

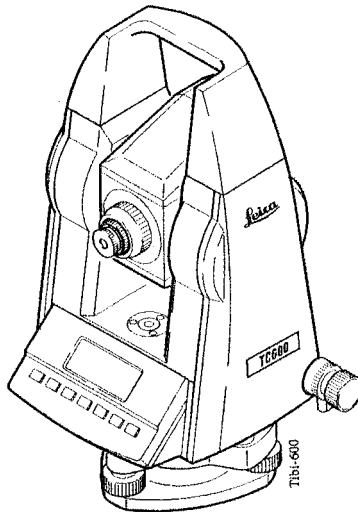
TC600/TC800

Electronic total station

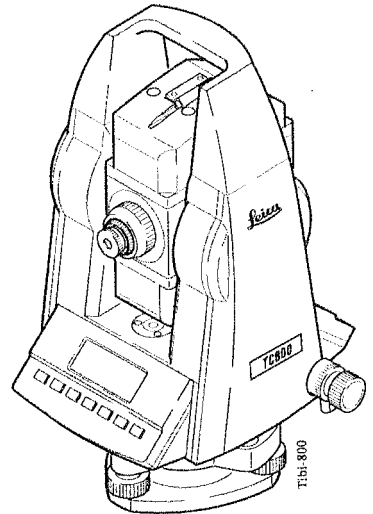
Version 2.1

English

TC600



TC800



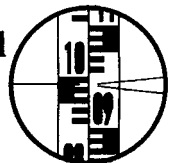
SURVEYORS-EXPRESS™



Milanweg 53 • 61118 Bad Vilbel

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Thank you for purchasing this Leica Total Station.



This manual contains important safety directions (*refer to section "Safety directions"*) as well as instructions for setting up the instrument and operating it. Please read carefully through the User Manual to achieve maximum satisfaction.

TC600/TC800

Electronic total station

Product identification

The instrument model and the serial number of your product are indicated on the label in the battery compartment.

Write the model and serial number of your instrument in the space provided below, and always quote this information when you need to contact your agency or service workshop.

Type: _____ Serial no.: _____

Symbols used in this Manual

The symbols used in this User Manual have the following meanings:



DANGER:

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING:

Indicates a potentially hazardous situation or an unintended use which, if not avoided, could result in death or serious injury.



CAUTION:

Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor or moderate injury and / or appreciable material, financial and environmental damage.



Important paragraphs which must be adhered to in practice as they enable the product to be used in a technically correct and efficient manner.

Contents

Introduction	8
Area of applicability of this User's Manual	8
Important parts	9
Set-up, getting started	11
Unpacking	11
Charging battery	13
Set-up	14
Tribrach with optical plummet	14
Tribrach without optical plummet	15
Level instrument with the electronic level	16
Operating concept	17
Settings, first steps	17
Units in this manual	17
Display and keyboard	18
Menu tree (Main menu)	20
Menu tree (Configuration)	21
Main menu	22
Measure and record	23
Display symbols	23
Pointing and distance measurement	24
Example: for offset or hidden points	25
Display of recorded data	26
Measure and record with coding	27
Coding	28
Input a new code line to the code list	28
Simple code input during measurements	30
Using predefined codes from the codelist	31
Additional entries to selected code	32
User Programs	34
Introduction	34
Set Job	35
Set station coordinates (Station Coord)	36
Manual point entry (Keyb)	37
Read the station coordinates from internal memory (IntMem)	38
Orientation (of horizontal circle)	39
Free Station	41

Setting out (Setout)	46
Tie Distance (Missing line)	48
Area computation (Calc Area)	51
Rapid measurement and recording (Rapid Meas)	54
Settings (SET)	57
Entering point number and reflector height (SET Ptnr/hr)	57
Alphanumeric entry of point number	58
Entering reflector height	58
Setting the horizontal circle (Hz)	59
1st variant	59
2nd variant	60
Setting the display mask (DSP)	61
Display-masks	61
Data management (DATA MANAGER)	62
Coordinate entry (COORDS)	63
Input of coordinates and codes (INPUT)	63
Code input (CODES)	64
Searching for point numbers and multiple recordings (FIND)	65
Searching for several data blocks with the same point number	66
Display of stored data (VIEW)	67
Delete measurements, coordinates and codes (DELETE PNT)	68
Delete the complete range of measurements, coordinates and codes (DELETE ALL)	69
EDM mode	70
EDM Configuration (EDM CONF)	70
EGL (Guide Light)	71
INTENS	72
RETTAP	73
Testing the instrument	75
Battery and instrument temperature	75
EDM Signal	76
Configuration	77
Distance corrections	77
Meteorological correction (ppm)	77
Prism constant (MM)	78
Determine instrument errors	79
Vertical index error (V-Index "i")	79
Line-of-sight error (Hz-Collimation "c")	81

