# WINLASE
# QUICK START

## OPERATION MANUAL

990-550 REV F

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## Revision Record

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| A | 21672 | 2/08 | Original Release. |
| B | 21818 | 6/08 | Corrected minor typographical errors. |
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# CONTACT US

Thank you for purchasing *WinLase LAN* Laser Marker Software. If you have purchased this software separately, please inspect the CD ROM and installation materials thoroughly for any damage prior to installation. Should there be any damage, please immediately contact the shipping company to file a claim, and notify us at:


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If you have any questions about the contents of this manual, or find any errors or omissions in it, please notify Amada Miyachi America.

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**1. (a)** Subject to the exceptions and upon the conditions set forth herein, Seller warrants to Buyer that for a period of one (1) year from the date of shipment ("**Warranty Period**"), that such Goods will be free from material defects in material and workmanship.

**(b)** Notwithstanding the foregoing and anything herein to the contrary, the warranty set forth in this Section 1 shall be superseded and replaced in its entirety with the warranty set forth on **Exhibit A** hereto if the Goods being purchased are specialty products, which include, without limitation, laser products, fiber markers, custom systems, workstations, Seller-installed products, non-catalogue products and other custom-made items (each a "**Specialty Products."**

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**(e)** Seller shall not be liable for a breach of the warranty set forth in Section 1(a) unless: (i) Buyer gives written notice of the defect, reasonably described, to Seller within five (5) days of the time when Buyer discovers or ought to have discovered the defect and such notice is received by Seller during the Warranty Period; (ii) Seller is given a reasonable opportunity after receiving the notice to examine such Goods; (iii) Buyer (if requested to do so by Seller) returns such Goods (prepaid and insured to Seller at 1820 South Myrtle Avenue, Monrovia, CA 91016or to such other location as designated in writing by Seller) to Seller pursuant to Seller's RMA procedures and Buyer obtains a RMA number from Seller prior to returning such Goods for the examination to take place; and (iii) Seller reasonably verifies Buyer's claim that the Goods are defective and that the defect developed under normal and proper use.

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**Exhibit A**
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**Acceptance Tests:** Acceptance Tests (when required) shall be conducted at Amada Miyachi America, Inc., Monrovia, CA, USA (the "**Testing Site**") unless otherwise mutually agreed in writing prior to issuance or acceptance of the Acknowledgement. Acceptance Tests shall consist of a final visual inspection and a functional test of all laser, workstation, enclosure, motion and accessory hardware. Acceptance Tests shall include electrical, mechanical, optical, beam delivery, and software items deliverable under the terms of the Acknowledgement. Terms and conditions for Additional Acceptance Tests either at Seller's or Buyer's facility shall be mutually agreed in writing prior to issuance or acceptance of the Acknowledgement.

**Performance Warranty:** The system is warranted to pass the identical performance criteria at Buyer's site as demonstrated during final Acceptance Testing at the Testing Site during the Warranty Period, as provided in the Acknowledgement. Seller explicitly disclaims any responsibility for the process results of the laser processing (welding, marking, drilling, cutting, etc.) operations.

**Exclusions:** Seller makes no warranty, express or implied, with respect to the design or operation of any system in which any Seller's product sold hereunder is a component.

**Limitations:** The limited warranty set forth on this Exhibit A does not cover loss, damage, or defects resulting from transportation to Buyer's facility, improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the equipment, or improper site preparation and maintenance. This warranty also does not cover damage from misuse, accident, fire or other casualties of failures caused by modifications to any part of the equipment or unauthorized entry to those portions of the laser which are stated. Furthermore, Seller shall not be liable for a breach of the warranty set forth in this Exhibit A if: (i) Buyer makes any further use of such Goods after giving such notice; (ii) the defect arises because Buyer failed to follow Seller's oral or written instructions as to the storage, installation, commissioning, use or maintenance of the Goods; (iii) Buyer alters or repairs such Goods without the prior written consent of Seller; or (iv) repairs or modifications are made by persons other than Seller's own service personnel, or an authorized representative's personnel, unless such repairs are made with the written consent of Seller in accordance with procedures outlined by Seller.

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Seller shall not be liable for a breach of the warranty set forth in this Exhibit A unless: (i) Buyer gives written notice of the defect or non-compliance covered by the warranty, reasonably described, to Seller within five (5) days of the time when Buyer discovers or ought to have discovered the defect or non-compliance and such notice is received by Seller during the Warranty Period; (ii) Seller is given a reasonable opportunity after receiving the notice to examine such Goods and (a) Buyer returns such Goods to Seller's place of business at Buyer's cost (prepaid and insured); or (b) in the case of custom systems, Seller dispatches a field service provider to Buyer's location at Buyer's expense, for the examination to take place there; and (iii) Seller reasonably verifies Buyer's claim that the Goods are defective or non-compliant and the defect or non-compliance developed under normal and proper use.

All consumable, optical fibers, and expendables such as electrodes are warranted only for defect in material and workmanship which are apparent upon receipt by Buyer. The foregoing warranty is negated after the initial use.

No warranty made hereunder shall extend to any product whose serial number is altered, defaced, or removed.

**Remedies:** With respect to any such Goods during the Warranty Period, Seller shall, in its sole discretion, either: repair such Goods (or the defective part). **THE REMEDIES SET FORTH IN THE FOREGOING SENTENCE SHALL BE BUYER'S SOLE AND EXCLUSIVE REMEDY AND SELLER'S ENTIRE LIABILITY FOR ANY BREACH OF THE LIMITED WARRANTY SET FORTH IN THIS EXHIBIT A.** Representations and warranties made by any person, including representatives of Seller, which are inconsistent or in conflict with the terms of this warranty, as set forth above, shall not be binding upon Seller.

Products manufactured by a third party and third party software ("**Third Party Product**") may constitute, contain, be contained in, incorporated into, attached to or packaged together with, the Goods. Third Party Products are not covered by the warranty in this Exhibit A. For the avoidance of doubt, **SELLER MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO ANY THIRD PARTY PRODUCT, INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; (c) WARRANTY OF TITLE; OR (d) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE.** Notwithstanding the foregoing, in the event of the failure of any Third Party Product, Seller will assist (within reason) Buyer (at Buyer's sole expense) in obtaining, from the respective third party, any (if any) adjustment that is available under such third party's warranty.

# Section I: Before You Start

## Overview

This *QuickStart Guide* contains basic instructions for the *WinLase* Laser Marker Software used on the LMF-2000 Laser Marker. For the rest of this guide, the software will simply be referred to as ***WinLase***, and the LMF-2000 Laser Marker will simply be referred to as "***the Marker***."

This guide only contains brief instructions in order to get you started with basic marking right away. If you need more detailed information, the complete OEM **Reference Manual** containing thorough instructions for using all features of *WinLase* is available from Amada Miyachi America. To download it, or to order a copy of that manual on CD ROM, see **CONTACT US** in the front of this guide to get in touch with us by e-mail, telephone, or regular mail.

## Before You Start

- The operator ***must*** have a working knowledge of the *Windows XP* Operating System.
- The operator ***must*** have a working knowledge of laser marking.
- Verify that the Marker and PC (Personal Computer) are connected together and function properly as shown in the marker manual.
- ***Before*** operating the Marker, be sure the protective lens cover is removed from the output lens.
- Verify the working distance of the marking material as shown in the marker manual.
- For stable marking, wait for at least 20 minutes ***after*** the power is turned ON for thermal stabilization.

Be sure to **SAVE** the created data periodically onto an external memory device or network. If there is trouble with the computer hard disk drive, all the data saved on it can be lost permanently.

## Safety Precautions

**DANGER**

***Always*** wear protective goggles when operating the Marker. Goggles ***must*** have an optical density of ***at least*** **7**$^{+}$**,** at the wavelength of the Laser Marker you are using. ***Never*** look directly into the laser beam.

**WARNING**

***Never*** operate the Marker in any manner other than described in this manual. Doing so may expose personnel to laser radiation or electrical hazards.

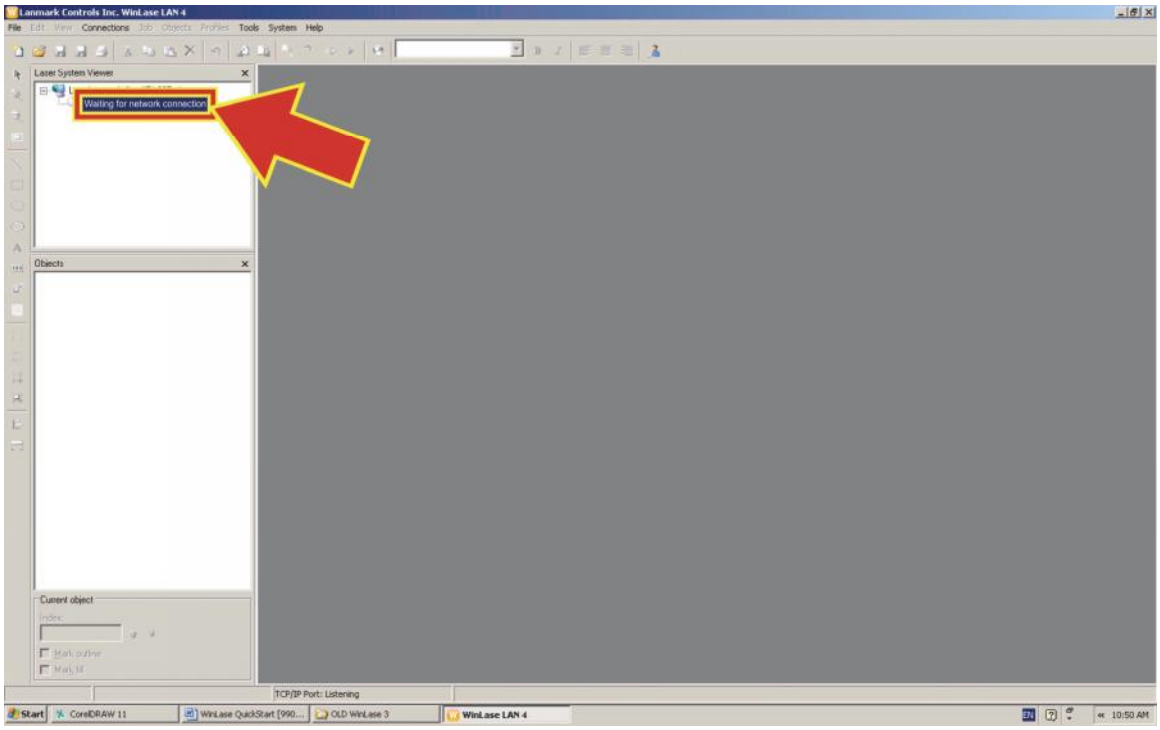
***Before*** operating the Marker, all personnel who will be working with the Marker ***must*** read this manual and the *Laser Safety User's Manual* (Amada Miyachi America Part Number 990-502) thoroughly.

