

ES series

 **TOPCON**

# ES

Easy Station



## A New Classic

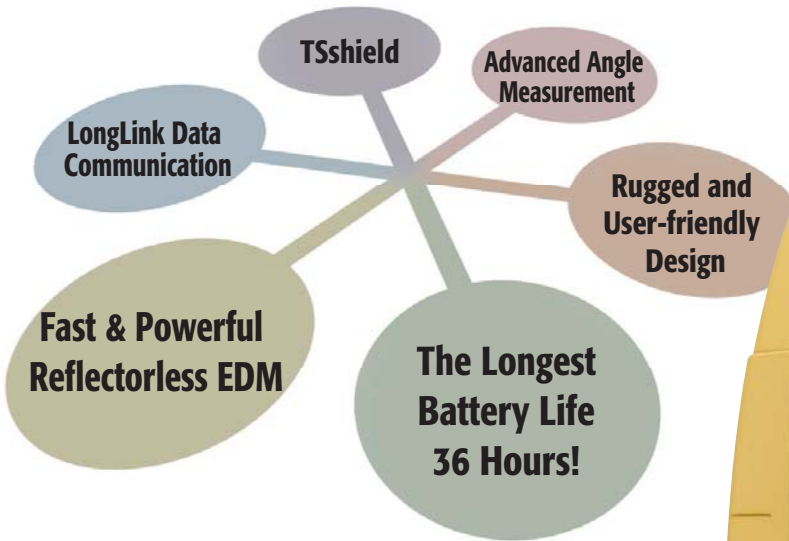
- Fast & Powerful Reflectorless EDM
- LongLink Data Communication
- Advanced Angle Accuracy
- The Longest Battery Life – 36 Hours!
- Rugged and User-friendly Design



**TSshield**  
Exclusive TSshield  
technology built-in

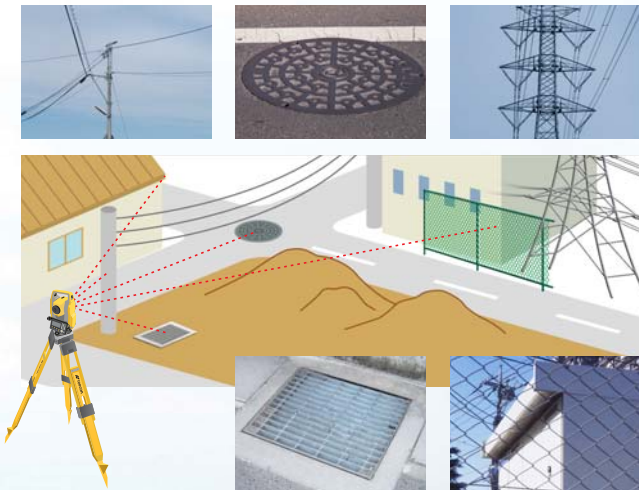


# The perfect combination of easy



## Fast and Powerful Reflectorless EDM

- Fast and accurate pinpointing with phase shift technology.
- Fast distance measurement of 0.9s regardless of object.
- Minimum reflectorless measuring distance – just 30cm.
- Improved collimation with super-bright pointer.
- Smaller EDM beam spot size for minimal distance measuring error.
- Dependable measuring even at shallow incidence angles.
- Ensures accurate reflective sheet distance measurement.



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



# operation and powerful features.

## LongLink Data Communication

- Long-distance communications with **Bluetooth®** Class 1.\*
- **Bluetooth** Class1\* realizes long-distance and stable connection
- Link between total station and rover-end data collector, both equipped with Bluetooth Class1, facilitates quick surveying only by sighting the object.

\* Offered as an option in some areas.



- USB Type A port for convenient added memory. Use of included USB accessory assures IP66 protection.
- 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 LCD for easy viewing of graphics\*.

\*Control panel location may vary depending on region or model.



USB Type A port



New control panel



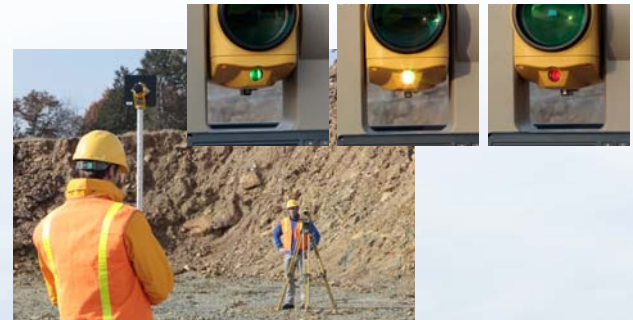
Trigger key

## Advanced Angle Measurement System

- ES features advanced absolute encoders for long-term reliability in all work conditions. Dual-axis compensation ensures accurate leveling even on rough terrain.
- Motion clamp and tangent screw ensure stable angle measurement.
- ES-101 and ES-102 feature angle measuring accuracy of 1" equipped with groundbreaking technology for extremely reliable angle measurement.

