Leica TS02&06/09 plus Quick Guide

Version 1.0
English

- when it has to be **right**

Leica Geosystems

1 Important Information about your Instrument

Read and follow the User Manual on the accompanying CD before using the product or the accessories delivered with the product.

Keep for future reference!

Intended use

- Measuring horizontal and vertical angles.
- Measuring distances.
- Visualising the aiming direction and vertical axis.

Laser products

The instruments contain the following laser products:

Laser product	Laser class
EDM (Electronic Distance Measurement) module	
• measurements with reflectors	Class 1
• measurements without reflectors	Class 3R
EGL (Electronic Guide Light)*	Exempt Group
Laser plummet	Class 2

*optional laser product

- The classification for the EDM and Laser plummet is in accordance with IEC 60825-1 (2007-03).
- The classification for the EGL is in accordance with IEC 62471 (2006-07).

CAUTION

From a safety perspective, class 3R laser products should be treated as potentially hazardous.

Precautions:

1) Prevent direct eye exposure to the beam.
2) Do not direct the beam at other people.

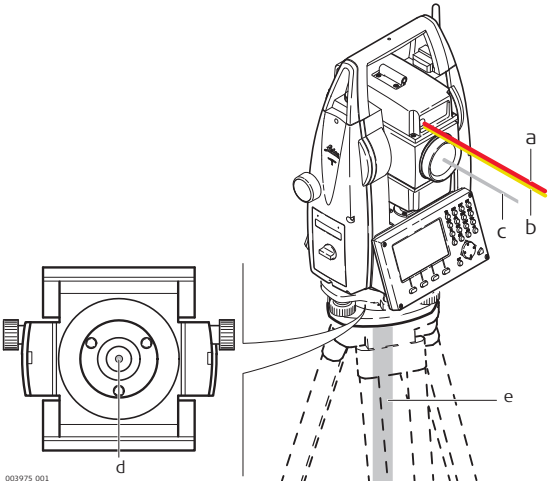
CAUTION

From a safety perspective, class 2 laser products are not inherently safe for the eyes.

Precautions:

1) Avoid staring into the beam.
2) Avoid pointing the beam at other people.

Locations of laser apertures



a) LED beam red (EGL)
b) LED beam yellow (EGL)
c) Laser beam (EDM)
d) Laser beam (Laser plummet)
e) Exit for laser beam (Laser plummet)

The product must not be disposed with household waste.

Conformity to national regulations - Products without Communication side cover

CE Hereby, Leica Geosystems AG, declares that the instrument is in compliance with the essential requirements and other relevant provisions of applicable European Directives. The declaration of conformity may be consulted at http://www.leica-geosystems.com/ce.

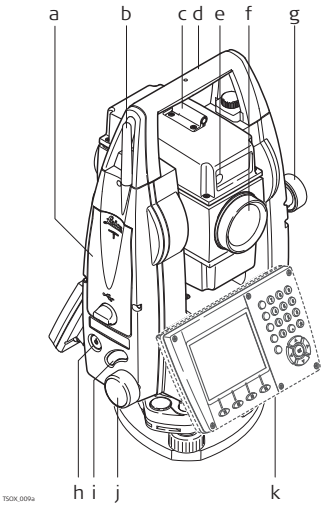
Conformity to national regulations - Products with Communication side cover

- FCC Part 15 (applicable in US).
- Hereby, Leica Geosystems AG, declares that the instrument with Communication side cover is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC and other applicable European Directives. The declaration of conformity may be consulted at http://www.leica-geosystems.com/ce.

  CE Class 1 equipment according European Directive 1999/5/EC (R&TTE) can be placed on the market and be put into service without restrictions in any EEA Member state.
- The conformity for countries with other national regulations not covered by the FCC part 15 or European directive 1999/5/EC has to be approved prior to use and operation.