# Section II. Description

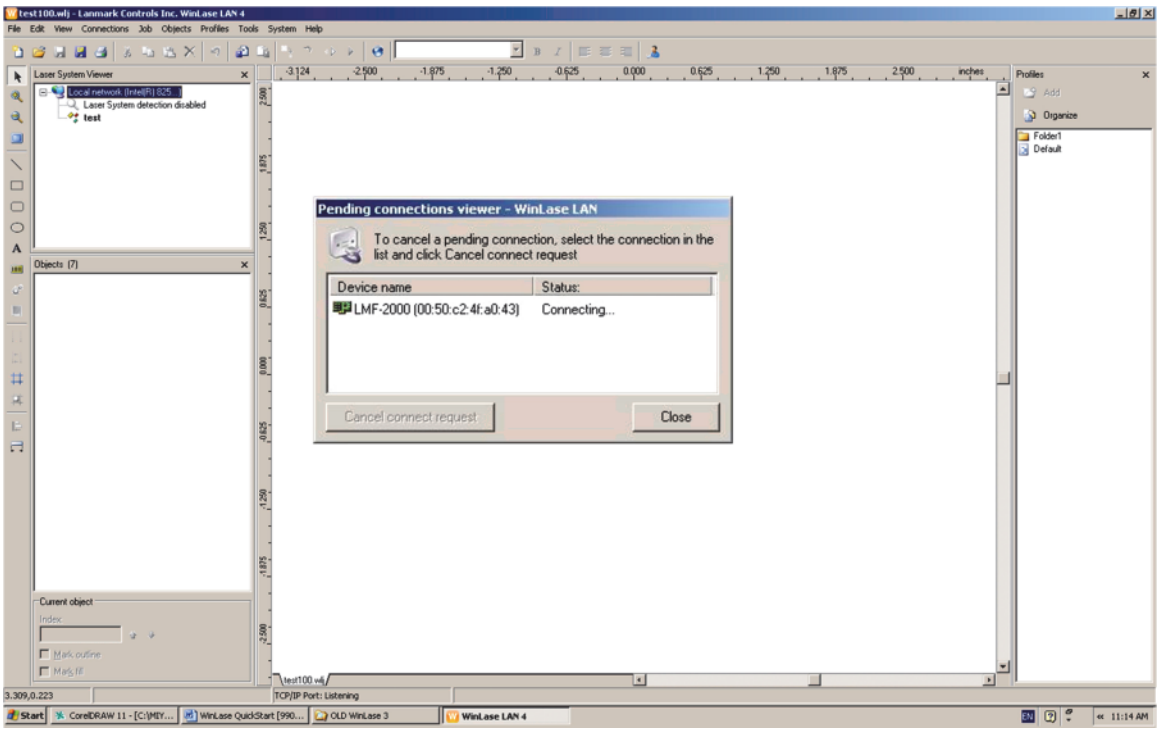
## *WinLase* Startup

Upon startup you will see a sequence of screens that change as the software connects to the Marker and prepares the system for use.

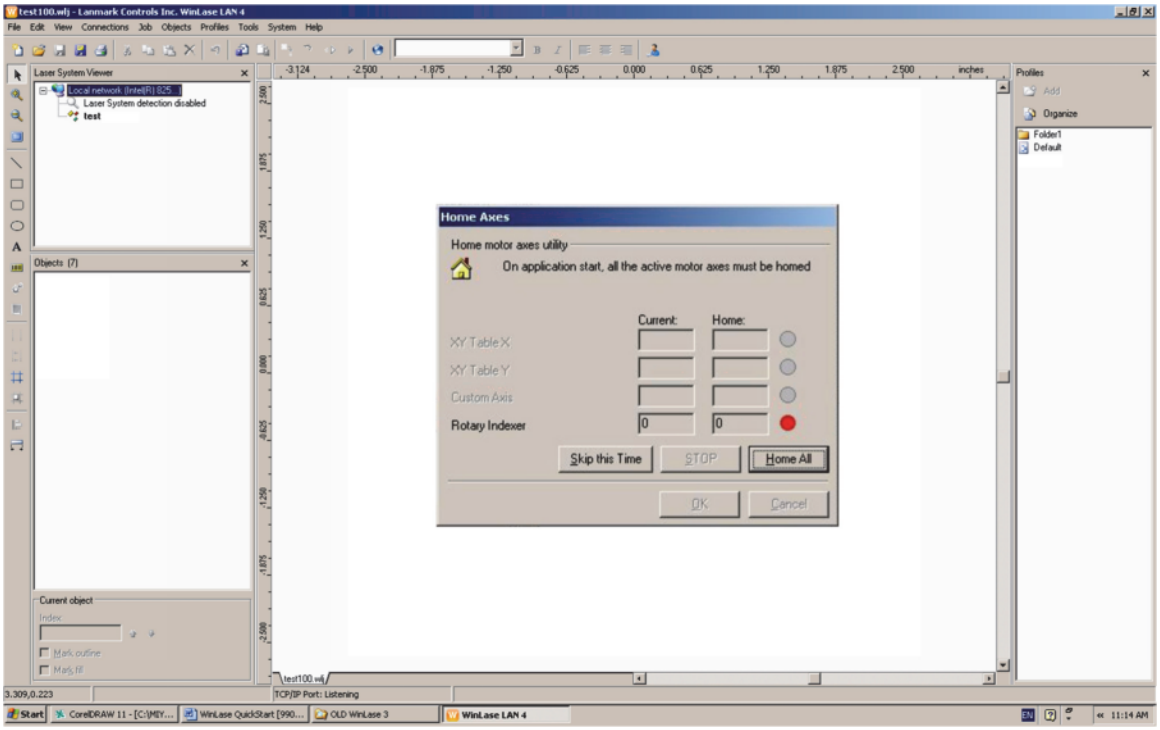
Some screens will display longer than others, such as **Waiting for network connection** as shown below.



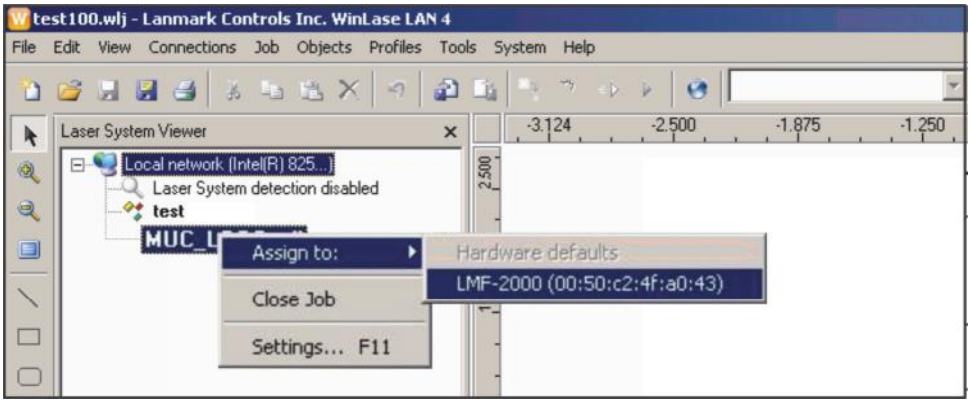
Some screens will prompt you for ***optional*** actions as shown below.



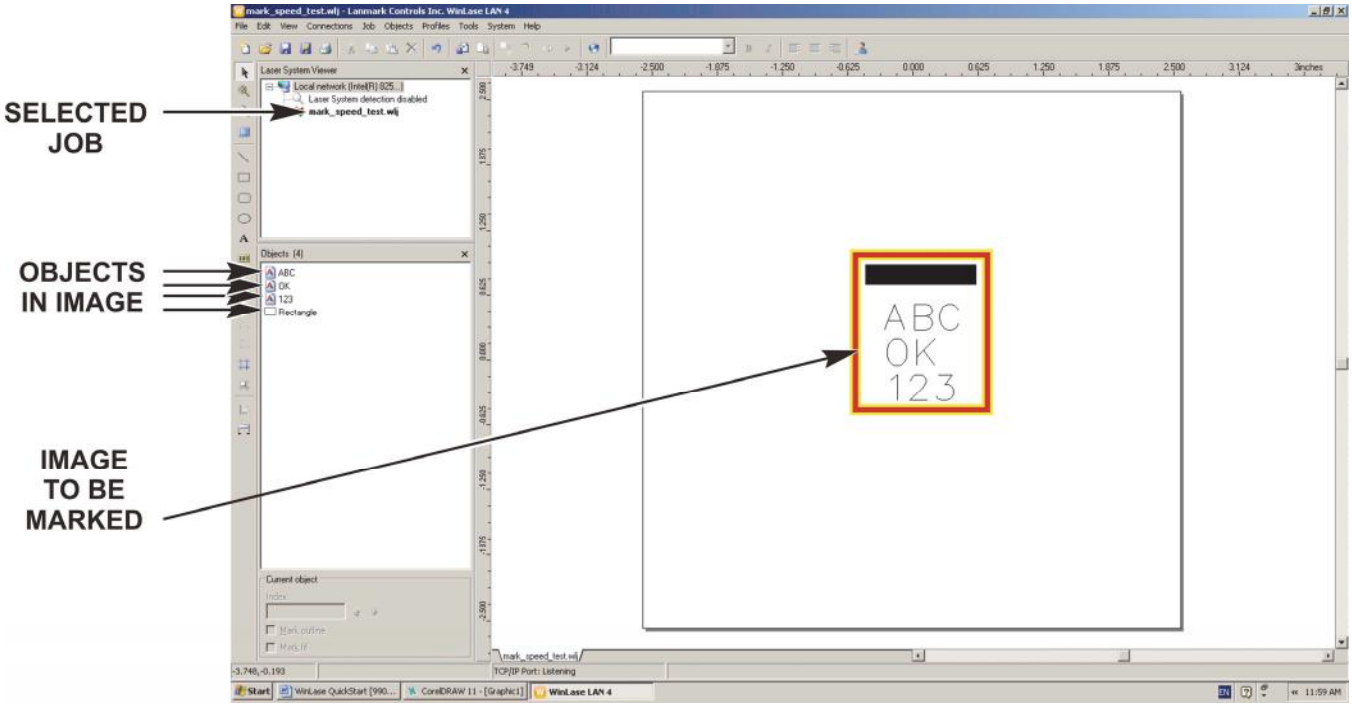

Other screens will prompt you for ***mandatory*** actions.



When the system starts-up and connects successfully, you're ready to mark. When you select a marking **Job**, you will be prompted to assign it to a Marker and be given other options.



