

26.SPECIFICATIONS

Except where stated, the following specifications apply to all OSs.

Telescope

Length	171mm
Aperture	45mm (EDM: 48mm)
Magnification	30X
Image	Erect
Resolving power	2.5"
Field of view	1°30' (26m/1,000m)
Minimum focus	1.3m
Reticle illumination	5 brightness levels

Angle measurement

Horizontal and Vertical circles type	Rotary absolute encoder
Detecting	
OS-201/202/203:	2 sides
OS-205:	1 side
Angle units	Degree/Gon/Mil (selectable)
Minimum display	
OS-201/202:	0.5"(0.0001gon/0.002mil)/1" (0.0002gon/0.005mil) (selectable)
OS-203/205:	1" (0.0002gon/0.005mil)/5" (0.0010gon/0.020mil) (selectable)
Accuracy	
OS-201:	1" (0.0003gon/0.005mil)
OS-202:	2" (0.0006gon/0.010mil)
OS-203:	3" (0.001gon/0.015mil)
OS-205:	5" (0.0015gon/0.025mil)
(ISO 17123-3 : 2001)	
Collimation compensation	ON/OFF (selectable)
Measuring mode	
Horizontal angle:	Right/Left (selectable)
Vertical angle:	Zenith/Horizontal/Horizontal $\pm 90^\circ/\%$ (selectable)

Tilt angle compensation

Type	Liquid 2-axis tilt sensor
Correction unit	1"
Range of compensation	$\pm 6'$ (± 0.1111 gon)
Automatic compensator	ON (V & H/V)/OFF (selectable)
Compensation constant	Can be changed

Distance measurement

Measuring method	Coaxial phase-contrast measuring system
Signal source	Red laser diode (690 nm) Class 3R (IEC60825-1 Ed. 3.0: 2014/FDA CDRH 21CFR Part1040.10 and 1040.11 (Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No.56, dated May 8, 2019.)) (When target (reflector) is set to prism or reflective sheet, the output is equivalent to Class 1)
Measuring range	(Using the following reflective prism/reflective sheet target during normal atmospheric conditions ^{*1/ *2} is good atmospheric conditions)
Mini pole Prism-5 ^{*3} :	1.3 to 500m (1,640ft)
Standard prism Prism-2 X 1 ^{*3} :	1.3 to 5,000m (16,400ft) (1.3 to 6,000m (19,680ft)) ^{*2}
Reflective sheet RS90N-K ^{*4} :	1.3 to 500m (1,640ft) 1.3 to 300m (980ft) ^{*5 *6}
Reflective sheet RS50N-K ^{*4} :	1.3 to 300m (980ft) 1.3 to 180m (590ft) ^{*5 *6}
Reflective sheet RS10N-K ^{*4} :	1.3 to 100m (320ft) 1.3 to 60m (190ft) ^{*5 *6}

