USER MANUAL

DrawingCenter™

VERSION 6

English

trix Drawing Center™ version 6

trix Systems™

Engineering Drawing
Viewing Software

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Legal Notice and Disclaimer

Other Trix Software

If you need the ability to edit raster images and/or convert them from raster files to CAD vectors consider our TracTrix software. To batch convert CAD files to raster files or PDF we offer Trix RasterServer. To store and control your files for easy retrieval we offer Trix Organizer. Details of these and other Trix software applications can found at http://www.trixsystems.com.

Table of Contents

SECTION 1: INTRODUCTION

About the manual

The manual has three sections:

- Section 1, **Introduction**: Describes the software and licensing.

- Section 2, **Functions**: A table of reference for the controls provided in each tab; and

- Section 3, **How-to Section:** Describes how to use the functions to perform commonly needed tasks.

Items in Sections 2 and 3 are cross-referenced by page numbers. The Appendices reference supported file-types and measurement conversion tables.

What does Trix *DrawingCenter* do?

The basic function of a viewer is to open files and display them. *Trix DrawingCenter* can do much more than this. It is designed so you can access and use the information contained in raster and/or vector engineering drawings in your everyday work.

With *DrawingCenter* you can print, measure, scale, markup and compare files. At the same time it protects the original files from change. It is not an editing software. If you markup the drawing the markup information is saved in a separate file by the program (.trx). The original file is never changed.

The difference between raster and vector files

Trix DrawingCenter handles three different types of image files. It is important to understand the difference because each type contains different information.

The first type is the **raster image**, produced when you scan a document or when you take a 'screen shot' of a computer screen. It is usually a single layer of information stored in the computer file as rows of 'dots'.

The second type is the **vector image.** This can be a DWG, DXF or DWF file created in a CAD application such as AutoCAD, or an HPGL file (usually with the extension .plt) created by a plotter driver in a CAD application. All vector formats are mathematically based. Vector files can contain more information than raster files and are usually much smaller files – they aren't rows of dots. There may be multiple layers and views in a single vector file. Vector files may use font descriptions stored elsewhere on your computer as TrueType or AutoCAD SHX fonts. One vector file may 'call' other vector or raster files to display as part of the overall image. These are called external references or x-ref files.

The third type is the **Acrobat PDF image**. These can be either raster or vector or a hybrid mix of both.

The application enables you to simultaneously open raster, vector and PDF files. The tools available at any one time will differ according to the type of file that is open and active.

All of these formats are digital.

Installation and Licensing

Activate your license

Licensing is initiated with the serial number that you received and employed as instructed in your product delivery email. You must complete the activation process upon registering your license in the *Trix Systems License Manager*. If activation fails, you should receive an error message. <u>Failure to activate your license will result in the program running in demo mode.</u>

Installation instructions

Follow the instructions you received with your serial number. If you need help please contact our Support.

Moving the license to another computer

Use these instructions to deactivate the license on the original computer so it can be installed on another computer. Before you shut down your original computer you must do the following using the *Trix Systems License Manager*:

1) Press [Deactivate License...]. Complete the on-screen deactivation. Call us if it doesn't go through. You will receive an email notifying you that your license has been successfully deactivated.

2) If you do not have a record of your serial number, press [Settings...] in the Trix Systems license manager dialog box.. Copy the text in the bottom box and email it to yourself---it contains your serial number, which you'll need if you ever have to reinstall the program.

3) On the new computer download the latest installers from http://www.trixsystems.com/sw/TrixDrawingCenterInstallers.zip.

4) Use the instructions above as though you were making the installation for the first time.

## Choose your preferred interface

By default Trix DrawingCenter 6 uses the newer Windows Vista 'ribbon' menus.
If you prefer to use the classic XP menu appearance hold down Shift and Control keys as you start up Trix DrawingCenter 6. Thereafter the classic menus will be displayed. To change back again repeat holding down the Shift and Control keys at start up. <u>Note however that this manual describes the Ribbon interface.</u>

Register your file-types

The very first time you launch *DrawingCenter* the Associations dialogue box appears allowing you to register the file extensions that you wish to open with our program. The list on the left shows file types already associated with *DrawingCenter*. The drop-down menu shows standard file extensions to add. Alternately, you can enter your own extension and description*. This dialogue is also accessible in the <u>Settings</u> tab from File types. Alternately, here you can un-register file types, or disassociate them, from *DrawingCenter*.
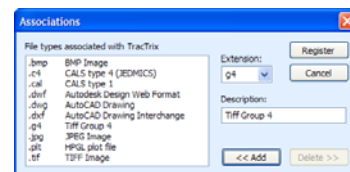
Changing file associations can also be done outside of *DrawingCenter* in the Windows Folder Options control panel.

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* Adding a file extension here doesn't mean *DrawingCenter* can open it. See Appendix 1 for supported file formats.

Establish application preferences

The settings for the application are accessible in the <u>Settings</u> tab from Program Settings.

Default Unit

Sets the default units for measurements. However you can still switch between metric and imperial units in the measurement results window.

When opening a file

Show markup

When checked, the application displays associated markup upon opening in *DrawingCenter*. This is the equivalent of toggling the Show markup icon. (Note: The toggle markup tool remains active regardless of this setting.)

Ask for missing X-ref in DWG/DXF

Check this box to be warned if any x-ref files cannot be found. See page 27 for details about how *DrawingCenter* looks for x-refs.
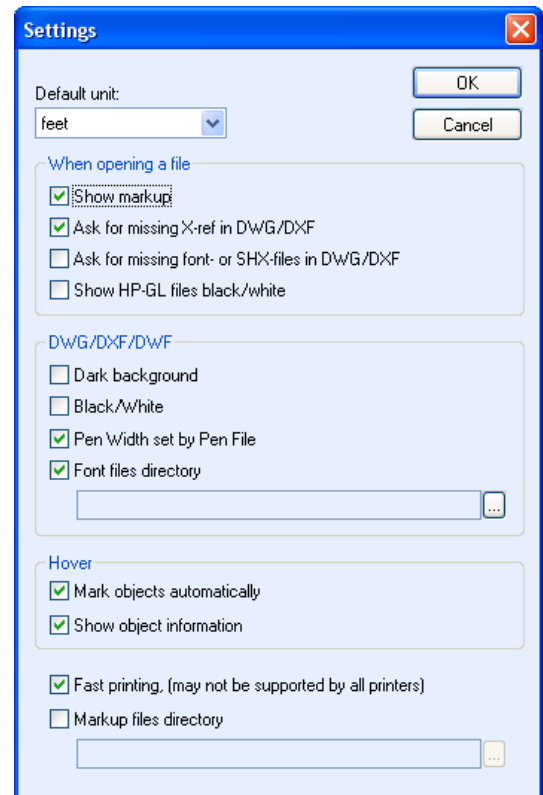
Ask for missing font- or SHX-files in DWG/DXF

DrawingCenter looks for the TrueType and SHX fonts called by vector files in order to display the files properly. Check this box if you wish to be prompted when a font cannot be located. Or specify a font file directory in the field described below. For more detail about how *DrawingCenter* looks for and replaces fonts, see page 27.

Show HP-GL files black/white

When checked, the application displays color HP-GL and PLT files as black and white.

DWG/DXF/DWF

Dark background

When checked, *DrawingCenter* defaults to displaying vector files against a black background.

Black/White

Check this to display all lines as black-on-white (or white-on-black if combined with Dark Background checkbox).

Pen widths set by Pen File

Checking this box enables you to print different colored vectors as various widths, defined by the active pen file. (Otherwise all lines will displayed with a uniform width, regardless of their color.) See page 33 for more information about how to use Pen Files.

Font files directory

SHX fonts are not stored in the Windows operating system. If you wish to have them display correctly in *DrawingCenter* you must point to the directory that stores them. To do this, check the box, then click on the **...** button to browse to the directory where the SHX fonts are stored. See page 27 for details.

