TOPCON

GPT-3000 SERIES

PULSE TOTAL STATION

Best Performance Non-prism Measurement

Features

The Topcon GPT-3000 series are Pulse Laser Total Stations with a superior non-prism measurement capability. Making use of an updated optical system, the GPT-3000 Series incorporates special techniques to provide accurate, reliable and safe non-prism distance measurement over a range of upto 250 meters. In addition to non prism measurement, the GPT-3000 series is of a compact, robust construction with IP66 water and dust protection making it the ideal construction site surveying instrument. The easy to use software provides complete functionallity to carry out all surveying and stake out routines and calculations and to store all data in the instrument itself.

For a complete, All weather, Non-Prism surveying instrument that can be applied to almost any surveying task, look no further than the Topcon GPT-3000 Series.

Visible Laser Pointer
GPT-3000 Series uses both an invisible Pulse Laser Diode for distance measurement and a Visible Red Laser Beam as a laser pointer to identify the measurement point at the center of the cross-hairs of the telescope. The visible laser pointer is a Class 2 laser which can be easily switched on and off as required. The laser pointer is an effective help in 1) identifying the measurement point during non prism measurement and for 2) targeting the required point during stake-out.

Toughest Durability
The proven robustness and durability of Topcon construction Total Stations is also to be found in the GPT-3000 Series. With International protection standard IP66, the instruments are water and dust proof and ensure reliable performance even in the harshest site conditions. This increases the amount of work hours in a day by allowing work to continue even in bad weather and also ensures that the instrument will perform reliably for many years without the need for lengthy service and repairs.

* Degree of protection against water for Topcon's GPT-3000 Series is based on the standard IEC60529, defined as "Water projected in powerful jets" against enclosure from any direction shall have no harmful effects. And also GPT-3000 complies with "Dust-tight" of the IEC60529 standard as to degree of protection against solid foreign objects, defined as "No ingress of dust".

Simple Operation
The GPT-3000 series is based on the best selling Total Station GTS-220 Series and has the same powerful yet extremely easy to use surveying and stake-out software.

Large Internal Memory
The GPT-3000 Series has the internal memory to store up to 8,000 points for data collection, or up to 16,000 points for layout work.

Dual-Axis Compensator
A dual-axis compensator is included in the GPT-3002/3003/3005 models. This dual-axis tilt sensor automatically corrects the vertical and horizontal angle compensation for leveling error, ensuring accurate and reliable angle readings.

Point Guide System
Topcon's Point Guide function is available as standard on the GPT-3000 Series. Get on line quickly and easily with this feature. Two (2) LED lights, one flashing and one constant, help identify the correct direction for setting out.

Non-Prism Measurement Features

Long Range measurement

The GPT-3000 Series can measure over a range of upto 250m in Non-Prism mode. This capability ensures a high performance non-prism measurement at ranges of between 50 and 150 meters by making measurement possible to the dark, rough or inclined surfaces which are encountered in the practical site environment. Non-prism measurements are rarely required to be made to perpendicular, Kodak Grey surfaces on which most instrument measurement specifications are based. Topcon GPT-3000 is designed to perform under real site conditions.

Safe Measurement

Topcon's unique Pulse Laser technology with narrow beam optical system is a Class 1 laser. This allows the instrument to be used in compliance with safty regulations on the construction site or in crowded public areas. A Class 1 laser is permitted in these environments being safe for the user and passer-by.

Dual Optical System

The GPT-3000 has a dual optical system for laser distance measurement. Non-prism measurement is made with a narrow beam system providing a stable invisible narrow beam, which produces a stable measuring spot for non-prism measurements. This allows accurate measurements at longer distances but also improves the ability to measure to difficult surfaces, such as asphalt, at shorter distances.
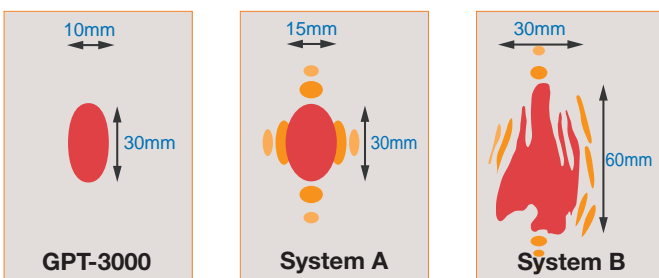
Comparison of beam spots at 50 meters

The Topcon system produces a high quality measuring spot which ensures that the point you are pointing at is the point you are measuring.

