Practical Functions

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1.System Installation

This chapter will letuser known how to install and setup **MarkingMate**.

1.1 System Requirement

- OS: Microsoft Windows 98/2000/XP/Vista/7/8.
- RAM: Win 98/2000/XP: 2GB Win Vista/7/8: 4GB.
- Resolution:1024*768 or above.
- Font size must be the smaller (100%) one.
- PMC2 card or MC1,MC3, UMC4 laser controller must be connected to the user`s computer.

  Table 1.1 shows the supportive system of controller.

Card	Bus	Windows 32 bit						Windows 64 bit			
		98	2000	XP	Vista	7	8	XP	Vista	7	8
PMC2	PCI	×	○	○	○	○	○	○	○	○	○
MC-1	USB	○	○	○	○	○	○	○	○	○	○
MC-3	USB	×	○	○	○	○	○	○	○	○	○
UMC-4	USB	×	○	○	○	○	○	○	○	○	○

Table 1.1

1.2MarkingMate Installation

Execute "**Setup.exe**" from **MarkingMate** installation disc and follow the steps as listed below (use Win7 64 bit operating system for example).

Step 1: Select Destination Directory

Choose a installation path. The default path is 「**C:\Program Files (x86)\MarkingMate**」. Users can change the path by clicking"**Browse…**" button. After decide the installation path, click "**Next**" to do the next step, see Fig.1.2.01. If users want to stop the installation, click "**Cancel**" or  at the upper right corner of the dialog box and a warning dialog box will appear like Fig.1.2.02 to notice users that the installation has not yet completed. Click "**Resume**" to continue installing, or click "**Exit Setup**" to quit the setup progress.

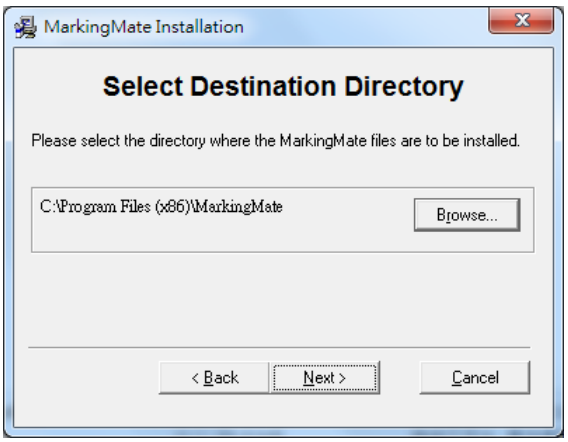

Fig.1.2.01

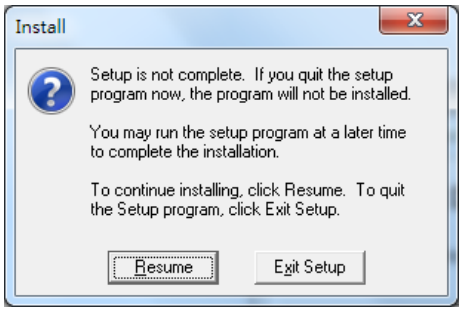

Fig.1.2.02

Step 2: Ready to Install

Confirm that the users are ready to install **MarkingMate** or not, see Fig.1.2.03. Click "**Next**" to proceed the next step or click "**Back**" to go back to previous step.

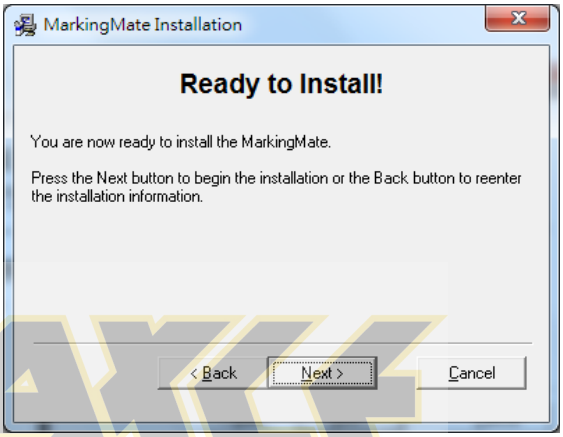

Fig.1.2.03

Step 3: Decide to Upgrade or New Install

Decide to upgrade **MarkingMate** or install it as new software, see Fig.1.2.04. Click "Next" to start installation.