Reflectorless (White):	0.3 to 800m (2,620ft) ^{*7} (0.3 to 1000m (3,280ft)) ^{*2 *8 *9}
Prism (tracking) ^{*3} :	1.3 to 1000m (3,280ft)
Reflective sheet target (tracking) ^{*4} :	1.3 to 350m (1,140ft) 1.3 to 210m (680ft) ^{*5 *6}
Reflectorless (White) (tracking, road):	0.3 to 300m (980ft) ^{*7}
Minimum display	
Fine/Rapid measurement:	0.0001 m (0.001 ft / 1/16 inch) / 0.001 m (0.005 ft / 1/8 inch) (selectable)
Tracking/Road measurement:	0.001 m (0.005 ft / 1/8 inch) / 0.01 m (0.1 ft / 1/2 inch) (selectable)
Maximum slope distance display	
(Except for tracking)	
Using prism or reflective sheet target:	9,600.000 m (31,490 ft)
Reflectorless:	1,200.000 m (3,930 ft)
(Tracking)	
Using prism or reflective sheet target:	1,280.000 m (4,200 ft)
Reflectorless:	768.000 m (2,520ft)
Distance unit	m/ft/inch (selectable)
Accuracy (D: measurement distance; Unit: mm) (Under normal atmospheric conditions ^{*1})	
(Using prism) ^{*3}	
Fine measurement:	(1.5 + 2 ppm X D) mm ^{*10 *12 *13}
Rapid measurement:	(5 + 2 ppm X D) mm ^{*12}
(Using reflective sheet target) ^{*4}	
Fine measurement:	(2 + 2 ppm X D) mm
Rapid measurement:	(5 + 2 ppm X D) mm
(Reflectorless (White)) ^{*7}	
Fine measurement:	(2 + 2 ppm X D) mm (0.3 to 200m) ^{*11 *12} (5 + 10 ppm X D) mm (over 200 to 350m) (10 + 10 ppm X D) mm (over 350 to 1,000m)
Rapid measurement:	(6 + 2 ppm X D) mm (0.3 to 200m) ^{*11 *12} (8 + 10 ppm X D) mm (over 200 to 350m) (15 + 10 ppm X D) mm (over 350 to 1,000m)
Measurement mode	Fine measurement (single/repeat/average)/Rapid measurement (single/repeat)/Tracking/ Road (reflectorless) (selectable)
Measuring time	(fastest time under good atmospheric conditions ^{*2} , no compensation, EDM ALC at appropriate setting, slope distance)
Fine measurement:	less than 1.5 sec + every 0.9 sec or less
Rapid measurement:	less than 1.3 sec + every 0.6 sec or less
Tracking measurement:	less than 1.3 sec + every 0.4 sec or less
Atmospheric correction	
Temperature input range:	- 35 to 60°C (in 0.1°C step)/ - 31 to 140°F (in 0.1°F step)
Pressure input range:	500 to 1,400 hPa (in 0.1hPa step) 375 to 1,050 mmHg (in 0.1mmHg step) 14.8 to 41.3 inchHg (in 0.01inchHg step)
Humidity input range:	0 to 100% (in 0.1% step)
ppm input range:	-499 to 499 ppm (in 0.1 ppm step)
Prism constant correction	-99 to 99 mm (in 0.1 mm step) 0mm fixed for reflectorless measurement
Earth curvature and refraction correction	No/Yes K=0.142/Yes K=0.20 (selectable)
Sea level correction	No/Yes (selectable)

*1: Slight haze, visibility about 20 km, sunny periods, weak scintillation.

*2: No haze, visibility about 40 km, overcast, no scintillation.

*3: Face the prism toward the instrument during the measurement with the distance at 10 m or less.

*4: Figures when the laser beam strikes within 30° of the reflective sheet target.

*5: Measurement at -30 to -20°C (-22 to -4°F) (Low Temperature Model)/50 to 60°C (122 to 140°F) (Standard Model)

*6: The temperature of the lower limit is -30°C (-22°F) when using reflective sheet target. (Low Temperature Model)

*7: Figures when using Kodak Gray Card White side (reflection factor 90%), brightness level is less than 5,000 lx and the laser beam strikes orthogonally the White side.

- *8: Figures when using Kodak Gray Card White side (reflection factor 90%), brightness level is less than 500 lx and the laser beam strikes orthogonally the White side. (800 m or more)
- *7,*8: When performing reflectorless measurement, the possible measurement range and precision will change depending on the target reflection factor, weather conditions and location conditions.
- *9: Figures may differ according to the country or the area.
- *10: Accuracy is $(2 + 2 \text{ ppm} \times D)$ mm for distance range 1.3 to 2 m.
- *11: Accuracy is $(5 + 2 \text{ ppm} \times D)$ mm for distance range 0.3 to 0.66 m or less.
- *12: Figures are 4 ppm instead of 2 ppm at -35 to -30°C (-31 to -22°F).
- *13: ISO 17123-4: 2012

Guide Light

Light source	LED (red 626 nm/green 524 nm)
Distance	1.3 to 150 m ^{*1}
Visible range	Right and Left/Upward and Downward: $\pm 4^\circ$ (7 m/100 m)
Resolving power at center area (width)	4' (about 0.12 m/100 m)
Brightness	3 levels (bright/normal/dim)