Contrast	82
Data and recording parameter (REC DATA)	83
Selecting units (UNITS)	86
Units for distance measurement (DIST)	86
Units for angle measurement (ANGLE)	86
V-Angle	87
Display number of decimal places (ROUND)	87
Automatic switch-off (ON/OFF)	88
TCTOOLS	91
Other data formats	97
Communication PC-TC600/TC800	98
Set station coordinates	98
Set orientation	98
Setting-out	99
Checking and adjusting	100
Tripod	100
Circular level	100
Circular level on the tribrach	101
Optical plummet	102
Care and transport	104
Battery charging	106
Battery chargers GKL22 and GKL23	106
Battery chargers GKL12 and GKL14	107
Safety directions	108
Intended use of instrument	108
Limits of use	109
Responsibilities	110
Hazards of use	111
Laser classification	116
Integrated distancer (EDM)	116
Guide Light EGL1	118
Electromagnetic acceptability	120
FCC statement (applicable in U.S.)	121
Product labeling	122
Error reports and warnings	123
Technical data	125
Index	131

Introduction

The TC600/TC800 is particularly suitable for cadastral and engineering surveying. The accuracy of angle-measuring, and the range of its EDM module, are matched to one another. The measured data can be stored in the internal memory or can be output individually via serial interface to an external recorder.

Area of applicability of this User's Manual

This manual applies to the following types of total stations:

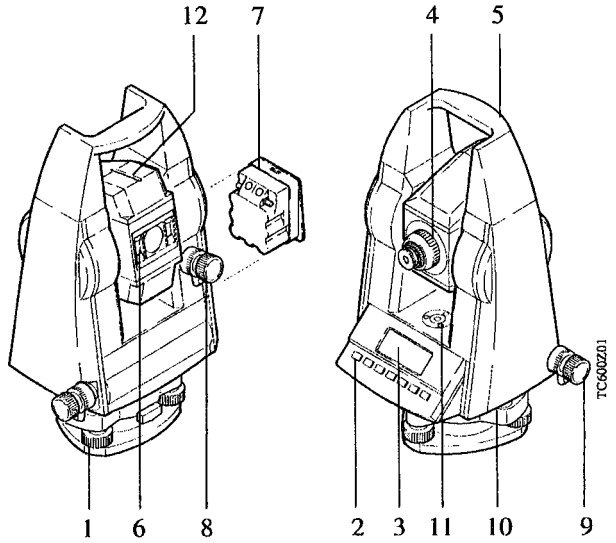
- TC600
- TC800

Differences between the two versions are clearly set out and assigned.

General text applies to both versions.

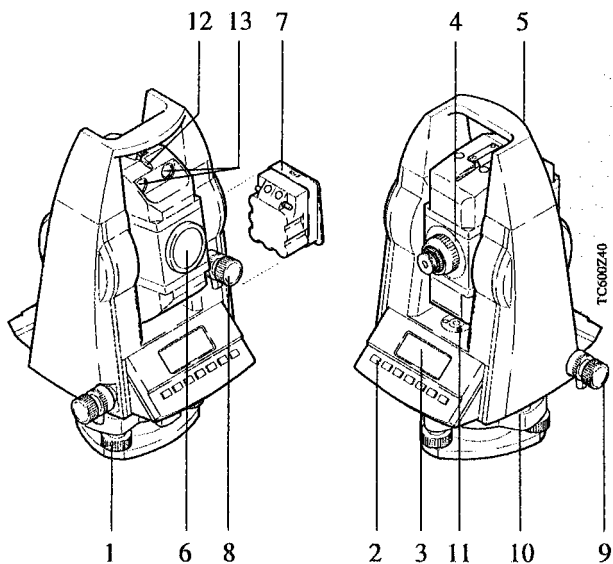
Important parts

TC600



- | | |
|-------------------|--------------------------|
| 1 Foot screw | 7 Battery |
| 2 Keyboard | 8 Vertical drive screw |
| 3 Display | 9 Horizontal drive screw |
| 4 Focusing | 10 Interface RS-232 |
| 5 Carrying handle | 11 Circular level |
| 6 Exit EDM | 12 Optical sight |