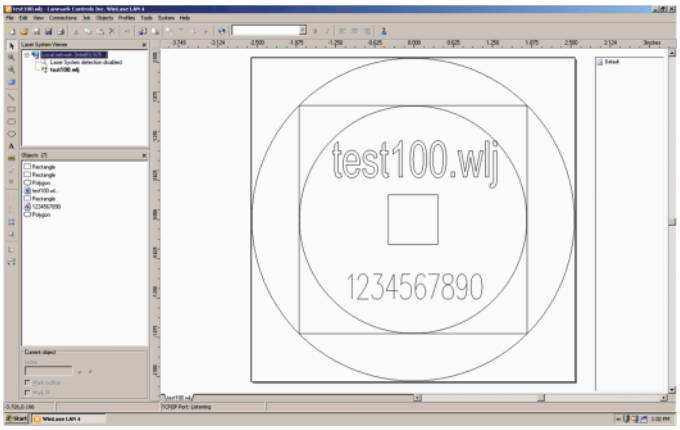

When the startup sequence is complete, you can select a **Job** to mark and you will see the screen below. For details on this screen, see *Section III, Full Editing Interface*.



## Operating Methods

*WinLase* allows you to choose operation from a computer using a mouse and a traditional display, a touchscreen display, or a hand-held pendant.

### Computer Operation




The computer screen is identical for both mouse and touchscreen operation. If you're using a standard computer screen, use the standard mouse "point & click" functions.

If you're using a touchscreen, simply touch the items displayed to perform the actions you want.

### Pendant Operation

The use of a hand-held pendant shown on the right is also known as "**Local Execution Mode**."

The pendant can be used to select stored **Jobs** and start and stop the marking process.

## User Access Levels

*WinLase* has three operating modes, one is unrestricted which allows the User/Operator to change all system and **Job** settings, and two are restricted modes which prevent the User/Operator from accidentally changing or deleting **Job** settings.

### Un-Restricted Mode

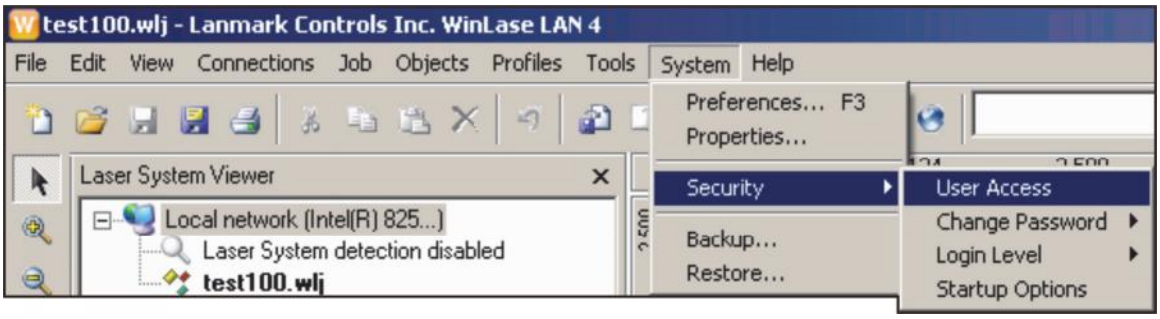
This operating mode is called **All Editing Functions** and allows the User/Operator to change ***all*** editing and control settings. To access this mode, the User/Operator ***must*** have a **Password** that is set by the System Administrator. See Page 7 for instructions on accessing this mode.

### Restricted Modes

- **Operator Interface only** -- This mode only allows loading and is intended for use in applications where the operator should be restricted from making any changes to the **Job**. This provides the minimum controls necessary to execute pre-saved **Jobs**, and close the application. See Page 8 for instructions on using this mode.
- **Touchscreen Interface** -- This is a specialized interface designed for use with touchscreens, and is intended for use in applications where the operator should be restricted from making any changes to the **Job**. The **Touchscreen Interface** provides the minimum controls necessary to execute pre-saved **Jobs**, and close the application. If necessary, the **Touchscreen Interface** can also be used with a mouse. See Page 8 for instructions on using this mode.

## Changing User Access Levels

1. To change the access levels, select **System -> Security -> User Access** as shown below.

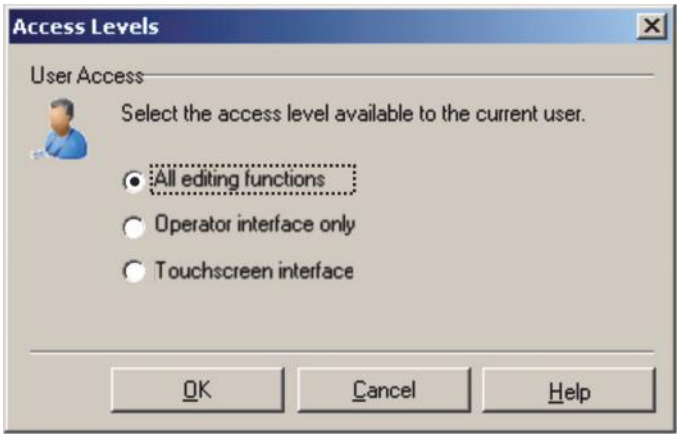



2. When the **Access Levels** window displays, follow the instructions below to choose the level you want.

### Select **All editing functions**

1. From the **Access Levels** window, click the **All editing functions** radio button.
2. Click the **OK** button.

   **NOTE:** *WinLase* automatically senses whether the dongle is attached to the Marker or not. If it is not attached, the **Touchscreen interface** selection will ***not*** display.



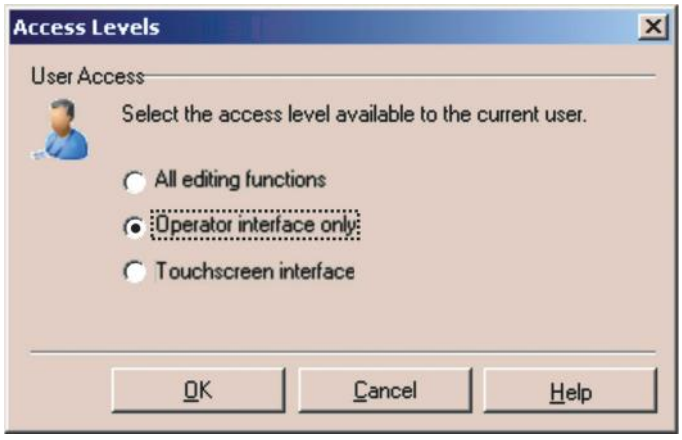
3. Click the **FULL ACCESS** button. If a password is set, the system will prompt you for the password.

Click Change Password in the Security window shown above in step 1

4. Enter the password and click **OK**.
5. The full access interface is restored.

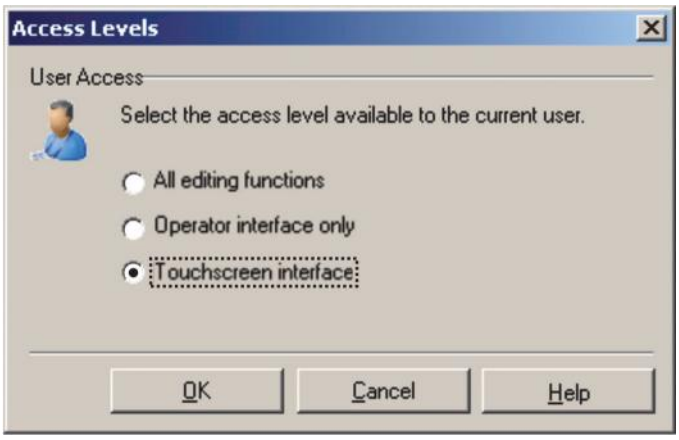
### Select **Operator interface only**

1. From the **Access Levels**, click the **Operator interface only** radio button.
2. Click the **OK** button.




### Select **Touchscreen interface**

1. From the **Access Levels** window, the **Touchscreen interface** radio button.
2. Click the **OK** button.

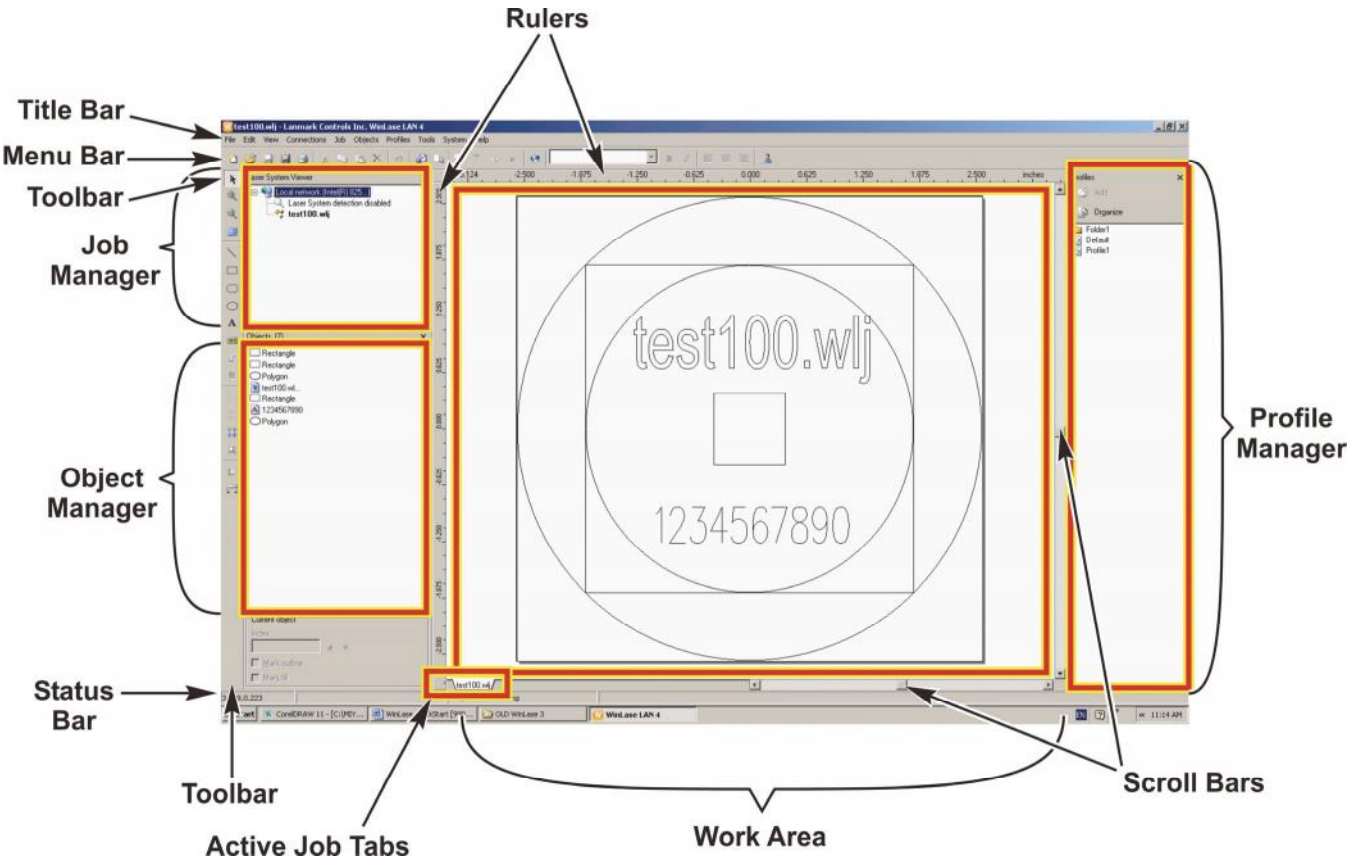


# Section III. Full Editing Interface

## *Full Editing Interface*

After starting *WinLase*, the **Full editing interface** window appears containing the following areas:

- **Title Bar**
- **Menu Bar**
- **Rulers**
- **Tool Bars**
- **Work Area**
- **Status Bar**
- **Scroll Bars**
- **Active Job Tabs**
- **Laser System Manager**
- **Object Manager**
- **Profile Manager**
- **Motor Manager**




## Title Bar

The **Title Bar** displays the currently loaded **Job** name, followed by the company name and application name.

