TPS1200 Quick Guide
7 Survey

Survey

The survey application program is used for point measurement. Coordinates for points can be measured and stored using the **F1 (ALL)**, **F2 (DIST)**, and **F3 (REC)** buttons.

In this Chapter

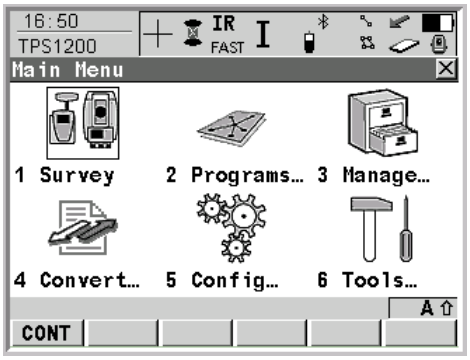
This chapter explains how to access the Survey application, how to survey points, and then describes configuring and measuring auto-recorded points using offsets. The last section describes the procedure for measuring remote points.

TPS1200 Quick Guide
7.1 Accessing Survey

Accessing Survey

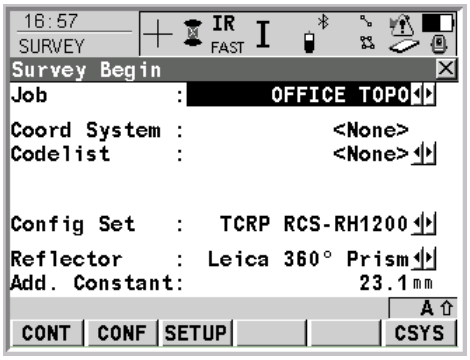
There are different ways of accessing the Survey application program. Probably the easiest way is to tap on the 1 Survey icon.

Follow the steps below to access Survey.

Step	Action	Display
1	From the Main Menu: • Tap on **1 Survey**. This takes you to the SURVEY Survey Begin screen.	

Continued on next page

TPS1200 Quick Guide
7.1 Accessing Survey

Step	Action	Display
2	In the SURVEY Survey Begin screen: **F2 (CONF)**: Press this button to configure auto points and remote point measurements. **F3 (SETUP)**: Press this button to access the SETUP Station Setup application program. **F6 (CSYS)**: Press this button to select a different coordinate system. **Job**: This field allows you select the active job. (See chapter *1*, sections *1.7 Job Management: Creating a Job* and *1.8 Job Management: Selecting a Job*.) **Coord System**: This field displays the currently attached coordinate system to the selected job. **Codelist**: This field displays the active codelist. This field allows you to select a codelist that resides in the instrument's system RAM. Selecting a codelist copies the codes to the job. If codes have not been copied from an existing codelist residing in the system RAM but entered manually, then the name of the active job is displayed. **Config Set**: This field displays the active configuration set. This field allows you to select a configuration set. See chapter *2 Configuration Sets* for information on creating a configuration set. This step continues on the following page.	

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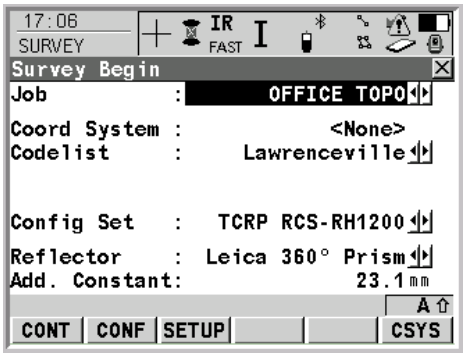
TPS1200 Quick Guide
7.1 Accessing Survey

Step	Action	Display
2	This step continues from the previous page: **Reflector**: This field displays the reflector currently set in the selected configuration set. Use this field to select a different reflector. **Add. Constant**: This field displays the additive constant stored with the chosen reflector. • Select a job from the **Job** field. In this example we created a job called **OFFICE TOPO**. • Select a coordinate system. In this example we are not using a coordinate system. **Remember**: to select a coordinate system you must press the **F6 (CSYS)** button. • Select a codelist from the **Codelist** field. In this example we will use the codelist that we transferred in chapter *3 Utilities*. • Select a configuration set from the **Config Set** field. In this example we are using the **TCRP RCS-RH1200**. • Press the **F3 (SETUP)** button. This takes you to the SETUP Station Setup screen.	

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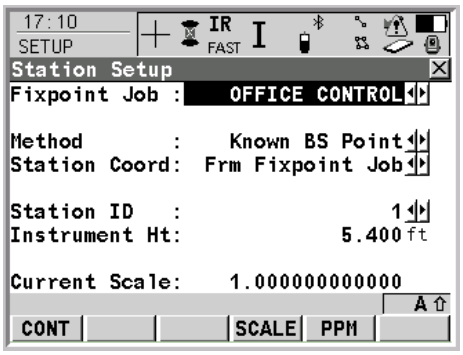
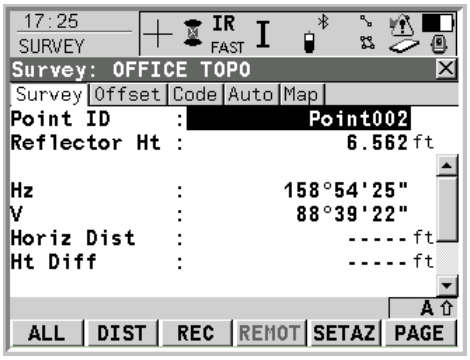
TPS1200 Quick Guide
7.1 Accessing Survey

Step	Action	Display
3	In the SETUP Station Setup screen: • Setup the instrument. For more information on setting up the instrument, see chapter *6 Setup Application*. In this example we will be setting up the instrument using the same points and method as described in chapter *6 Setup Application* section *6.3 Setup Method: Known Backsight*. Completing Setup takes you to the SURVEY Survey screen.	

TPS1200 Quick Guide
7.2 Surveying

Step	Action	Display
1	In the SURVEY Survey screen: **F1 (ALL)**: Use this button to measure and store distances and angles. **F1 (STOP)**: This button becomes available if the **EDM Mode** field is set to **Tracking** and the **F2 (DIST)** button was pressed. This button stops the distance measurements. The **F1** softkey changes back to **ALL**. **F2 (DIST)**: Use this button to measure distances. It is available unless the **EDM Mode** field is set to **Tracking** and/or the **Log Auto Pts** field is set to **Yes**, after the tracking or logging has started. **F3 (REC)**: Use this button to record data. If the **EDM Mode** field is set to **Tracking** and/or the **Log Auto Pts** field is set to **Yes**, pressing this button records the measured point and continues tracking. **F4 (REMOT)**: This button is available if the **Use Remote Pt** field is set to **Yes** in the Remote Pt page of the SURVEY Configuration screen and a distance has been measured. Use this button to access the SURVEY Survey Remote Point (see the last section of this chapter, *7.5 Remote Point,* to learn more about this function). **F5 (SETAZ)**: Use this button to access the SETUP Set Stn & Ori – Set Azimuth screen to set the horizontal angle. (See section *46.6.2 Set Azimuth* of the *TPS Technical Reference Manual* for more information on the SETUP Set Stn & Ori – Set Azimuth screen.) This step continues on the following page.	