TC800



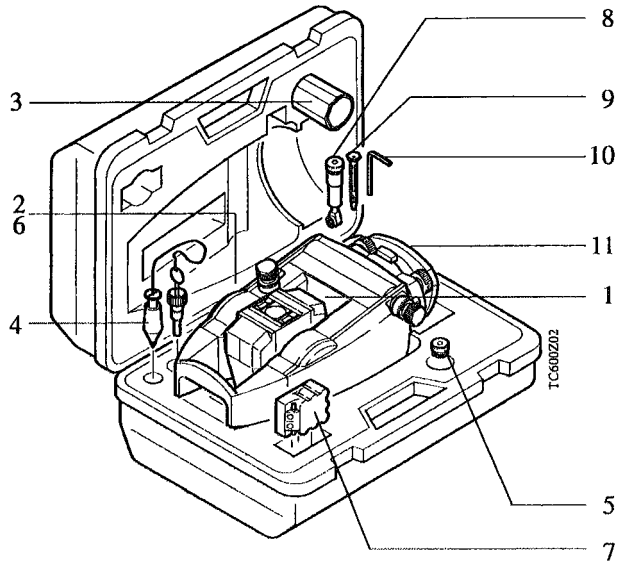
- | | | | |
|---|-----------------|----|------------------------|
| 1 | Foot screw | 8 | Vertical drive screw |
| 2 | Keyboard | 9 | Horizontal drive screw |
| 3 | Display | 10 | Interface RS-232 |
| 4 | Focusing | 11 | Circular level |
| 5 | Carrying handle | 12 | Optical sight |
| 6 | Exit EDM | 13 | Exit EGL1 (optional) |
| 7 | Battery | | |

Set-up, getting started

Unpacking

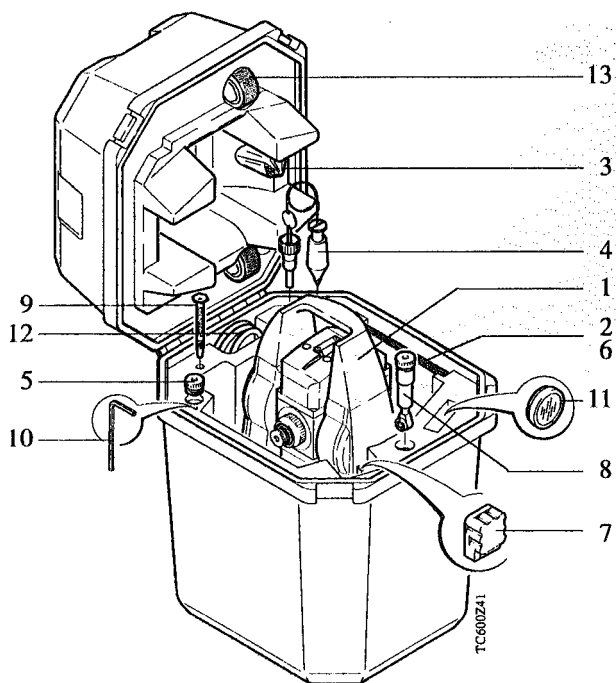
Remove TC600/TC800 from transport case and check for completeness:

TC600



- | | |
|-------------------------|--|
| 1 Instrument | 7 Spare battery (optional) |
| 2 User's Manual | 8 Eyepiece for steep angles (optional) |
| 3 Protective cover | 9 Screwdriver, set of pins |
| 4 Plummets (optional) | 10 Allen key |
| 5 Eyepiece (optional) | 11 Tribrach (optional) |
| 6 Diskette with TCTOOLS | |

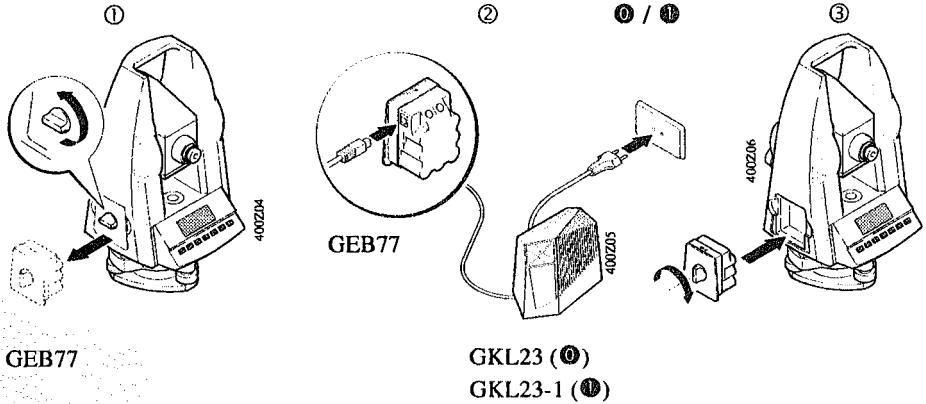
TC800



- | | |
|----------------------------|--|
| 1 Instrument | 8 Eyepiece for steep angles (optional) |
| 2 User's Manual | 9 Screwdriver, set of pins |
| 3 Protective cover | 10 Allen key |
| 4 Plummet (optional) | 11 Lens (optional) |
| 5 Eyepiece (optional) | 12 Cable (optional) |
| 6 Diskette with TCTOOLS | 13 Shoulder straps |
| 7 Spare battery (optional) | |

Charging battery

Charge batteries using GKL12, GKL14, GKL22 or GKL23. For more information about charging batteries refer to chapter "Battery charging".



