

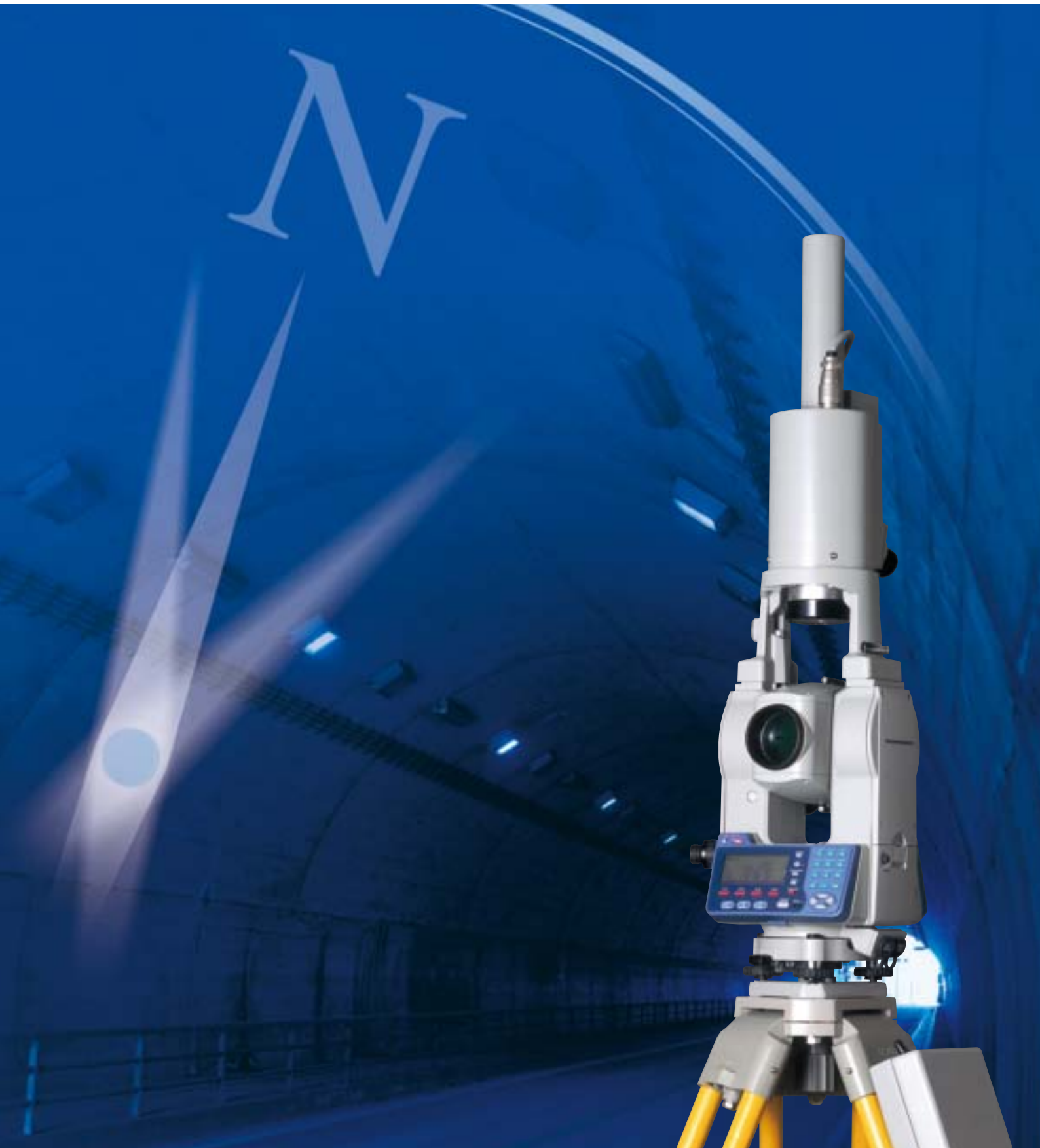
SOKKIA

GP3130R3

GYRO STATION



Gyroscope Integrated with SET3130R3 Advanced Reflectorless Total Station



Determine Precise True Azimuth Anywhere, Anytime.

