LEICA TCA1800 • TCA2003 • TC2003





High-performance total station for precision measurements – with quality certificate

Leica Geosystems

LEICA TCA1800 • TCA2003 • TC2003

High-performance total station robust, precise and universally useful

The high-performance total stations have unique precision. You can tackle demanding tasks in engineering surveying, in tunnel building as well as structural work above and below ground both reliably and with very high precision. The total stations are extremely robust and are excellently suited to continuous applications such as permanent structure monitoring or for controlling machines.

LEICA SYSTEM 2000

TC2003 • TCA 2003

Robust precision total station for the highest requirements in surveying with an angle measuring accuracy of 0.5″ (0.15 mgon) (ISO 17123-3)

TCA 1800

Universal total station for demanding surveying tasks with high accuracy requirements. Angle measuring accuracy of 1″ (0.3 mgon) (ISO 17123-3)

Engineering survey

Monitoring of existing structures and as well as those under construction, manual or automatic convergence measurements, tunnel network observations, and much more.
Advantage:
High flexibility in use, even under difficult conditions.

Deformation measurement

Monitoring of dams and similar objects.
Advantage:
Continuous, timer-controlled monitoring measurements with high measuring accuracy, day and night operation with automatic alarm signalling.

RCS remote control

Using the Remote Control System (RCS), which is connected to the total station via an integrated radio modem, you can measure just as easily from the target as from the instrument itself. Display and keypad on the remote control are fully compatible with the total station. All functions and programs can be accessed from the remote control and operation is identical to the total station. Perfect for one-man surveying.

Advantage:
- Check the accuracy directly at the target point
- Higher productivity
- Easy acquisition and coding of complex structures directly at the target.

The equipment is optimised with the 360° reflector, which does not need to be aligned with the instrument.

PCMCIA cards for the safe storage of data

Common PCMCIA memory cards are used for data storage.
Due the expanded temperature range from -20° C to +70° C, the cards supplied by Leica are particularly suitable for field use.

For applications in engineering surveying…

Bridges
Bridge loading measurements, permanent deformation measurement, automatic observation of the bearing pads.
Advantage:
Flexible use of the total station for measurements with maximum precision in manual or automatic mode.

Engineering surveying
Precision staking out, check measurements in engineering and micro-triangulation networks.
Advantage:
Extreme measurement reliability due to the high measuring accuracy of the TC2003/TCA2003 total station.

Tunnel building
For the alignment of tunnelling machines and part-face heading machines as well as the determination of bore holes and drive directions.
Advantage:
By reliable and precise control of machine positions, it is possible to avoid expensive re-work.

Robust
The technology has already been proven many thousands of times all over the world and is extremely reliable. Due to the high stability and the long service life of the gearboxes on the automatic instruments, the total stations are particularly suitable for continuous use such as monitoring tasks or for the control of machinery. With IP54 the total stations are very well protected against dust and water.

EGL - guide light
The practical double flashing light is built into the housing of the telescope. It enables the rodman at the target point to line up the reflector with the telescope. EGL eases the alignment of the TCA instrument with the reflector during remote control operation (RCS mode). EGL is particularly suitable for use during staking out.

Laser plummet
A laser plummet for simple and exact centring over the ground point is built in as standard.

...in machine control

Earth works

Used for the control of vertical boring machinery and rammers as well as for the alignment of installations and machines.
Advantage:
Stakes for marking grid points are superfluous.

Road building, railway building

Used for the control of slab form pavers, bitumes finishers, graders and cutting machines.
Advantage:
Due to the continuous online measurements with the total station, the time-consuming installation of guide wires for controlling machinery is not necessary.

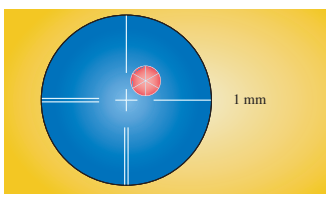
Levelling

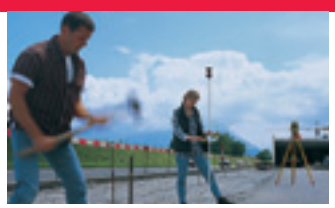
Used for the control of rollers of all types.
Advantage:
With the use of an automatic total station, expensive machine downtimes for determining height are unnecessary. Even sloped surfaces can be easily worked without interruption.

Automatic fine pointing

The Automatic Target Recognition (ATR) demonstrates its full benefits during routine repeat measurements, e.g. monitoring, set measurements and measurement at two telescope faces. Using the sight, the observer aligns the telescope roughly with the target point and triggers a distance measurement. The total station automatically moves the telescope to the centre of the prism, measures the distance and corrects the angle with the deviation to the centre of the prism.

