

# Testra Corporation

## TestraPlot Printer Driver for Machine Control Specifications and User Instructions

Mar 2007

### *Machine Control via a Printer Driver*

With TestraPlot you can work in your favorite graphics program under Windows XP/2000/Vista and control a machine by printing to it in a familiar Windows environment. The machine must be controlled by one of our SS4000 series controllers running LE631 or higher firmware.. Currently only the Laser application is supported.

A model designer is available for OEM's which allows for customization for his particular machine series and model. This allows everything to be setup for his customer in advance so that he may send his job to a machine from a graphics program directly by simply printing. Both raster images and vectors are handled in the same drawing. Lines set to minimum width are treated as vectors. All other lines, fills, and photo images are treated as raster objects.

**Notes: This driver is still under development and there are a few features that are NOT working, even though they appear in the user interface. They will be fixed in later releases.**

1. Raster and fills at 333 dpi has a discontinuity every 1"
2. Rubber Stamp Mode is not implemented.
3. This specification and user instruction manual is just now being started so is just a brief outline at this time.

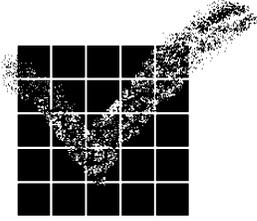
### **Protection**

The Testra SS4000 series controllers each have a unique serial number. Each copy of TestraPlot is coded with an authorization code that is linked to the serial number. During operation the printer driver queries the controller and looks for a match of the authorized serial number. This unique code is supplied with each TestraPlot license. The printer driver will work for a short time without a license, but then will drop down into a very limited output mode allowing only a very small drawing to be output.

**SynchroStepping** \* All of our motion systems and drivers utilize a method that synchronously, microstep, sample and correct the current on multiple motor windings at a 20-50 kHz rate resulting in stable, quiet, smooth control of a stepper motor. US Patent # 5,650,705

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### Installation

The installation package consists of three files which are zipped together.

- a) TestraPlot.msi - Setup program for the printer driver
- b) License.ini - Copy of the authorization code to match the serial number.
- c) BMPlotControl.ini - Copy of all the setup parameters created by the OEM

The OEM can package these up for his customer. Initially the OEM will receive the three files with the License.ini file having a null authorization code, and the BMPlotControl.ini with the default settings for the printer driver. You need to be in an Administration account in windows.

1. Unzip these files into a Temporary directory for example c:\TEMP.
2. Double-click on TestraPlot.msi
3. Follow the installation instructions

The installation will create a directory c:\Program Files\Testra\Testra Print Driver Ver 1.0.5. Within that directory will be a Driver Folder, and executable for the user interface BMPlotUI.exe and copies of the ini files. Once you have setup the driver for your machine you can copy these ini files to your TEMP directory and zip together with the TestraPlot.msi to create an installation package for your customer.

### Re-Installation

Make sure you are in an Administration account in windows. To update the driver or reinstall you must first remove the old driver. To do this from your windows desktop click on:

**<start>/<control panel>/<add or remove programs>**

Search down the list until you find:

**<Testra Print Driver Version 1.05>**

Then click on the **<Remove>** button

When windows finishes with the removal process, you may be asked to reboot your computer before installing the TestraPlot printer driver again. To reinstall simply go to your temporary directory and double-click on the new version **TestraPlot.msi** to be installed. All of your prior setup information and authorization code information will still be retained from the prior installation.