Hover

Mark objects automatically / Show object information

With the these options enabled, markup entities are automatically magnified on rollover, and object information of markup entities is automatically displayed in the form of a bubble upon rollover.

Fast Printing

Leave this checked, unless you experience problems printing. Turning off Fast Printing may resolve printing issues.

Markup directory

Use this field to provide a path to a directory where you wish for all markup to be saved. This setting will apply only to you. For techniques on sharing markup among *DrawingCenter* users, see page 22.

Checking for software updates

You can check for *DrawingCenter* updates using Search for updates.. located in the Help menu. This will prompt your internet browser to check the updates page at the *Trix Systems* web site.

SECTION 2: FUNCTIONS—TABLE OF REFERENCE

The Quick Access Toolbar

This toolbar is always available and visible in the upper left corner. Customize it to show the tools you use most often (such as the Pan tool 👆 and Text tool 🅰🅱). The tools shown by default are:

💾 Save markup (Ctrl-S)	Markup files have the file extension .trx---native to all Trix applications.
↩ Undo	Undo the previous action (may be repeated for multiple undos).
🔍 Zoom in	Left mouse click and drag to select the required area to view. Mouse wheels can also be used for zooming in and out.
⤢ Zoom all	Adjusts zoom so that entire image fits in the window.
✨ Select (Alt+5)	Use to select regions of, or items in, a document for copying, printing, and manipulating. The Select Area tool cannot be used to cut or copy parts of raster files. Left-click and drag to select the required area. Use holding the Shift key to add to area in selection; with the Control key to subtract from it.
▶ Select markup	Click on markup to select for editing, moving or deletion.

Customize the Quick Access Toolbar for your needs

Use the down arrow ▾ and select [Show Below the Ribbon] if you prefer the bar to appear closer to your workspace. Use [Minimize the Ribbon] to toggle the Ribbon (or tabbed menus) on and off.

Choose [More Commands...] to view the selection of tools that can be added. For example, the Pan tool is used frequently and for many purposes. By default, this tool appears in the Start tab, but you would probably find that moving it to the Quick Access Toolbar would be most convenient. Options on the Settings tab setting tab (page 19) provide options for customizing the interface.

Tools in the 🔵 Trix Menu

📂 Open... Ctrl-O	Opens a file. See Appendix 1 for a complete list of supported file formats.
💾 Save Ctrl-S	Save markup to see again later. For more information on saving markup, see page 32.
💾 Save raster as...	Use this for saving a new raster file. The raster formats available are then listed in the *Save As Type* drop-down menu.
📄 Publish PDF	Make a PDF of the current document (option to save PDF or email it). See the section on creating high-quality PDF files on page 33.
🖨 Acquire	Scanning abilities for TWAIN interface scanners are built-into *DrawingCenter*. See page 23 for details.
🖨 Print Ctrl-P 🔍	Access Print menu-controls, including setup and preview.
📁 Close	Close the current document.
📋 Properties...	Displays dimensions and other details about the file (see page 28).

START

Edit Group
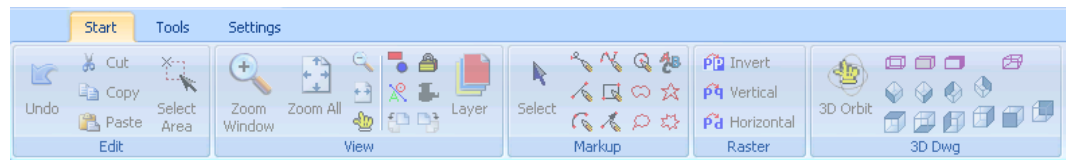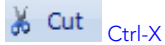
|	
Undo	Undo the previous action (may be repeated for multiple undo).
Cut Ctrl-X	For cutting markup from the markup layer and placing it in the clipboard.
Copy Ctrl-C	For copying selected markup to the clipboard.
Paste Ctrl-V	For pasting markup from the clipboard onto the markup layer.
Select Area Alt-5 Add area with SHIFT Deduct area with Ctrl	Use to select rectangular regions in a document for printing.

START

View Group
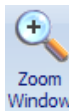
Zoom Window Zoom in (or use scroll wheel)	When you open a file, the zoom tool is automatically selected. Click and drag to select the required area to view. The region defined by dragging is indicated by a dashed rectangle.
Zoom All	Adjusts zoom so that entire image fits in the window.
Zoom out (or use scroll wheel)	Click to zoom out to previous magnification.
Adjust to width	Adjust the image width to the window's width.
Lock Zoom	All images will be displayed at the current level of zoom.
Pan	Hold down left mouse button to drag and move image inside window. Use this tool to view parts of the image hidden from view (under the edges of the window).
Filled objects	Toggle fill-displays in areas.
Markup	Toggles display of markup and symbols on or off.
Drawing	Toggles display of raster image on and off.
Rotate tools	Rotates raster document in 90° increments CW or CCW.
Layer	Accesses markup layers and DWG/DXF layers in DWG or DXF files. To learn how to use and control Layers, see page 27.

Learn markup techniques in the How-to markup section beginning on page 29. Topics addressed include using markup layers and tools, setting defaults, editing and sharing markups, and using pen widths. See also page 20.

Select		Click on this tools to select a vector symbol, object, image sheet or markup for editing.
	Vector drawing tools	Use these to draw vector markup. Markup never changes the content of the original file. This protects the source file. Instead markup is saved into a separate file. The application stores markup data in the application's storage file format. This has the extension TRX.
	Cloud markup	Use to draw markup clouds.
	Text	Use to create new text.

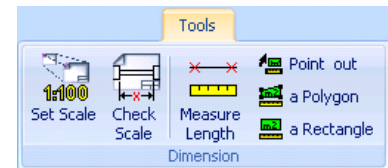|	
Invert Vertical Horizontal Raster	Invert the color values in the raster image (e.g. black becomes white). Rotate the raster image on either a vertical axis or on a horizontal axis.

This group is inactive for 2D files.

3D Orbit	3D Orbit rotates 3D files for viewing from all perspectives. Right-click to pan the 3D image. 3D Orbit must be selected to access the 3D tools below.

	Display a wire frame image without surfaces.
	Remove hidden lines.
	Shade surfaces fully.
	Show the model in perspective.
	Top, side or end view.

TOOLS

Dimensions Group

Detailed scaling and measuring techniques are described in the How-To section beginning on page 28.
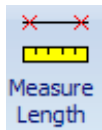
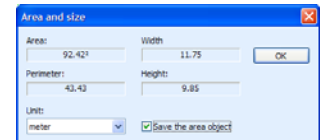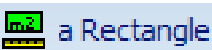|		
Set Scale		Use this to set the scale of the drawing if you know the scale.
Check Scale	(with optional Snap)	If you do not know the scale of a drawing, but there are known dimensions in the drawing, use this tool to define it. *DrawingCenter* will calculate the scale.
Measure Length	(with optional Snap)	Before taking any measurements the appropriate scale must be established. Once a scale has been set in a drawing you can take measurements by clicking successively on 2 points in the drawing, then right-click/Exit to see the length.
Point out — Add area with SHIFT, Deduct area with Ctrl		This tool automatically seeks out the boundaries of an area, such as a room, and measures area and perimeter. Click once and the tool seeks out rectangular boundaries. When the area you wish to measure has been found, right-click and 'Create an area object'. If the tool misinterprets the desired area try starting from another point. To retain the area as visible, hatched, markup, check the 'Save the area object' box.
a Polygon — Works well with Snap.		Use this tool to take measurements of a non-rectangular region. Click successively on boundary points, and then close the polygon by right-clicking/Close. Completed polygon shapes can be edited by selecting a node and dragging. To retain the area as visible, hatched, markup, check the 'Save the area object' box.
a Rectangle — Works well with Snap.		Use this tool to define and take measurements of a rectangular region. To retain the area as visible, hatched, markup, check the 'Save the area object' box.

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Utilities Group
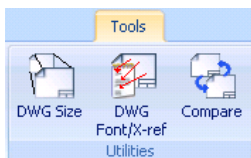
Resize DWG, DXF or DWF files for printing by selecting a pre-set document size (e.g. ANSI C), entering dimensions or changing the scale. **Note:** This will not change the size of the image on screen.
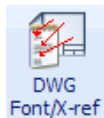
Displays names of fonts and x-refs called by DWG or DXF files, and names of font substitutions made if any fonts are unavailable. If an x-ref is missing the panel displays a message to this effect. Resize the panel to reveal long path names.

When two versions of the same drawing are open, raster and/or vector, use Compare to rapidly see the differences between the two drawing versions. Select the original version with the left radio button, and the revised version with the right radio button, and click on Compare. The application will display deletions in red and additions in blue.

If the drawings are different sizes, use the Manual Adjustment to align content before starting the comparator. Check the 'Fix origin' box if two DWG files are to be compared in Model Space.
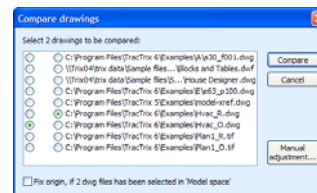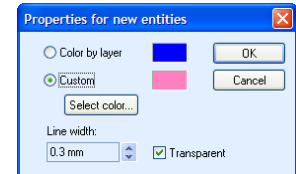
SETTINGS

Settings Group

Program Settings are applied to the entire program. See page 10 for more details.

Use Pen Settings to set specific line weights for corresponding colors in a vector file. Instructions for how to use Pen Settings are detailed on page 33.

Specify default attributes for new markup entities. You can specify the color of new markup two different ways: 1) according to the layer that the markup is placed on, or 2) choosing Custom to specify a color. You can also specify the line width and transparency / opacity properties of new markup.
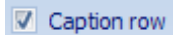
Used to manage file type associations (by file extension) with *DrawingCenter*.
See page 9 for details on registering and un-registering file extensions with *DrawingCenter*.

SETTINGS

Show/Hide Group
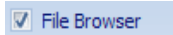
File Browser
With this option turned on, you can roll your mouse over the orange Explorer tab on the left to expose the Explorer File Browser. See Page 24 for details.

Caption row
When turned on, this displays an information caption above each document. This information is also displayed when rolling over the file name tab at the foot of the display window.

File type: PDF. Size: 8.265" x 11.680". File size: 10104386 bytes. File name: \\Trix04\trix data\Sample files\sample PDFs\02-628 schema.pdf.
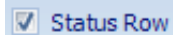
Status Row
Displayed at the foot of the window the Status Row provides access to valuable viewing and navigation tools, and key points of reference:
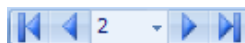
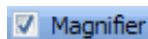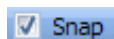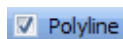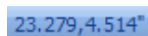|	
	Navigate pages or layouts in multi-page documents.
	Navigate between documents (if multiple documents are open).
Use with scroll wheel	In multi-page documents, this control toggles the activation of the scroll wheel between page navigation mode and zoom mode. In navigation mode, the scroll wheel tool can instead be used to pan.
Magnifier / Keyboard Toggle: Z	Enables the magnifier. The cursor will act as a hovering magnifying glass. For details on using the Magnifier and other viewing techniques, see page 24. The magnifier automatically disables after one click.
Snap / Keyboard Shortcut: S	Check Snap to have your markup and measuring tools snap (jump to) lines and nodes on the underlying image. See page 25.
Polyline / Keyboard Shortcut: P	Use Polylines to join vector-line endpoints to form a continuous polyline. A key icon appears, enabling the points to snap together.
23.279,4.514"	Displays the cursor coordinates. 0,0 is top left.
Main	Displays the name and color of the active markup layer.
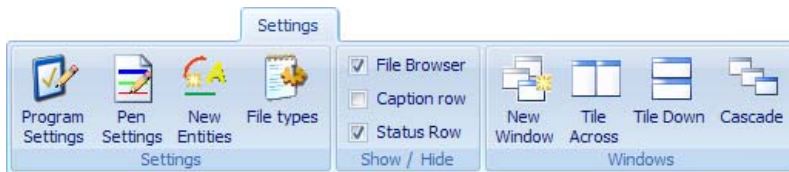
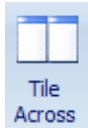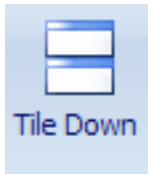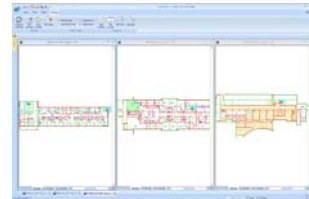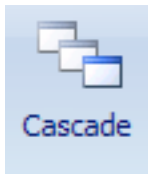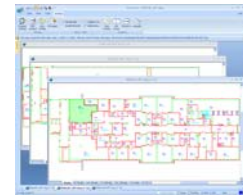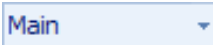|	
New Window	Opens a new window containing a copy of the current document. Use this to zoom in to details in different regions of a file and view them side by side.
Tile Across	Displays all open windows or files in vertical tiles.
Tile Down	Displays all open windows or files in horizontal tiles.
Cascade	Cascades tiles in window.

OBJECTS

Layer Group
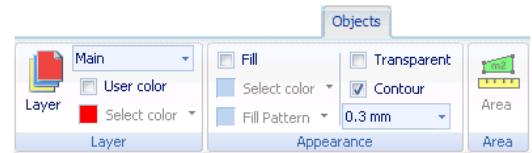
The Objects tab is available whenever a markup entity is selected.
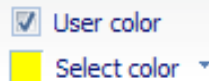
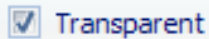|	
Layer	Opens the **Layer Control** tool window. See page 27.
Main ▾	Use this drop-down menu to assign the selected entity (or entities) to a specific markup layer. The name of the assigned layer is then displayed in the panel. See techniques for using markup layers and sharing markup on page 29.
☑ User color Select color ▾	Use to change the color of an entity from the default (which is set by the Layer properties) to a user-selected color.

OBJECTS

Appearance Group
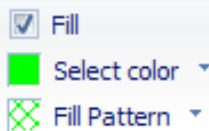
☑ Fill Select color ▾ Fill Pattern ▾	Use this box to select a fill color and pattern for entities with boundaries (i.e. rectangles, polygons). When the Fill box is checked, Select color and Fill Pattern become available.
☑ Transparent	Set transparency on markup entities.
☑ Contour 0.6 mm ▾	The solid edges of filled entities are displayed if the Contour box is checked. Use the sizing window below to set the width of the edge.

OBJECTS

Area Group

|	
Area SHIFT to select multiple entities	For use with multiple area-markup entities; use **Area** to sum and total the areas. See page 29 for detailed techniques on measuring and creating areas.

SECTION 3: THE 'HOW-TO' SECTION

General Viewing, Navigation, and Printing
Opening files

Roll-over the orange **Explorer** tab and press the Push Pin 📌 to dock (or again to undock) the window. Access networks and directories in the top frame and individual files in the bottom frame. Double-click on a directory to open/close.

To reposition the FileBrowser **Explorer**, right-click the lower panel for menu of options. Float the window off to make more workspace available. Use the file-type drop-down box to filter for the file type that you want.
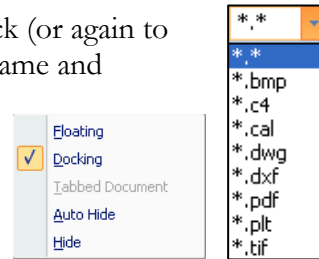
The **File Browser** enables you to 'slide show' files in the same directory.