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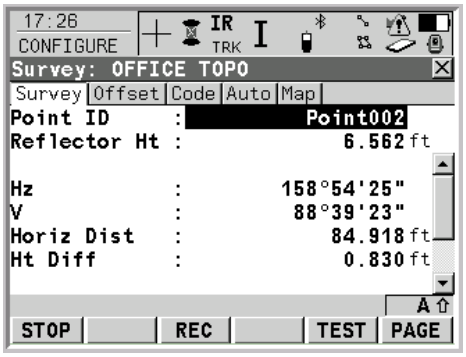
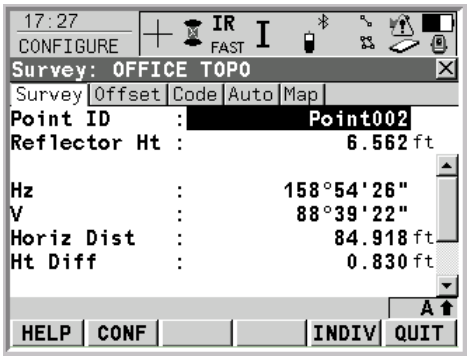
TPS1200 Quick Guide
7.2 Surveying

Step	Action	Display
1	This step continues from the previous page. **F5 (TEST)**: This button is available if the **EDM Mode** field is set to **Tracking** and/or the **Log Auto Pts** field is set to **Yes**, after the tracking or logging is started. Pressing this button accesses the SURVEY EDM Test Signal/Frequency screen. **SHIFT F2 (CONF)**: Use this button combination to access the SURVEY Configuration screen. Here you can configure auto points and remote point measurements. When the **SHIFT F2 (AVGE)** or the **SHIFT F2 (ABS)** buttons are active, this button combination [**SHIFT F2 (CONF)**] is not available. **SHIFT F2 (AVGE)**: Use this button combination to check the residuals for the averaged point. It is available when the **Averaging Mode** field is set to **Average** and when more than one measured coordinate triplet has been recorded for the same point. **SHIFT F2 (ABS)**: Use this button combination to check the absolute difference between the measurements. It is available when the **Averaging Mode** field is set to **Absolute Diffs** and when more than one measured coordinate triplet has been recorded for the same point. **SHIFT F5 (INDIV)** and **SHIFT F5 (RUN)**: Use these button combinations to change between entering an individual point ID different to the defined ID template and running point ID according to the ID template. (See section *17.1 ID Templates* of the *TPS Technical Reference Manual* for more information on ID Templates.) This step continues on the following page.	 Below is the display after the **SHIFT** button was pressed. 

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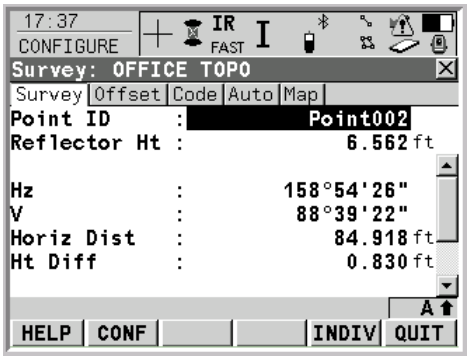
TPS1200 Quick Guide
7.2 Surveying

Step	Action	Display
1	This step continues from the previous page. **Note**: The fields displayed in the image on the right may not match the fields you see on your instrument. The fields shown on the right were set in chapter *2 Configuration Sets*, section *2.4 Editing a Configuration Set*, *step 11*. **Point ID**: This field is used to enter an identifier for measured points. The configured point ID template is used. The ID can be changed: - to start a new sequence of points ID's, overtype the point ID to start a new sequence. - for an individual number independent of the ID template, press the **SHIFT F5 (INDIV)** button combination. Press the button combination **SHIFT F5 (RUN)** to change back to the next ID from the configured ID template. **Reflector Ht**: Use this field to enter a reflector height. The last used reflector height is suggested when accessing the Survey application program. **Point Code**: Use this field to select a code. This step continues on the next page.	

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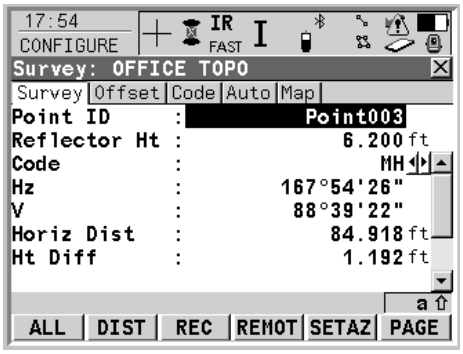
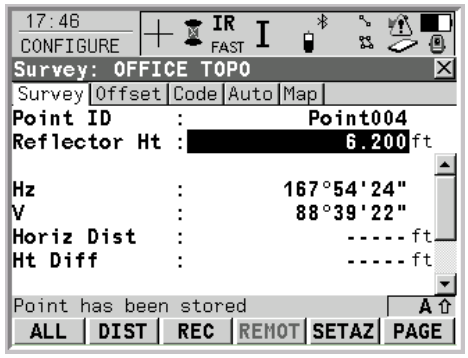
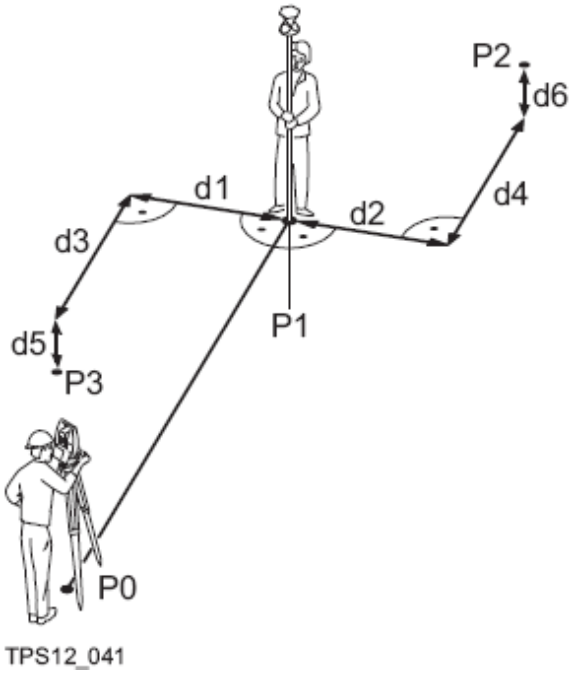
TPS1200 Quick Guide
7.2 Surveying

Step	Action	Display
1	Continuing in the SURVEY Survey screen: • Enter a point ID in the **Point ID** field. In this example we will measure point **Point003**. • Enter a reflector height in the **Reflector Ht** field. In this example the reflector height is **6.2** feet. • Enter a code in the **Point Code** field. In this example the code is **MH** for manhole. • Aim the instrument at the target point and press the **F1 (ALL)** button. Notice the message informing us that the point has been stored. Also notice that the point number in the **Point ID** field has incremented to **Point004**. • Continue measuring points. In this example we will measure two more points. When finished measuring accessible points, we will then measure a point using an offset. • Tap on the **Offset** tab. This takes you to the Offset page of the SURVEY Survey screen.	 