Then start surveying right away with the Reflectorless Total Station.

The GP3130R3, a combination of the GP1 manual gyroscope and the SET3130R3 total station, locates true north and determines true azimuth with 20 arc-second (6mgon, 0.1mil) precision in approximately 20 minutes.

Determines the True Azimuth

The GP1 pendulum-type gyroscope consists of a gyroscopic motor suspended by a suspension tape and is housed in a cylindrical body mounted on the total station. The pendulum oscillates around the earth's meridian. This oscillation (precession) can be observed through the eyepiece of the GP1. The SET3130R3 detects the precession width by horizontal angle, or measures the time of precession intervals, then calculates the center of this precession as true north.

Simple Operation

There is no need for manual calculation, field notation, or even a stopwatch. All operations can be directly performed with ease using the total station's control panel or the SF14 wireless keyboard.

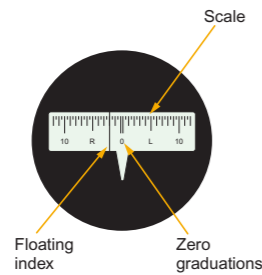
The calculated true azimuth is instantly set to the total station's horizontal angle without the need for numeric data input or manual circle orientation. This allows the operator to proceed

immediately to total station surveying work using true azimuth, saving valuable time and effort.

Two Modes for Seeking True North

Follow-up Measurement

Rotate the total station either clockwise or counterclockwise to keep the floating index mark in the gyro eyepiece as close as possible to zero. At the turning point of precession, just press a key on the total station or SF14 keyboard to enter the horizontal angle reading. After the data from two or more turning points has been entered, true azimuth is automatically calculated.



Time Measurement

Make a provisional determination of true north within $\pm 20'$ (0.37gon, 6mil) precision, by using either the follow-up method with two turning points only, with a tubular compass, or by some other method, and clamp the total station. Input the amplitudes of both turning points of precession via the keyboard and press a key each time the floating index crosses the zero graduations. Once this straightforward procedure is complete, the total station calculates the true north direction.

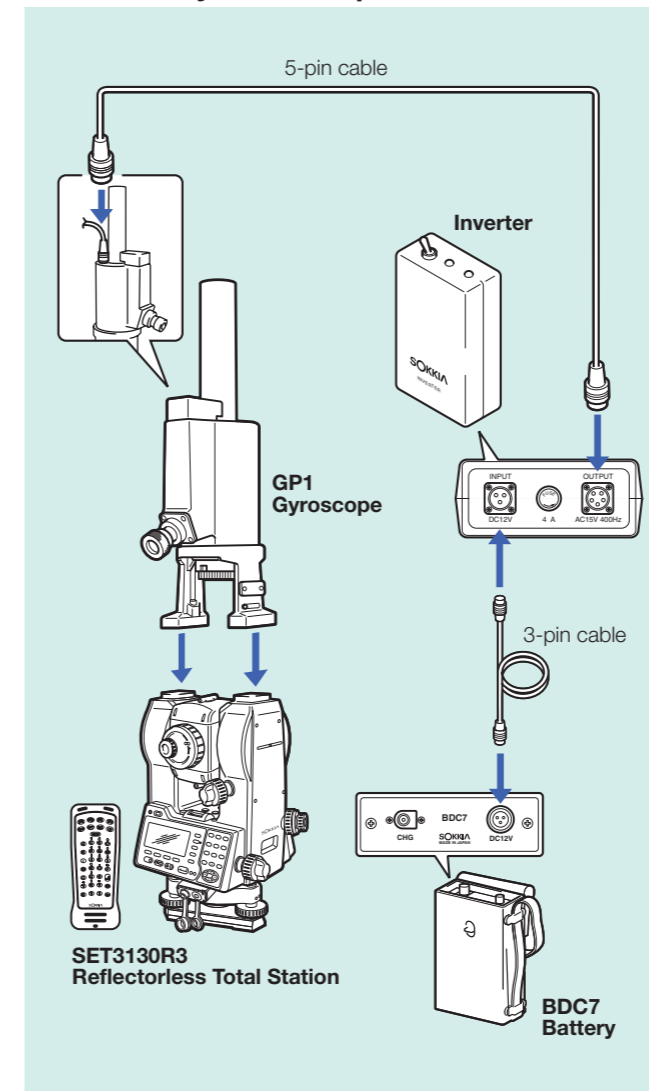
The Ideal Solution — One Step Ahead of Other Technology

