advanced Angle calibration:
Topcon's advanced angle encoder technology with exclusive calibration system provides "Best in Class" angle accuracy.



Built-in laser plummet is equipped for quick instrument setting. 5 brightness levels are ready for optimum visibility. (option)

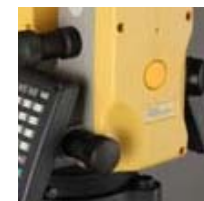
Guide Lights Red and Green LED:
Green/red Guide Light is built into the telescope as a standard feature, enhancing setting-out work efficiency in a range of 1.3 to 150m.



Laser pointer (Red Coaxial):
Topcon's red laser pointer is coaxial through the scope making measurements indoors, in limited sunlight or for short distance measurements quickly.



Quick and easy Trigger Key:
This allows the instrument operator to easily and quickly to get a measurement and record.



Star key [★] instantly brings up functions.



26 key keyboard, with 4-way directional arrow key with backlit:
This keyboard system is useful for the jobs from early morning through sundown and perfect for tunneling and mining applications.

MAGNET™

MAGNET Field Software

MAGNET Field is a powerful and intuitive field application software equipped to enable users to collect survey mapping data and perform construction and road layout using the DS total station. Topcon's industry-leading software package offers graphical and intuitive operations.



KIT COMPONENTS

Standard package components

- DS main unit
- Battery (BDC70) ×2
- Battery charger (CDC68)
- Lens cap
- Lens hood
- Tool pouch
- Screwdriver
- Lens brush
- Adjusting pin×2
- Cleaning cloth
- Operation manual
- USB memory
- Laser caution sign-board
- Carrying case
- Carrying strap

Optional Accessory

- Upgrade Kit



SPECIFICATIONS

Model	DS-101AC	DS-102AC	DS-103AC	DS-105AC
Telescope				
Magnification / Resolving power	30x / 2.5"			
Length: 168mm (6.6in.), Objective aperture: 45mm (1.8in.) (50mm (2.0in.) 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 resolutions	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"
Advanced angle encoder technology	Provided			
Dual-axis compensator / Collimation compensation	Dual-axis liquid tilt sensor, working range: ±6' / Collimation compensation available			
Distance measurement				
Laser output	Reflectorless model: Class 3R / Prism/sheet model: Class 1			
Measuring range (under average conditions ^{*3})	Reflectorless ^{*3}	0.3 to 800m (1 to 2,620ft.) / Under good conditions ^{*5} to 1,000m (3,280ft.)		
	Reflective sheet ^{*4}	RS90N-K1: 1.3 to 500m (4.3 to 1,640ft.), RS50N-K1: 1.3 to 300m (4.3 to 980ft.), RS10N-K1: 1.3 to 100m (4.3 to 320ft.)		
	360°prism ^{*6, *7}	1.3 to 1,000m (4.3 to 3,280ft.) / Under good conditions ^{*5}		
	Mini prism ^{*8}	1.3 to 500m (4.3 to 1,640ft.)		
	One prism ^{*9}	1.3 to 5,000m (4.3 to 16,400ft.) / Under good conditions ^{*5} to 6,000m (16,680ft.)		
	Three prisms ^{*10}	to 8,000m (26,240ft.) / Under good conditions ^{*5} to 10,000m (32,800ft.)		
Display resolution	Fine: 0.0001 / 0.001m (0.001 / 0.01ft., 1/16 / 1/8in.) / 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}	(2 + 2ppm x D) mm ^{*3}		
	Reflective sheet ^{*4}	(2 + 2ppm x D) mm		
	Prism	(1.5 + 2ppm x D) mm		
Measuring time ^{*11}	Fine: 0.9s (Initial 1.5s), Rapid: 0.6s (Initial 1.3s), Tracking: 0.3s (Initial 1.3s)			
Auto-Collimating, Auto-Tracking[™] and Motor				
Working range ^{*7}	360°prism ^{*6, *7, *8}	2 to 600m (6.6 to 1,960ft.)		
	One prism ^{*9}	1.3 to 1,000m (4.3 to 3,280ft.)		
	Reflective sheet ^{*14}	5 to 50m (16 to 160ft.)		
	Mini prisms ^{*9}	1.3 to 500m (4.3 to 1,640ft.)		
Rotation speed / Auto-Tracking speed ^{*7}	70°/s / 15°/s			
Motor type	DC Servo motor			
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 ^{*15}	On both faces (Face 2 is only touch screen display)			
Trigger key	On right instrument support			
Data storage	Internal memory	500MB internal memory		
	Plug-in memory device	USB flash memory (max. 8GB)		
Interface	Serial RS-232C, USB2.0 (Type A / miniB)			
Bluetooth modem (option) ^{*16}	Bluetooth Class 1, Ver.2.1+EDR, Operating range: up to 300m (980ft.) ^{*7}			
General				
Laser-pointer ^{*3}	Coaxial red laser using EDM beam			
Guide light ^{*18}	Green LED (521nm) and Red LED (626nm), Operating range: 1.3 to 150m (4.3 to 490ft.)			
Levels	Graphic / Circular level	6' (Inner Circle) / 10' / 2mm		
Optical plummet	Magnification: 3x, Minimum focus: 0.3m (11.8in.) from trlbrach bottom			
Laser plummet (option)	Red laser diode (635nm±10nm), Beam accuracy: ≤1.0mm@1.3m, Class 2 laser product			
Dust and water protection / Operating temperature	IP65 (IEC 60529:2001) / -20 to +50°C (-4 to +122°F)			
Size with handle	W207 (W) X 190 (D) X 372 (H) mm (W8.1 x D7.5 x H14.6in.)			
Weight with battery & trlbrach	Approx. 6.1kg (13.4lb.)			
Power supply				
Battery	BDC70 detachable battery	Li-ion rechargeable battery		
Operating time (20°C)	BDC70	Approx. 5 hours (Fine distance measurement (single) using Auto-Collimating, repeated every 30 seconds)		
	External battery (option)	BT-73Q: approx. 14.5 hours (Fine distance measurement (single) using Auto-Collimating, repeated every 30 seconds)		