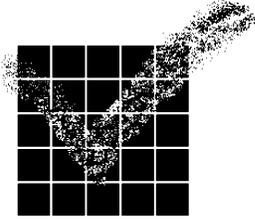
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### Accessing the Model Designer

Once the driver is installed, the model designer is accessed thru a hot-key combination of: **Ctrl-Alt-B**. This means you have to press and hold down those keys in sequence before releasing. This will bring you into the model designer window as shown below:

### Series Tab

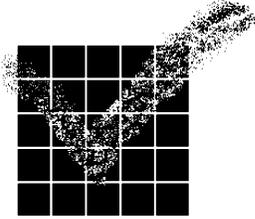
The screenshot shows the 'Testra Model Designer' window with the 'Series' tab selected. The window title bar includes standard Windows window controls (minimize, maximize, close). The 'Series' tab is active, and the 'GMR' series is selected. The configuration is as follows:

- Controller:** Laser
- Application:** Laser (Vector + Raster)
- Controller Origin (0,0):** Near Left
- Controller Units / Steps per Inch:** 1000
- Decimal Places (Accuracy):** 4
- Maximum Vector/Fill Pens/Tools:** 8
- Raster Properties:**
  - Needs Margin
  - Needs Offset
  - Acceleration:** 40 In/Sec<sup>2</sup>
- Enable Raster Banding:**
- Enable Hotkey:**
- Swap X and Y axis:**
- Pen Up (Laser off) Speed Overridable:**
- Uses Standard Printer Port:**
- Invert Bitmap Pixels:**
- Raster Axis:**
  - X Axis Rastering
  - Y axis Rastering
- Check Controller Serial No:** [Button]
- Enable Rotation Of Jobs:**

At the bottom of the window, there are buttons for 'Add New Series', 'Delete Current Series', 'OK', 'Cancel', 'Apply', and 'Help'. The status bar at the very bottom shows 'Job Status : No Job Active' and 'Version 1.0.530'.

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### Model Tab

The screenshot shows the 'Testra Model Designer' window with the 'Model' tab selected. The interface includes a series of tabs: Series, Model, Job Setup, Material, Vector Pens, Fill Pens, Raster, Output, and General. The 'Phantom-L' model is selected, and the 'Table Setup' section is visible, containing fields for 'Table Size' (X: 100, Y: 60 in) and 'Home Position' (Near left). Below this, the 'Available User Controls' section has checkboxes for 'X axis Rotary', 'Y axis Rotary', 'X axis Wise', 'Y axis Wise', 'Ventilation', 'Auxiliary', and 'Cooling'. The 'Default Printer Name' is 'GMR Phantom-L' and the 'Port Type' is 'COM1:'. At the bottom, there are buttons for 'Add New Model', 'Delete Current Model', 'OK', 'Cancel', 'Apply', and 'Help'. The status bar at the bottom indicates 'Job Status : No Job Active' and 'Version 1.0.530'.

Testra Model Designer

Series | Model | Job Setup | Material | Vector Pens | Fill Pens | Raster | Output | General

Phantom-L

Table Setup

	X	Y	
Table Size	100	60	in

Home Position: Near left

Available User Controls

X axis Rotary    Y axis Rotary    X axis Wise    Y axis Wise

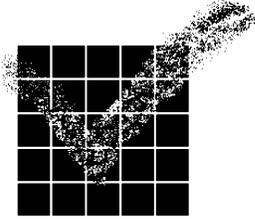
Ventilation    Auxiliary    Cooling

Default Printer Name: GMR Phantom-L   Port Type: COM1:   Configure...

Add New Model   Delete Current Model

OK   Cancel   Apply   Help

Job Status : No Job Active   Version 1.0.530



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### Job Setup Tab

**Testra Model Designer**

Series | Model | **Job Setup** | Material | Vector Pens | Fill Pens | Raster | Output | General

**Table Setup**

Table Size X: 100 Y: 60 in

Home Position: Near Left Corner

Job Plate Symmetry: Normal

**Blank details**

Blank Size (Corel Page Setup): 8.5 x 11 in

Blank Offset: 0 x 0 in

Edit Blank...