2 Instrument Components

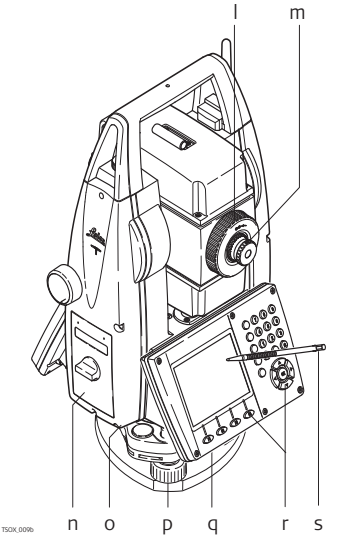
Instrument components part 1 of 2



a) Compartment for USB memory stick and USB cable ports
b) Bluetooth antenna
c) Optical sight
d) Detachable carrying handle with mounting screw
e) Electronic Guide Light (EGL)*
f) Objective with integrated Electronic Distance Measurement (EDM). Exit for EDM laser beam
g) Vertical drive
h) On/Off key
i) Trigger key
j) Horizontal drive
k) Second keyboard**

* Optional for TS06 plus
** Optional for TS06 plus/TS09 plus

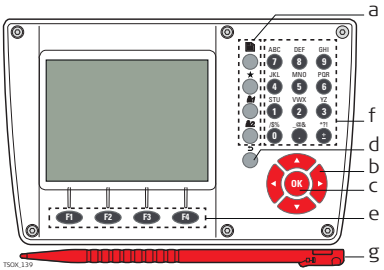
Instrument components part 2 of 2



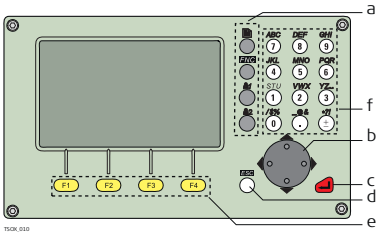
l) Focusing telescope image
m) Eyepiece; focusing graticule
n) Battery cover
o) Serial interface RS232
p) Foot screw
q) Display
r) Keyboard, model may vary depending on instrument
s) Stylus

Keyboard

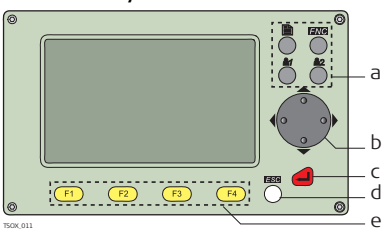
Color&Touch keyboard



Alphanumeric keyboard

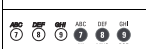


Standard keyboard

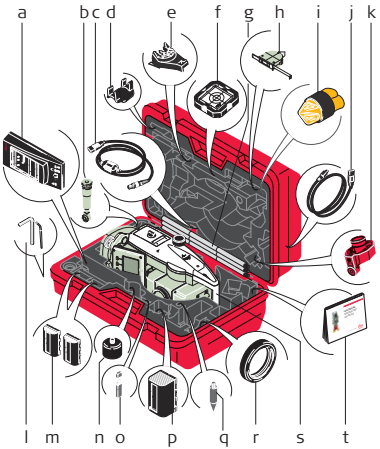


a) Fixed keys
b) Navigation key
c) **ENTER** key
d) **ESC** key
e) Function keys **F1** to **F4**
f) Alphanumeric keypad
g) Stylus

Keys

Key	Description
	Page key. Displays the next screen when several screens are available.
	**FNC**/Favourites key. Quick-access to measurement supporting functions.
	User key 1/User key 2. Programmable with a function from the **Favourites** menu.
	Navigation key. Controls the focus bar within the screen and the entry bar within a field.
	**ENTER** key. Confirms an entry and continues to the next field. Turns off the instrument, when held for 3 seconds.
	**ESC** key. Quits a screen or edit mode without saving changes. Returns to next higher level.
	Function keys **F1** to **F4** that are assigned the variable functions displayed at the bottom of the screen.
	Alphanumeric keys for entry of text and numerical values.

Container contents



a) Battery charger*
b) Diagonal eyepiece*
c) Data cable (USB-RS232)*
d) Clip-on bubble*
e) Holder for height meter*
f) Flat prism*
g) Mini prism pole*
h) Height meter*
i) Protective cover / Lens hood / Cleaning cloth
j) Data cable (USB-mini USB)*
k) Mini prism*
l) Adjustment tools
m) Batteries*
n) Flat or mini prism adapter*
o) Leica industrial grade USB memory stick*
p) Battery*
q) Tip for mini prism pole*
r) Counterweight (diagonal eyepiece*)
s) Instrument
t) Manuals
* Optional

3 Technical Data

Environmental specifications

Temperature

Operating temperature [°C]	Storage temperature [°C]
-20 to +50	-40 to +70

Protection against water, dust and sand
IP55 (IEC 60529)

Humidity
Max 95 % non condensing.
The effects of condensation are to be effectively counteracted by periodically drying out the instrument.

