



Geodetical



**GPT-8200A/GTS-820A SERIES**

**AUTO TRACKING  
TOTAL STATION**

## The Solo Survey System that puts you in control



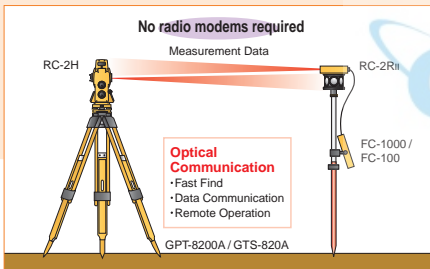
**The new improved Topcon Auto Tracking total stations offer the very best performance using the latest laser communication and pulse-laser distance measurement technology. The GTS-820A series and GPT-8200A series are the latest generation Auto Tracking Total Stations that form the central part of the Topcon Solo Surveying System which is completed by adding the unique Optical Infrared communications device Topcon RC-2II, Topcon Field controller and Topcon software TopSURV.**

The GTS-820A series are Motorized Auto-Tracking Total stations with standard Prism distance measurement. Improvements have been made to the tracking performance with faster rotation speed and longer tracking range.

The GPT-8200A series have all the features of GTS-820A series but with long range Non-Prism distance measurement with the capability to measure a distance of 1,200m without a prism.

The GPT-8200A series is designed for specialist applications such as building surveys, quarry surveys and volumetric monitoring but is equally suitable as the ideal 'multipurpose' total station for standard survey jobs for one-person or two-person surveying. One person surveying can be done from behind the instrument in Non-Prism mode or using the Topcon RC-2 II for remote control from the prism.

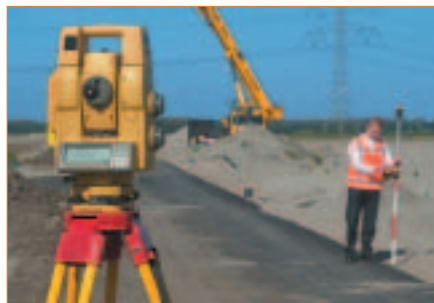
### Unique system features



position and the instrument. Using the GPT-8200A/ GTS-820A with the remote control device, RC-2 II, the surveyor can 'talk' to the total station, giving instructions to measure and tell the instrument where the prism is after a loss of lock.

What is more, the total station can 'talk' back to the surveyor, sending all the measured data for storage in the handheld controller unit.

No radios are needed, no interference or reception problems, no missing or corrupted data. The optical data link puts you in control.



due to the movement of the prism. 12°/sec is approximately equivalent to 75 km/h at 100m. This results in reliable prism lock and better performance in machine control and other applications where fast or erratic movements can be expected. The GPT-8200A series uses a new CCD tracking system, which

#### Unique Remote Control

Topcon's system for solo surveying is based on a unique principle using an optical data link for communication between the prism

identifies the prism and ensures only the prism can be followed by the instrument. In addition advanced technology Movement Anticipation firmware delivers unbeatable tracking performance.

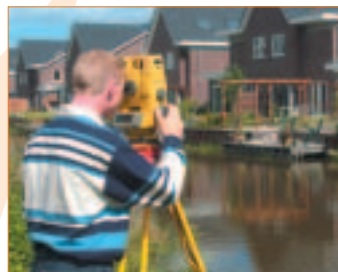
#### Super Fast Find

The super "Fast Find" function is a major advantage of the system ensuring quick re-location of the prism after loss of lock, with the simple press of a button.

Using Topcon's unique laser optical communication technique the RC-2 II directs the total station to the prism position. Weighing only 300 grams and the size of a small pocket calculator, the RC-2 II, when activated, sends a signal, which is detected by the total station. The total station then quickly turns to the correct direction and vertical angle setting to locate the prism.

#### Fast Auto Lock

The Auto Lock function is activated within an area of 5° around the prism. This allows the prism to be identified within a wider field of view so that automatic sighting takes over from manual sighting sooner and only rough pointing to the target is necessary.



#### Laser Safe System

The Topcon Auto Tracking System uses a Class 1 Laser for Auto Lock and Tracking. The GPT-8200A also uses a Class 1 Laser for non-prism distance measurement. This ensures the instruments are safe for use in busy public

areas or on the construction site where regulations may restrict the use of some types of laser. The optical communication between the total station and the Topcon remote control device RC-2 II, makes use of a Class 2 laser.

## Long Range Non-Prism Measurement (GPT-8200A)

The GPT-8200A has dual mode non-prism measurement. Standard mode to measure up to 120m with an accuracy of  $\pm 3\text{mm}$  and Long mode to measure up to 1,200m. A new Pulse Laser technique is used for this long range distance measurement without a prism. A distance of 1,200m can be achieved to a Kodak grey (white surface)

but the real power of this non-prism distance measurement is when measuring to difficult surfaces at shorter distances. For example, measurements made to asphalt can be made more accurately and consistently than ever before. The standard non-prism mode has improved accuracy of  $\pm 3\text{mm}$  from 25m distance up to 120m.