**Output Order Sorting**

Enable Sorting by Pen's output order

Enable Nearest Sorting

Enable Inside Out Sorting

Sorting Preference

Neutral Sorting

Left to Right Preferred

Top to Bottom Preferred

Disable In-Out Sorting when Count > 10000

Disable during Preview when Count > 500

**Return Location After Job**

Just Stay where Job ends

Move to Home Position

Move to Job Plate Start

Move to a Specific Location

X: 0 Y: 0 in

**Repositioning & Offsets for Job & Blank**

Job in Blank: As in Document

Blank in Table: Home

**Rotate Job**

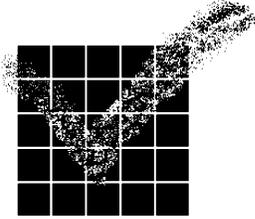
0 deg  90 deg  180 deg  270 deg

**Rotate Blank**

0 deg  90 deg  180 deg  270 deg

OK Cancel Apply Help

Job Status : No Job Active Version 1.0.530



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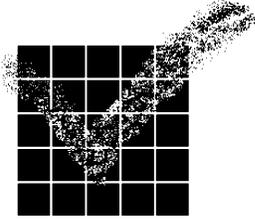
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### Material Tab

The screenshot shows the 'Testra Model Designer' window with the 'Material' tab selected. The current material is 'Material 1 Lexan 0.020'. The interface is divided into several sections:

- Limits for this material:** A table with columns for 'Min' and 'Max' values, and units.
- Settings for this material:** A group of checkboxes for 'Software Override', 'Mirror X', and 'Speed in Percent'.
- Vector Quality Control:** Radio buttons for 'Pixels per Inch' and 'Pulses per Inch'.
- Buttons:** 'Add New Material' and 'Delete Current Material' buttons.
- Footer:** 'OK', 'Cancel', 'Apply', and 'Help' buttons, along with 'Job Status : No Job Active' and 'Version 1.0.530'.

	Min	Max	Units
Vector Mark Speed	0	100	%
Raster Mark Speed	0	100	%
Bitmap / Fill PPI	125	1000	PPI
Vector Pulse Rate	1	500	PPI
Curve fitting Tolerance		0.005	in



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### Vector Pens Tab

Testra Model Designer

Series | Model | Job Setup | Material | **Vector Pens** | Fill Pens | Raster | Output | General

Colors 1-10

Enable	Color Name	Speed %	Power %	PPI	Mapped Pen	Output Order	Offset-In X	Offset-In Y	A	I	R	U	X	E	X	H
<input checked="" type="checkbox"/>	Black	50	100	500	1	6	0	0	<input checked="" type="checkbox"/>							
<input checked="" type="checkbox"/>	Red	50	100	500	2	6	0	0	<input checked="" type="checkbox"/>							
<input checked="" type="checkbox"/>	Green	50	100	500	3	6	0	0	<input checked="" type="checkbox"/>							
<input checked="" type="checkbox"/>	Yellow	50	100	500	4	6	0	0	<input checked="" type="checkbox"/>							
<input checked="" type="checkbox"/>	Blue	50	100	500	5	6	0	0	<input checked="" type="checkbox"/>							
<input checked="" type="checkbox"/>	Magenta	50	100	500	6	6	0	0	<input checked="" type="checkbox"/>							
<input checked="" type="checkbox"/>	Cyan	50	100	500	7	6	0	0	<input checked="" type="checkbox"/>							
<input checked="" type="checkbox"/>	Orange	50	100	500	8	6	0	0	<input checked="" type="checkbox"/>							
<input checked="" type="checkbox"/>	Brown	50	100	500	1	6	0	0	<input checked="" type="checkbox"/>							
<input checked="" type="checkbox"/>	Violet	50	100	500	2	6	0	0	<input checked="" type="checkbox"/>							