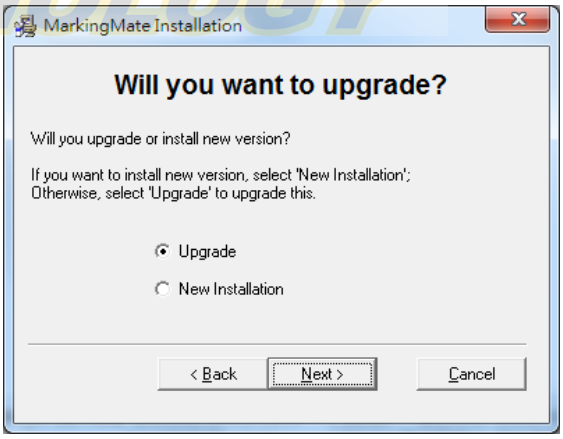

Fig.1.2.04

Step 4: Select Driver

Select an appropriate driver according to the control card and the laser machine, see Fig.1.2.05, and then click "**OK**".

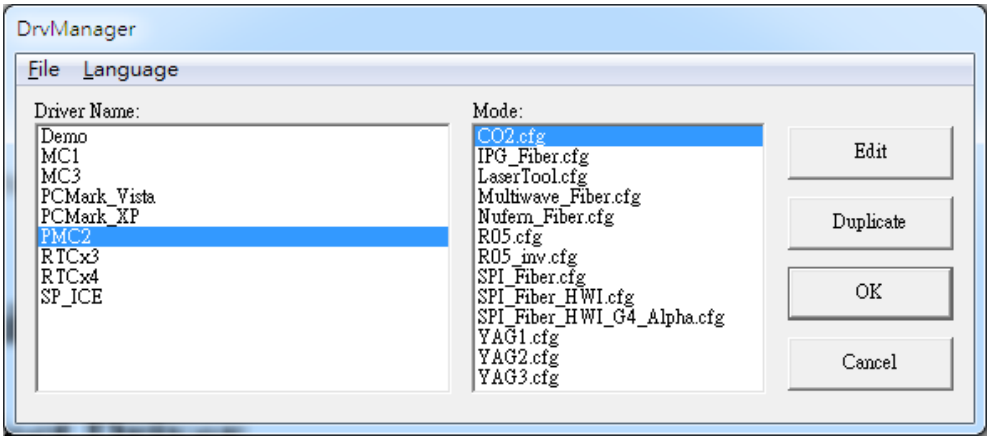

Fig.1.2.05

Step 5: Installation Complete

The installation is finished. Click "**Finish**" to exit the setup program, see Fig.1.2.06.

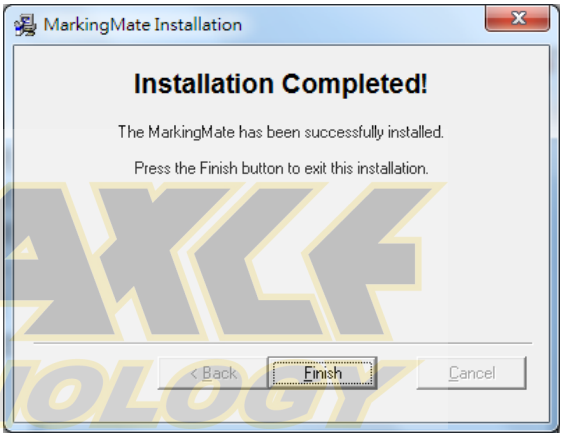

Fig.1.2.06

Step 6: Execute MarkingMate

After the installation is completed, the system will add a "**MarkingMate System**" folder at「 **Start→All Programs** 」and create a shortcut like 

on the Desktop.

Users can execute **MarkingMate** by click "MarkingMate" which is under "**MarkingMate System**" (see Fig.1.2.07) or double click the shortcut on the Desktop. Users can also pin the shortcut to the Taskbar and click the icon to execute the software, see Fig.1.2.08.

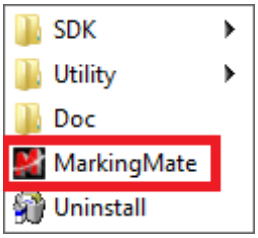

Fig.1.2.07

Fig.1.2.08

1.3Hardware Protect Key Installation

The **Hardware Protect Key** (or **Dongle**) is a male-to-female connector (Fig.1.3.01) for parallel port or a USB type connector (Fig.1.3.02). If the protect key does not connect to computer correctly, **MarkingMate**will not be able to work normally.

