



## Fast EDM, 16-hour battery and superior Nikon optics



The Nikon® DTM/NPL-302 Series total stations from Tripod Data Systems™ (TDS) deliver a versatile, easy-to-use platform to help you get the job done right. Nikon's world-renowned optics give you brighter, clearer images. Fast, accurate Electronic Distance Measurement (EDM) helps you move quickly from point to point. Battery life is the longest in the industry—16 hours—so you can work through even the longest day with no battery changes. The built-in software includes several easy-to-use alpha input modes to help you work more efficiently. And its lightweight, waterproof construction ensures reliable performance in tough field conditions.

### See brighter, sharper, clearer images

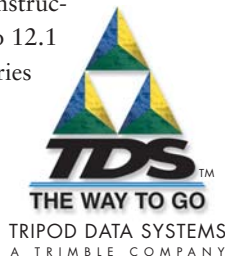
You'll see the difference when you look through a Nikon total station. Nikon's legendary optics effectively let in more light. The result is brighter, sharper images, even in the low-visibility conditions typical in the field. You'll see much more detail and much less distortion, especially over longer distances. Better optics help you aim more precisely, and they're much easier on your eyes—something you'll really appreciate on long workdays.

All Nikon telescopes use a unique linear focusing mechanism that improves focusing at both short and long distances. And the large focusing knob is easy to use even when you're wearing gloves.

### 16-hour battery and rugged construction keep you going in the field

The 302 Series features the industry's longest-lasting battery—a BC-65 clip-on that gives you up to 16 hours of continuous distance/angle measurement; with one measurement every 30 seconds, battery life extends to 27 hours. That means you can work all day without having to stop and change the battery.

The 302 Series also features rugged, lightweight construction for reliable performance in the field—just 11.5 to 12.1 lbs with battery, depending on model. And all 302 Series total stations come with an IPX6 waterproof rating. That means the total station can withstand a powerful jet of water with no harmful effects. You can count on your total station to work just as hard as you do.



# Prism or reflectorless—Nikon total stations deliver



## Fast, accurate distance measurement

The 302 Series models are among the fastest total stations in their class, with 1.4-second initial measurement and 1.0-second updates for DTM models in normal mode. This fast EDM helps you move quickly through your survey routines so you spend less time in the field.

The 302 Series is also extremely precise, with an accuracy of  $\pm(3+2 \text{ ppm} \times D)$  mm for DTM models in precise mode. DTM models also feature advanced software to ensure measurements taken using reflector sheets are as fast and accurate as those taken with glass prisms.

## Waterproof IPX6 rating ensures all-weather performance

You can count on the 302 Series to perform reliably, even in wet weather and extreme temperatures.



## NPL-302 Series pulse laser stations support reflectorless applications

The NPL-362/352/332 pulse laser stations deliver productivity and performance in reflectorless total station models. The NPL-302 Series builds on the features of the DTM-302 Series to create the world's first high-precision coaxial, focusing, reflectorless EDM. This lets you survey environments inaccessible to prism-based systems without compromising speed or accuracy.

The NPL-302 Series pulse laser stations use a Class 1 laser to measure points with an accuracy of  $\pm(5+2 \text{ ppm} \times D)$  mm in precise mode. You can use the NPL-302 Series with reflector sheets or a standard prism. With a single prism, you can measure up to 16,400 ft (5 km), ideal for large-scale survey applications. What's more, two independent measurement keys let you take measurements using both prism and reflectorless modes on the same job.