Pass 1

Add New Vector Color | Delete a Vector Color | Add New Pass | Delete A Pass

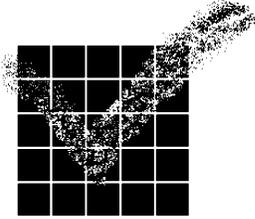
OK | Cancel | Apply | Help

Job Status : No Job Active | Version 1.0.530

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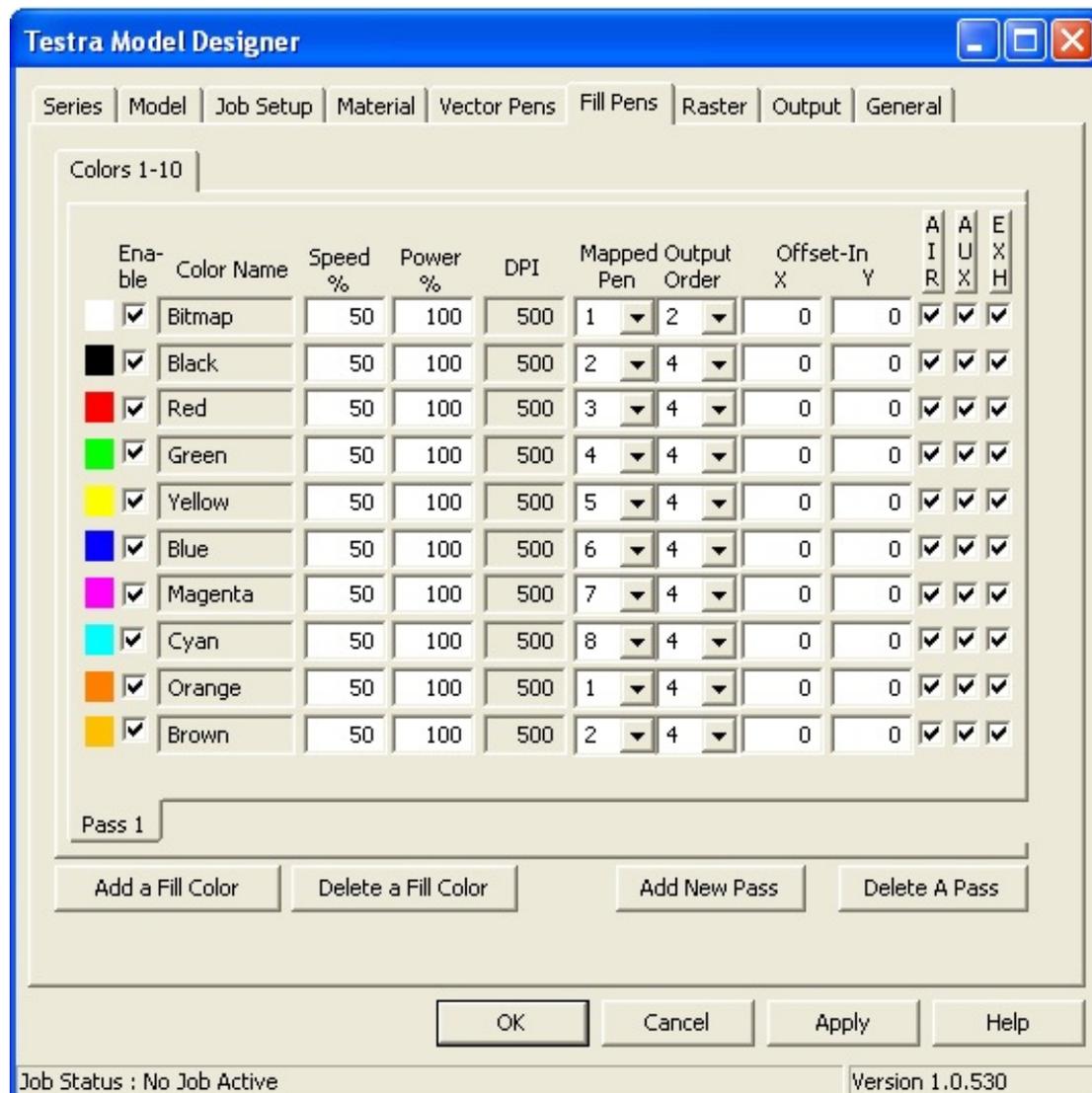


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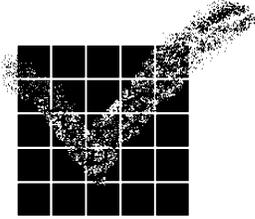
### Fill Pens