### Angle measurement

The GPT-8200A series (and GTS-820A series) each consist of 4 models, GPT-8201A (GTS-821A), GPT-8202A (GTS-822A), GPT-8203A (GTS-823A) and GPT-8205A (GTS-825A), with 1" (0.3mgon), 2" (0.6mgon), 3" (1.0mgon) and 5" (1.5mgon) angle measurement accuracy's respectively. The first two models have 0.5" (0.1mgon) minimum reading and second two models have 1" (0.2mgon) minimum reading. All models have absolute encoder system for angle measurement.

### Prism measurement

The GTS-820A series measures distance using the traditional principle of EDM and has a measuring range of 2,200m to a single prism in standard conditions with 20Km visibility. The measurement accuracy is  $\pm 2\text{mm} + 2\text{ppm}$ . GPT-8200A in prism mode can measure up to 7,000 meters with an accuracy of  $\pm 2\text{mm} + 2\text{ppm}$ .

## Advanced Features

### Internal memory

Large capacity internal memory for storing up to 30,000 data points is available in both the GPT-8200A and GTS-820A. There is also an internal program memory of 2MB for storing large application programs including the field surveying package supplied by Topcon as standard.



### Additional data storage

PCMCIA or Flash card slot is on the instruments for additional data handling flexibility. Memory cards are available from Topcon which are suitable for more extreme environmental conditions, but standard compact flash cards can also be used.

### Large graphic display

Large graphic display screen on both sides of the instrument with backlight, heater function and contrast adjustment, ensure clear visibility under all lighting conditions. (GTS-822A, GTS-823A and GTS-825A have 1 side display and keyboard.) The clear keyboard with keys for alpha and numeric characters make the instrument easy to use.

### Power supply accessories

The GPT-8200A/ GTS-820A series includes as standard two internal batteries, BT-56Q. Each battery allows at least 3.5 hrs use. The charger for BT-56Q is the BC-27C allowing full recharge in 2.5 hrs. Also available are new external power supply battery and charger, for 8 hrs use in full robotic mode.



Tracking indicator lights





## The Solo Survey System

### RC-2 II Remote control

The RC-2 II provides remote control of the auto tracking total station. It consists of two parts, RC-2H the smart handle unit, and RC-2R II the remote control unit. The RC-2H replaces the instruments standard carrying handle and includes 4 laser sensors, one on each quadrant of the handle. The RC-2R II control unit is carried by the surveyor with the prism pole or can be mounted on the side or the top of the pole. The RC-2R II can be connected to the field controller with a standard instrument cable or via Bluetooth to establish communication between the controller and the instrument.

The RC-2R II has the following features:

- Fast Find of total station tracking beam (typically less than 10 seconds).
- Small, compact size.  
Light weight (300g).
- Mount on top of prism or side of prism pole.
- Operating range of at least 250m.
- Weather proof IPX5.
- Operating time 30 Hours.



### Field controller

Topcon FC-1000 or FC-100 Windows CE handheld Field computers are the ideal controllers for the system. They are built to meet the demanding needs of surveyors and able to withstand rugged use in the field being shockproof, water-proof, dustproof and lightweight. In addition to these design features the computing power is second to none, with fast data processing ensuring optimum performance of your Topcon Auto Tracking Total Station.

### Controller software

Topcon Auto Tracking Total stations are loaded with Topcon's 'Standard Survey Software' offering full functionality for field surveying, calculations and stake-out. For the Total Station Controller there is now new Topcon software, TopSURV.

TopSURV includes all the functions of the Total Station software bringing the power of the instrument to the prism position.



The Topcon system also gives the possibility to use third party hardware and software so users can adapt the system to their own specific needs if required.

TopSURV is an integrated field controller package with, in addition to the total station data logging and Solo Survey total station control, also controller software for Topcon GPS systems. The 2 modules are available separately or combined, providing a seamless integration between Topcon surveying total stations and GPS.

### Cable free connection

Using a special Bluetooth adapter, communication between the RC-2R II and the Windows CE controller can be made without cables. The Bluetooth adapter can be fixed to the RC-2R II and with a Bluetooth Compact Flash card in the FC-1000 or FC-100, cable free communication is established.



### RC-2 Pole mount bracket

This bracket allows the RC-2 to be mounted on top of the A-3 prism or on the side of the prism pole.

### A-3 Prism

The Topcon circular prism array is specifically designed for use with Topcon auto-tracking total stations. The A-3 prism assures accurate tracking and measurement and reduces the chances of loss of prism lock.