TPS1200 Quick Guide
7.3 Surveying Offsets

Offsets

The offset values are applied to measured points. The offset function allows offset points to be determined, for instance when the reflector cannot be set up directly on a point. Traverse, longitudinal and/or elevation offsets can be defined from the reflector position to the offset point. All of the displayed and recorded measurement data is in relation to the offset point. The values for target eccentricity are retained after storage with the **Offset Mode** field set to **Permanent**. The values are set to zero with the **Offset Mode** field set to **Reset after REC**.

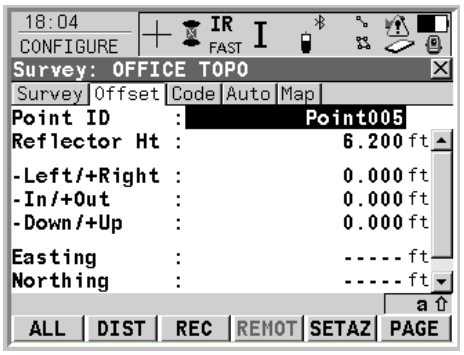
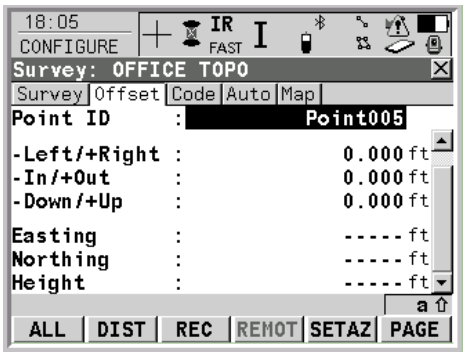


TPS12_041

P0	Station
P1	Current position
P2	Offset point
P3	Offset point
d1	Offset cross -
d2	Offset cross +
d3	Offset length -
d4	Offset length +
d5	Offset height -
d6	Offset height +

Continued on next page

TPS1200 Quick Guide
7.3 Surveying Offsets

Step	Action	Display
1	In the Offset page of the SURVEY Survey screen: **Note**: The fields displayed in the image on the right may not match the fields you see on your instrument. The fields shown on the right were set in chapter *2 Configuration Sets*, section *2.4 Editing a Configuration Set*, *steps 11-12*. **-Left/+Right**: Use this field to enter a cross offset of the target point, perpendicular to the line of sight (see image on previous page). **-In/+Out**: Use this field to set the length offset of the target point in the direction of the line of sight (see image on previous page). **-Down/+Up**: Use this field to set the height offset of the target point (see image on previous page). **Northing**, **Easting**, **Height**: These fields display the northing, easting, and height coordinates of the offset point. This step continues on the following page.	 

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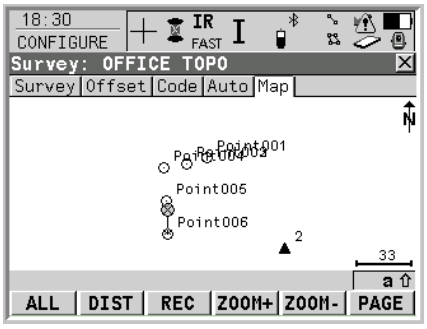
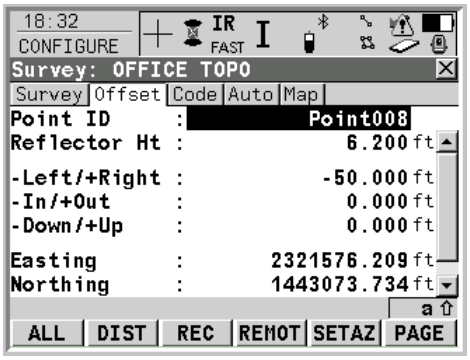
TPS1200 Quick Guide
7.3 Surveying Offsets

Example

In this example, the offset point we are about to measure is closest to point ID **Point006**. It is 50 feet (measured with a Leica Disto) on the left side of the line from the instrument to the reflector (using the diagram at the beginning of this section as a reference). The offset height is 0.0ft and so is the offset length.



Step	Action	Display
1	This step continues from the previous page: • Enter offset values in the **Offset Cross**, **Length**, and **Height** fields. In this example only the **Offset Cross** field requires a value of **–50ft** (negative because it's on the left side of the line). • Press the **F1 (ALL)** button when ready to measure the offset point. This measures the offset point. This step continues on the following page.	

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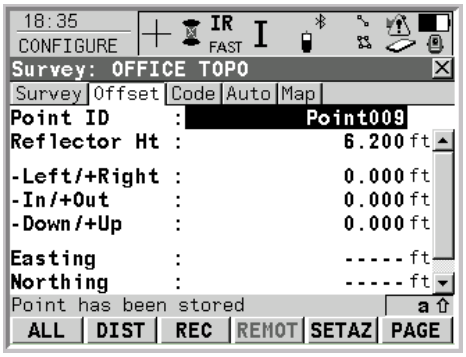
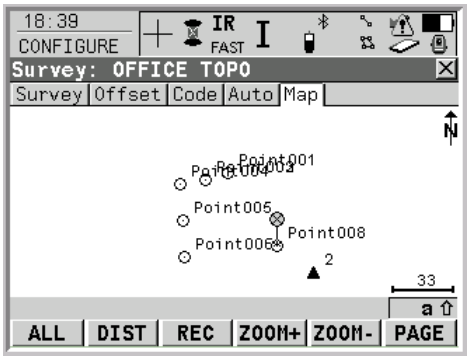
TPS1200 Quick Guide
7.3 Surveying Offsets

Step	Action	Display
1	This step continues from the previous page: We see that the **Point ID** field has incremented to **Point009** (we measured the previous points in section *7.2 Surveying*). Also notice that the **Offset Cross** field reset itself to **0.0** and an alert message explains that the point was stored. • Press the **Map** tab. This takes you to the Map page of the SURVEY Survey screen.	
2	In the Map page of the SURVEY Survey screen: We see the offset point **Point008** with the reflector icon over it. For a detailed description of MapView, see chapter *1*, section *1.9 MapView*.	

TPS1200 Quick Guide
7.4 Surveying Auto Points

Auto Points

Auto points is used to automatically measure and store points at a specific rate. Additionally, individual auto points can be stored outside the defined rate. Auto points logged between starting and stopping logging of auto points form one chain. A new chain is formed each time logging of auto points is started.