Notice

Every package contains only one protect key.If it is lost or damaged, users can get another one only by purchasing another **MarkingMate** system. Therefore, users should take good care of the key.

If the protect key cannot work normally, please contact with the distributors.

Fig.1.3.01

Fig.1.3.02

2. Driver Manager

Based on the different marking controller usage, user must select a correct driver. Users need to select the driver when installing **MarkingMate**. Besides, they can also change the driver by executing **Driver Manager** through the following path: **Start – Programs –MarkingMate System–Utility – Drv Manager**, see Fig.2.0.1.

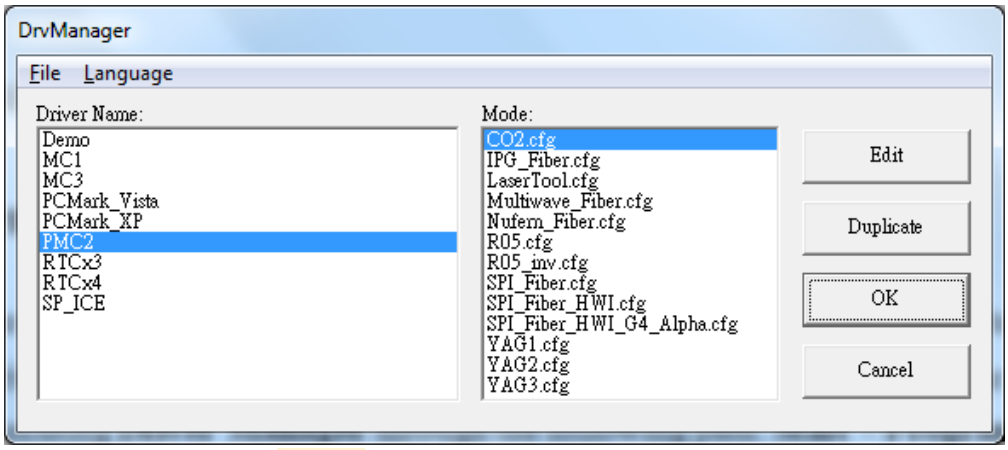

Fig.2.1.01

3.System Info Backup and Recovery

3.1Configuration Import/Export

Use this function to load the backup configuration files or export the current configuration files for backup, see Fig.3.1.01.

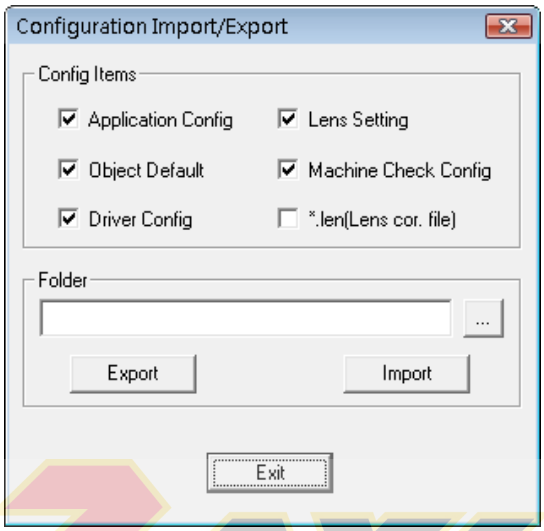

Fig. 3.1.01

Method:

1. Select "**File**" from Menu Bar and click "**Configuration Import/Export.**"
2. Select the items and click "…" to select the folder user want to export or import, then click "Import" or "Export" button. If the name of lens has already existed, the system will pop a warning dialog box, see Fig.3.1.02. Please notice that "*Jen (Lens cor. File) is only used for version 2.4, so it can only be import.

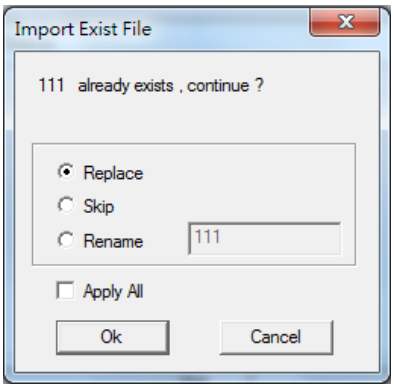

Fig. 3.1.02

3. Restart the program.

3.2Auto Save

Activate 「**Auto Save**」function can help users to save the editing file automatically to avoid losing the data. Users can enable this function from「**File Menu**」→「**Options**」→「**Edit**」→「**Auto Save**」, see Fig.3.2.01.

