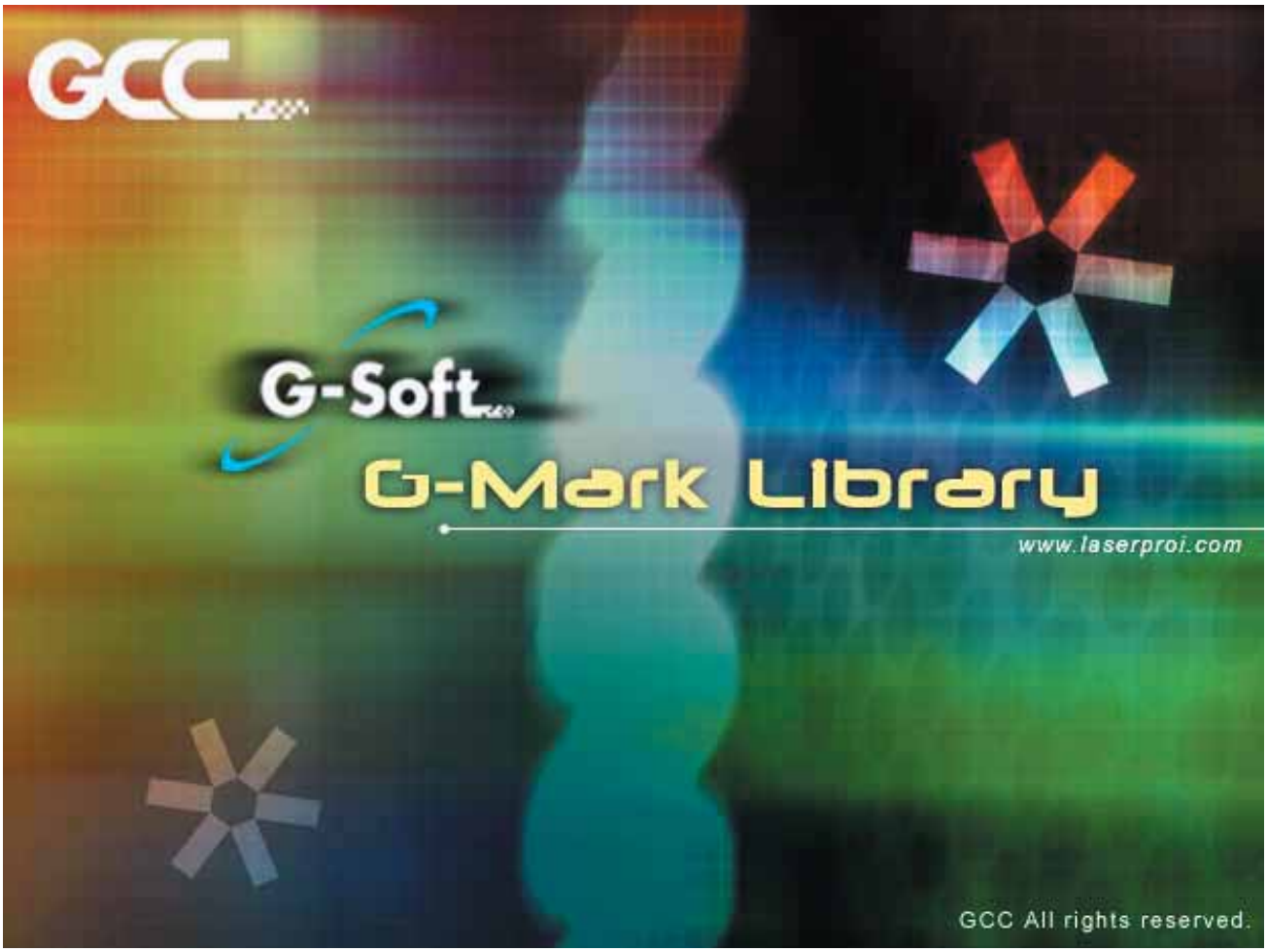


General Introductions

Table of Contents

1. Menu Bar

"**Menu Bar**" is on the top of **MarkingMate** program window. It shows the main function of **MarkingMate**. Users can select the function they need through clicking the corresponding menu. "**Menu Bar**" includes the following 9 functions.

- **File Menu**
- **Edit Menu**
- **Draw Menu**
- **Image Menu**
- **Color Menu**
- **Execute Menu**
- **View Menu**
- **Window Menu**
- **Help Menu**

1.1 File Menu

"FileMenu" offers the following functions:

New	Create a new **MarkingMate** file.
Open…	Open an existing **MarkingMate** file (*.EZM).
Close	Close a file.
Save	Save the current document using its original file name(Cover the original file).
Save As…	Save the current document using an assigned file name
Option…	Edit the program settings.
Import	Import an image file.
Export DXF	Export the file as a '*.DXF' file for other applications to use.
Select TWAIN Device…	Select the supporting scanners.
TWAIN Acquire…	Scan an image.
Configuration Import/Export	Import or export the configuration files.
Change Language…	Change to different language version.
Print…	Print the file.
Preview	Preview the current document before printing.
Printer setting…	Select the printer and edit the printing settings.
Set File Password	Lock the current file with password.
MRU File	Display the last used file.
Exit	Exit **MarkingMate.**

1.1.1 New

Create a new document. Users can create several new files at the same time.

Method:

- Click "**File**" from "**Menu Bar**" and select "**New**".
- Click from the **Toolbar**.
- Press [**Ctrl**+**N**] on the keyboard.

1.1.2 Open

Open an existing **MarkingMate** file. Users can open several files and switch to different document by using "**Window Menu**."

Method:

- Click "**File**" from "**Menu Bar**" and select "**Open**".
- Click from the **Toolbar**.
- Press [**Ctrl**+**O**]on the keyboard.

The default file format of **MarkingMate** is'*.EZM'. Users can search the file they want to open under the folder they used to save **MarkingMate** files, refer to Fig.1.1.01.

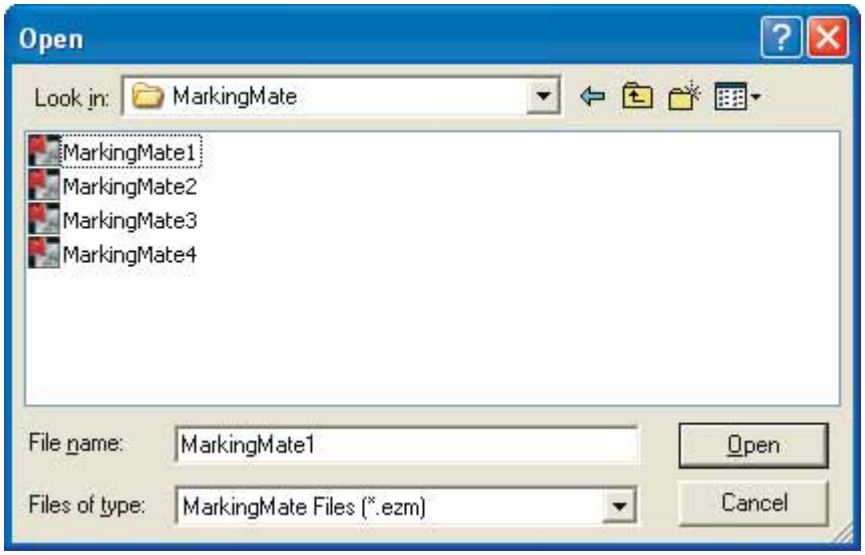


Fig.1.1.01

1.1.3 Close

Close the current using file. **MarkingMate** will suggest users to save the editing file before closing it. Users will lose all the modifications they edit after the pervious saving when closing the file without saving it.
When closing an unnamed or new file, **MarkingMate** will pop up a "**Save As**" dialog box for users to name and save that file.

Method:

- Click "**File**" from "**Menu Bar**" and select "**Close**".
- Click the upper right button like Fig.1.1.02 to close the file.

Fig.1.1.02

- Click the upper left icon  like Fig.1.1.03 and select "**Close**" to close the file.

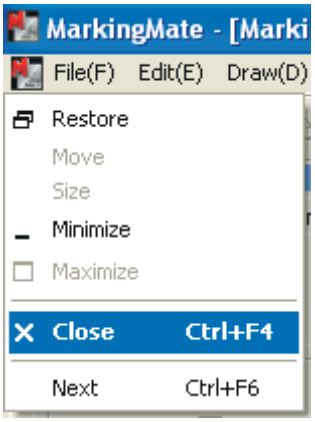


Fig.1.1.03

- Press [Ctrl＋F4] on the keyboard.

1.1.4 Save

Save the current using document with the original file name under the same folder. **MarkingMate** will pop up a "**Save As…**" dialog box when the file is new or unnamed or when users want to change the file's name or folder.

Method:

- Click "**File**" from "**Menu Bar**" and select "**Save**".
- Click  from the **Toolbar.**
- Press [**Ctrl＋S**] on the keyboard.

1.1.5 Save As…

Save the current document using a new file name or changing the saving folder, see Fig.1.1.04.

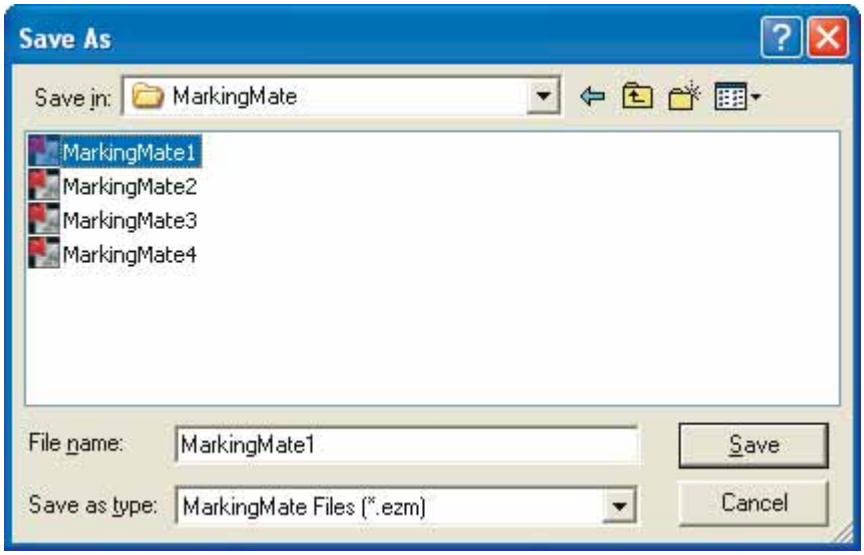


Fig.1.1.04

The following options are the functions users can select when using "**Save As…**"
Save in: Select the folder users want to save.
File name: Type or select a file name.
Save as type: The default file type of **MarkingMate** is '*.EZM.'

1.1.6 Option

This function allows users to edit their own setting, such as ruler and grid.

1.1.6.1 System

Under the “System” option, there are several settings related to **MarkingMate** system, see Fig.1.1.05.

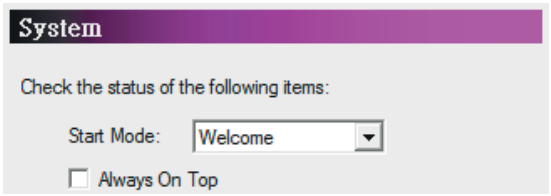


Fig. 1.1.05

Start Mode

Decide if show Welcome Dialog, open a new document, or open the latest file while markingmate is startup. Welcome dialog allows users to open file, open last edit file or create a new file, see Fig.1.1.06.

Always On Top

Make MarkingMate on the top of all current using programs.

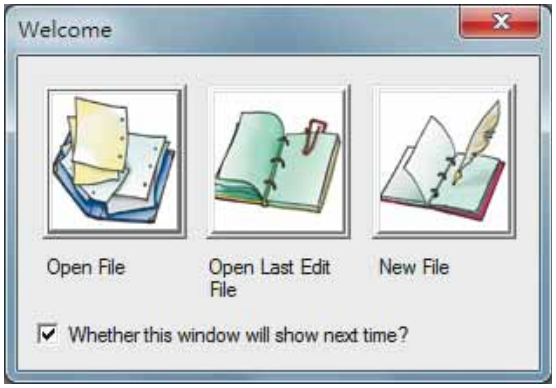


Fig. 1.1.06

1.1.6.2 LogFile Setting

Enable/disable to use the log file, see Fig.1.1.07.

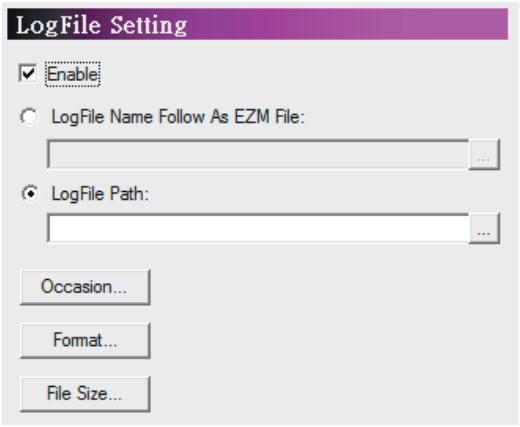


Fig. 1.1.07

Log File Path

Select the path of log file by clicking the ... button.

Occasion

Click "**Occasion**" and a dialog box will appear as Fig.1.1.08.
Check the items users want to record.

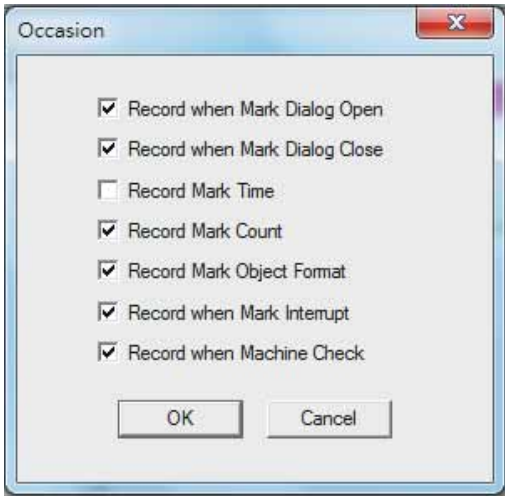


Fig. 1.1.08

Record when Mark Dialog Open
Record the message when mark dialog opened.
Record when Mark Dialog Close
Record the message when mark dialog closed.
Record Mark Time
Record the marking time.
Record Mark Count
Record the marking times.
Record Mark Object Format
Record the object format information.
Record when Mark Interrupt
Record the message while interrupt happened.
Record when Machine Check
Record the message of machine checking.

Format
Click "**Format**" and a dialog box will appear asFig.1.1.09.
Format of each item in the log file can be edited here.

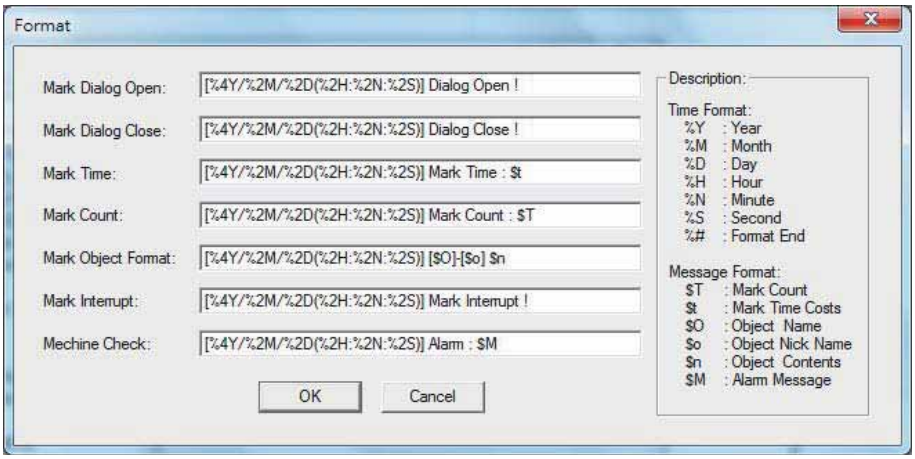


Fig. 1.1.09

Description:
All of the Time Format and Message Format are listed here.

Example:
If a format of Mark Dialog Open is set as below:
[%4Y/%2M/%2D(%2H:%2N:%2S)] Dialog Open ! %#
Then the log file will be recorded as:
[2007/10/15(09:32:24)] Dialog Open !

Please note that Time Format can be used in every fields, however, the Message Format must be placed at the related fields. For example: the Message Format "$T" (Mark Count) can only be used in "Mark Count" field, if it is placed in "Mark Dialog Open" field, an unexpected result may occur.

File Size
This function is used for editing the log file's size and division type.
There are four kinds of file type settings, see the following examples.

Example 1: Select Maximum Size: 1000 KBytes (default).
If the file size is over 1000 Kbytes, the system will rename the original file, for example, TEST.TXT, to TEST-1.TXT and continue recording using a new file named TEST.TXT, see Fig.1.1.10.

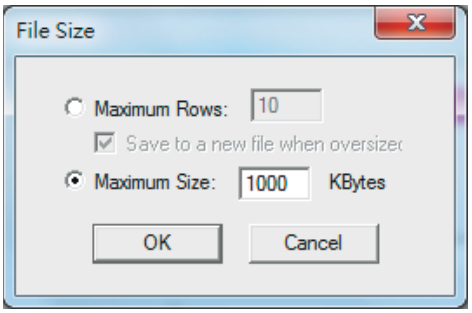


Fig. 1.1.10

Example 2: Select Maximum Rows: 10 and check "Save to a new file when oversized."
If the file rows exceed 10, the system will rename the original file, for example, TEST.TXT, to TEST-1.TXT and continue recording using a new file named TEST.TXT, see Fig.1.1.11.

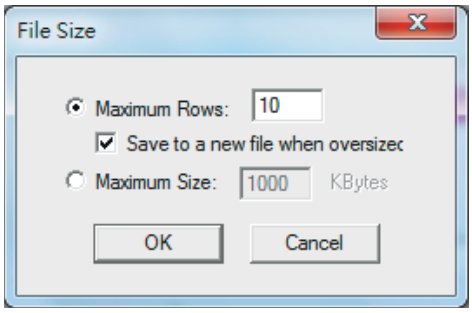


Fig. 1.1.11

Example 3:Select Maximum Rows: 10 without checking "Save to a new file when oversized."
If the file rows exceed 10, the system will log the new message in the first row and delete row 11, see Fig.1.1.12.

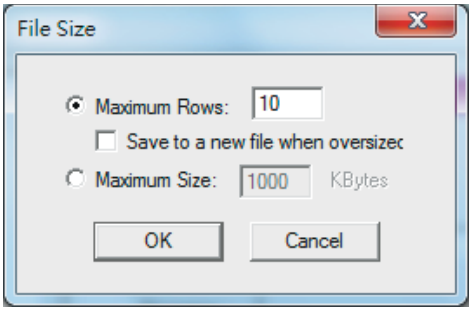


Fig. 1.1.12

Example 4:Select Maximum Size: 0 Kbytes or Maximum Rows: 0
The system will not change the file during recording, see Fig.1.1.13.

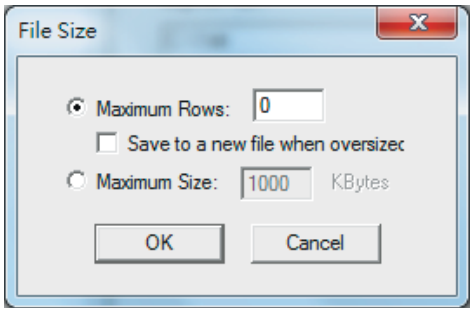


Fig. 1.1.13

1.1.6.3 Mark On Fly

Without the "Mark On Fly" function, the marking result will be incorrect while the working pieces are moving. Enable this function the system will pursue the object's position and revise it to make sure the marking result is correct, see Fig.1.1.14.

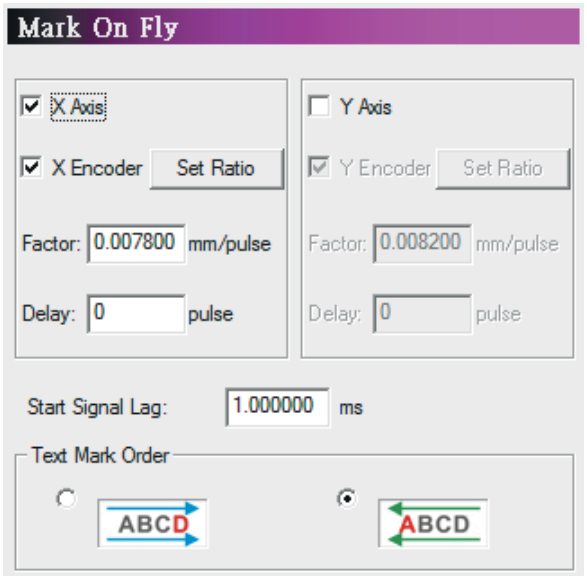


Fig. 1.1.14

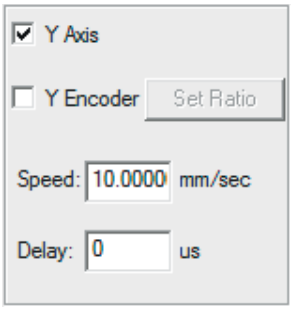


Fig. 1.1.15

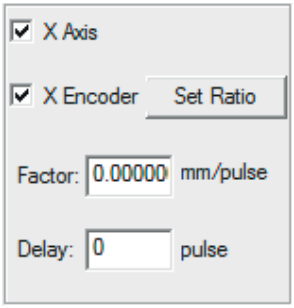


Fig. 1.1.16

X/Y Axis (checked)

Enable "Mark On Fly" on X/Y Axis.

X/Y Encoder (unchecked)

The system will use the setting value of "Speed" to pursue the object's position, see Fig.1.1.15.

Speed

Theoretical speed of conveyer.

Delay

The time that laser needs to start marking after receive the start signal.

X/Y Encoder (checked)

The parameter will change from "Speed" and "Delay" to "Factor" and "Delay", see Fig.1.1.16. The system will pursue the object's position according to "Factor" which is the product of the encoder feedback pulse value and moving distance. When checking the encoder setting options, please make sure the encoder device is connected with the laser controller; otherwise an incorrect result will happen. As to the encoder connection method, please refer to encoder manual.

Factor

The moving distance of conveyer per pulse.

Delay

The pulses that laser needs to start marking after receive the start signal.

Set Ratio

Counting the factor through the pulse from the encoder and the moving distance, see Fig.1.1.17.

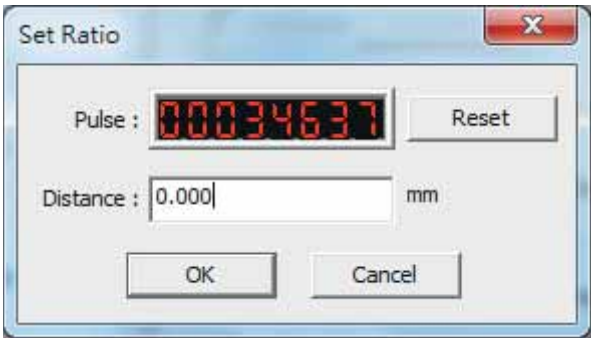


Fig. 1.1.17

Reset
Reset the value of pulse.

Delay application
In order to raise the accuracy of marking on the moving objects, the system will usually install a sensor instead of using an operator to measure whether the working pieces are located on the available place for marking. The sensor will trigger the start signal to mark when the working piece move through it. Since the sensor is unable to install right below the laser machine directly, users can apply the delay setting to make the laser machine wait for a period of time when it received the start signal, so the working pieces can move to the available marking position and then start marking. Besides, users can also apply "Automation Process" to "Mark on Fly."

Delay setting method
Users can calculate the delay time through the setting speed or factor and the distance the object move from triggering the start signal to the correct marking position.
For example, assume that the X Axis is checked, and the moving distance of object from triggering start signal to the marking position is 50mm. If X Encoder is unchecked and the setting speed is 100 mm/sec, then the delay value should set as $(50/100)*10^6 = 5*10^5$ us. If X Encoder is checked and the setting factor is 10 mm/pulse, then the delay value should set as 50/10=5 pulse.

Start Signal Lag
When using "Mark On Fly" function, users will find that the preview mark position and the real marking position are not the same, see Fig.1.1.18. This is because there will have a tiny delay time between the sensor inducts the work piece and the laser starts to mark. This delay time and the speed of conveyer will cause this status. As a result, users can fix this status by modifying "**Start Signal Lag**" and make the position of preview and real marking be the same, see Fig.1.1.19.

This value can be positive or negative according to the actual result. Users must satisfy the following conditions to set "**Start Signal Lag**."

I. Do not check X/Y encoder.
II. Set an optimize speed for X/Y axis, and set "Delay" as 0.

III. The arrangement of Mark On Fly device, working-piece and sensor must be placed such as Fig.1.1.18.

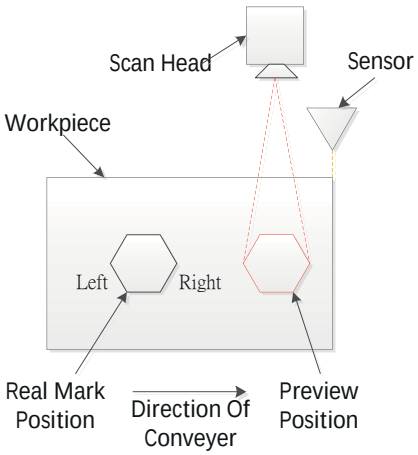


Fig. 1.1.18 Different Position

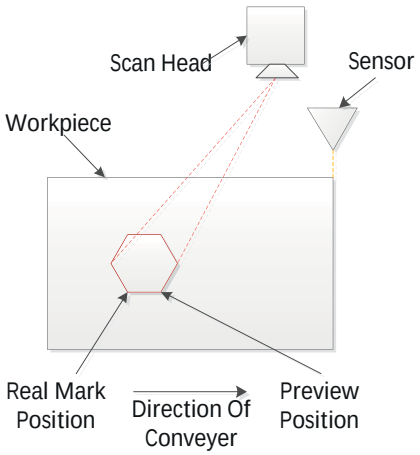


Fig. 1.1.19 Same Position

Adjustment Description

Take Fig.1.1.18 for example. Suppose users set this value as 100. If the preview result located on the right side of real mark position, then increase the setting value. On the contrary, decrease the setting value.

Text Mark Order

Select the marking direction. The direction of arrow represents the conveyer moving direction.

：Conveyer moving direction is right-to-left. The marking direction will be D→C→B→A.

：Conveyer moving direction is left-to-right. The marking direction will be A→B→C→D.

1.1.6.4 Extend DLL

Enable this function when users need to import DLL modules, see Fig.1.1.20. Click the “Import” button, and then select the assigned DLL module and click “Open”, “Apply” button to import it.

More details please refer to **“Extend DLL User Manual”.**

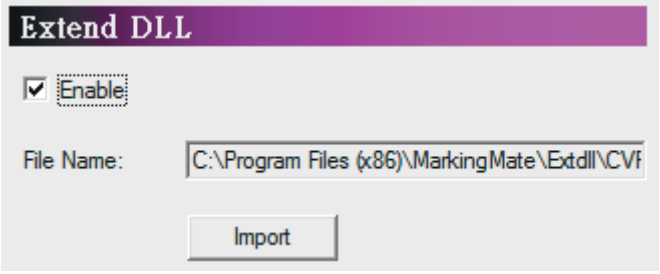


Fig. 1.1.20

1.1.6.5 Auto Text Macro

The system provides three Auto Text DLLs, see Fig.1.1.21. If users need to add more Auto Text DLL modules, they can import the assigned DLL modules by themselves using “Import DLL” function.

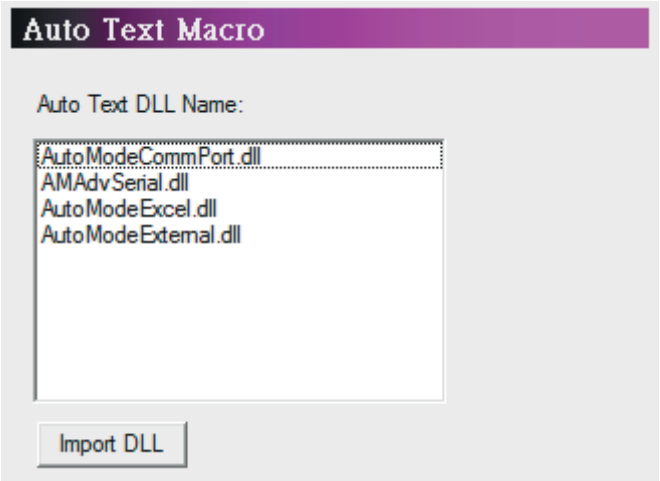


Fig. 1.1.21

1.1.6.6 Machine Check

Enable this function, the assigned output signal will shine when the marking reaches the setting max mark or auto text amount, see Fig.1.1.22.

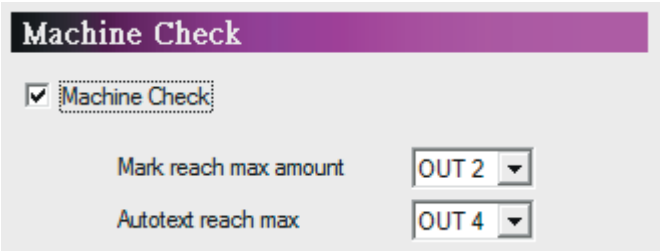


Fig. 1.1.22

1.1.6.7 Automation

Only MC-1, MC-3 and PMC2 driver supports this function.

Buffered Pre Download

The system will pre download the marking data to the controller’s memory buffer to fasten the marking speed, see Fig.1.1.23. Enable timeout can make sure the buffering data will be refreshed every setting time period.

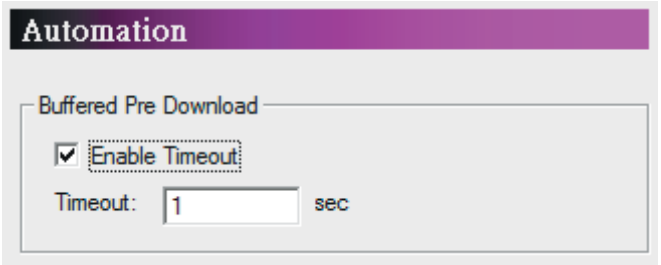


Fig. 1.1.23

1.1.6.8 Motion Config

Users can do setting for XT-Table through this option, see Fig.1.1.24.

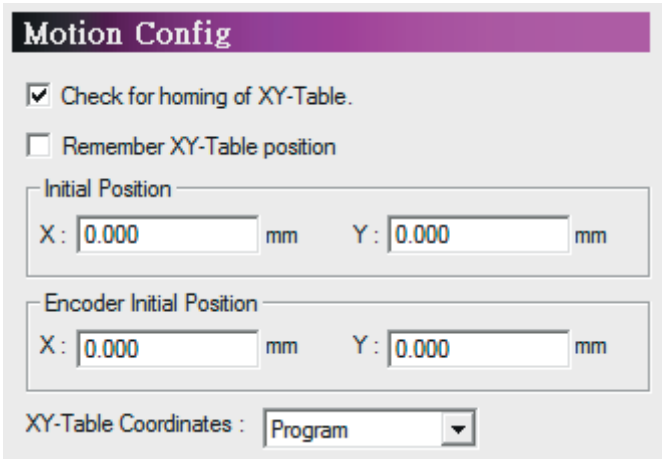


Fig. 1.1.24

Check for homing of XY-Table.
Enable this function, the system will display a warning dialog box when users want to start marking if the XY table is not yet homed, see and Fig.1.1.25.

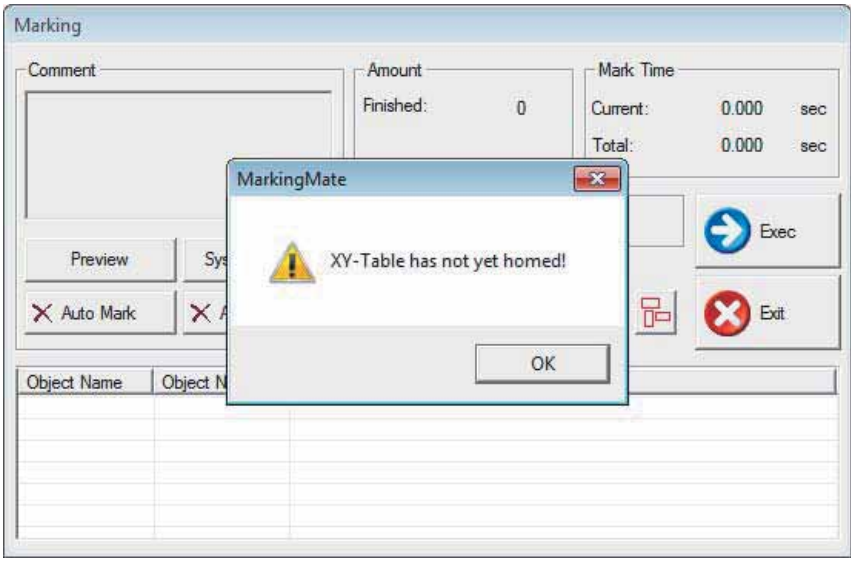


Fig. 1.1.25

Remember XY-Table position.
Save the current position of XY-Table when exiting **MarkingMate**.
Initial Position
Set the initial position for XY-Table.
Encoder Initial Position
Set the initial position for encoder.
XY-Table Coordinated
Set coordinate of XY-table is based on program or mechanical

1.1.6.9 ShortKey

Users can assign the short-key for each function through this option, see Fig.1.1.26.

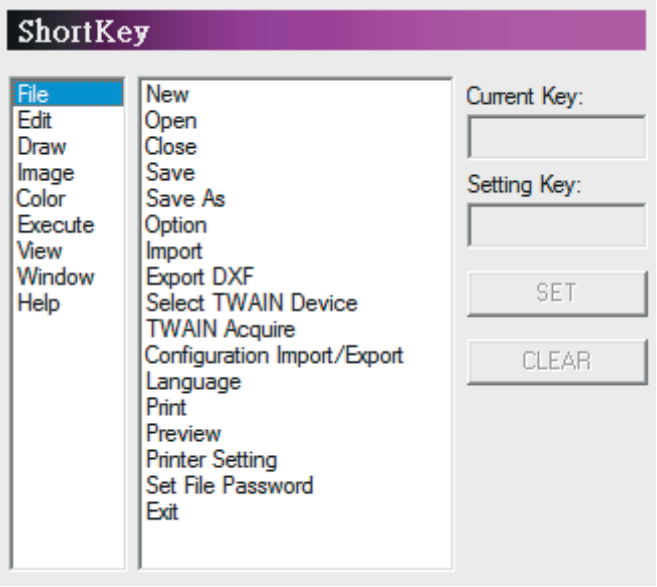


Fig. 1.1.26

Current Key The current using short-key of selected function.
Setting Key Set the short-key for selected function. If the assigned key has not been used, then the "**SET**" button will be enabled for users to click and set that key as the default value. Otherwise, a warning message "Short-key is used" will pop up.
Clear Clear the short-key setting.

1.1.6.10 CommPort Setting

The Com Port transmission of Auto Text will be effected after enabling this function and setting the Com Port parameters, see Fig.1.1.27.

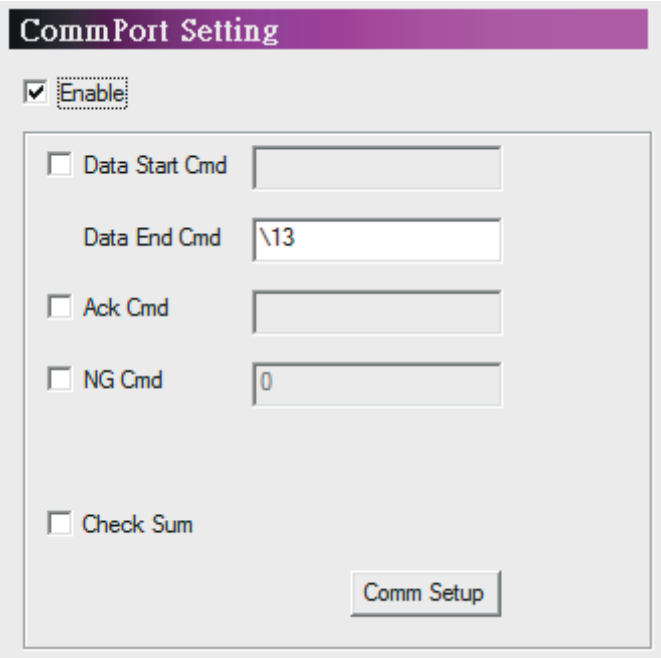


Fig. 1.1.27

Enable
Decide to use Com Port or not.
Data Start Cmd
When system receives this value from the host, it means that the next received character is the correct marking content. If this column is blank, the system will treat the first received character as the Auto Text content.
Data End Cmd
This is an essential setting. When the system receives this parameter, it means the transmission is finished. The default value is "\13," the line feed symbol. This parameter cannot be blank; otherwise the system will pop up a warning dialog box like Fig.1.1.28.

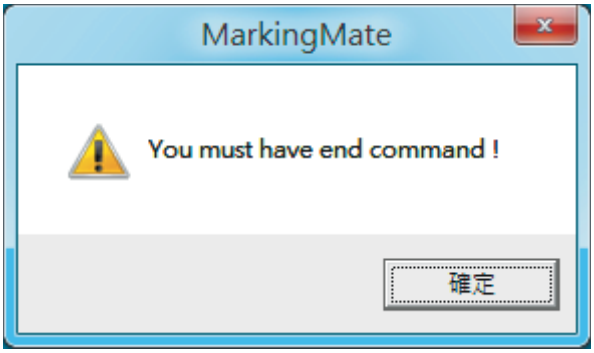


Fig. 1.1.28

Ack Cmd
Setting this parameter, the software will transmit this value to the host to report the transmission is regular after system receives the value of "Data End Cmd" and "Check Sum" and confirms that both values are correct.
NG Cmd
The software will report to the host that the transmission is wrong when the "Check Sum" is incorrect while using this function.
Check Sum
Decide to transmit the "Check Sum" or not to do the further verification of information. The operation

of “Check Sum” is to convert each character of information into Hex first and then do XOR operation for each one in order. The Hex of final result is the “Check Sum.” For example, the “Check Sum” of “2578” is “8,” see Fig.1.1.29.

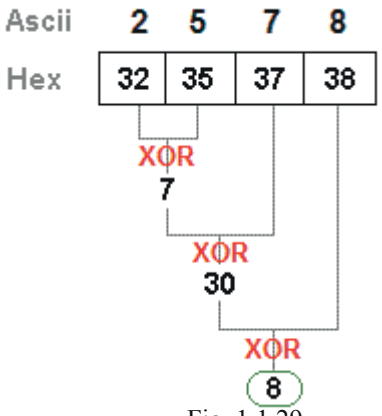


Fig. 1.1.29

Comm Setup

Click “Comm Setup” bottom and enter the setting dialog box, see Fig.1.1.30.

