

APPENDICES



Contract
XXXX

Survey


- Backup Files
- Control
- Cross Section
- Data Collection
- Drainage
- Electrical
- Forms
- InRoads
- Miscellaneous
- Redheads
- Requested Survey
- Right of Way
- Rail
- Structures
- Signs
- Slopes Stakes
- Walls

CONFIGURATION

1. Set-up and level your backsight and the Total Station on their appropriate tripods.
2. Connect the power carriage to the Total Station and the Data Collector (recommend both on the same side).
NOTE: There are several ways to provide power, refer to your user's manual.
3. Turn on the Total Station by powering up the Data Collector.
WARNING: Wait for the fisheye level screen to appear on the Data Collector prior to pressing any keys or selecting screen functions. A failure to do so could result in a system lockup, which requires a hard reset of the Data Collector.
4. Fine tune the leveling of the Total Station and accept the conditions.
5. Parameter settings appear on the next screen, where you can enter the temperature, barometric pressure, and prism constant. These settings need a onetime entry from the Data Collector.
6. The basic screen then displays. At this point, you can zero the Total Station on your backsight, measure a quick distance, and turn an angle from this screen, without entering a contract/job file. Otherwise, you may escape from this screen.
7. The Main Screen appears for Survey Controller.
8. Create a new job by selecting: Files > New Job > [enter job name]. Select Coordinate System > Scale Factor=1.00 (always), then select Units (meters or US feet) > Accept to return to the main screen for the job you just created.
9. Open an existing job by selecting: Files > Open Job, then tap on desired job.




NOTE: Refer to your equipment manufacturer's owner's manual for actual input methods. Software compatibility issues may require additional research and updates for accurate data management.

STATION SETUP

1. Follow steps 1 - 5 in "Configuration".
2. From the Survey Controller main screen, select: Survey > [MODEL] > Station Setup > Enter;
 - Occupied point (from either the point list or shoot the point)
 - Backsight point (from either the point list or shoot the point)
 - Total Station height
 - Backsight height
3. Measure [] the point/Accept/Store (only if residuals are accurate)
4. Go to "Robotic Surveys" to perform topography-shots, stakeouts, 2-person mode surveys and robotic surveys. Otherwise, go to step 5.
5. After station setup, select Survey > End Survey to prompt Shutdown.

6. Enter No > Survey > Start Robotic. When Auto Centered is fine? is displayed, select Ok > Yes. The Total Station will shutdown.
7. Disconnect the Data Collector cable from the Total Station battery pack and connect the cable to the bottom port on the side of the pole-mounted radio. It takes approximately 30 seconds for the radio to power on and render a beep, which indicates a remote connection is established. During the wait time, you can turn on your prism on top of the pole (green LED's will flash) and set your prism height on the telescoping pole.

ROBOTIC SURVEYS

1. At this point, the Data Collector screen will display the same leveling screen, and you can adjust the bubble accordingly. However, remember heavy level adjustments will force a new station setup. Proceed to the station setup screen and use your last setup if no large leveling adjustments were performed, which will save you redundant entries.
2. You are now ready to perform Topographic Surveys, Measure Points, Measure Rounds, or Stakeouts.
3. The next step is to lock the Total Station on to your remote pole prism. Walk away in-line from the telescope approximately 15 feet while holding the pole and towards the Total Station. If your prism is on the Total Station, it should "Autolock". If the Autolock fails, select the instrument icon [ 1.254] on the right side of the screen and select Autolock, where the [] icon appears while the Total Station searches for the prism. Once locked on, the lights should be solid [ 1.500].
4. Once locked, you can commence performing the previously mentioned surveys.

All of these procedures and/or further information can be found in the device's help menu or technical documentation.

SURFACE SCAN

Surface scanning is an automated direct reflex (DR) measuring process where measurements are automatically stored along a remote surface that you have defined.

To perform a surface scan:

1. Start a conventional survey.
2. From the Survey menu, select Surface Scan.
3. Enter the Start point name and code (if necessary).
4. In the Method field, select a measurement method.
5. Define the area for the scan and grid interval.
6. Tap the function button and set the EDM method (TRK is fastest). The total number of points to scan, scan grid dimensions, and estimated scan time are displayed.
7. Change the scan size, step sizes or EDM method to increase or decrease the number of points and scan time.
8. Tap Start.