## Menu Bar

The **Menu Bar** area consists of **File, Edit, View, Objects, Profiles, Job, Tools, System,** and **Help**.

### Menu Commands

The following sections describe each of the *WinLase* menu commands.

## Section III. Full Editing Interface

**File** This menu provides **Job** file handling functions.

**New Job:** Creates a new empty **Job** and sets it as the active **Job**.

**Open Job:** Opens a selected **Job** and sets it as the active **Job**.

**Close Job:** Closes the active **Job**.

**Close All Jobs:** Closes all open **Jobs.**

**Import:** Imports files from other applications.

**Export:** Exports *WinLase* objects to other applications.

**Import and Export Profiles:** Imports and exports object Profiles.

**Save Job:** Saves the changes to the **Job** file.

**Save Job As:** Saves the current **Job** to a new file.

**Save Job to Laser System:** Saves all objects in the active **Job** to the embedded controller. Required for operation in local mode.

**Print Setup:** Displays the Print Setup window.

**Print:** Prints the current **Job**.

**Exit:** Exits the *WinLase* software.

**Edit** This menu provides the necessary **Job** editing tools.

**Undo:** Reverses the last editing action performed.

**Cut:** Initiates a cut operation, in which the object is copied to the Clipboard, and is deleted from its current location.

**Copy:** The current object is copied to the Clipboard.

**Paste Special:** Pastes an object that was copied to the *Windows* Clipboard from another application.

**Paste:** Pastes the selected object from the clipboard. If the clipboard does not contain an object, no **Paste** action occurs.

**Duplicate:** Copies and pastes the selected object.

**Delete:** Removes the selected object from the active **Job**.

**Select All:** Selects all objects in the drawing area.

**Snap to Guidelines:** Toggles this function ON & OFF.

**Snap to Grid:** Toggles this function ON & OFF.

**View** This menu provides the tools to control the way *WinLase* displays the controls.

**Laser System Viewer:** Displays the Laser System Viewer

**Object Manager:** Displays all the objects in the **Job** in the order in which they will mark.

**Profiles Manager:** Displays a list of all previously saved object profiles and their folders.

**Motor Manager:** (***Optional***) Display a toolbox for interfacing with an optional 4-axis motor controller card.

**Guidelines:** Displays the current guidelines that were set with the Guidelines setup form.

**Grid:** Displays a drawing grid.

**Rulers:** Enables/Disables the rulers for the currently open **Job**.

**Millimeters:** Changes units to millimeters.

**Inches:** Changes units to inches.

**Bits:** Changes units to bits.

**Objects** This menu provides the object tools and settings.

**Add:** Shows the following menu items:

- *Automation:* Adds a new automation object to the current **Job**.
- *Barcode:* Adds a new barcode object to the current **Job**.
- *Point:* Adds a new point object to the current **Job**.
- *Line:* Adds a new line object to the current **Job**.
- *Polygon:* Adds a new polygon object to the current **Job**.
- *Rectangle:* Adds a new rectangle object to the current **Job**.
- *Text:* Adds a new text object to the current **Job**.

**Convert to Template:** Places the current object in the background, to serve as a **Job** template.

**Lock Object/Unlock Object:** Toggles the lock state of the current object.

**Lock All:** Locks all objects in the active **Job**, so no editing of the objects can occur.

**Unlock All:** Unlocks all objects in the active **Job**.

**Defaults:** Changes the settings that are applied to a new object.

**Dimensions:** Displays the **Dimension** tool for the currently selected object.

**Properties:** Displays the **Object Properties** box for the currently selected object.

**Profiles** This menu provides the object **Profile** tools and settings.

**Add to Profiles:** Adds the profile from the currently selected object to the saved profiles.

**Organize Profiles:** Displays the **Organize Profiles** dialog box.

**Job** This menu provides the **Job** tools and settings.

**PreviewMark:** (***Optional***) Starts the object preview mode, which when combined with a visible laser pointer, creates an outline that defines the boundaries of the current object/group.

**QuickMark:** Marks selected object or objects immediately.

**Run:** Starts a process.

**Tools** This menu provides the **System** tools.

**Configure Tools:** Shows a dialog box to add, delete, or edit programs on the Tools menu.

**Align:** Aligns currently selected objects to each other in the current **Job**.

**Grid/Guidelines:** Makes changes to the grid and guideline tools settings.

**Change Laser System License:** (***Not Used***)

**Minimize Laser Power:** Provides a quick way to command the laser power setting to minimum.

**Change Laser System Firmware:** Accesses the firmware update wizard.

**Manage Laser System Connections:** Opens the connections manager where network adapters and automatic laser connections can be configured

**System** This menu provides the **Job and** System Tools.

**Preferences:** Displays the **Systems Preferences** window.

**Properties:** Displays the current system properties.

**Security:** Shows the following menu items:

- *User Access*: Selects the operator interface mode. Access the touchscreen mode through this menu.
- *Change Password*: Sets/Changes the *WinLase* password.
- *Startup Options*: Selects the access mode in which *WinLase* will start in.
- *Login Options:* Selects the current login level

**Backup:** Saves the *WinLase* system settings to a backup file. This is ***only*** available to Administrators.

**Restore:** Restores system settings from a backup file. This is ***only*** available to Administrators.

**Help** This menu provides the **Help** tools.

**Contents & Index:** Starts the online Help system.

**Online Updates:** Connects to the Internet to get an OEM software update if available.

**About:** Displays information about the version of *WinLase* that is currently installed.

## Ruler Guide

The Ruler Guide consists of straight horizontal and vertical lines located around the work area. These rulers are useful for the alignment of objects in the work area. The ruler dimensions can be set to millimeters, inches or bits. The scaling of the rulers is automatically set using information stored in the **Lens Correction File**.

## Toolbars

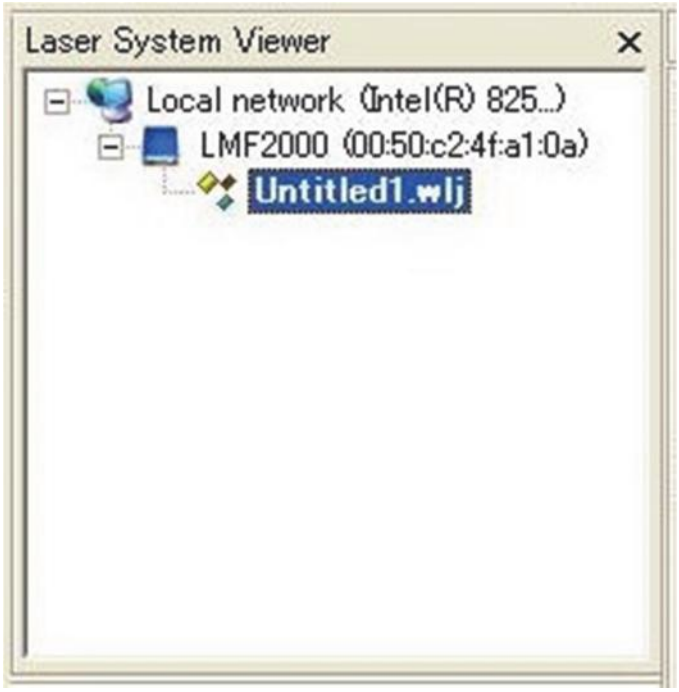
The Toolbar consists of shortcuts to often used functions, menus, and other tools used to edit a **Job**. Place the cursor on a tool in the Tool bar to display the function of that tool in a hint window. The Toolbar locations are:

- **Below the Menu Bar Tools** (above). These contains the standard working tools with which to create, open, save, print, import, export, change text settings, etc. within the program.
- **Left Side of the Screen Tools** (left). These contain the set of working tools with which to add, select, and manipulate objects in the **Job**.

## Work Area

The Work Area occupies the window within *WinLase*. This area represents the physical marking field and shows each object in the **Job** relative to other objects. The limits of the displayed "page" represent the field size of the particular lens installed on the Scan Head. Objects can be moved outside of the field size boundary, but they will not mark. The size of the page can be set using the **Page Setup** function in the **Job Settings** dialog box.

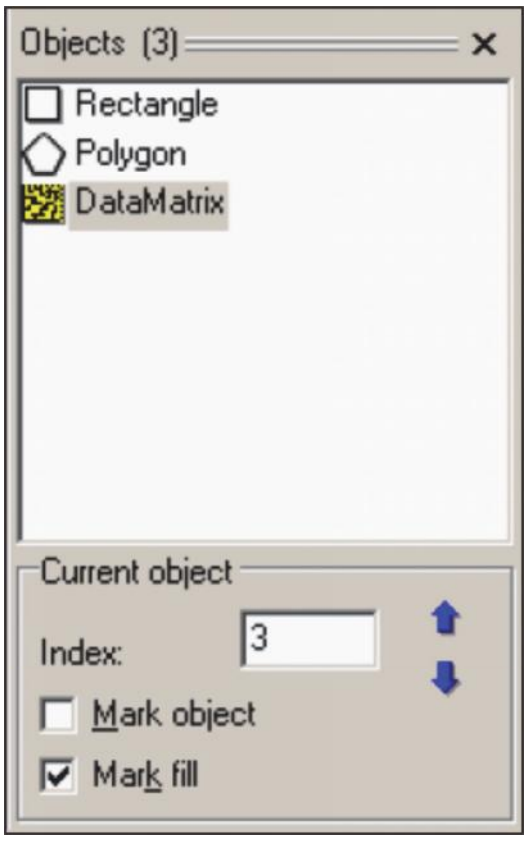
## Laser System Viewer




The **Laser System Viewer** displays the currently active network card and any laser markers visible on the network. If no systems are visible, "Searching for Laser Systems…" will be displayed. If "Laser Detection Disabled" is present the USB hardware key is not properly detected. The icon to the left of the laser name indicates the current status – a blue square icon indicates a particular laser is connected, a black square icon indicates the laser is disconnected. Please see the operator manual for details on other modes

Any open jobs will appear in this list. A dotted line will indicate to which laser system (or no systems) the job is associated with. To assign a job, right click on the job name and use the "Assign To…" context menu.

## Object Manager




The **Object Manager** displays the list of objects (marking and automation) in the **Job**.