- ⓪ Version for 230V mains
- Ⓛ Version for 115V mains

Charging time:

Internal battery:	GEB77	1.0 hours
External batteries:	GEB70	1.5 hours
	GEB71	5.0 hours

(Refer also to chapter "Technical Data")



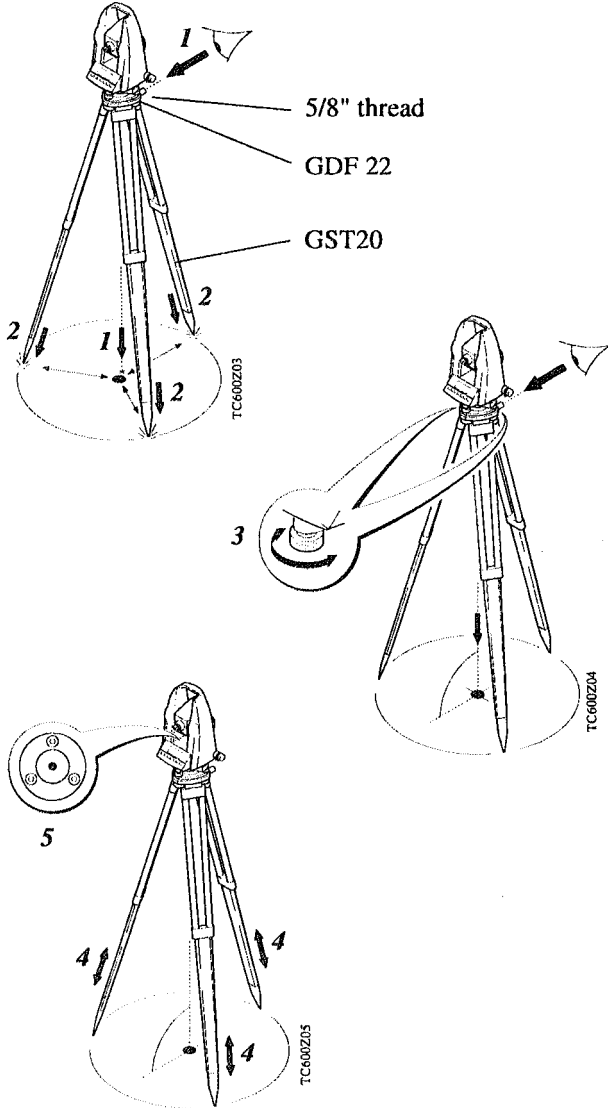
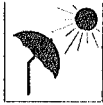
WARNING:

The battery chargers are intended for indoor use. Only use a battery charger in a dry place, never outdoors.

Set-up

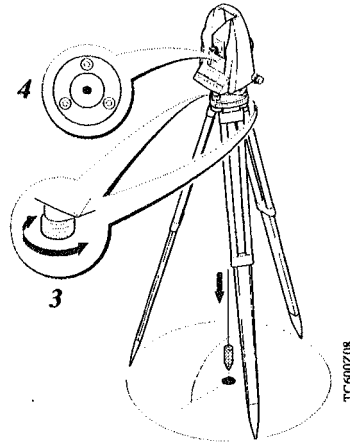
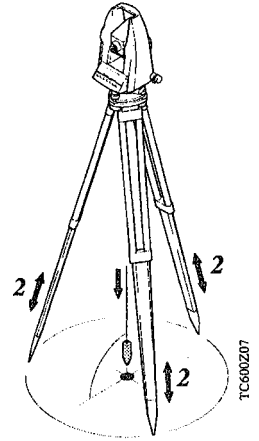
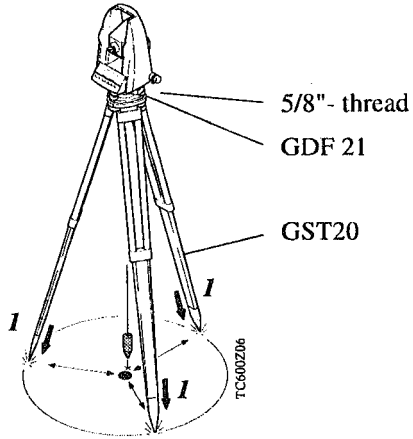
Tribrach with optical plummet