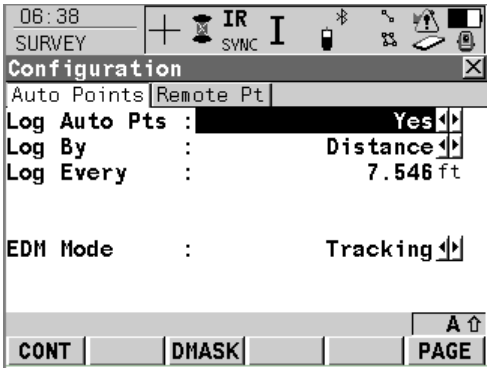
Auto points can be collected in the Survey application program. An Auto page is visible when logging of auto points is active.

Up to two offset points related to one auto point can be logged. The offset points can be both to the left or right and they can be coded independently of each other and of auto points.

The following section describes how to configure Auto points and then use them with two offsets to measure three lines of points. We will be measure the centerline of a roadway and two right-of-way offsets at the same time.

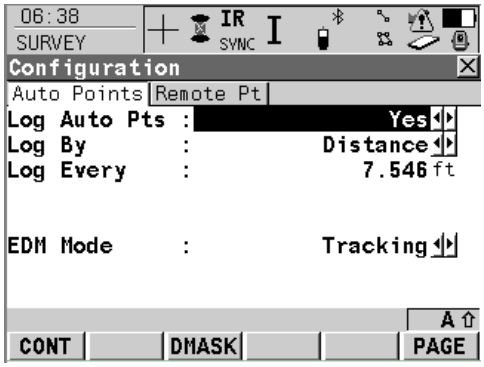
Accessing Auto Points Configuration

Pressing the **F2 (CONF)** button from step *2* of the section *7.1 Accessing Survey* accesses the Auto Points page of the Survey Configuration screen.

Step	Action	Display
1	In the Auto Points page of the Survey Configuration screen: **F3 (DMASK)**: Use this button to access the SURVEY Auto Pts Display Mask screen. There you can configure what is viewed in the Auto page in the Survey application program. This button is only available if the **Log Auto Pts** field is set to **Yes**. For more information on display masks see chapter *2 Configuration Sets*, section *2.4 Editing a Configuration Set*, steps *10-12.* **Log Auto Pts**: Use this field to activate or deactivate the logging of auto points and all fields on this screen. This step continues on the following page.	

Continued on next page

TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
1	This step continues from the previous page: **Log By**: Use this field to select how the auto points are to be measured. The choices are: **Time**: Auto points are stored according to a time interval. **Distance**: The difference in distance from the last stored auto point, which must be reached before the next auto point is measured. The auto point is stored with the next available measured position. **Height Diff**: The height difference from the last stored auto point, which must be reached before the next auto point is measured. The auto point is stored with the next available measured position. **Dist or Ht**: Before the next auto point is measured either the difference in distance or difference in height must be reached. The auto point is stored with the next available measured position. **Stop & Go**: An auto point is stored when the position of the reflector does not move more than the distance configured in the **Stop Position** field with the value in the **Stop Time** field. **User Decides**: An auto point is stored upon pressing the **F3 (REC)** button in the Auto page of the SURVEY Survey: job name screen. In the beginning, the chain to which the auto points should be assigned must be started with the pressing of the **F1 (START)** button. In the end, the chain must be closed by pressing the **F1 (STOP)** button. This step continues on the following page.	

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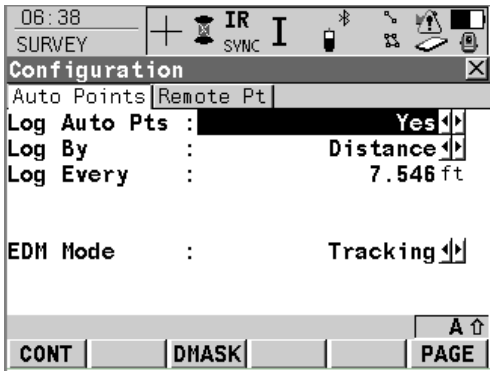
TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
1	This step continues from the previous page: **Log Every**: This field is available unless the **Log By** field is set to **Dist** or **Ht**. If the **Log By** field is set to either **Distance** or **Height Diff**, use this field to enter the difference in distance or height before the next auto point is logged. When the **Log By** field is set to **Time**, use this field to enter a time interval between 0.1 and 60 seconds for when the next auto logged point gets logged. **Min Distance**: This field is available if the **Log By** field is set to **Dist or Ht**. Use this field to enter a value for the difference in distance before the next auto point is logged. **Min Height**: This field is available if the **Log By** field is set to **Dist or Ht**. Use this field to enter a value for the height difference before the next auto point is logged. **Stop Position**: This field is available if the **Log By** field is set to **Stop & Go**. Use this field to enter the maximum distance within which the position is considered stationary. **Stop Time**: This field is available if the **Log By** field is set to **Stop & Go**. Use this field to enter the time while the position must be stationary until an auto point is stored. **EDM Mode**: Use this field to select the EDM mode. The choices are: **Tracking**: Continuous distance measurements are made with **0.3 second** measuring time and **5 mm + 2 ppm** accuracy. When the logging of auto points has started, **TRK** is displayed as an icon. This step continues on the following page.	

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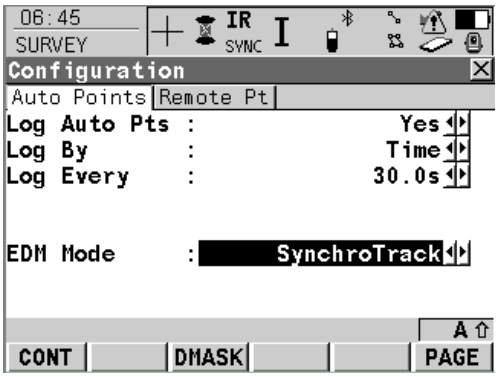
TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
1	This step continues from the previous page: SynchroTrack: This is available if the EDM type has been set to **Reflector (IR)**. This is the measurement mode for the interpolation of angle measurements in IR LOCK Tracking mode. In difference to normal IR LOCK Tracking mode, where angle measurements are only assigned to certain distance measurements, SynchroTrack will perform a linear interpolation between the previous and following angle measurements, based upon the timestamp of the EDM measurement. When the logging of auto points has started, SYNC is displayed as a icon. In this example we will log auto points by time and we will log a point every 30 seconds. • Set the **Log Auto Pts** field to **Yes**. • Set the **Log By** field to **Time**. • Set the **Log Every** field to **30.0s**. • Set **EDM Mode** field to **SynchroTrack**. • Press the **F1 (CONT)** button when finished. **Note**: To learn more about the **Remote Pt** tab, please see the following section 7.*5 Remote Point*. This returns you to the previous page you were in when you accessed the Auto Points page of the Survey Configuration screen. In this example it returns us to the SURVEY Survey Begin screen.	