DEFINE SCAN AREA

To define the scan area:

1. Do one of the following:
 - If the point already exists, enter the point name, or use menu arrow to select it from the list.
 - From the pop-up menu in the Top left and Bottom right fields, select Fast fix or Measure to measure and store points that define the limits of the search.
2. Follow the steps of the section corresponding to the desired setup method: "HA VA Interval", "Rectangular Plane" or "Line and Offset".

NOTE: With any selected method, the defined scan area may not exactly fit the grid interval. There may be an area left over along the scan extents that is smaller than the grid interval. If the width of this area is less than one-fifth of the grid interval, the points along this scan area will not be measured. If the width is more than one-fifth of the grid interval, then an extra point is scanned.

HA VA INTERVAL

Use this method on complex surfaces, when you cannot use a rectangular plane to approximate the surface you are scanning (see Figure D-1):

1. Aim to the top left corner of the scan area (1) and measure a point.
2. Aim to the bottom right corner of the scan area (2) and measure another point.
3. Define the angular grid interval, where:
 - 3 is the Horizontal angle.
 - 4 is the Vertical angle.

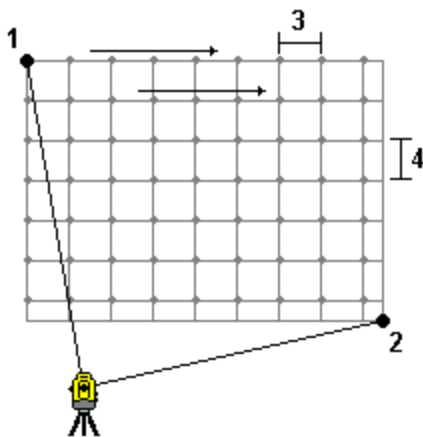


Figure D-1: HV VA Method Setup

TIP: To define a Horizontal only scan of a 360-degree scan area, set the Top left and Bottom right points to the same name and set the VA interval to null.

RECTANGULAR PLANE

Use this method on a plane surface where you need a regular grid interval.

DATA COLLECTOR SOFTWARE

Determines the angle of the plane and uses this and the grid interval to approximate how far to turn the instrument for each subsequent point.

1. Aim to the first corner of the scan area (1) and measure a point.
2. Aim to the second corner of the scan area (2) and measure another point.
3. Aim to the third point on the opposite side of the plane (3) and measure a point.
4. Define the distance and grid interval, where:
 - 4 is the Horizontal distance.
 - 5 is the Vertical distance.

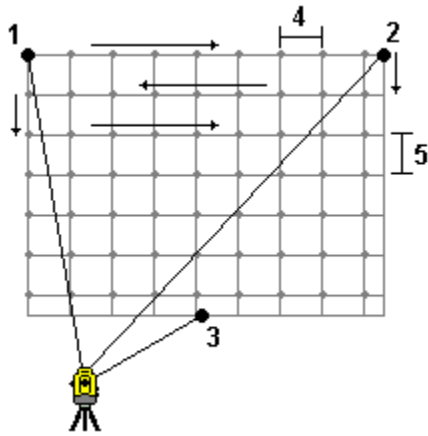


Figure D-2: Rectangular Plane Method Setup

LINE AND OFFSET

Use this method to define the area to scan from a center line that has equal offsets to the left and right. Data Collector software defines the surface using horizontal offsets perpendicular to the center line. The software then uses this definition and the station interval to determine approximately how far to turn the instrument for each subsequent point (see Figure D-3):

1. Perform one of the following:

Two-point method:

- Aim to the start point of the center line (1) and measure a point.
 - Aim to the end point of the center line (2) and measure another point. These two points (1 and 2) define the center line.
2. Access the pop-up menu in the Start point field. Change the method and then define the line by a start point with azimuth and length.
 3. Define the station interval (3).
 4. Define the maximum offset distance (4).
 5. Define the offset interval (5).

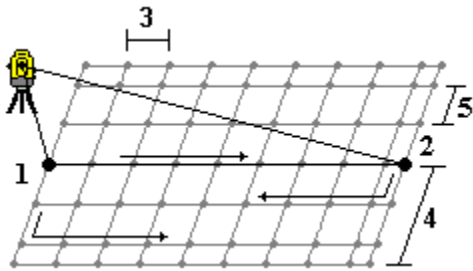


Figure D-3: Line and Offset Method Setup

Total Station scans the center line first, then the points on the right-hand side and the left-hand side.