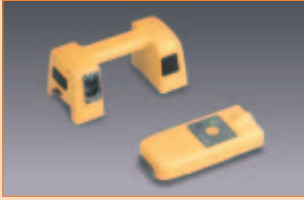
	GPT-8201A (GTS-821A)	GPT-8202A (GTS-822A)	GPT-8203A (GTS-823A)	GPT-8205A (GTS-825A)
TELESCOPE				
Length	166mm			
Objective lens	50mm			
Magnification	30X			
Field of view	1° 30'			
Resolving Power	3"			
Minimum focus	1.3m			
Focusing	GPT-8200A: 2 speed / GTS-820A: 1 speed			
AUTO TRACKING SERVO MECHANISM				
Max. revolving speed	50°/sec			
Max. auto tracking speed	12°/sec			
Auto tracking range	800m (with standard prism)			
Driving range	All range revolving			
Search range	User definable			
Coarse Movement	Shuttle control (7 speeds)			
Fine Movement	Jog control (Min. 1")			
Positioning accuracy	Standard deviation 3"			
Laser Class	Class 1			
DISTANCE MEASUREMENT (P)				
Measurement range Mini prism	GPT-8200A: 1,500 / GTS-820A: 800m (visibility approx.20km)			
Standard Prism	GPT-8200A: 7,000 / GTS-820A: 2,200m (visibility approx. 20km)			
Measuring accuracy	± (2mm+2ppm)m.s.e			
Minimum reading	Fine 0.2mm/1mm Coarse 1mm/10mm			
Measuring time(initial)	Fine 1mm mode approx. 1.2 sec. (3 sec)			
DISTANCE MEASUREMENT (NP) GPT-8200A ONLY				
Measurement range	Standard mode: 3-120m / Long mode: 30-1,200m			
Measuring accuracy	Standard mode: 3-25m ±(10mm)m.s.e			
	Standard mode: >25m ± (3mm+2ppm) m.s.e / Long mode: ± (10mm+10ppm)			
ANGLE MEASUREMENT				
Method	Absolute encoder			
Detecting	Horizontal: dual		Vertical: dual	
Minimum reading	0.5" (0.1mgon)/1" (0.5mgon)		1" (0.2mgon)/5" (1.0mgon)	
Accuracy	1" (0.3mgon)	2" (0.6mgon)	3" (1.0mgon)	5" (1.5mgon)
TILT SENSOR				
Type	Dual axis			
Compensating range	±4'			
LEVEL SENSITIVITY				
Circular level	10'/2mm			
Plate level	30"/2mm			
OPTICAL PLUMMET				
Magnification / Focus range	3x / 0.5m to infinity			
OTHERS				
Water / Dust protection	IP54 (IEC60529 standard)			
Display and keyboard	2 sides (GTS-822A / 823A / 825A: 1 side)			
Dimension / Weight	325x229x211mm / GPT-8200A: 7.6kg, GTS-820A: 7.5kg			
Optical Communication	Optional RC-2 II (Laser Class 2)			

## Standard set composition

GPT-8200A series / GTS-820A series	1 pce
Battery BT-56Q	2 pcs
Battery Charger BC-27CR	1 pce
Tool Kit with case	1 pce
Hard plastic carrying case	1 pce
Silicon cloth	1 pce
Plastic rain cover	1 pce
Plumb bob set	1 pce
Lens cap	1 pce
Instruction manual	1 pce



## Optional accessories



RC-2 II REMOTE CONTROLLER



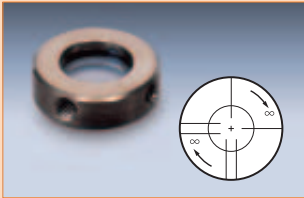
TROUGH COMPASS 6



DIAGONAL EYEPIECE 10



SOLAR FILTER 6



SOLAR RETICULE 6



PCMCIA CARD



PRISM UNIT A3



AC-6 12 V ADAPTER

## Software

The Topcon Auto tracking total stations all have pre-installed surveying software (SSS800) as standard. There are no extra charges for extended modules; all the advanced functionality is included. TopSURV Total Station Controller package is an additional software needed to upgrade the system for one-person operation. Both packages have the same functionality and menu structures so there is seamless integration and a familiar user interface. The software includes the following functions:

- Easy to read and use menu structure.
- Overview of JOB status in main menu.
- Re-computation of co-ordinates after editing measured data (e.g. prism height, offset).
- Measured co-ordinates are displayed in the measurement screen when recording.
- When setting out, points are displayed in graphics on the display.
- The Point Code library has a layer table structure. Point codes can be uploaded to the internal memory or created directly in the instrument.
- Multiple job files can be created.
- Easy to use field observation procedures for traverse and detail point measurement and offset points.

- Multiple backsight orientations with calculation of residuals.
- New Resection program including calculation of residuals, the possibility to remove or add observations, calculation with scale factor, storage of measurements, continuous display of standard deviation of results.
- Cross section survey procedure.
- Point -to- line calculation.
- Control point coordinate library.
- Extensive editing facilities.
- DXF download.
- Printed output reports.
- Cut and fill reports can be generated for staked out points.
- Definition of road alignments and stake out.
- Traverse adjustment.
- Computation of occupied point elevation by observation to a known point.
- Area calculation using previously stored points.
- Building plot setting out routine to define batterboard intersection points.
- Computation and storage of Missing line measurements.
- Input of taped dimensions to fill in missing points.



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