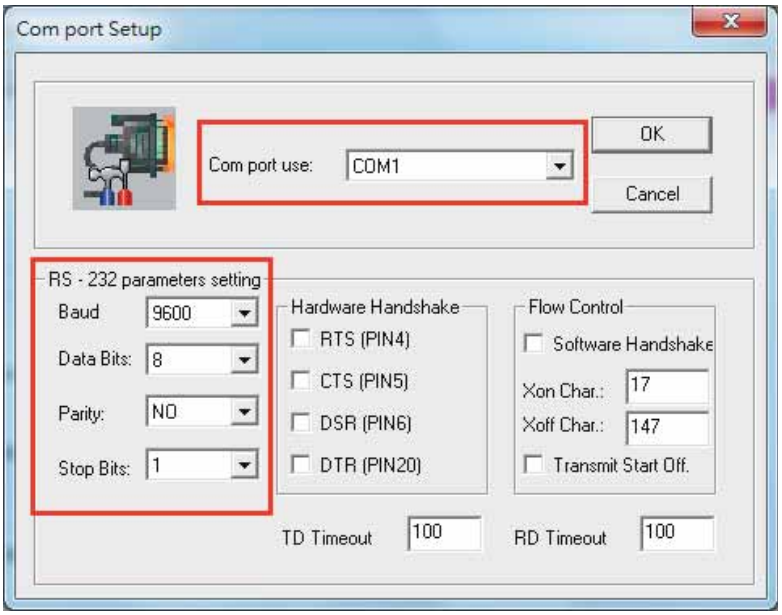


Fig. 1.1.30

Com Port Use

Select the suitable Com Port basic on the host equipment.

RS-232 Parameters Setting

Do the same setting as the information transmission source. Please do not change the parameters which are not in the red flame of Fig.1.45 if not necessary.

1.1.6.11 Config

Allow users to adjust the config setting of system, see Fig.1.1.31.

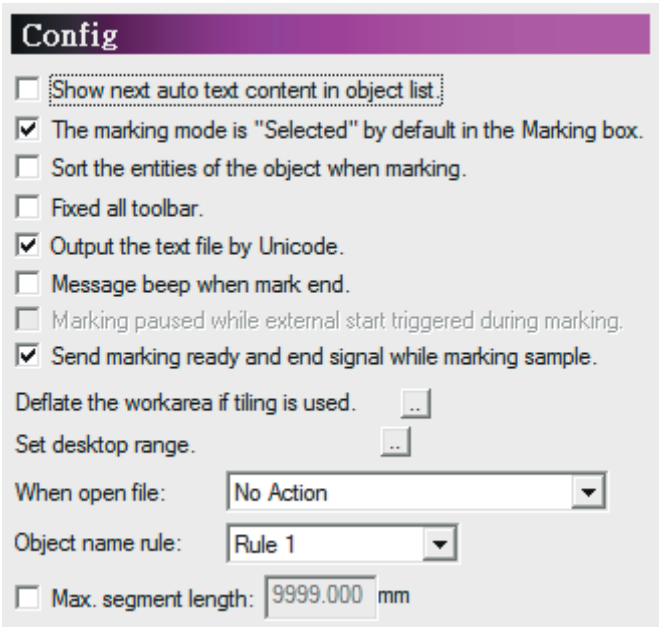


Fig. 1.1.31

Show next auto text content in object list.
Checked this option, the marking object list will present the oncoming marking content of Auto Text. Otherwise, it will show the previous marking content.
The marking mode is "Selected" by default in the Marking box.
Decide the default value of marking mode is "All" or "Selected," see Fig.1.1.32.

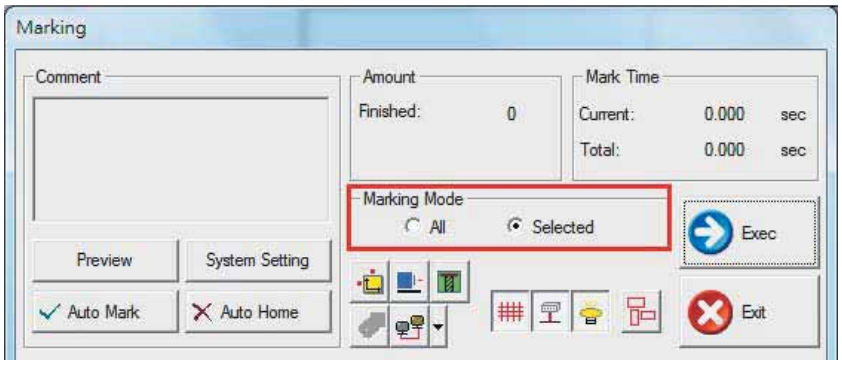


Fig. 1.1.32

Sort the entities of the object when marking.
Adjust the marking order according to the position of objects to optimize the marking speed.
Fixed all toolbar.
Keep all the Tool Bar at the current location and become immovable.
Output the text file by Unicode.
Decide to encode the output text file by Unicode or not.
Message beep when mark end.
The system will sound a beep when mark end.
Marking paused while external start triggered during marking.
Users could pause marking process during marking from external start.

Send marking ready and end sample while marking sample.
After checking this box, marking ready signal will send out before marking sample, marking end signal will send out after marking sample.
Deflate the workarea if tiling is used.
Set the deflate range of work area when using “Graphic Split” function. The value cannot be negative, see Fig.1.1.33.

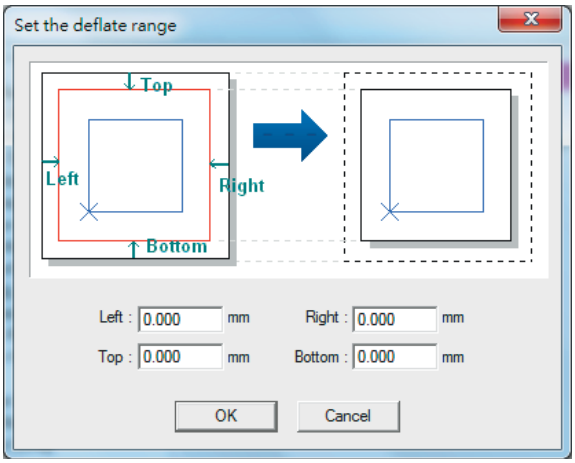


Fig. 1.1.33

Set Desktop range.
Allow users to set a new working area range and coordinates according to their demand, see Fig.1.1.34.

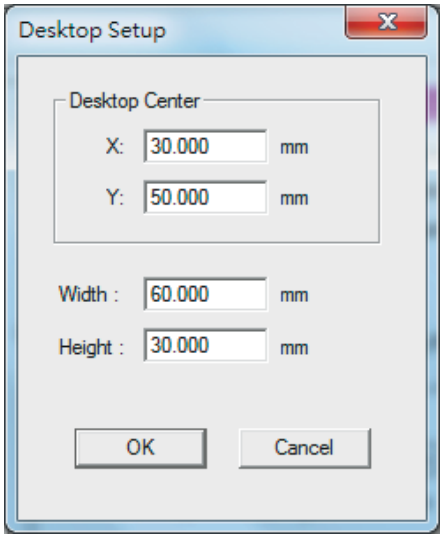


Fig. 1.1.34

When open file.
Choose a default action while opening a file.

Object name rule.
Select the name rule of objects which are in a copy group. Fig.1.1.35 is the "**Object Browser**" of Rule 1, and Fig.1.1.36 is Rule 2.

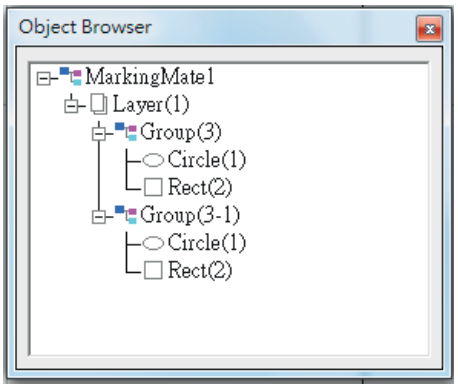


Fig. 1.1.35

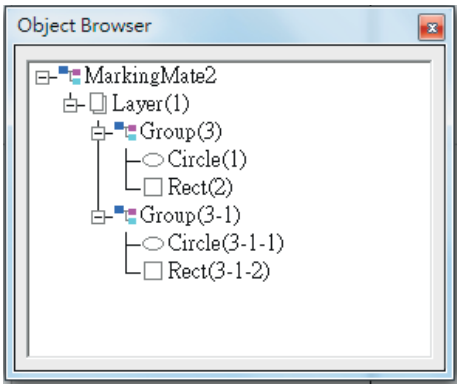


Fig. 1.1.36

Max. segment length.
Set the segment length when marking. There will be no partition if users didn't check this option.

1.1.6.12 Lens Manager

All lenses users have will be listed here, see Fig.1.1.37.

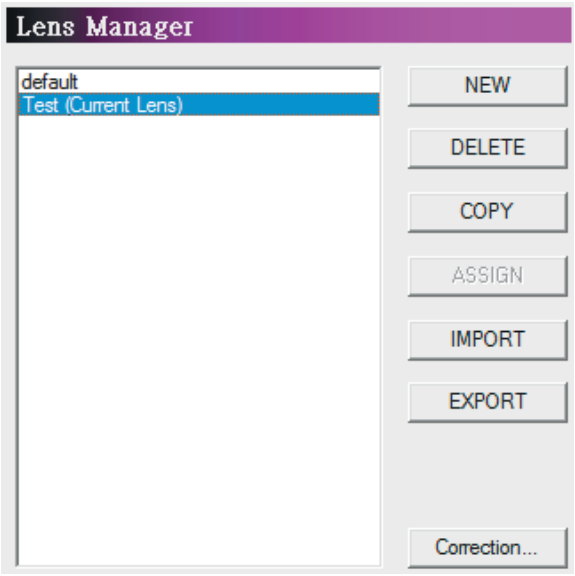


Fig. 1.1.37

NEW	Click this button to add a new lens.
DELETE	Click this button to delete the selected lens.
COPY	Click this button to copy the selected lens.
Assign	Click this button to set the selected lens as the default lens.
Import	Allow users to import lens file.
Export	Allow users to export selected lens file.
LensCor…	Select the one lens and click this button to enter the Lens Correction function.

Click "**Lens Cor…**" button and do further settings for lens.

Lens Setup

The system will use math formula to correct the barrel distortion, trapezoid distortion, or parallelogram distortion resulted from lenses and optical devices. Adjust lens parameter properly will make the marking result be the same as the original design. Fig.1.1.38 shows the lens setup under normal mode. Fig.1.1.39 is the lens setup under dot mode.

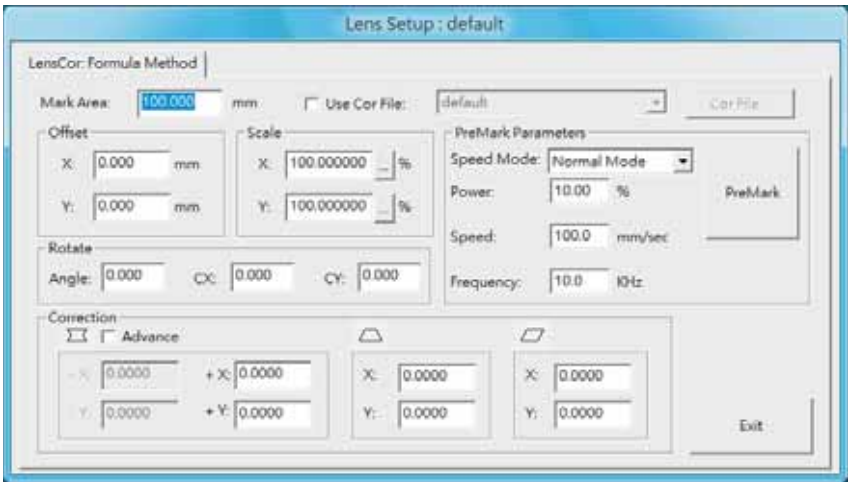


Fig. 1.1.38 Under Normal Mode

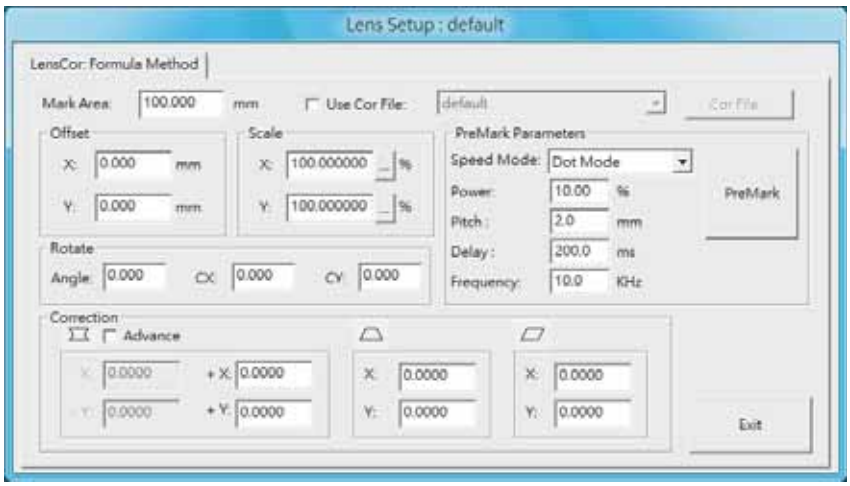


Fig. 1.1.39 Under Dot Mode

Working Area Working area of the lens.

Use Cor File Use the correction files from manufacturers or use the file created by using Scale or Grid Methods and then adjust parameters.

Correction file Select the file name same as the lens name from dropdown menu or select "Import…" item from the dropdown menu to import the correction file such as COR, CTB (from ScanLab), or GCD (from RayLase).If the selected correction file has the same name as the assigned lens, users are able to click "**Cor File…**" button and do correction through **"Using Correction File"** function.

Offset If the working pieces cannot be put in an ideal position, users can modify the design or change the offset value to fix this problem. For example, if the position has 5mm deviation to the right side, then input -5mm in Offset X to correct it.

Scale If the size of marking result (real size) are different from the original design (theoretical size), user can use the scale function

	of X and Y to fix it. The unit of scale is percentage (***theoretical size / real size * 100***, the default value is 100). For example, if real size is smaller, this value should be larger than 100.
Rotate	If the working pieces cannot be put in an ideal position, users can modify the design or input suitable values in these fields to amend it.
Correction	When the barrel distortion, trapezoid distortion, or parallelogram distortion happen, enter the suitable X/Y values to do the correction. Please refer the following description of **Distortion Correction.**
Advance	Allow users to input different correction values at negative X and Y direction.
PreMark Parameters	Setting the parameters for PreMark.
Speed Mode	Select to use Normal Mode or Dot Mode to Premark.
Power	Laser power percentage for PreMark.
Speed	Laser speed (mm/sec) for PreMark.
Frequency	Laser frequency for PreMark.
Pitch (Under Dot Mode)	The distance between dot and dot on the marking route when doing PreMark.
Delay (Under Dot Mode)	The waiting time a lens needs to start radiating when move to a dot while doing PreMark.
Pulse Width (YAG Laser)	The spending time for each pulse.
PreMark	Click the "PreMark" button, the laser will mark according to the parameters setting above.

Please follow the steps listed below to do the correctionand note that the direction of X and Y means the output port of GALVO motor:

Step 1:	Select the lens user want to correct and adjust its focus.
Step 2:	Input the value of lens working area. Input the value of scale percentage according to the output voltage ratio of lens and driver. **Attention, users need to complete this step first and then start executing PreMark, otherwise the lens would be damaged.**
Step 3:	When barrel distortion happened, follow the rules of "Distortion Correction" as Table 1.1 to do the correction until four square sides are all straight lines.
Step 4:	When trapezoid distortion happened, follow the rules of "Distortion Correction" as Table1.2 to do the correction until four square sides are equal in length.
Step 5:	When parallelogram distortion happened, follow the rules of "Distortion Correction" as Table 1.3 to do the correction until four square sides are all vertical.
Step 6:	Measure the dimension of marking result. Input the value of scale according to the formula (***theoretical size / real size * 100***). If the real size is larger than theoretical size, then reduce its value and retry. On the contrary, increase its value and retry.
Step 7:	Repeat Step 6 until the theoretical size and real size are equal.

Distortion Correction

Correction of barrel distortion

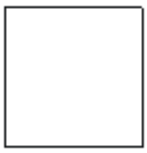
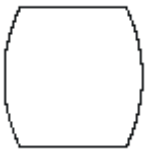
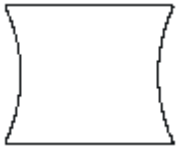
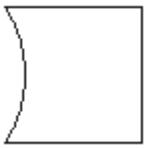
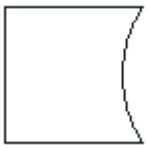
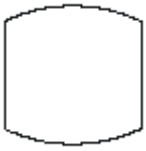
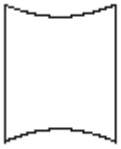
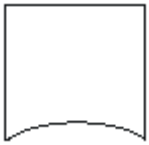
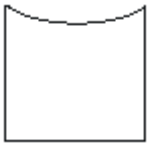
Original				
Mark Results				
Solutions	Increase the X value of  field	Reduce the X value of  field	Reduce the value of –X (Advance)	Reduce the value of +X (Advance)
MarkResults				
Solutions	Increase the Y value of  field	Reduce the Y value of  field	Reduce the value of –Y (Advance)	Reduce the value of +Y (Advance)

Table1.1

Correction of trapezoid distortion

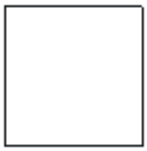
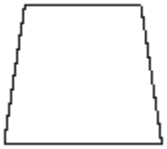
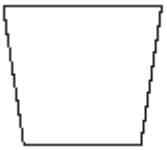
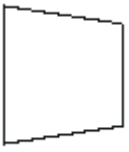
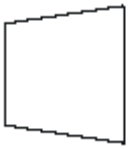
Original		
Mark Results		
Solutions	Enlarge the X value of  field	Reduce the X value of  field
Mark Results		
Solutions	Enlarge the Y value of  field	Reduce the Y value of  field

Table1.2

Correction of parallelogram distortion

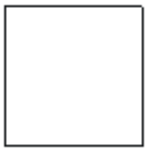
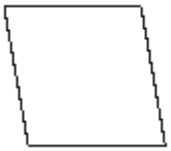
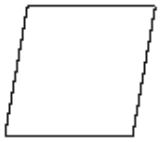
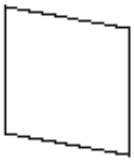
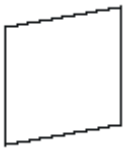
Original		
Mark Results		
Solutions	Enlarge the X value of  field	Reduce the X value of  field
Mark Results		
Solutions	Enlarge the Y value of  field	Enlarge the Y value of  field

Table1.3

- **Using Correction File**

Correction files are provided by lens manufacturers such as SCANLAB and RayLase for users to do lens correction. Mostly, the results of using these files are acceptable. Users only need to adjust some of the scale parameters.
If require more accurate result or the correction files from lens manufacturers are unable to meet the requirement, users can do advanced correction through using the "Cor File…" function to reach the goal. Before using this function, please make all the parameters as the default values as Fig. 1.1.40.
Once finding that still need to adjust these values after finishing lens correction, users can come back to this dialog box to modify them.

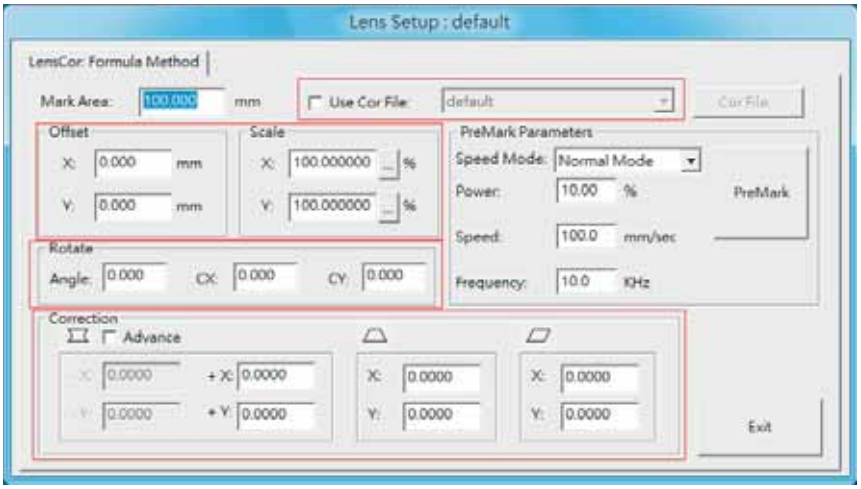


Fig. 1.1.40

- **New/Edit Correction File**

If it's the first time entering the "Cor File…" function after creating a new lens, users will need to select one correction method from Scale Method and Grid Method, see Fig. 1.1.41. Please note that each lens can only choose one method.

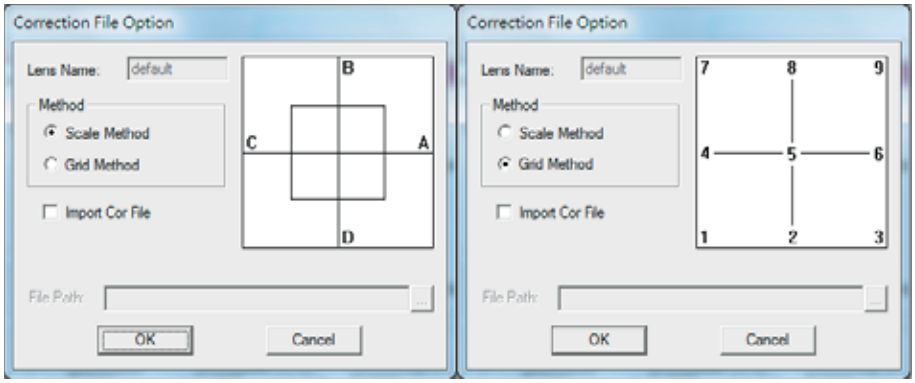


Fig. 1.1.41

Method	Select Scale Method or Grid Method. Please refer to the following description.
Import Cor File	Import an existing correction file and do advanced correction. There are three usable file types: COR, CTB, and GCD.
File Path	The path of the imported correction files.

- **Scale Method**

The traditional lens correction method is using linear way to correct the distortion. However, some of distortions are not completely linear. In this situation, users can use the Scale Method to divide the lens into several areas and adjust each area by different percentage, see Fig.1.1.42.

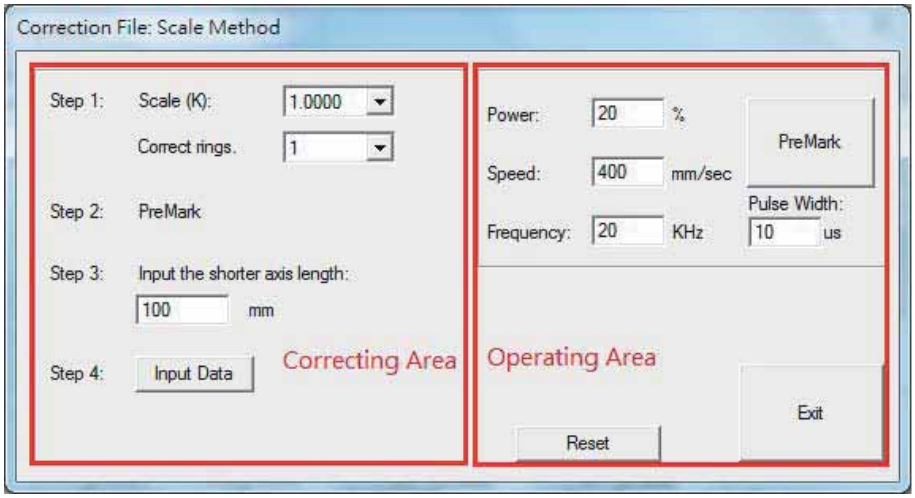


Fig. 1.1.42

The left side of Scale Method window is correcting area for users to enter values to get a correction file. The right side is operating area; users can measure the result according to settings of left side or reset the settings of correcting area.

Operating Area

On the top of this area is the Premark parameters (refer to p.26)

Reset

The purpose of this function is to reset the setting of correcting area, or import a correction file to do correction, see Fig.1.1.43.

Import Cor File

Import the correction file provided by the manufacturers for correcting area. The value of correcting area will be reset if press "OK" without clicking "Import Cor File".

File Path

The path of correction file.

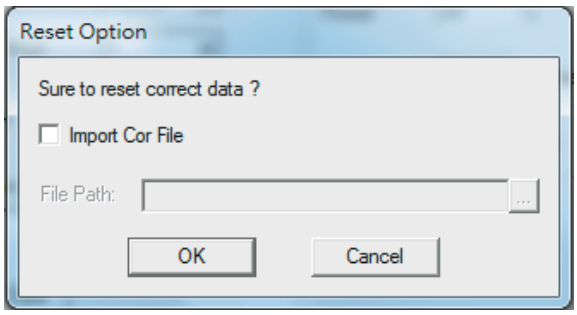


Fig. 1.1.43

Correcting Step

Step 1 Select a Scale (K) value which is close to the voltage ratio of lens and driver. Then select correct rings from the list. The more correct rings users select the better accuracy they will get.

Step 2 Click the "PreMark" button to execute marking.

Step 3 Measure the axis length and then enter the value in the field. (Since the value of X-axis and Y-axis may be different, please enter the shorter one.) If the real value is 109.11mm, it will be better to enter 110mm.

Step 4 Click the "Input Data" button for next step, see Fig.1.1.44.

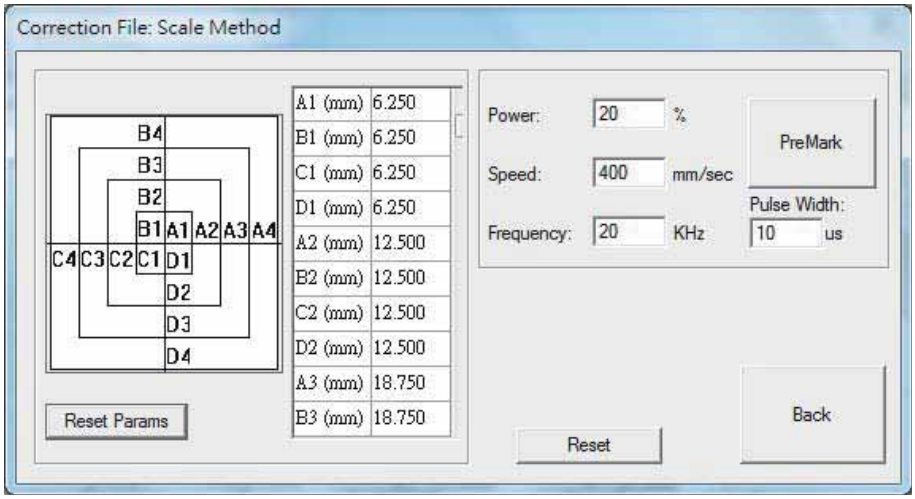


Fig. 1.1.44

Step 5 Click the "PreMark" button to see the mark result

Step 6 Edit the values of A, B, C, and D in the fields separately and then click the "PreMark" button again to see the mark result. If necessary, repeat these steps until achieving the goal. Click "Back" button and then "Exit" button to save the file and exit.

Reset Params Reset all correction data as the default values.

- **Grid Method**

Instead of using a formula, this method measures the real position of correct dots directly. More correct dots will get more accurate result, see Fig 1.1.45.

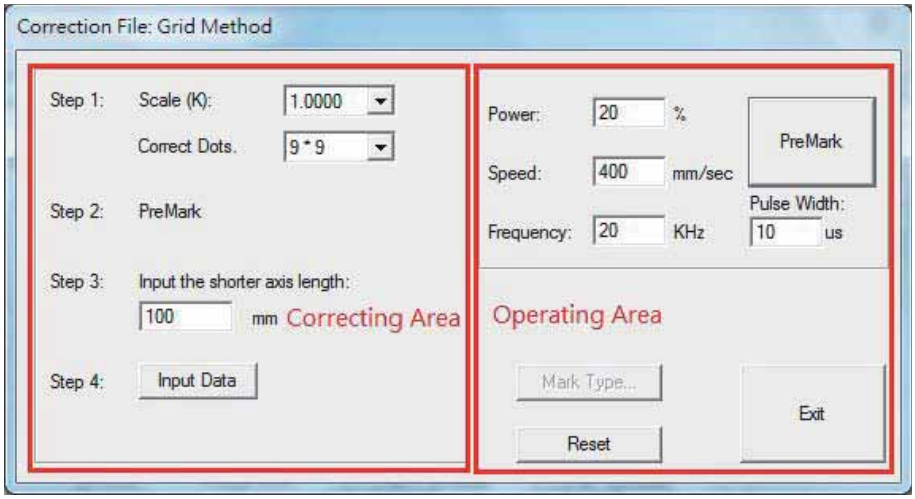


Fig. 1.1.45

Operating Area

On the top of this area is the Premark parameters (refer to p.26)

Mark Type

To use the function, users must click "Input Data" at "Correcting Area" first, see Fig.1.1.46.

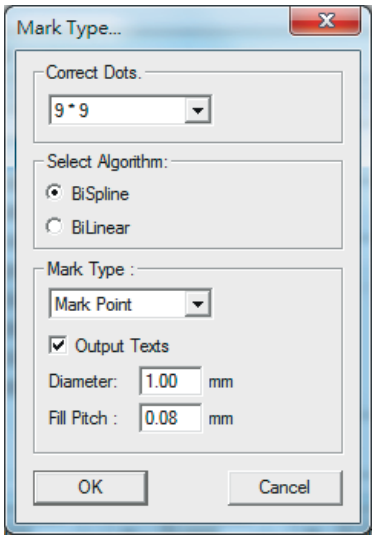


Fig. 1.1.46

Correct Dots

Select correct dots from the list. More correct dots will get more accurate result.

Algorithm

Select "BiSpline" or "BiLinear" algorithm.

Mark Line

The laser will mark grid line when choosing "Mark Line".

Mark Point

The laser will mark grid point when choosing "Mark Point". Users can also set

the diameter and fill pitch of the grid point from the field below.

Output Texts

If checked the “Output Texts” checkbox, the representing numbers will appear next to the grid point or line, see Fig.1.1.47.

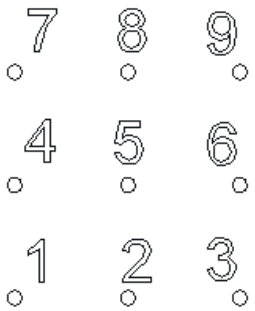


Fig. 1.1.47

Reset

Please refer to page 30.

Correcting Step

Step 1 Select the scale (K) value which is close to the voltage ratio of lens and driver output from the drop down menu. Then select the correct dots. More correct dots will get more accurate result.

Step 2 Click the “PreMark” button to execute marking.

Step 3 Measure the axis length and then enter the value in the field. (Since the value of X-axis and Y-axis may be different, please enter the shorter one.) If the real value is 109.11mm, it will be better to enter 110mm.

Step 4 Click the “Input Data” button for next step, see Fig.1.1.48.

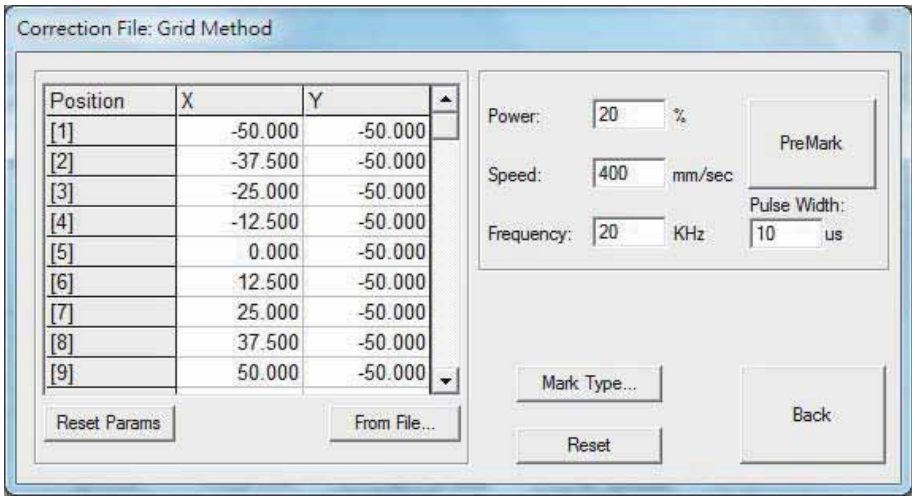


Fig. 1.1.48

Step 5 Click the “PreMark” button to see the mark result.
Select from the drop down menu to set correct dots. More correct dots will get better accuracy.

Step 6 Edit the positions of X and Y in the fields separately and then click the “PreMark” button again to see the mark result. If necessary, repeat these

steps until achieving the goal. Click “Back” button and then “Exit” button to save the file and exit.

Reset Params. Reset all correction data as the default values.

From File… Users can create a *.txt file as a correction file and using this function to import that file as the coordinates of X and Y, see Fig.1.1.49.

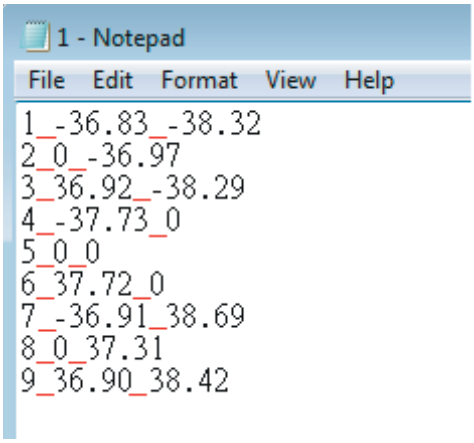


Fig. 1.1.49

1.1.6.13 Focal Axis Config

Users can enable focal axis for 3D marking application. See fig. 1.1.50

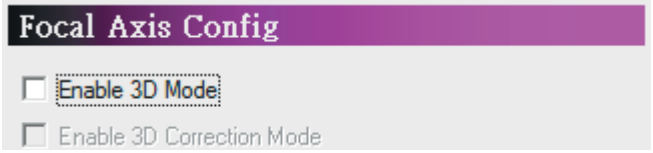


Fig. 1.1.50

Enable 3D mode Allow user use 3D marking.

Enable 3D correction mode Allow user tune 3D marking detail option.

1.1.6.14 Scan Head Config

Users can set the home position of scan head, enable multi-head, and activate sky writing from here, see Fig.1.1.51.

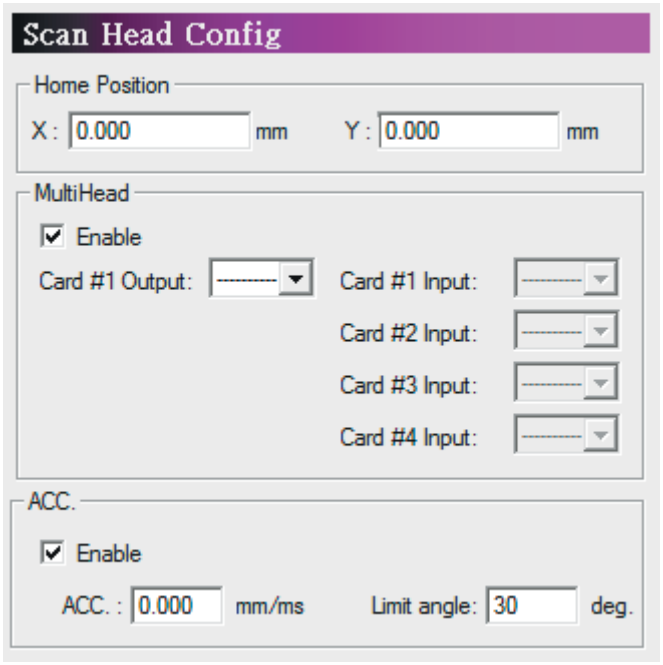


Fig. 1.1.51

Home Position — Setting original points position in X direction and Y direction.

MultiHead — Enable multiple scanners work simultaneously.

- **Enable** — Enable MultiHead function.
- **Card Output** — Setting main controller synchronize signal output. Value is between from 1 to 16.
- **Card Input** — Setting client controller synchronize signal input. Value is between from 1 to 16.

ACC. — Enable Sky Writing function. **Sky Writing** is developed for eliminating scanner motor physical inertia caused laser spot distribution is uneven at start marking, end marking, and poly-line marking. See fig 1.1.52.
Enable Sky Writing will need to clear Start point delay, Poly delay, End point delay, and mark delay to 0 at first, than rebuild delay parameters. See fig 1.1.53, and refer to sector 3.2.4 to rebuild the parameters.

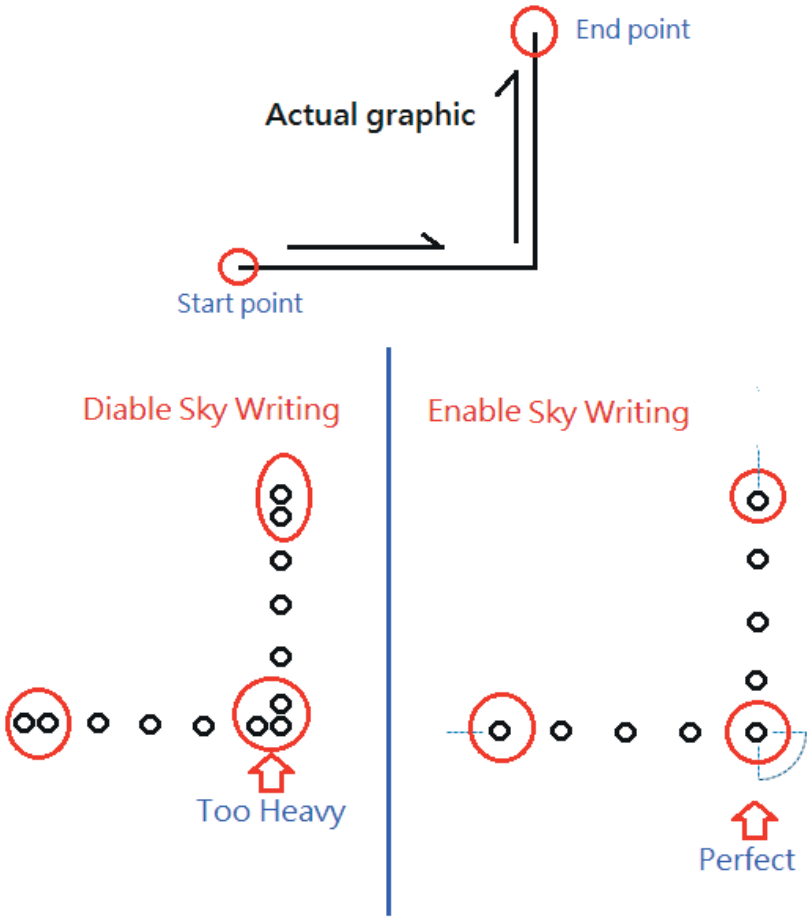


Fig. 1.1.52

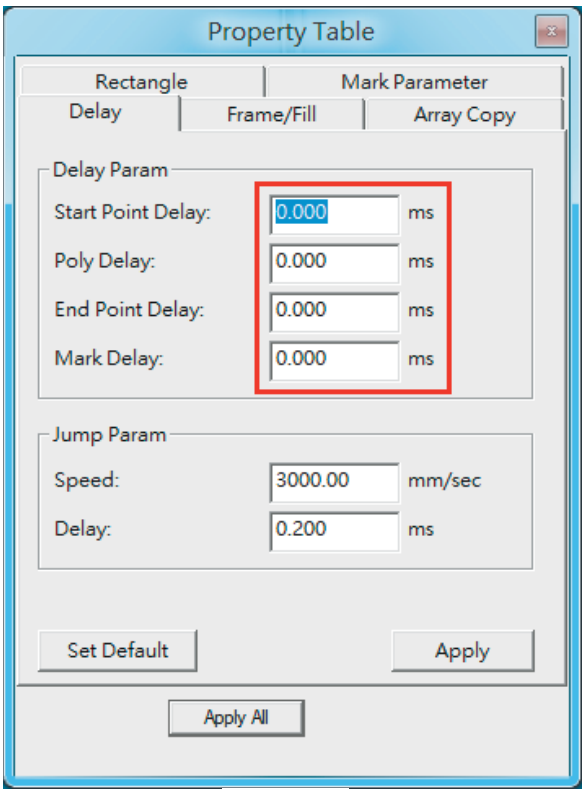


Fig. 1.1.53

Enable	Use Sky Writing function ◦ To use Sky Writing will need controller support.
Acc. speed	Greater acc. speed will need shorter time to attend the stable marking speed. This value must more than 0.
Limit angle	Sky writing is disabled when poly-line outer corner angle is smaller than limit angle (not include equal to limit angle). See fig. 1.1.54. Value is from 0 to 180, which set to 0 means forced to use Sky Writing on whole marking process, and set to 180 means forced not to use Sky Writing during marking.