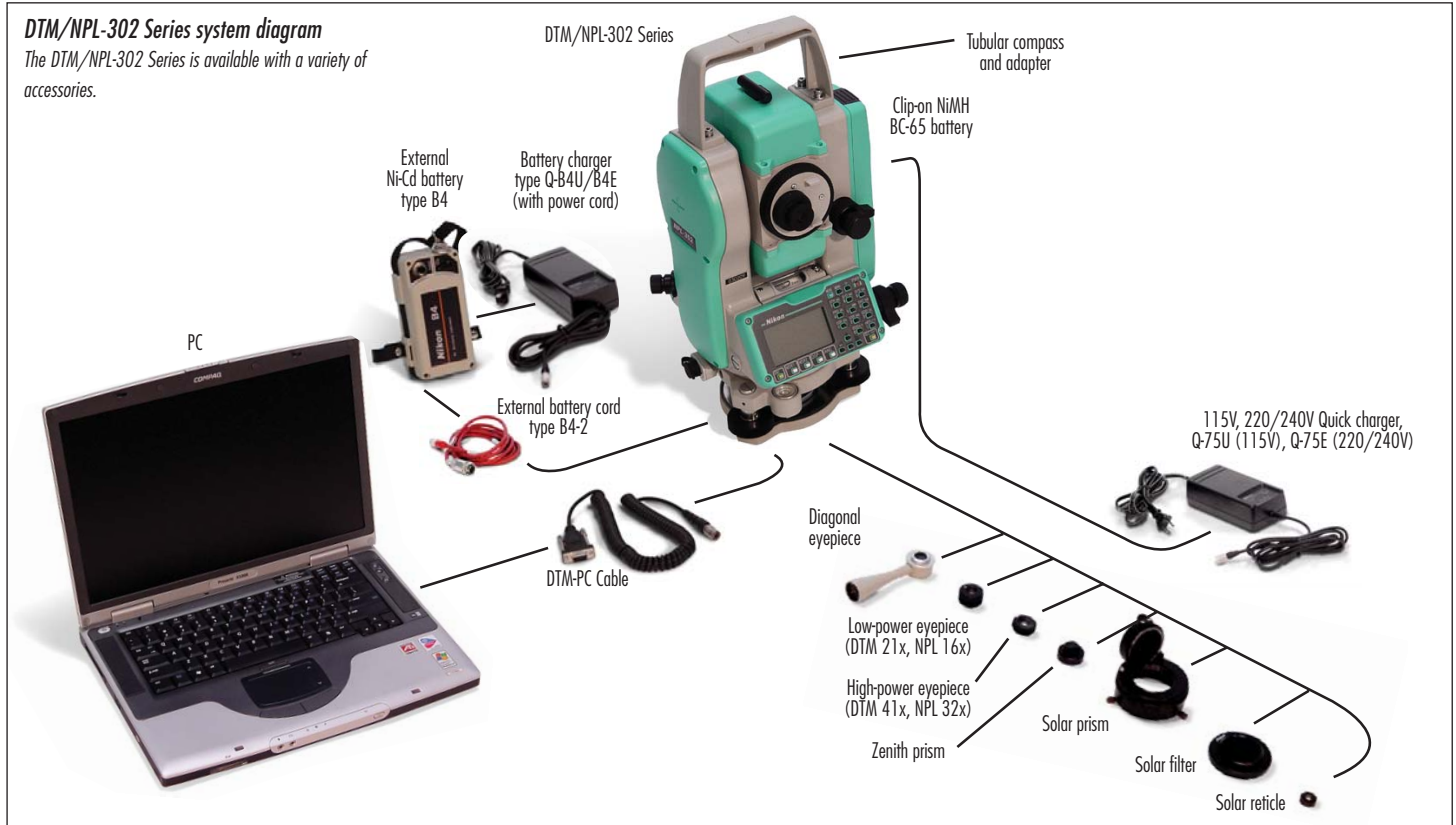
## Reflectorless models give you more options

The NPL-302 Series pulse laser stations combine all the features of the 302 Series with a high-precision coaxial, focusing, reflectorless EDM. Two independent measurement keys let you take measurements using both prism and reflectorless modes on the same job.

The NPL-302 Series pulse laser stations

## DTM/NPL-302 Series system diagram

The DTM/NPL-302 Series is available with a variety of accessories.



# ver speed, accuracy, ease of use

## Part of the complete data collection system from TDS

The 302 Series total stations are part of a complete data collection system from TDS. For example, you can connect your total station to a rugged Ranger™ or Recon® handheld for more flexible, powerful data collection capabilities. Both the Ranger and Recon meet military standards for durability, so you can count on them in the field.

Easy-to-use Survey Pro™ software has been the #1 choice of surveyors since 1995.<sup>1</sup> All TDS products are designed to meet surveyors' demanding requirements, helping you capture data accurately, work with it efficiently and present it to your clients professionally.

1 Business News Publishing Company, "Surveying and Mapping Industry Study" 1995-2004.



**Connect a TDS Ranger for more data collection capabilities**  
You can expand your data collection capabilities by connecting a TDS Recon or Ranger (shown) data collector to the 302 Series total station.