Set-up TC600/TC800
with tribrach GDF 22 and
tripod GST20



Tribrach without optical plummet

Set-up TC600/TC800
with tribrach GDF 21 and
tripod GST20



Operating concept

Settings, first steps

The following settings are possible:

Units for distance measurement (DIST):

- m = meters
- US ft = feet (in decimals)

Units for angle measurement (ANGLE):

- gon = 400gon
- 360d = 359°.999 (in decimals)
- 360s = 359° 59' 59" (sexagesimal)

Display number of decimal places (ROUND):

- high = 81°45' 24" (1" Interval)
- med = 81°45' 25" (5" Interval)
- low = 81°45' 20" (10" Interval)

For more informations refer to *section "Selecting units (UNITS)"*.

Units in this manual

Specifications within this manual always applies to the following units:

Units of length:

- in m (meter)
- in addition, within brackets in ft (feet)

Units of angle:

- in ° ' "
- in addition, within brackets in gon

Units of temperature:

- in °C
- in addition, within brackets in °F

Display and keyboard

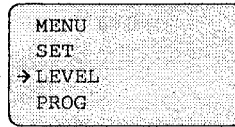
The TC600/TC800 unit has a dual-level interface. Keys are color-coded for each level.

white keys: active during measurements.

orange keys: key **MENU** activates orange keys for input of measuring and instrument parameters.

Display and keyboard

Cursor for indicating sub-program



Display, max. 4x16 char.