- High, constant accuracy independent of the observer
- Fatigue-free and quick
- No focussing necessary
- Measures using any standard prisms (active prisms not required)





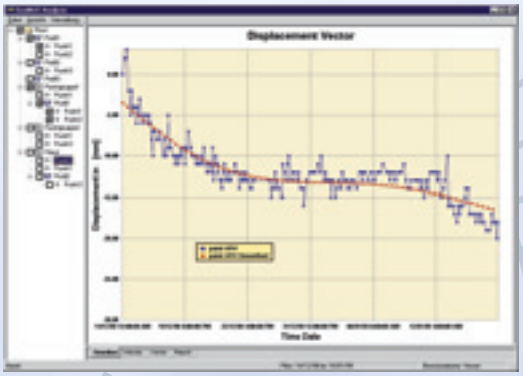
Automatic target tracking

In the LOCK mode the instrument automatically tracks the reflector after the first measurement. With a single button press, all measured values can be recorded at any time without the need to interrupt target tracking.
Measurement is particularly convenient using the 360° reflector, as this does not need to be aligned.

The LOCK mode is predominantly suitable for

- Topographical mass point surveys
- Coded surveys for further processing in LIS/GIS
- Staking out

...and for monitoring tasks of all types

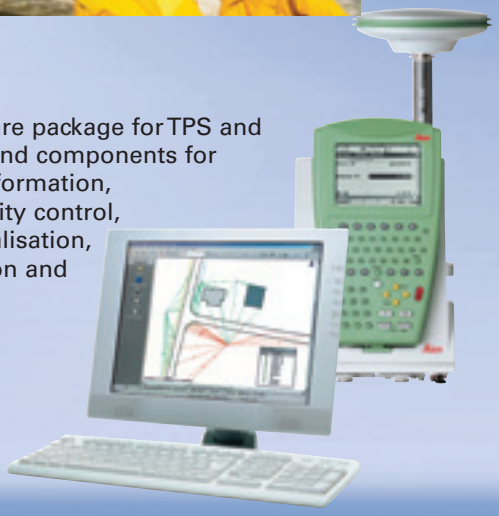


GeoMos - the universal software

GeoMoS Analyzer displays the measured values and results graphically or numerically. The results can be displayed in displacement-time graphs which show the movement trends over a selected period.

LEICA Geo Office

Extensive software package for TPS and GPS with tools and components for the display of information, conversion, quality control, calculation, equalisation, report preparation and much more.



WORKING TOGETHER
LEICA SYSTEM 2000

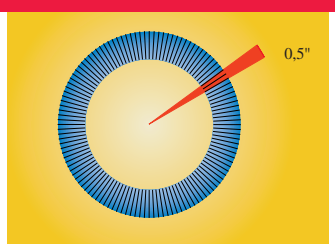
Onboard software – an application program suitable for every task

The comprehensive instrument software library provides software suitable for many surveying tasks

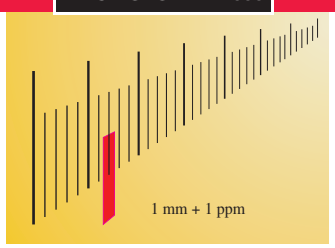
Integrated programs:
- Station opening
- Target Eccentricity
- Manual Input of Coordinates

Standard programs:
- Orientation
- Height Transfer
- Resection
- Stakeout
- Computation of Tie Distance

Optional programs:
- Free Station
- Road Line and Stakeout incl. File Editor
- Sets of Angles
- Area
- COGO (coordinate geometry calculations)
- Hidden Point, measurement of points that are not directly visible
- Reference Line
- Local Resection
- Remote Height
- Traverse
- Monitoring
- GeoBasic, for developing custom programs



The total stations have a specially-manufactured angle measuring system that facilitates a measuring accuracy of 0.15mgon (0.5") on the TC2003 and TCA2003. Key elements here are the precise drives and the quadruple detection of the graduated circles.



All total stations are equipped with coaxial precision distancers. On the TC2003 and TCA2003, a distance measuring accuracy of 1mm +1ppm is achieved due to the use of specially-developed components.

LEICA TCA1800 • TCA2003 • TC2003

Technical specifications

Models and options

	TCA1800	TCA2003	TC2003
Angle measurement	●	●	●
Distance measurement (IR)	●	●	●
Motorized	●	●	
Automatic target recognition (ATR)	●	●	
Guide light (EGL)	○	○	○
Remote control RCS1100	○	○	○