## Large, easy-to-read display, ergonomic keypad and one-touch codes speed data input

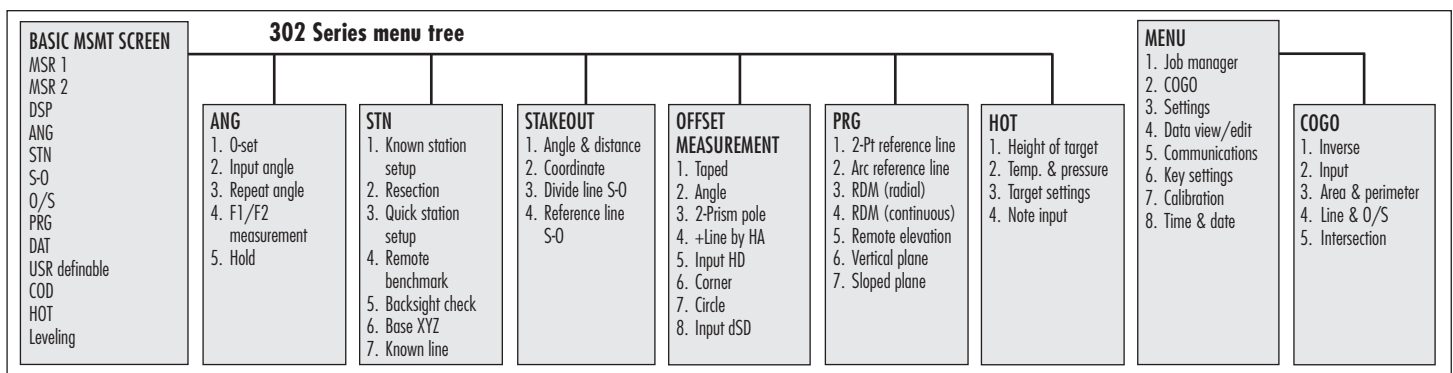
All 302 Series models feature a large, easy-to-read LCD graphic display and an ergonomic keypad for efficient field operation. MENU, MODE and HOT keys give you easy access to frequently adjusted settings and job management functions. The full numeric keyboard makes it fast and easy to input angle and height of target data. Multiple code-input methods help

speed data input as well. You can assign specific functions to the two USR keys for one-touch access to the functions you use most. You can also assign up to 10 one-touch Quick Codes to the numeric keys 0 through 9. Once you've defined your codes, you simply aim at the target and press one of the Quick Code keys to measure and record a point with full coding.

The 302 Series' internal memory can store up to 10,000 data records in up to 32 separate jobs. You can check, edit, delete, input and search for job file data directly on the total station. Plus, you can save survey control-point coordinates in a job file, then access that data from other jobs.

### Easy-to-use keypad features USR, Quick Code keys

To speed up data input, you can assign frequently used functions to the two USR keys. You can also define up to 10 one-touch Quick Codes; simply aim at the target and press one of the Quick Code keys to measure and record a point with the assigned code.