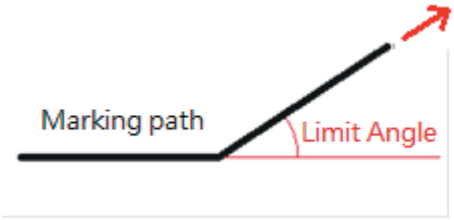


Fig.1.1.54

1.1.6.15 Power Setting

Enable/disable the power settings, see Fig 1.1.55

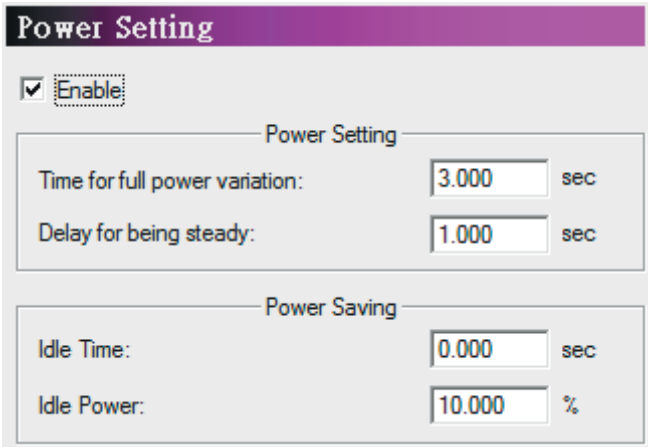


Fig. 1.1.55

Power Setting
Time for full power variation
Time period from zero and full power
Delay for being steady
The time it takes for the power to become steady when the power is full.
Power Saving
Idle Time
The system will enter to Power Saving Mode after this setting time when the system is idle.
Idle Power

MarkingMate 2.7 A-24

Set the power under Power Saving mode.

1.1.6.16 Dot Mode

Enable this function when requiring a special dot features on the marking object, see Fig.1.1.56. For example, mark a line with dot feature, like Fig.1.1.57. The main purpose of this function is to reach the dot effect through extending the distance and laser staying time of each dot.

Step Distance
Distance between each dot**.**

Step Delay
Laser staying time on each dot.

Repeat
Set the repeat times for each dot.

Time Interval
The time interval between each dot on one spot.

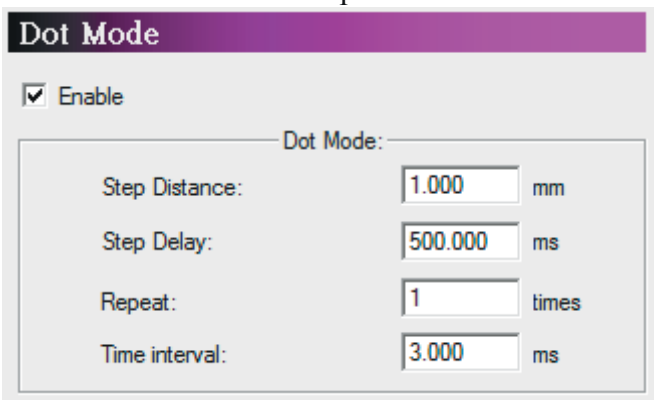


Fig. 1.1.56

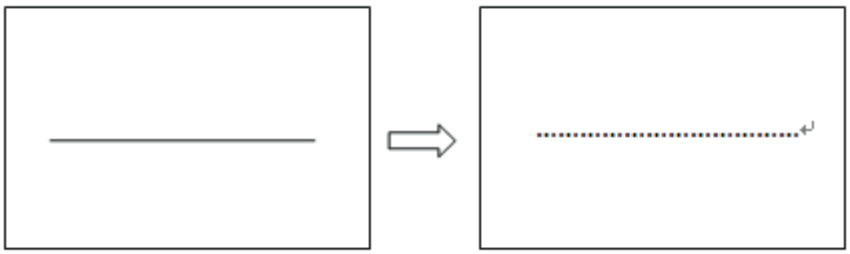


Fig. 1.1.57

1.1.6.17 Laser Config

Allow users to do some laser related settings, see Fig.1.1.58.

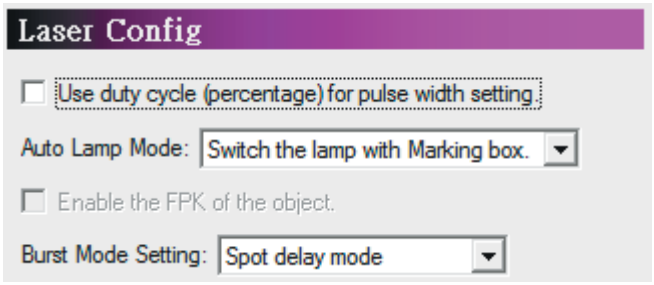


Fig. 1.1.58

Use duty cycle (percentage) for pulse width setting

Use the percentage of (pulse/oscillogram) to set the pulse width instead of setting the continuous time of pulse directly.

Auto Lamp Mode

The lamp can be selected to switch with the marking dialogue box or the marking system.

Enable the FPK of the object

Allow using different FPK for each object when marking.

Burst Mode Setting

When the marking object is vertex, image or barcode, users can select the spot marking mode.

Spot delay mode

This is the default setting. Spot delay means the time laser takes to mark a dot. Users can set the “Spot Delay” time in the ‘Mark Parameter” page of the Property Table while select this mode, see Fig.1.1.59.

Laser shot mode

This option controls the amount of laser shot on each dot. Users can set the “Laser Shot” count in the “Mark Parameter” page of the Property Table while select this mode, see Fig.1.1.60.

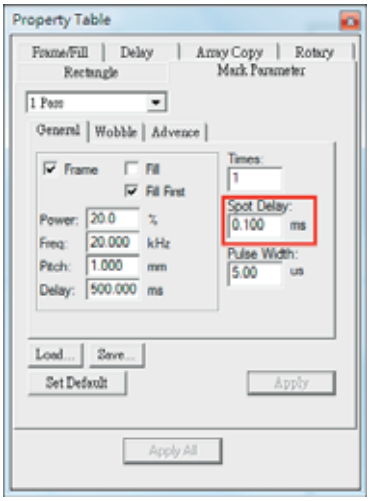


Fig. 1.1.59

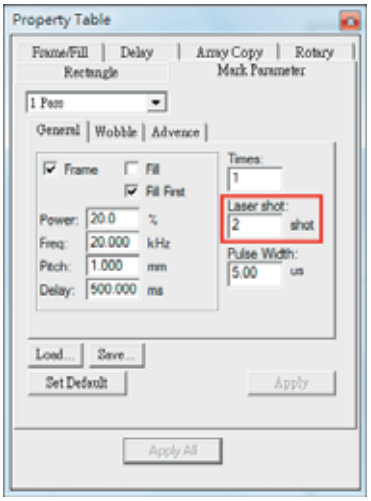


Fig. 1.1.60

1.1.6.18Edit

Set the edit function of the system, such as display the ruler and grid or not. The checked options will be the default value. See Fig.1.1.61.

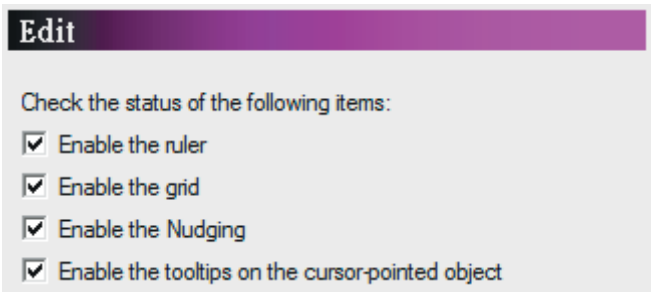


Fig. 1.1.61

1.1.6.19 Ruler

Enable/disable the ruler to appear on the work area, see Fig.1.1.62.Use ruler can help user measure the actual size of the object.

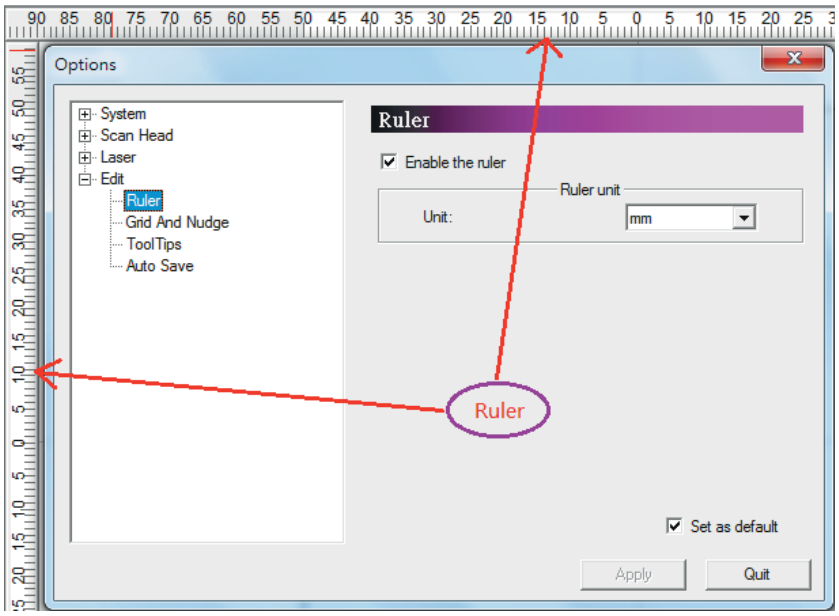


Fig. 1.1.62

Ruler Unit: mm or inch

1.1.6.20 Grid and Nudge

Enable/disable the grid and nudging, see Fig.1.1.63. Grid is used to help users measure the actual size of the object. Enable nudge, users can adjust the object's position through direction key according to setting nudge measure.

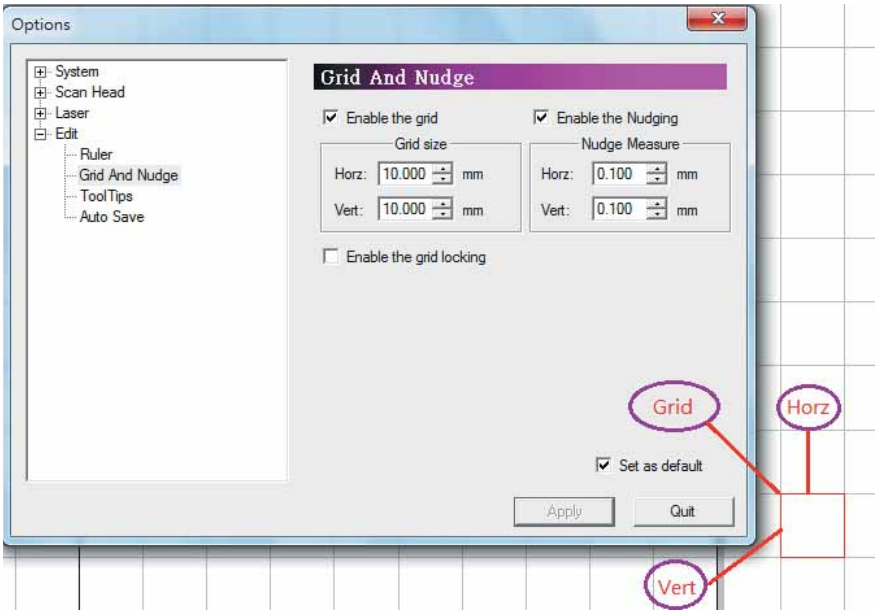


Fig. 1.1.63

Grid Size / Nudge Measure
Horz Horizontal width
Vert Vertical width

Enable the grid locking
Enable/disable the grid locking function. Enable this function allows users to adjust the size and position of selected object more accurate. The system will automatically lock a grid if the mouse pointer is close to that grid when users create or move an object.

1.1.6.21 ToolTips

Settings about tips of objects, see Fig.1.1.64.

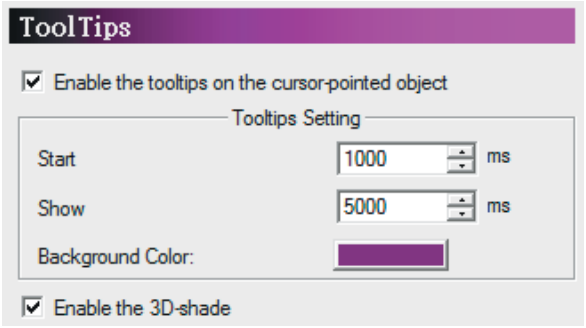


Fig. 1.1.64

Enable the ToolTips on the cursor-pointed object
ToolTips shows the info of the selected objects, see Fig.1.1.65.

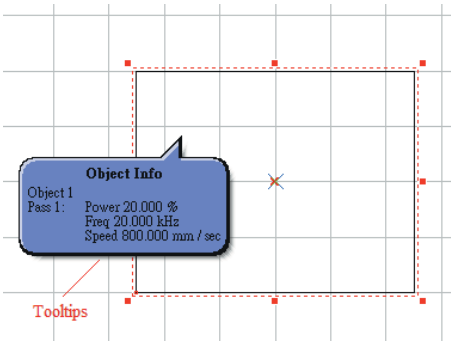


Fig.1.1.65

ToolTips Setting
Start Span Span for ToolTips to appear.
Show Span ToolTips continues time.
Background Color Background color of ToolTips.
Enable the 3D-shade Enable/disable the 3D-shade.

1.1.6.22 Auto Save

Enable/disable the Auto Save function, see Fig.1.1.66.

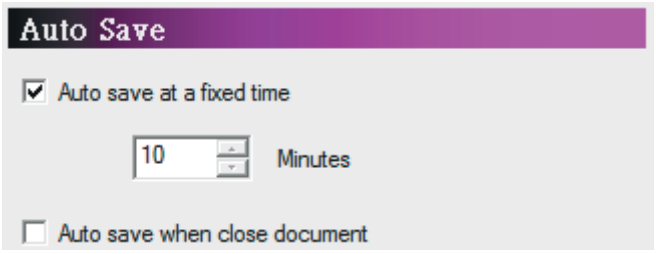


Fig. 1.1.66

Auto Save Rule
Auto save at a fixed time
The system will save the documents automatically every time period users set in the field.
Auto save when close document
Executing auto save when closing the document every time.

1.1.7 Import

This function allows user to import an image file that was not originally created by MarkingMate, such as *.bpm or *.dxf. The system will automatically convert that file into a format supported by MarkingMate after using import function. If the import object is a group or combine object, users can use “Ungroup” or “Break” function to break that object into several individual objects, see Fig.1.1.67.

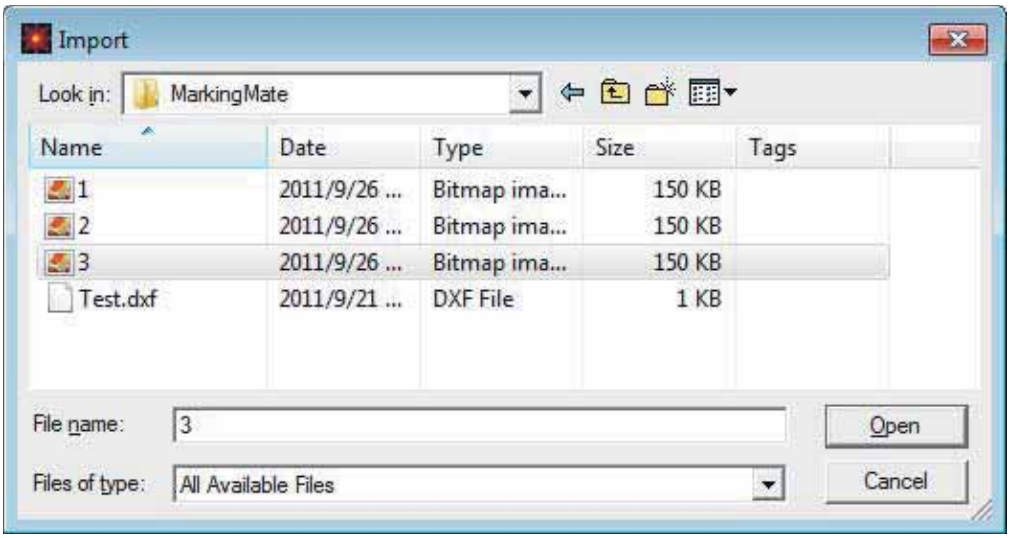


Fig. 1.1.67

Method:

- Click “File” from Menu Bar and select “Import” function.
- Click the button from the Toolbar
- Press the [**Ctrl**＋**I**] key from keyboard.

Look in	Select the directory users want to import from.
File name	Type or select the file name to import.
Files of type	**MarkingMate** allows users to import various file types such as: DWG/DXF/PLT/CNC/GBR/DST/AI/BMP/EMF/PNG/PCX/CMP/FPX/PLT/CAL/ICO/JPG/PS/EPS/CLP/WMF/TIF/CUR/PSD/TGA.

1.1.8 Export DXF

This allows users to transfer the current document into .dxf file format for AutoCAD or other applications which can use this type of file.
Click “File” from Menu Bar and select “Export DXF” function, a dialogue box as Fig.1.1.68 will appear.

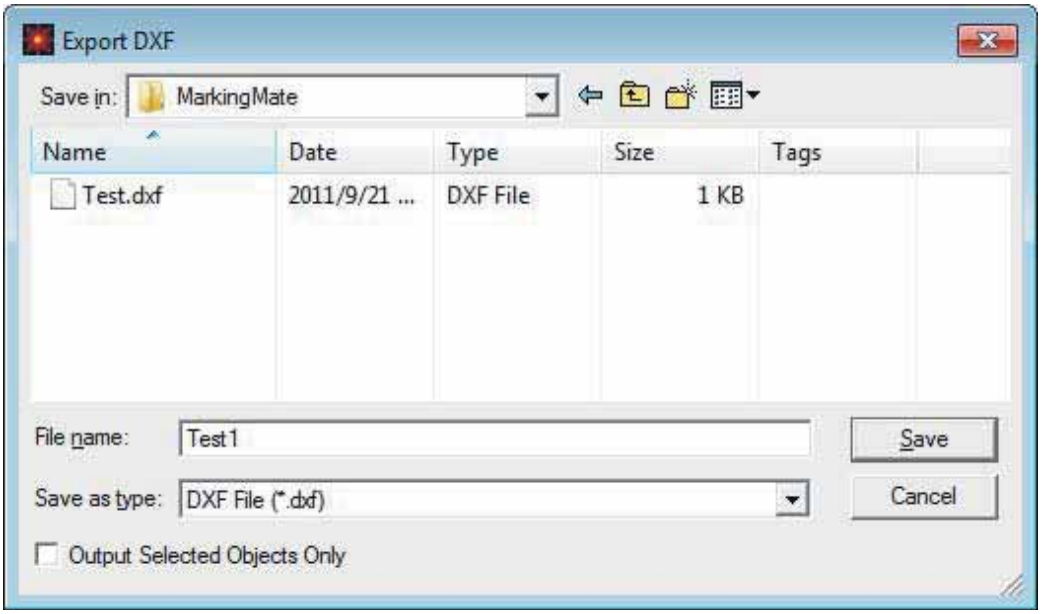


Fig. 1.1.68

File Name	Input file name or select from the list.
Save as type	DXF File (*.dxf)
Output Selected Objects only	Choose to output the selected object only or not.

1.1.9 Select TWAIN Device

Select a supported scanner, see Fig.1.1.69.

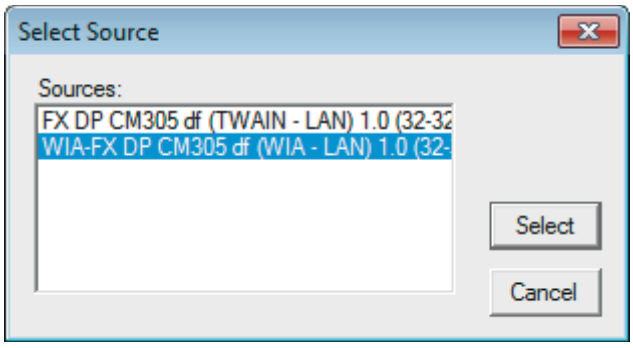


Fig. 1.1.69

1.1.10 TWAIN Acquire

Use this function to set image parameters such as size and resolution, the interface is provided from the scanner’s manufacturer.

1.1.11Configuration Import/Export

Use this function to back-up or restore current configuration, such as application configuration, object default setting, driver configuration, lens setting, machine check configuration and lens correction file.

Method:

Export:

1. Click on "File"→ "Configuration Import/Export" to bring out dialog seen as fig. 1.1.70.

2. Check on any option then choose a folder by clicking on "…" button or filling the editor with path folder directly. After that click on the "**Export**" button. Please notice that "*.len (Lens cor. file)" is used at version 2.4., thus this option is for import only.

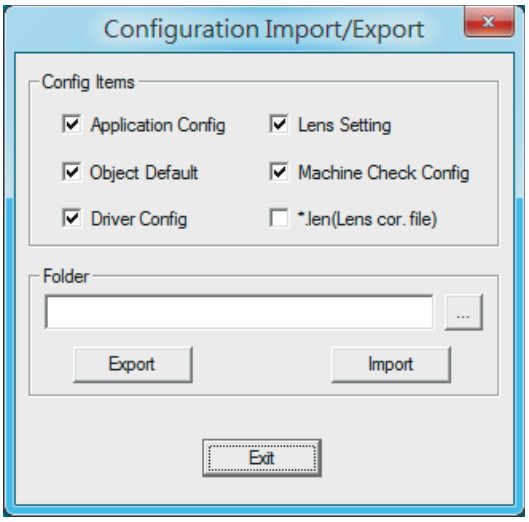


Fig. 1.1.70

Import:

1. Click on "File"→ "Configuration Import/Export" to bring out dialog seen as fig. 1.1.71.

2. Check on any option then choose a folder by clicking on "…" button or filling the editor with path folder directly. After that click on the "**Import**" button.

3. If file is already existed, will pop-up a dialog to confirm to replace, skip, or rename the file. See fig. 1.1.70.

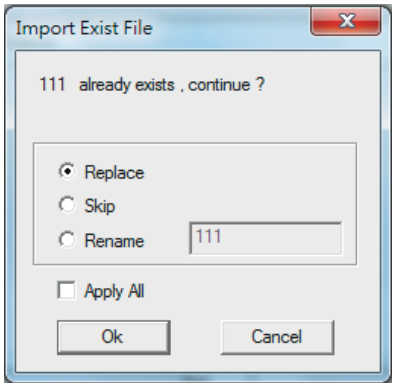


Fig. 1.1.71

4. After import is completed, click on "**Yes**" when asking to restart software.

1.1.12 Change Language

This function allows user to change the system to different language version. There are now five language versions for user to select: English, Simplified Chinese, German, Japanese, Turkish, and Traditional Chinese, see Fig.1.1.72.

Fig. 1.1.72

1.1.13 Print

Print the current document, see Fig.1.1.73.

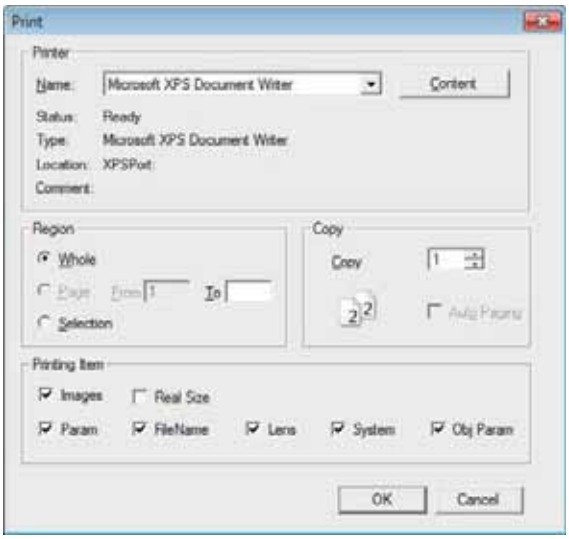


Fig. 1.1.73

Method:

Click “File” from Menu Bar and select “Print” function or press the [**Ctrl**＋**P**] key from keyboard

Printer

Name	Select the printer
Content	Further setting for printer. The settings are different from the OS and the manufacture of the printer.
Region	Select the region user want to print
Whole	Print all of the data in the work area
Page	Print the selected page(s).
Selection	Print the current used page
Copy	Select the number of copies user want to print
Printing Item	Select the items users want to print (image, real size, parameter, file name, lens, system, or object parameter)

1.1.14 Preview

Preview the current document before printing it. Fig.1.1.74 is the function of preview.

Fig. 1.1.74

Print – Go directly to the Print menu and start printing
Zoom In – Magnify the current image.
Zoom Out – Minify the current image.
Prev/Next – Allow user to view the document more convenient.
Images, Param, File Name, Lens, System, Obj Param – Select the parameters users want to display while printing.
Close – Return to the edit menu

1.1.15 Printer setting

Further setting about the printer, see Fig.1.1.75.

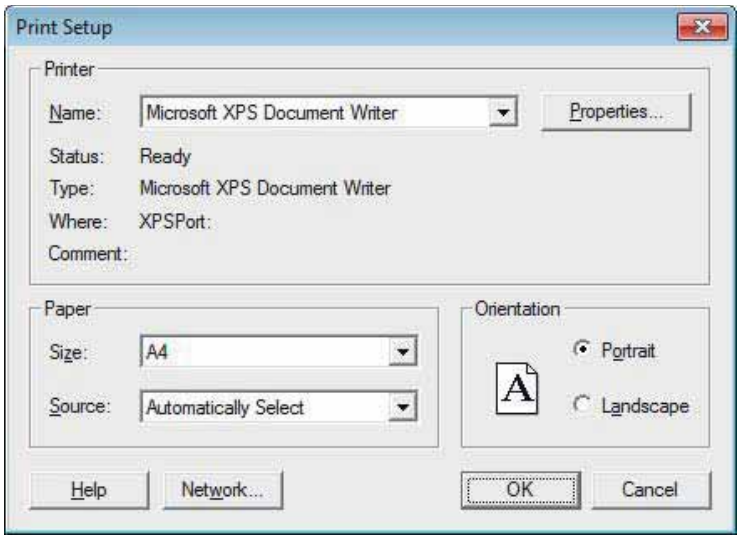


Fig. 1.1.75

Printer
Select the printer
Paper
Select the paper source
Direction
Select horizontal or vertical print
Content
Detail printer setting

1.1.16 Set File Password

Set current file password. After setting the file password, user will be asked password for access the file.

1.1.17 MRU File

It will show “MRU File” if it’s the user’s to run MarkingMate, see Fig.1.1.76. Otherwise, it will display the previous used files (maximum 4 files), see Fig.1.1.77.

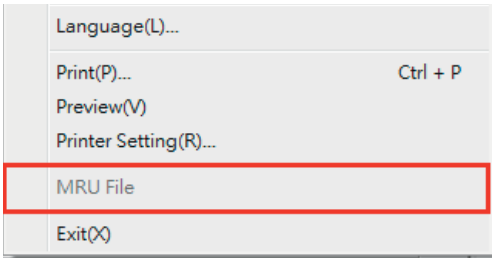


Fig. 1.1.76

Fig. 1.1.77

1.1.18 Exit

Exit **MarkingMate** system.

Method:
Click “File” from Menu Bar and select “Exit” function.
Click the upper right button, see Fig.1.1.78.

Fig. 1.1.78

Click the upper left icon  to exit the system, see Fig.1.1.79.

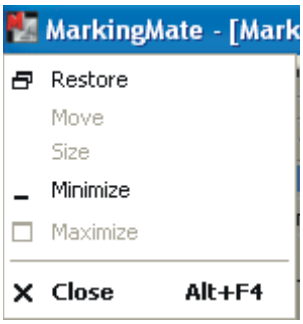


Fig. 1.1.79

Press the [**Alt＋F4**] key from keyboard.

1.2 Edit Menu

"Edit" menu offers the following functions:

Redo	Cancel the "Undo" action
Undo	Cancel the latest edition
Cut	Remove selected data and store it in the clipboard for another use
Copy	Duplicate selected data and store it in the clipboard for another use
Paste	Attach data from the clipboard to an assigned document
Delete	Delete and remove the selected data
Select All	Select all objects, including objects which are not located in working area.
Select Invert	Select the objects which are un-selected, including objects which are not located in working area and cancel the selected ones.
Replace…	Substitute the selected object by importing assigned object.
Combine	Combine two or more objects into one. This function allows several objects to share the same property settings
Break	Break on object into several objects.
Group	Combine two or more objects into one group.
UnGroup	Do the inversion of Group function
Set Circle Object Radius	Modify circle that radius same as **original radius** to **modified radius**.
Move to New Layer	System will create a new layer and move the selected object to that new layer.
Sort	Sort the connected parts of the selected object
Reverse	Set the object's start point as end point and the end point become the start point.
Mirror Horz	Invert an image on its horizontal axis. Left will become right and vice-versa
Mirror Vert	Invert an image on its vertical axis. Up will become down and vice-versa
Move to Center	Move the object to the center of working area.
Baseline	Align selected text along a designated path
Split	Do the inversion of baseline function
Trans-Curve	Transfer an object in to a curve line.
Nudge	Set the nudge measure of an object when using the direction key of keyboard to move that object.

Jump Cross	Make the intersects of two objects turn into two objects without crossing
Welding	Make the selected objects do vector combination.
Contour	This function will create an outline from a selected bitmap image
Transfer to Image	Transfer the selected objects into an image
Align	Adjust the selected objects' position according to the assigned alignment.
Distribute	Adjust the selected objects' position according to the assigned distribution.

1.2.1 Redo

Cancel the “Undo” action. If this function was grayed, it means it is disable to use. The maximum times of “Redo” are 20.

Method:

- Click “Edit” from Menu Bar and select “Redo” function.
- Click  button from Standard Bar.
- Press [**Ctrl**＋**Y**] from keyboard.

1.2.2 Undo

Back to the previous edit action. If this function was grayed, it means it is disable to use.
The maximum times of “Undo” are 20.

Method:

- Click “Edit” from Menu Bar and select “Undo” function.
- Click  button from Standard Bar.
- Press [**Ctrl**＋**Z**] from keyboard.

1.2.3 Cut

Remove selected data and store it in the clipboard for another use. If no data or object is selected, this function will be disabled.

Method:

- Click “Edit” from Menu Bar and select “Cut” function.
- Click  button from Standard Bar.
- Press [**Ctrl**＋**X**] from keyboard.

1.2.4 Copy

Duplicate selected data and store it in the clipboard for another use. If no data or object being selected, this function will be disabled.

Method:

- Click “Edit” from Menu Bar and select “Copy” function.
- Click  button from Standard Bar.
- Press [**Ctrl**＋**C**] from keyboard.

1.2.5 Paste

Attach data from the clipboard to the current document. If there is nothing stored in clipboard, this function will be disabled.

Method:

- Click “Edit” from Menu Bar and select “Paste” function.
- Click  button from Standard Bar.
- Press [**Ctrl**＋**V**] from keyboard.

1.2.6 Delete

Delete the selected data, and the data will not be stored in the clipboard.

Method:

- Click “Edit” from Menu Bar and select “Delete” function.
- Press [**Del**] from keyboard.

1.2.7 Select All

Select all objects, including objects which are not located in working area.

Method

- Click “Edit” from Menu Bar and select “Select All” function.
- Press [**Ctrl**＋**A**] from keyboard.

1.2.8 Select Invert

Select the objects which are un-selected, including objects which are not located in working area and cancel the selected ones.

Method

- Click “**Edit**” from “**Menu Bar**” and select “**Select Invert**” function.

1.2.9 Replace

Substitute the selected object by importing assigned object.

Method

- Click “Edit” from Menu Bar and select “Replace…” function.
- Click  button from Standard Bar.

1.2.10 Combine

Combine two or more objects into one. This function will allow several objects to share the same property settings. Under the fill situation, the odd number overlapping parts of objects will be filled in color, while the even numbers parts will not, see Fig.1.2.01.

Method:

- Click "Edit" from Menu Bar and select "Combine" function.
- Click  button from Standard Bar.
- Press [**Ctrl**+**K**] from keyboard.

Example:

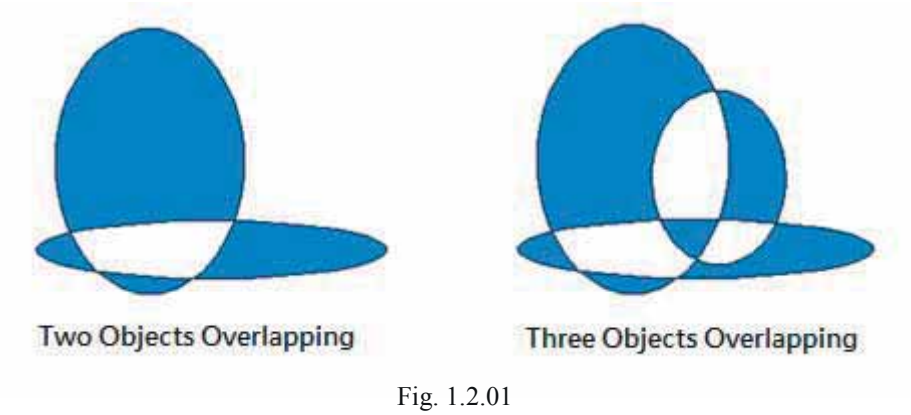


Fig. 1.2.01

1.2.11 Break

Divide a combined object into several individual objects.

Method:

- Click "Edit" from Menu Bar and select "Break" function.
- Click  button from Standard Bar.
- Press [**Ctrl**+**B**] from keyboard.

1.2.12 Group

Classify two or more objects into one group. This function will allow several objects to move together while allowing their individual property settings to remain intact. Notice: the maximum amount of group's layer is 15.

Method:

- Click "Edit" from Menu Bar and select "Group" function.
- Click  button from Standard Bar.
- Press the [**Ctrl**+**M**] from keyboard.

1.2.13 UnGroup

Cancel the group effect of an object.

Method:

- Click “Edit” from Menu Bar and select “UnGroup” function.
- Click  button from Standard Bar.
- Press the [**Ctrl**＋**Q**] from keyboard.

1.2.14 Set Circle Object Radius

Modify circle that radius same as **original radius** to **modified radius**.

Method

- Click “Edit” from Menu Bar and select “Set Circle Object Radius” function.

1.2.15 Move to New Layer

System will create a new layer and move the selected object to that new layer.

Method

- Click “Edit” from Menu Bar and select “Move to New Layer” function.

1.2.16 Sort

Sort the segments or objects which are not arranged in order, see Fig.1.2.02 and Fig.1.2.03. Please note that the objects users want to sort must be combined first. The arrow in the image is the start point of the object.

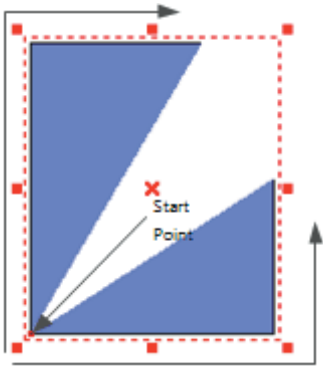


Fig. 1.2.02

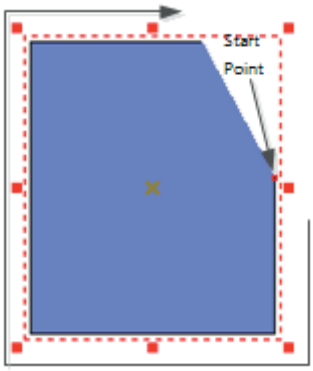


Fig. 1.2.03

Method:

- Click “Edit” from Menu Bar and select “Sort” function.
- Click  button from Standard Bar.

1.2.17 Reverse

Set the object’s start point as end point and the end point become the start point.

Method:

Click “Edit” from Menu Bar and select “Reverse” function.

1.2.18 Mirror Horizontal

Invert an object on its horizontal axis. Left will become right and vice-versa, see Fig.1.2.04.

Method:

- Click "Edit" from Menu Bar and select "Mirror Horizontal" function.
- Click  button from Standard Bar.
- Press [**Ctrl**+**H**] from keyboard.

Example:

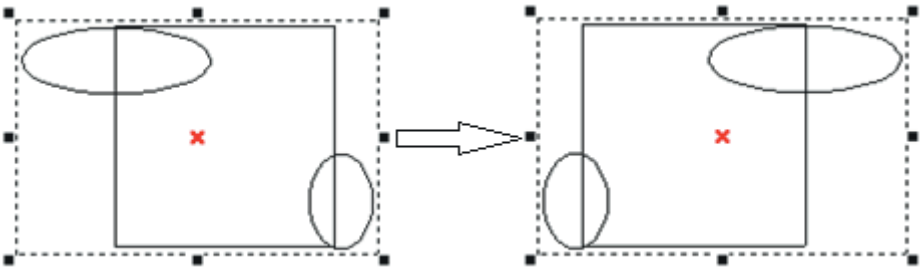


Fig. 1.2.04

1.2.19 Mirror Vertical

Invert an image on its vertical axis. Up will become down and vice-versa, see Fig.1.2.05.

Method:

- Click "Edit" from Menu Bar and select "Mirror Vertical" function.
- Click the  button from Standard Bar.
- Press [**Ctrl**+**L**] from keyboard.

Example:

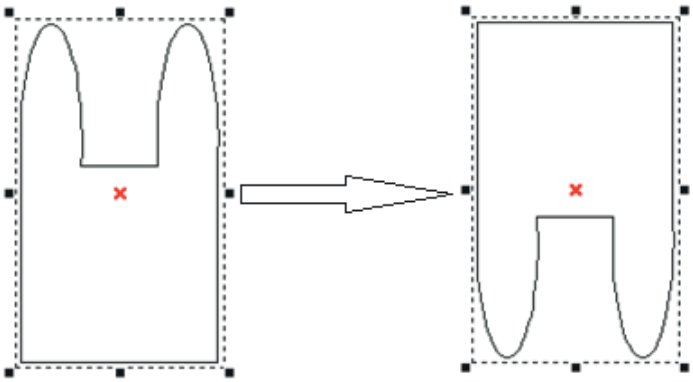


Fig. 1.2.05

1.2.20 Move to Center

Move the selected object(s) to the center of working area.