4 Care and Transport

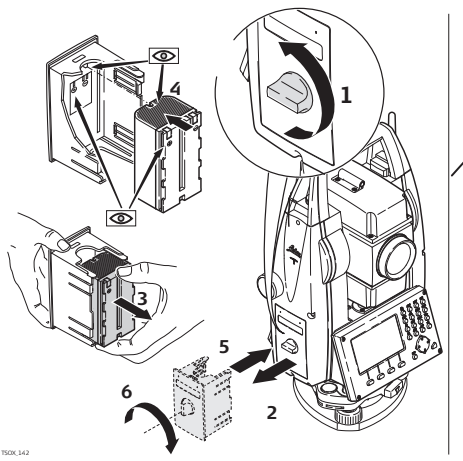
Care and transport

- Carry the product in its original container or carry the tripod with its legs splayed across your shoulder, to protect the product against shock and vibration.
- Periodically carry out test measurements and perform the field adjustments indicated in the User Manual, particularly after the product has been dropped, stored for long periods or transported.

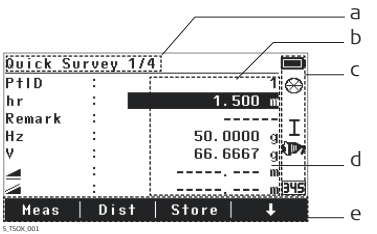
5 Operation

The battery must be charged before using it for the first time.

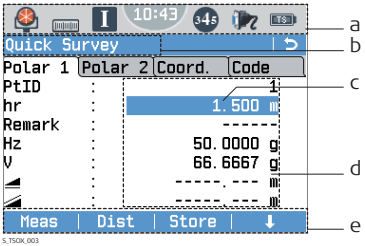
Turning on and off the instrument



Screen



a) Title of screen
b) Focus in screen. Active field
c) Status icons
d) Fields
e) Softkeys



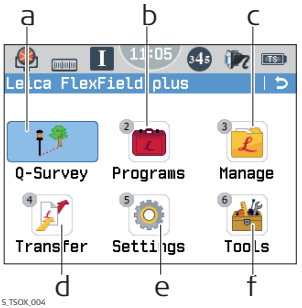
a) Status icons
b) Title of screen
c) Focus in screen. Active field
d) Fields
e) Softkeys

Tap on an icon, field or tab to run a function.

Icons

Icon	Description
	Displays the selected prism icon, the EDM measurement activity icon or the active laser pointer icon. For C&T: Tapping the icon opens the **EDM Settings** screen.
	Displays the telescope position (face I or face II) or the compensator status (on, off or out of range). For C&T: Tapping the icon opens the **Level & Plummet** screen.
	Displays the keypad mode (numeric or alphanumeric). The icon is displayed when an editable field is highlighted. For C&T: Tapping the icon switches the keypad mode.
	Displays the communication port icon (RS232, Bluetooth or USB) or auto detect communication icon. For C&T: Tapping the icon opens the **Interface Settings** screen.
	Displays the status of the battery. For C&T: Tapping the icon opens the **Info** screen.
	Displays that offset is active.
	Horizontal angle is set to left side angle measurement.

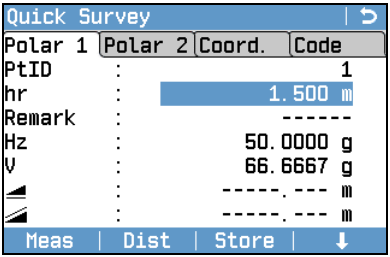
Main Menu



a) Quick Survey program to begin measuring immediately.
b) To select and start programs.
c) To manage jobs, data, codelists, formats, system memory and USB memory stick files.
d) To export and import data.
e) To change EDM configurations, communication parameters and general instrument settings.
f) To access instrument-related tools such as check and adjust, personal startup settings, PIN code settings, licence keys, system information and firmware upload.

Despite an automatic defragmentation, the memory gets fragmented after a while. Please format the internal memory periodically to maintain the instrument performance.