The objects are listed in the order in which they will mark/process. If more than one object appears in the **Object Manager**, the ⬆⬇ arrows (Up/Down) at the bottom of the **Object Manager** become enabled.

Use these buttons to move objects up and down relative to each other in the list. The number of objects within a **Job** is displayed to the right of the Objects title.

A particular object can be selected using the mouse. Use the **Mark object** and **Mark fill** check boxes to toggle the outline marking and fill marking features.

Objects can also be selected and grouped from the **Object Manager**.

## Profile Manager

The **Profile Manager** displays a hierarchical view of the Profiles the user has saved. These Profiles can be organized into groups of folders, and applied to marking objects in the **Job**.

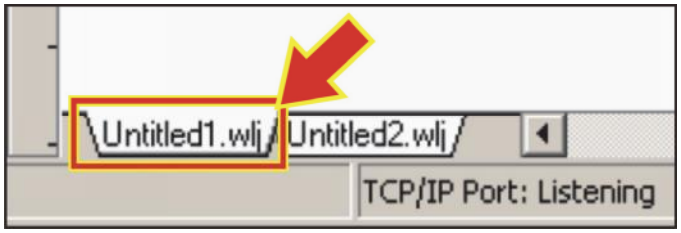
Profiles can be added to objects or groups of objects from within the **Profile Manager** by right clicking on the **Profile** and selecting the desired item from the popup context menu.

Profiles can be viewed and edited by double clicking on the specific **Profile**.

## Available Jobs Tab Control

The available **Job Tabs** control gives a visual indication of the currently loaded **Job**s and the **Active Job**.

As shown on the right, the **Active Job** is **Untitledl.wlj**.



# Section IV. Operator Interface

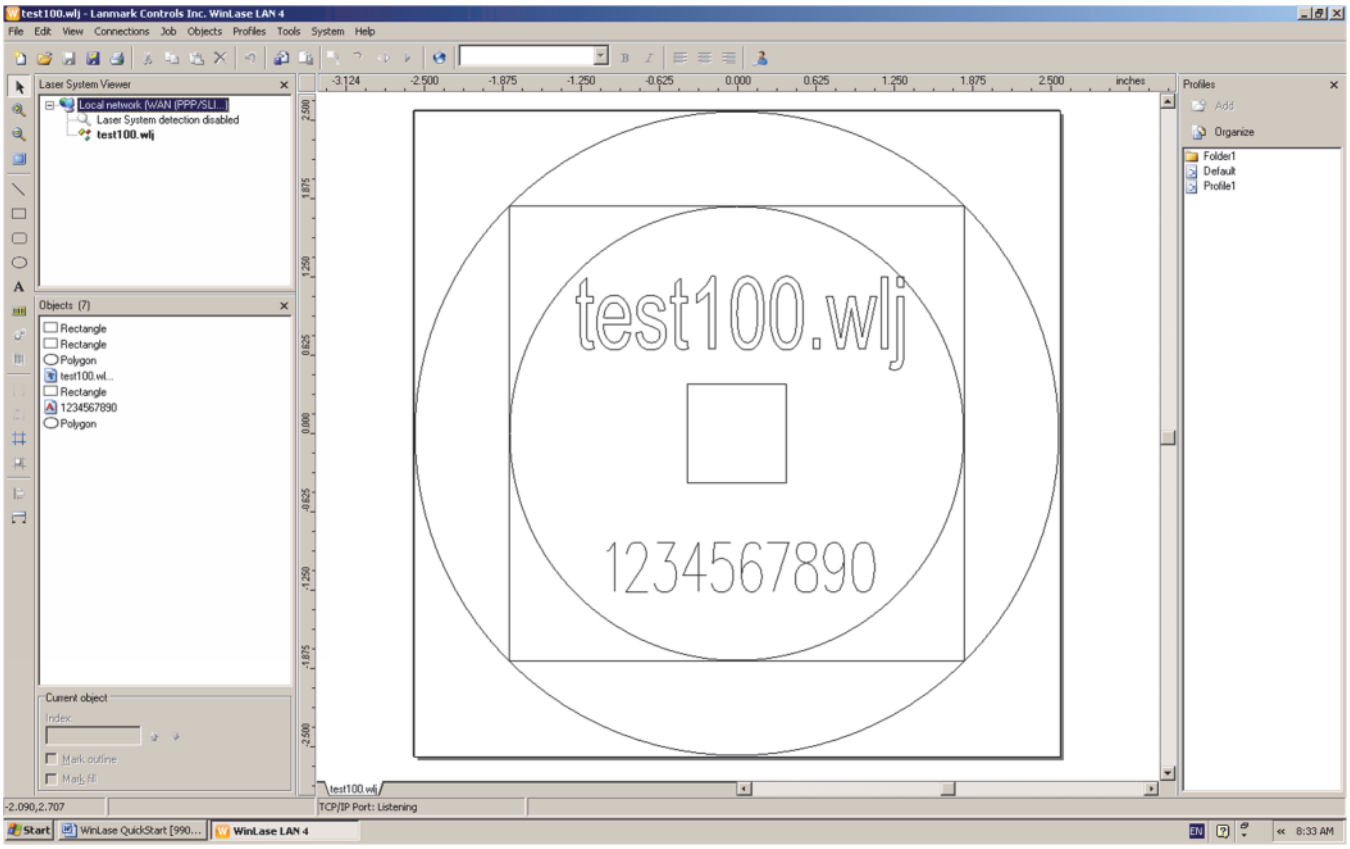
## The Operator Interface

This operating mode is designed for use in applications where the operator should be restricted from making any changes to the **Job** and provides only the minimum controls necessary to execute pre-saved **Jobs**, and close the application.

## Using the Operator Interface

When in **Operator Interface** mode, the following window appears and consists of the following active areas:

- **Title Bar**
- **Menu Bar**
- **Toolbar**



## Title Bar

The **Title Bar** displays the currently loaded **Job** name, followed by the company name and application name.

## Menu Bar

The **Menu Bar** area consists of **File** and **Job**. The following section details each menu command.

## Menu Commands

**File** This menu provides **Job** file handling functions.

- **Open Job --** Opens a selected **Job** from the **\marker\operator** folder and sets it as the active **Job**.
- **Exit --** Exits the *WinLase* software.

**Job** This menu provides the **Job** tools and settings.

- **QuickMark --** Marks selected object or objects immediately.
- **Run --** Starts a process.

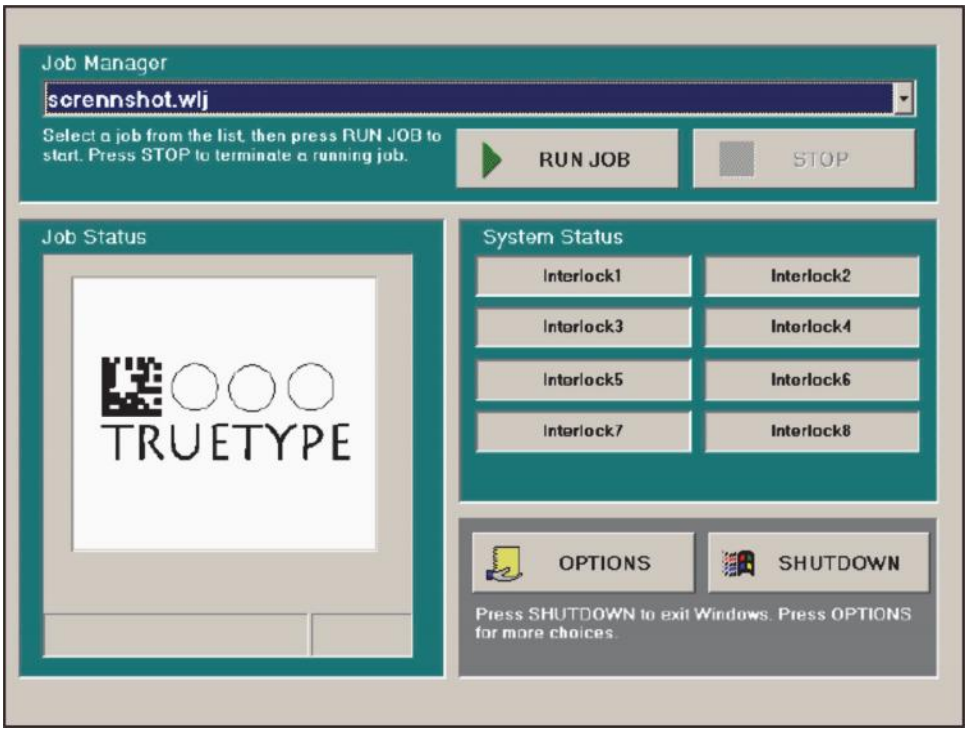
# Section V. Touchscreen Interface

## Introduction

The **Touchscreen Interface** requires a **Touchscreen** display panel. This operating mode is intended for use in applications where the operator should be restricted from making any changes to the **Job** and provides only the minimum controls necessary to execute pre-saved **Jobs**, and close the application. Although specifically designed for a touchscreen display, you can use a mouse in this mode.

**NOTE:** Amada Miyachi America recommends touchscreen LCD monitors with USB interface.

## Using the Touchscreen Interface




The controls available in the **Touchscreen Interface** consist of the following:

- **Job Manager** -- Loads a **Job** from the **marker\operator** folder. **Jobs** are loaded by clicking on the drop down list and selecting an available **Job**.
- **RUN JOB** -- Starts execution of the loaded **Job**. Clicking this button is equivalent to selecting **Job -> Run** from the main menu, and then clicking the **Go** button in the **Run Process** dialog.
- **STOP** -- Immediately stops execution of the running **Job**.

- **Job Status --** Displays the objects within the **Job** in relation to the mark field.
- **System status** -- Displays the status of **Interlocks 1** through **8**. These interlock panels can be customized to display customized strings to represent each interlock port.
- **OPTIONS** -- Click this button to see a secondary menu, which has selections for **Global** settings, and to return to the full editing interface,
- **SHUTDOWN --** Shut down *Windows* directly with this button.

# Section VI. Using *PreviewMark*

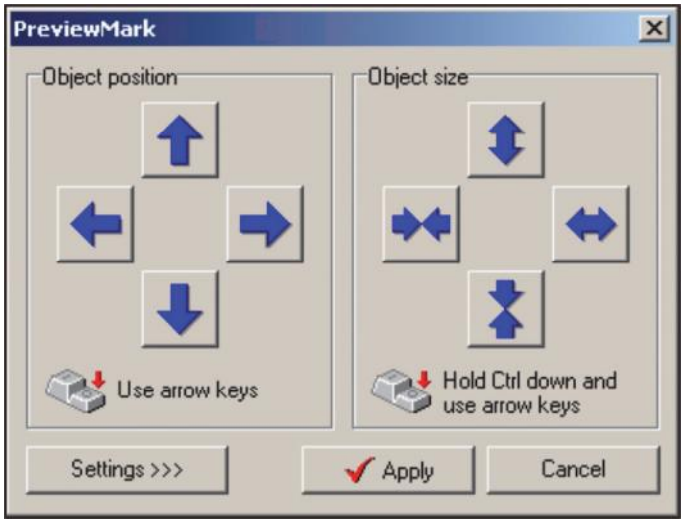
When the laser is equipped with a visible pointer, and the laser driver file has enabled the visible pointer, **PreviewMark** is enabled. This feature visually indicates the outline of an object or group of objects. This is accomplished by rapidly tracing the outline of the object(s) with the visible laser ***while keeping the marking laser turned OFF***. The mark object can be easily moved around the marking field by using the **Arrow** keys and when properly positioned, moved there with a press of the **Enter** key. Additionally, using the **CTRL + Arrow** key combination can dynamically change the size of the object.