Method:

- Click "Edit" from Menu Bar and select "Move to Center" function.
- Click the  button from Standard Bar or Modify Bar.
- Press [**F8**] from keyboard.

1.2.21 Baseline

Align selected text along with a designate path. First select the text, then click "Edit –Baseline" from Menu Bar, the mouse pointer will become as A, and then select the path such as line, arc, or curve, see Fig.1.2.06.

Method:

- Click "Edit" from Menu Bar and select "Baseline" function.
- Press the [**Ctrl**+**E**] key from keyboard.

Example:

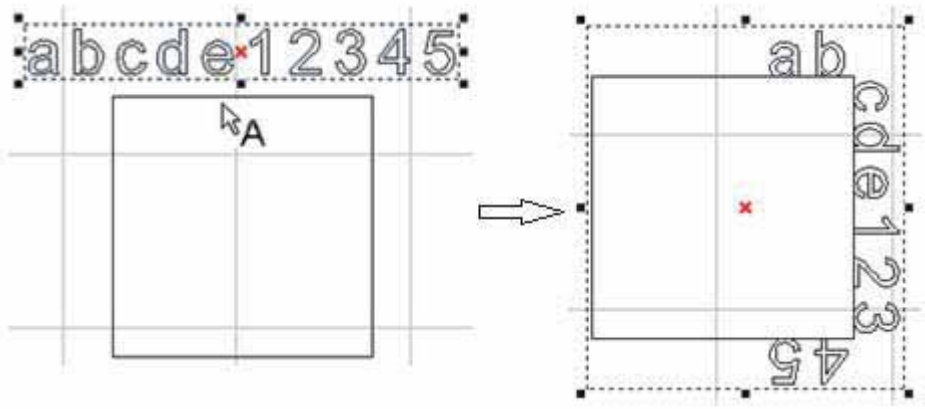


Fig. 1.2.06

1.2.22 Split

Cancel the baseline function, see Fig.1.2.07.

Method:

- Click "Edit" from Menu Bar and select "Split" function.
- Press [**Ctrl**+**D**] from keyboard.

Example:

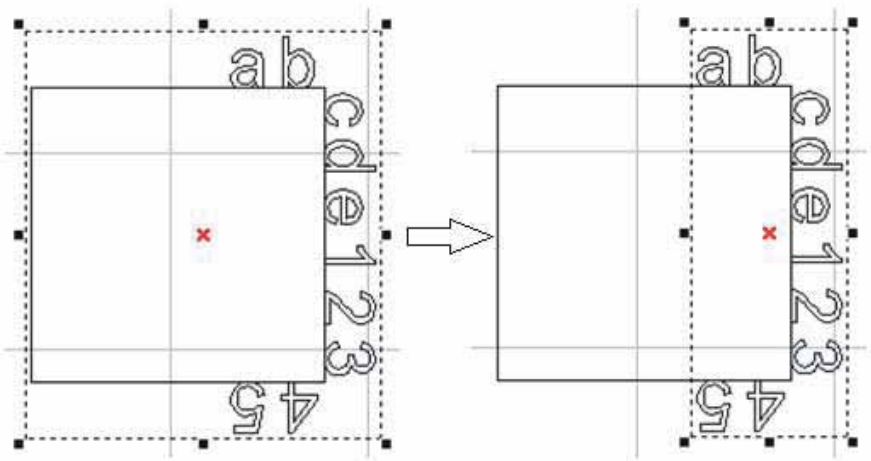


Fig. 1.2.07

1.2.23 Trans-Curve

Transfer a curved line into a series of individual lines. Allow these single lines to be manipulated individually such as using “Edit Vertex” function to change the object’s shape, see Fig1.2.08 to Fig.1.2.10.

＊ Only curve objects are able to use “Add Vertex” and “Edit Vertex” functions.
＊ This function can only be used on non-image objects.

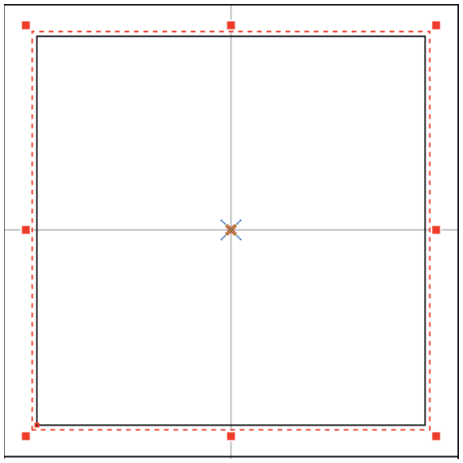


Fig. 1.2.08 Turn the Rectangle into Curve

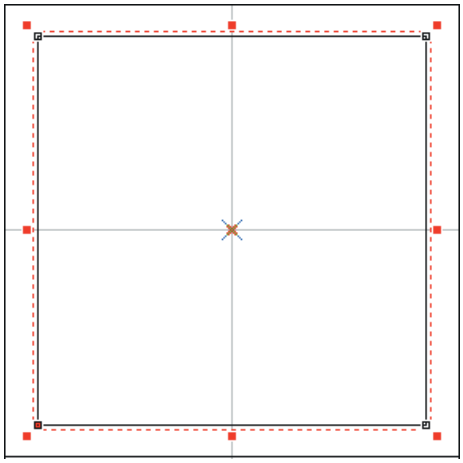


Fig. 1.2.09 Edit Vertex (White Square is Vertex)

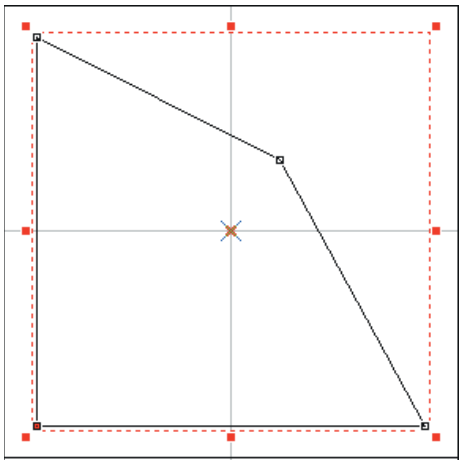


Fig. 1.2.10 Change the Shape by Drag the Vertex

Method:

- Click “Edit” from Menu Bar and select “Trans-curve” function.
- Click  button from Obj Property Bar.
- Press [**Ctrl＋U**] from keyboard.

1.2.24Nudge

Set the nudge measure of an object when using the direction key of keyboard to move that object, see Fig.1.2.11.

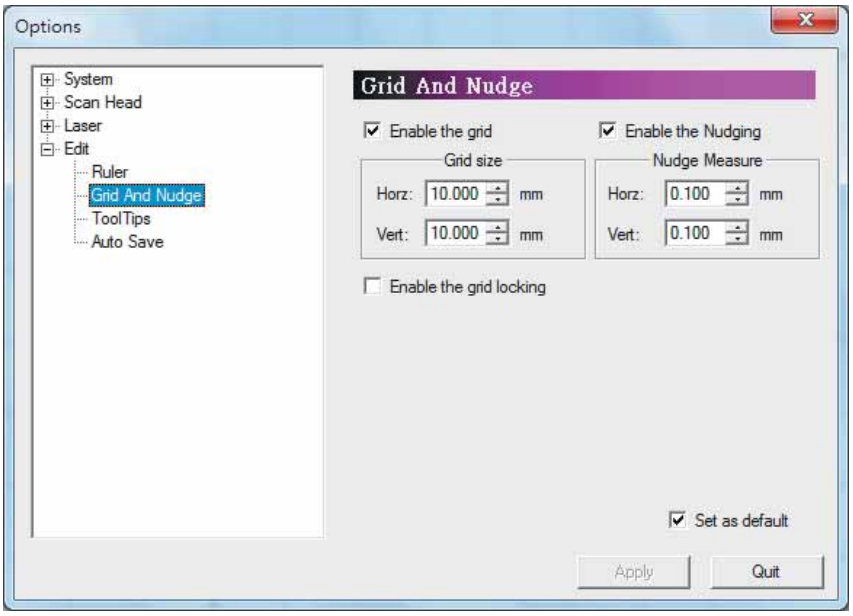


Fig. 1.2.11

Method:

- **Click "Edit" from Menu Bar and select "Nudge" function.**

1.2.25 Jump Cross

Make two figures with the line intersecting turn to be no crossing. The cross size is best to be set as between 0.008mm and 0.1mm, see Fig.1.2.12 and Fig.1.2.13.

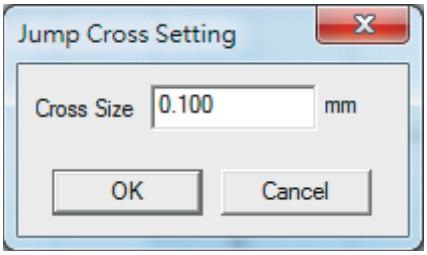


Fig. 1.2.12

Method:

- **Click "Edit" from Menu Bar and select "Jump Cross" function. Enter the value of cross size in the dialog box and click "OK" button.**

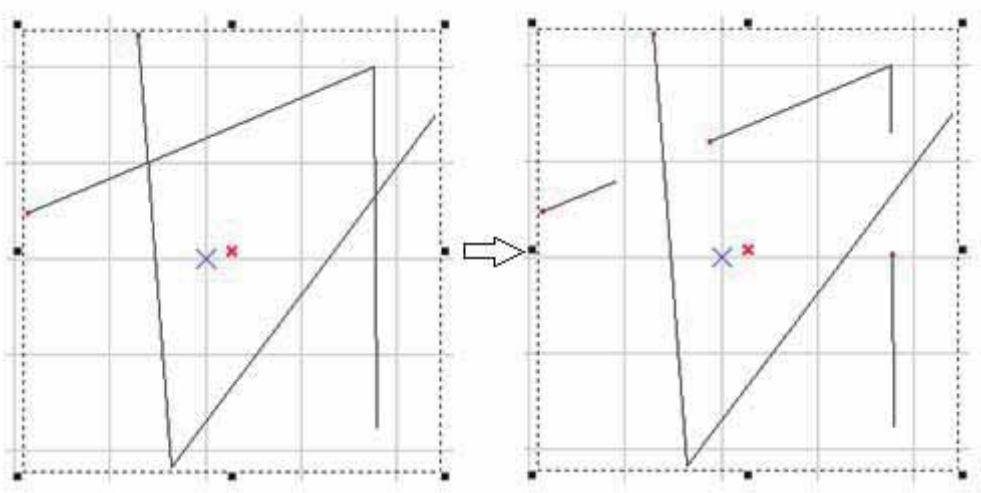


Fig. 1.2.13

1.2.26 Welding

Combine two or more objects and eliminate the overlapping lines, see Fig.1.2.14.
＊ This function is only work for the none-text and none-image objects. If users want to use this function for texts, they have to break the text into several segments first.

Method:

- Click “Edit” from Menu Bar and select “Welding” function.
- Click  button from Obj Property Bar.
- Press [**Ctrl**＋**G**] from keyboard.

Example:

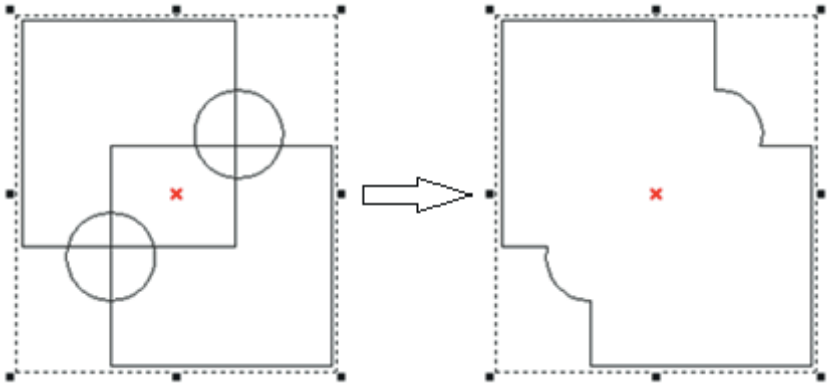


Fig. 1.2.14

1.2.27 Contour

This function can derive the frame of a selected bitmap image. Before executing this function, users have to set the contour filter first, see Fig.1.2.15.

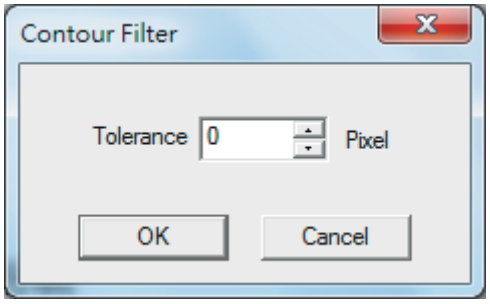


Fig. 1.2.15

Users have to input the tolerance value (maximum is 0) to get the correct figure. And then the image will become an ordinary figure. Users will see a lot of segments on the screen. They have to use “break” function if they want to use these segments, see Fig.1.2.16.

Method:

- Click “Edit” from Menu Bar and select “Contour” function.
- Press [Ctrl＋W] from keyboard.

Example:

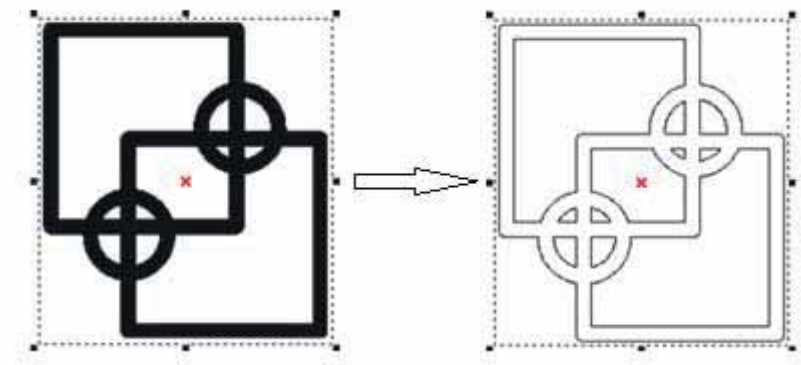


Fig. 1.2.16

1.2.28 Transfer to Image

Transfer the selected objects into an image. The dialogue box show as Fig.1.2.17 can change the resolution, color, and dithering mode.

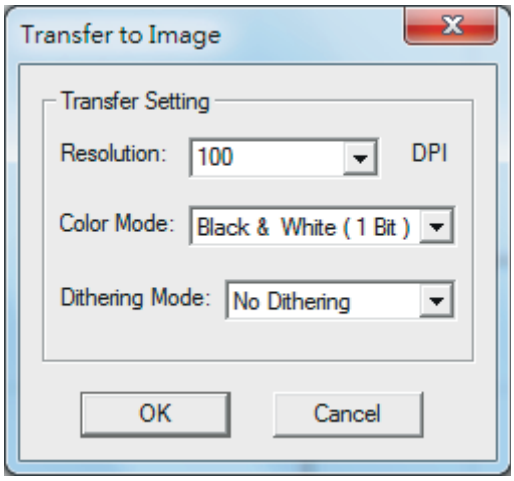


Fig. 1.2.17

Method:

- Click "Edit" from Menu Bar and select "Trans to Image" function.
- Press [**Ctrl**＋**T**] from keyboard.

1.2.29 Align

Use this function to align the selected objects, see Fig.1.2.18.

Left – align to the left
Middle – align to the middle
Right – align to the right
Top – align to the top
Center – align to the center
Bottom – align to the bottom
Align to:
Last Select Object – align to the last selected object
Paper Edge – align to the paper edge
Paper Center – align to the paper center

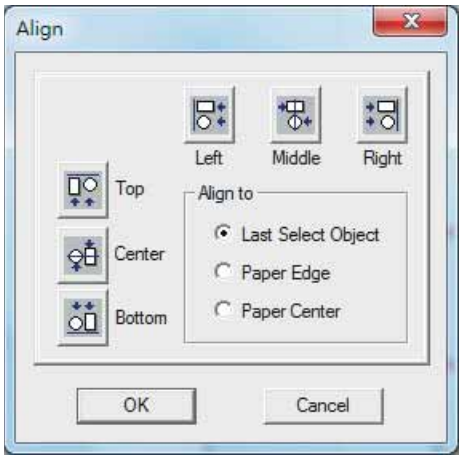


Fig. 1.2.18

Method:

- Click "Edit" from Menu Bar and select "Align" function.
- Click button fromObj Property Bar.

1.2.30 Distribute

Adjust the selected objects' position according to the assigned distribution, see Fig.1.2.19.

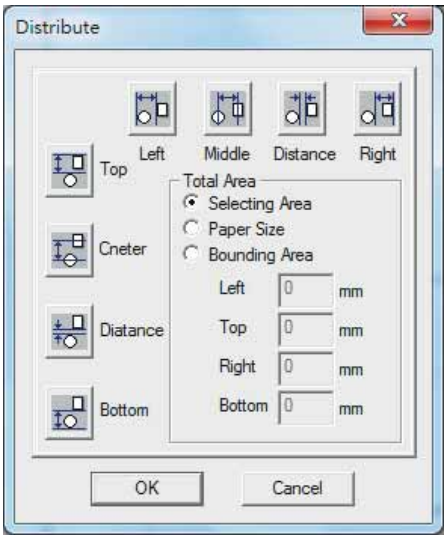


Fig. 1.2.19

Left – adjust the distance between the left-edge of each object
Middle – adjust the distance between the middle of each object
Distance – adjust the distance between the space of each object
Right – adjust the distance between the right-edge of each object
Top – adjust the distance between the top of each object
Center – adjust the distance between the center of each object
Distance – adjust the distance between the space of each object
Bottom – adjust the distance between the bottom of each object
Total Area - The distribute area is according to a selected area, paper area, or an adjustable border area.

Method:

- Click "Edit" from Menu Bar and select "Distribute" function.
- Click button from Obj Property Bar.

1.3 Draw Menu

"Draw" menu offers the following functions:

Vertex	Draw a vertex.
Line	Draw a straight line.
Arc	Draw an arc.
Circle	Draw a circle or oval.
Rectangle	Draw a square or rectangle.
Curve	Draw a curve.
Curve Brush	Draw a freehand line using the mouse.
Text	Insert a text object.
Arc Text	Insert an arc-text object.
Rectangle Text	Insert a rectangle text object.
1D Barcode	Create a 1D barcode.
2D Barcode	Create a 2D barcode.
Matrix	Create a matrix object.
Spiral	Draw a spiral object.
Control Object	Insert control objects.

1.3.1 Vertex

Insert a vertex object in the Working Area.

Method:
- Click “Draw” from Menu Bar and select “Vertex” function.
- Click  button from Draw Tool Bar.

Marking Way:
There are two ways for vertex marking. One is “Spot Delay” mode and the other is “Laser Shot” mode. Please refer to P.29 1.1.6.8 Burst Mode Setting.

1.3.2 Line

To draw a line, first click the “Line” function. The next step is to select a start point and click the left button of mouse, and then move the mouse to the end point and click the left button again. Click left button at third point to draw another line or click right button to end this function. Or press “C” to make the line become a close path and end function.

Method:
- Click “Draw” from Menu Bar and select “Line” function.
- Click  button from Draw Tool Bar.

Marking Way:
The marking route of line or any curve object is from its start point to the end point.

1.3.3 Arc

Press the left button of mouse to set the start point of arc, the move the mouse to the second point and press left button again. And then move to the third point and click the button to set the end point. Users can press the right button of mouse to end this function or press “C” to make the curve become a close path and end the function.

Method:
- Click “Draw” from Menu Bar and select “Arc” function.
- Click  button from Draw Tool Bar.

1.3.4 Circle

Create circles or ovals. Select a start point on the working area. Press the left mouse button and move the mouse to decide the size and shape and then click the left button again to finish drawing. Press the right button to stop this function. Press“Ctrl” when drawing will get a circle.

Method:
- Click “Draw” from Menu Bar and select “Circle” function.
- Click  button from Draw Tool Bar.

Marking Way:

No Fill
Marking starts from 0 degree following levorotarydirection, see Fig.1.3.01.

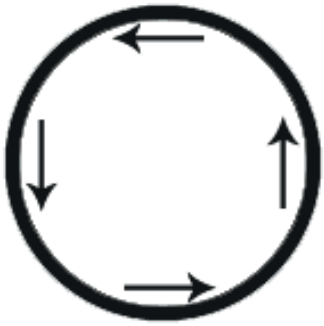


Fig. 1.3.01

Fill
Marking starts from left to right internal and then marks external frame, see Fig.1.3.02.

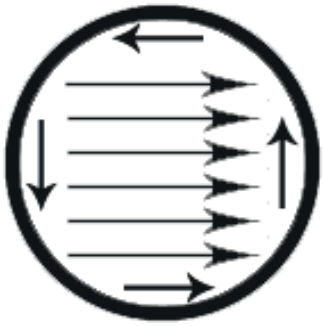


Fig. 1.3.02

1.3.5 Rectangle

Create squares and rectangles. Select a start point on the working area. Press the left mouse button and move the mouse to decide the size and shape and then click the left button again to finish drawing. Press the right button to stop this function. Press "Ctrl" when drawing will get a square.

Method:

- Click "Draw" from Menu Bar and select "Rectangle" function.
- Click  button from Draw Tool Bar.

Marking Way:

No Fill
Marking starts from upper left side following clockwisedirection, see Fig.1.3.03.

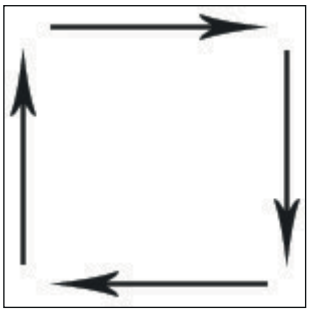


Fig. 1.3.03

Fill
Marking starts from left to right internal and then marks external frame, see Fig.1.3.04.

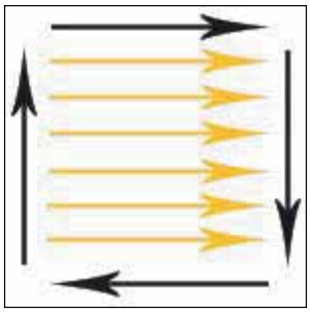


Fig. 1.3.04

1.3.6 Curve

Select the start point of the curve, holding the mouse left button and decide the direction of tangent line of that point. Then move to another point and decide the direction of tangent line again and complete a curve. Users can continue drawing the curve through moving the mouse; press “C” to make that curve become a closed path curve or press the right button to end this function.

Method:

- Click “Draw” from Menu Bar and select “Curve” function.
- Click button from Draw Tool Bar.

1.3.7 Curve Brush

Holding the left button of mouse and moving the mouse. A curve will display on the working area according to the move path of mouse. Release the left button to complete drawing and press right button to end this function.

Method:

- Click “Draw” from Menu Bar and select “Curve Brush” function.
- Click button from Draw Tool Bar.

1.3.8 Text

Select this function. Decide the position of the text and a dialog box will be displayed, see the red area in Fig.1.3.05. Input the content of the text. Press “Enter” to do line feed or click right button of mouse to end this function.

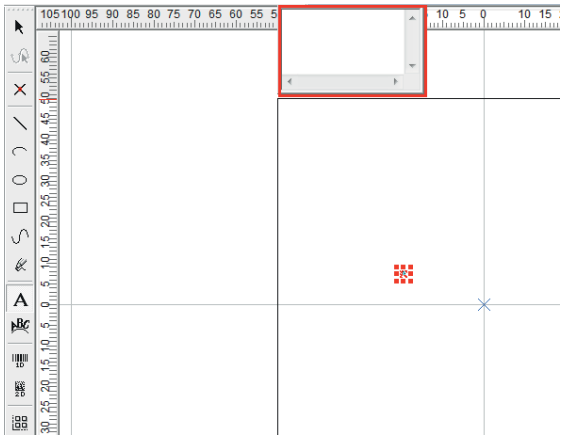


Fig. 1.3.05

Method:

- Click “Draw” from Menu Bar and select “Text” function.
- Click button from Draw Tool Bar.

Marking Way:

If a text object hasseveral characters, the laser will mark the characters one by one. If users need to mark the whole text at the same time, then the text must be transferred to a curve.

1.3.9 Arc Text

Using this function, the system will show a window like Fig.1.3.06. Input the content and click “OK” to end this function.

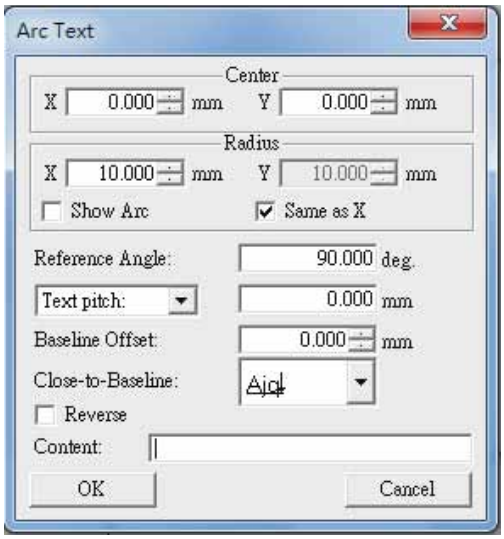


Fig. 1.3.06

Method:

- Click “Draw” from Menu Bar and select “Arc Text” function.
- Click  button from Draw Tool Bar.

1.3.10Rectangle Text

Users can input the text within a specified rectangle, see Fig.1.3.07. The font size of text will be changed according to the amount of characters.

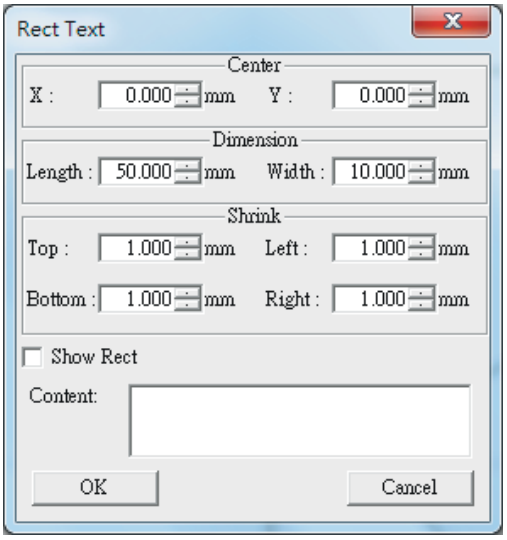


Fig. 1.3.07

Method:

- Click “Draw” from Menu Bar and select “Rectangle Text” function.
- Click  button from Draw Tool Bar.

1.3.13 Matrix

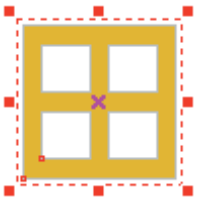
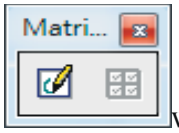


Fig. 1.3.10

Matrix function uses one or more objects as a sample to create an assigned amount of objects with same parameters and figure. Executing this function, a 2x2 matrix object will be created on working area,see Fig.1.3.10, and a toolbar 

will show for users to edit the content of matrix. Decider the amount of row and column of matrix and click button  or double click the mouse left button on one cell to edit the matrix content.Then click button  to finish the editing and all cells will show the same content.

Method:

- Click “Draw” from Menu Bar and select “Matrix” function.
- Click  button from Draw Tool Bar.

1.3.14 Spiral

Create Spiral. Select a center point on the working area. Click the left mouse button to draw a spiral

Method:

- Click “Draw” from Menu Bar and select “Spiral” function.
- Click  button from Draw Tool Bar.

1.3.15 Control Object

There are nine control objects: Digital In, Digital Out, Do Pause, Delay Time, Motion, Set Position, Loop, Ring and Homing, see Fig.1.3.11.

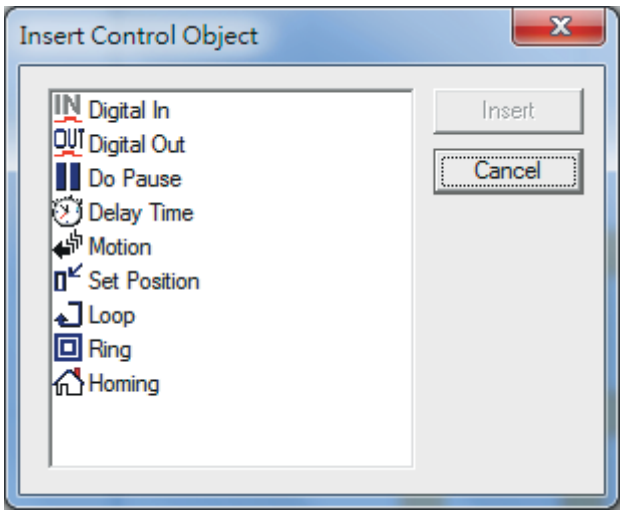


Fig. 1.3.11

Select one function and insert it and the function will display on object browser. The marking order will follow the objects' order under layer, for example, "Circle- Digital In- Rect- Do Pause- Curve- Homing," see Fig.1.3.12.

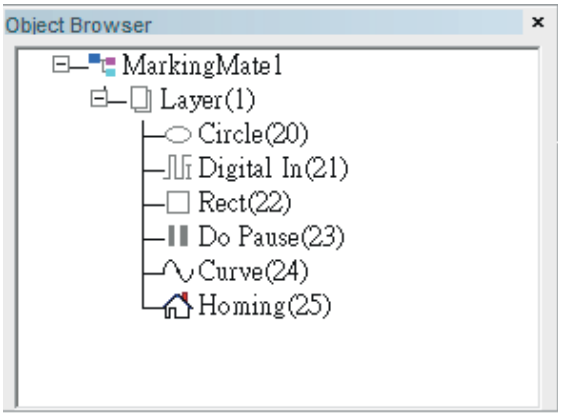


Fig. 1.3.12

Method:

- Click "Draw" from Menu Bar and select "Control Object" function.
- Click function users want to use from Control Object Tool Bar.

1.3.16 Group Hatch

Group-Hatch object is a special object which is generated within object browser when a group is generated and deleted when a group is ungroup. Users could use this object to perform carved marking task. **This object is useless to all barcode object, image object and vector object**.

Method:

- Generate a group will create a group-hatch object within object browser automatically. See fig 1.3.13.

- Choose a group hatch object from object browser. Modify group hatch object from Pass0 to Pass1 or other pass from marking property to enable hatch function. See fig 1.3.14.

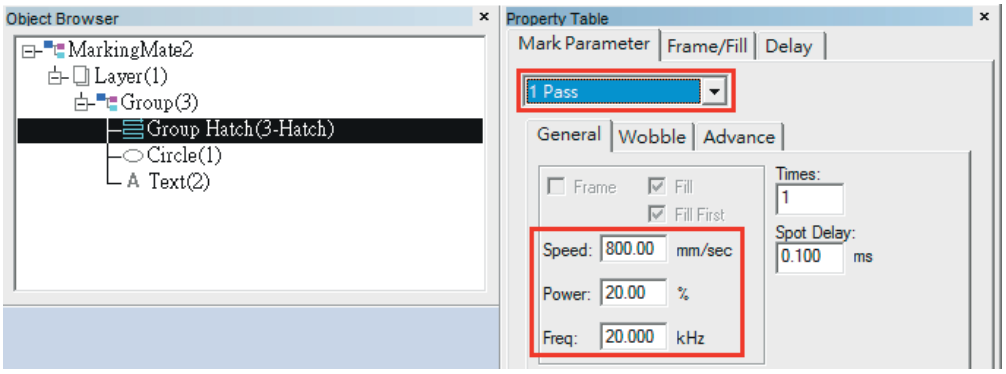


Fig. 1.3.13

Fig. 1.3.14

1.4 Image Menu

"Image" menu offers the following functions:

Effects	Modify the image effects Posterize Mosaic Average Median Sharpen Add Noise Emboss Edge Enhance Oilify
Spatial Filters	Use different filters Gradient Laplacian Sobel Prewitt Shift & Difference Line Segment

1.4.1 Effects

1.4.1.1 Posterize

Click "Image – Effects - Posterize"

This function allows user to adjust the color levels for an image, refer to the following examples.

Fig.1.4.01 is the original image:

Fig. 1.4.01

When Levels per color plane is 2, see Fig.1.4.02.

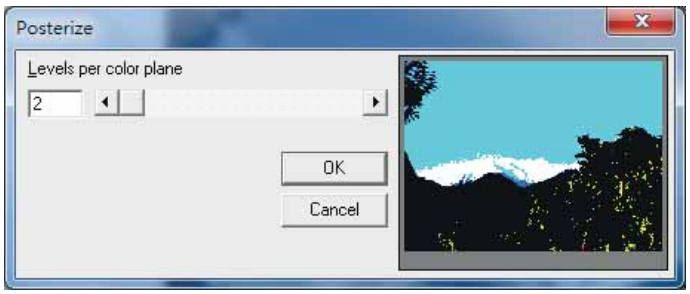


Fig. 1.4.02

When Levels per color plane is 20, see Fig.1.4.03.

Fig. 1.4.03

When Levels per color plane is 64, see Fig.1.4.04.

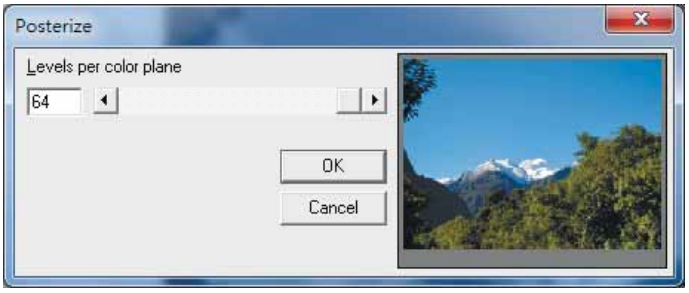


Fig. 1.4.04

1.4.1.2 Mosaic

Click "Image – Effects - Mosaic"

This function will cause a blurred by magnifying the pixel size of the image, refer to the following examples.
Fig.1.4.05 is the original image:

Fig. 1.4.05

When Tile size is 2, see Fig.1.4.06.

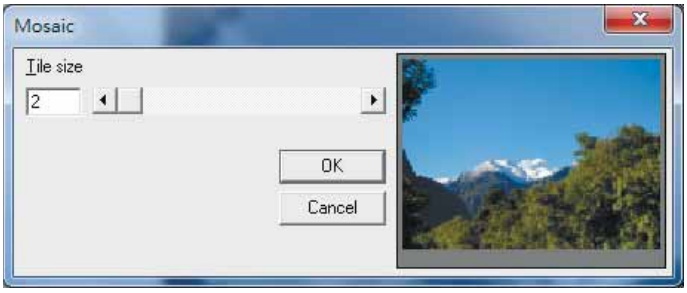


Fig. 1.4.06

When Tile size is 20, see Fig.1.4.07.

Fig. 1.4.07

When Tile size is 64, see Fig.1.4.08.

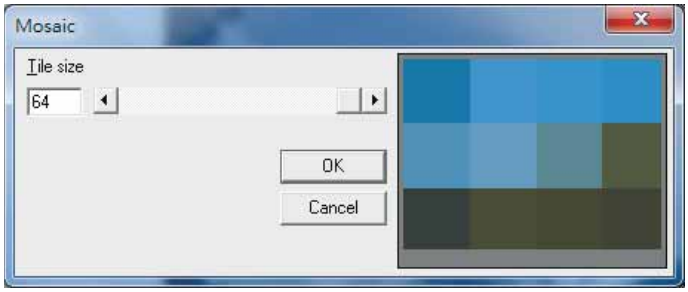


Fig. 1.4.08

1.4.1.3 Average

Click "Image – Effects - Average"

This function will cause a blurred by adjusting the average sample size of the image, refer to the following examples.
Fig.1.4.09 is the original image:

Fig. 1.4.09

When Sample size is 3, see Fig.1.4.10.

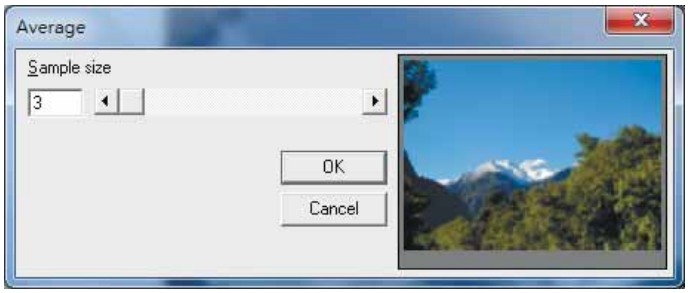


Fig. 1.4.10

When Sample size is 7, see Fig.1.4.11.

Fig. 1.4.11

When Sample size is 11, see Fig.1.4.12.

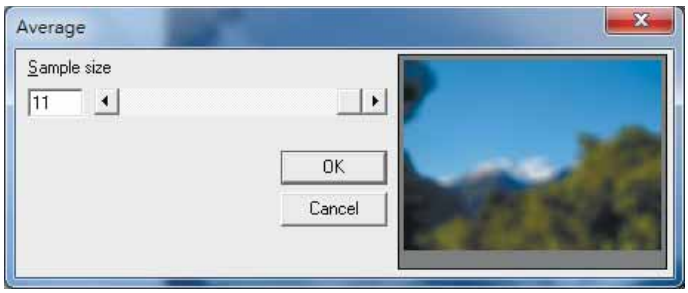


Fig. 1.4.12

1.4.1.4 Median

Click "Image – Effects - Median"

Adjust the sample size of image to cause the median effect and make the image become blurred, refer to the following examples.
Fig.1.4.13 is the original image:

Fig. 1.4.13

When Sample size is 3, see Fig.1.4.14.

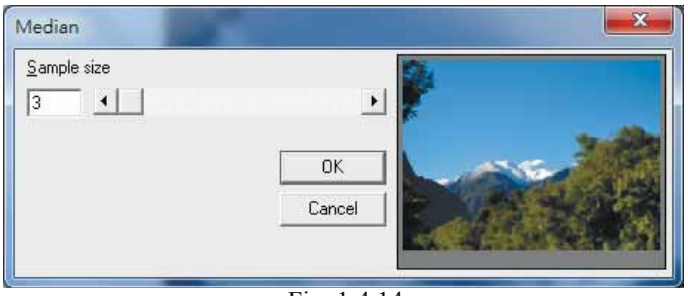


Fig. 1.4.14

When Sample size is 7, see Fig.1.4.15.

Fig. 1.4.15

When Sample size is 11, see Fig.1.4.16.

Fig. 1.4.16

1.4.1.5 Sharpen

Click "Image – Effects - Sharpen"

Adjust to percentage of image to increase the resolution and emphasize the contrast, refer to the following examples.
Fig.1.4.17 is the original image:

Fig. 1.4.17

When Percentage is 0, see Fig.1.4.18.

Fig. 1.4.18

When Percentage is -100, see Fig.1.4.19.

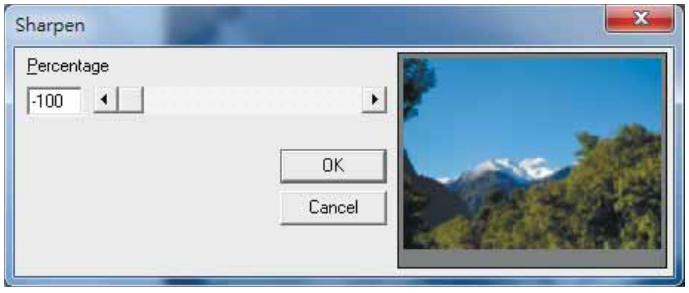


Fig. 1.4.19

When Percentage is 100, see Fig.1.4.20.

