

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.

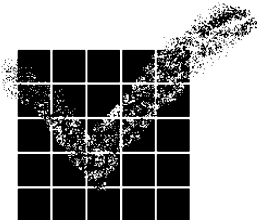
Protection

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:

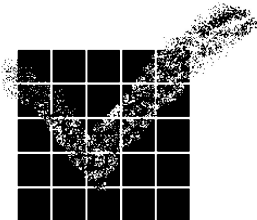
<start>/<control panel>/<add or remove programs>

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 has a blue title bar and standard Windows window controls. The 'Series' tab is active, showing various configuration options for a machine control series. The 'Controller' is set to 'Laser' and the 'Application' is 'Laser (Vector + Raster)'. The 'Controller Origin (0,0)' is 'Near Left', 'Controller Units / Steps per Inch' is '1000', and 'Decimal Places (Accuracy)' is '4'. The 'Maximum Vector/Fill Pens/Tools' is set to '8'. There are several checkboxes: 'Enable Raster Banding' (unchecked), 'Enable Hotkey' (checked), 'Swap X and Y axis' (unchecked), 'Pen Up (Laser off) Speed Overridable' (unchecked), 'Uses Standard Printer Port' (checked), 'Invert Bitmap Pixels' (unchecked), and 'Enable Rotation Of Jobs' (unchecked). The 'Raster Properties' section has 'Needs Margin' (checked), 'Needs Offset' (checked), and 'Acceleration' set to '40 In/Sec^2'. The 'Raster Axis' section has 'X Axis Rastering' (checked) and 'Y axis Rastering' (checked). There is a 'Check Controller Serial No' button. At the bottom, there are 'Add New Series' and 'Delete Current Series' buttons, and 'OK', 'Cancel', 'Apply', and 'Help' buttons. The status bar at the bottom shows '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

GMR

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

☐ Enable Raster Banding ☒ Enable Hotkey

☐ Swap X and Y axis ☐ Pen Up (Laser off) Speed Overridable

☒ Uses Standard Printer Port ☐ Invert Bitmap Pixels

☐ Enable Rotation Of Jobs

Raster Properties

☒ Needs Margin ☒ Needs Offset

Acceleration: 40 In/Sec^2

Raster Axis

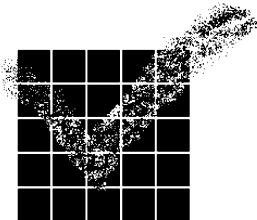
☒ X Axis Rastering ☒ Y axis Rastering

Check Controller Serial No

Add New Series Delete Current Series

OK Cancel Apply Help

Job Status : No Job Active Version 1.0.530



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Model Tab

Testra Model Designer

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

Phantom-L

Table Setup

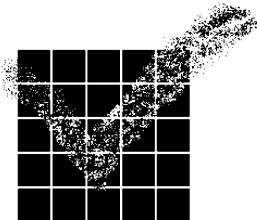
	X	Y	
Table Size	100	60	in
Home Position	Near left		

Available User Controls

<input type="checkbox"/> X axis Rotary	<input type="checkbox"/> Y axis Rotary	<input type="checkbox"/> X axis Vise	<input type="checkbox"/> Y axis Vise
<input checked="" type="checkbox"/> Ventilation	<input checked="" type="checkbox"/> Auxiliary	<input checked="" type="checkbox"/> Cooling	

Default Printer Name: Port Type:

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 Y in

Home Position:

Job Plate Symmetry:

Blank details

Blank Size (Corel Page Setup): in

Blank Offset: in

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

Rotate Job

☒ 0 deg ☐ 90 deg ☐ 180 deg ☐ 270 deg

Return Location After Job

☒ Just Stay where Job ends

☐ Move to Home Position

☐ Move to Job Plate Start

☐ Move to a Specific Location

X Y in

Repositioning & Offsets for Job & Blank

Job in Blank:

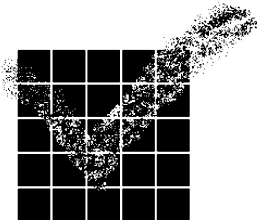
Blank in Table:

Rotate Blank

☒ 0 deg ☐ 90 deg ☐ 180 deg ☐ 270 deg

Job Status : No Job Active

Version 1.0.530



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Material Tab

Testra Model Designer

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

Material 1 Lexan 0.020

Limits for this material

	Min	Max	
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

Settings for this material

☒ Software Override ☐ Mirror X ☒ Speed in Percent

Vector Quality Control

☐ Pixels per Inch

☒ Pulses per Inch

Add New Material Delete Current Material

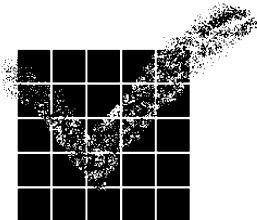
OK Cancel Apply Help

Job Status : No Job Active Version 1.0.530

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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	A 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"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Red	50	100	500	2	6	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Green	50	100	500	3	6	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Yellow	50	100	500	4	6	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Blue	50	100	500	5	6	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Magenta	50	100	500	6	6	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Cyan	50	100	500	7	6	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Orange	50	100	500	8	6	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Brown	50	100	500	1	6	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Violet	50	100	500	2	6	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Pass 1

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

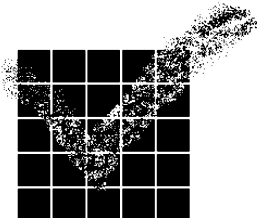
OK | Cancel | Apply | Help

Job Status : No Job Active | Version 1.0.530

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Fill Pens

Testra Model Designer

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

Colors 1-10

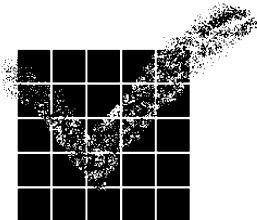
Enable	Color Name	Speed %	Power %	DPI	Mapped Pen	Output Order	Offset-In X	Offset-In Y	A I R	A U X	E X H
<input checked="" type="checkbox"/>	Bitmap	50	100	500	1	2	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>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

Pass 1

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

OK | Cancel | Apply | Help

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Raster - Bitmap Settings

Testra Model Designer

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

Bitmap Settings | Raster Offset | Rubber Stamp

Image Type:

Output Type:

Raster PPI:

Halftone

☐ Full Gray Scale

☒ Error Diffusion No Of Gray Levels:

☐ Pattern Dithering Pattern Size:

Bitmap Inversion

☐ Invert Bitmap Image

☐ Invert Blank

☒ Invert Job Area

Raster Direction

Raster 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

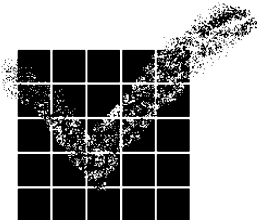
☒ Engrave All

Raster Margin Control

☒ Auto Margin Margin Length: in

OK Cancel Apply Help

Job Status : No Job Active Version 1.0.530



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Output Tab

Testra Model Designer

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

Output Folder/Port Selection

COM1: [v]

☐ Always Launch 'Save As' dialog before Sending Job

Output Folder and Filename

Output Folder: C:\Documents and Settings\Thomas Hart\My Document [Browse...]

☒ Use Source Document Name as Job Filename

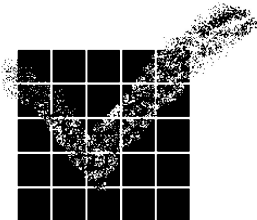
☒ Suppress filename extension, if present in Document Name

☐ Always Use this as a fixed Job Name: MyJob

☐ Append a Job ID to Filenames ☒ Do not Prompt before Overwriting File Extension: .prn

OK Cancel Apply Help

Job Status : No Job Active Version 1.0.530



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General Tab

The screenshot shows the 'Testra Model Designer' window with the 'General' tab selected. The window has a blue title bar and standard Windows window controls. The 'General' tab is active, showing various settings. The 'Unit' is set to 'English - Inch'. There are buttons for 'Add New Printer...', 'Save Settings as a file', and 'Load Settings from a file'. Under 'Additional support programs', two programs are listed: 'c:\ss\SSXP.BAT' and 'c:\TestraMWLaser\MillWriteTestraLaserV6.exe', each with a 'Launch' button. The 'Authorization Code' section shows a sequence of boxes containing 'DE61A', 'URJYW', 'U1VV6', 'ZK2DW', and '8EBH1', followed by an 'Apply Code' button. The 'Product Code' section shows a text box with 'Machine SI No =91275'. At the bottom, there are 'OK', 'Cancel', 'Apply', and 'Help' buttons. The status bar at the very 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

General

Unit: English - Inch Add New Printer...

Settings

Save Settings as a file Load Settings from a file

Additional support programs

c:\ss\SSXP.BAT Launch

c:\TestraMWLaser\MillWriteTestraLaserV6.exe Launch

Authorization Code

DE61A - URJYW - U1VV6 - ZK2DW - 8EBH1 Apply Code

Product Code

Machine SI No =91275

OK Cancel Apply Help

Job Status : No Job Active Version 1.0.530