## *PreviewMark* an Object

1. Select an object or group of objects.
2. To start **PreviewMark**, do ***one*** of the following:
   - Right click on the object and select **PreviewMark**.

     ***OR***
   - Press the **F4** function key.

     ***OR***
   - From the main menu, select **Job -> PreviewMark**.




## Move the Displayed Outline

1. To move the outline of the object on the marking field, do ***one*** of the following:
   - Click on the up/down/left/right arrows with the mouse. A single click moves the outline once. Holding the mouse button down on the direction arrow will move the outline across the mark field.

     ***OR***
   - Press the up/down/left/right arrow keys on the keyboard. A single press moves the outline once. Holding the arrow key down will move the outline across the mark field.

2. When the outline is in the desired position, press the **Enter** key on the keyboard or click the **Apply** button with the mouse. The object is repositioned on the screen to the new location.

## Scale the Displayed Outline

1. To scale the outline of the object, do ***one*** of the following:
   - Click on the scale arrows with the mouse. A single click scales the outline a small amount. Holding the mouse button down on the scale arrow will scale the outline continuously.

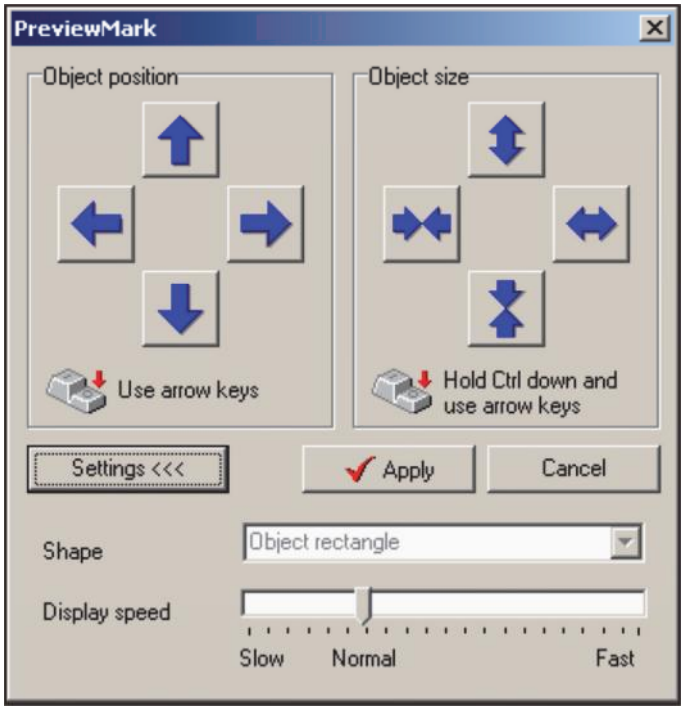
   ***OR***

   - While holding the **CTRL** key down, press the up/down/left/right arrow keys on the keyboard. A single press scales the outline a small amount. Holding the arrow key down will scale the outline continuously.

2. When the outline is scaled to the desired size, press the **Enter** key on the keyboard or click the **Apply** button with the mouse. The object is resized on the screen.

## Adjust The Outline Refresh Speed

1. Click the **Settings** button. The **PreviewMark** window expands to show additional controls.
2. With the mouse pointer, click the **Display** speed slider bar, and while holding the mouse button down, move the bar left or right to adjust the speed.
3. Click **Apply** to save the changes, **Cancel** to discard them.



# Section VII. Marking With the Laser

## Marking Introduction

This chapter provides an overview of the laser marking of objects and groups of objects. In this context, a marking object is any laser markable entity added to an active Job. In *WinLase*, there is a fundamental difference between marking objects (**QuickMark**) and running Jobs (**Run Job**).

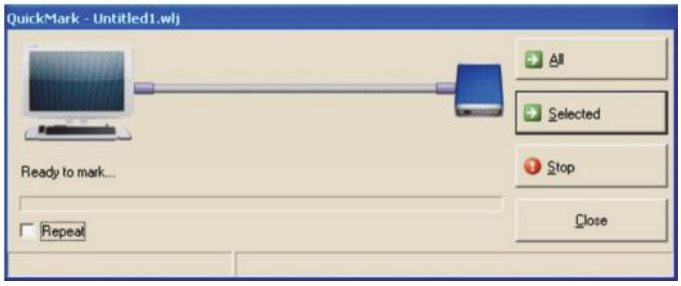
When marking objects in **QuickMark**, there is no process control, so **Automation** objects will ***not*** execute. Also, any special processing that has been applied to an object, such as **TextMerge**, serialization, etc. will ***not*** be executed when simply marking the object using **QuickMark**. To execute those features, objects ***must*** be marked using the **Run** command.

## Using the QuickMark Feature

Use the **QuickMark** feature to laser mark the selected object, or group of objects. **QuickMark** does ***not*** apply any special processing to the object such as **Serialization** or **TextMerge**, etc.

## Marking Objects

| **WARNING** |
| --- |
| ***Before*** you proceed, check the beam path because the Laser will turn ON immediately. |




1. Select the object or group of objects to be laser marked.
   - To get the **QuickMark** box, do ***one*** of the following:
   - From the main menu, select **Job -> QuickMark**.

     ***OR***
   - Press **F8** on the keyboard.

     ***OR***
   - Right mouse click and select **QuickMark**.
2. Click the Selected button to mark the single object.
3. Click the **All** button to mark all objects currently in the Job.

4. To mark an object repeatedly, click the **Repeat** button. The object will mark continuously until the **Stop** button is clicked.
5. To stop the laser while marking, do one of the following:
   - Click the **Stop** button.

     ***OR***
   - Press the **ESC** key.

     ***OR***
   - Click close to finish the **QuickMark** session.

# Section VIII: Working With Profiles

## Introduction

An **Object Profile** is the laser marking parameters and scan head parameters specified by the **Object Profile** settings. After developing laser-marking parameters for different materials, there is no need to repeat the process for another object that needs to use the same parameters. *WinLase* provides a means of saving the marking **Profiles**, and arranging them in a tree structured set of folders. This method makes saving, retrieving and applying **Profiles** extremely easy.

**Saved Profiles** are displayed in the **Profile Manager**. By default, the **Profile Manager** is displayed on the right hand side of the *WinLase* window.

## The Object Profile Page

The **Profile** page in the **Object Properties** box is where to make most changes to an objects marking profile. After making changes, **Profiles** can be saved to the **Profiles Manager** for later retrieval.

An **Objects Profile** can also be copied from one object and then pasted to one or more objects.

To show the **Profiles** page, do one of the following:

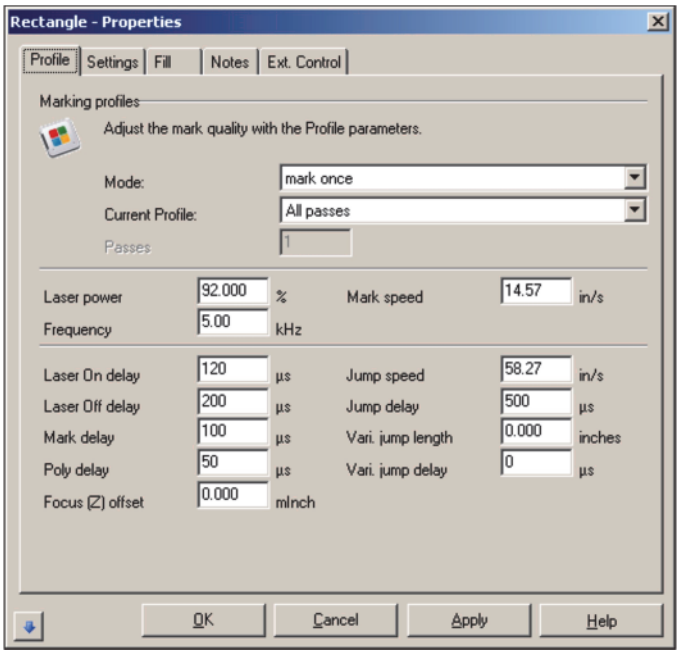
- Right mouse click on a mark object and select **Properties**

***OR***

- Select a mark object, then from the menu bar, select **Objects ➜ Properties.**

***OR***

- Select a mark object and then press the **F2** key.



## Marking Modes

| | |
|---|---|
| **Mark Once** | The object will mark once with the selected **Profile** parameters. |
| **Mark Multiple times** | The object will mark the number of times indicated in the **Passes** field. |
| **2-Pass Cut and Clean** | The object will mark twice and each pass has its own **Profile** settings. To modify different **Profile** settings, select them with the **Current Profile** box. |
| **3-Pass Cut and Clean** | The object will mark three times and each pass has its own **Profile** settings. To modify, different **Profile** settings, select them with the **Current Profile** box. |
| **4-Pass Cut and Clean** | The object will mark four times, and each pass has its own **Profile** settings. To modify different **Profile** settings, select them with the **Current Profile** box. |

If the **Use pens** checkbox is checked**, 2 pass Cut and Clean, 3 pass Cut and Clean, or 4 pass Cut and Clean** is not available.

## Current Profile

When the Mode field is set to **2 pass Cut and Clean, 3 pass Cut and Clean,** or **4 pass Cut and Clean**, or the **Use pens** box is checked, the **Current Profile** box selects which Profile is currently displayed. If displaying pens, the associated pen color is displayed to indicate which line segments in the object will use the current **Profile**. Changes can be made to the current Profile and saved with the object.

## Passes

The **Passes** field is only available when the **Mark Multiple times** mode is selected. Enter the desired number of marking passes for the object. When running the Job, the object will mark the number of times indicated in the **Passes** field, even though it only appears in the **Object List** once.

## Use Pens

The **Use pens** check box is only available when the object contains extended pen information. Pen information is usually found in files of type ***.plt**. Using pens allows different line segments within one object to be assigned different Profiles. When the **Use pens** box is checked, the **Current Profile** control updates with the pens available in the object, and the associated color in which the line segments in the object are drawn on screen. When the **Mode** field is set to **2 pass Cut and Clean**, **3 pass Cut and Clean**, or **4 pass Cut and Clean**, using pens is not available.

## Laser Power

Controls the output power of the laser. On YAG type lasers, this is typically accomplished by changing the lamp or diode current. Depending on the settings in the **Laser Configuration** file, the units are percent **(%)** or Watts.