Use the **Start** button ⏭ to start a slide show. Each image in the folder will successively display for 3 seconds; duration can be changed with the drop-down menu. Use the **Stop** button ⏸ to end the show. Reduce memory use by using **Close Previous** ❌; otherwise all files will simply stay open in the application.

Scanning to *DrawingCenter*

DrawingCenter enables you to scan directly into the program from a desktop scanner (with a TWAIN interface), and save the scan in a variety of raster formats, including TIFF, CALS, JEDMICS, C4, and more.

- Prepare the original document to be as clean and sharp as possible (don't damage the drawing when you brush off the dust).

- Avoid scanning from glossy paper (use a copy machine to generate a print on a flat-finished paper)—glossy paper creates noise, uneven lines, and/or mirroring effects on the scan.

- Turn off dithering (or anti-aliasing) in your scanner settings. Dithered images look great on screen, but the underlying quality of the image is compromised.

- Set the resolution (dpi) to 300, initially, and increase it if you find the scan doesn't adequately capture enough detail. A high dpi will create a better quality image, but it will also increase the file size.

- Set the appropriate bit depth. Drawings, schematics, blueprints, and other 1-color images are best scanned with a 1-bit setting to a TIFF CCITT Group 4 file format—this captures the lines as crisp black pixels, and the low bit depth generates a very small file size (bytes). In scanning software, 1-bit is frequently referred to as a monochrome or line art. (Faint lines can be darkened by adjusting the light sensitivity in the scanner or by increasing the dpi.)

   Conversely, multi-color images (artwork, photographs) are best scanned at a higher bit-depth (8-24 bit) to GIF or TIFF with LZW compression—this captures the full range of hues in the original image. 'Worn and weathered' drawings, or drawings that have shaded areas are nicely scanned to grayscale (4-8 bit)—it captures the hues as grays while keeping the file size reasonably small. Colored artwork and photos can also be scanned to grayscale,

which, in essence, converts the colored hues to grays. Avoid scanning to JPG—it discards information in order to make files smaller.

- If you have a color image scan it to GIF or a TIFF with LZW compression. Set the color depth to 8-bit rather than 24-bit if this is an option. Again avoid scanning to JPEG.

Establish a connection to your scanner by choosing **Select Source…** . If your scanner has a TWAIN interface, you will see its name listed; select it (most desktop scanners are supported). Use **Acquire** to access the scanning software where you can adjust scanning settings and preview the scan.

Navigating pages and layouts within your files

Tabs at the foot of the display window enable you to navigate between pages and layouts. Additional navigation features are accessible in the status bar at the foot of the window. See page 20 for the functions of the navigation tools.
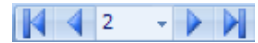
The Pan tool enables you to move the raster or vector image inside the window.

Zooming Options

When you open a file, the **Zoom Window** tool is automatically activated. Click and drag to define the zoom area. Click **Zoom All** to refit image to window.

A complete selection of zoom controls is located in the Start tab. The **Lock Zoom** control stays locked during File Browser slide shows.

An easy-to-use alternative for zooming is to roll the mouse wheel.

On-the-fly magnification can be achieved using the **Magnifier** toggle. With any measurement or markup tool selected, press the Z key to activate the magnifier. A circular area around the cursor will immediately be magnified. Red cross-hairs indicate the original position of the cursor. When the cursor is positioned over the target point, and you click the mouse, a point is registered, and the magnification disappears.
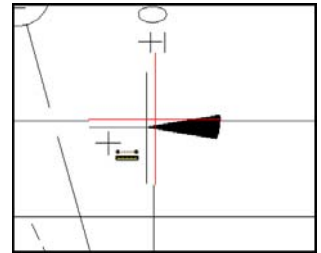
Toggle the drawing and markup

Control which markup elements are shown for viewing, sharing, or printing.

Toggle the **Markup** and **Drawing** on and off with the controls in the Start tab. Turn off markup layers entirely in the **Program Settings** (see page14).

Shortcuts

View the keyboard shortcuts by pressing the Alt button. The text or digits corresponding to keys appear over the controls. After you use a shortcut (or Alt) the shortcut cues will disappear.

Snapping

Snap is to automatically snap (jump) to lines and nodes on the underlying image. This means you do not have to spend time adjusting the cursor position precisely over the desired point. Instead, as you move close to the point, the cursor will automatically find it and snap to it. **Snap** activation can be toggled on the keyboard by pressing the S key, or by clicking the checkbox in the Status Row (status row switch in Setting).

The size of the aperture (the little red square) can be adjusted. Right/click **Properties** to access panel. Increase
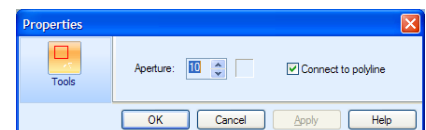
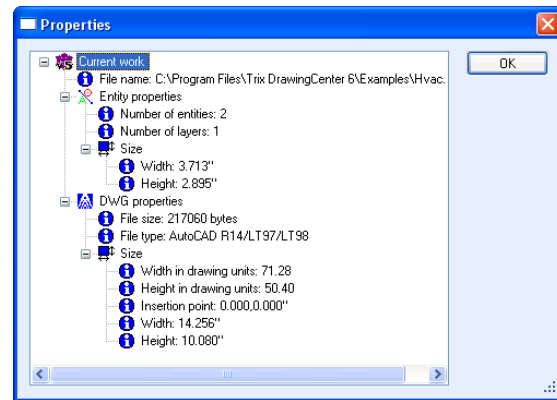the aperture to widen the snap area, or decrease it to tighten the snap area. Snap works best when drawing is zoomed out.

File Properties

Press [Properties...] in the Trix menu to display information about the open file, including:

- File name and path
- File size on disk
- Dimensions
- File type and AutoCAD version (if DWG vector file)
- Resolution in DPI
- Bit depth (# of colors)

Drawing Version Comparator

Accessible in the Tools tab, Compare enables you to rapidly see the differences between any two open drawings. Typically this is used to compare two different versions of the same drawing. In the Compare window, use the left radio button to identify the original drawing, and the right radio button to select the revised version, and then click on *Compare*. The application will display deletions in red and additions in blue.
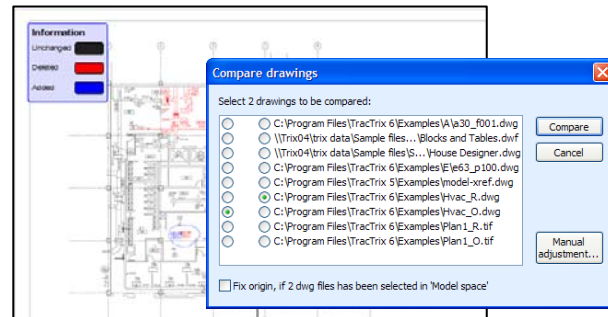
If the drawings are of different sizes you can use *Manual Adjustment* to align content before starting the comparator. If two DWG files are to be compared in Modelspace, check the 'Fix origin' box.

Registering your file-types
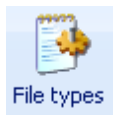
Accessible in the Settings tab, use File types to register specific file extensions you want to open in *DrawingCenter*.

The list on the right shows file types already associated with *DrawingCenter*. The drop-down lists standard file extensions to add.
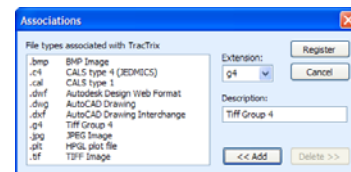
Raster file-specific functions

Capturing raster clips
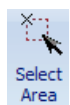
Use **Select Area** to copy raster clips for use in other programs (use with the Shift key to add area, or Ctrl to subtract area). Then right-click the selection for standard editing functions:

- Some options are grayed out because you can not edit the raster image. See 'Erasing regions' below for techniques on making something appear deleted.
- [Copy] Copies the selected area to the clipboard for pasting into other applications, such as Microsoft Word or PowerPoint.
- [Properties...] Displays properties of raster entity/region.

Rotation

Rotate raster images clockwise or counter-clockwise with the **Rotate** controls in the Start tab.
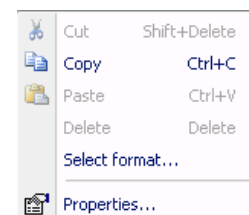
Inverting and mirroring images

Images can be inverted ▣ and mirrored vertically and horizontally ▣ ▣ using the Raster group tools in the <u>Start</u> tab.

'Erasing' regions

Since the original file cannot be changed the workaround is to 'pseudo-erase' a portion of an image by marking it up with a white rectangle. You can then cover this with new detail or text markup. To do this, select the **Rectangle** tool ▣ , accessible from the Markup panel on the <u>Start</u> tab. Cover the area to be blanked out with a rectangle and change the fill color to white.

Scaling and measure

DrawingCenter has invaluable tools for scaling and measuring lengths, perimeters, and areas in raster images and scans. The functions of these tools, and techniques to use them, are described in greater detail in its dedicated section, beginning on page 28.

Saving raster files

Depending on the format of the original raster image opened in *DrawingCenter* you may be able to save it other raster formats using *Save raster as...*, accessible from the Trix menu.

Raster formats which can be exported from *DrawingCenter* include the basic TIFF Group 4 which can be opened in Kodak Imaging or Windows Picture Viewer and PNG which can opened in most web browsers. The raster formats available are listed in the *Save As Type* drop-down menu.

Vector file-specific functions

X-refs and SHX fonts

X-refs and SHX fonts are fully supported in *DrawingCenter*, assuming they're made available. The program looks for x-ref files in three ways:

1) Using the absolute path specified in the source DWG file;

2) If not found, uses the specified path applied relative to the directory now containing the source DWG (for x-ref's with filenames like ...\...\x-ref.dwg);

3) If still not found, searches same directory as CAD file.

In **Program Settings** in the <u>Settings</u> tab you can enable a warning about missing x-refs and fonts when opening a file.

To view the x-refs and fonts called-for in a file, press **DWG Font/X-ref** in the <u>Tools</u> tab. Substitute fonts used are shown here if an original font is not available. If an x-ref is missing the panel displays a message to this effect. The panel may be resized to view long path names.
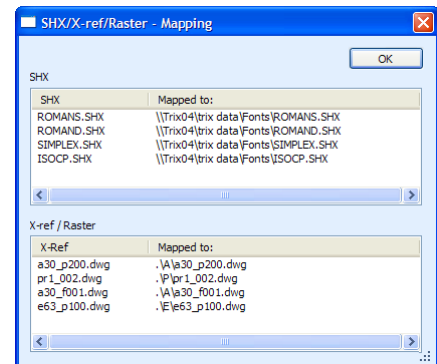
SHX fonts are used only in AutoCAD design; font files are not stored in the DWG file. A path to your SHX font directory should be specified in the **Program Settings**. If you do not have a required SHX font, *DrawingCenter* substitutes another font. TrueType fonts are also used in AutoCAD files. *Trix DrawingCenter* will use whatever TrueType fonts are available in your operating system and make substitutions for any that are missing.

Controlling DWG layers
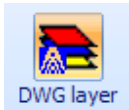
DWG/DXF layers are defined in the original file. They can not be altered in *DrawingCenter*. But you can use the check boxes in the Layer control panel to control the visibility of each layer, accessible by clicking on DWG layer. There are also
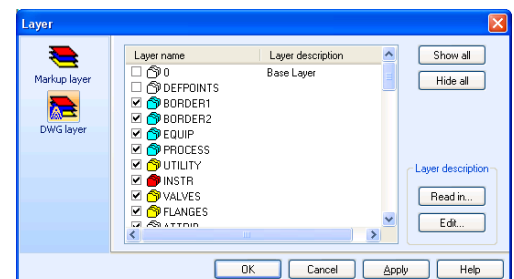
Show all and *Hide all* buttons.

To save a selection of layers for repeated use click the *Read in* button. This will create a file containing the selection with the file extension 'LST'. This file may be given any name you choose. To reuse a layer file click on the *Edit* button and select the file you require.

To display vector files against a black background, check Dark Background in **Program Settings**.

Show HPGL files in black & white
Use **Program Settings** in the <u>Settings</u> tab to show color HP-GL and PLT files in black and white.

Viewing 3D files
If a 3D file is open, the 3D Orbit tool is activated, enabling you to rotate the image to view it from different perspectives. See page 16 for more information.

Scaling and Measuring Functions
Why scale?
A drawing must be accurately scaled in order to obtain accurate measurements. A feature of *DrawingCenter* is the ability to measure lengths, perimeters, and areas in real world units (e.g. millimeters, inches, square-yards). In order to measure accurately, you must scale—a task made easy in *DrawingCenter*.

Most raster-images need to be scaled because they do not contain scale data, and are assigned a 1:1 ratio by default. Vector files, on the other hand, usually have some scale ratio information built-into the file. To see it, go to the Modelspace layout and click **Set Scale** from the <u>Tools</u> tab. Scales work only in drawings that represent a single plane, typically a front, side or top view. Scaling will not operate in drawings presenting isometric (3D) perspectives.
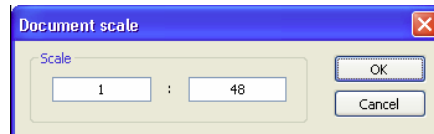
Calculating the scale of a raster image
Scale tools are featured in the <u>Tools</u> tab. There are two ways to scale your drawing:

1) Use **Set Scale**, and then enter the decimal value of a scale shown on the drawing[*] in the Document scale panel that appears. A drawing showing a scale of [¼" = 1'- 0"] translates to a decimal scale of [1:48]. A fraction/decimal conversion table is featured in Appendix 2.

2) Use **Check Scale** to specify the distance between any two given points. Click once on a starter point—a visible line appears and moves with your cursor (if needed, press Z to activate the magnifier)—then click once on an end point. The document scale dialogue box opens enabling you to enter distances and specify the unit of measurement. Then round the scale to the closest decimal (i.e. 1: 48.065 would be correctly rounded to 1:48).

Scale need only be set once for each file. The application will remember the scale (and markups created for the image) in the TRX file associated with the original file.

Cross-checking a scale
You can cross-check your scale with the **Measure Length** tool in the <u>Tools</u> tab (tool details are provided below). *DrawingCenter* provides the measurement of a length you

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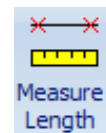
[*] This method requires your drawing to have been scanned as 100% (aka full size).

define according to the scale that is set for the drawing. If the measurement shown in the window matches the line dimension on a drawing, then your scale setting is correct.

Note: The scale may change within a drawing—different parts of a drawing can contain detail drawn at different scales. Check to see that the scale you have set is appropriate to the detail you are measuring.

Measuring

Length and perimeter
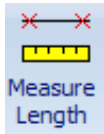
Use the **Measure Length** tool in the <u>Tools</u> tab to measure a length on the drawing, or to check your scale. To use the tool, position the crosshair cursor on one point and click once, then drag the crosshair cursor to the end point and click once. End by right-clicking/Exit. The measured length will appear. If this is the same dimension as that shown on the drawing your scale setting is correct. Use many consecutive clicks to measure perimeters.
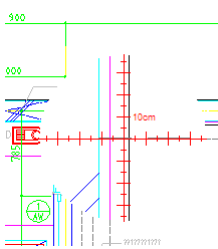
If the Magnifier check box at the foot of the window is checked you can magnify the region under the cursor. A cursor cross-hair will appear over a magnified image of the region. This will assist you to select points with greater precision. The Magnifier can be toggled by pressing the Z key. Note: The resulting measurement could be very close but not exact - you may not have exactly selected the limits when you mouse clicked the ends of the measurement.

Area

The drawing must be properly scaled in order to obtain accurate measures (see above). The measuring tools are located in the <u>Tools</u> tab. Each measuring tool is described below. The result of any measurement is: 1) upon defining an area, the measurements are displayed in a window, 2) in the window you can adjust the unit of measure which recalculates the measurements, and 3) create hatched markup of the area of the area you measured by checking the 'Save the object area'.

By far the easiest measuring tool to use is **Point out**. This tool auto-selects a rectangular area. With Point out, you can add to the area by pressing the Shift key and clicking again. The Polygon and Rectangle tools work best with the Snap control on (see page 25).Use the **Polygon** to create a custom shape, then right-click/Close to display measurements. The **Rectangle** simply measures a rectangle.

Additionally, with the Polygon and Rectangle tools you can create holes in areas by redrawing a shape over the existing hatched area; this prompts *DrawingCenter* to create a 'hole' in the hatch.
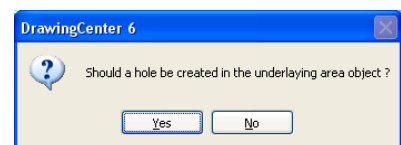
To sum the measurement of multiple hatched areas, press the Shift key while using the **Select** tool to point out the multiple hatching; then use the **Area** tool in the <u>Objects</u> tab to display the total measurement.

Controlling Markup
Also known as annotation or redlining

Properties

Markup or object properties are only available if markup is selected, which activates the Appearance group in the <u>Objects</u> tab. Here you can edit and define layer assignments, markup colors, and properties. See page 22 for a detailed description about the features in this tab.
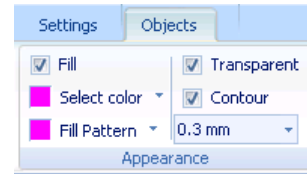
Markup layers

When a file is first opened in *DrawingCenter* a single empty blue markup layer is created, titled 'Main'. Access the **Layer** control switch in the <u>Start</u> tab (or if markup is currently selected, in the <u>Objects</u> tab).

Add layers using *Create New*. Edit the color of the layer using *Edit....* Create a different markup layers for each user or team. The

checkboxes identify if a layer is set to be visible, or use the *Show all* and *Hide all* buttons.

While many markup layers can be seen at the same time, only one markup layer can ever be *active* at a time—the *active* layer being the one currently being used for markups. Use the radio buttons to designate the active markup layer. The active layer is also indicated in the status row at the bottom right of the *DrawingCenter* window where you see an 'L'—the status bar (page 19) must be turned on for this to be visible.
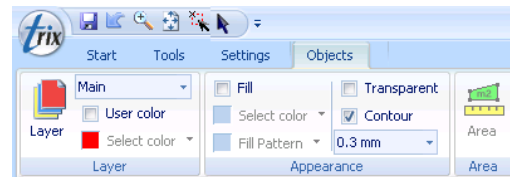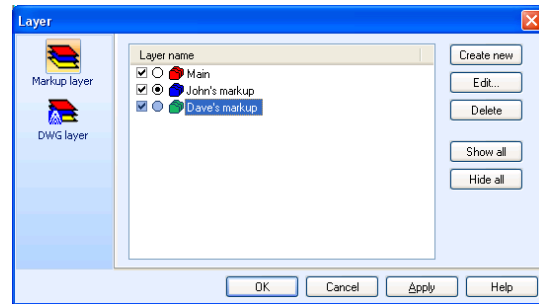
Layer management is easily accessible in the <u>Objects</u> tab, which becomes active only after markup is selected. You can quickly assign or edit markup layers as they apply to the selected entity (or entities).

Markup tools

The markup tools are available by clicking on their respective icons in the <u>Start</u> tab.

With the Hover option enabled in Program Settings, mark up entities are automatically magnified on rollover, and object information of markup entities is automatically displayed in the form of a bubble upon rollover.

Setting the default color and pen width for markup

There are two choices for the default color used by the markup tool. You can either have the color defined by the color of the markup layer in which you are working, or choose a color to regardless of layer. Go to the <u>Settings</u> tab and click on **New Entities**. Use the radio buttons in the window that appears to select *Color by layer* or *Custom*. If *Custom* is selected the *Select color* button becomes enabled. Use this to select the color to use.

In the same window is a setting for the default line width to be applied to markup. A different markup line width can be specified by selecting the markup on screen and right clicking for Properties.

Use the **Select** tool to select the markup that you wish to edit (use with Shift choose multiple or Control-A to Select All). To resize an entity click on a control point (a square box on a corner of a markup element) and drag with the mouse. Right-click on the markup to access a menu of standard editing tools*:

- ● 🔄 Rotate Outlines the markup and transforms the cursor into a crank. Drag the mouse to turn the crank and rotate the markup.

- ● ↔ Move side Enabled only for polylines, this tool allowing you to grab and skew a segment of a polylines, leaving some points in tact.

- ● Insert corner Adds an additional control point to a line. Click on the where the insertion is to be made. Right-click/Insert corner. See page 22 for a description of how these tools work.

- ● ✂ Cut Cuts the markup and places a copy on the clipboard.

- ● 📋 Copy Copies markup or the selected area to the clipboard. All or part of the image can be copied to the computer's clipboard for pasting into other images in *DrawingCenter†* or into other applications, such as Microsoft Word or PowerPoint.

- ● 📋 Paste ‡ Pastes markup clipped from with *DrawingCenter*.

- ● Delete Deletes the selected markup.

- ● 🖳 Properties... For markup shapes, displays the aperture for the Snap feature, and a switch to Create polylines; for markup text, enables editing of the text; for raster clips it displays properties of raster entity/region.

Properties

Markup or object properties are only available when markup is selected. This activates the Object tab. Use this to edit and define layer assignment, markup color and properties, and even measure multiple areas. See page 22 for a detailed description about the features on the Object tab.
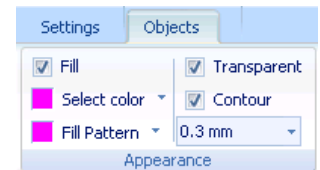
If the markup is a closed entity (i.e. it is a continuous line with no end points) *Fill* is available, enabling you to specify color, pattern, transparency, and weight of markup frame.

'Erasing' regions

Since the original file cannot be changed, the workaround is to pseudo-erase a portion of an image,

making way for new detail or text markup. To do this, select the **Rectangle** tool 🔲, accessible from the Markup panel on the Start tab. Draw a rectangle to cover the area to hide. Then change the fill color of the rectangle to white.

Sharing markup

If your colleagues also have *DrawingCenter* and you are on the same network, you can all point your Markups Directory to the same path (see the instructions in next section on TRX files), enabling you to see one another's edits when you open the file.

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* possible edits will vary depending upon the type of entity selected (text, rectangle, line, clipart, etc)

† The image into which you paste must be active. To activate an image, click inside it using the arrow cursor.

‡ This feature is dependent upon the abilities of the application you are pasting into. Some applications cannot read vector information from any program; alternately some programs can not read raster information.

For users without *DrawingCenter* you can share files, complete with markup, by publishing the file as a raster PDF using the **Publish to PDF** option in the application menu. Choose **Send as e-mail** to automatically open a new email message with the PDF of your file, complete with any visible markup, already attached, or save the PDF file locally. The size of the PDF you create, as well as the dpi and other attributes, can be adjusted in **PDF Settings**.

For IT departments that need to serve up engineering drawings to remote clients over the Internet the *Trix DrawingCenter Server* product is sold separately for use, can be used within the IE browser and allows for unlimited client installs.
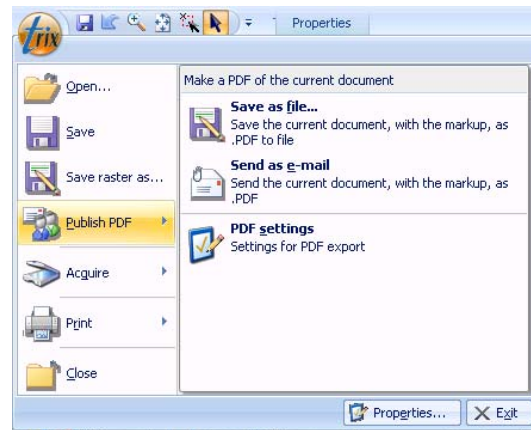
Saving markup with TRX files

Trix DrawingCenter never changes the contents of the files it displays. This protects the source file. However it also means that markup and settings created in *DrawingCenter* must be saved into a separate file. *DrawingCenter* names this file identically to the original file but adds the file extension .TRX. For many users the only noticeable effect of this is the appearance of what appears to be a duplicate file in the directory containing the image files. If the original file extension has been associated with *DrawingCenter*, clicking on either file will open the file. All the markup information is stored in the TRX file.

If a file name is to be changed you must at the same time change the name of the related TRX markup file. For example, if file '*original name.tif*' is changed to '*new name.tif*' you you must also change 'original *name.tif.trx*' to be '*new name.tif.trx*'.

To save markup as you work click on the *Save Markup* icon on the Quick Access Toolbar at the top.

By default *DrawingCenter* saves TRX files to the same directory in which the original image file is stored. This is the most logical place to store the markup data when working in collaboratively with other *DrawingCenter* users as this enables them to see the same markup when they open the file from the same directory.

Alternately, you can designate a separate directory for the storage of the TRX files. This setting is applied to single-workstation installations of *Trix DrawingCenter*. It enables you to maintain individualized mark up for the images.

Use **Program Settings**, accessible from the Settings tab, to specify a path to the directory where you wish to store your TRX files. Click the **...** button to browse to and identify the directory.

Printing
Vector files and pen settings

Use **DWG Size** in the Tools tab to specify a unit of measure and select a document size. Changing the document size automatically adjusts the height, width, and scale in the fields below. Manual entry of the desired width, height, or scale is allowed—*DrawingCenter* automatically adjusts the document size to accommodate.
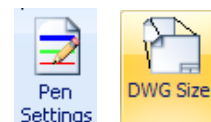
The line work in DWG, DXF and HPGL files is typically orchestrated in a variety of colors, making it easy to distinguish between design elements when viewing it on screen. Any given CAD or HPGL file can contain up to 255 different colors.

However, if you print to a monochrome (black and white) output device or printer the colors distinctions are lost. To recreate the distinctions in the form of different line widths (or line weights) *DrawingCenter* uses Pen files. Access the control panel using **Pen Settings** in the Settings tab.

The Pen width window displays the current pen widths. By default all colors are assign the same pen width (0.18 mm). *DrawingCenter* always uses millimeters as the unit of measure for pen widths (conversion table of points to millimeters in Appendix 2). To alter the **Pen Settings** click once on the line item to highlight it, and then click *Edit....*
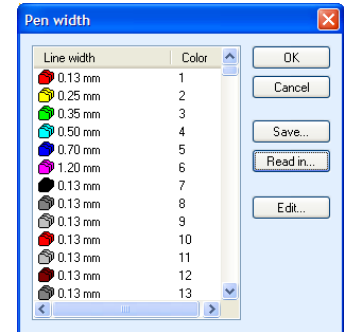
Click *Save…* to store an individual set of pen widths for future use. *DrawingCenter* creates a file with the extension PEN which contains the values of the widths as you defined them—the first line contains a width for color 1, the second for color 2 and so on. Pen files are simple text files that can be opened and edited in Notepad.

Reuse a previously created pen file by selecting *Read in…*to open it. Multiple pen files can be created and saved.

Hiding markup

Use the vector/markup on/off toggle to display or hide markup before printing. The Hide/Show raster icon can be used in a similar fashion to print out only markup.

Printing a partial detail

To print a detail from an image click on the *Select Area* tool . Click and drag to select the region to be printed. Use Ctrl P or File-Print-Print and choose *Selected Area* in the print control box.

Print Settings

Use **Print Setup** to setup your printer. Select the name of your printer in the pull-down menu.

The options available under **Print Setup** vary depending upon your printer type. **Print Preview** provides a preview of what a print will look like. It has its own menu bar to enable zoom and navigation.

Options in the **Print** control box are:
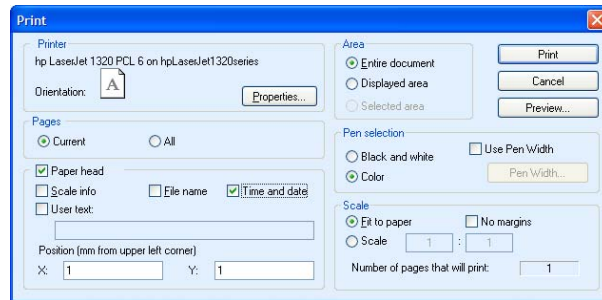
Pages: If the file is a multi-page document, this radio button gives you the choice of printing just the current page or all the pages in the document.

Paper head: By using the appropriate check boxes, you can include the scale, date and time, file name or a user text string at the head of the print. You can also position the heading on the page using the *Position* settings.

Select the area for printing: Use the radio button to select the entire image, the extent of the image as seen in the *DrawingCenter* window, or a selected area (see Printing a partial detail, page 33, for how to select an area).

Pen selection: Use the *Black and White* or *Color* radio button to set use of color in the print. In DWG, DXF and HPGL files, the width of lines can be set according to their original color values using a Pen file (for information on how this is created see page 33). To use a pen file, check the *Use pen widths* box and click on *Pen Widths* to select the pen file to be used.

Scale: To use as much of the printable area as possible, select *Fit to paper.* To use a scale which is in a fixed proportion to the original scale of the image, check the *In relation to the original document* box. Then enter the ratio that you want to use to scale the image. (For example, to quadruple the size, enter 4:1. To halve the size enter 1:2.) When the ratio is entered, the number of printed pages that will be produced is indicated below the scale. By default, Trix *DrawingCenter* adds a small margin to the edge of each image. To switch this off, check the *No margins* box.

HP-GL and raster files are opened 'actual size'--this means that if you print them at a scale of 1:1, they will print just as they were originally intended. DWG/DXF/DWF files are much more complex as they may not contain any size information. We say DWG, DXF and DWF files are 'unitless'. Nevertheless Trix *DrawingCenter* makes an attempt to best establish a size for you. You can view and change the sheet size using the Tools-Utilities-DWG size window.

Printing all open files

Choose to Print All from the Trix menu. The options in the Print All dialogue box are equivalent to those in the Print dialogue box.

Advanced Functions

DDE Commands

Dynamic Data Exchange (DDE) provides a way for Windows programs to share data and interact with one another within your Windows operating system. Using DDE commands, Windows exchanges information by request data from one application and instruct another applications to do things. Here is a list of the DDE commands available for *DrawingCenter* and an explanation of usage for each:

#Open(File name[;File2;File3;...])   Opens one or many files in DrawingCenter

#Close([File name])   With no filename all files will be closed.

#Exit()   Exit DrawingCenter

#Print(Filename;Scale;Printer;Paperhead;Scaleinfo;Showname;Time;Textinfo;Text)

>   Filename   File to print
>
>   Scale   0=Fit(default), 100=1:100
>
>   Printer   "Printer name"
>
>   Paperhead   0=No, 1=Yes
>
>   Scaleinfo   0=No, 1=Yes
>
>   Showname   0=No, 1=Yes
>
>   Time   0=No, 1=Yes
>
>   Textinfo 0=No, 1=Yes
>
>   Text   "User text"

Examples of how it could look in the Explorer:

>   Open: #Open(%1)
>
>   Print: #Open(%1)#Print(%1)#Close(%1)
>   // Default printer and fit to page and no paperhead info
>
>   Printto: #Open(%1)#Print(%1;1;%2)#Close(%1)
>   // Selected printer, 1:1 no paperhead info

Using *DrawingCenter* within Internet Explorer

When you initially install *DrawingCenter*, a version of the software is installed by default for use in the Microsoft Internet Explorer Web Browser. This enables you to view files served using the HTTP method within your IE browser window. If a webpage furnishes a URL link to a DWG file (or some other file type associated with the *DrawingCenter*), going to that URL will open the file in a *DrawingCenter* window nested within your browser window.

An example of a Web page created to serve drawings to a Browser may be seen by selecting *Start – Programs – Trix DrawingCenter 6 – Web page with DrawingCenter 6*. Look at the source HTML for this example to see how the page is created. There are limitations, however, in the Web Browser version: Only a single image may be viewed at one time, and saving markup is not enabled.

APPENDIX: SUPPORTED FORMATS

Raster-file formats

Raster files of this type are supported (including 🗐=Multipage files or ❖=color if indicated as such):

AFP	❖	IBM Presentation PTOCA (AFP)*
ANI	🗐 ❖	Windows Animated Cursor
AVI	❖	Windows AVI*
AWD		Microsoft Fax
BMP	❖	OS/2 Bitmap, v1 and v2
	🗐 ❖	Windows BMP Uncompressed
	❖	Windows BMP RLE
C2		CALS Type 2
C4		C4 JEDMICS
CAL		CALS Type 1
CIN	❖	Kodak Cineon
CIT		Intergraph CCITT G4
CLP	❖	Microsoft Windows Clipboard
CUR	🗐 ❖	Windows cursor
CUT	❖	Dr. Halo
DCR	❖	Kodak PDC*
DCS	❖	Kodak PDS*
DJV	❖	DjVu*
ECW	❖	Enhanced Compressed Wavelet
EPS	❖	EPS (Encapsulated PostScript)
		EPS with Embedded TIFF file
FAX	❖	FAX, raw, CCITT Group 3 1D
		FAX, CCITT Group 3 1D, no eol
		FAX, CCITT Group 3 2D
		FAX, CCITT Group 4 1D
FPX	🗐 ❖	FlashPix
	🗐 ❖	FlashPix, JPEG
	🗐 ❖	FlashPix, Uncompressed
GIF	🗐 ❖	GIF (Compuserve)
ICA	🗐	IOCA, CCITT Group 3, 1d, -MO
	🗐	IOCA, CCITT Group 3, 2d, -MO
	🗐	IOCA, CCITT Group 3, 1d
	🗐	IOCA, CCITT Group 3, 2d
	🗐	IOCA, CCITT Group 4, 1d
	🗐	IOCA, CCITT Group 4, 1d, -MO
	🗐	IOCA, IBM MMR (+MO/–MO)
	🗐	IOCA, uncompressed (+MO/-MO)
ICO	🗐 ❖	Windows icon
IFF	🗐 ❖	Interchange File
	❖	Interchange File, RLE*
	❖	Interchange File - uncompressed
IMG	❖	GEM Image
ITG		Intergraph RLE
JPG	❖	Exif JPEG
	❖	Exif JPEG 4:1:1
	❖	JPEG
	❖	JPEG (4:1:1 and 4:2:2)
	❖	JPEG CieLAB
	❖	JPEG CieLAB (4:1:1 and 4:2:2)
KDC	❖	Kodak DC*
LSD		Laser Data*
MAC	❖	Mac Paint
MSP	❖	Microsoft Paint
NIF	🗐	CALS Type 3
PCD	❖	Kodak PhotoCD*
PCT	🗐 ❖	MacPict
PCX	❖	ZSoft PCX
PDF	🗐 ❖	Adobe Acrobat
PGM	❖	Portable Greymap ASCII

	❖	Portable Greymap Binary
PNG	❖	Portable Network Graphics
PPM	❖	Portable Pixelmap, ASCII
	❖	Portable Pixelmap, Binary
PSP	❖	Paint Shop Pro
	❖	Paint Shop Pro, RLE
	❖	Photoshop (Adobe)
PTK	❖	IBM Presentation PTOCA*
RAS	❖	Sun Raster
RAW		Raw BitField*
	❖	Raw Packbits*
	❖	Raw RLE4* & RLE8
	❖	Raw uncompressed data
RTF	❖	RTF Format*
SCT	❖	Scitex continuous tone
SFF	🗐	Structured Fax File Format
SGI	❖	Silicon Graphics Image
	❖	Silicon Graphics Image - RLE
SID	❖	Mr. Sid*
SMP	❖	Xionics
		Xionics CCITT Group 3 1D/2D
		Xionics CCITT Group 4
TFX		Tiff -FX CCITT Group 3 1D
		Tiff -FX CCITT Group 3 2D
		Tiff -FX CCITT Group 4
		Tiff -FX JBIG black/white*
	❖	Tiff -FX JBIG color/gray*
	❖	Tiff -FX JBIG color/gray 2
	❖	Tiff -FX JPEG*
TGA	❖	Targa
	❖	Targe RLE
TIF	❖	Exif TIFF, Uncompressed
	❖	Exif TIFF, Uncompressed, YCC
	🗐 ❖	GeoTIFF
	🗐	Tiff - CCITT Group 3 1D and 2D
	🗐	Tiff, CCITT Group 4
	🗐	Tiff, CCITT Huffman
	🗐 ❖	Tiff, JBIG
	🗐 ❖	Tiff, JPEG 2000
	🗐 ❖	Tiff, JPEG 4:2:2
	🗐 ❖	Tiff, LZW compression
	🗐 ❖	Tiff, Uncompressed CMYK
	🗐 ❖	Tiff, Uncompressed YCC
	🗐 ❖	Tiff, Uncompressed
	🗐 ❖	Tiff, Packbits CMYK/YCC
	🗐 ❖	Tiff, Packbits
	🗐 ❖	Tiff, Uncompressed
	🗐 ❖	Tiff, Wavelet CMP
WBM	❖	Wireless Bitmap file
WFX		Winfax, CCITT Group 3 2D
		Winfax, CCITT Group 4
WPG	❖	Word Perfect Graphics
XBM	❖	XBitMap
XPM	❖	XPicMap
XWD	❖	X Window Dump (v10-11)

*Read Only files of this type cannot be exported

Vector-file formats
Standard vector formats

Vector files of this type are supported by *Trix DrawingCenter* v6:

- AutoCAD DXF and DWG
  Versions 12, 13, 14, 2000, 2002, 2004, 2005, 2006, 2007, and 2008

- Autodesk DWF

- 3D DWF, and DWG

- HPGL, HPGL/2 and PLT files (*Read important information below regarding PLT files.*)

- Acrobat PDF

HP-GL and plotter files (.hpgl, .hpg, .gl, .hp2, .plt, .pl2)

PLT and HP-GL files are **pl**o**t** files normally created with the **H**ewlett **P**ackard **G**raphics **L**anguage—a printer-control language that The Hewlett-Packard Company developed in 1989 to drive their new line of pen plotters (commonly found in engineering departments and typical to the industry). The simplicity of HP-GL commands made it a desirable language to all plotter manufacturers, and HP-GL went on to set the standard for pen plotters of the day.

Plotters print their output by moving a pen across the surface of a piece of paper. The quality of the pen plotters was impressive with the crisp lines it produced, and the precise, mechanical movement of the pens, but this made it draw very slowly. Ultimately the pen technology restricted plotters to printing only line art (no raster art), and a slow pace at that, so they faded out with the introduction of laser and ink-jet printers

These days you'd be hard pressed to find a plotter—they have been replaced with faster and more adaptable wide-format ink-jet and laser-jet printers. HP-GL/2 was developed to enable printers to act as plotters; to read, print, and create HP-GL/PLT files of their own. Third-party HP-GL/2 drivers were created, and while these variants are usually based on standard HP-GL, they also contain additional commands that do not conform to the original H-P specification. Having said that, HP-GL files that have been created with a plot driver that employs original H-P commands is fully supported by *DrawingCenter.*

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