Internal memory

Capacity	1 GB (includes memory for program files)
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External memory

USB flash drive

Data transfer

Data input/output	Asynchronous serial, RS232C compatible
USB	USB Ver. 2.0, Host (Type A) and Client (Type miniB)

Bluetooth wireless communication^{*14}

Transmission method	FHSS
Modulation	GFSK
Frequency band	2.402 to 2.48GHz
Bluetooth profile	SPP
Power class	Class 1
Usable range	about 10 m (while in communication with FC-500) ^{*15 *16}

*14: *Bluetooth* function may not be built in depending on telecommunications regulations of the country or the area where the instrument is purchased. Contact your local dealer for the details.

*15: No obstacles, few vehicles or sources of radio emissions/interference in the near vicinity of the instrument, no rain.

*16: Usage range could be shorter depending on specifications of Bluetooth device to communicate.

Power Supply

Power source	Rechargeable Li-ion battery BDC72
Working duration at 20 °C	
Distance measurement (Fine distance measurement (single) repeated every 30 sec)	
BDC72:	about 20 hours
BT-73QB (external battery, optional accessory):	about 49 hours
Battery state indicator	4 levels
Auto power-off	5 levels (5/10/15/30 min/Not set) (selectable)
External power source	6.7 to 12V
Battery (BDC72)	
Nominal voltage:	7.2V
Capacity:	5,986mAh
Dimensions:	40 (W) x 70 (D) x 40 (H) mm
Weight:	about 220g

Charger (CDC77)	
Input voltage:	100 to 240VAC
Charging time (at 25°C, when two batteries are charged at the same time):	
BDC72:	about 8 hours
	(Charging can take longer than the times stated above when temperatures are either especially high or low.)
Charging temperature range:	0 to 40°C
Storage temperature range:	-20 to 65°C
Size:	94 (W) X 102 (D) X 36 (H) mm
Weight:	about 250g
General	
Operating system	Windows Embedded Compact 7
Display	3.5 inch Transmissive TFT QVGA color LCD
Backlight:	LED: 9 brightness levels (0 to 8) (selectable)
Touch panel:	Resistance-sensitive analog type
Keyboard	29 keys
Key backlight:	Yes
Trigger key	Yes (right side)
Sensitivity of levels	
Circular level:	10 ¹ / ₂ mm
Plate level (Low temperature model only):	30 ¹ / ₂ mm
Electronic Circular levels:	
Graphic display range:	6' (inner circle)
Digital display range:	±6' 30"
Optical plummet	
Image:	Erect
Magnification:	3X
Minimum focus:	0.3 m
Laser plummet ^{*17}	
Signal source:	Red laser diode 635 ±10nm (Class 2 IEC60825-1 Ed. 3.0:2014/FDA CDRH 21CFR Part 1040.10 and 1040.11 (Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No.56, dated May 8, 2019.))
Beam accuracy:	1mm or less (when tripod head height is 1.3m).
Spot diameter:	ø3mm or less
Brightness control:	5 levels
Auto power-off:	Provided (power cut off after 5 minutes)
Calendar/clock function	Yes
Laser-pointer function	ON/OFF (selectable)
Operating temperature	
Standard models:	-20 to 60 °C (-4 to 140 °F) (no condensation) ^{*18}
Low temperature models:	-30 to 50 °C (-22 to 122 °F) (no condensation)
Storage temperature range	-30 to 70°C (-22 to 158 °F) (no condensation)
Dust and water resistance	IP65 (IEC 60529:2001)
Instrument height:	192.5 mm from tribrach mounting surface 236mm +5/-3mm from tribrach bottom
Size (with handle)	
Display on one side:	191 (W) X 174 (D) X 348 (H) mm
Display on both sides:	191 (W) X 190 (D) X 348 (H) mm
Weight (with battery and tribrach)	5.7kg (12.3 lb)

^{*17}: Laser plummet is available as a factory option depending on the country or the area where the instrument is purchased.

^{*18}: No direct sunlight for using high temperatures of 50 to 60°C (122 to 140°F).