- 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.
- Trigger key is ergonomically placed so that measurement can be taken at any time with just the push of a button.
- Built-in laser plummet is equipped for quick instrument setting. 5 brightness levels are ready for optimum visibility.\*

\*Offered as an option in some areas.



## The Longest Battery Life – 36 Hours!\*

- Just one battery last 36 hours. It runs one week in full charge and no longer requires extra batteries.

\*As of December, 2011.



7 hours in 5 days for fine single measurement in 30 seconds

## Rugged and User-friendly Design

- IP66 dustproof/waterproof performance
- Standard usage temperature range  $-20^{\circ}$  to  $+50^{\circ}$ C. Low temperature models can be used as low as  $-30^{\circ}$ \* and High temperature Models up to  $+60^{\circ}$ C.\*

\* Low and High temperature models available as options.



## World's first support service only from Topcon

TSshield is a standard feature on all new model Topcon Group total stations. Its advanced communication system provides new opportunities to secure and maintain your instrument.



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

### KIT COMPONENTS



#### Standard package components

- ES 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 key
- 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 With Kodak Gray Card White Side (90% reflective). When brightness on measured surface is 30,000 lx. or less. Reflectance 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. Reflectanceless 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 ES-101, ES-102 and Low Temperature models.

### SPECIFICATIONS

Model	ES-101	ES-102	ES-103	ES-105	ES-107
<b>Telescope</b>					
Magnification / Resolving power	30x / 2.5"				
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				
<b>Angle measurement</b>					
1" / 5"					
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"
Dual-axis compensator / Collimation compensation	Dual-axis liquid tilt sensor, working range: ±6' (±111mgon) / Collimation compensation available				
<b>Distance measurement</b>					
Laser output *1	Reflectorless mode: Class 3R / Prism/sheet mode: Class 1				
Measuring range (under average conditions *3)	Reflectorless *5	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	1.3 to 500m (1,640ft.)			
	One prism	1.3 to 4,000m (4.3 to 13,120ft.) / Under good conditions *6: 1.3 to 5,000m (16,400ft.)			
	Three 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 *5	(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)				
<b>Interface and Data management</b>					
Display / Keyboard	Graphic LCD, 192 x 80 dots, backlight, contrast adjustment / Alphanumeric keyboard / 25 keys with backlight				
Control panel location *9	On both faces				On one face
Trigger key	On right instrument support				
Data storage	Internal memory	Approx. 10,000 points			
	Plug-in memory device	USB flash memory (max. 8GB)			
Interface	Serial RS-232C, USB2.0 (Type A, for USB flash memory)				
Bluetooth modem (option) *10	Bluetooth Class 1, Ver.2.1+EDR, Operating range: up to 300m (980ft.) *11				
<b>General</b>					
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.)				
Levels	Graphic	6'(inner circle)			
	Circular level	10' / 2mm			
Optical plummet	Magnification: 3x, Minimum focus: 0.3m (11.8in.) from tribrach bottom				
Laser plummet (option)	Red laser diode (635nm±10nm), Beam accuracy: ≤ 1.0mm@1.3m, Class 2 laser product				
Dust and water protection	IP66 (IEC 60529:2001)				
Operating temperature *13	-20 to +50°C (-4 to +122°F)				
Size with handle *9	Control panel on both faces: W191 x D181 x H348mm (W7.5 x D7.1 x H13.7in.) Control panel on one face: W191 x D174 x H348mm (W7.5 x D6.9 x H13.7in.)				
Weight with battery & tribrach	Approx. 5.6kg (12.3 lb.)				
<b>Power supply</b>					
Battery	BDC70 detachable battery	Li-ion rechargeable battery			
Operating time (20°C)	BDC70	Approx. 36 hours (single distance measurement every 30 seconds)			
	External battery (option) *14	BT-73Q: approx. 89 hours (single distance measurement every 30 seconds)			

Your local Authorized Topcon dealer is: