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R1 Training: How to upload coordinates to total station - step by step.

R1/R15 Upload

<https://youtu.be/ZjM-S45QPCo>

1. Given a list of coordinates. Could be ascii text or excel csv file.
Example: In this order, Point Number, Northing (Y), Easting (X), Elevation (Z) and description
1,5000,5000,100,Setup
2,5005,5000,100,BS
3,5010,5000,100,SQ1
4,5010,5005,100,SQ2
5,5005,5005,100,SQ3
2. Open Cube-Link Program on PC. Go to File, New and create a new project. Use the empty file choice as you have not made a template. Optionally you could save a template to store the settings.

Select Home Tab and choose [Import ASCII]. Then choose the path of the file. With the ASCII and Create Topographic Points buttons selected, Choose Next. If default format does not match your data, you can edit the order to match. It should save that from the last upload. A drop-down list will have it.

Step 3 will show the coordinates in a table so choose next. Your points will now show on the map.

3. Now to get the points from the PC into the total station. Select the Topography Tab on the top of Cube-Link program. Choose Export Coordinates. Select R1/R15 Total Station. You can choose which points or all points to export into the R1. Choose the R15 file type and select the path of the Job file. You can make the job file in 3 ways. Make it on the hard drive of the computer and copy it to total station later. You can copy it to the SD card of the R1 that you put in the card reader of the PC. Or you can make a USB connection so that the PC sees the internal memory of the total station as a disk drive.

The procedure for connecting the total station to the PC is power on the R1. Plug the USB cable from the keyboard plug to the USB plug in the PC. The PC may make a message that it does not recognize the R1. No Problem. I like to hit Star button and left or right to tun on the light, then escape. Hit the MEM [F3] button and scroll to next page so that 1. USB is displayed and push enter on the R1. Now the PC will see the R1's files just like the drive. You may have to unplug and plug in the USB cable to see the USB drive.

Now choose the drive and File directory to see the JOBX.R15 files. Overwrite the file that has no data in it. There is a limit of 20 files and you cannot create more. You can change the name. Or store on the SD Card. A table with show and say OK. Now you can check by pushing escape on the R1, Go to MEM and look at known data to see if JOB has points and Measurements if you want to confirm what is in each point.



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R1 Training: How to download coordinates from total station - step by step.

R1/R15 Download <https://youtu.be/AQV78VwqxL4>

1. After survey is finished. There are three ways to download the data from R1 to PC.
Download from internal memory of R1 to PC.
From initial screen of R1, choose MEM [F3]. Press Func Key or Up Arrow and choose 1.USB
Press Enter. Plug USB wire into port on PC.
2. Open Cube Link and Select Topography. Click on Import Fieldbook. Select Instrument Model and Click Connect USB. Open the drive in the file explorer window. Click on File Directory. Highlight job desired and click on Open.
3. Click on Make Fieldbook. If desired, check the options for import. Choose OK. Select Fieldbook Menu and click on Detail Calculation. Click on Transfer All. Click OK. Select Orientation point from the list and choose OK. View Report, NO. Click on Confirm Calculation. Click on OK. Points should be on the map. Press Esc on R1 to Close.

You can also copy the job to the SD Card. Press MEM [F3]. Use arrow keys to get to second page. Select 1. File Copy Push Ent or 1 Key. Select Job and Confirm. Remove card and Open Cube Link on PC and Go through Step 2 above selecting SD card drive instead of USB drive like before.

You may also set the internal memory to record the job to SD card instead of internal memory.



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R1 Training: How to set up a survey on total station - step by step.

R1/R15 – How to Start Surveying <https://youtu.be/gYkz266f2R4>

1. Turn on the total station and select a job. There are 20 job files in the internal memory. Press MEM key to enter the JOB menu. Press 1 key to JOB Select option. Select a Job. Arrow keys left and right can scroll through Jobs. Press enter key and return to Job Menu. You can select Rename Job if you want. SFT key will change from Alpha characters to Numbers. Select Characters from Keyboard and push enter to go back. Press Esc.
2. Declare station and measure points. Press F1 key to enter MEAS mode. Scroll to page with Func key to REC is displayed. Select F4 to start survey. Pt# is shown at top of screen. Enter Pt#100 for setup point. Insert Instrument Height and coordinates of setup point. Ex: 5ft. N5000, E5000, Z100. Press F3 REC.
3. Set Orientation (Backsight) Press 1 Key to set Azimuth. Pt# can be BSP (Backsight Point) Set the Target Height and Azimuth Angle (0). Push F1 MEAS. Push F3 Key to confirm. Press 2 Key Survey. Can press SFT key to change target type. (Prism or Non-Prism) Aim to target and press F2 Key, to store it press F4 REC. Can edit point ID if desired. Press Ent Key. Can change Target Ht. Press F1 OK. Pt. Number is increased. F1 Auto Shoots and Stores the point in one Key.
4. Change Station Point. Press F2 DIST to Measure the next station point. Press REC F4 and then change the PT# to 200. Press F1 OK.
5. Power Off instrument and setup on point #200. Turn on R1 and press F1 MEAS. Press F4 REC. Press 1 Key to set the New Station Point. Press F1 READ to select Station Point Scroll to choose and press enter. Enter new station height. Press F3. Press F1 ADD to not overwrite the point. Press the 2 Key Back sight. Press F1 Key to Select previous station point and select from data base. Press enter key. Enter target height and press F4 OK. Aim to backsight and press enter. Press F4 OK. PT#100 Target in sight press F1 MEAS. Press F3 REC to Confirm. Press F1 Key ADD to not overwrite. Press 2 Key Survey to gather points. You can change EDM setting before surveying.



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R1 Training: How to do a resection on total station - step by step.

R1/R15 - Resection

<https://youtu.be/9Rs7v-VIblQ>

1. Some known points are marked in the field and you want to use them to determine where your total station is so you can add to the survey. At least 2 points are needed but more may be used. Power up the R1 and push the F1 MEAS key. Press Func key to scroll to Menu shows and Press F2 MENU. Press Func key to scroll the page until Resection appears. Press 1 key to choose Resection. You can choose 1. NEZ and 2. Elevation. Choose 1. NEZ
2. Enter the point name and its coordinates for first point. Press F2 REC to save. Enter point name and its coordinates for the second point. Press F2 REC to save. It is possible to enter the points from memory by pressing F1 READ. Scroll through the up and down arrows to choose desired point and press ENT key. Enter all the rest of the points the same way and when done press F4 MEAS to start. Aim at first point and press F1 DIST. Confirm by pressing F4 YES after setting target height. Do the same for all the points you want to use for the resection.
3. Press F1 CALC to compute the results and they will be displayed on the screen. Press F3 REC to store the station point. You can give it a name and Instrument Height. Press F3 Key then you are ready to use other total station programs.



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R1 Training: How to stake out points with total station - step by step.

R1/R15 – How to Stakeout <https://youtu.be/cj9ENkBVwgg>

1. It may be useful to preload points into the total station by uploading from PC or manually entering points. Power up the R1 and press F3 MEM key. Press 1 key to enter JOB menu. Press 1 key again to enter JOB Selection. Choose job desired with left and right arrow keys. Press ENT key to confirm and return to JOB menu. Press ESC key to show main menu.
2. Press F1 MEAS key. Press FUNC key to scroll to MENU and press F2 MENU key. Press 1 key to choose Stake Out. Press 1 key to select Occ. Orientation. Then press 1 key to Occ. Coordinate. Name the point Station and enter the instrument height and coordinates. Or you can press F1 READ to get the station coordinate from memory. Select it and press Enter key. Press F3 REC to save.
3. Choose the method you want to set orientation, 1. Azimuth or 2. Back Sight. Choosing 1 key Azimuth, enter target height and point name. Aim to the point and press F3 REC to save. Before starting press 3 key to modify EDM setting and set to tracking mode and check other settings. Press ESC key.
4. Press 2 key to enter the stake out menu. There are 3 choices that are displayed for the stake out. 1. Height, 2. Angle & Dist. And 3. Coord. If 2 Ang & Dist. Is chosen then enter the distance, angle and target height using the keypad. Press F2 SHV and F4 OK to stake out. Turn instrument to target direction until dHA offset is close to zero. Press F1 MEAS, move the telescope up and down to sight the prism and measure until offset is close to zero.
5. Select coordinates to stake out. Press 3 key Coord. From the stake out menu. Here you can edit the coordinates manually or press F1 READ to select from the memory. Press F3 REC to record the point manually entered then F4 key OK to stake out. The next screen will tell the direction to move the prism to desired stake out point.