

Using 2-Dimensional PRISM 3D 5.0 Tools

PRISM 3D 5.0 provides a robust set of tools for 2-dimensional measurement and individual laser scan data viewing. The following sections highlight PRISM 3D 5.0's 2D tool set.

Point Selection Tool

The point selection tool provides the exact world coordinates of any point in an individual laser scan. To use this tool, select the point selection tool button in the tool bar. Next, press and hold the Control (CTRL) key and click on the desired point in the individual laser scan. The output window will show the exact world coordinates of the clicked point.

Note: To ensure the highest accuracy, the point selection tool can only be used on points that have enough high-quality measurements to be validated. Not all visible points are validated due to small or low quality measurements. These points are filtered and cannot be used for measurements. If a filtered point is clicked, the pointer will change to a crossed-out circle (⊗).



Figure 1: Point Selection Tool Button in the Tool Bar

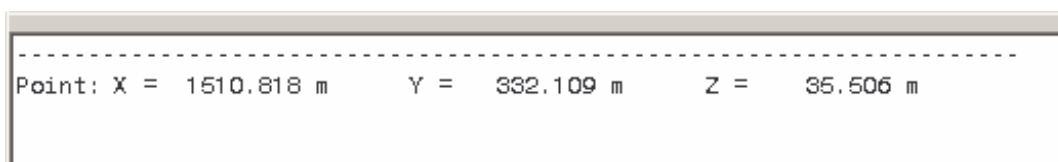


Figure 2: Point Measurement Tool Output

Point-to-Point Measurement Tool

The point-to-point measurement tool works similarly to the point selection tool. First, select the point selection tool button in the tool bar. Next, press and hold the Control (CTRL) key and click on the two desired points in the individual laser scan in any order. The output window will show the exact world coordinates of the two points and the difference between them.

Note: To ensure the highest accuracy, the point selection tool can only be used on points that have enough high-quality measurements to be validated. Not all visible points are validated due to small or low quality measurements. These points are filtered and cannot be used for measurements. If a filtered point is clicked, the pointer will change to a crossed-out circle (⊗).



Figure 3: Point-to-Point Measurement Tool Button in the Tool Bar

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First: X = 1509.228 m   Y = 335.854 m   Z = 36.174 m  
Second: X = 1512.624 m   Y = 337.301 m   Z = 35.983 m  
Diff: X = -3.397 m   Y = -1.447 m   Z = 0.191 m   Distance: 3.697 m
```

Figure 4: Point-to-Point Measurement Tool Output

Pipe Measurement Tool

Pipe diameter and centerline measurement information may be extracted using the pipe measurement tool. To do so, please follow the below procedure.

Note: To ensure the highest accuracy, the point selection tool can only be used on points that have enough high-quality measurements to be validated. Not all visible points are validated due to small or low quality measurements. These points are filtered and cannot be used for measurements. If a filtered point is clicked, the pointer will change to a crossed-out circle (⊗).

Note: The pipe measurement tool should only be used on individual lines.

1. Select the pipe measurement tool button in the tool bar



Figure 5: Pipe Measurement Tool Button in the Tool Bar

2. Select a point to estimate the direction of the pipe's axis by pressing and holding the Control (CTRL) key and clicking a point near the center of the desired pipe in the individual laser scan. A red dot will be shown to indicate the point selected.



Figure 6: Red Dot Indicating Selected Pipe

3. Draw a line to initially estimate the pipe diameter by pressing and holding the Control (CTRL) key and clicking a point near one edge of the pipe and then pressing and holding the Control (CTRL) key and clicking a point near the opposite edge of the pipe. A green line will be shown between the two points selected.

Note: This line should be a distance from the red dot, roughly perpendicular to the edges of the pipe and should not cross outside the pipe.

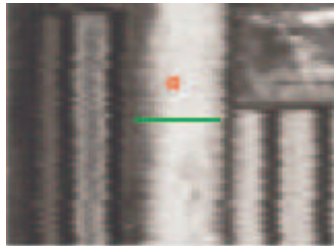


Figure 7: Green Line for Initial Pipe Diameter Estimate

4. Select an area of the pipe that will be used to calculate its diameter and centerline. Press and hold the Control (CTRL) key and click points near the edges of the pipe. To complete the area selection, hold down the Shift key and click. A blue box will be shown indicating the area selected. More than one pipe area can be selected, if so desired.

Note: For greatest accuracy, it is recommended that the edges of the pipe not be included in the box and that a rectangular area be used. While selecting a greater area will provide more information for the calculation, it will also take more time for the calculation to complete.

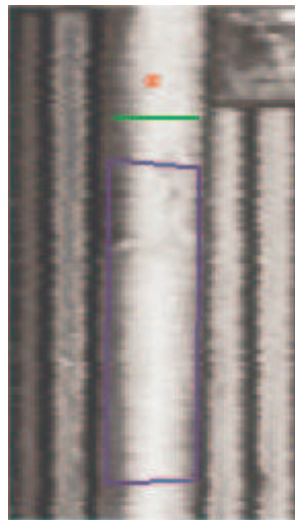


Figure 8: Blue Box for Pipe Area Selection

5. Once all selections are made, press the Enter or Return key to begin calculating the pipe measurements. Once the processing is complete, pipe measurement information, such as the pipe diameter, slope, and azimuth angle, will be displayed in the output window.

Note: The actual pipe diameter is reported, not the nominal diameter. To report the nominal diameter, hold the Control (CTRL) key when pressing the Enter or Return key. The diameter will be calculated as normal and then fit the result to the closest nominal pipe size.

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Center:      (X = 1509.195 m   Y = 335.896 m   Z = 35.581 m) ± 0.003 m  
Diameter:    0.101 m ± 0.003 m  
Slope: 88.96°  
  
Pipe Side East = 1509.245 m   Pipe Side West = 1509.145 m  
Pipe Side North = 335.946 m   Pipe Side South = 335.846 m
```

Figure 9: Pipe Measurement Estimates in the Output Window

Confidence Values

The center value and the diameter measurement estimated by the pipe measurement tool include a confidence value, represented as \pm measurement. This indicates the certainty of the output. A lower the confidence value indicates higher quality estimated results.

Error Messages

Occasionally the pipe measurement tool will fail to converge on an estimate and an error message similar to the below error message will be displayed. This error can occur for a variety of reasons, such as an inaccurate pipe diameter estimate (too small or outside of the actual pipe diameter), too small a pipe area being selected, a non-linear section of pipe being used, etc. If this error message is received, please use the pipe measurement tool again while avoiding the listed potential issues. If you are unable to receive an answer, please contact Quantapoint customer support.

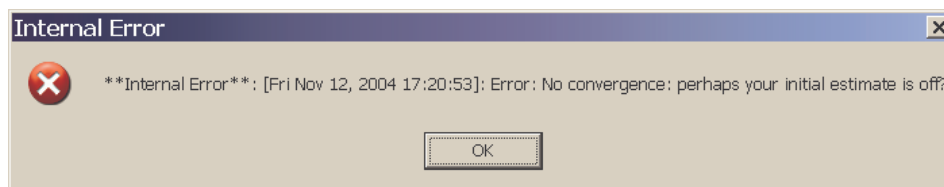


Figure 10: Pipe Measurement Tool Error Message

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