## Frequency

Controls the repetition rate of the laser control signal. On YAG lasers, this is usually referred to as the Q-Switch or pulse frequency.

## Pulse Width

Controls the pulse width of the laser control signal. For example, if the **Laser Power** field is set to 50% and the **Frequency** field to 5 KHz, the pulse width will be set automatically to 100 µSec.

## Mark Speed

Controls the speed with which the laser spot moves on the target while executing a marking vector.

## Jump Speed

Controls the speed with which the spot moves while "jumping" to the start of the next marking vector. The laser is OFF during the jump.

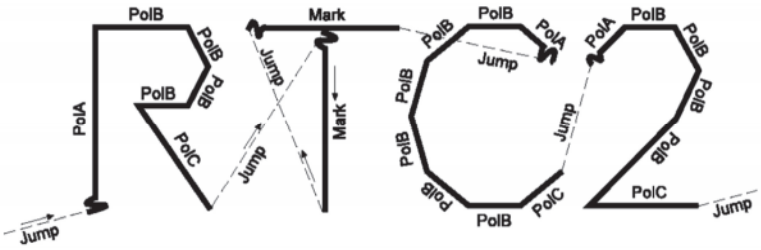
## Jump Delay

Before executing a jump command, the Scan Head mirrors have to be accelerated up to the programmed Jump Speed. This acceleration results in a time lag. After the jump, the mirrors need time to settle to a complete stop. In order to take into account the time lag and settling time, a **Jump Delay** is inserted automatically at the *end* of every jump vector.

Note that a higher **Jump Speed** requires a longer Jump Delay. The entire time taken by a jump consists of the jump time and the **Jump Delay** and can be minimized by choosing optimum values of **Jump Speed** and **Jump Delay**.

### Jump Delay Too Short

The vector succeeding a jump command has started marking during the settling time. A running-in oscillation or an overshoot will be visible.




### Jump Delay Too Long

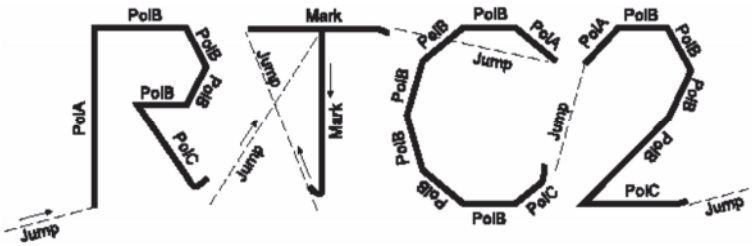
There are no visible effects if the **Jump Delay** is programmed too long. However the marking time will be increased.

## Mark Delay

At the end of a series of marking vectors, the mirrors have to settle to a stop before executing the next command. For this reason, a **Mark Delay** is automatically inserted *after* the last marking vector in a series. For best performance, **Mark Speed** and **Mark Delay** have to be well matched.

### Mark Delay too short:

Though the mirrors have not reached the end position of a mark vector, the command for scanning the succeeding vector is already issued. The mark vector is turned to the direction of the succeeding vector.




### Mark Delay too long:

If the **Mark Delay** is too long there are no visible effects, but the marking time will be increased.

## Poly Delay

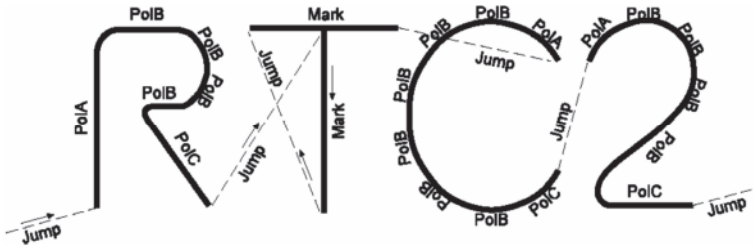
The time lag occurring while executing a series of marking vectors results in a rounding of the corners of the polygon. To control this, a **Poly Delay** is inserted *between* each vector is a series of marking vectors.

**WARNING**

The laser is still ON at the end of these vectors, you can be burned.

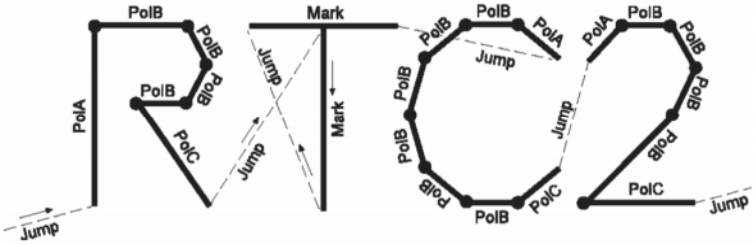
### Poly Delay too short:

The corners of a polygon are rounded. The command succeeding a **PolygonA** or a **PolygonB** command is already issued, although the mirrors have not reached the end position of the preceeding **PolygonA** or **PolygonB** vector.



### Poly Delay too long:

If the polygon delay is too long, the mirrors are retarded or stopped at the end position of a **PolygonA** or a **PolygonB** vector



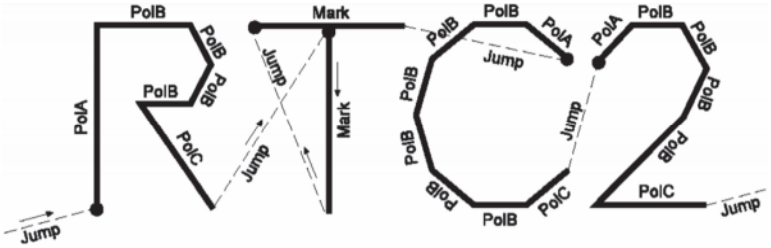

## LaserOn Delay

Many applications require laser marking without variation in intensity at the start or end of a vector. In order to reach acceptable marking results, it is necessary to mark vectors with a constant velocity.

When the Scan Head first executes a marking vector, the mirrors on the galvanometers have to be accelerated up to the defined marking speed. To make sure the laser is not switched ON before the mirrors have reached the programmed angular velocity; a **LaserOn Delay** is automatically inserted ***before*** the start of a series of marking vectors. The length of the **LaserOn Delay *must*** be matched with the **Mark Speed.**

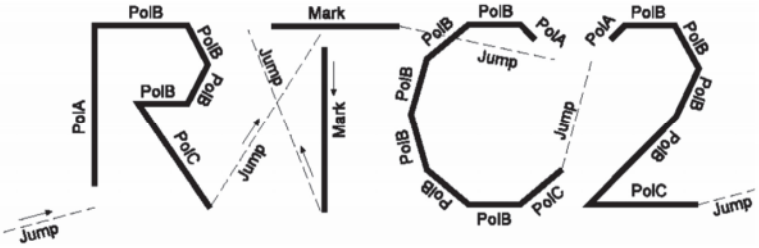
### LaserOn Delay Too Short:

At the beginning of a mark or a PolygonA vector the laser is switched on even though the mirrors have not reached the necessary angular velocity. Burn in effects at the start points of the respective vectors result.




### LaserOn Delay Too Long:

The laser is turned on too late at the beginning of a mark or PolygonA vector. The respective vectors can not be marked from their start points.

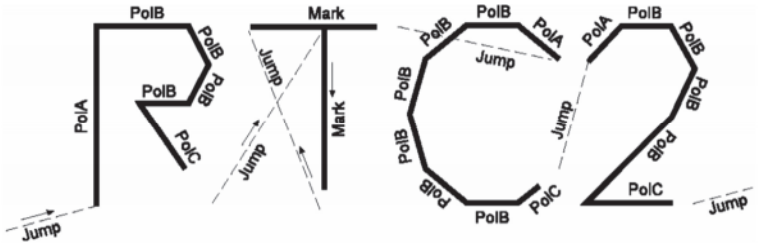



## LaserOff Delay

Depending on the programmed **Mark Speed**, a difference occurs between the commanded position and the actual position of each mirror during execution of a vector. The difference in time between these two values is called lag. When the command value of the end of a vector is reached, the laser should not be turned off immediately; it must be turned off after a delay, to compensate for the lag. A **LaserOff Delay** is automatically inserted at the *end* of every series of marking vectors. The length of the **LaserOff Delay** has to be matched with the **Mark Speed**.

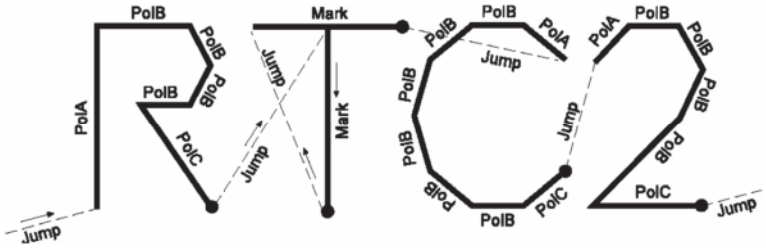
### LaserOff Delay Too Short

The laser is turned off after a mark or a **PolygonC** command even though the mirrors have not reached the end position of the vectors. The respective vectors are not marked completely.




### LaserOff Delay Too Long

The laser is turned off too late after a mark or a **PolygonC** command. The laser is ON even though the mirrors are retarded or stopped. Burn in effects result at the end points of the respective vectors.




## Wobble Width

Changing the value of **Wobble Width** controls the width of the marked line. When **Wobble Width** is greater than **0**, the beam dithers (moves in a very small circle) while marking a vector. This has the effect of making the marked line wider.

## Wobble Frequency

Changing the **Wobble Frequency** controls the speed at which this circle is moved.

## Zero power After Mark

After the object has completed marking, the laser power will be set to zero % if this check box is checked. This feature is useful if using certain laser types that require a separate signal to control the laser power.

## Tips on Optimizing the Delays

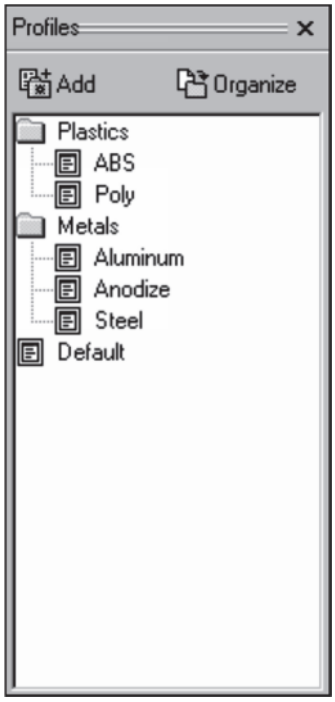
The delays have to match with the application and the defined **Jump Speed** and **Mark Speed**. If the delays are not optimized, the quality of the scanning results will be reduced and the scanning time will be extended. The lengths of **LaserOn** and **LaserOff** delay have no influence on the scanning time.

Adjusting the delays as follows.

1. Optimize the **LaserOn** and the **LaserOff** delays. While optimizing these delays, it is useful to set the **Jump** and the **Mark Delay** to a high value.
2. Optimize the delays for controlling the galvanometer scanners, i.e. **Jump**, **Mark** and **Poly Delay**.