# DTM/NPL-302 Series Specifications

## DTM-362/DTM-352/DTM-332/NPL-362/NPL-352/NPL-332

	DTM-362/352	DTM-332	NPL-362/352	NPL-332
<b>TELESCOPE</b>				
Tube length:	6.22 in (158 mm)	6.22 in (158 mm)	6.02 in (153 mm)	6.02 in (153 mm)
Image:	Erect	Erect	Erect	Erect
Effective diameter of objective:	1.77 in (45 mm)	1.77 in (45 mm)	1.57 in (40 mm)	1.57 in (40 mm)
Magnification:	EDM: 1.97 in (50 mm) 33x (21x/41x) w/optional eyepieces)	EDM: 1.97 in (50 mm) 33x (21x/41x) w/optional eyepieces)	EDM: 1.97 in (50 mm) 26x (16x/32x) w/optional eyepieces)	EDM: 1.97 in (50 mm) 26x (16x/32x) w/optional eyepieces)
Field of view:	1°20'	1°20'	1°30'	1°30'
Resolving power:	2.5"	2.5"	3"	3"
Minimum focusing distance:	4.26 ft (1.3 m)	4.26 ft (1.3 m)	5.3 ft (1.6 m)	5.3 ft (1.6 m)
<b>DISTANCE MEASUREMENT</b>				
	<b>Range with Nikon-specified prisms</b>			
Under good conditions	No haze with visibility over 25 miles (40 km)			
With reflector sheet:	16.4 to 328 ft (5 to 100 m)	16.4 to 328 ft (5 to 100 m)	5.3 to 980 ft (1.6 to 300 m)	5.3 to 980 ft (1.6 to 300 m)
With mini prism:	3,930 ft (1,200 m)	3,930 ft (1,200 m)	9,840 ft (3,000 m)	9,840 ft (3,000 m)
With single prism:	7,540 ft (2,300 m)	7,540 ft (2,300 m)	16,400 ft (5,000 m)	16,400 ft (5,000 m)
With triple prism:	9,840 ft (3,000 m)	9,840 ft (3,000 m)	—	—
Under normal conditions	Ordinary haze with visibility about 12.5 miles (20 km)			
With reflector sheet:	16.4 to 328 ft (5 to 100 m)	16.4 to 328 ft (5 to 100 m)	5.3 to 980 ft (1.6 to 300 m)	5.3 to 980 ft (1.6 to 300 m)
With mini prism:	3,280 ft (1,000 m)	3,280 ft (1,000 m)	9,840 ft (3,000 m)	9,840 ft (3,000 m)
With single prism:	6,560 ft (2,000 m)	6,560 ft (2,000 m)	16,400 ft (5,000 m)	16,400 ft (5,000 m)
With triple prism:	8,530 ft (2,600 m)	8,530 ft (2,600 m)	—	—
Reflectorless mode:	—	—	5.3 to 690 ft (1.6 to 210 m)	5.3 to 690 ft (1.6 to 210 m)
With KGC 90% <sup>1</sup> :	—	—	—	—
<b>ACCURACY</b>				
Prism/Precise mode:	±(3+2 ppm x D) mm	±(3+2 ppm x D) mm	±(3+2 ppm x D) mm	±(3+2 ppm x D) mm
-4 to 14 °F (-20 to -10 C):	±(3+3 ppm x D) mm	±(3+3 ppm x D) mm	±(3+3 ppm x D) mm	±(3+3 ppm x D) mm
104 to 122 °F (40 to 50 C):	±(3+3 ppm x D) mm	±(3+3 ppm x D) mm	±(3+3 ppm x D) mm	±(3+3 ppm x D) mm
Reflector sheet:	—	—	±5 mm: 5.3 to 17.4 ft (1.6 to 5 m)	±5 mm: 5.3 to 17.4 ft (1.6 to 5 m)
Prism:	—	—	±5 mm: 5.3 to 32.8 ft (1.6 to 10 m)	±5 mm: 5.3 to 32.8 ft (1.6 to 10 m)
Prism/Normal mode:	±(10+5 ppm x D) mm	±(10+5 ppm x D) mm	±(10+5 ppm x D) mm	±(10+5 ppm x D) mm
Reflectorless/Precise mode:	—	—	±(5+2 ppm x D) mm	±(5+2 ppm x D) mm
-4 to 14 °F (-20 to -10 C):	—	—	±(5+3 ppm x D) mm	±(5+3 ppm x D) mm
104 to 122 °F (40 to 50 C):	—	—	±(5+3 ppm x D) mm	±(5+3 ppm x D) mm
<b>LEAST COUNT</b>				
Precise mode:	0.002 ft (1 mm)	0.002 ft (1 mm)	0.002 ft (1 mm)	0.002 ft (1 mm)
Normal mode:	0.02 ft (10 mm)	0.02 ft (10 mm)	0.02 ft (10 mm)	0.02 ft (10 mm)
<b>MEASURING INTERVALS<sup>2</sup></b>				
Prism/Precise mode:	1.6 sec (initial 1.6 sec)	1.6 sec (initial 1.6 sec)	1.3 sec (initial 2.0 sec)	1.3 sec (initial 2.0 sec)
Prism/Normal mode:	1.0 sec (initial 1.4 sec)	1.0 sec (initial 1.4 sec)	0.5 sec (initial 1.6 sec)	0.5 sec (initial 1.6 sec)
Reflectorless/Precise mode:	—	—	1.6 sec (initial 2.6 sec)	1.6 sec (initial 2.6 sec)
Reflectorless/Normal mode:	—	—	0.8 sec (initial 2.0 sec)	0.8 sec (initial 2.0 sec)
<b>ANGLE MEASUREMENT</b>				
Reading system:	Photoelectric detection by incremental encoder			
Circle diameter:	H 3.46 in (88 mm)	H 3.46 in (88 mm)	H 3.46 in (88 mm)	H 3.46 in (88 mm)
Horizontal angle:	Diametrical	Single	Diametrical	Single
Vertical angle:	Single	Single	Single	Single
Minimum increment				
Degree:	1/5/10"	1/5/10"	1/5/10"	1/5/10"
Gon:	0.2/1/2 mgon	0.2/1/2 mgon	0.2/1/2 mgon	0.2/1/2 mgon
MIL6400:	0.005/0.02/0.05 mil	0.005/0.02/0.05 mil	0.005/0.02/0.05 mil	0.005/0.02/0.05 mil
DIN 18723 accuracy:	3"/5"	5"/1.5 mgon	3"/5"	5"/1.5 mgon