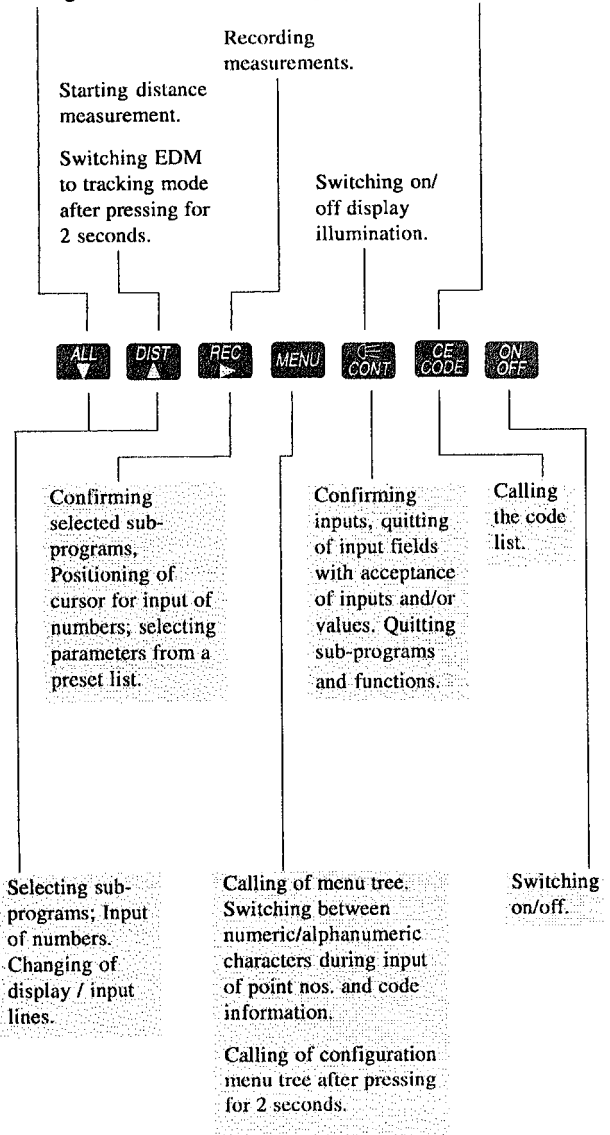


Keys

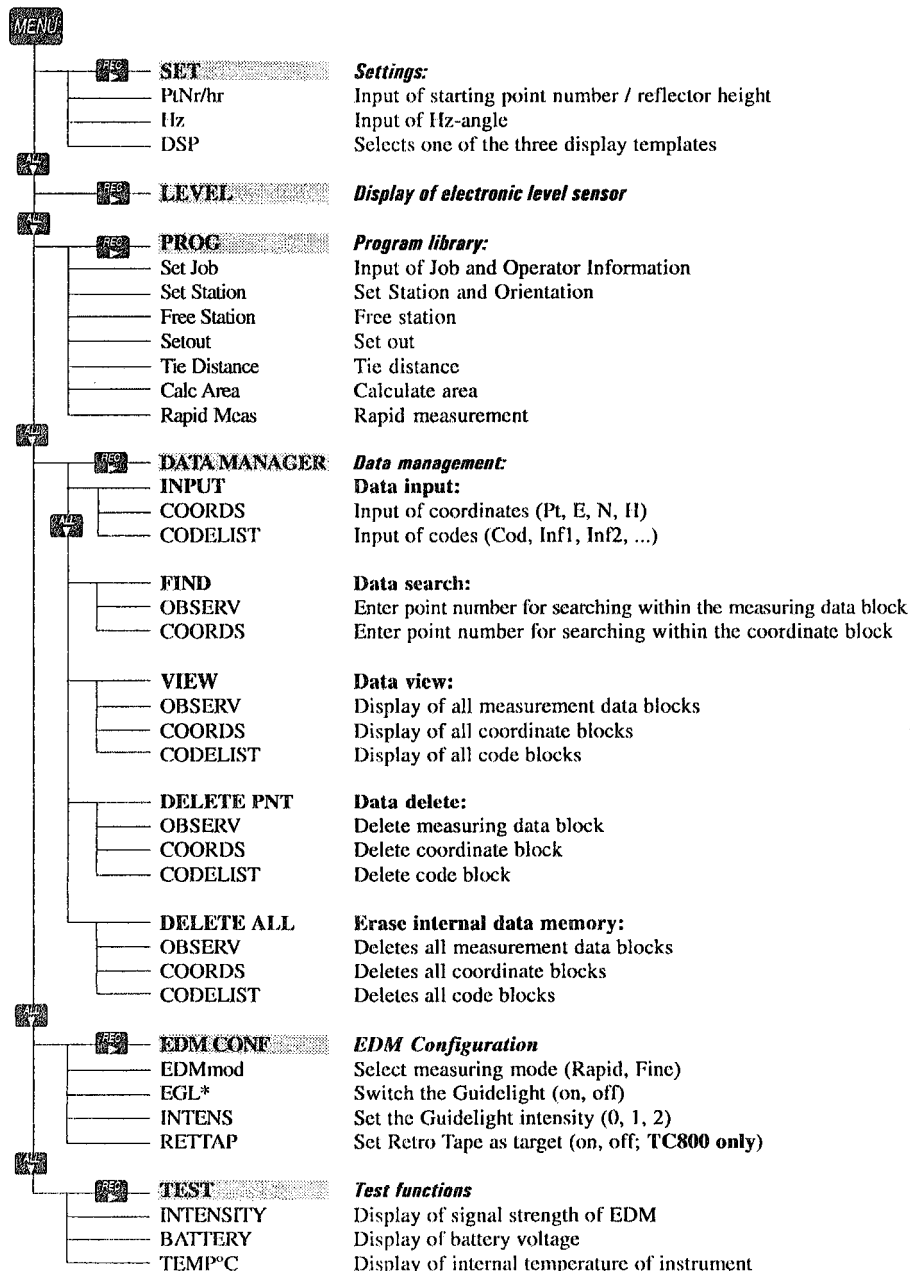
Key functions

Starting simultaneous measurement of distances and angles including data recording.

Deleting error messages, terminating functions and quitting of input fields without accepting values. Quitting sub-programs and functions.

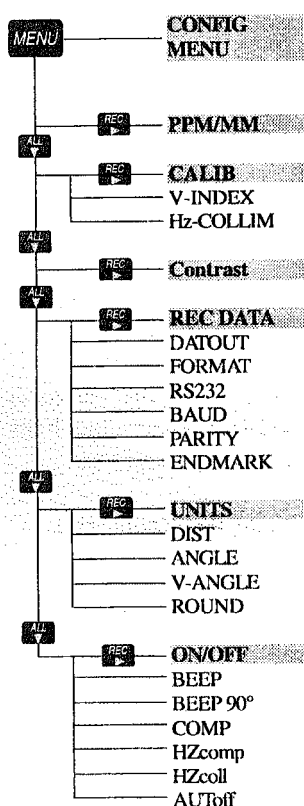


Menu tree (Main menu)



* EGL is an optional accessory for TC800

Menu tree (Configuration)



Press (for about 2 seconds) until the configuration menu appears.