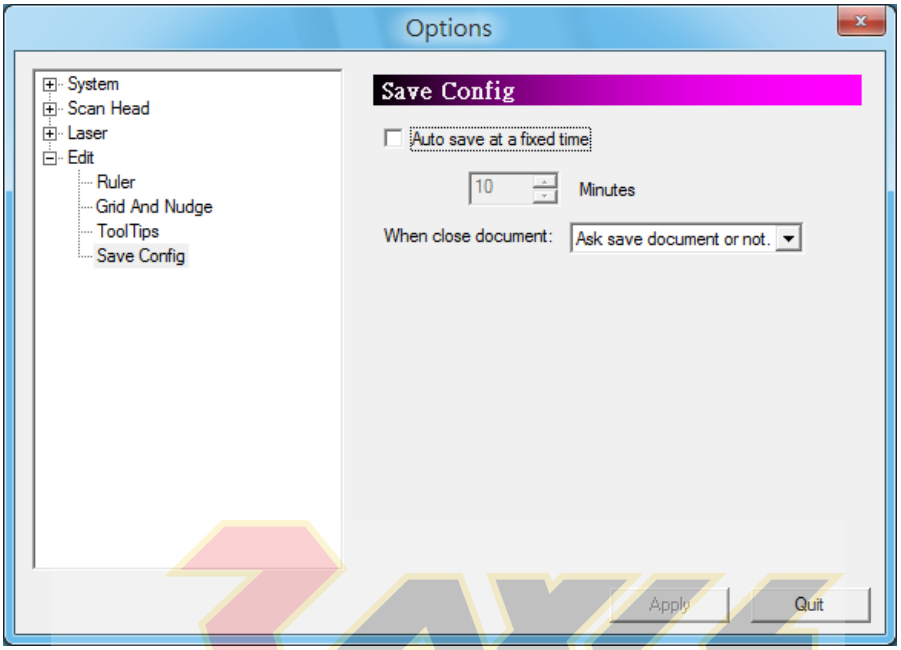

Fig. 3.2.01

Auto Save Rule

Auto-save at a fixed time

The system will save the documents automatically every time period user setted in the field.

When close document

Default action while closing document.

Ask save document or not

Ask if save document or not.

Auto save document

Executing auto save when closing the document every time.

Not save document

Close document directly.

4.Lens Correction

"**Lens Correction**" function is used to fix the distortion resulted from Lens characteristics or optical problems. If the lens correction has been completed, but the mark result still hassome problems such asunfocused or ratio inaccuracy, usersneed to adjust these parameters from the "**Work Area**" page under "**Property Table**."

4.1Lens Manager

Enter "**Lens Manger**" form 「**File**」→「**Option**」→「**Scan Head**」, see Fig.4.1.01.All lenses users have will be listed here.

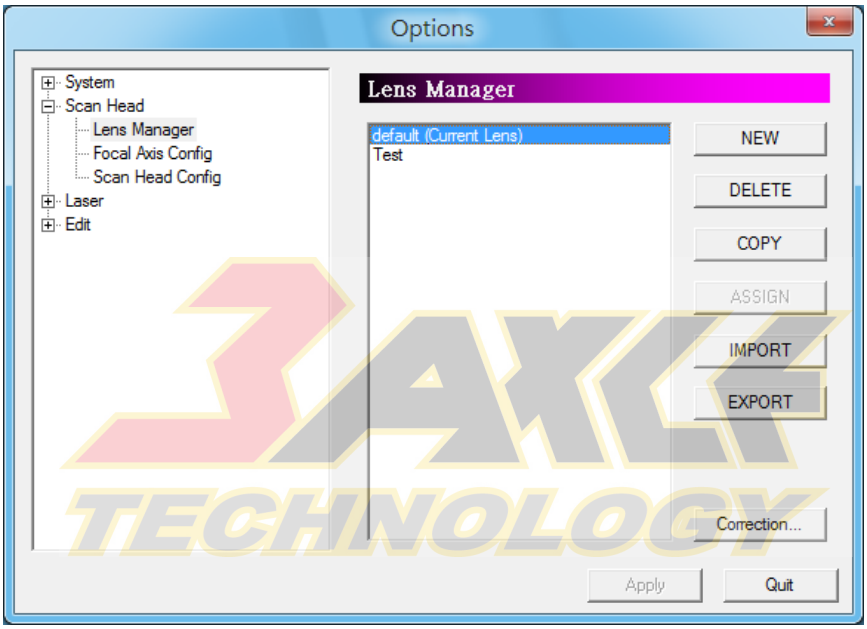

Fig. 4.1.01

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.

