

Tutorial

Topographic survey with SET 10/30R series using internal data-storage

These Sokkia Total Stations can be used for measuring and displaying coordinates on the screen, but also feature internal recording of survey jobs which include measurements, point-numbers, instrument and target height as well as feature code and administrative information.



For a successful survey the following procedure outlines everything that needs to be recorded in the job file, for a typical survey.

Step 1 **Set-up**

Set the instrument up over your first station, use the footscrews to see the survey nail centered through the optical plummet. Then adjust the tripod legs to get the round bubble centered.

Next align the tubular bubble with 2 of the footscrews and play the bubble with these footscrews. Then rotate the instrument 90 degrees and play the bubble with the remaining 3rd footscrew.

Step 2 **Admin**

Switch on, go to MEM menu, then JOB to select the job file you want to use. EDIT name if desired

Step 3 **First orientation**

Attach the compass to the handle, release the screw and turn the instrument till the needle floats freely. Press H.ANGLE and key in 0.0 so that 0 degrees is now means facing North.

Step 4 **Point of Beginning**

Record the coordinates for your first station in the job file.

Press REC then STN DATA and enter info for this station point (press EDIT where required), e.g.

Point	1000
E	100.00 (you can use 0.00 as assumed coordinates too, but you may get
N	200.00 (negative figures)
H	0.00
Instr Height	1.65 (measure from the mark on the floor to the line on the side of the instrument)
Code	STN (arrow down to end of the list to see this)

Step 5 **Set-up for recording**

Still in REC menu, now select DIST + COORD data and press \downarrow and then <esc>

We must record COORD data so we can later use the coordinates to calculate an orientation and to have coordinates for next stations. The DIST data (which is raw observations horizontal angle, vertical angle plus slope distance) is recorded for troubleshooting purposes.

Step 6 **Take the first shot to next station**

Select the desired measurement mode with the <shft> key : Prism or Reflective sheeting or reflectorless, Aim at the next station you want to set up over later and press the OBS key.

You'll get the target point's coordinates displayed on the screen.

To record this data, press REC and check/ edit:

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- Point number (you may want to use different point-numbers for the station points and topo points)
- Target height (for prism pole shots measure from the ground to the centre of the prism)
- Code (depending on what your software does with it, e.g. STN for station points, CB for corner building etc)

and then press OK to store the information

Step 7 **Take topo shots**

As step 6, but likely you're using reflectorless measurements to measure to corners of buildings etc. If automatic point-numbering is fine and the code is the same as previous point, you can press the AUTO button to measure and record.

Repeat this step until all points you can see from the current station have been done.

Step 8 **Move to next station**

Undo instrument from tripod and move to the next station. See step 1 for Set-up

Step 9 **Orientation on next station**

Orient the instrument to a previously recorded coordinate or bearing (only on the first station you orient to North)

You can do this either by entering the bearing to the previous station (= bearing from previous station to this station plus 180 degrees). However, it is easier to orient from stored coordinates for current station and previous station:

Press H.ANG then select BACK SIGHT, READ and press ↵ to get a list of available points for the backsight point (typically this is the previous station)

Press OK and then select your current station from the list and press OK.

Now aim the instrument to the backsight point and take a shot.

Step 10 **Add new station to file**

To record that we have moved the instrument to its new location, Press REC then STN DATA and then READ to copy the coordinates from the available points. enter info for this station point (press EDIT where required), e.g.

Point 1001
E 121.12
N 212.01
H 0.02

Instr Height 1.67 (measure from the mark on the floor to the line on the side of the instrument)

Code STN (arrow down to end of the list to see this

and press OK. You'll need to press ADD to get this point recorded to the job file as a station

Step 11 - **take shot at next station** - see Step 5 and Step 6

Step 12 - **take shots at topo points** -see Step 7

keep repeating Steps 11 and 12 till you've surveyed all of your points.

Step 13 - **finish** off by taking a check shot to a previously recorded coordinate

Note: you can view both the recorded measurements and coordinates in the VIEW submenu, which is on the second page after pressing the REC button.