Q-Survey program



After switching on and setting up correctly, the instrument is immediately ready for measuring.

Meas	To start measurements and save the measured values.
Dist	To start measurements and display the measured values.
Store	To save the displayed values.
⬇ Code	To find/enter codes. Available on page ***4/4*** or **Code**. Or, on any page, press the **FNC**/Favourites key and select **Coding**.
⬇ Station	To enter station data and set the station.
⬇ Set Hz	To set the orientation to a user defined horizontal direction.
⬇ Hz ⬅ / Hz ➡	To set the horizontal angle reading to the left (anticlockwise) or to the right (clockwise).

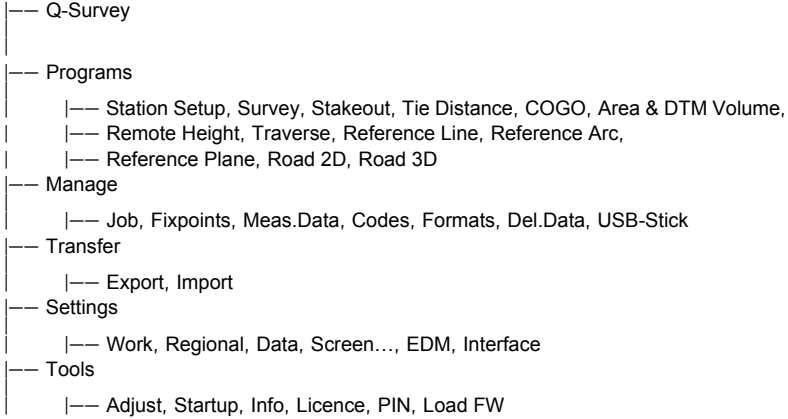
EDM mode

P-Precise+	Fine measuring mode for highest precision measurements with prisms (1.5 mm + 2 ppm).
P-Precise & Fast	Quick measuring mode with prisms, with higher measuring speed and high accuracy (2 mm + 2 ppm, for TS02 3mm + 2ppm).
P-Tracking	For continuous distance measurements with prisms (3 mm + 2 ppm).
Tape	For distance measurements using Retro reflective targets (5 mm + 2 ppm).
P-Long (>4.0 km)	For long range distance measurements with prisms (5 mm + 2 ppm).
NP-Precise	For distance measurements without prisms (2 mm + 2 ppm; >500 m: 4 mm + 2 ppm).
NP-Tracking	For continuous distance measurements without prisms (5 mm + 3 ppm).

Prism type

Round (GPR)	**Leica Const.**: 0.0 mm
Mini (GMP)	**Leica Const.**: +17.5 mm
Mini0 (GMP111-0)	**Leica Const.**: 0.0 mm
Jp Mini (SMP222)	**Leica Const.**: +34.4 mm
360° (GRZ4)	**Leica Const.**: +23.1 mm
360°Mini(GRZ101)	**Leica Const.**: +30.0 mm
Tape (GZM)	**Leica Const.**: +34.4 mm
None	**Leica Const.**: +34.4 mm
User 1 / **User 2**	For any prism modes, the user can define two of their own prisms. Constants can be entered in mm in either **Leica Const.** or **Abs. Const.**. For example: User prism constant = -30.0 mm **Leica Const.** = +4.4 mm (34.4 + -30 = 4.4) **Abs. Const.** = -30.0 mm

Menu Tree


Q-Survey
Programs
Station Setup, Survey, Stakeout, Tie Distance, COGO, Area & DTM Volume,
Remote Height, Traverse, Reference Line, Reference Arc,
Reference Plane, Road 2D, Road 3D
Manage
Job, Fixpoints, Meas.Data, Codes, Formats, Del.Data, USB-Stick
Transfer
Export, Import
Settings
Work, Regional, Data, Screen…, EDM, Interface
Tools
Adjust, Startup, Info, Licence, PIN, Load FW

Total Quality Management: Our commitment to total customer satisfaction.

Leica Geosystems AG, Heerbrugg, Switzerland, has been certified as being equipped with a quality system which meets the International Standards of Quality Management and Quality Systems (ISO standard 9001) and Environmental Management Systems (ISO standard 14001).

Ask your local Leica Geosystems dealer for more information about our TQM program.

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