The GP3130R3 can locate true north at any time, day or night, regardless of visibility or weather conditions, even when working underground, and without the need of any known station. Ideal for those applications where alternative technologies fail to deliver.

Comparison of Solutions

	Location	Weather	Accuracy	Speed	Known Station
Gyro Station	Unrestricted	Unrestricted	Good	Fast	Not Required
GPS RTK	Restricted	Unrestricted	Good	Fast	Required
GPS Static	Restricted	Unrestricted	Good	Slow	Required
Oriented by Tie Point	Restricted	Restricted	Good	Slow	Required
Astronomical Observation	Restricted	Restricted	Good	Slow	Not Required
Magnetic Compass	Unrestricted	Unrestricted	Low	Fast	Not Required

GP3130R3 System Components



Applications

- Obtaining azimuth readings in tunnels, underground spaces and other enclosed environments.
- Determining directions for roads, railroads, power-lines and similar long and narrow construction projects.
- Checking navigational devices.

SET3130R3 — Reflectorless Total Station

The GP3130R3 incorporates a special version of the SET3130R3, which is loaded with a gyro calculation program in addition to the standard software. The SET3130R3 instrument is originally equipped with advanced measurement capabilities, practical software and internal data memory.

- Ultra-narrow red laser measurement beam ensures pinpoint accuracy in reflectorless distance measurement.
- 0.3 to 350m (1 to 1,140ft.) reflectorless measurement range.
- $\pm(3 + 2\text{ppm} \times D)\text{mm}$ precision for reflectorless distance measurement.
- $\pm(2 + 2\text{ppm} \times D)\text{mm}$ precision and 5,000m (16,400ft.) range with a single glass prism.
- 2.6 seconds high-speed measurement in fine mode with or without a reflector.
- 1.8 seconds super high-speed measurement in rapid mode.
- $1'' / 0.2\text{mgon} / 0.005\text{mil}$ angle readings with $3'' / 1\text{mgon} / 0.015\text{mil}$ accuracy.
- Market-proven original absolute encoders for highly reliable angle measurement.
- Internal memory that can hold approx. 10,000 data points with 10 job files.
- CF card unit can be added as a factory option for more memory capacity.
- Password-protection function to prevent unauthorized use.
- Easy operation with alphanumeric keys, softkeys and direct keys.
- Practical onboard measurement programs.
- Guide light unit (factory option) boosts efficiency with setting-out jobs.
- 7 hours continuous use with a standard Ni-MH battery. Optional Ni-Cd battery provides longer working hours under extremely low temperatures.

For more information, please refer to the Series130R Reflectorless Total Stations brochure.

Specifications

GP1 Gyroscope	
Accuracy of azimuth determination (standard deviation)	±20" / 6mgon / 0.1mil
Running-up time	Approx. 60 seconds
Half period (at middle latitudes)	Approx. 3 minutes
Minimum interval between main divisions	Approx. 10' (0.185gon, 3mil) /div.
Operating temperature	-20 to +50°C (-4 to +122°F)
Operative area	Up to 75° latitude
Size	W145 x D200 x H416 mm (W5.7 x D7.9 x H16.4 in.)
Weight	Approx. 3.8kg (8.4 lb.)