The second optical system in the GPT-3000 series is used for making measurements using a reflecting glass prism (as with traditional EDM). This system has a broader measurement beam and is very stable over long distances upto 3 Km. The high stability of the beam ensures excellent performance even in conditions with high heat shimmer or other circumstances where the air is unstable, such as over water or along side buildings.

Non-prism mode

Prism mode

Switching between the 2 optical systems is achieved by a simple, one key touch operation.

Pulse Laser technology

The special Pulse Laser technology in the GPT-3000 Series uses the priciple of "Time of Flight" to measure the time taken for a pulsed burst of laser energy to travel to a surface and back to the instrument. The technique used by Topcon has the ability to identify the reflection from the targetted point, thus filtering out the unnecessary signals from surfaces in front of, or behind the point to be measured. The GPT-3000 can recognise the target at the center of the telescope cross-hairs and ensure that measurement is made to the required surface.
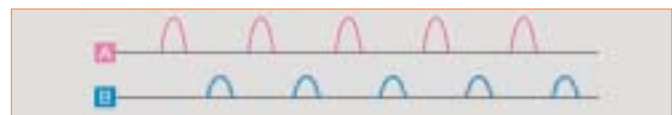
Using this technology even non-prism measurements through a chain-link fence or to corner points can be made.

The technique works as follows:

Prism mode

When collimating Point A, the pulse laser will output to Point A and Point B at the same time.

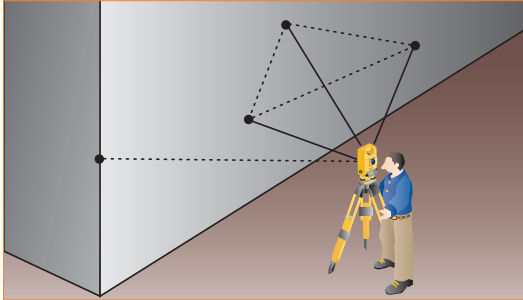1. Pulse Laser (Time of Flight) measurement outputs signal A and signal B separately

2. Although the measured value of A and B is mixed in one cycle, the shape of signal is different.

3. In this way GPT-3000 can distinguish between signal A and B

Application Software

Non-Prism Plane Offset Program
Topcon's exclusive, "Plane Offset Program" is standard on all GPT products. Just measure three (3) random points on a wall or plane to establish a known plane. Then sight the unknown point on the plane and the GPT calculates coordinates and distance values of the desired point.

Remote Elevation Measurement (REM)
This feature measures the height where a prism can not be placed directly. Measurement can be extended along the plumb line as the height is continuously displayed.

Z coordinate of occupied point (Benchmark Elevation)
Z coordinate and direction angle of the instrument can be calculated and reset by measuring Z coordinate of known points (Max. 10 points).

Area calculation
Area can be calculated using measured data or file data (Coordinate data).

Missing Line Measurement (MLM)
Multiple lines can be drawn between;
1. the first point and the last point.
2. the last 2 points.
Horizontal distance, difference in height and slope distance are calculated.
Coordinate file data and manual input data are available to be used.

Point to line measurement
Create a new coordinate by measuring to two points. The 1st point becomes the origin and the 2nd point becomes the N axis direction.

Applications

Applications
The features and software of the GPT-3000 Series combine to provide ultimate flexibility in many field applications such as City Elevation Work, Forestry Survey, Quarry Surveys, Mining surveys, Accident Investigation.