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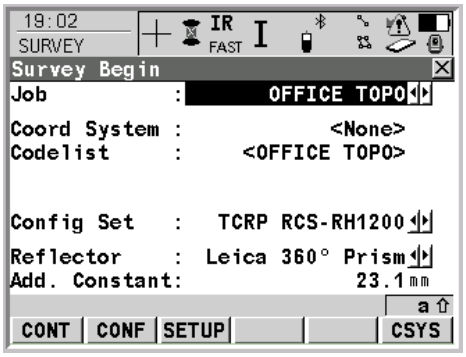
7.4 Surveying Auto Points

Step	Action	Display
2	In the SURVEY Survey Begin screen: If the instrument has not been set up yet, press the **F3 (SETUP)** button (see chapter *6 Setup Application* for more information on setup). • Press the **F1 (CONT)** button. This takes you to the Auto page of the SURVEY Survey screen.	

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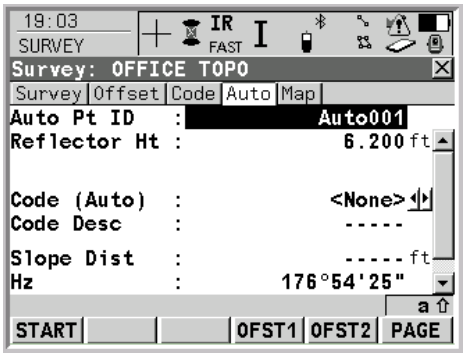
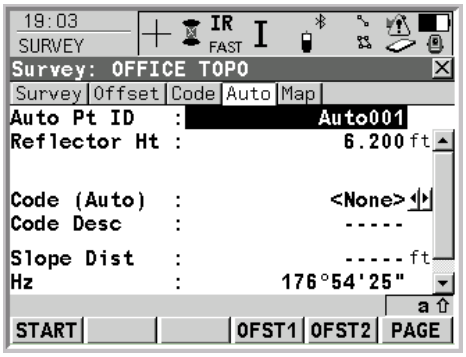
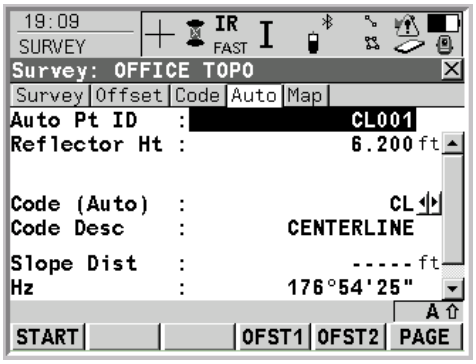
TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
3	In the Auto page of the SURVEY Survey screen: We now see the Auto page in the Survey screen. The softkeys and the **Auto Pt ID** field are always displayed. Other fields may be displayed depending on the display mask configured. **F1 (Start)**: Use this button to start logging auto points and offset points (if configured). Or if the **Log By** field is set to **User Decides**, use this button to start the chain to which the auto points should be assigned. The first auto point is stored. **F1 (STOP)**: Use this button to end recording of auto points and offset points (if configured). Or if the **Log By** field is set to **User Decides**, use this button to end the chain to which the auto points are assigned. **F3 (REC)**: This button is available for **F1 (STOP)**. Use this button to store an auto point at any time. **F4 (OFST1)**: Use this button to configure recording of the first type of offset points. **F5 (OFST2)**: Use this button to configure recording of the second type of offset points. **SHIFT F2 (CONF)**: Use this button combination to configure auto points. This step continues on the following page.	

Continued on next page

TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
3	This step continues from the previous page: **SHIFT F6 (QUIT)**: Use this button combination to exit the Survey application program. Point information logged until pressing the **SHIFT F6 (QUIT)** button combination is saved in the database. **Auto Pt ID**: This field is available unless the **Auto Pts** field is set to **Time & Date** in the CONFIGURE ID Templates screen. Use this field to enter the identifier for auto points. The configured ID template for auto points is used. The ID can be changed. To start a new sequence of point IDs, overtype the point ID. If the **Auto Pts** field is set to **Time & Date** in the CONFIGURE ID Templates screen, the current local time and date is used as an identifier for auto points. • Enter an auto point ID in the **Auto Pt ID** field. In this example we will start the point IDs with **CL001**. **Reflector Ht**: This field suggests the default reflector height as defined in the active configuration set. Use this field to enter a different reflector height. • Enter a reflector height in the **Reflector Ht** field. In this example we are leaving the **6.2ft** reflector height. **Msd Auto Pts**: This field is available after pressing the **F1 (START)** button and before pressing the **F1 (STOP)** button. This field displays the number of measured auto points since the **F1 (START)** button has been pressed. This step continues on the following page.	 

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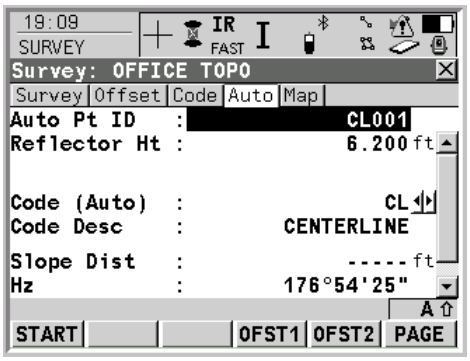
TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
3	This step continues from the previous page: **Code (Auto)**: Use this field to enter a thematical (point) code for the auto point. If the **Thematic Codes** field is set to **With Codelist**, all codes from the job codelist can be selected. The attributes are shown as output, input, or choice list fields depending on their definition. If the **Thematic Codes** field is set to **Without Codelist**, codes can be typed in but not selected from a codelist. A check is performed to see if a point code of this already exists in the job. If so, the according attributes are shown. **Code Desc**: This field displays the description of the code. • Enter a code in the **Code (Auto)** field. In this example we are entering the code **CL** for centre line. **Slope Dist**: This field displays the measured slope distance. When the **F1 (START)** button is pressed, the **EDM Mode** field is set to **Tracking** and the slope distance is constantly updated. **Hz**: This field displays the current horizontal angle. **Vz**: This field displays the current vertical angle. • Press the **F4 (OFST1)** button. This takes you to the General page of the SURVEY Auto Points – Offset 1 screen.	

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7.4 Surveying Auto Points

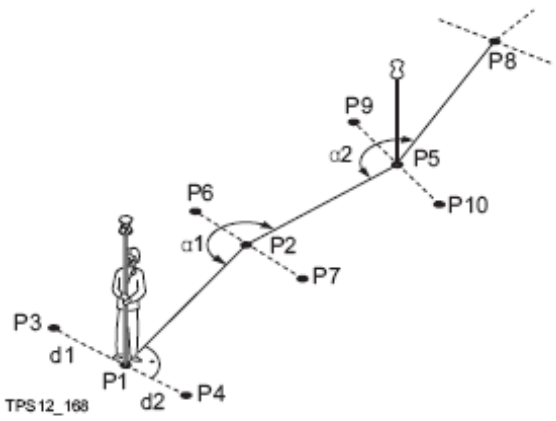
Offset Points

Offset Points

- can be created with auto points when auto points are stored in the DBX database.
- can be to the left or right of auto points.
- are automatically computed with the logging of auto points, if configured.
- form a chain relative to the chain of auto points to which they are related. Subsequently computed chains are independent from each other.
- can be coded independently of auto points.
- have the same time of when they were stored as the auto points to which they are related.

