



# LineType

## LineScale™ Plug-In for Adobe Acrobat

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Congratulations on your purchase of the LineScale™ plug-in for Adobe Acrobat. This plug-in provides sophisticated distance and area measurement capabilities to users of Portable Document Format (PDF) files.

Powerful features include:

- Easy to use, intuitive interface
- Precision “snapping” to points in vector graphic drawings
- Segment length, total length, and area calculations
- User-definable scale factors
- Metric / English unit conversions
- Continuous display in toolbar window
- Fractional inch display
- Orthogonal cursor constraints
- Works with Adobe Acrobat and Microsoft Internet Explorer

Version 1.80

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### System requirements

- Microsoft Windows XP
- Adobe Acrobat version 7 or 8 (Standard or Professional)
- Microsoft Internet Explorer (required for measuring PDF drawings on the web)

### Installation setup

The LineScale plug-in will install automatically for Acrobat. Double-click on the file named **LINESCALE\_V180.EXE** to begin installation.

### Evaluation mode

The LineScale plug-in is initially installed in evaluation mode. In this mode all functions of the plug-in are available, but you will be able to use the plug-in for only three (3) days. After the time limit has expired the plug-in will be inoperative until it is licensed.

While in evaluation mode, a dialog box will be displayed whenever Acrobat is started up. You can work in evaluation mode by clicking **OK**. By clicking on the **Buy Now!** Button, you will be transferred to the LineType Software, Inc. website to purchase a license key. After your credit card has been processed, a license key will be emailed to you (usually within one minute).

We recommend that you save the setup file and your license key in case LineScale ever needs to be installed on your system again.

### License key

License keys for the LineScale plug-in are created for a specific *name* and *hardware fingerprint*. The name is the person to whom the key is sold. The hardware fingerprint is a unique number that identifies the computer on which the key can be installed.

Be sure that the computer on which you plan to use the LineScale plug-in is the same computer on which you have installed the evaluation copy, and the one you use to purchase the key. A key for one computer cannot be used on a different computer, because they will have different hardware fingerprints.

When purchasing a key from the LineType Software, Inc. website, you will be required to enter the hardware fingerprint from your system. If you enter the website by clicking on the **Buy Now!** button, the hardware fingerprint will automatically be entered in the appropriate field. If the website is opened by some other means, then you will need to enter the hardware fingerprint manually (or by using copy and paste).

See the box to the right for helpful information about entering the key code.

To enter the key code in the license key dialog box:

- Select the key code in the email that you received when it was purchased.
- Choose **Copy** from the right-click menu
- In the License Key dialog box, click the mouse inside the key code window and choose **Paste** from the right-click menu.

### Uninstalling LineScale

Because the LineScale plug-in may be installed for more than one Adobe product (it may be installed for different versions of Acrobat on the same computer, for instance) you must manually remove the plug-in from the plug-ins folder for each Adobe product.


- Open the plug\_ins folder for the Adobe product. For Acrobat 8, for instance, this would be:

**C:\Program Files\Adobe\Acrobat 8.0\Acrobat\plug\_ins**

- Delete the **LineScale.API** file.
- Repeat for any other Adobe products in which the plug-in was installed.

If at any time you wish to re-install the plug-in, just follow the instructions for installation. Your license key is not uninstalled when you uninstall the plug-in, so the license key will still be there when you re-install the plug-in.

## LineScale tool icon

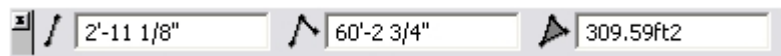
The LineScale tool is activated by clicking on its tool icon: 

The tool icon is located in the toolbar. When the tool icon is selected, the LineScale window appears and the plug-in is ready for use.




- Pick a point anywhere on the document. This is the start point.
- As the cursor is moved around the screen, the distance from the start point to the point under the cursor is displayed in the LineScale window (see below). A temporary red line is drawn to show the relationship between the points.
- As more points are selected, the Segment Length from the last point to the current cursor position is displayed along with the Total Path Length and the Enclosed Area of all the points. These measurements are all based on the scale entered in the [Settings](#) dialog box.
- Hit the **ESC** key to stop selecting points. The LineScale window displays measurements for the last point picked with the mouse.

## LineScale window

The LineScale window displays distance and area measurements:



The individual readouts in the window are labeled with icons:

- Segment Length: 
- Total Path Length: 
- Enclosed Area: 

If one or more of these readouts is not needed, the appearance of the window can be customized in the [Settings](#) dialog box.

If you need to copy values out of the LineScale window (for pasting into another application, for instance) select the value, then choose **Copy** from the right-click menu. *Note that Ctrl-C does not work in this window for copying to the clipboard.*

If the LineScale tool does not appear in the toolbar when Acrobat is started, try the following:

- Go to **Edit > Preferences > General**
- Click on the **Options** item in the list on the left side of the dialog box.
- Un-check the **Certified Plug-ins Only** box.
- Restart Acrobat

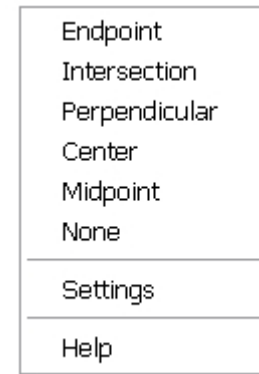
When the window is initialized it appears in the upper-right hand corner of the document.

The window may be moved with the mouse, and as it is the same height as the Acrobat toolbars, it may be relocated to a spot adjacent to one of the toolbars. This will keep it out of the main window so that it will not obscure any part of the document that you are viewing.

## Right-click menu

When the LineScale tool is in use, the right mouse button may be used to bring up a context menu to access special features. The menu contains the following selections:

- Temporary snap point override settings (see the description of snap points in the [Selecting points](#) section)
- A Settings item to open the Settings dialog box (see the description of the [Settings](#) dialog box later in this document).
- A Help item to open this help file.



## Shift and Caps Lock

If Shift is held down the cursor will be temporarily constrained to horizontal and vertical movement only. Turning on Caps Lock will have the same effect and may be helpful when horizontal and vertical constraints are needed for a longer time.

## Escape key

Pressing the **ESC** key at any time during a measuring operation will stop the current measurement and return the LineScale tool to its “beginning” state, ready to measure again.

The length and area display windows will indicate the last measurements made before the ESC key was pressed.

## Menu items

Several features of the LineScale plug-in may also be accessed through pull-down menus in the main menu bar.

- **Plug-Ins > LineScale** has the same effect as choosing the LineScale tool icon.
- **Help > About Third-Party Plug-Ins > LineScale** opens a dialog box listing version and license information

The Settings dialog box is accessed through the right-click context menu. The settings are explained in more detail in later sections of Help:

The screenshot shows the 'Settings' dialog box with the following sections and callouts:

- Scale:**
  - Drawing units:** 1 Inches. Callout: "The distance and units on the document as if it were printed full-size and measured with a ruler."
  - Real world (display) units:** 8 Feet. Callout: "The 'real world' units that correspond to the drawing units selected."
  - Pick distance:** A button to select two points on the drawing. Callout: "Click this button to select two points on the drawing to use as the drawing unit distance."
  - Display units:**  Display feet and inches,  Decimal inches,  Fractional inches. Callout: "When 'feet' is selected as the display unit, check this box to show both feet and inches. If not checked, distances will be displayed in decimal feet."
- Display Precision:**
  - Decimals:** .001. Callout: "Choose the degree of precision for display of decimal and fractional numbers."
  - Fractions:** 1/8. Callout: "When 'Display feet and inches' is selected, choose one of these options to indicate the format for inch display."
- Default Snaps:**  Endpoint,  Intersection,  Perpendicular,  Center,  Midpoint. Callout: "Select the default point snaps that you wish to use with vector graphic PDFs."
- Selection Box Size:** A slider and a preview box. Callout: "Use the slider to adjust the size of the selection box on the point snap cursor. The cursor will snap to points that fall within the box. A smaller box makes it easier to differentiate points that are close together."
- Displays:**  Segment length,  Total length,  Area,  Redraw screen when scrolling. Callout: "Check this box if stray red lines show up on your screen when measuring. Otherwise leave it unchecked." and "Select the information to be included in the display window. Eliminating unneeded information will make the display smaller."
- Buttons:** OK, Apply, Cancel. Callout: "Click OK to save the settings and exit. Click Apply to save settings and remain in the dialog box."

### Scales

In order to obtain meaningful data from the LineScale plug-in, it is necessary to choose a correct scale for the measurements. The scale consists of two parts: Drawing Units and Display Units.

The Drawing Units represent an actual distance on the document based on the page size and other information stored in the PDF file. The Display Units are the “real world” equivalent of this distance.

Most familiar scales are expressed in these terms already. The following are all examples of valid scales, with the drawing units on the left and the display units on the right:

1/8 inch = 1 foot

1 inch = 8 feet

1 1/2 inches = 1 foot

2 inches = 10 miles

1 cm = 10 km

1 mm = 0.314961 feet

1 point = 1 point

Note that it is possible to express the same scale in different terms. The first two items on this list (1/8" = 1' and 1" = 8') represent the same scale.

Sometimes the scale of a drawing will be obvious – it may be written somewhere on the drawing, or if you created the PDF yourself you may know what the scale is.

Other times things might not be so clear. There may be no scale printed, or the printed scale may be incorrect (don't assume that just because the drawing says 1/8" = 1' that this is right – it could have been plotted incorrectly or changed by someone after being printed).

In either case, the scale settings for the LineType plug-in include features to allow you to set a useable scale for almost any drawing.

As you use the LineScale plug-in, bear in mind a few common-sense concerns about taking direct measurements from PDF files:

- The measurement data you obtain from the LineScale plug-in is only as good as the precision of the PDF document itself.
- If possible, verify that your scale settings are correct by checking a known quantity or a dimension string that is written into the document.
- Check with the person who generated the document to determine if direct measurements are reliable, and what precision can be expected from the PDF document.
- Scanned documents are inherently less accurate than vector graphics. Distortions may be introduced during scanning and this may affect measurements from one part of the drawing to another.

### Set the Drawing Units first

First, choose the units of measure (feet, inches, cm, etc.) that apply to the drawing. Then enter the number of these units in the box to the left of the units. Numbers may be entered with decimals or fractions.

**Pick Distance** may be used when the scale of the drawing is not known, or when a graphic scale is included on the drawing. After clicking on the **Pick Distance** button, select two points in the drawing that are a known distance apart. These might be two points on a graphic scale or two endpoints of a dimension string – anything that has a reliable measurement associated with it. Setting some point snaps before picking the distance will help you make an accurate selection.

### Then set the Display Units

Again, choose the units of measure first (feet, inches, cm, etc.) and then enter the number of these units in the box to the left of the units. Numbers may be entered with decimals or fractions.

### Making unit conversions

The LineScale plug-in can also perform unit conversions. For instance, a drawing plotted to a metric scale such as 1 cm = 1 m can be converted so that distances are displayed in feet and inches when measurements are made.

- First enter the Drawing Units and Display Units for the drawing as described above. For our Metric to English example, the Drawing Units would be set to 1 cm and the Display Units to 1 m.
- Now click on the **Apply** button. This is important so that the units will be saved and correctly converted.
- After saving these units, select a different unit of measure in the Display Units window. For our example, we would select Feet from the drop-down list. The number in the Display Units box will automatically change. Click the **OK** button and proceed with measuring.

When picking a distance in a raster image where point snaps are not available, try to select as long a distance as possible, and zoom in on the points to get as good a measurement as you can. This will reduce the error.

### Snap points

One of the most powerful features of the LineScale plug-in is its ability to detect and “snap” to the underlying geometry of a vector-based PDF file. This feature allows precision measurements to be taken from CAD drawings, maps, and other documents that use vector graphics.

When snaps are turned on, the cursor will be displayed as a crosshair with a box in the center (called the *selection box*). When the cursor is moved over a vector graphic image and a snap point falls within the selection box boundary, the cursor “jumps” to center itself on the snap point and it changes color to indicate that a snap point has been found.

The available snap point settings and their associated cursor colors are:



#### Endpoint

The endpoint of a line or line segment (each corner of a box is an endpoint, for instance, as is the end of a simple line)



#### Intersection

The point at which two lines cross or meet. Each corner of a box is an intersection, as is the center of an X shape.



#### Perpendicular

A point on a line that defines a perpendicular between the line and the last point picked. Hard to describe but easy to use once you try it!



#### Center

The center of a circle or circular arc.



#### Midpoint

The midpoint of a line or line segment.



#### None

Point snapping is disabled.

Note that some CAD software and other graphics programs plot circles as many-sided polygons. The **Center** snap setting will not be able to locate the center of these polygons. Only circles drawn as true arcs will be detected properly by this setting.

### Setting default snap points

The [Settings](#) dialog box contains a check box for each type of snap. Selecting snaps here will define them as “default” snaps to be used in all measurements until they are changed again in the Settings dialog.

If no boxes are checked then snapping will be disabled and the cursor will be displayed as a crosshair with no selection box.

### Override snaps

The right-click menu provides a way to temporarily “override” the default snap point settings until the next point is picked. For instance, if **Endpoint** and **Intersection** snaps are set as defaults and the right-click menu is used to choose **Midpoint**, then only Midpoint snap will be enabled until the mouse is clicked on a point. Then the default snaps will go back into effect.

This feature is useful in complex drawings where there may be many potential snap points in one area and multiple default snaps may be in effect. The override snap allows you to temporarily disable the unwanted snaps and focus only on the one that is needed.

Selecting **None** from the override snap menu will temporarily turn off all snaps and will allow you to select a point very close to a snap point without having the cursor jump over to the snap point.

Override snaps can be used any time LineScale is active – when beginning a new measurement, or in the middle of a multi-segment measuring operation.

### Availability of snap points

Snap points can only be detected in vector graphics. Vector graphic drawings are usually made by creating a PDF directly from CAD or illustration software using a PDF printer driver.

Text or scanned images (including scans of floor plans or other line drawings) cannot be analyzed by LineScale to locate snap points. All the other features of LineScale will still be usable, but the accuracy of measurements will depend on how precisely you can position the cursor on the drawing. Try zooming in to select points as accurately as possible, and turn off point snapping to get a simple crosshair cursor, which should help with alignment.

The right-click override menu may be used in the middle of a LineScale measuring operation.

For instance, you can select one point using the default snap settings, then right-click and choose an override snap setting for the next point to be selected.

### The selection box

The [Settings](#) dialog box includes a slider control to vary the size of the selection box on the snap cursor. As the cursor is moved around the screen, any snap points that fall within the selection box will cause the cursor to jump to the point and change color.

A larger box will make it easier to snap to points (the cursor will not have to be moved as precisely in order to find a snap point) but it may also cause difficulty on complex drawings where many lines are close together. Sometimes more than one potential snap point may end up inside the selection box, in which case only the first point found by LineScale will be used. Making the selection box smaller will alleviate this problem.

Experiment with this setting to find the best balance between ease of selection and precision for the type of drawings you are measuring.

### Optimizing performance with point snaps

When point snaps are used in large drawings with many lines, there may be a slight delay as LineScale locates snap points. This delay is a result of the extra processing that is required for calculation of point locations.

To get the best performance when using point snaps, try the following:

- Limit the number of default snaps to only those that are really needed. Usually endpoint snap is the most often used – try setting it as the only default, and when you need another snap, use the right-click override menu.
- Zoom in to the section of the drawing where you are making measurements. This will reduce the number of lines that LineScale has to evaluate in order to find snap points.

On some older computer systems with slower processors and limited memory, it may be best to turn off all default snaps and use override snaps (from the right-click menu) only they are really needed.

Most CAD systems plot lines to a PDF file as a true line with a specific thickness. This is good, because it means that snaps will work correctly and unambiguously.

In some instances, though, a line may be drawn as a thin, filled rectangle. This commonly occurs with “polylines” plotted from AutoCAD. You can’t see the difference on the screen, but when you try to snap to the endpoint of this type of line, you will really be snapping to one of the corners of a rectangle.

This may produce a slight inaccuracy when repeated measurements are made, because it will be difficult to know which corner of the rectangle is being chosen as the snap point.

To be sure, zoom in close and snap to the endpoint of the line. If the snap cursor is in the middle of the endpoint, then it is a true line. If the snap appears at the corner, then the line has been drawn as a rectangle.

You may change the view displayed in the document window in the middle of a measuring operation, without interrupting the measurement in progress.

This feature allows you to zoom in close to one area of the drawing, select a point, and then zoom or pan to another area for selection of another point.

### Changing views with the *Viewing* toolbar or the scrollbars

When a LineScale measurement is in progress, selecting any of the following view change tools will result in an immediate change in view, after which the measurement will resume automatically:

- Any of the tools in the Viewing toolbar:



- Any of the commands in the View menu
- Either of the scrollbars

### Changing views with zoom windows or the hand tool

A different procedure is needed for changing the view with any of the view tools in the Basic toolbar as shown below:



After the hand tool or either of the magnifier tools (a window zoom) is used, the LineScale tool will need to be re-selected. The measurement that was in progress before the view change was made will be resumed.

Remember, to cancel the current measurement in progress, hit the **ESC** key.

Some commonly-encountered problems, and solutions for dealing with them, are outlined below. For other problems, check the [Support](#) page.

Problem	Cause	Solution
The LineScale plug-in tool icon does not appear in the toolbar	There is an Acrobat setting to allow only plug-ins "certified" by Adobe to be loaded. LineScale is not certified and will be blocked if this option is set.	<ul style="list-style-type: none"><li>• Go to <b>Edit &gt; Preferences &gt; General</b></li><li>• Un-check the <b>Certified Plug-ins Only</b> box.</li><li>• Exit and restart Acrobat</li></ul>
	The toolbar containing the LineScale icon is not currently displayed. The LineScale tool is located in the <b>Basic Tools</b> toolbar, and if this is set to be hidden, then none of the tools associated with it will be shown.	<ul style="list-style-type: none"><li>• Position the mouse over any toolbar</li><li>• Right-click</li><li>• Choose <b>Basic Tools</b> from the menu</li></ul>
A dialog box appears saying that the plug-in is not compatible with my version of Acrobat	The LineScale plug-in works with version 7 or higher of Acrobat	Click <a href="#">here</a> to purchase Acrobat.
A dialog box appears saying that the evaluation period has expired.	If you have been using the plug-in in evaluation mode, this means that the trial license (which is limited to three days) has expired.	Purchase a license by clicking on the <b>Buy Now!</b> button in the dialog box.
	If you have already purchased and installed a license key, it may have become corrupted, especially if you have rebuilt or edited your system registry.	Click on the <b>Enter key</b> button in the dialog box, and re-enter the key that was sent to you via email when you purchased it.

Problem	Cause	Solution
When the license key is entered, an error box comes up saying "The name/key you entered does not appear to be valid. Please try again."	Some part of the key was entered incorrectly. The key has two parts – the name and the key code. Both parts must be entered exactly as they are shown in the email message that was sent containing the key.	<ul style="list-style-type: none"> <li>• Locate the email message containing the key</li> <li>• Select the name portion of the key</li> <li>• Choose Copy from the right-click menu</li> <li>• Click on the Name field in the Registration dialog box</li> <li>• Choose Paste from the right-click menu</li> <li>• Repeat above steps for the key code portion of the key</li> </ul>
	The key was generated incorrectly or corrupted while being sent.	Contact <a href="mailto:info@linetype.com">info@linetype.com</a> to obtain a new key.
Measurements are coming out very wrong	The scale is incorrect	Check the settings for <b>Drawing Units</b> and <b>Display Units</b> in the <a href="#">Settings</a> dialog box.
Measurements are slightly different than dimension strings on the drawing – and I am sure the scale is correct!	<p>This is probably due to differences in the way rounding is performed by LineScale and by the CAD application that generated the drawing (and the dimension strings).</p> <p>LineScale will <i>round up</i> any distances that fall in the middle of the display precision range. For instance, 1/16" will be rounded to 1/8" if display precision is set to 1/8".</p> <p>The CAD application that generated the dimensions may be rounding down, which would account for the slight discrepancy.</p>	<p>Increase display precision in the <a href="#">Settings</a> dialog box. This will give you a better idea of the "actual" unrounded distance.</p> <p>Contact the person who generated the CAD drawing to determine how rounding variables were set for dimension strings.</p>

Problem	Cause	Solution
The cursor will only move horizontally or vertically.	Ortho lock is turned on and needs to be turned off. Ortho lock is controlled by the <b>Shift</b> and <b>Caps Lock</b> keys.	Make sure that the <b>Caps Lock</b> key is not active. Usually a light on the keyboard will indicate if <b>Caps Lock</b> is on.
There are extra red lines drawn on the screen when the display is scrolled. And sometimes stray red lines are left on the screen when ESC is hit.	If the scrollbars are used during a measurement this will happen on some systems. The solution is to include some extra screen refreshes during scrolling – but this slows down performance. So only do this if it is really necessary.	Check the <b>Redraw screen when scrolling</b> box in the <a href="#">Settings</a> dialog box.
Lines on the screen look uneven and too heavy	This is not a problem with LineScale, but rather has to do with how Acrobat displays vector graphics. Turning on vector graphic smoothing will improve appearance but may affect display performance.	<ul style="list-style-type: none"> <li>• Go to <b>Edit &gt; Preferences &gt; General</b></li> <li>• Click on the <b>Display</b> item in the list on the left side of the dialog box.</li> <li>• Check the <b>Smooth Line Art</b> box</li> <li>• Click <b>OK</b> to exit the dialog box</li> </ul>

Free email support is available to all users, and we welcome reports of problems or suggestions for improvement. Support email address is [info@linetype.com](mailto:info@linetype.com) or visit the LineType Software, Inc. website at [www.linetype.com](http://www.linetype.com)

For more information about the PDF format and about generating PDF files from CAD software or other graphics applications, visit [www.linetype.com/advice](http://www.linetype.com/advice)

Thank you for using the LineScale plug-in!