Power supplies for GP1	
Inverter (plugs into GP1)	
Input	12V DC
Output	115V AC, 400Hz / 12V DC
Size	W130 x D55 x H240 mm (W5.1 x D2.2 x H9.4 in.)
Weight	Approx. 1.7kg (3.8 lb.)
BDC7 Battery (Ni-Cd external rechargeable battery)	
Output	12V DC
Continuous use at 25°C (77°F)	Approx. 3 hours
Size	W140 x D50 x H250 mm (W5.5 x D2.0 x H9.8 in.)
Weight	Approx. 2.0kg (4.4 lb.)
CDC7/7A/7B Charger	
Input	100/120/220V AC
Output	14.5V DC
Recharging time at 25°C (77°F)	Approx. 15 hours

SET3130R3 Total Station for GP3130R3	
Laser class*1	Class 3R Laser Product
Telescope (fully transiting, coaxial sighting and distance measurement optics.)	
Magnification	30x
Resolving power	2.5"
Minimum focus	1.3m (4.3ft.)
Angle measurement (Absolute encoder scanning with diametrical detection)	
Display resolution	1"/5", 0.2/1mgon, 0.005/0.02mil
Accuracy (ISO 17123-3:2001)	3" / 1mgon / 0.015mil
Automatic dual-axis compensator	Dual-axis liquid tilt sensor, working range ±3' (55mg)
Distance measurement (Modulated laser, phase comparison method with red laser diode)	
Measuring range	Reflectorless*2 0.3 to 350m (1 to 1,140ft.)
	With reflective sheet 1.3 to 500m (3.3 to 1,640ft.)/RS90N-K 90x90mm target
	With 1 AP prism 1.3 to 5,000m (3.3 to 16,400ft.)
Display resolution	0.001m, 0.01ft, 1/8in.
Accuracy	Reflectorless*2 ±(3 + 2ppm x D)mm (0.3 to 200m (1 to 650ft.))
	±(5 + 10ppm x D)mm (over 200 to 350m (over 650 to 1,140ft.))
	With reflective sheet ±(3 + 2ppm x D)mm
	With AP prism ±(2 + 2ppm x D)mm
General	
Control panel	Dot matrix LCD and 31 keys on both faces
SF14 wireless keyboard	IR wireless communication, 37 keys
Internal memory	Approx. 10,000 points with 10 job files
Dust and water protection	Conforms to IP64 (IEC 60529:1989)
Weight with handle and battery	Approx. 5.8kg (12.7 lb.)
Power supply	
BDC35A Ni-MH detachable battery	About 7 hours (about 800 points) continuous use (single measurement every 30 seconds at 25°C (77°F))

*1 IEC 60825-1Amd.2: 2001 / FDA CDRH 21 CFR Part 1040.10 and 1040.11(Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001)

*2 With KODAK Gray Card White Side (90% reflective)

SET3130R – a Class 2 laser model with 200m (650ft.) reflectorless measurement range is also available as a factory option.



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Standard Configuration

The GP3130R3 Gyro Station consists of a GP1 Gyroscope and SET3130R3 reflectorless total station.

GP1 Standard Accessories

Inverter, BDC7 external battery, CDC7 charger, 5-pin cable, 3-pin cable, SF14 wireless keyboard, Tubular compass, Eyepiece hood, Bulbs, Fuses, Clamp lock, Cleaning cloth, Vinyl cover, Tool kit, Operator's manual, Carrying case

SET3130R3 Standard Accessories

BDC35A Ni-MH detachable batteries (2 pcs.), CDC70 quick charger, CP7 tubular compass, Lens hood, Lens cap, Plumb bob, Wiping cloth, Vinyl cover, Tool kit, Operator's manual, Carrying case, Shoulder strap, Laser caution sign

Optional Accessories

For GP1

EDC20-11 AC adapter (100 to 240V AC)

For SET3130R3

BDC40A Ni-Cd detachable battery (for low temperature), DE25 diagonal eyepiece, OF3A solar filter, GDL2 guide light unit (factory option)

For more information, please consult with your local dealer or SOKKIA sales office.