Up to two offset points can be related to one auto point.

The screens for the configuration of offset points are identical except for the title.



P1	First auto point
P2	Second auto point
P3	First offset point for P1
P4	Second offset point for P1
P5	Third auto point
P6	First offset point for P2
P7	Second offset point for P2
P8	Fourth auto point
P9	First offset point for P5
P10	Second offset point for P5
d1	Horizontal offset to the left
d2	Horizontal offset to the right
α1	Angle between P1 and P5
α2	Angle between P2 and P8

Continued on next page

TPS1200 Quick Guide
7.4 Surveying Auto Points

Computation of Offset Points

The computation of offset points depends on the number of auto points in one chain.

One Auto Point

No offset points are computed or stored.

Two Auto Points

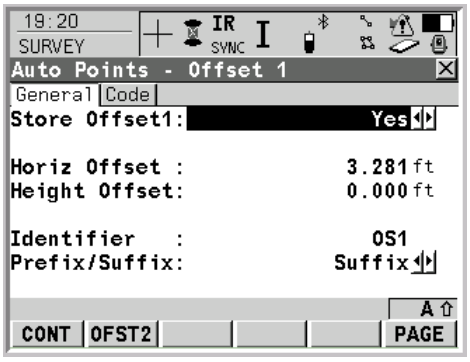
The configured offsets are applied perpendicular to the line between two auto points.

Three Or More Auto Points

The first offset points are computed perpendicular to the line between the first and second auto point.

The last offset point is computed perpendicular to the line between the last auto point and the one before.

All other offset points are computed on a bearing. The bearing is half of the angle between the last and the next measured auto point.

Step	Action	Display
4	In the General page of the SURVEY Auto Points – Offset 1 screen: **F2 (OFST2)**: Use this button to switch between configuring offset point type one and two. **Store Offset1**: Use this field to activate or deactivate the logging of offset points and all fields on this screen. **Horiz Offset**: Use this field to enter a horizontal offset between –1000m and 1000m at which the offset point is collected. **Height Offset**: Use this field to enter a height offset between –100m and 100m from the related auto point. This step continues on the following page.	

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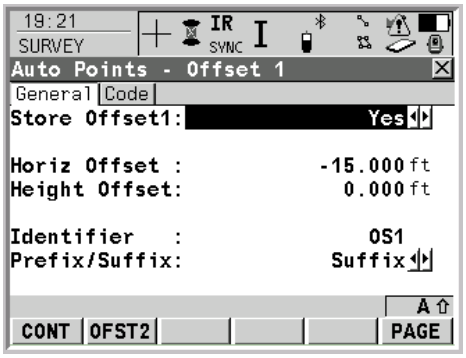
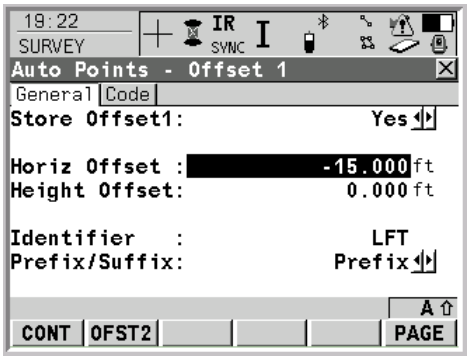
TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
4	This step continues from the previous page: **Identifier**: Use this field to enter an identifier that can have up to four characters, to the front of or at the end of the ID of the auto point. This ID is then used as the point ID for the related offset point. **Prefix/Suffix**: Use this field to select whether the identifier gets placed in front of or at the end of the auto point ID. In this example we will create two offsets to the auto points, one five metres on the left and one five metres on the right side of the auto points. The left-side offset points will have the prefix **LFT** and the right-side offset points will have the prefix **RHT**. We will also code these offsets as **ROW** for right of way. • Set the **Store Offset1** field to **Yes**. • Set the **Horiz Offset** field to **-15.0ft**. • Set the **Height Offset** field to **0.0ft**. • Set the **Identifier** field to **LFT**. • Set the **Prefix/Suffix** field to **Prefix**. • Tap on the **Code** tab. This takes you to the Code page of the SURVEY Auto Points – Offset 1 screen	 

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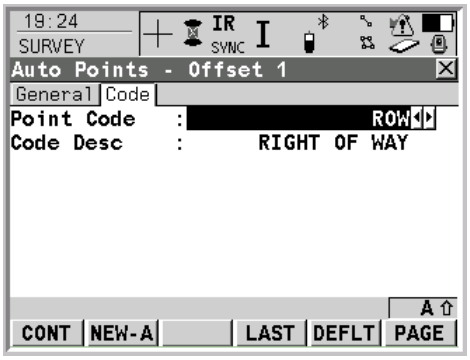
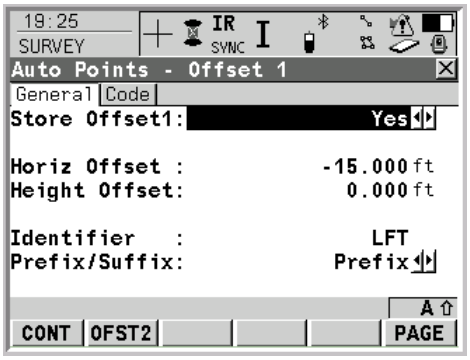
TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
5	In the Code page of the SURVEY Auto Points – Offset 1 screen: The settings on this page are identical to those of thematical coding with/without codelist. Up to three attribute values can be stored. • Set the **Point Code** field to **ROW**. • Tap on the **General** tab. This returns you to the General page of the SURVEY Auto Points – Offset 1 screen.	
6	In the General page of the SURVEY Auto Points – Offset 1 screen: • Press the **F2 (OFST2)** button. This takes you to the General page of the SURVEY Auto Points – Offset 2 screen.	

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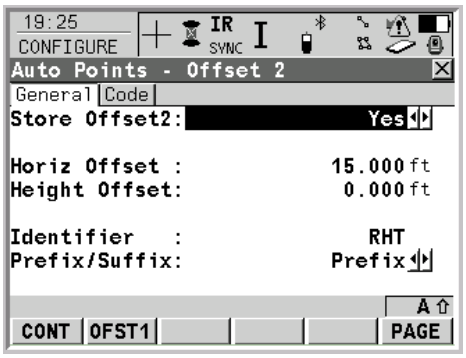
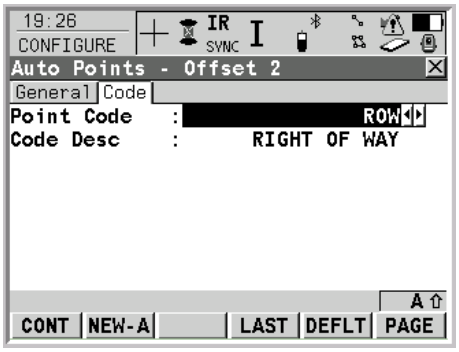
TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
7	In the General page of the SURVEY Auto Points – Offset 2 screen: • Set the **Store Offset2** field to **Yes**. • Set the **Horiz Offset** field to 1**5.0ft**. • Set the **Height Offset** field to **0.0ft**. • Set the **Identifier** field to **RHT**. • Set the **Prefix/Suffix** field to **Prefix**. • Tap on the **Code** tab. This takes you to the Code page of the SURVEY Auto Points – Offset 2 screen.	
8	In the Code page of the SURVEY Auto Points – Offset 2 screen: • Set the **Point Code** field to **ROW**. • Press the **F1 (CONT)** button. This returns you to the Auto page SURVEY Survey screen.	