## Viewing the Profile Manager

The **Profile Manager** consists of folders to store object profiles and the object profiles themselves.




### Display the Profile Manager

From the Toolbar, click the **Profile Manager** button or from the **Menu** bar, select **View ➜ Profile Manager**. The **Profile Manager** appears on the right side of the Work area. This allows you to view, add, delete, modify, and organize **Profiles** applied to objects.

### Hide the Profile Manager

- From the **Toolbar**, press on the **Show Profiles** button.

***OR***

- Select **View ➜ Profiles**.

***OR***

- Click **x** in the **Profile Manager**.

# Section IX: System Capabilities

## LMF-2000 Marker On-Board Software

The Marker contains a fully integrated processor and operating system board called the LEC-1 capable of high-level communications with *WinLase* using TCP/IP protocols, or operating in a fully independent stand-alone mode. The control software of the Marker is stored in Flash memory on the module. In a networked application, the Marker firmware boots upon system power-up and periodically broadcasts identification information on the network. *WinLase* accepts and processes these broadcast messages. The broadcast messages contain data that identifies the serial number, friendly name, and IP address of the Marker. This data, in turn is used to establish session communication channels to the controller.

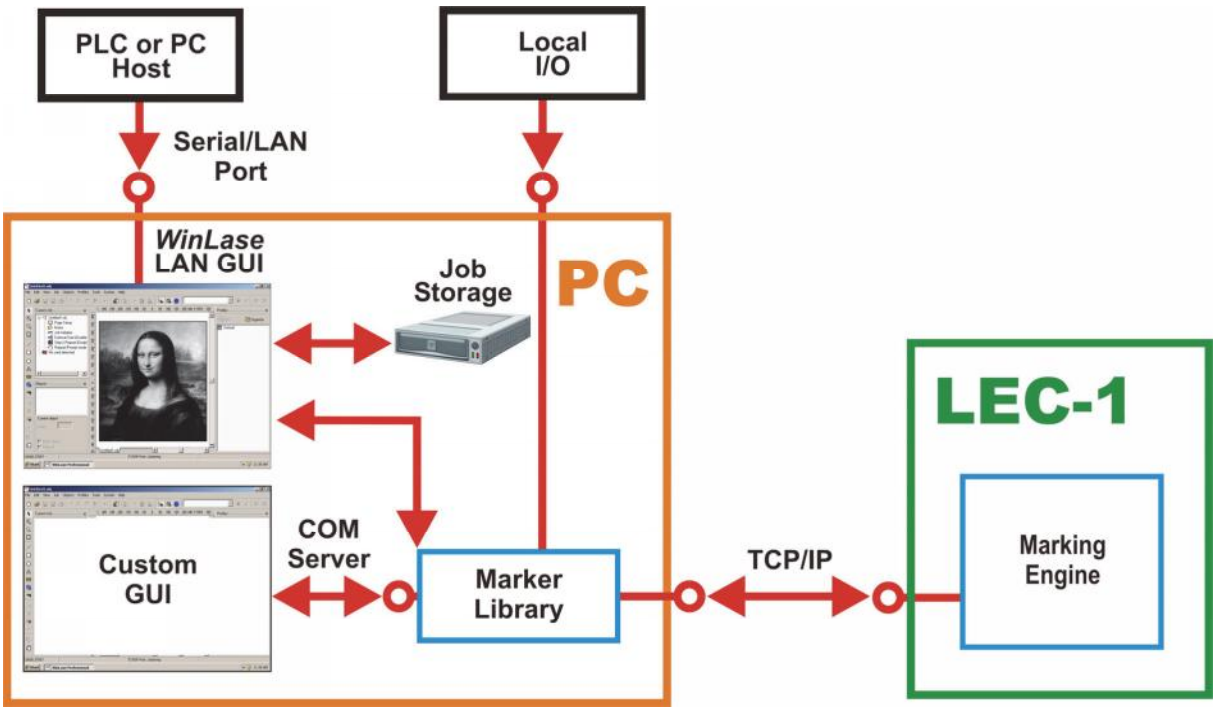
A communications session (*WinLase* **Connection***)* permits the transmission of job data to the LEC-l and the reception of job-generated messages. Jobs are streamed to the Marker with multiple levels of buffering to guarantee full marking performance without CPU load-dependent timing anomalies. Two additional channels of communications are provided to permit asynchronous job aborts, job pausing and resuming, and exception message propagation back to the application.

*WinLase* and the Marker also support the concept of "fixed configuration data," data that defines the configuration of the scan-head and surrounding electronics such as lens correction tables, laser interface signal polarities, lens field-size, focal length, calibration values, etc. This data can be set by *WinLase* and stored in Flash memory on the Marker. On the next power-up, the Marker will load these configuration files from Flash.

When running the board locally, *WinLase* Embedded provides the services to connect and interact with the Marker. In addition, a graphical local user interface is available for a richer user interface experience.

## Streaming Mode

The Marker embedded controller is capable of receiving job instructions sent as a stream of data in real time. This data is meant to be executed by the vector engine as it arrives, and once consumed, is no longer available. *WinLase* fully supports the Marker in streaming mode.

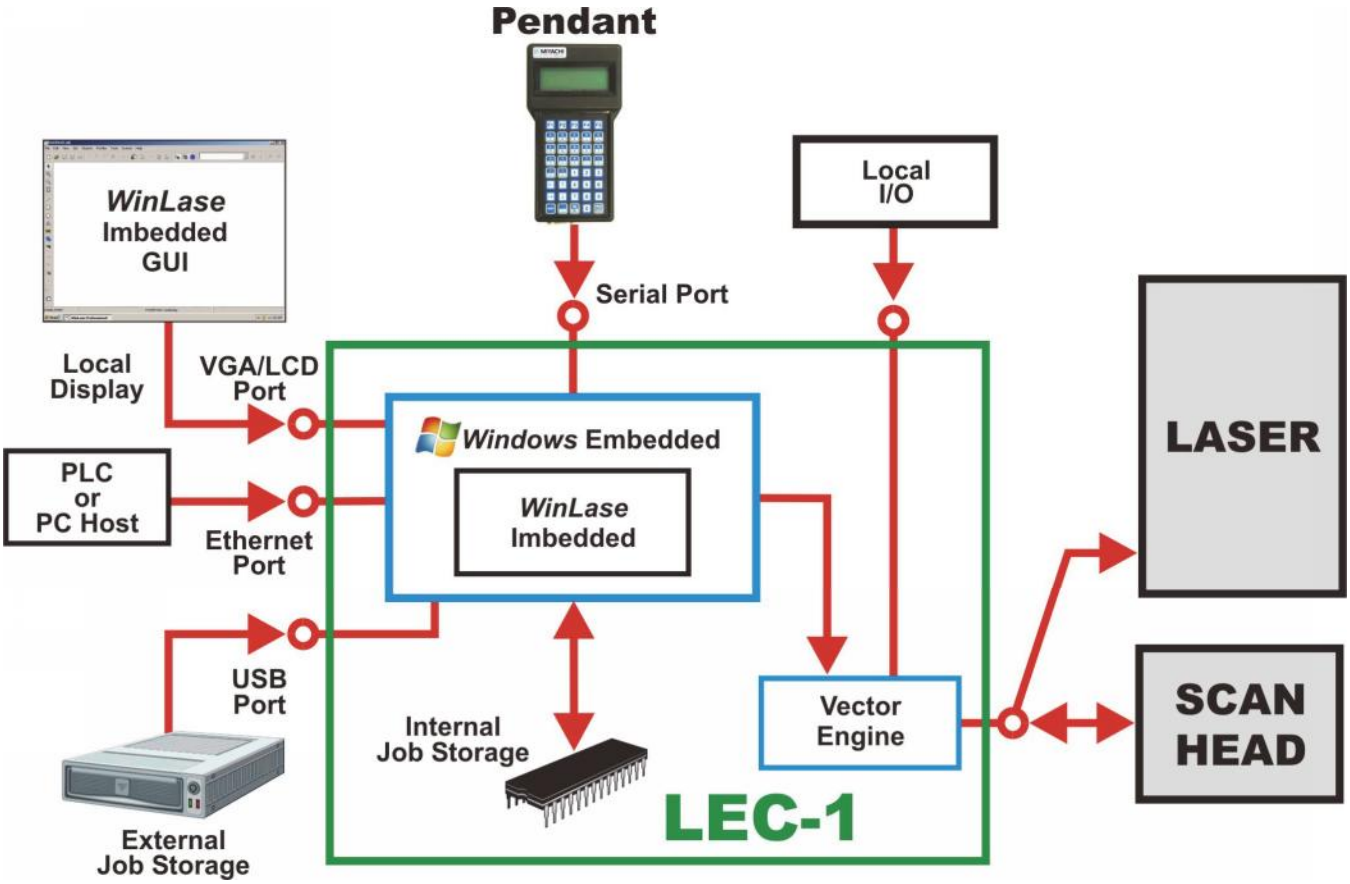



### Key Technology Blocks

- *PC* -- Computer running *Windows 2000, XP* or *Vista.*
- *WinLase GUI* -- Off the shelf user interface solution for job creation, editing and streaming.
- *Custom GUI* -- Optional custom user interface software solution developed by the integrator using the COMServer interface.
- *PLC or PC Host* -- Optional host controller, using the Remote Interface API provided by *WinLase*
- *Local I/O* -- Local control over the marking process with Start Mark, Busy/Ready and Mark in Progress using optional 24-bit I/O card installed in PCI slot.
- *Marker Library* -- Software libraries providing job editing and marking functionality.
- *TCP/IP*-- Streaming information is passed between PC and Marker over TCP/IP.
- *Marking Engine* -- Software libraries providing marking services for Marker.

## Local Execution Mode

In addition to streaming jobs in real time to the Marker, a user can create and edit job content with *WinLase* and save the job on the LEC-l for execution at a later time. The number of jobs that can be saved is limited only by the available storage on either the built in Flash memory, or an installed USB Flash drive. Individual jobs to be processed are accessed and selected either on the local pendant interface, or through commands sent to the Remote Command API. The Remote Command API is available via TCP/IP, the serial port (exclusive of the pendant), or a Bluetooth module.




### Key Technology Blocks

- *Windows CE Embedded* -- Marker running WinCE.
- *WinLase Embedded*-- Software libraries for job storage and execution services.
- *WinLase Embedded GUI* -- Optional MMI (user interface) displayed on a local VGA monitor or OEM LCD touch screen.
- *PLC or PC Host* -- Optional host controller, using the Remote Interface API provided by *WinLase* Embedded.
- *Pendant* -- Optional user interface pendant for local control of **Job** editing and execution.

- *Local I/O* -- Local control over the marking process with Start Mark, Busy/Ready and Mark in Progress using hardware I/O ports of the Marker.
- *External job storage* -- Externally connected compatible USB drive for job storage.
- *Internal job storage* -- Embedded Flash memory for job storage.
- *Vector Engine* -- Real time vector engine for direct control of scan head and laser equipment.

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