Distance corrections

Instrument error:

Determination of vertical-index error
Determination of horizontal collimation error

Sets contrast and viewing angle of display

Settings for recording:

Select data output (MEM, RS232)
Length of data string (8, 16)
Select recording template (MASK1, MASK2)
Set transfer rate (300, 600, 1200, 2400, 4800, 9600)
Set parity (EVEN, NONE, ODD)
Set line end mark (CR/LF, CR)

Units:

Sets distance units (m, ft)
Sets angle units (gon, 360d decimal, 360s sexagesimal)
Select ref.plane of V-angle (V, +/-V, V%)
Selects angle resolution displayed (low, medium or high)

On / Off:

Acoustic input signal (ON, OFF)
Beep at 0°, 90°, 180° and 270° (ON, OFF)
Compensator (ON, OFF)
Correction Hz-angle (ON, OFF; only active if COMP = ON)
Line of sight error (ON, OFF)
Automatic switch-off (ON, OFF)


- Settings (SET)** Under **SETTINGS** specifications for measurements are entered (eg, point numbers, selection of display templates).
- Electronic level (LEVEL)** For the exact levelling-up of the instrument.
- Program library (PROG)** To make survey work easier, additional user programs are stored in the program library.
- Data management (DATA MANAGER)** Under **DATA MANAGER** measurements, coordinates or codes can be entered, deleted and displayed.
- EDM configuration (EDM conf)** Several settings for measuring can be carried out under **EDM CONF** (eg. selecting the EDM mode, Guidelight LIGHTS ON/OFF, setting retro tape as target, etc.)
- Testing (TEST)** **TEST** contains different functions specifying status of instrument (eg, battery etc.)




Measure and record

ON
OFF

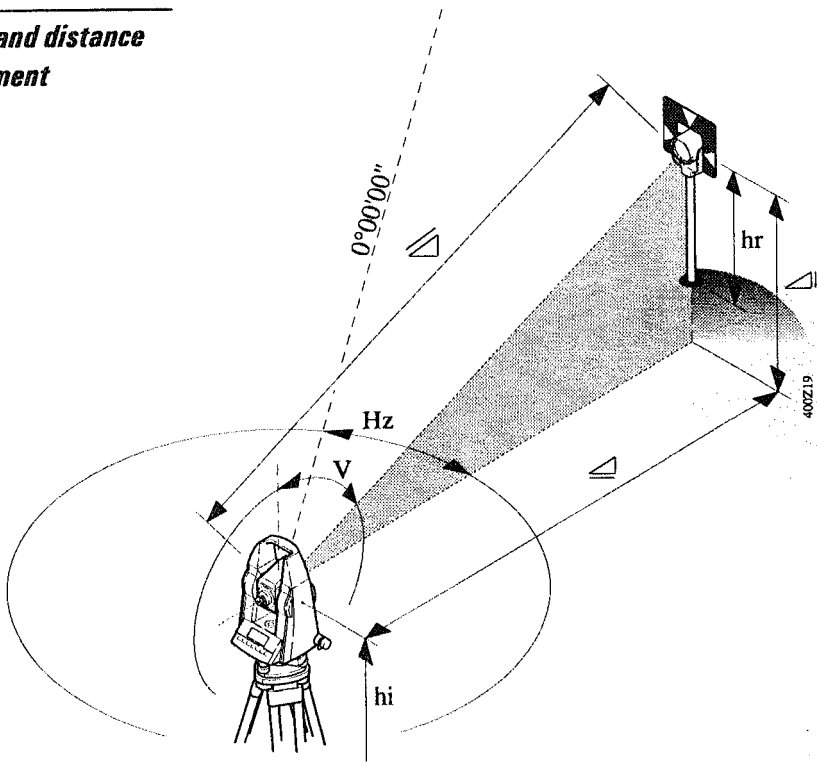
After switching on and setting up the total station correctly, it is immediately ready for measuring.

Display symbols

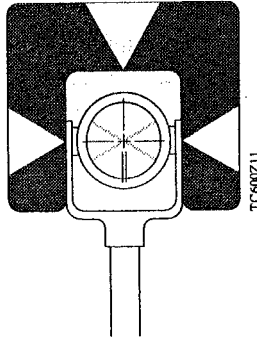
PtNr :	+00000000
Hz :	341°17'10
V :	87°55'10
 :	3.782

PtNr : Point number
Hz : Horizontal angle
V : Vertical angle
 : Slope distance
 : Horizontal distance
 : Height difference
E : Easting (value right)
N : Northing (upper value)
H : Height
Code : Code (description)
hr : Reflector height
hi : Instrument height
ppm : Atmospheric distance correction
mm : Prism constant (Leica multiple prism = 0)

Pointing and distance measurement



GPH1 prism holder with GZT4 target plate



When pointing through windows or if reflecting surfaces are present, incorrect readings may result. For long-range work or for surveys under unfavorable conditions, multiple prisms (e.g. GPH3 three-prism holder) are necessary.



PtNr :	+00000000
Hz :	341°17'10
V :	87°55'10
∠ :	---

Simultaneous determination of distances and angles, including data recording.