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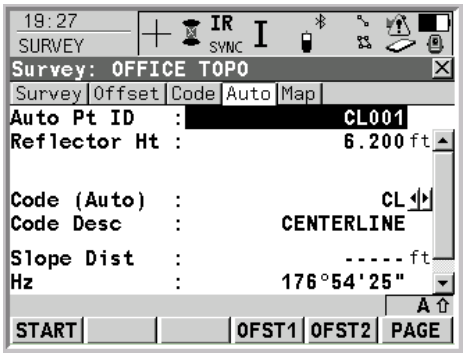
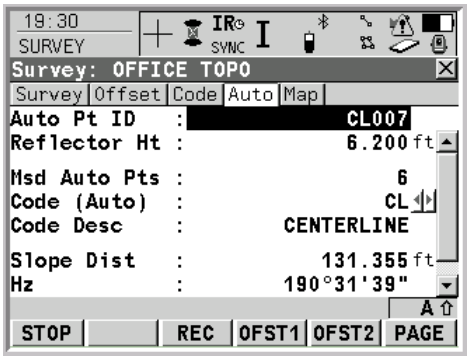
TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
9	In the Auto page of the SURVEY Survey screen: We are now ready to begin measuring the auto points and offsets. • Move with the reflector into position to start recording data. • Press the **F1 (START)** button to begin. This starts the logging of auto points and associated offset points. Remember that since we are measuring auto points based on time, you must keep moving or many points will be logged on top of each other.	
10	Continuing in the Auto page of the SURVEY Survey screen: Notice the **Msd Auto Pts** field increases in value as each point is measured and recorded. Once you have finished measuring you must stop the logging of auto points. • Press the **F1 (STOP)** button to stop logging. • Tap on the **Map** tab. This takes you to the Map page of the SURVEY Survey screen.	

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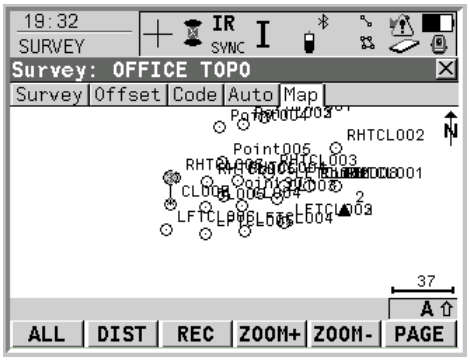
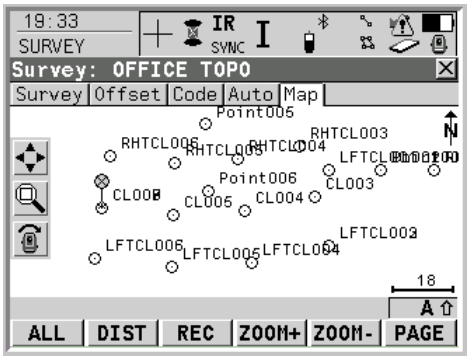
TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
11	In the Map page of the SURVEY Survey screen: We see the grouping of points at the bottom of the screen. We will use the zoom tool to better see the points. For more information on using MapView, please see chapter *1,* section *1.9 Mapview*. After zooming in closer we can now see the auto point and the two offset points associated with the auto point. It may appear as if the left and right offset points are backwards but the rod person was walking southwards away from the instrument. Therefore, using offset points with auto points, it is possible to measure many points without actually measuring each point individually. Since we have finished measuring with auto points, we will turn off auto points. • Tap on the **Survey** tab. This takes you to the Survey page of the SURVEY Survey screen.	 

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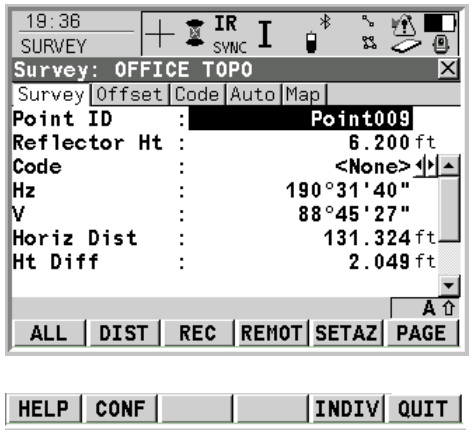
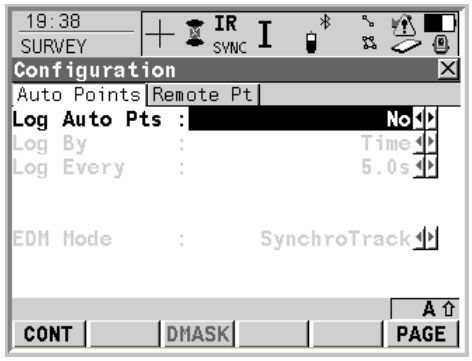
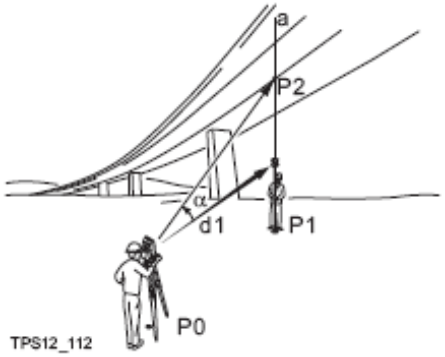
TPS1200 Quick Guide
7.4 Surveying Auto Points

Step	Action	Display
12	In the Survey page of the SURVEY Survey screen: • Press the **SHIFT** button and then the **F2 (CONF)** button. This takes you to the Auto Points page of the SURVEY Configuration screen.	
13	In the Auto Points page of the SURVEY Configuration screen: • Tap on the **Log Auto Pts** field and select **No**. • Press the **F1 (CONT)** button. This returns you to the Survey page of the SURVEY Survey screen.	

TPS1200 Quick Guide
7.5 Remote Point

Remote Point

Remote point is used to determine the 3D coordinates of inaccessible points. The horizontal distance to a base point directly underneath or above the remote point is measured. Then the instrument is aimed at the remote point. The coordinates of the remote point are calculated with the distance measured to the base point and the angles measured to the remote point.



P0	Instrument station
P1	Base point
P2	Remote point
d1	horizontal distance to the base point
á	vertical angle between base point and remote point
a	Vertical axis from P1 to P2

To ensure correct results, the remote point and the reflector must be lined up vertically. If it is not possible to maintain an exactly vertical line, an acceptable horizontal distance tolerance must be chosen. The horizontal distance to the remote point and the base should coincide.