Building and Structures

Quarries Survey

Forestry Survey

Accident Investigation

	GPT-3002	GPT-3003	GPT-3005	GPT-3007
TELESCOPE				
Magnification	30 X			
Field of view	1°30'			
Minimum focus	1.3m			
Reticle illumination	Provided			
DISTANCE MEASUREMENT (P)				
1 prism *	3000m			
Accuracy	± (3mm + 2 ppm) m.s.e.			
Minimum reading	Fine: 0.2mm Coarse: 1mm Tracking: 10mm			
Measurement Time	Fine: 1.2 sec Course: 0.5 sec Tracking: 0.3 sec			
DISTANCE MEASUREMENT (NP)				
Kodak white card	1.5 ~ 250m			
Accuracy	5mm m.s.e (above 25m) 10mm m.s.e. (1.5 to 25m)			
Laser class	1			
ANGLE MEASUREMENT				
Accuracy (Standard deviation based on DIN 18723)	2" (0.6mgon)	3" (1.0mgon)	5" (1.5mgon)	7" (2.0mgon)
Minimum reading	1" (0.2mgon)			5" (1.0mgon)
TILT SENSOR				
Type	Dual axis			Single axis
Compensating Range	± 3'			
DISPLAY				
LCD	Graphic LCD 160 x 64 Dots with backlight			
	2 sides			1 side
OPTICAL PLUMMET				
Magnification	3 X			
Field of view	5°			
Laser Plummet Laser class (only for Laser plummet type)	Class 2			
OTHERS				
Instrument height	176mm			
Point guide	Provided			
Dimension	336(H) x 184(W) x 174(L) mm			
Weight (incl.battery)	5.1 kg			
Protection against dust and water	IP66			
Operating Temperature	-20°C to +50°C			
RECHARGEABLE BATTERY BT-52QA				
Maximum operating time including distance measurement	4.2 hrs			
Weight	0.3 kg			
BATTERY CHARGER BC-27CR				
Recharging time (at +20°C)	1.8 hrs			

* Condition 1: Slight haze with visibility about 20 km, moderate sunlight with light heat shimmer
Designs and specifications herein are subject to change without notice.
Important: In order to obtain the best results with this instrument, please be sure to review all user instructions prior to operation.

Standard Components

GPT-3000 series	1 each
Battery BT-52QA	2 each
Battery charger BC-27CR (230V)	1 each
Tool kit with case	1 set
Plastic carrying case	1 each
Silicon cloth	1 each
Plastic rain cover	1 each
Plumb bob set	1 each
Lens cap	1 each
Instruction manual	1 each
Sun shade	1 each

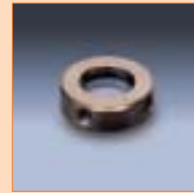## Optional accessories

TROUGH COMPASS-6   DIAGONAL EYEPIECE-10   SOLAR FILTER-6   SOLAR RETICULE-6   FC-1000

More than 70 years of experience

For 70 years, Topcon has been a leading manufacturer in industrial, medical and positioning enhancement tools. This broad experience has created a basis for Topcon's wide product line for basically every positioning need, whether it's for construction or surveying applications.

For the construction industry, Topcon offers a complete range of innovative laser and sonic solutions, including industry leading products for interior, utility, general construction and machine control applications.

For surveying applications, Topcon manufacturers and supplies a complete range of optical measuring products, from digital and optical levels to theodolites and robotic total stations, and a full line of GPS+ satellite positioning solutions.

Product & Service support

To assure that your Topcon product maintains peak performance, your local Topcon dealer offers factory trained certified service technicians. And just in case service assistance isn't available in your area, our Europe wide network of Topcon offices, offer repair and return service policies second to none.

Innovation, not imitation

During the last decades, Topcon has brought many innovative solutions to the industry, that offer the contractor significant productivity increase and greater ease of use. That's the key to leadership, and the reason Topcon is the world's leading supplier of laser and surveying instruments. Some examples of unique Topcon technologies:

- Waterproof auto level
- The integrated total station, "The Guppy"
- The compact coaxial total station (GTS-1)
- World's First laser with beam scanning technology
- The first waterproof total station
- GreenBeam® visible construction lasers
- Automatic excavator control system
- World's First 3-D machine control (3D- MC™ LPS)
- 5" Grade laser with automatic alignment & remote control
- Horizontal self leveling laser with liquid compensator
- First robotic total station with instant beam lock system (GTS-800A and RC-2)
- First satellite-directed automatic 3D machine control system (3D-MC™ GPS)