Fig. 1.4.20

1.4.1.6 Add Noise

Click "Image – Effects – Add Noise"

Add white noise to the image according to the noise level and channel. There are four types of channel to choose: Master, Red, Green and Blue, refer to the following examples.
Fig.1.4.21 is the original image:

Fig. 1.4.21

When Noise Level is 50 and Level is Master, see Fig.1.4.22.

Fig. 1.4.22

When Noise Level is 50 and Level is Red, see Fig.1.4.23.

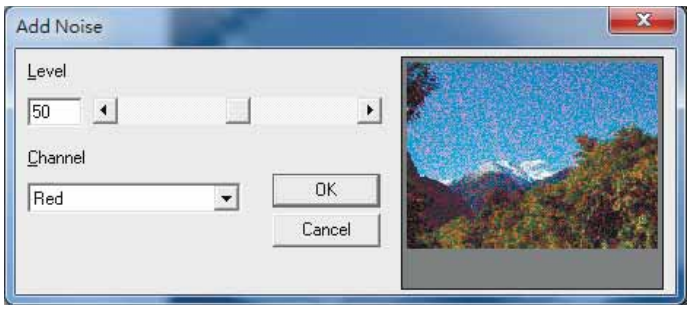


Fig. 1.4.23

When Noise Level is 50 and Level is Green, see Fig.1.4.24.

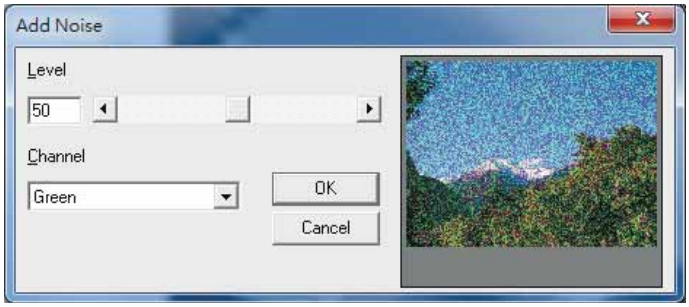


Fig. 1.4.24

When Noise Level is 50 and Level is Blue, see Fig.1.4.25.

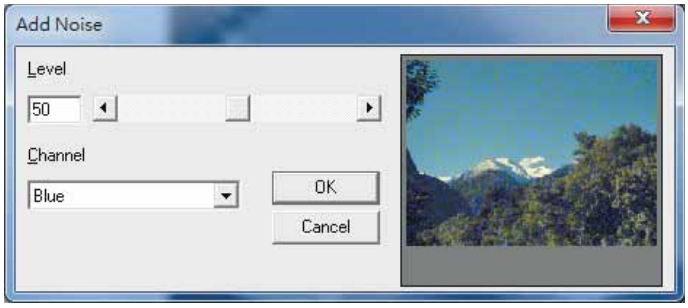


Fig. 1.4.25

1.4.1.7 Emboss

Click "Image – Effects - Emboss"

Create an embossed effect for the image by adjusting the direction and depth, refer to the following examples.
Fig.1.4.26 is the original image:

Fig. 1.4.26

Choose the direction as North and the Depth as 50, see Fig.1.4.27.

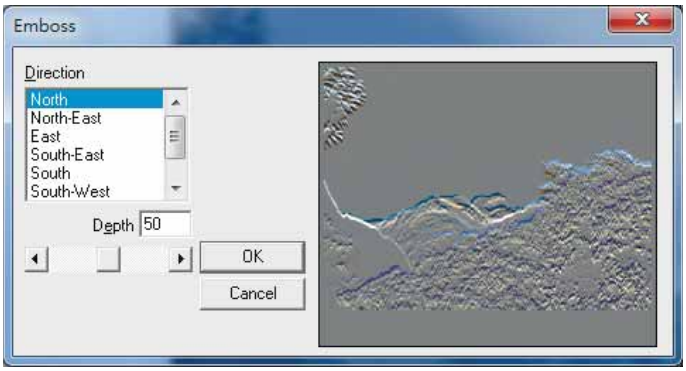


Fig. 1.4.27

Choose the direction as South-West and the Depth as 75, see Fig.1.4.28.

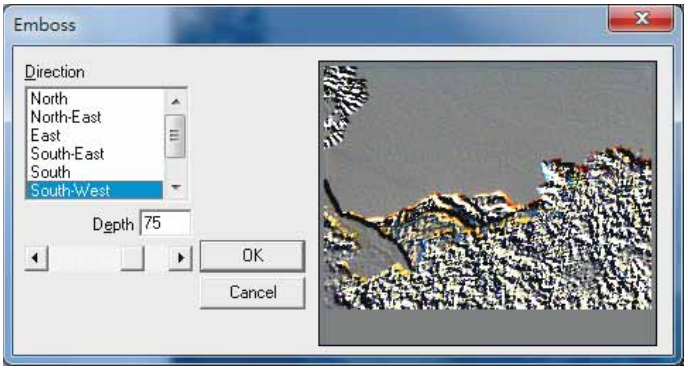


Fig. 1.4.28

1.4.1.8 Edge Enhance

Click "Image –Effects – Edge Enhance"

Enhance the edge of image, refer to the following examples.

Fig.1.4.29 Original Image

Fig.1.4.30 Edge-Enhance Image

1.4.1.9 Oilify

Click "Image – Effects - Oilify"

Adjust the sample size to create an oil painting effect for the image, refer to the following examples.
Fig.1.4.31 is the original image:

Fig. 1.4.31

When Sample size is 3, see Fig.1.4.32.

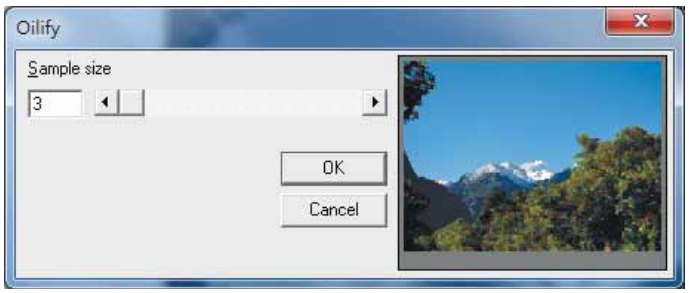


Fig. 1.4.32

When Sample size is 7, see Fig.1.4.33.

Fig. 1.4.33

When Sample size is 11, see Fig.1.4.34.

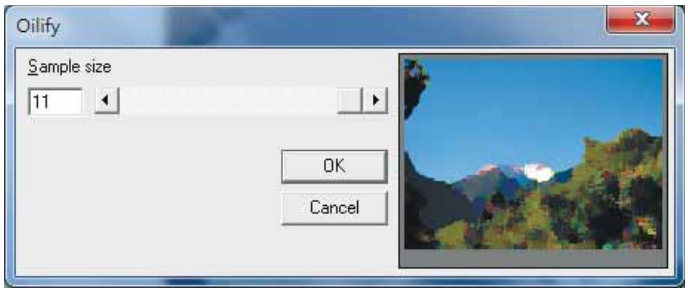


Fig. 1.4.34

1.4.2 Special Filters

1.4.2.1 Gradient

Click "Image – Special Filters - Gradient"
Adjust the Filter Value according to the direction, refer to the following examples. Fig.1.4.35 is the original image:

Fig. 1.4.35

Direction: North, see Fig.1.4.36.

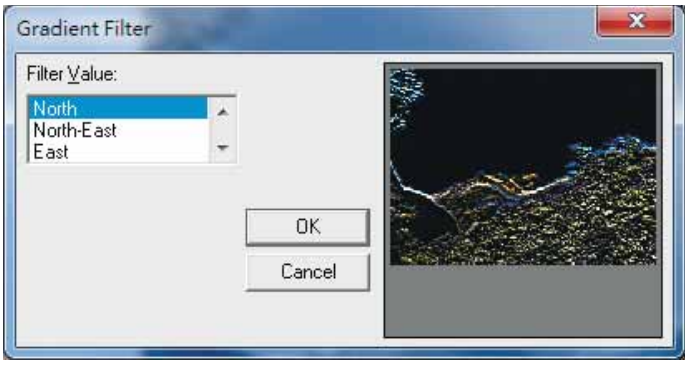


Fig. 1.4.36

Direction: South-East, see Fig.1.4.37.

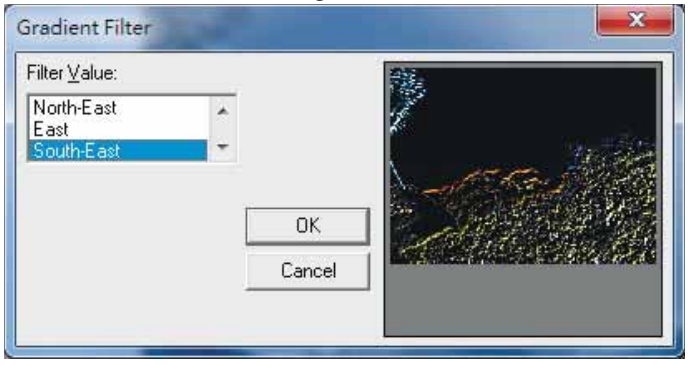


Fig. 1.4.37

1.4.2.2 Laplacian

Click "Image – Special Filters - Laplacian"
Select Filter from Filter Value list to adjust the image, refer to the following examples.
Fig.1.4.38 is the original image:

Fig. 1.4.38

When select Filter 1, see Fig.1.4.39.

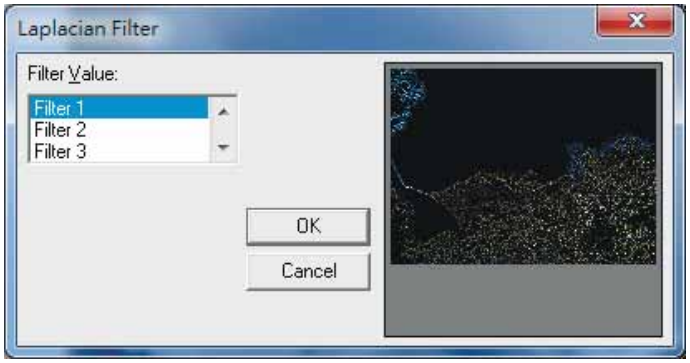


Fig. 1.4.39

When select Filter 2, see Fig.1.4.40.

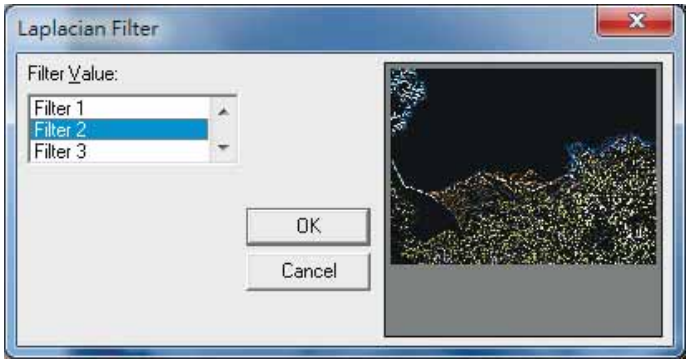


Fig. 1.4.40

When select Diagonal, see Fig.1.4.41.

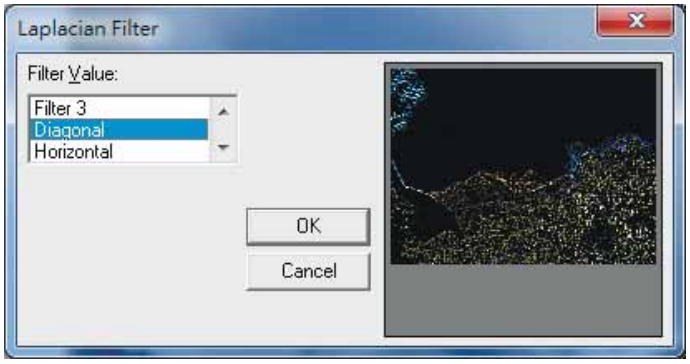


Fig. 1.4.41

1.4.2.3 Sobel

Click "Image – Special Filters - Sobel"
Adjust the image by selecting the Filter Value to get Sobel effect, refer to the following examples.
Fig.1.4.42 is the original image:

Fig. 1.4.42

When the value is Horizontal, see Fig.1.4.43.

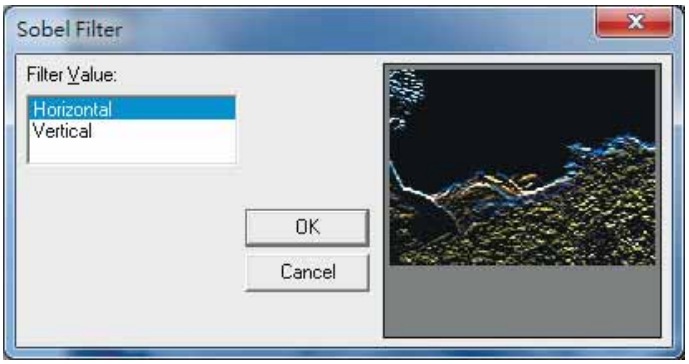


Fig. 1.4.43

When the value is Vertical, see Fig.1.4.44.

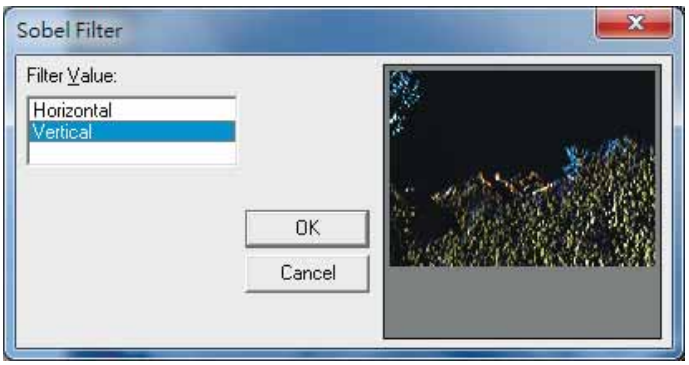


Fig. 1.4.44

1.4.2.4 Prewitt

Click "Image – Special Filters - Prewitt"
Adjust the image by selecting the Filter Value to get Prewitt effect, refer to the following examples.
Fig.1.4.45 is the original image:

Fig. 1.4.45

When the value is Horizontal, see Fig.1.4.46.

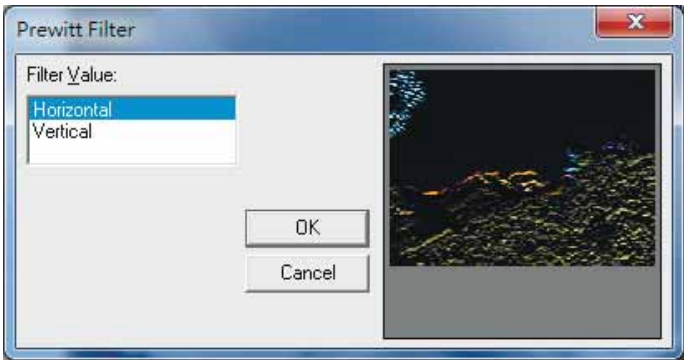


Fig. 1.4.46

When the value is Vertical, see Fig.1.4.47.

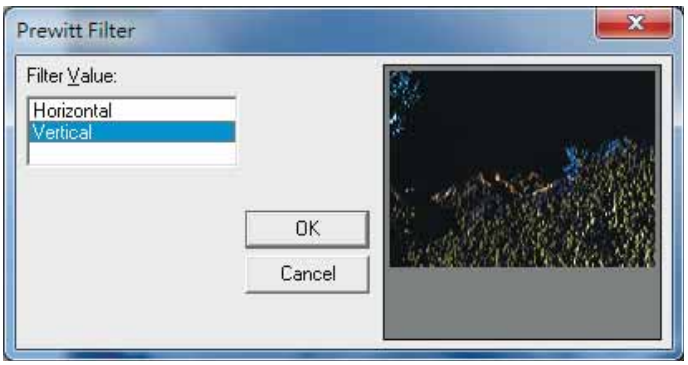


Fig. 1.4.47

1.4.2.5 Shift Difference

Click "Image – Special Filters – Shift Difference"
Adjust the image effect by selecting the Filter Value, refer to the following examples. Fig.1.4.48 is the original image:

Fig. 1.4.48

When the value is Diagonal, see Fig.1.4.49.

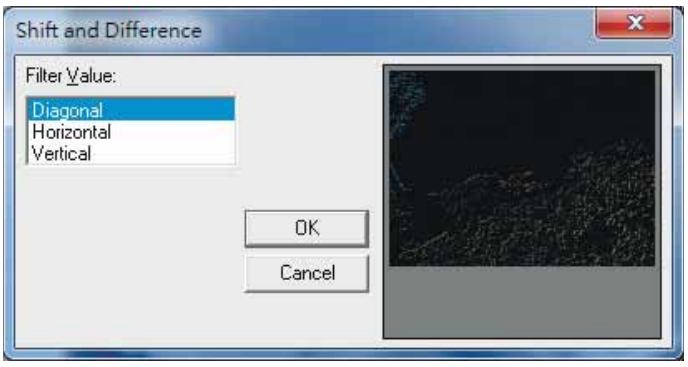


Fig. 1.4.49

When the value is Horizontal, see Fig.1.4.50.

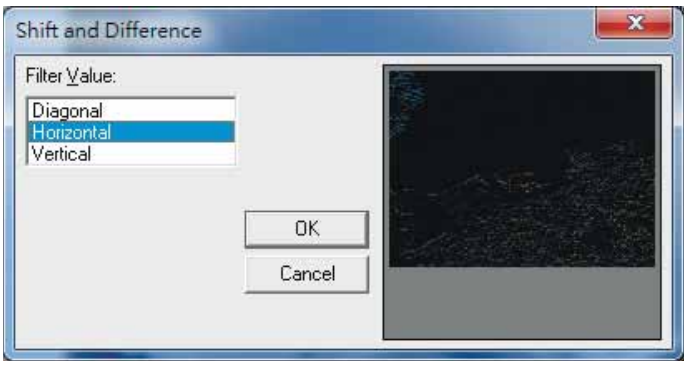


Fig. 1.4.50

When the value is Vertical, see Fig.1.4.51.

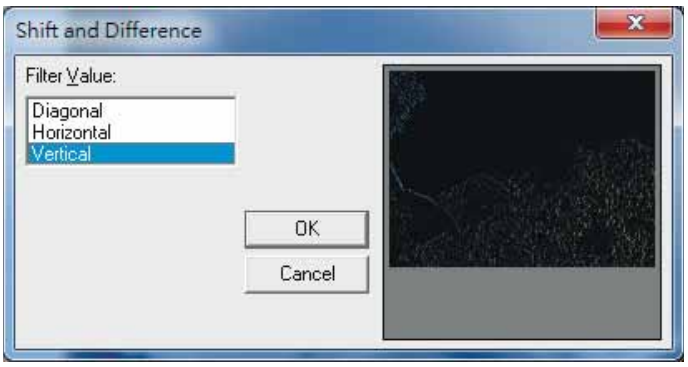


Fig. 1.4.51

1.4.2.6 Line Segment

Click "Image – Special Filters – Line Segment"
Adjust the image effect by selecting the Filter Value, refer to the following examples. Fig.1.4.52 is the original image:

Fig. 1.4.52

When the value is Horizontal, see Fig.1.4.53.

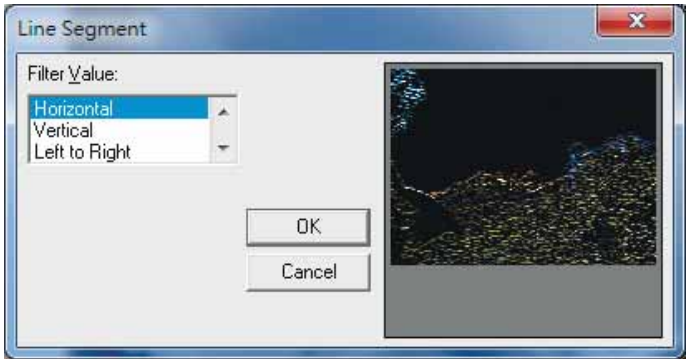


Fig. 1.4.53

When the value is Vertical, see Fig.1.4.54.

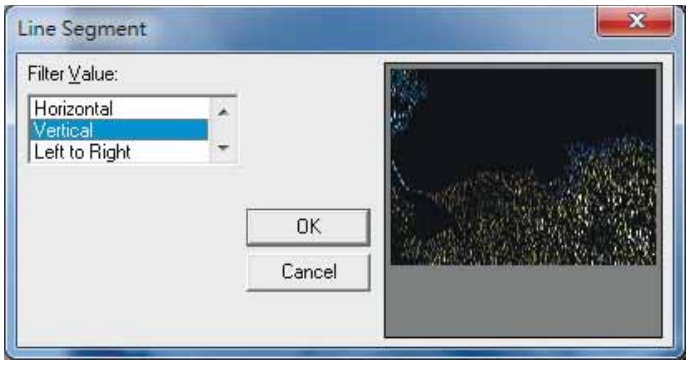


Fig. 1.4.54

When the value is Left to Right, see Fig.1.4.55.

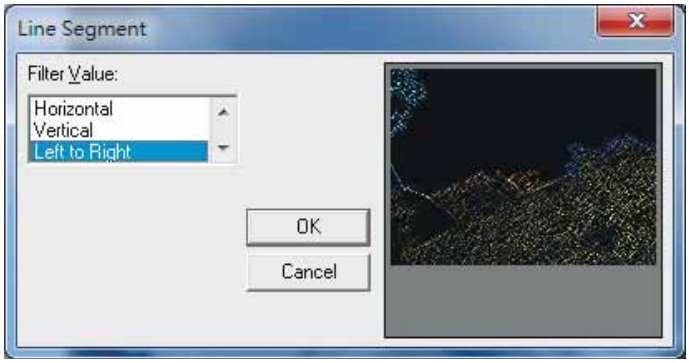


Fig. 1.4.55

When the value is Right to Left, see Fig.1.4.56.

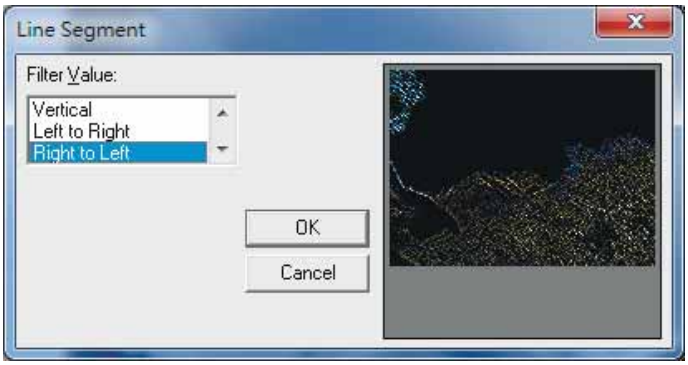


Fig. 1.4.56

1.5 Color Menu

“Color” menu offers the following functions:

Gray Scale
Color Resolution
Brightness
Contrast
Hue
Saturation
Gamma
Intensity
Histogram
Invert
Solarize

Fig.1.5.05
Bits Per Pixel: 16-bit
Color Order: Red-Green-Blue

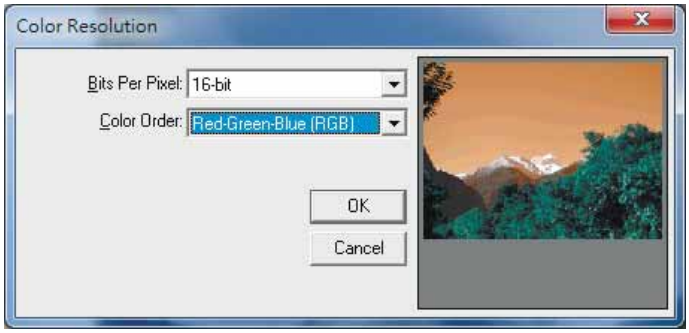


Fig. 1.5.05

Fig.1.5.06
Bits Per Pixel: 8-bit
Dither Method: None
Palette: Fixed Palette

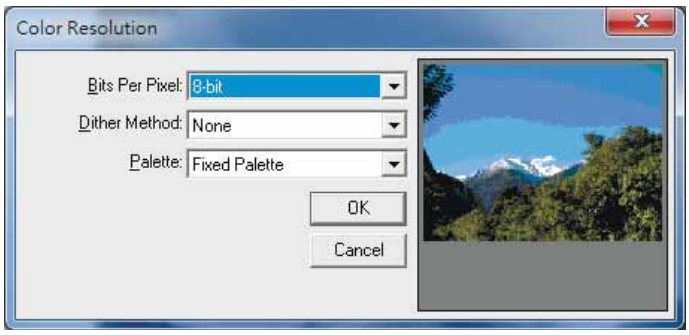


Fig. 1.5.06

Fig.1.5.07
Bits Per Pixel: 8-bit
Dither Method: Ordered
Palette: Netscape Fixed Palette

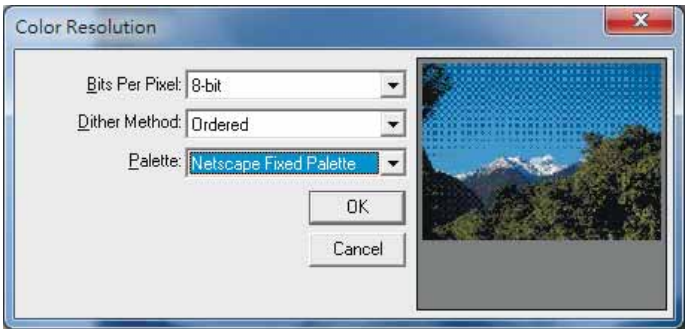


Fig. 1.5.07

1.5.3 Brightness

Click "Color - Brightness"
Change the brightness of image by adjusting the Percentage, refer to the following examples.
Fig.1.5.08 is the original image:

Fig. 1.5.08

When Percentage is 0, see Fig.1.5.09.

Fig. 1.5.09

When Percentage is -30, see Fig.1.5.10.

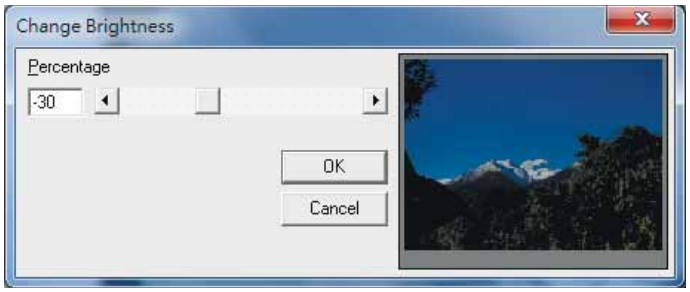


Fig. 1.5.10

When Percentage is 30, see Fig.1.5.11.

Fig. 1.5.11

1.5.4 Contrast

Click "Color - Contrast"

Change the contrast of image by adjusting the Percentage, refer to the following examples.
Fig.1.5.12 is the original image:

Fig. 1.5.12

When Percentage is 0, see Fig.1.5.13.

Fig. 1.5.13

When Percentage is -100, see Fig.1.5.14.

Fig. 1.5.14

When Percentage is 100, see Fig.1.5.15.

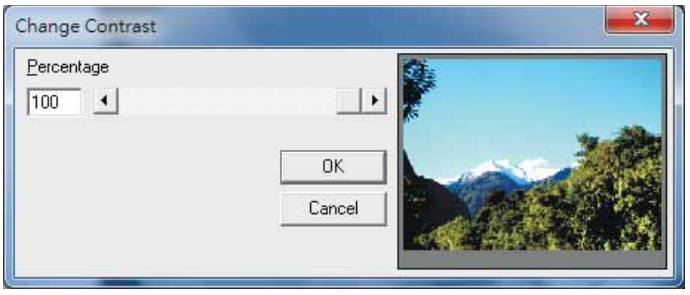


Fig. 1.5.15

1.5.5 Hue

Click “Color - Hue”

Adjusting the degrees to change the hue of image, refer to the following examples. Fig.1.5.16 is the original image:

Fig. 1.5.16

When Angle (degrees) is 0, see Fig.1.5.17.

Fig. 1.5.17

When Angle (degrees) is -280, see Fig.1.5.18.

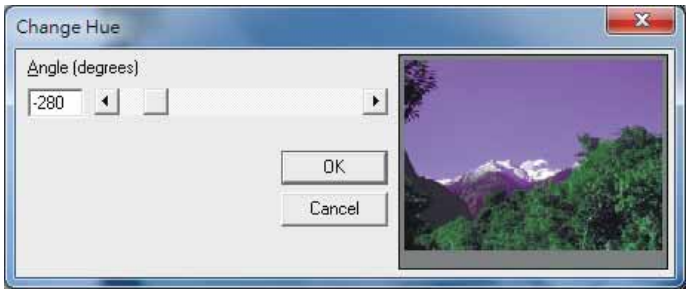


Fig. 1.5.18

When Angle (degrees) is 280, see Fig.1.5.19.

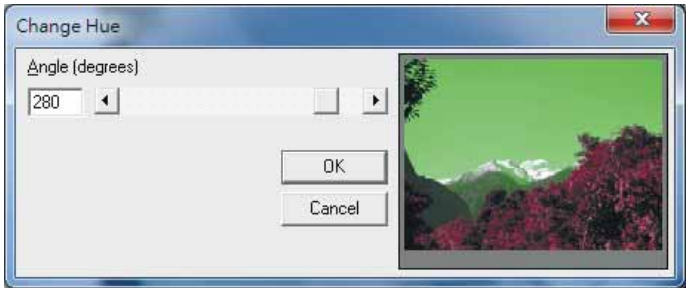


Fig. 1.5.19

1.5.6 Saturation

Click "Color - Saturation"

Change the contrast of image by adjusting the Percentage, refer to the following examples.
Fig.1.5.20 is the original image:

Fig. 1.5.20

When Percentage is 0, see Fig.1.5.21.

Fig. 1.5.21

When Percentage is -100, see Fig.1.5.22.

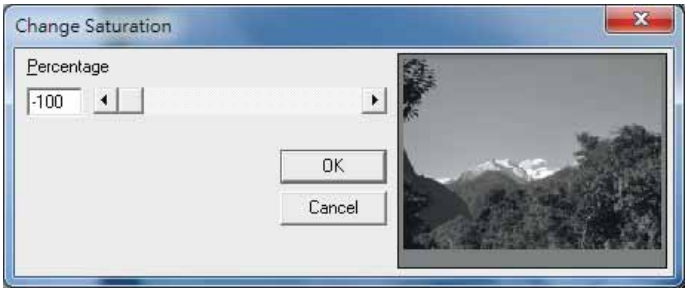


Fig. 1.5.22

When Percentage is 100, see Fig.1.5.23.

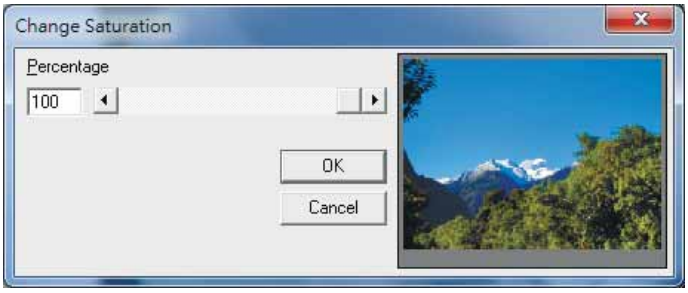


Fig. 1.5.23

1.5.7 Gamma

Click "Color – Gamma"

Change the image color by adjusting the Gamma value, refer to the following examples.
Fig.1.5.24 is the original image:

Fig. 1.5.24

When Gamma Value is 1.00, see Fig.1.5.25.

Fig. 1.5.25

When Gamma Value is 0.30, see Fig.1.5.26.

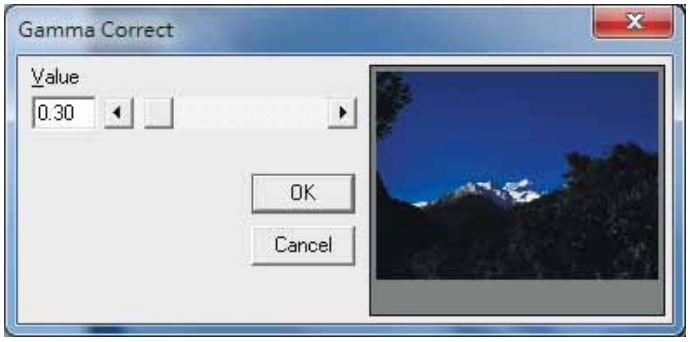


Fig. 1.5.26

When Gamma Value is 4.99, see Fig.1.5.27.

Fig. 1.5.27

1.5.8 Intensity

Click “Color - Intensity”

1.5.8.1 Detect

Adjust image intensity according to the Low and High value, refer to the following examples.

Fig.1.5.28 is the original image:

Fig. 1.5.28

When Low Value is 43, High Value is 186, see Fig.1.5.29.

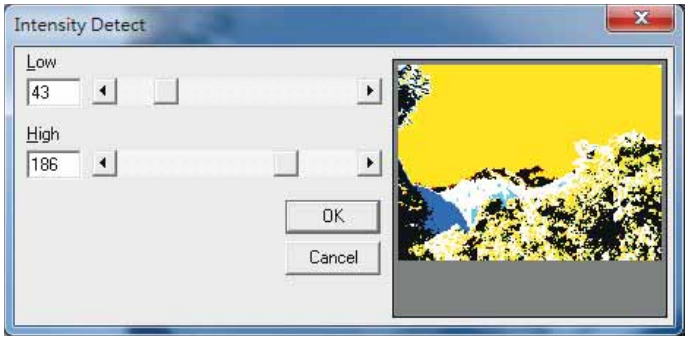


Fig. 1.5.29

When Low Value is 130, High Value is 150, see Fig.1.5.30.

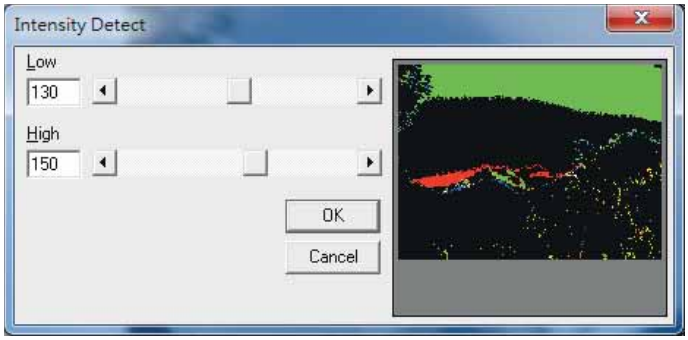


Fig. 1.5.30

1.5.8.2 Stretch

Change the image intensity according to the previous settings.

1.5.9 Histogram

Click “Color - Histogram”

1.5.9.1 Equalize

Equalize the image automatically, refer to Fig.1.5.31 and 1.5.32.

Fig. 1.5.31 Original Image

Fig. 1.5.32 After Equalizing

1.5.9.2 Contrast

Change the image contrast by adjusting the percentage.
Fig.1.5.33 is the original image:

Fig. 1.5.33

When Percentage is 0, see Fig.1.5.34.

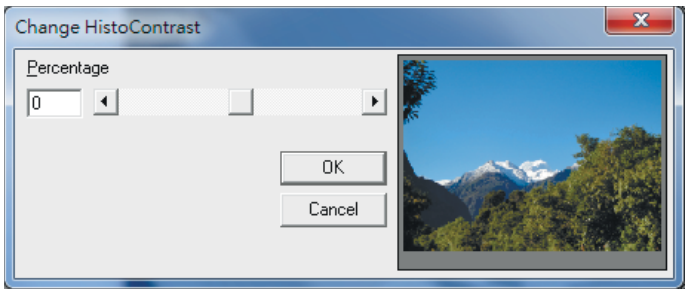


Fig. 1.5.34

When Percentage is -100, see Fig.1.5.35.

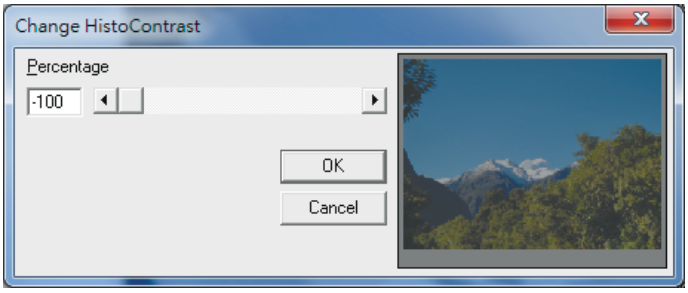


Fig. 1.5.35

When Percentage is 100, see Fig.1.5.36.

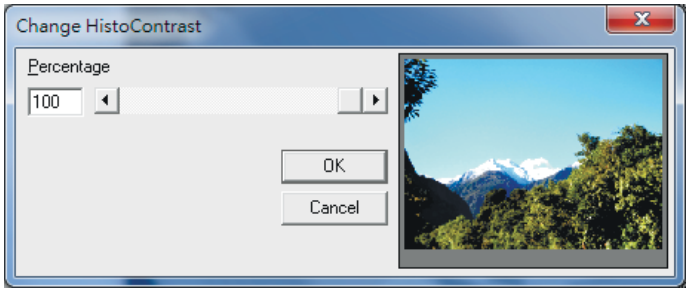


Fig. 1.5.36

1.5.10 Invert

Click "Color - Invert"

Invert the color of the image, refer to Fig.1.5.37 and 1.5.38.

Fig. 1.5.37

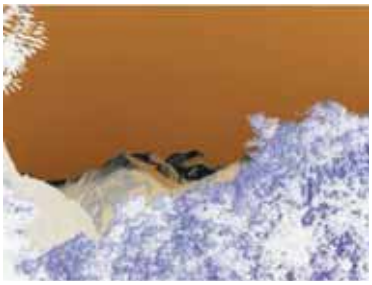


Fig. 1.5.38

1.5.11 Solarize

Click "Color - Solarize"

Create an exposure effect for the image by adjusting threshold vaule.
Fig.1.5.39 is the original image:

Fig. 1.5.39

When Threshold is 30, see Fig.1.5.40.

Fig. 1.5.40

When Threshold is 80, see Fig.1.5.41.

Fig. 1.5.41

When Threshold is 128, see Fig.1.5.42.

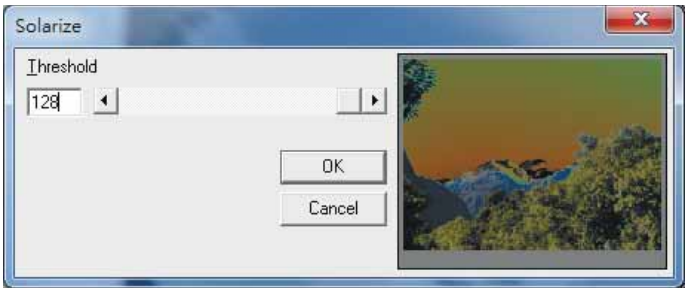


Fig. 1.5.42

1.6 Execute Menu

"Execute" menu offers the following function:

Marking	Set the marking related parameters and execute marking.
Preview	Using align light to preview the marking path.
Mark Sample(s)	Mark the selected objects once as a sample for user to adjust the parameters.
Quick Mark	Execute marking. However, the Control Object will be ignored.
Align Test	Allow users to examine the mark position is correct or not.
User Level	User Level is divided into Operator, Programmer, and Administrator to separate user's authorities.
Mark Parameter List	Allow users to name, save, and load the marking parameters.
Auto Text Manager	Activate the auto text manager for users to edit auto text object.
Rotary Marking	Provide common used rotary marking functions.
Laser Setting	Some types of laser provided specified parameters setting to pursue better marking quality.