Description

Remote point measurements are possible from the Survey application program when the **Use Remote Pt** field is set to **Yes** in the Remote Pt page of the SURVEY Configuration screen and a valid distance measurement is available.

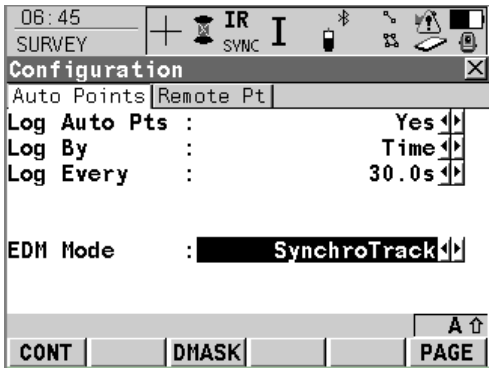
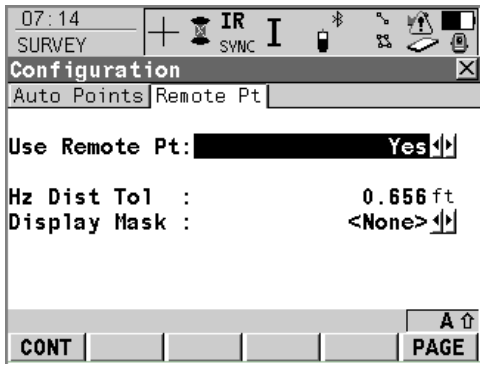
Unless the **Display Mask** field is set to **None** in the Remote Pt page of the SURVEY Configuration screen, this screen contains an additional, user-defined display mask.

Continued on next page

TPS1200 Quick Guide
7.5 Remote Point

Configuring Remote Point

This continues from step *1* of section 7.*4 Surveying Auto Points*.
Remember to tap on the **Remote Pt** tab to access this page.

Step	Action	Display
2	In the Remote Pt page of the SURVEY Configuration screen: **Use Remote Pt**: Use this field to activate or deactivate the remote point function. • Set the **Use Remote Pt** field to **Yes**. **Hz Dist Tol**: The horizontal distance to the remote point is equal to the horizontal distance of the base point. Use this field to enter the maximum tolerated length of the chord between the base point and the remote point. • Enter a value in the **Hz Dist Tol** field. In this example we are leaving the default **0.656ft**. **Display Mask**: Use this field to select a display mask. • Select a display mask for the **Display Mask** field. In this example we will not use a defined display mask therefore we are leaving this as **<None>**. • Press the **F1 (CONT)** button. This exits the SURVEY Configuration screen and returns you to the Survey page of the SURVEY Survey screen.	 

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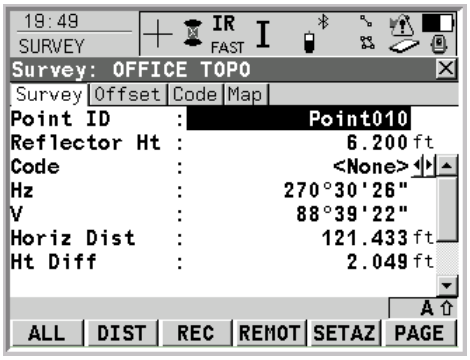
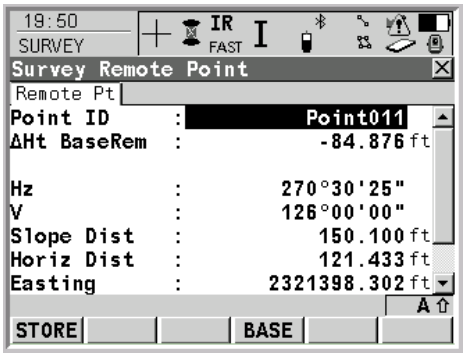
TPS1200 Quick Guide
7.5 Remote Point

Step	Action	Display
3	In the Survey page of the SURVEY Survey screen: In order to start using remote point, we must first measure a distance to the base point (see the diagram at the beginning of this section). • Aim the instrument at the base point and measure the point by pressing the **F2 (DIST)** button. We now see the **F4 (REMOT)** button is active. • Press the **F4 (REMOT)** button. This stores the base point and takes you to the Remote Pt page of the SURVEY Survey Remote Point screen.	
4	In the Remote Pt page of the SURVEY Survey Remote Point screen: **F1 (STORE)**: Use this button to store the remote point. Pressing this button keeps you in the Remote Pt page of the SURVEY Survey Remote Point screen. **F4 (BASE)**: Pressing this button returns you to the SUREVY Survey screen. The distance measurement is cleared. This step continues on the following page.	

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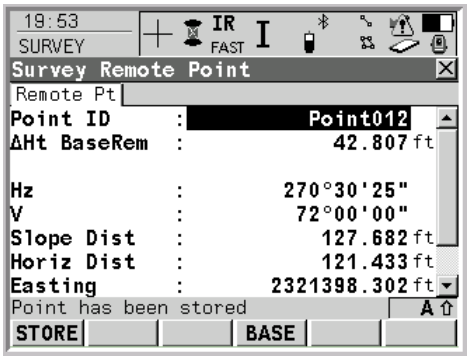
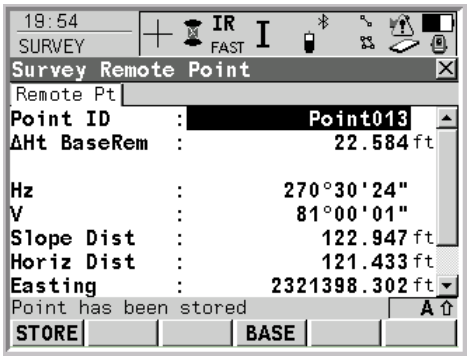
TPS1200 Quick Guide
7.5 Remote Point

Step	Action	Display
4	This step continues from the previous page: **Point ID**: This field displays the point ID for the remote point. The point ID in the Remote Pt of the SURVEY Survey Remote Point screen is always identical to the point ID in the SURVEY Survey screen. **ΔHt BasRem**: This field displays the difference between the base point and the remote point. **Hz** or **V**: These fields display the current horizontal and vertical angles. **Slope Dist**: This field displays the current slope distance to the remote point calculated from the horizontal distance to the base point and the current vertical angle. **Horiz Dist**: This field displays the horizontal distance measured to the base point. **Northing**, **Easting**, and **Height:** These fields display the calculated northing, easting and height coordinate of the remote point. • Aim the telescope to the target point above the base point and press the **F1 (STORE)** button. This stores the remote point. • Press the **F4 (BASE)** button. This returns you to the Survey page of the SURVEY Survey screen.	 

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TPS1200 Quick Guide
7.5 Remote Point

Step	Action	Display
5	In the Survey page of the SURVEY Survey screen: You are now ready to carry on surveying.