

Tips

- Hold the distoX with both hands and support them against the wall. Wait for sensors to stabilise.
- With the DistoX2, the DIST button may be held pressed until the measurement is done and the laser switches off. This helps making measurements without shaking the distoX.
- Avoid metal objects and magnets - lights, SRT gear, equipment on harness. These affect the compass.
- Stores up to 1000 measurements to be viewed later or transferred over the bluetooth connection

Main Functions:

DIST:	power on / start Laser / measure distance
CLR:	cancel current operation, switch laser off , 2 sec power off
REF (↑):	change distance reference (back/front/extension)
TIMER:	start timer (automatic measurement)
MEM (📄):	show stored readings
SMART (↙):	show measurement information... bearing, horz, vert, total distance roll, dip (magnetic field) strength of gravity, magnetic field
FUNC:	Step thru distoX information... Battery level Versions and distoX serial # Display light level * End piece zero offset * FUNC = next SMART (↙) = previous

* press PLUS + MINUS, 2 sec to edit

**Options and Configuration****2 second keys and combinations**

MEM (📄):	change units (affects display only)
REF (↑):	switch to permanent front reference
CLR:	power off
MEM (📄) + SMART (↙):	angle unit: degrees/grad
MEM (📄) + FUNC:	silent mode on/off (no bluetooth)
MEM (📄) + MINUS:	backsight mode on/off
REF (↑) + MINUS:	beep on/off
REF (↑) + PLUS:	display illumination on/off
REF (↑) + FUNC:	back reference: case/end piece
CLR + SMART (↙):	calibration mode on/off
CLR + MEM (📄):	clear unsent memory ie before survey
CLR + FUNC:	bluetooth on/off
CLR + MINUS:	locked power off
SMART (↙) + MINUS:	triple shot check on/off 50mm, 1.7°

5 second keys and combinations

CLR + FUNC + MEM (📄):	Factory reset to default values including clearing calibration
FUNC + SMART (↙):	Change battery chemistry

Carry out an accuracy test (see over) before each day's survey

Keep the readings so you can calculate corrections for your survey / cave map

Error Codes

If an error occurs during a measurement the text “Info” appears on the screen together with one of the following error codes:

252, 253: Temperature too high, too low
255, 256: Received signal too weak, too strong
257: Too much background light
260: Laser beam interrupted

If the “**2nd**” symbol is shown at the top of the display, one of the two acceleration sensors is not working. The distoX still works but precision is compromised and the **calibration is no longer valid** if it was made with both sensors.

To Retain Bluetooth Connection between Devices

- Keep distoX powered on and close to PDA, it will not ‘auto-off’ while bluetooth connection is strong.
- Hide PocketTopo application with the red X, so that it stays running and connected in the background. (Menu:Exit closes the application and closes bluetooth connection = bad).
- PDA device bluetooth manager setting: Select ‘maintain when off’ and ‘make visible to other’.

Calibration Requirements

- PocketTopo Program must be running (on a PC, PDA or other device)
- There has to be a working bluetooth connection.

The calibration measurements must be done in an undisturbed magnetic environment. It is practically impossible to do a precise calibration in a house or near buildings. The best environment is either a cave or a forest.

Calibration Procedure

For a full calibration the complete following steps ...

- 1) Start the PocketTopo program.
- 2) If not already done, set the bluetooth port under "Menu:Options:Port".
- 3) Use "**Menu:Calibration...**" to start the PocketTopo calibration application.
- 4) Use "**Menu:Start**" on the calibration screen to put the Disto into calibration mode. The display of the Disto shows “CAL” in the first line.
- 5) Carry out the calibration measurements with the Disto (see below).
- 6) Transfer the results to the calibration application. Transfer starts automatically when a connection to the Disto is set up. The results are shown in a table on the screen.
- 7) Use "**Menu:Stop**" to turn off the calibration mode on the Disto.
- 8) Use "**Evaluate**" to analyze the calibration. The third value given in the lower part of the screen is a measure of quality. **It should be smaller than 0.5.**
- 9) Use "**Menu:Update**" to transfer the calculated calibration coefficient to the Disto.

Accuracy Test: After each calibration and before each survey trip.

Measure a defined line, preferably east – west, at least five times:

- Display up - Display right - Display down - Display left - Backwards (one back measurement is enough, but if you do 4 back measurements you have a better check)

Results should match within about 0.5° (the real error is half of the largest difference).

Record the values and calculate the correction to apply when processing the survey (Bruce’s spreadsheet).

Calibration Measurements

Calibration consists of 56 shots in 14 distinct directions. Each direction is measured four times (display up, right, down, and left). **Imagine being in the centre of a large cube.** The first six directions are taken to the middle of the six faces, four of them are horizontal and two are vertical (up and down). The remaining directions are taken to the 8 vertices of the cube. The precise directions are not important as long as they are reasonably spread.

To correct for potential error between the laser and the sensors, a few directed measurements are needed.

Therefore, **for the first four (horizontal) directions, the four measurements (display up, right, down, and left) made in each case are measured precisely in the same direction. This is easily done between two points marked on cave walls.**