1.6.1 Marking

Mark the selected objects and adjust the marking related settings, see Fig.1.6.01.

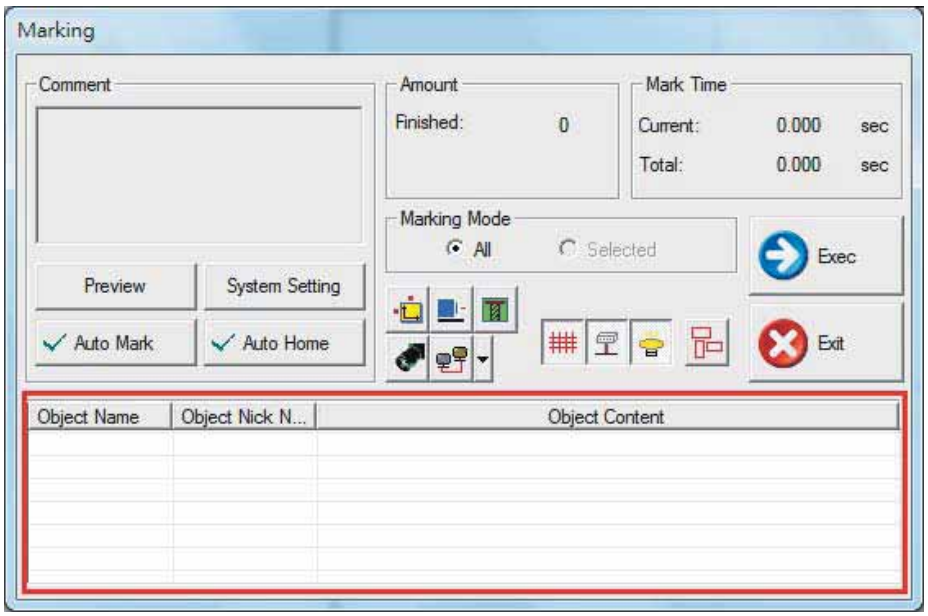


Fig. 1.6.01

Comment: Display the notation of the marking file. It shows the function and the notes of that file.
Preview: Preview marking. (Refer to 1.6.2)
System Setting: Set the marking related parameters, see Fig.1.6.02. Some parameters are the same as parameters of System Property Table (refer to 3.1.3), in this case, the followings only introduce the different parameters (red flames of Fig.1.6.02).

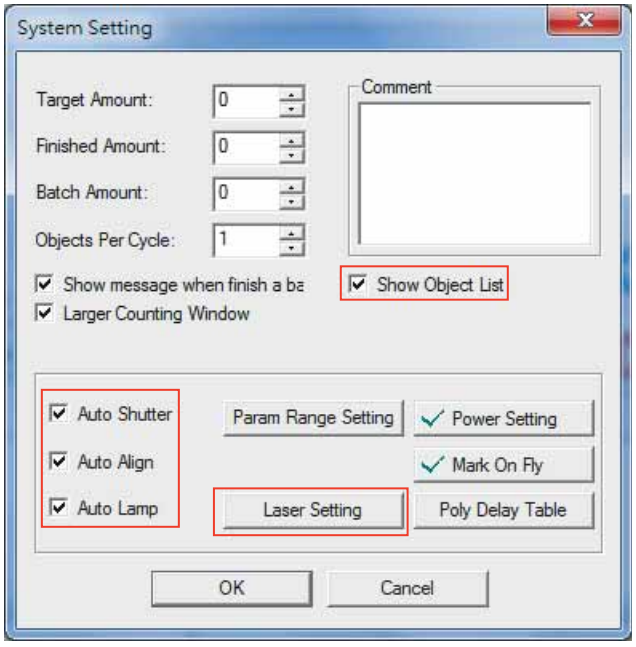


Fig. 1.6.02

Show Object List: Enable this function, all object's names and contents will be displayed in the red frame of "Marking" dialogue like Fig.1.6.01 shows.

Auto Shutter/Auto Align/Auto Lamp: Enable to allow system to do the auto setting of these three functions. (Default is checked.)

Param Range Setting
Set Max mark speed, power range and frequency range.

Set Mark Info
Customizable mark info title: Object Name, Object Nickname, Auto-Text, Type, Start Value, and Mark Content.

Laser Setting:
Set the parameters of some specific laser controllers, such as SPI laser. This button will display only when choosing the laser which support this function. As to how to set the parameters, please refer to the laser's manual.

Auto Mark: Click this button and a dialog box will appear like Fig. 1.6.03. Check the "Enable" box to allow users to mark continuously. If enable this function, then the figure 

will become 

.

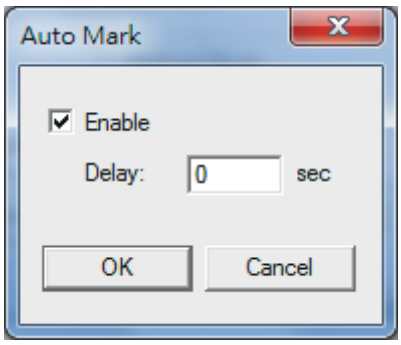
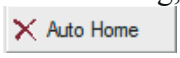
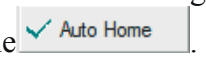


Fig. 1.6.03

Delay: The waiting time between each marking.

Auto Home: Click this button and a dialog box will appear like Fig. 1.6.04. Check the "Enable" box to allow users to select the axis which is using and set "C" value. C means that the selected axis will do home automatically after marking specific times. Take C=3 for example, the system will do home at the beginning of marking and then after 3 times of marking, the system will do home again. If enable this function, then the figure 

will become 

.

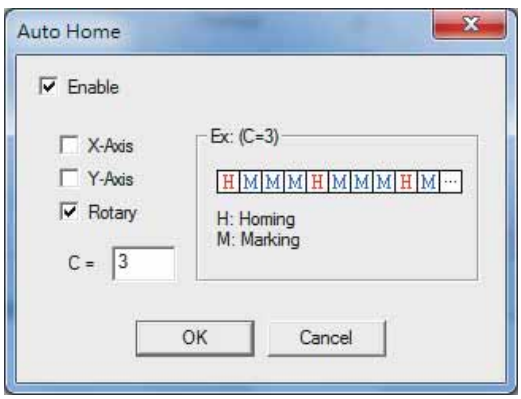


Fig. 1.6.04

1.6.3 Mark Sample(s)

Select this function and enter the preview mode to do “Mark Sample.”

1.6.4 Quick Mark

Select this function to start marking, see Fig.1.6.07.

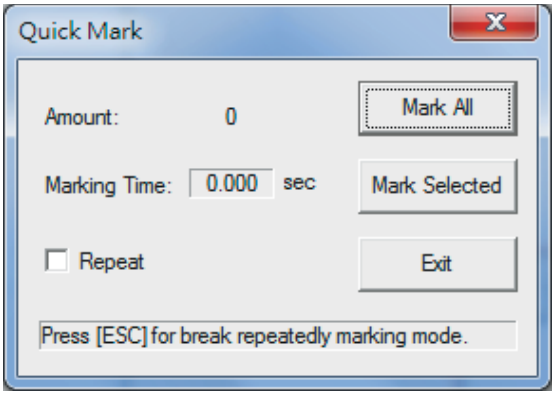


Fig. 1.6.07

Amount: The total marking amount.
Marking Time: The time cost of current marking process.
Repeat: Repeat marking. Users can press “Esc” to stop marking.
Mark All: Mark all the objects.
Mark Selected: Mark the selected objects.
Exit: Exit this mode.

The difference between “**Marking**” and “**Quick Marking**” is that “**Auto Text**” and “**Control Object**” functions will be ignored under “Quick Marking” mode.

1.6.5Align Test

Set the parameters for align light, see Fig.1.6.08.

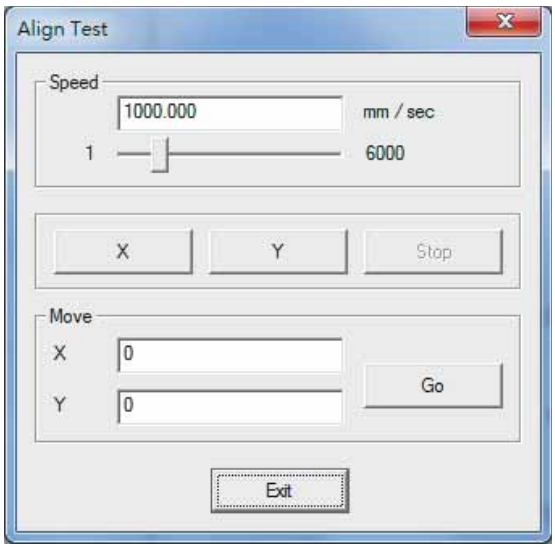


Fig. 1.6.08

Speed
Adjust the speed of the align light. Modify it by key in the value or move the scrollbar directly. The maximum speed is 6000 mm/sec.

X: Click “X” button, the align light will shift toward the X direction.
Y: Click “Y” button, the align light will shift toward the Y direction.
Stop: Click “Stop” button and the align light will stop.

Move
X: Set the shift distance of X direction (unit: mm).
Y: Set the shift distance of X direction (unit: mm).
Go: Click the button and the align light will adjust the X/Y position according to the X/Y value.

1.6.6 User Level

Users are allowed to execute different functions according to their authorities, see Fig.1.6.09.

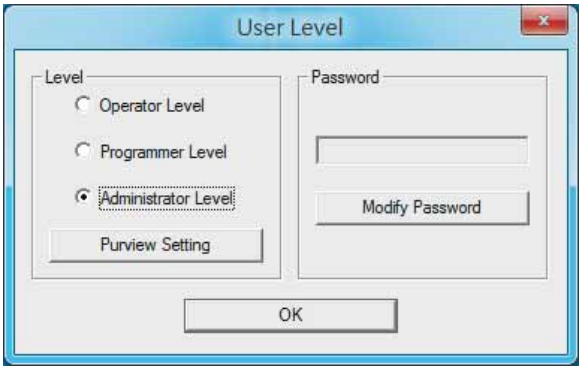


Fig. 1.6.09

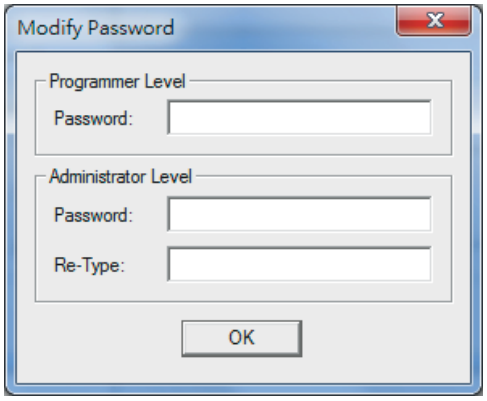


Fig. 1.6.10

Operator: Operator level users can only read and output files.

Programmer: Programmer level users are allowed to draw and edit objects and use some limited functions without system parameter settings.
Administrator: Administrator level users are able to use all the functions and modify their passwords to manage the system, see Fig.1.6.10.
Purview Setting: Need administrator authority. Allow administrator to assign different access right to different level user. See Fig 1.6.11. Administrator could assign the following parts: File, Edit, Draw, Image, Color, Execute, View, Property table, Tracker.

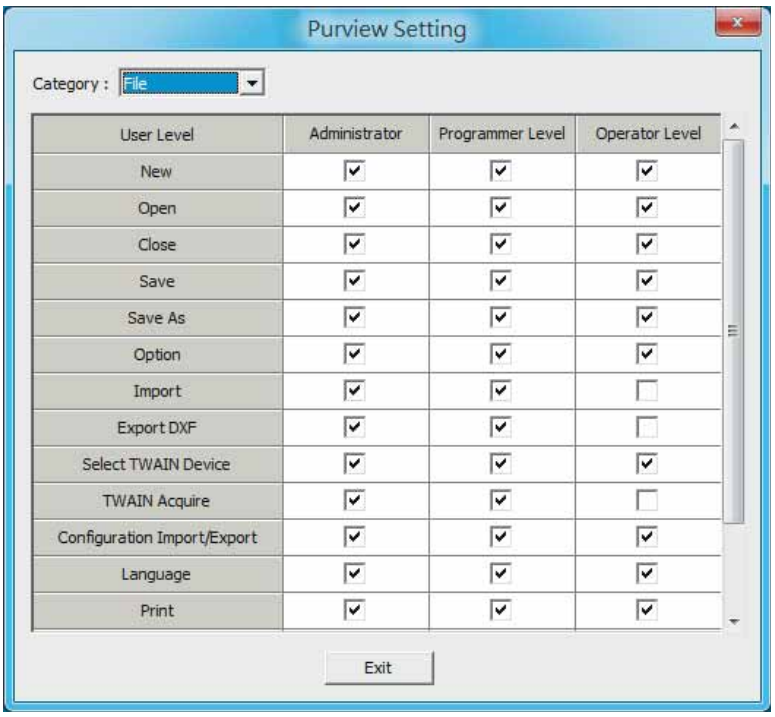
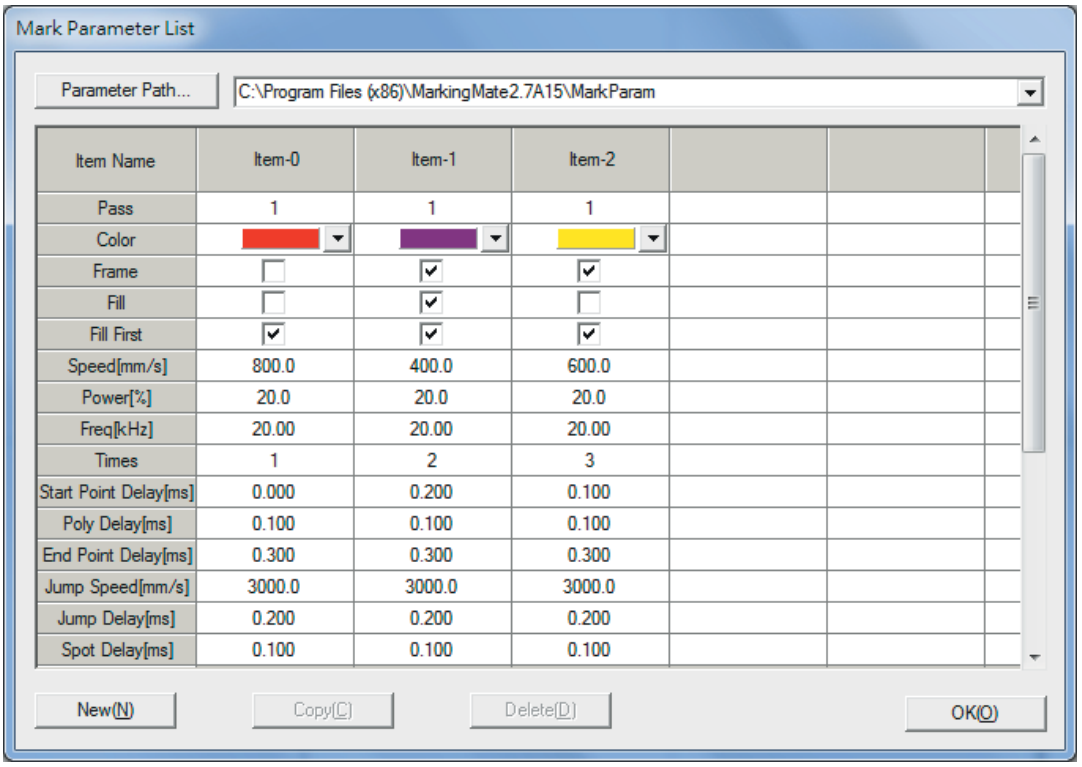


Fig. 1.6.11

1.6.7Mark Parameter List

This list shows all the marking parameters users set themselves. Users can name, sort, and save these parameters for future use, see Fig.1.6.12.



Item Name	Item-0	Item-1	Item-2			
Pass	1	1	1			
Color						
Frame	☐	☑	☑			
Fill	☐	☑	☐			
Fill First	☑	☑	☑			
Speed[mm/s]	800.0	400.0	600.0			
Power[%]	20.0	20.0	20.0			
Freq[kHz]	20.00	20.00	20.00			
Times	1	2	3			
Start Point Delay[ms]	0.000	0.200	0.100			
Poly Delay[ms]	0.100	0.100	0.100			
End Point Delay[ms]	0.300	0.300	0.300			
Jump Speed[mm/s]	3000.0	3000.0	3000.0			
Jump Delay[ms]	0.200	0.200	0.200			
Spot Delay[ms]	0.100	0.100	0.100			

Fig. 1.6.12

Parameter Path The saving folder of the parameter list.
Item Name The name of the item.
Pass The marking passes of Mark Parameter Table.
Color Set the frame and fill color.
Frame Decide to mark frame or not.
Fill Decide to fill or not when marking.
Fill First Decide to fill first or not when marking.
Speed [mm/s] Marking speed.
Power [%] Marking power (maximum 100).
Freq [KHz] Marking frequency.
Times Repeat marking times.
Start Point Delay [ms] The time difference between start laser order and laser hit time. This value will affect the quality of start point.
Poly Delay[ms] This value will affect the quality of joins.
End Point Delay [ms] This value will affect the quality of end point.
Jump Speed [mm/s] The speed of laser.
Jump Delay [ms] When laser move to the assigned position, it will shoot after this delay time.
Spot Delay [ms] The spending time for laser to mark one spot or pixel.
Laser Shot The amount of laser shots for marking a dot (only when choose

	"Laser Shot Mode" in "Burst Mode Setting").
FPK Width	Set the width of FPK.
Pulse Width [µs]	Set the width of pulse (only for YAG).
Waveform No.	There are 64 waveforms for users to choose(only for SPI).
CW Mode	Mark using continuous wave mode (only for SPI).
Wobble	Mark by spiral type and make the line segment become thicker.
Wobble Thick (W)	The diameter of the circle for wobble.
Wobble Overlap	Frequency of wobble. When the speed becomes quicker and the frequency become higher, the line segment will be denser.
Step Distance	The distance between each dot (under Dot Mode).
Step Delay	The staying time for laser on each dot (under Dot Mode).
New	Create a new item.
Copy	Copy the selected item as a new item.
Delete	Delete the selected item.
OK	Save the data.

Application: How to use the created mark parameters?

i. Select an object.
ii. Go to the Mark Parameter of the Property Table and then click "Load…" button to enter the Mark Parameter List.
iii. Select the mark parameter user need and click "Apply" button, and the object will be marked as the mark parameter setting.

1.6.8 Auto Text Manager

This is used to activate the Auto Text Manager for auto text setting, see Fig.1.6.13. For more details, please refer to **Practical Functions Chapter 11－Auto Text.**

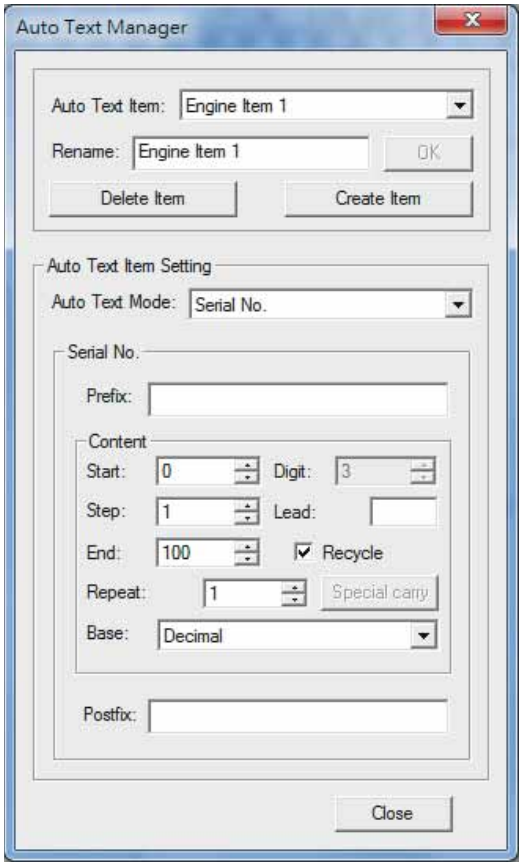


Fig. 1.6.13

1.6.9Rotary Marking

The system provides three common used rotary marking functions for users to select, see Fig.1.6.14. Moreover, it also allows users to set the motor. If users click “Setting››,” then the “Rotary Control Panel” will display as Fig.1.6.15. Please refer to**Practical Functions Section 7.3－Rotary Library**for more details.

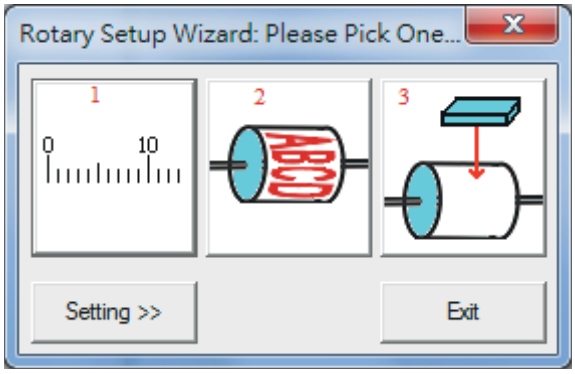


Fig. 1.6.14

1. **Calibration Marking**
2. **Ring Text Marking**
3. **Cylinder Marking**
4. **Rotary Control Panel**

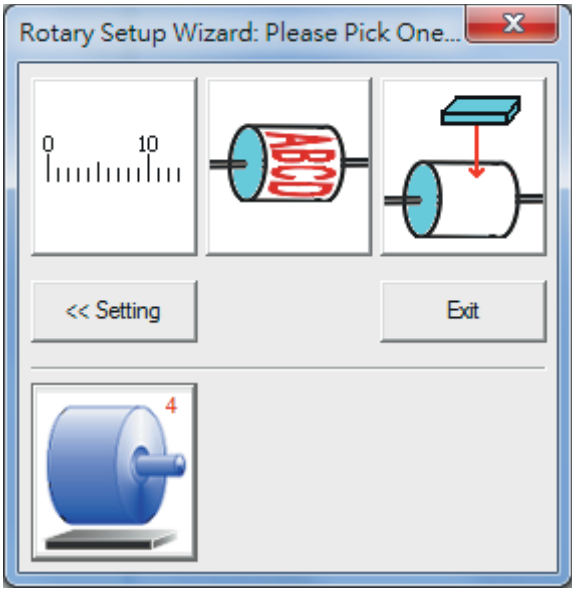


Fig. 1.6.15

1.6.10Laser Setting

Some types of laser provided specified parameters setting to pursue better marking quality. If this function is grayed, that means this laser is not needed to setting.

1.7 View Menu

"View" menu offers the following functions:

Standard Bar	Enable/disable Standard Bar
Zoom Bar	Enable/disable Zoom Bar
Draw Bar	Enable/disable Draw Bar
Layer Bar	Enable/disable Layer Bar
Object Browser	Enable/disable Object Browser
Modify Bar	Enable/disable Modify Bar
Dimension Bar	Enable/disable Dimension Bar
Obj Property Bar	Enable/disable Object Property Bar
Mark Sample Bar	Enable/disable Mark Sample Bar
Manual Split Bar	Enable/disable Manual Split Bar
Data Wizard	Enable/disable Data Wizard
Make Font Bar	Enable/disable Make Font Bar
Text Property Bar	Enable/disable Text Property Bar
Vector Box	Enable/disable Vector Box
Control Tool	Enable/disable Control Tool
Mark Panel	Enable/disable Mark Panel
Status Bar	Enable/disable Status Bar
Desktop Mode	Enter Desktop Mode or not
Composing	Composing Settings
Show Order	Show the mark order
Tooltips	Enable/disable Tooltips
Tooltips Setting	Go to the Tooltips setting page of Options
Ruler	Enable/disable Ruler
Ruler Setting	Go to the ruler setting page of Options
Grid	Enable/disable Grid
Grid Lock	Enable/disable Grid Locking
Grid Parameter	Grid Parameter setting
Zoom In	Enlarge a specific area
Zoom Out	Shrink a specific area
Zoom Previous	Go back to the previous view
Zoom All	Show the whole Working Area

Zoom Extend	Show all objects
Zoom Selected Objects	Zoom the selected objects to fit the whole editing area.

Tool Bars allow users to execute some specific functions more quickly. Users can activate the tool bar they need at View Menu and the image of that tool bar, for example, Standard Bar, will become 

. Users can also place the tool bar to any position by dragging it.

1.7.1 Standard Bar

The Standard Bar provides some basic functions for users to edit the file, see Fig.1.7.01.

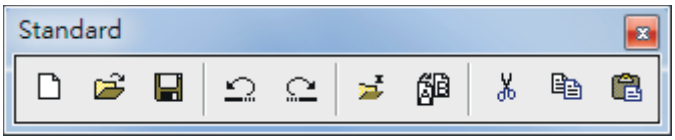


Fig. 1.7.01

New		Create a new document.
Open		Load files.
Save		Save the current document using the existing file name.
Undo		Back to the previous action.
Redo		Cancel the Undo action.
Import		Import a graphic file and convert it into the marking format.
Replace		Replace the selected object by a new one.
Cut		Remove selected data and store it in the clipboard for another use.
Copy		Duplicate selected data and store it in the clipboard for another use.
Paste		Attach data from the clipboard to an assigned document.

1.7.2 Zoom Bar

View the objects by zooming them, see Fig.1.7.02.

Fig. 1.7.02

Zoom in		Enlarge a specific area.
Zoom out		Shrink a specific area.
Zoom previous		Go back to the previous view.
Zoom all		Show the whole Work Area.
Zoom extend		Show all objects.
Zoom Selected Objects		Zoom the selected objects to fit the whole editing area.

1.7.3 Drawing Bar

The Drawing Bar provides the drawing functions, see Fig.1.7.03.

Fig. 1.7.03

Selection		Select objects.
Edit Vertex		Edit the vertexes of curve objects.
Vertex		Draw a dot.
Line		Draw a line.
Arc		Draw an arc.
Circle		Draw a circle or oval.
Rectangle		Draw a square or rectangle.
Curve		Draw a curve.
Curve Brush		Draw a freehand line using the mouse.
Text		Insert a text object.
Arc Text		Insert an arc text object.
Rect Text		Insert a rect text object.
1D Barcode		Create a 1D barcode.
2D Barcode		Create a 2D barcode.
Matrix		Create a matrix object.
Spiral		Draw a spiral object

1.7.4 Layer Bar

The Layer Barallows users to edit the layers, see Fig.1.7.04.

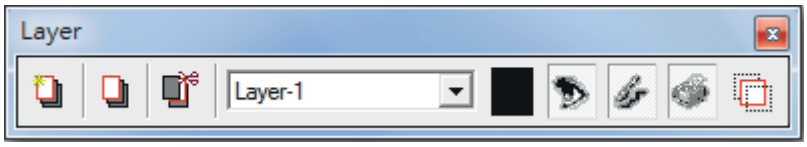


Fig. 1.7.04

Layer Manager		The layer page of Property Table will show up for editing.
New Layer		Create a new layer.
Delete the Active Layer		Delete the selected layer.
Current Layer	Layer-1	Select the layer.
Layer Color		Set the layer color.
View Layer		Enable or disable to view the selected layer.
Edit Layer		Enable or disable to edit the selected layer.
Output Layer		Enable or disable to output the selected layer.
Show the Selected Layer		Show the selected layer only.

1.7.5 Object Browser

The Object Browserallows users to edit the parameters of layer, see Fig.1.7.05. Object Brower can not only view the whole layers and objects but can also change the order or rename the layer and object.

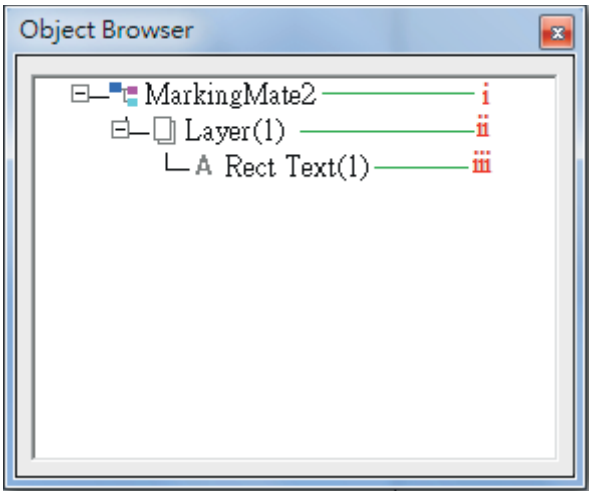


Fig. 1.7.05

i. **Select the file:** When click the file, like MarkingMate2, all the layers and objects will also be selected and users can edit the parameters of System-Related Property Table.

ii. **Select the layer:** When click the layer, all the objects under this layer will also be selected and users can edit the layer's parameters at Layer Page of Property Table.

iii. **Select the object:** Users can edit the object's parameters when clicking the object's name.

1.7.6 Modify Bar

The Modify Bar is for users to modify the object's parameters such as length and width, see Fig.1.7.06. Please notice that "Enter" must be pressed after input the value so that the modification will be effective.

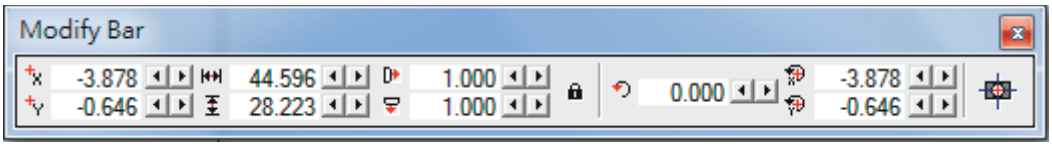


Fig. 1.7.06

X of Center		The X-axis value of the object's center.
Y of Center		The Y-axis value of the object's center.
Length		The length of the selected object.
Width		The width of the selected object.
X of Scale		The scale of the selected object's length.
Y of Scale		The scale of the selected object's width.
Lock to Same Ratio		Enable this function, the length and width will be adjusted with the same ratio at the same time.
Angle of Rotating		The rotary angle of the selected object.
X of Rotating Center		Set the X-axis value of rotating center.
Y of Rotating Center		Set the Y-axis value of rotating center.
Move to the Center		Move the object to the center of working area.

1.7.7 Dimension Bar

The Dimension Barallows users to set the object's datum point, shift the object or change the object's dimension and shape, see Fig.1.7.07.

Move
Set the absolute or relative position.

Rotate
Set the rotary angle and rotary center position.

Aslope
Set the aslope angle

Scale
Set the scale of the object

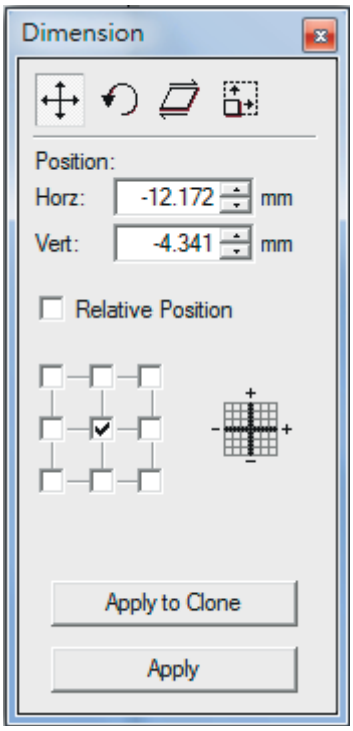


Fig. 1.7,07

1.7.8 Object Property Bar

The followings are the introductions of Object Property Bar.

1.7.8.1 Page Tool Bar

The Page Tool Bar will be shown on screen when there is no object been selected, see Fig.1.7.08.

Fig. 1.7.08

Origin X		The X-axis value of start point of working area.
Origin Y		The Y-axis value of start point of working area.
Page Length		The length of working area.
Page Width		The width of working area.
Change the Unit	mm	The unit of the ruler (mm or inch).
Trim X		Edit the trimming base of X.
Trim Y		Edit the trimming base of Y.
Grid X		Edit the X grid line.
Grid Y		Edit the Y grid line.
Open the Options Dialogue		Click this button to enter the Options page.
Show or Hide the Property Table		Click this button to show or hide the Property Table.

1.7.8.2 General Tool Bar

The General Tool Bar will be shown on screen when select a non-text object, see Fig.1.7.09.

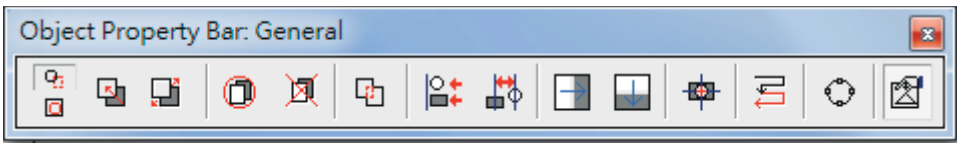


Fig. 1.7.09

General Selection		The selected object is in general situation.
Transparent Selection		The selected object is been grouped.
Combine		Combine two or more objects into one. This function allows several objects to share the same property settings.
Break		Divide a combined object into several individual objects.
Group		Classify two or more objects into one group. This function allowseach object to have its own property settings.
UnGroup		Cancel the group effect of an object.
Welding		Combine two or more objects and eliminate the overlapping lines.
Alignment		Align the selected objects to the assigned position.
Distribute		Distribute the selected objects (at least 2) based on the assigned setting.
Mirror Horizontally		Invert an object on its horizontal axis.
Mirror Vertically		Invert an image on its vertical axis.
Move to the Center		Move the selected object to the center of working area.
Sort		Combine the objects which vertex are not connect to each other first, and then using this function to sort these confused objects
Transfer to Curve		Transfer anun-curved object into a curve.
Show or Hide the Property Table		Click this button to show or hide the Property Table.

1.7.9 Mark Sample Bar

Open the Mark Preview function (refer to 1.6.2).

1.7.10 Manual Split Bar

Manual Split Bar allows users to adjust the tiling settings under Manual Split mode, see Fig.1.7.10. For more details about Tiling, please refer to 3.1.3.

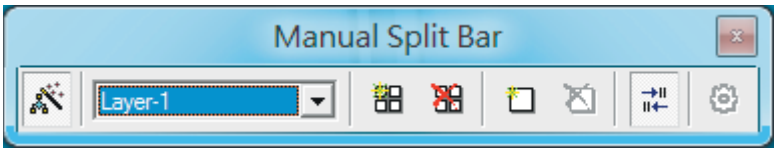


Fig. 1.7.10

Edit Split Bands		Enter or Exit Manual Split Mode.
Current Layer	Layer-1	Current editing layer.
Auto create bands		Auto-generate all bands.
Clear all bands		Clear all existed bands.
Create A New Band		Create a new band.
Delete Bands		Delete selected band(s).
Order The Bands		Show the order of bands.
Tiling setting		Open Tiling dialog

1.7.11 Data Wizard

Using this function to adjust the selected object(s), see Fig.1.7.11 and 1.7.12.

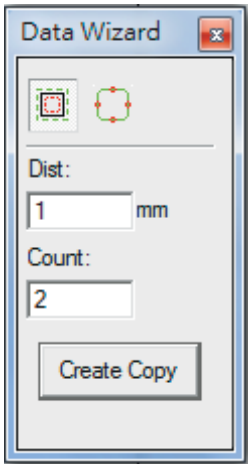


Fig. 1.7.11

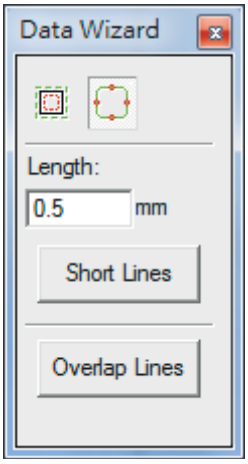


Fig. 1.7.12

Beam Compensation	Create (a) shrink or dilate object(s) from a closed path object according to the dist and count, see Fig.1.7.13.
Dist	The shrink or dilate distance (+value: shrink; -value: dilate).
Count	The amount of new created object(s)
Create Copy	Create new objects.

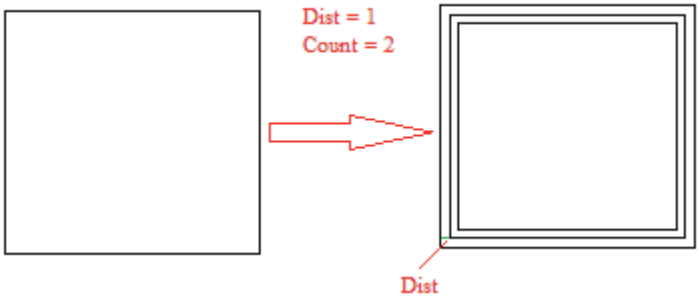


Fig. 1.7.13

Data Reduction	Optimize the selected objects by eliminating the short or overlapping lines.
Length	Set the length of short lines user wants to eliminate.
Short Lines	Eliminate the set short lines.
Overlap Lines	Eliminate the overlapping lines.

Subtract: Retain the none-overlapping part of main object, see Fig.1.7.20.

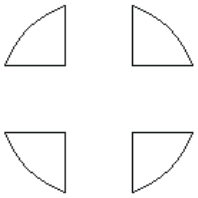


Fig. 1.7.20

Main: Retain the main object and the none-overlapping parts of the other objects, see Fig.1.7.21.

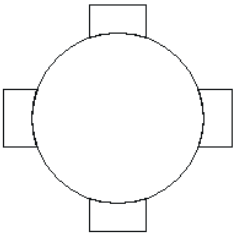


Fig. 1.7.21

1.7.15 Property Table

Click to open property table.

1.7.16 Control Object Tool Bar

The Control Object Tool Bar allows user to insert control objects, see Fig.1.7.22. For more detail descriptions, please refer to section 3.4.

Fig. 1.7.22

Digital In	IN	Set digital in signals.
Digital Out	OUT	Set digital out signals.
Do Pause		Insert a pause object into the marking sequence.
Delay Time		Insert a delay time object into the marking sequence.
Motion		Move the object to anassigned position.
Set Position		Set the current position as the assigned position.
Loop		Create a loop path in the marking sequence.
Ring		Insert a ring object into the marking sequence.
Homing		Insert an auto-home object.

1.7.17 Mark Panel

The Mark Panel offers users to quickly execute some marking related functions, see Fig.1.7.23.

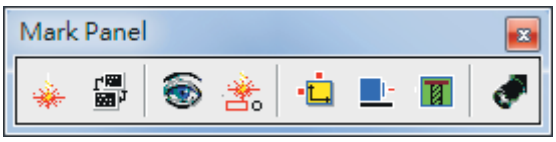


Fig. 1.7.23

Marking		Execute the marking function, please refer to section 1.6.1.
Remote Control		Use remote control function to connect two computers to mark, please refer to Practical Introduction.
Preview		Enter the Preview mode, please refer to section 1.6.2.
Mark Sample		Enter he Mark Sample mode, please refer to section 1.6.2.
X-Y Table		Allow users to adjust X-Y Table settings, please refer to section 1.7.16.1.
Rotary Control Panel		Allow users to adjust rotary axis settings,please refer to section 1.7.16.2.
Z Axis Control Panel		Allow users to adjust Z axis settings, please refer to section 1.7.16.3.
CCD Panel		CCD control setting, please refer to CCD Panel User Manual.