*1 IFC60625-11/d.7.07007 / FDA CDRL121 CFR Part 1040.10 and 11 *2 Average conditions: Slight haze, visibility about 20km (12 miles), sunny periods, weak scintillation. *3 White 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 Good conditions: No haze, visibility about 40km (25 miles), overcast, no scintillation. *6 ATPI(S) prism. *7 Figures when both the elevation and depression angles of the laser beam are within 15° and the instrument is facing the 360° prism. *8 prism-5. *9 prism-2. *10 Measuring range: 0.3 to 200m. *11 Typical, under good conditions. Reflectorless measurement time may vary according to measuring objects, observation situations and environmental conditions. *12 Auto-tracking function can be added by Upgrade Kit. *13 Figures when the Auto Pointing / Auto Tracking beam strikes within elevation and depression angle 15° and the instrument is facing the 360° prism. *14 When using a reflective sheet for Auto Pointing, the size of sheet (10 to 90 mm) must be selected to correspond to the distance being measured. Use smaller reflective sheets for shorter distances. Figures when the Auto Pointing / Auto Tracking beam strikes within 15° of the reflective sheet target. *15 Control panel location may vary depending on region or model. *16 Usage approval of Bluetooth wireless technology varies according to country. Please consult your local office or representative in advance. *17 No obstacles, few vehicles or sources of radio emissions/interference in the vicinity of the instrument, no rain. *18 The laser-pointer and the guide light do not work simultaneously.

TSshield™ Advanced Security and Maintenance

Every instrument has a telematics card installed that constantly communicate to the Topcon servers. In reviewing information daily, Topcon can then determine if the total station has any error codes, what firmware version is installed, as well as the total station location. From this information Topcon can send a message to the total station and advise the operator if a newer version is available. *This service may not be available in some areas.



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