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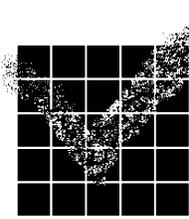
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### Raster - Bitmap Settings

The screenshot shows the 'Testra Model Designer' application window with the 'Raster' tab selected. The 'Bitmap Settings' sub-tab is active, displaying various configuration options:

- Image Type:** Color Or GrayScale
- Output Type:** 1 Bit B&W
- Raster PPI:** 500
- Halftone:**
  - Full Gray Scale
  - Error Diffusion No Of Gray Levels: 2
  - Pattern Dithering Pattern Size: HalfTone 6X6
- Bitmap Inversion:**
  - Invert Bitmap Image
  - Invert Blank
  - Invert Job Area
- Raster Direction:** Raster Axis: Y Axis
- Raster Progress:**
  - Left to Right
  - Right to Left
  - Auto
- Raster Merging:**
  - Merge Closely Spaced When Count < 1000
  - Merge All as One
  - Never Merge
  - Merge Closely Spaced always
- Overlapped Bitmaps/Fills:**
  - Do not engrave hidden area
  - Engrave All
- Raster Margin Control:**
  - Auto Margin
  - Margin Length: 1 in

Buttons at the bottom: OK, Cancel, Apply, Help. Job Status: No Job Active. Version: 1.0.530.



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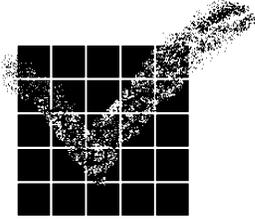
### Output Tab

The screenshot shows the 'Testra Model Designer' application window with the 'Output' tab selected. The window title bar includes standard Windows window controls (minimize, maximize, close). The 'Output' tab is highlighted among other tabs: Series, Model, Job Setup, Material, Vector Pens, Fill Pens, Raster, Output, and General.

The 'Output Folder/Port Selection' section contains a dropdown menu set to 'COM1:' and an unchecked checkbox labeled 'Always Launch 'Save As' dialog before Sending Job'.

The 'Output Folder and Filename' section includes an 'Output Folder' text box containing 'C:\Documents and Settings\Thomas Hart\My Documer' with a 'Browse...' button to its right. Below this are two radio button options: 'Use Source Document Name as Job Filename' (which is selected) and 'Always Use this as a fixed Job Name'. Under the selected option, there is a checked checkbox 'Suppress filename extension, if present in Document Name'. Under the unselected option, there is a text box containing 'MyJob'. At the bottom of this section, there is an unchecked checkbox 'Append a Job ID to Filenames', a checked checkbox 'Do not Prompt before Overwriting', and a 'File Extension' text box containing '.prn'.

At the bottom of the window, there are four buttons: 'OK', 'Cancel', 'Apply', and 'Help'. The status bar at the very bottom shows 'Job Status : No Job Active' on the left and 'Version 1.0.530' on the right.



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### General Tab

The screenshot shows the 'Testra Model Designer' application window with the 'General' tab selected. The interface includes several sections for configuration:

- General:** A dropdown menu for 'Unit' is set to 'English - Inch', and there is an 'Add New Printer...' button.
- Settings:** Two buttons: 'Save Settings as a file' and 'Load Settings from a file'.
- Additional support programs:** Two text input fields with 'Launch' buttons. The first field contains 'c:\ss\SSXP.BAT' and the second contains 'c:\TestraMWLaser\MillWriteTestraLaserV6.exe'.
- Authorization Code:** Five text input fields containing 'DE61A', 'URJYW', 'U1VV6', 'ZK2DW', and '8EBH1', followed by an 'Apply Code' button.
- Product Code:** A text input field containing 'Machine SI No =91275'.

At the bottom of the window, there are 'OK', 'Cancel', 'Apply', and 'Help' buttons. The status bar at the very bottom shows 'Job Status : No Job Active' and 'Version 1.0.530'.

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