1.7.16.1XY-Table Control Panel

To control the XY Table, users must first activate the XY table function by clicking the layer object in Object Browser and then go to the XY Table page of Property Table and enable this function. After doing this, click button and do the further setting, see Fig.1.7.24.

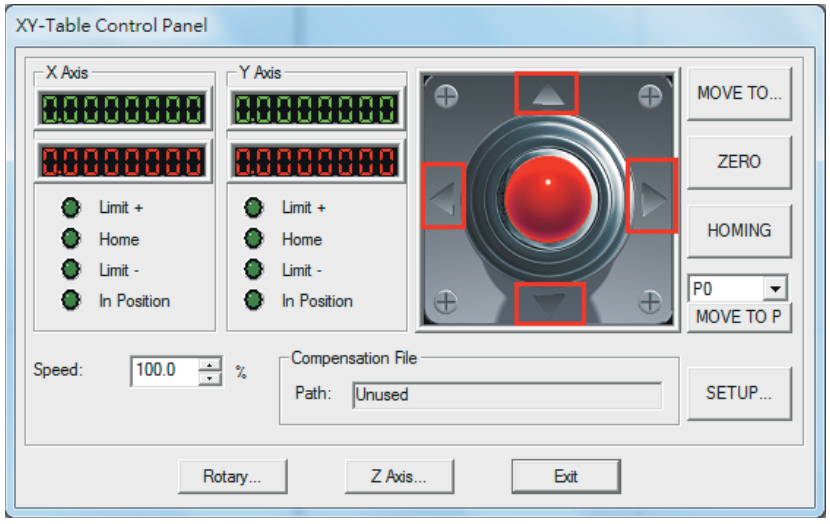


Fig. 1.7.24

1. Click “MOVE TO…” button and then input the X and Y values in the dialog box like Fig.1.7.25and click “GO,” the XY Table will move to that specific position. The moving speed can be adjusted from “Speed” parameter.

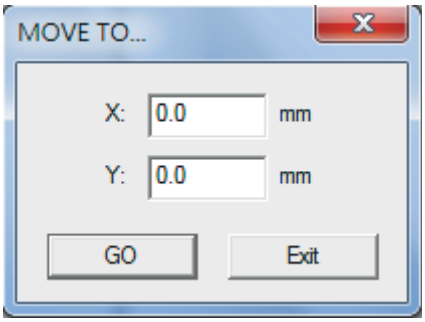


Fig. 1.7.25

2. Click the four direction buttons (the red part of Fig.1.7.24) to move the XY Table.
3. Click “ZERO” and the program will set the present position as (0,0).
4. Click “HOMING” and the XY Table will move to program origin.
5. Click “MOVE TO P”, the XY Table will directly move to the setting position (P0~P9). Users can click “SETUP…” button to set the value of these points.
6. Click “SETUP…”and do more detail settings, see Fig.1.7.26.
7. Click “Rotary…” button can do Rotary control setting, please refer to section 1.7.16.2.
8. Click “Z-Axis…” button can do Z-Axis control setting, please refer to section 1.7.16.3.
9. “Load Compensation File” shows the compensation file users loaded.

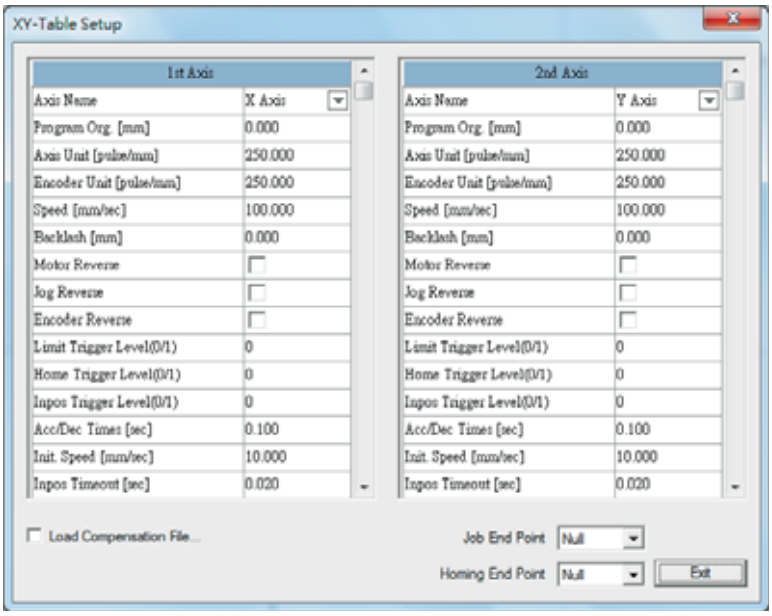


Fig. 1.7.26

Axis Name Users can set the 1st Axis as X or Y, andthe 2nd Axis as Y or X.

Program Org. [mm] The program will consider this point as the program origin.

Axis Unit [pulse/mm]	The pulse needed for X/Y Axis to move 1 millimeter (must refer to the motor's specification).
Encoder Unit [pulse/mm]	The pulse the encoder releases when moving 1 millimeter (must refer to the encoder's specification).
Speed [mm/sec]	The moving speed of X/Y Axis.
Backlash [mm]	The transmission deviation between motor and axis.
Motor Reverse	Reverse the motor moving direction.
Jog Reverse	When XY Table is placed in a different direction with the software's control panel, this parameter can make the X/Y axis move following the right direction.
Encoder Reverse	Reverse the direction of the encoder.
Limit Trigger Level (0/1)	0: active low; 1: active high
Home Trigger Level (0/1)	0: active low; 1: active high
InPos Trigger Level (0/1)	0: active low; 1: active high
Acc/Dec Times [sec]	The time motor needs to reach the setting speed.
Init. Speed [mm/sec]	The initial speed of motor.
Inpos Timeout [sec]	The program will consider X/Y axis completed position after passing the time setting here.
Inpos Delay [sec]	The program will wait for thesetting time here to execute the next command.
Ext I/O Home	Using external controller (I/O) to do homing.
Ext I/O Jog+	Using external controller (I/O) to do positive shift.
Ext I/O Jog-	Using external controller (I/O) to do negative shift.
Home Speed [mm/sec]	The homing speed of the motor.
Home Back Speed [mm/sec]	The speed motor needs to move from home position to the edge of home sensor after reaching the home position.
Home Reverse	Reverse the direction of homing.
Home Sensor Touching Mode (0/1)	Decide that XY-Table will stop or do home in reverse direction when touching the limit sensor during homing. 0 is stop, and 1 is homing reversely.
Limit Stop Mode	Decide the motor stop rapidly (0) or slowly (1) when moving to limit sensor.
Distance of Travel [mm]	The maximum available travel distance X/Y Axis can reach.
P0~P9 [mm]	Set the position of P0~P9.

Job End Point

XY-Table will move to the assigned position (P0~P9) after marking is completed.

Homing End Point

XY-Table will move to the assigned position (P0~P9) after homing.

Load Compensation File

Click "Load Compensation File" to load the compensation file. Fig.1.7.27 is an example of the compensation file.

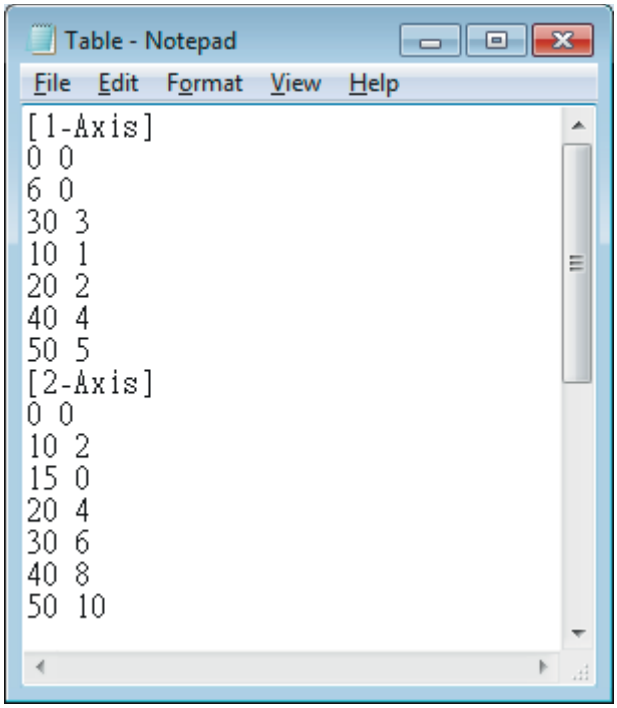


Fig. 1.7.27

In this text file, [1-Axis] represents the compensation value of the first axis, while [2-Axis] means the second one. Take the line “30 3” for example. When the program makes a command of moving 30mm but the actual movement was only 27mm, users can add the value “30 3” in the compensation file. As a result, when get an order of moving 30mm, the program willchange to 33mm automatically to do compensation.

It is no need to sort the position of compensation values; the program will automatically do the sorting. And there is no limitation for numbers. If the position is not in the file, the program will calculate the compensation automatically using interpolation method. If the value of position is larger than the maximumcompensation value, the program will set the maximum compensation value as the compensation of that position. And the minimum compensation value will be the compensation value when the position is smaller than it.

1.7.16.2 Rotary Control Panel

To control the Rotary Axis, users must first activate the Rotary function by clicking the layer object in Object Browser and then go to the Rotary page of Property Table and enable this function. After doing this, click  button and do the further setting, see Fig.1.7.28.

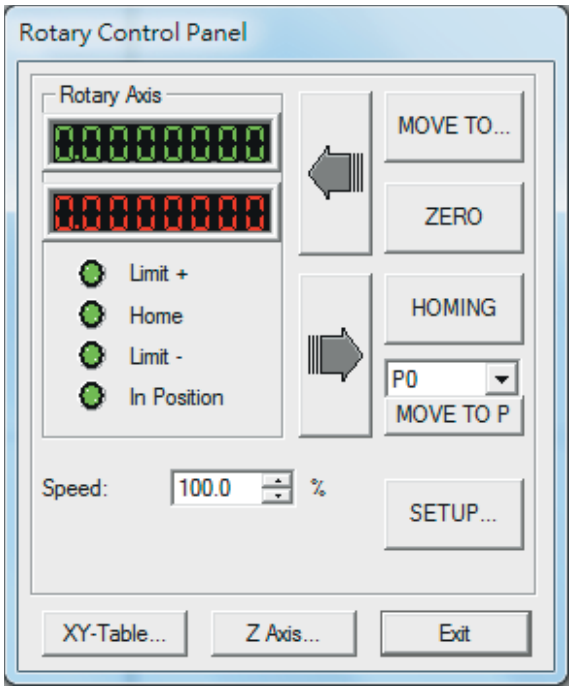


Fig. 1.7.28

1. Click “MOVE TO…” button and input the degree value in the dialog box like Fig.1.7.29and click “GO,” the rotary axis will rotate to that specific angle. The rotating speed can be adjusted from “Speed” parameter.

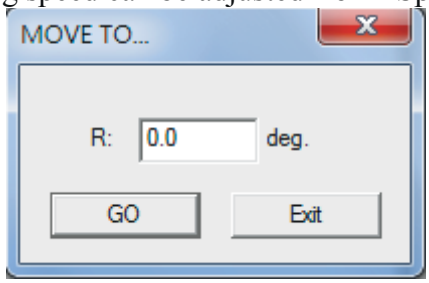


Fig. 1.7.29

2. Click the two direction buttons to move the rotary axis.
3. Click “ZERO” and the program will set the present position as (0,0).
4. Click “HOMING” and the rotary will move to program origin.
5. Click “MOVE TO P”, the rotary axis will directly move to the setting position (P0~P9). Users can click “SETUP…” button to set the value of these points.
6. Click “SETUP…” and do more detail settings, see Fig.1.7.30.
7. Click “XY-Table…” button can do X/Y Table control setting, please refer to section 1.7.16.1.

8. Click “Z-Axis…” button can do Z-Axis control setting, please refer to section 1.7.16.3.

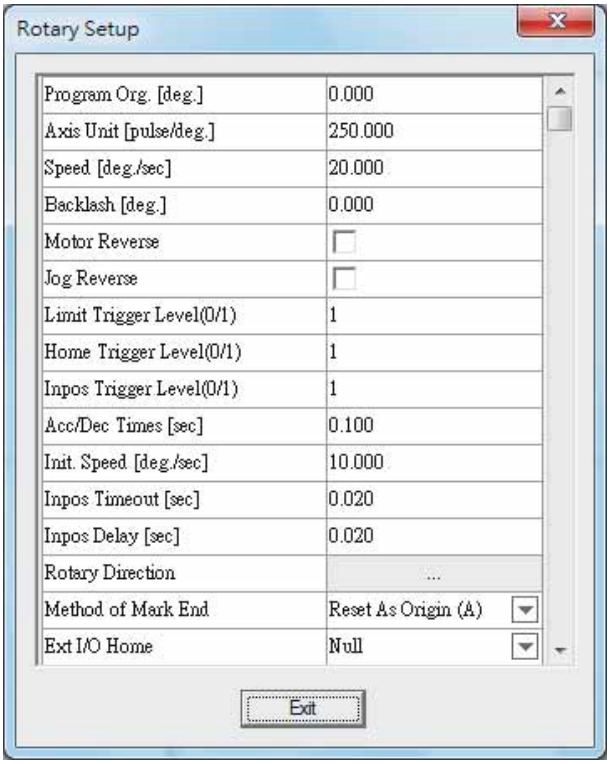


Fig. 1.7.30

Program Org. [deg] The program will consider this point as the program origin.

Axis Unit [Pulse/deg] The pulse needed for rotary to move 1 millimeter (must refer to the motor’s specification).

Speed [deg/sec] The rotating speed of the rotary axis.

Backlash [deg.] The transmission deviation between motor and axis.

Motor Reverse Reverse the motor rotating direction.

Jog Reverse When rotary axis is placed in the different direction with the software’s control panel, this parameter can make it rotate following the right direction.

Limit Trigger Level (0/1) 0: active low; 1: active high

Home Trigger Level (0/1) 0: active low; 1: active high

InPos Trigger Level (0/1) 0: active low; 1: active high

Acc/Dec Time [sec] The time motor needs to reach the setting speed.

Init. Speed [mm/sec] The initial speed of motor.

Inpos Timeout [sec] The program will consider rotary axis completed position after passing the time setting here.

Inpos Delay [sec] The program will wait for the setting time here to execute the next command.

Rotary Direction Click to do further settings for the rotating direction of the rotary axis, see Fig.1.7.31.

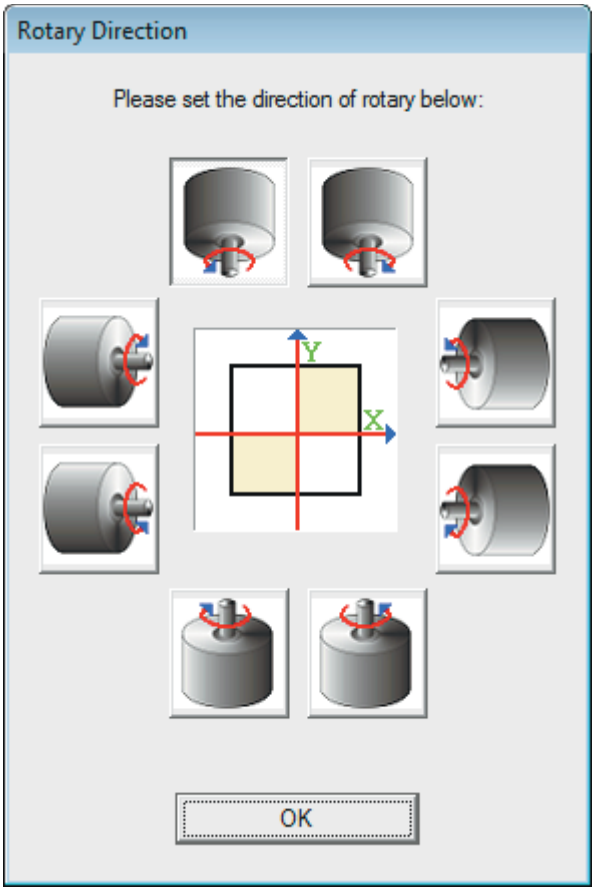


Fig. 1.7.31

Method of Mark End Five ways for laser to go back to the origin after finishing marking job.

- ◆Reverse Direction: go back to the origin by backward direction.
- ◆Shortest Path: go back to the origin by the shortest path.
- ◆Reset As Origin A: set the mark end point as the new origin and the start point for the next marking.
- ◆Reset As Origin B: set the mark end point as the new origin,but the rotary will move some distance (based on the distance of the object and the upper edge of software's working area) and then start the next marking.
- ◆Forward Direction: go back to the origin by forward direction.

Please note that the origin represent different position according to the method of mark end. Only "Reset As Origin" method will consider the latest point as the origin, the other methods will treat the left-top corner of the work area as the origin.

Ext I/O Home Using external controller (I/O) to do homing.

Ext I/O Jog+ Using external controller (I/O) to do positive shift.

Ext I/O Jog- Using external controller (I/O) to do negative shift.

Home Speed [deg/sec] The homing speed of rotary axis.

Home Back Speed [deg/sec]	The speed motor needs to move from home position to the edge of home sensor after reaching the home position (only for PMC2 & PCMark).
Home Reverse	Reverse the direction of homing.
Home Sensor Touching Mode (0/1)	Decide that rotary axis will stop or do home in reverse direction when touching the limit sensor during homing. 0 is stop, and 1 is homing reversely.
Home End Point	Rotary axis will move to the assigned position (P0~P9) after homing.
Limit Stop Mode	Decide the motor stop rapidly (0) or slowly (1) when moving to limit sensor.
P0~P9 [deg.]	Set the position of P0~P9.

1.7.16.3 Z Axis Control Panel

Please note that only PMC2 driver supports Z Axis control. Click  button and do the further setting, see Fig.1.7.32.

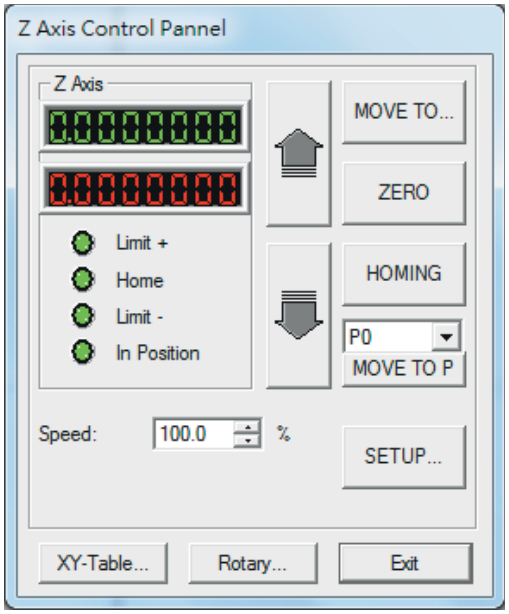


Fig. 1.7.32

1. Click “MOVE TO…” button and input the value in the dialog box like Fig.1.7.33 and click “GO,” the Z Axis will move to that specific position. The moving speed can be adjusted from “Speed” parameter.

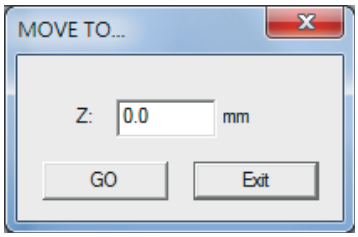


Fig. 1.7.33

2. Click the two direction buttons to move the Z axis.
3. Click “ZERO” and the program will set the present position as the program origin. Users can also click “SETUP…” button to set the program origin.
4. Click “HOMING” and the Z axis will move to program origin.
5. Click “MOVE TO P”, the Z axis will directly move to the setting position (P0~P9). Users can click “SETUP…” button to set the value of these points.
6. Click “SETUP…” and do more detail settings, see Fig.1.7.34.
7. Click “XY-Table…” button can do X/Y Table control setting, please refer to section 1.7.16.1.
8. Click “Rotary…” button can do Rotary control setting,please refer to section 1.7.16.1.

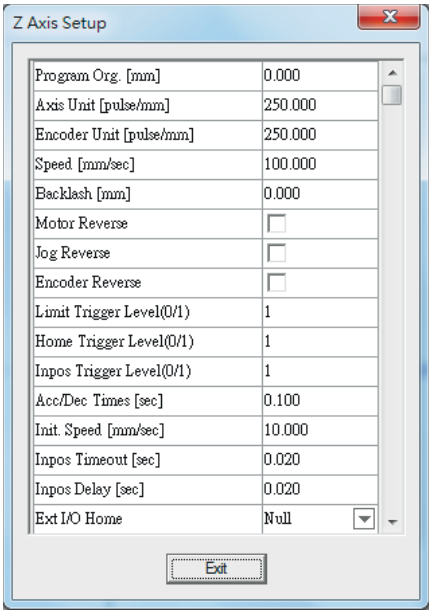


Fig. 1.7.34

Program Org. [mm] The program will consider this point as the program origin.

Axis Unit [pulse/mm] The pulse needed for Z Axis to move 1 millimeter (must refer to the motor's specification).

Encoder Unit [pulse/mm] The pulse the encoder releases when moving 1 millimeter (refer to the encoder's specification).

Speed [mm/sec] The moving speed of the Z axis

Backlash [mm] The transmission deviation between motor and axis.

Motor Reverse Reverse the motor moving direction.

Jog Reverse When Z Table is placed in a different direction with the software's control panel, this parameter can make the Z axis move following the right direction.

Encoder Reverse Reverse the direction of the encoder.

Limit Trigger Level (0/1) 0: active low; 1: active high

Home Trigger Level (0/1) 0: active low; 1: active high

InPos Trigger Level (0/1) 0: active low; 1: active high

Acc/Dec Times [sec] The time motor needs to reach the setting speed.

Init. Speed [mm/sec] The initial speed of motor.

Inpos Timeout [sec] The program will consider Z axis completed position after passing the time setting here.

Inpos Delay [sec] The program will wait for the setting time here to execute the next command.

Ext I/O Home Using external controller (I/O) to do homing.

Ext I/O Jog+ Using external controller (I/O) to do positive shift.

Ext I/O Jog- Using external controller (I/O) to do negative shift.

Home Speed [mm/sec] The homing speed of the motor.

Home Back Speed [mm/sec] The speed motor needs to move from home position to the edge of home sensor after reaching the home position (only for PMC2 & PCMark).

Home Reverse	Reverse the direction of homing.
Home Sensor Touching Mode (0/1)	Decide that Z axis will stop or do home in reverse direction when touching the limit sensor during homing. 0 is stop, and 1 is homing reversely.
Home End Point	Rotary axis will move to the assigned position (P0~P9) after homing.
Limit Stop Mode	Decide the motor stop rapidly (0) or slowly (1) when moving to limit sensor.
Distance of Travel [mm]	The maximum available travel distance Z Axis can reach.
P0~P9 [mm]	Set the position of P0~P9.

1.7.18 Status Bar

Enable or disable the Status Bar which display on the bottom of the software, see Fig.1.7.35.

Fig. 1.7.35

Display the function description positioned by the mouse.
Show the user level.
The X, Y-axis value of the mouse position

1. When press the Caps Lock key, the CAP will appear.
   When press the Num Lock key, the NUM will appear.
   When press the Scroll Lock key, the SCRL will appear.

1.7.19 Desktop Mode

Change the setting Desktop Mode.

1.7.20Composing Setting

Include tooltips, ruler, grid, and grid locksettings here. The toolbar with a  mark means that function has been opened.

1.7.20.1 Show Order

Use this function can see the mark order of each object, see Fig.1.7.36.

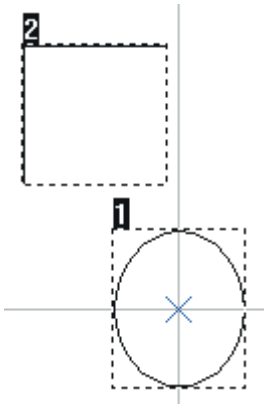


Fig. 1.7.36

1.7.20.2 Tooltips / Tooltips Setting

The tooltips setting descriptions please refer to 1.1.6.21.

1.7.20.3 Ruler / Ruler Setting

The ruler setting descriptions please refer to 1.1.6.19.

1.7.20.4 Grid / Grid Lock / Grid Parameter

The grid setting descriptions please refer to 1.1.6.20.

1.7.21 Zoom In

Enlarge a specific area.

1.7.22 Zoom Out

Shrink a specific area.

1.7.23 Zoom Previous

Go back to the previous view.

1.7.24 Zoom All

Show the whole Work Area.

1.7.25 Zoom Extend

Show all objects.

1.7.26 Zoom Select Object

Zoom the selected objects to fit the whole editing area.

1.8 Window Menu

"Window" menu offers the following functions:

New	Create new window
Cascade	Allow all open windows overlapping
Tile	Show all open windows without overlapping
Arrange	Rearrange the windows
Close All	Close all windows

1.8.1 New

Create new window, and the content of the new window will be the same with the one user is using. Users can create multiple windows to view the different parts of the content. The modifications in any one of the window will also be displayed in other windows.

1.8.2 Cascade

Display allopen windows in an overlapping way, see Fig.1.8.01.

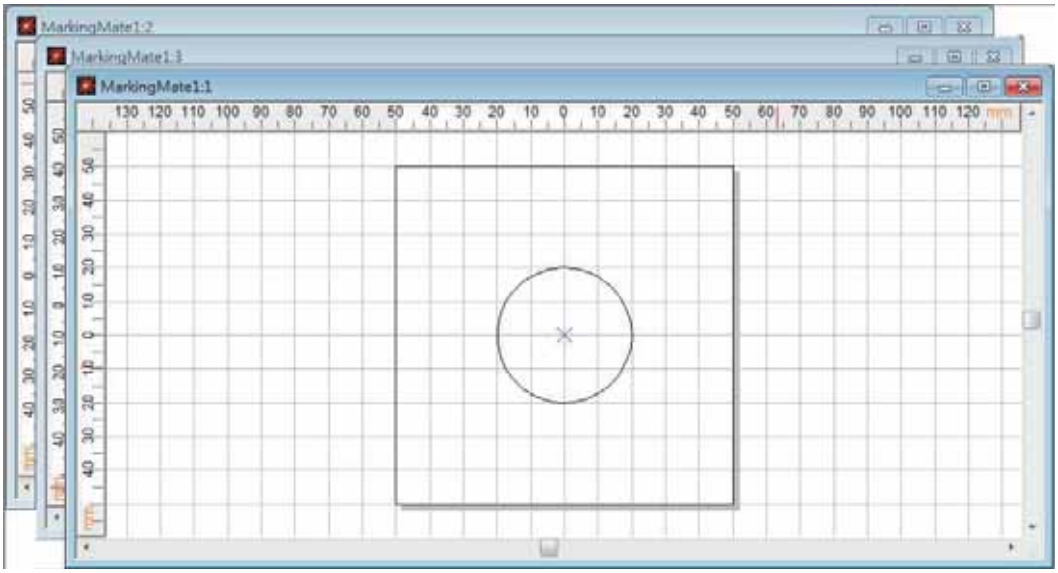


Fig. 1.8.01

1.8.3 Tile

Show all open windows side by side, see Fig.1.8.02.

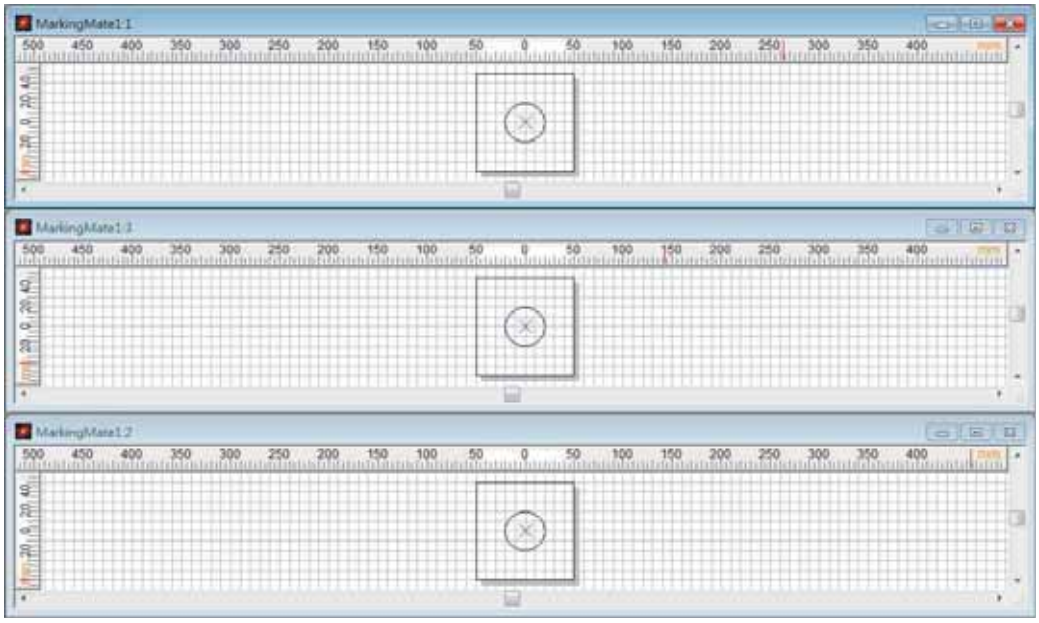


Fig. 1.8.02

1.8.4 Arrange

Rearrange the windows. The shrink window will be list at the bottom of MarkingMate, see Fig.1.8.03.

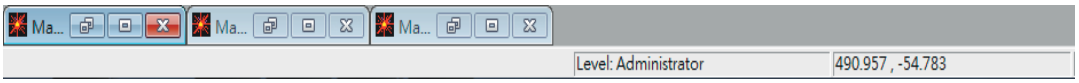


Fig. 1.8.03

1.8.5 Close All

Close all opened windows.

1.9 Help Menu

"Help" menu will assist you to use this software

Help Topics Offers the manuals of the software.
Key Information The key version and content, see Fig.1.9.01.

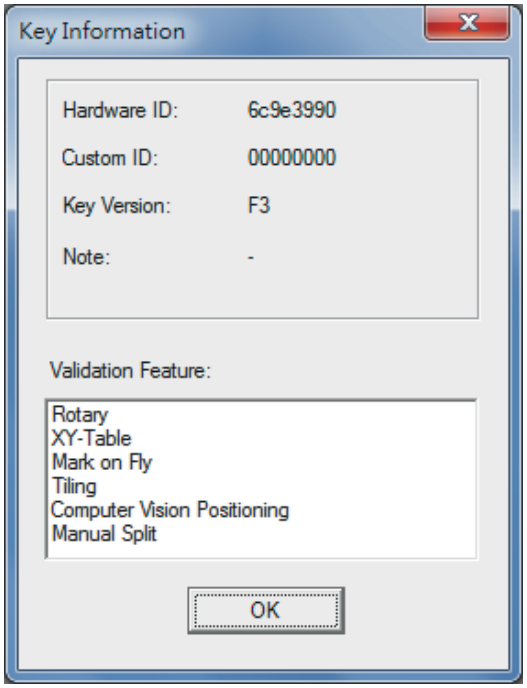


Fig. 1.9.01

Machine Information Show the information of the laser machine, see Fig.1.9.02.

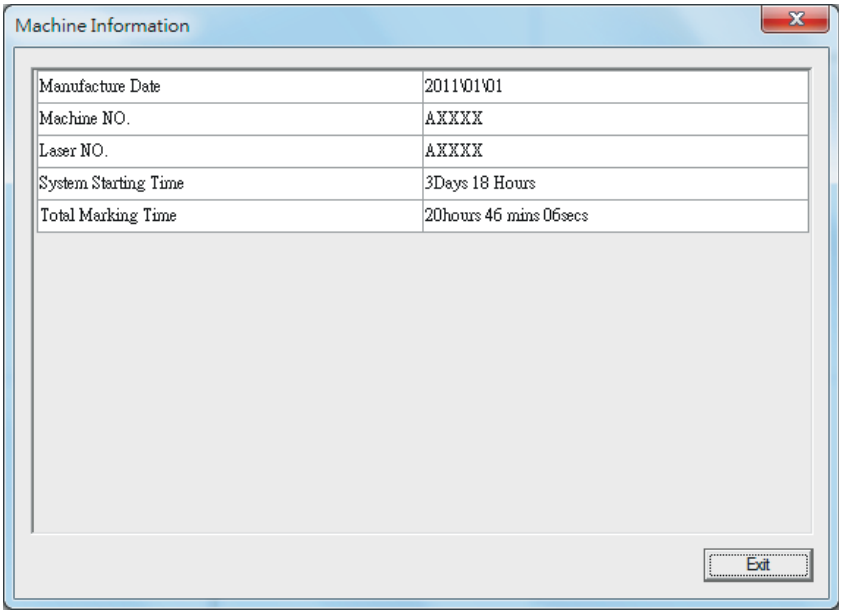


Fig. 1.9.02

MarkingMate 2.7 A-24

About MarkingMate Show the current using version and driver of MarkingMate, see Fig.1.9.03.

Fig. 1.9.03

2. Objects

MarkingMate offers “Object Function” for users to draw graphics, texts, and barcodes. These functions include dot, line, arc, circle, rectangle, curve, curve brash, text, arc text, rect text, 1D barcode, 2D barcode, matrix, and spiral. Whatever an object being selected, its related property table will be displayed for setting.

Besides, click the right button of mouse after selecting an object will display a popup menu providing the normal use functions and additional functions. For example, select a curve, click right mouse button, a function of edit vertex will be added in the popup menu.

Select the Curve object.
The property table of the Curve object will be displayed as the left side of the picture below.
Click the mouse right button will see the popup menu include the “Add Vertex” function.

2.1 Common Settings

This section will discuss the common setting page of the Property Table that includes Frame/Fill, Output Parameter, CAM Parameter, and the Popup Menu.

2.1.1 Property Table

When an object in the Work Area being selected, the property table of this object will be displayed. Users can set up some marking related parameters over the dialogue box; mainly include the object’s frame/fill, marking parameter, and delay.

Frame/Fill	Adjust the color of the border and interior shading of a selected object.
Mark Parameter	This menu in the Property Table will allow you to edit the assigned speed, power, and frequency output of the laser machine.
Delay	Setting some parameters about marking speed and quality.

2.1.2 Popup Menu

Select a general object and click the right button of the mouse, users will see a popup menu, see Fig.2.1.01.

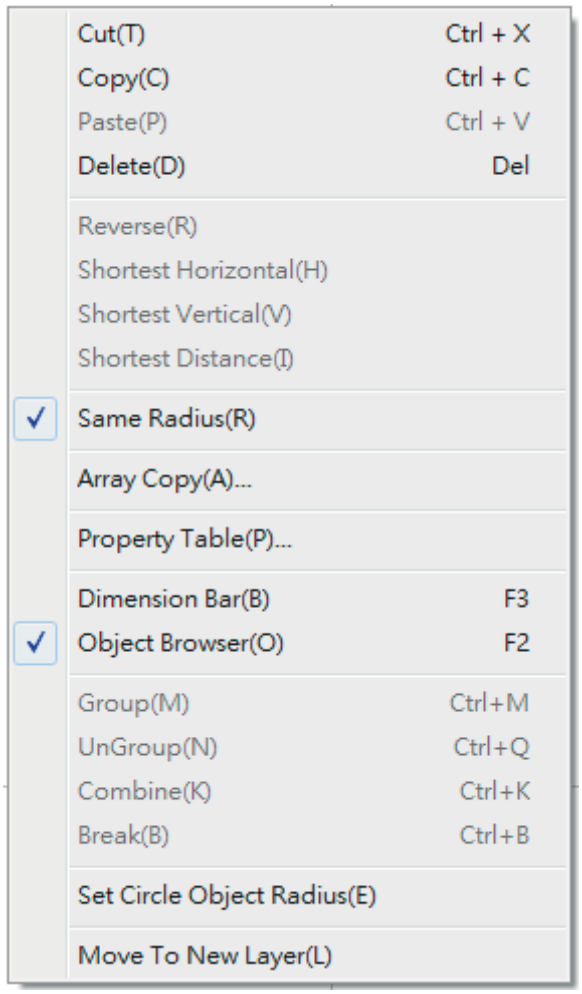


Fig. 2.1.01

Cut	Remove selected data and store it in the clipboard for future use
Copy	Duplicate selected data and store it in the clipboard for future use
Paste	Attach data from the clipboard to the current document
Delete	Delete and remove the selected data
Reverse	Reverse sorting mark order
Shortest Horizontal	Sorting mark order by the shortest horizontal direction
Shortest Vertical	Sorting mark order by the shortest vertical direction
Shortest Distance	Sorting mark order by the shortest distance of object center
Same Radius	Make the circle become the same radius

Array Copy	Execute the array copy function
Property Table	Show the Property Table of the object
Dimension Bar	Enable/disable Dimension bar
Object Browser	Enable/disable Object Browser
Group	Group selected object
Ungroup	Ungroup selected group
Combine	Combine several objects into one object
Break	Break one object into several objects
Set Circle Object Radius	Modify circle that radius same as original radius to modified radius.
Move To New Layer	Move selected objects to new layer

2.2 Create Objects

Create objects such as line, arc, circle, rectangle, curve, curve brush, text, arc text, Rectangle Text, 1D barcode, or 2D barcode.

Vector	Draw a point.
Line	Draw a straight line.
Arc	Draw an arc.
Circle	Draw a circle or oval.
Rectangle	Draw a square or rectangle.
Curve	Draw a curve.
Curve Brush	Draw a freehand line using the mouse.
Text	Insert a text object.
Arc Text	Insert an arc text object.
Rectangle Text	Insert a rectangle text object.
1D Barcode	Create a 1D barcode.
2D Barcode	Create a 2D barcode.
Matrix	Create a matrix object.
Spiral	Draw a spiral object.

3. Property Table

All objects have their own unique properties. These properties define how each specific object or each group of objects be displayed or how they will be marked.

NOTE: Any modification of the property will take effect after users click “Apply” button. Users can also click “Apply All” after modify several property pages to make sure all the changes are effective.

The Property Table contains the following five portions.

System	Adjust system-related parameters.
Marking Parameter	Adjust marking-related parameters.
Object	Adjust general object-related parameters.
Control Object	Adjust settings of control objects.
Layer	Set the layer-related functions.

3.1 System-Related Property Table

Users can edit the system-related property table when there has no object been selected. There are five setting pages under system-related property table.

3.1.1 Work Area

The size of f-theta lens will affect the working area. If it is not properly adjusted, center drifting and distortion might be caused. Adjust the parameters carefully, and the marking result will be extremely similar to the users' design, see Fig.3.1.01.