**READOUT DISPLAY**  
29,999.99 ft (9,999.999 m)

**AMBIENT TEMPERATURE RANGE<sup>3</sup>**  
-4 to 122 °F (-20 to 50 C)

**ATMOSPHERIC CORRECTION**  
Temperature range: -40 to 140 °F (-40 to 60 C)  
Barometric pressure: 15.8 to 39.3 inHg (400 to 999 mmHg/533 to 1332 hPa)  
Prism offset correction: -999 to 999

**TILT SENSOR**  
Type: Dual-axis (DTM-362/352/NPL-362/352)  
Single-axis (DTM-332/NPL-332)  
Method: Liquid-electric detection Compensation range: ±3"  
Setting accuracy: ±1"/±0.2 mgon

**LEVEL VIAL SENSITIVITY**  
Plate level vial: 30"/2 mm Circular level vial: 10"/2 mm

**OPTICAL PLUMMET**  
Image: Erect Magnification: 3x  
Focusing range: 1.6 ft (0.5 m) to ∞

**DISPLAY/KEYPAD**  
Type: Graphic LCD (128 x 64 pixel) with backlight and 25 keys  
Both sides (DTM-362/352/NPL-362/352)  
Single side (DTM-332/NPL-332)

**COMMUNICATIONS PORT**  
Type: RS-232C Baud rate: 38,400 max ASYNC

**POINT MEMORY**  
Raw/coordinates: 10,000 records

**DIMENSIONS (W x D x H)**  
6.6 x 6.8 x 13.2 in (168 x 173 x 335 mm) (DTM-362/352/332)  
6.6 x 6.8 x 13.7 in (168 x 173 x 347 mm) (NPL-362/352/332)

**WEIGHT**  
Main unit (w/o battery): 10.8 lbs (4.9 kg) (DTM-362/352/NPL-332)  
10.6 lbs (4.8 kg) (DTM-332)  
11.2 lbs (5.1 kg) (NPL-362/352)

BC-65 clip-on battery: 0.9 lbs (0.4 kg)  
Battery charger: 1.3 lbs (0.6 kg)  
Carrying case: 5.3 lbs (2.4 kg) (DTM-362/352/332)  
7.1 lbs (3.2 kg) (NPL-362/352/332)

**POWER SUPPLY**  
Clip-on NiMH battery BC-65  
Output voltage: 7.2V DC  
Operating time: ~16 hours (cont. distance/angle measurement) (DTM-362/352/332)  
~6.5 hours (cont. distance/angle measurement) (NPL-362/352/332)  
~7 hours<sup>4</sup> (cont. distance/angle measurement, Reflectorless mode) (NPL-362/352/332)  
~27 hours (distance/angle measurement every 30 seconds) (DTM-362/352/332)  
~15 hours (distance/angle measurement every 30 seconds) (NPL-362/352/332)  
~16 hours<sup>4</sup> (distance/angle measurement every 30 seconds, Reflectorless mode) (NPL-362/352/332)  
~30 hours (angle measurement) (DTM-362/352/332)  
~27 hours (angle measurement, Prism and Reflectorless modes) (NPL-362/352/332)  
Quick charger Q-75U (115V)/Q-75E (220/240V)/Q-70C (12V DC)  
Recharging time: ~2.0 hours for full recharge  
Discharging time: ~7.5 hours (Q-75U/Q-75E)

<sup>1</sup>KGC 90% is Kodak Gray Card 90% reflective.

<sup>2</sup>Measuring time may vary depending on measuring distance and conditions.

<sup>3</sup>A special version of the DTM-362/352 is available that allows operation at extremely low temperatures down to -22 °F (-30 C).

<sup>4</sup>At 77 °F (25 C). Operation time may be shorter if battery is not new.

Your local TDS dealer

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