The point number is incremented by 1 after each recording.

or



PtNr :	+00000000
Hz :	341°17'10
V :	87°55'10
∠ :	3.782

Distance measurement without automatic data recording. will record the measured distance.

The Hz-angle always refers to the actual pointing direction of the telescope.

Example: for offset or hidden points

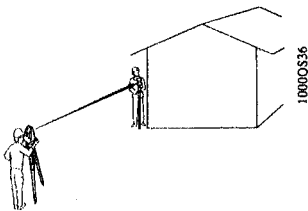


The distances and horizontal angles can be measured separately. First determine the distance and then adjust the direction (e.g. for surveying corners of buildings).

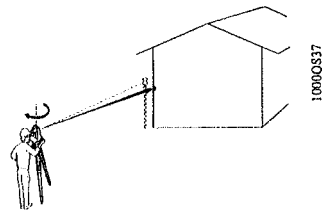
will record the data (refer to section "Recording").



The recorded V-angle always refers to the time of the completed distance measurement.



Measuring DISTANCE ()



Storing DATA ()

Tracking mode



Press for 2 seconds and the tracking is switched on.



Stops tracking mode and returns into single mode.

Display of recorded data



```
◇ MENU
  LEVEL      →
  PROG       →
  →DATA MANAGER
```



```
◇ *DATA MANAGER
  INPUT      →
  FIND       →
  →VIEW      →
```



```
√ *VIEW
  →OBSERV   →
  COORDS    →
  CODES     →
```

```
Obs : 0004/0047
Pt : +00000072
Type : Meas.
```

Measuring block

Total measured blocks (max. 1300, refer to section "Recording")



Press to scroll measured data upwards or downwards block by block. By keeping pressed down, measured data is scrolled continuously up or down.



Display of data, line by line within a measurement (block)

Measure and record with coding

Codes can be assigned to each measurement to provide additional information to the measured point.

Example of a code display in the measurement mode:

**CE
CODE**

```
List: 0000/0050
Code:      ?
In1 : CodeInp?
In2 :      ?
In3 :      ?
In4 :      ?
In5 :      ?
```

Codes can be entered directly or selected out of 100 pre-defined codes in the code list. Codes consists of max. 8 characters.

Alphanumeric code lists can be defined on the PC using TCTools and then transferred to the TC600/TC800 unit via RS232 interface (*refer to section "TCTOOLS"*). Codes also can be appended to the code list at the instrument using the menu options:

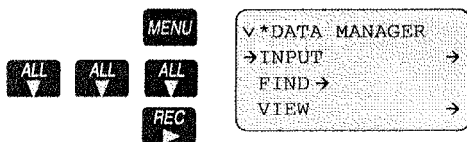
- DATA MANAGER
- INPUT
- CODES

Coding

Input a new code line to the code list

Up to 100 code blocks can be specified within a code list. Each code block consists of max. 6 elements, the code itself and five additional elements for description (In1, In2, ..., In5).

Appending additional codes at the instrument is carried out in the "DATA MANAGER". For the code itself letters and numbers are allowed.



```
√ *DATA MANAGER
→ INPUT      →
  FIND →
  VIEW       →
```



```
√ *INPUT
→ COORDS    →
  CODES     →
```



```
√ Code Input
→ Cod:      0
  In1:      0
  In2:      0
```






```
√ Code Input
→ Cod:  +00000000
  In1:   0
  In2:   0
```


Press unless you reach the digit to be modified.



```
√ Code Input
→ Cod:  +00010000
  In1:   0
  In2:   0
```

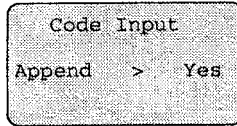
Change characters using the  / -key.

You can toggle between numeric and alphanumeric input mode with the -key.

Confirm your input with .

Similar to the "Cod" line is the additional information input in the lines "In1" "In5".

If you confirm a line containing only zeros the program ask you to store this code as follows:



Toggles between YES/NO.

Simple code input during measurements

During measurement (like you do it right after switching on the TC600/TC800) you have the possibility to code your measurement directly with one Codeline and max. five additional information entries.



```
List: 0000/0050
Code: ?
In1 : CodeInp?
In2 : ?
In3 : ?
In4 : ?
In5 : ?
```

At position 0000 of the code list, a code which allows individual modifications is predefined. This code will not appear in your DATA MANAGER unless you enter individual values using the keys.



```
√ CODE EDIT
→Cod: ?
In1 : CodeInp?
In2 : ?
```



To enter new codes into the code list *refer to section "Input a new code line to the code list"*.



The selected or edited code is assigned to the last measurement and stored in the observation area. The instrument returns to the measuring display.



Returns to the measuring display without recording the code.