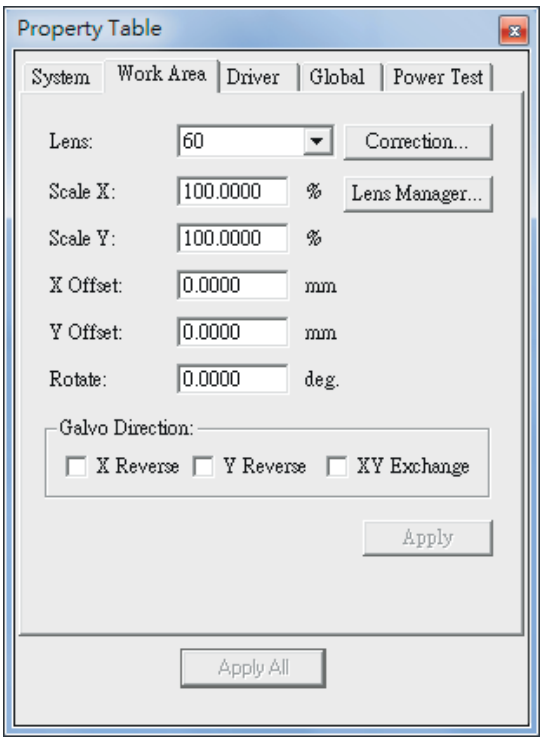


Fig. 3.1.01

Lens

Users can select the lens they want to use from here.

Correction/ Lens Manager

This button is used for lens correction or lens management.

Scale X/Y

If the scale is too small, please enter a number larger than 100 (because unit is percentage); on the contrary, please enter a value smaller than 100.

X Offset / Y Offset

If the position of marking result has 5mm shift to the right side, users can enter -5mm in the X column. The other situations are the same.

Rotate

Set the angle of the marking result to fit the marking platform when the platform or work piece cannot be placed appropriately.

Galvo Direction:

X reverse / Y reverse / XY exchange

Provides X reverse, Y reverse, and XY exchange for users to apply when they need to adjust the axis' direction of working area.

3.1.2 Driver

The page displays the driver's name and version, see Fig.3.1.02.

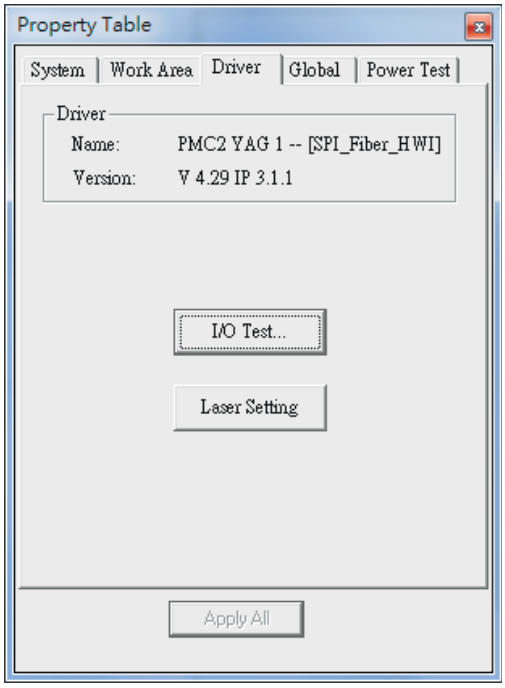


Fig. 3.1.02

I/O Test

Press the button of "I/O Test", a dialogue box like Fig.3.1.03 will be displayed to show the input and output status. The name of the I/O point can be assigned by the user. Please refer to Appendix A for more details.

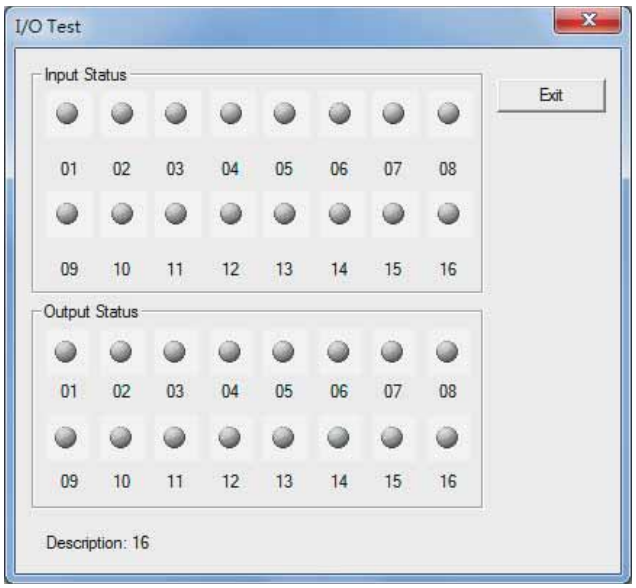


Fig. 3.1.03

Fig. 3.3.07

3.3.6 1D Marking

Some marking-related settings, see Fig.3.3.08.

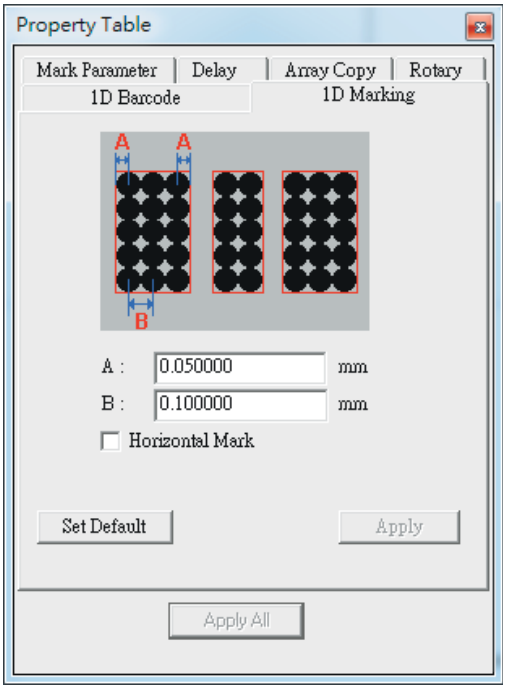


Fig. 3.3.08

A

The distance between laser spot center and the edge of barcode.

B

The distance between two laser spots (according to the spot center).

Horizontal Mark

Mark the bar code in horizontal way (generally is in vertical way).

3.3.7 2D Barcode

Create a 2D Barcode object and the parameter page will show like Fig.3.3.09.

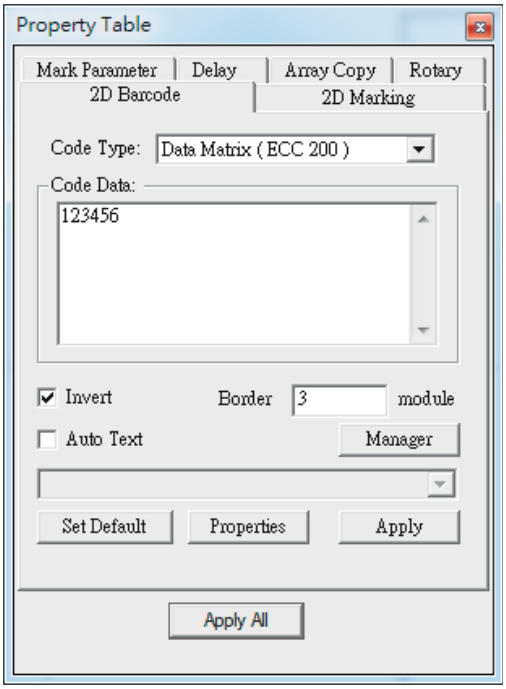


Fig. 3.3.09

Code Type

There are several code types for users to select: Data Matrix (ECC 000~140), Data Matrix (ECC 200), PDF417, QR Code, and Maxi Code, PDF417 Truncated、Micro PDF417、Micro QR Code.

Invert

Invert the bar and space of the bar code. This application is when the work piece is black, see Fig.3.3.10.

Border

The size of quiet area when using Invert function, see Fig.3.3.10.

Auto Text

Use auto text as the content of code data.

Manager

Manage the auto text.

Properties

Select the rectangular size and format of 2D Barcode.

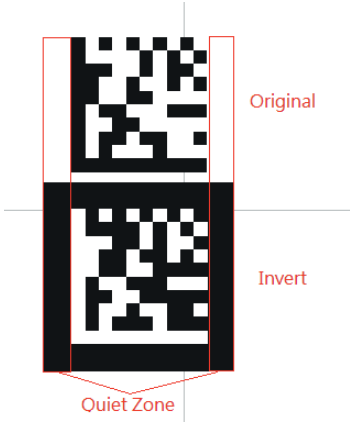


Fig. 3.3.10

3.3.8 2D Marking

Some marking-related options, see Fig.3.3.11.

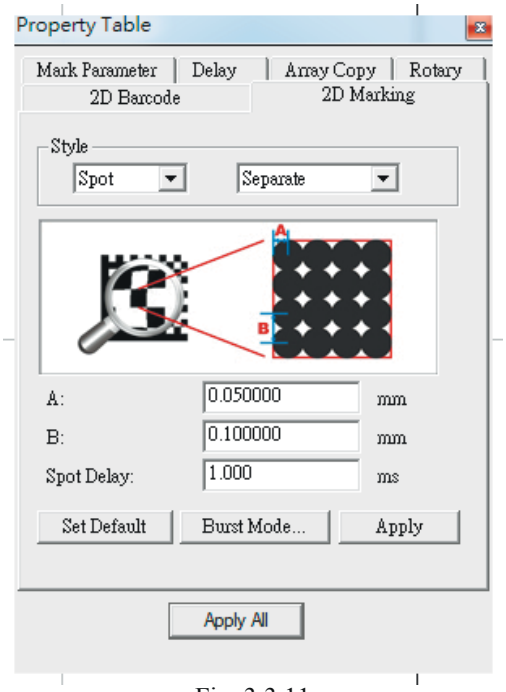


Fig. 3.3.11

Style

2D barcode is divided into many cells and has three mark style to mark each cell. Besides, in order to make the instruction more lucid, we consider that 2D Barcode has two parts: cell and row, see Fig.3.3.14.

	**Spot:** Mark each cell in spot manner.
	**Line:** Mark each cell in line manner.
	**Rectangle:** Mark each cell as a rectangle.
	**Spiral:** Mark each cell as a spiral.
	**Circle:** Mark each cell as a circle.
Custom	**Custom:** After user choosing Custom and press on Apply, will appear 2D Barcode toolbar  . Clicking on  to enter edit mode. If we draw as fig 3.3.12, after clicking on  to leave edit mode, 2D barcode will be seen as like fig 3.3.13.

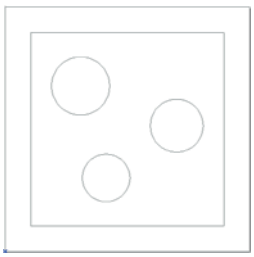


Fig. 3.3.12

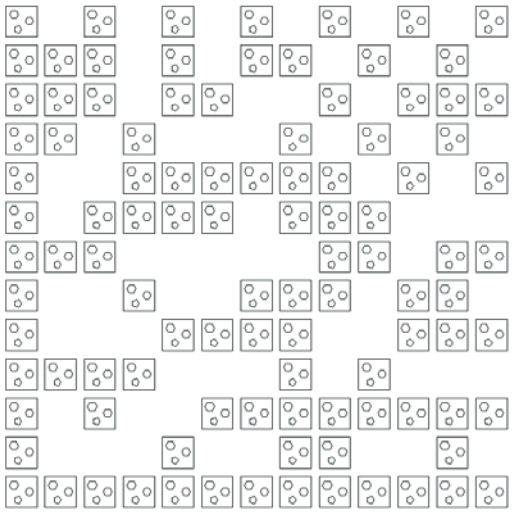


Fig. 3.3.13

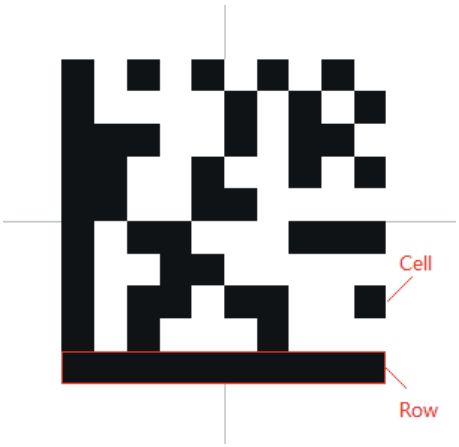


Fig. 3.3.14

Each style has two mark modes.

Spot and Rectangle Style

Orderly: Mark following the cell's and row's order.

Separate: Mark without following the cell's order. This method can avoid the blurred result caused thermal effects.

Line Style

Continuous: Consider all the cells on the same row as one unit and mark.

By Cell: Mark all the cells one by one and follow the row's order.

A: The distance between laser spot center and the edge of barcode.

B: The distance between two laser spots (according to the spot center).

Spot Style

Spot Delay: The required time for laser to mark a spot.

Burst Mode: Click "Burst Mode…" button the dialogue box of options will appear to set up the Burst Mode settings (please refer to 1.1.6.8).

Line Style

Non-Stop: Mark all the cells (By Cell) or each row (Continuous) by style.

Alternate Lines: Mark without following the row's order to avoid the blurred result caused thermal effects.
Rectangle Style
Poly Delay: Set the poly delay. For more details about Poly Delay, please refer to Section 3.2.3.
Spiral Style
Out ring circle: Mark an outer ring after each spiral is marking completed.
Outer to inner: Setting spiral marking direction is from outer to inner.
CCW: Setting spiral marking direction is counter clockwise.

3.3.9 Image

Import an image, and the property table will show the related information of this image, see Fig.3.3.15.

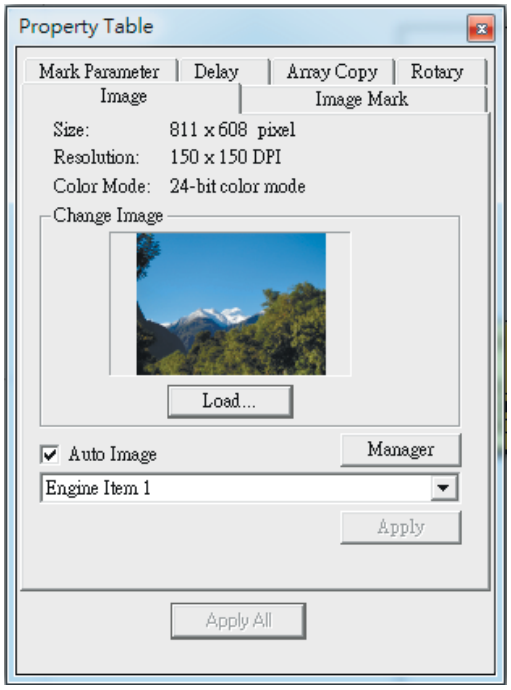


Fig. 3.3.15

Auto Image: Mark the image based on the application of Auto Text when there has a series of images to mark.

3.3.10 Image Mark

Adjust the mark settings of the image, see Fig.3.3.16.

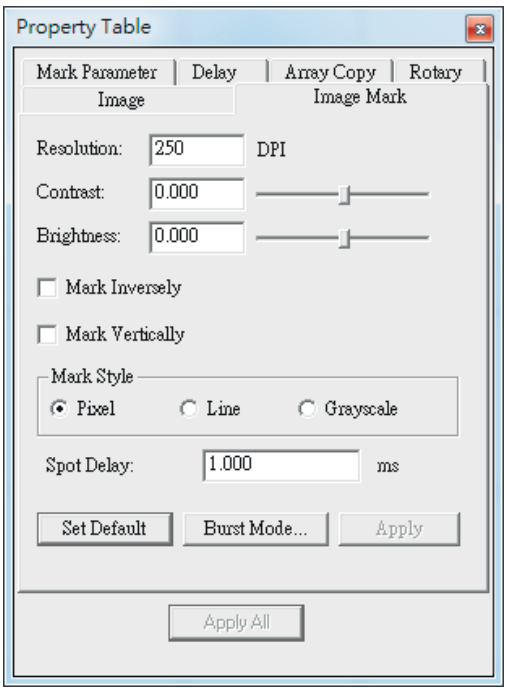


Fig. 3.3.16

Resolution

The resolution of the image. DPI means "Dots Per Inch."

Contrast/ Brightness

Adjust the contrast/ brightness of the image.

Mark Inversely

This function is used when the color of work piece is black.

Mark Vertically

Mark the image in vertical way.

Mark Style: An image is composed by pixels which are according to the size of the image. For example, if the size of the image is 600×800, then the amount of pixels of that image will be 480,000.

Pixel: Mark the image as dots.

Spot Delay: The required time for laser to mark a spot.

Burst Mode: Click "Burst Mode…" button the dialogue box of options will appear to set up the Burst Mode settings (please refer to 1.1.6.8).

Line: Connect the pixels on the same row as a line and mark the image.

Grayscale: Transfer the image into a black-and-white color image.

3.3.11 Text

Create a Text object, and the Text Property Page will display like Fig.3.3.17.

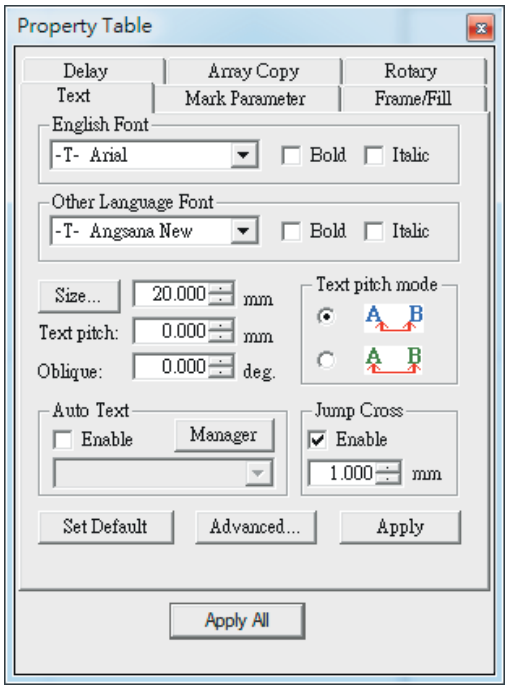


Fig. 3.3.17

English Font: Select the font for letters of the alphabet and numerals.
Other Language Font: Select the font for other language characters.
Bold/ Italic: Select the font type as bold, italic or both.
Size: Adjust the font size.
Text Pitch: Adjust the spacing between two characters.
Oblique: Adjust the tilt angle of the text.
Text Pitch Mode: Select the text pitch base. There are two modes for users to apply: based on the edge of characters  or based on the center  .
Auto Text: Apply the Auto Text function.

Jump Cross: Enable or disable the jump cross function. For more details please refer to 1.2.24.
Advance: Offer further settings for text, see Fig.3.3.18.

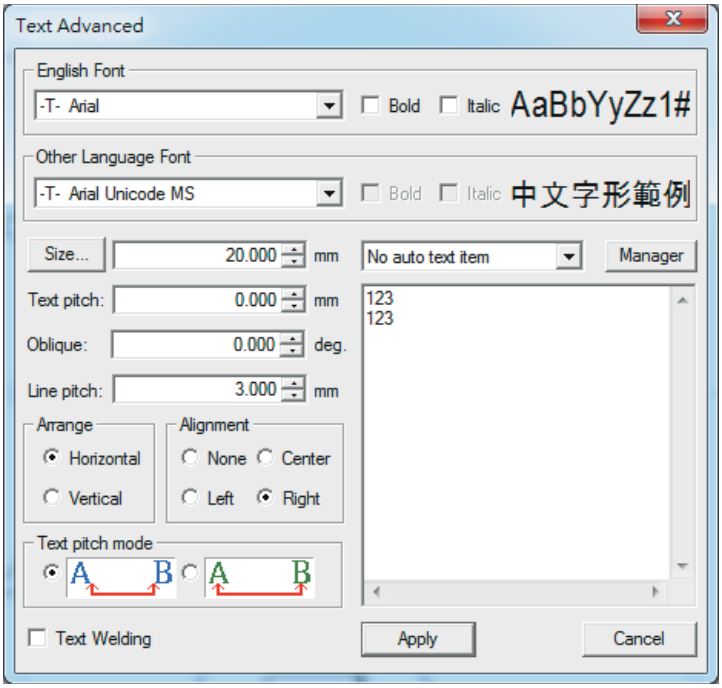


Fig. 3.3.18

Line Pitch: Adjust the spacing between each line.
Arrange: Select the character arrange style, see Fig.3.3.19.

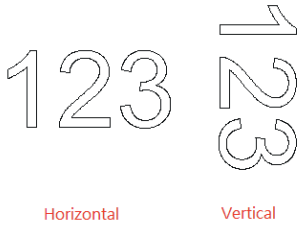
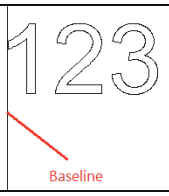
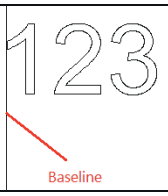
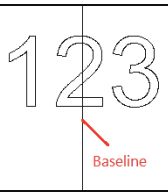
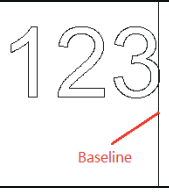


Fig. 3.3.19

Alignment: Use the insert position as the baseline, and align the text object along that baseline.

None	Left	Center	Right
			

Text Welding: Use to avoid the overlapping part of character's strokes.

3.3.12 Arc Text

Create an Arc Text object, and the Arc Text Property Page will be displayed like Fig.3.3.20.

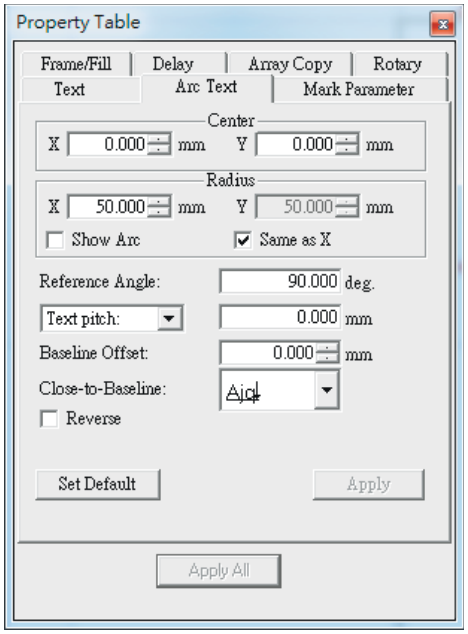


Fig. 3.3.20

Center: Set the center position of the arc.
Radius: Set the arc's radius.
Show Arc: Show the arc path, see Fig.3.3.21.
Same as X: Make the arc has the same radius (becomes a circle).
Reference Angle: Set the angle between 0° line and reference line. Users can adjust the text's alignment from Text Tool Bar or Text Property Table－Advance. Please note that the system will suppose the reference line as the alignment baseline when using Arc Text.
Text Position: Adjust the spacing between characters.
Spread Angle: Set the spread angle and the characters will distribute averagely in this range.
Baseline Offset: Set the spacing between the text and the baseline.
Close-to-Baseline: Select the position of text based on the baseline.
Reverse: Reverse the text part of the art text, see Fig.3.3.22.

Fig. 3.3.21

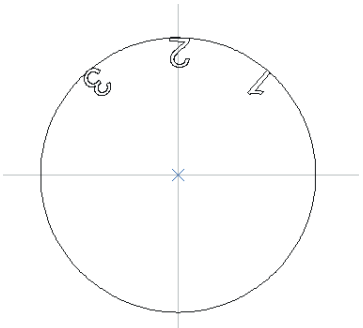


Fig. 3.3.22

3.4.6 Set Position

Set Position

The system will consider the current position as the assigned position when the mark process execute to “Set Position” object (Only PMC2 driver supports Z axis control). Users can assign the position at Set Position Property Table, see Fig.3.4.05.

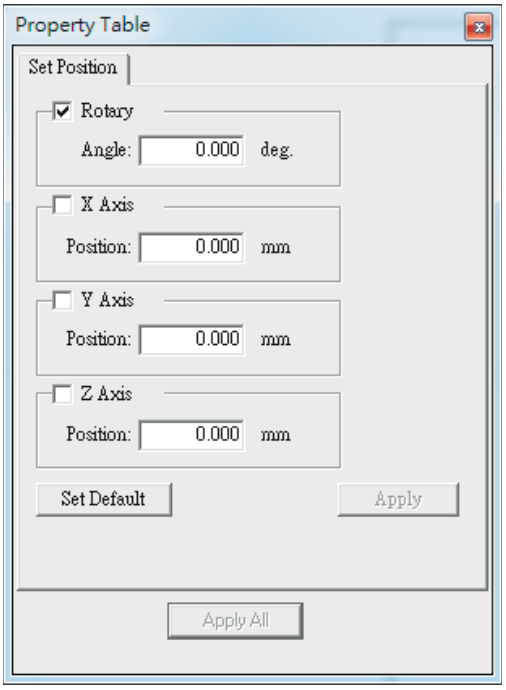


Fig. 3.4.05

3.4.7 Loop

Loop

“Loop” is used to mark the selected objects repeatedly. Users can set the repeated time at Loop Property Table, see Fig.3.4.06. When insert this object, users will see two sub-objects (Loop Begin and Loop End) in the Object Browser and thendrag the objects users want to repeated mark into the loop, like Fig.3.4.07.

Fig. 3.4.06

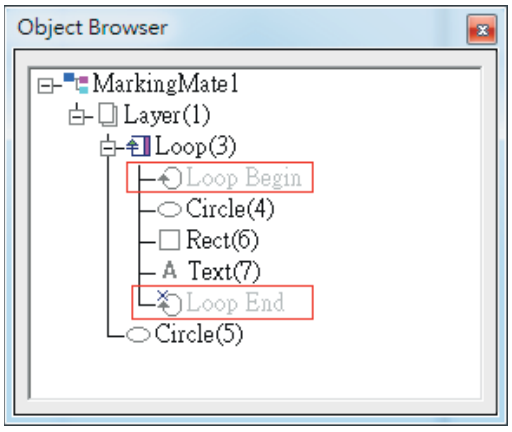


Fig. 3.4.07

3.4.8 Ring

Ring

"Ring" object must be used accompanied with rotary axis.
When the mark process executes to "Ring" object, the Galvo will move to the X/Y position users set at Property Table (see Fig.3.4.08) first and the laser will start to hit. When the rotary axis rotate to the assigned angle, the laser will be turned off. Please note that the "Position" here means the Galvo's position, not X/Y Table.

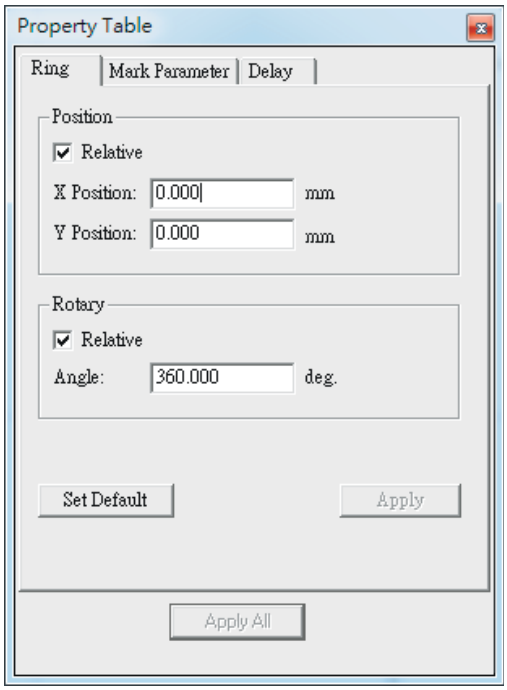


Fig. 3.4.08

3.4.9 Homing

Homing

When the mark process execute to "Home" object, the axis users select at Property Table (see Fig.3.4.09) will go back to origin.

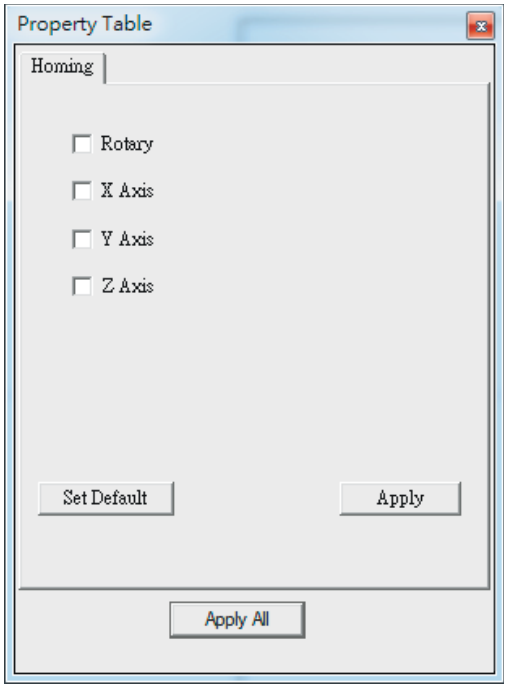


Fig. 3.4.09

3.5 Layer-related Property Table

When a layer object in the Object Browser has being selected, the Property Table will display the layer-related property page for uses to edit.

3.5.1 Layer

The Layer Property Page allows users to set the parameters of the selected layer, see Fig.3.5.01.

Processing Method: Marking or cutting this layer.
Name: Edit the layer's name.
Color: Edit the layer's color.
View: Enable or disable to view the layer.
Edit: Enable or disable to edit the layer.
Output: Enable or disable to output the layer.

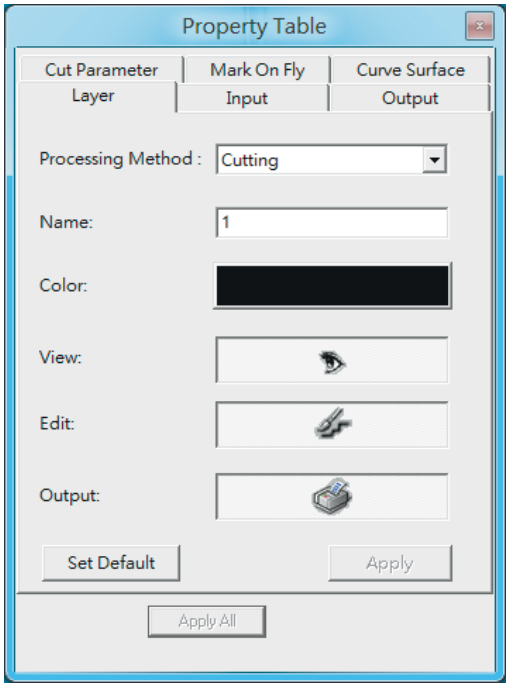


Fig. 3.5.01

3.5.2 Input

The Input Property Page allows users to set up the input status of the layer, see Fig.3.5.02. The system will first check the Input Status settings and then start to mark the layer's objects.

Input Status

Set the potential (high or low) of the input points.

- ☑ High Potential.
- ☐ Low Potential.
- ☑ Ignore.

Timeout

The time system needs to wait for the input signal. The default is -1.

Wait Input

Wait until all input status exist, otherwise wait for Timeout

Match Input

Wait until all input status exist, otherwise skip the layer.

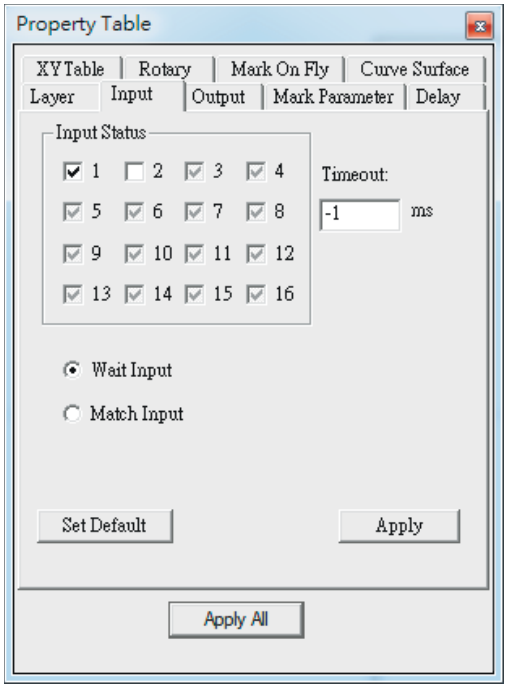


Fig. 3.5.02

3.5.3 Output

Use this function to set up the output status of the layer.

The system will first handle the graph and then the output status.

Output Status

High or low voltage of the output points

For example:

- ☑ 1 Point 1: high
- ☐ 5 Point 5: low
- ☑ 9 Point 9: don't care

Auto Clear Signal

Wait for Delay Time and auto clear signal after the voltage settings are done

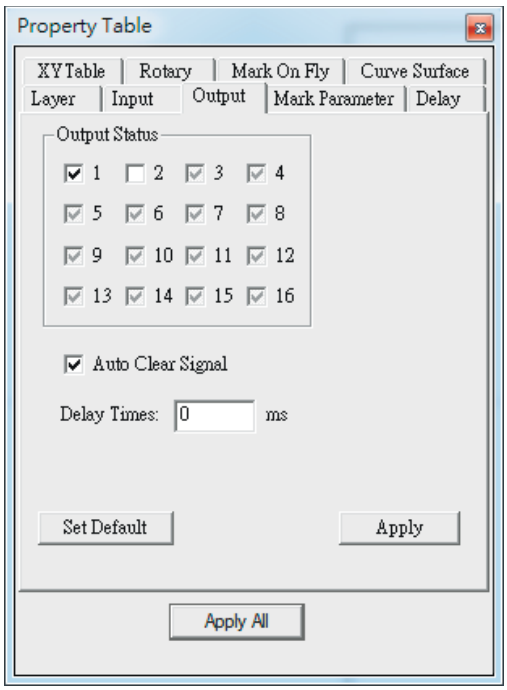


Fig. 3.5.03

3.5.4 Mark Parameter

The Mark Parameter Property Page here is for the selected layer, see Fig.3.5.04. Its setting method is the same with the individual object. Please refer to the section 3.2.1 Mark Parameter.

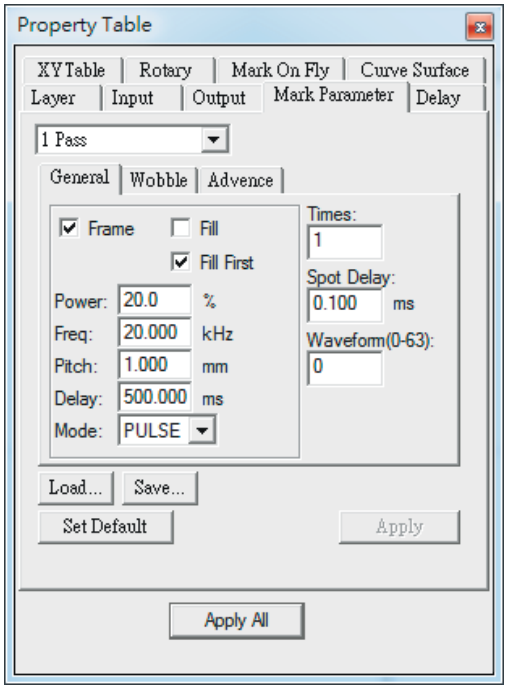


Fig. 3.5.04

3.5.5 Delay

The Delay Parameter Property Page here is for the selected layer. Its setting method is the same with the individual object. Please refer to the section 3.2.3 Delay.

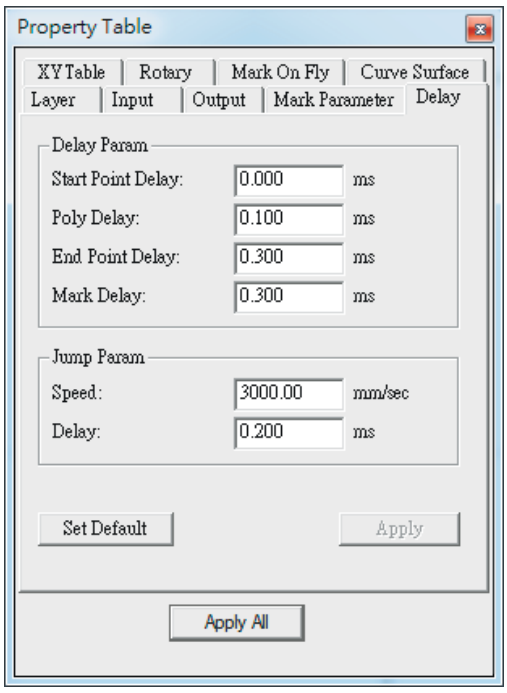


Fig. 3.5.05

3.5.6 XY(/Z) Table

Allow users to enable XY (/Z) Table. Users can add coordinates and then the XY(/Z) axis will move to the assigned positions in order, see Fig.3.5.06.

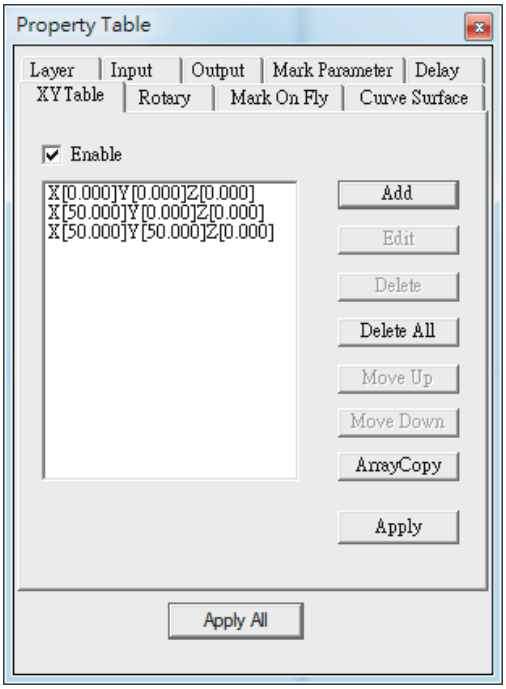


Fig. 3.5.06

Add/Edit

Add or edit the XY (/Z) position, see Fig.3.5.07.

Delete/Delete All

Delete the selected position or delete all setting positions.

Move Up/ Move Down

Move up/down the selected position to change its order.

Array Copy

Create several positions at one time based on array principle, see Fig.3.5.08.

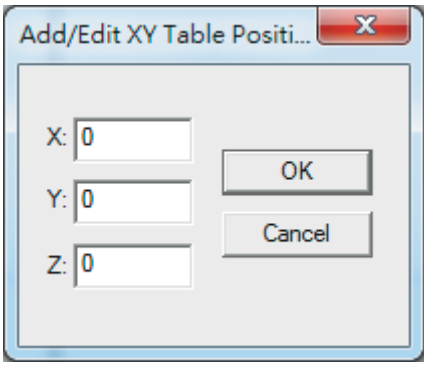


Fig. 3.5.07

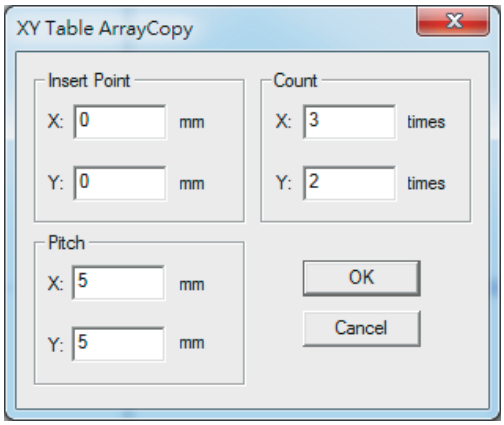


Fig. 3.5.08

Insert Point: Set the start point.
Count: The duplicate amount.
Pitch: The interval of each point.