● Standard ○ Optional

Angle measurement

		TCA1800	TCA2003	TC2003
Accuracy	Hz, V	1'' (0.3 mgon)	0.5'' (0.15 mgon)	0.5'' (0,15 mgon)
(standard deviation, ISO 17123-3)	Display resolution	1'' (0.1 mgon)	0.1'' (0.01 mgon)	0.1'' (0.01 mgon)
	Method:		absolute, continuous, diametrical	
Compensator	Working range:	4' (0.07 gon)	4' (0.07 gon)	4' (0.07 gon)
	Setting accuracy:	0.3'' (0.1 mgon)	0.3'' (0.1 mgon)	0.3'' (0.1 mgon)
	Method:		electronic dual axis compensator	

Distance measurement (IR)

Range	Round prism (GPR1):		2500 m	
(average atmospheric conditions)	360° reflector (GRZ4):		1300 m	
	Mini prism (GMP101):		900 m	
	Reflective tape (60 mm x 60 mm)		200 m	
Accuracy / measurement time	Standard mode:	1 mm + 2 ppm / 3.0 s	1 mm + 1 ppm / 3.0 s	1 mm + 1 ppm / 3.0s
(standard deviation, ISO 17123-4)	Fast mode:		3 mm + 2 ppm / 1.5 s	
	Tracking mode:		5 mm + 2 ppm / 0.3 s	
	Display resolution:	0.1 mm	0.01 mm	0.01 mm
	Method:		Phase measurement (coaxial, invisible infrared laser)	

Guide light (EGL)

Range		
(average atmospheric conditions)	Working range:	5 m - 150 m
Accuracy	Positioning accuracy:	5 cm at 100 m

Motorized

Maximum speed	Rotating speed:	45° / s

Automatic target recognition (ATR)

Range ATR mode / LOCK mode	Round prism (GPR1):	1000 m / 500 m
(average atmospheric conditions)	360° reflector (GRZ4):	500 m / 350 m
	Shortest measurable distance:	5 m
Accuracy / measurement time	Up to 200 m: 1 mm, > 200 m: as per angle measuring accuracy +1 mm / 3-4 s	
Max. speed (LOCK-Modus)	Tangential (standard mode):	5 m / s at 100 m, 1 m / s at 20 m
	Tangential (with EDM tracking mode):	1 m / s at 100 m, 0.2 m / s at 20 m
	Method:	Digital image processing (laser beam)

General data

Telescope		***Laser plummet***	
Magnification:	30x	Centring accuracy:	1.0 mm at 1.5 m
Free objective aperture:	42 mm	Laser dot diameter:	2.5 mm at 1.5 m
Field of view:	1°33' (1.72 gon) / 2.7 m at 100 m	***Endless drives***	
Focussing range:	1.7 m to infinity	Number of drives:	2 horiz. / 1 vert. (TCA), 1horiz / 1 vert. (TC)
Keyboard and display		***Battery (GEB187)***	
Display:	64*210 pixels, graphic LCD, with illumination	Type:	NiMH, rechargeable
		Voltage:	12 V
Keyboard:	32 keys (6 function keys, 12 alphanumeric keys, 6 direct keys)	Capacity:	1.8 Ah
		Operating time:	TCA 400, TC 600 distance measurements
Angle display:	360°' '', 360° decimal, 400 gon, 6400 mil	***Weight***	
Distance display:	meter, int. ft, int. ft/inch, US ft	Instrument:	7.5 kg
Position:	keyboard in position I and II (standard)	Battery:	0.3 kg
Data storage		Tribrach:	0.9 kg
Internal memory:	S-RAM card (512 KB and 2 MB)	***Working environment***	
Number of data records:	~4000 per MB	Working temperature:	-20°C to +50°C
Interface:	RS232	Storage temperature:	-40°C to +70°C
Circular bubble		Dust / water (IEC 60529):	IP54
Sensitivity:	4' / 2 mm	Humidity:	95%, non-condensing

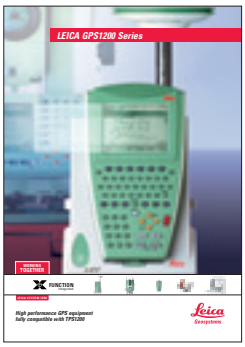
LEICA SYSTEM 2000

LEICA TPS1200 Total Stations
Product brochure
Art No. 738 581
Online:
www.leica-geosystems.com

Distance meter (IR) and ATR:
Laser class 1 in accordance with IEC 60825-1 resp. EN 60825-1

Guide light (EGL):
LED class 1 in accordance with IEC 60825-1 resp. EN 60825-1

Laser plummet:
Laser class 2 in accordance with IEC 60825-1 resp. EN 60825-1



LEICA GPS1200
Product brochure
Art No. 738 811
Online:
www.leica-geosystems.com

LEICA System 1200 Software
Product brochure
Art No. 738 825
Online:
www.leica-geosystems.com

TQM
ISO 9001/ISO 14001

Total Quality Management – our commitment to total customer satisfaction

Find out more about our TQM program from your local Leica Geosystems representative.

Leica Geosystems

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