4.2 Lens Correction

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.4.2.01 shows the lens setup under normal mode. Fig.4.2.02 is the lens setup under dot mode.

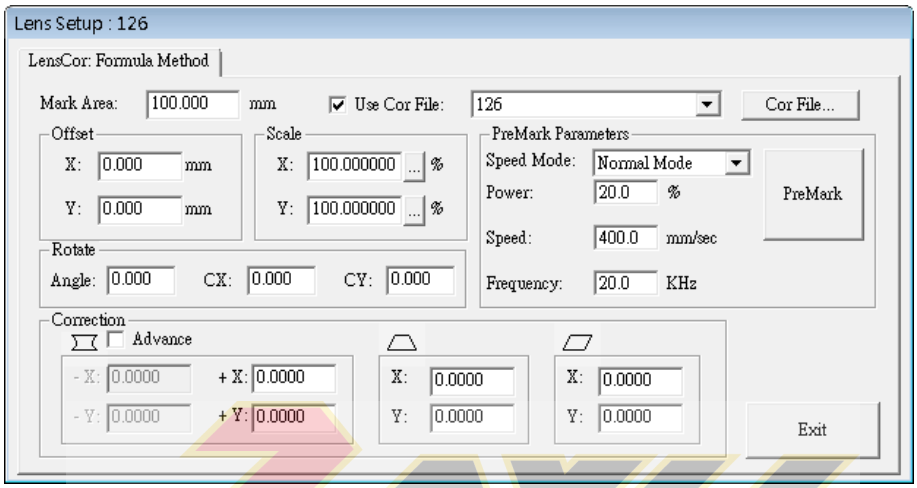

Fig. 4.2.01Under Normal Mode

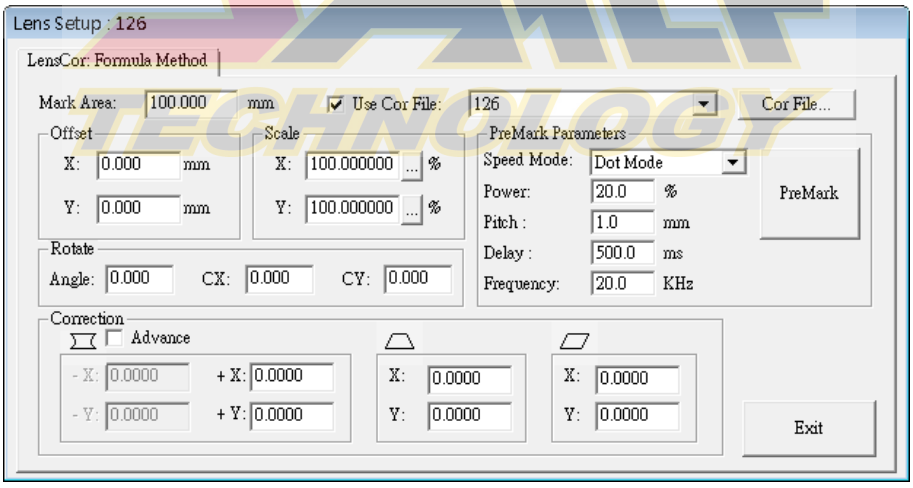

Fig. 4.2.02Under Dot Mode

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 correctionthrough **"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.

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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 4.1 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 Table4.2 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 4.3 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

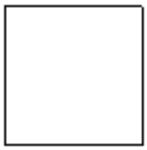
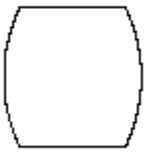
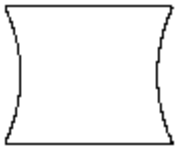
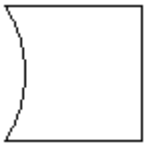
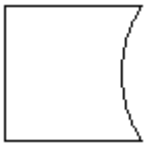
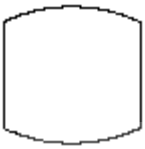
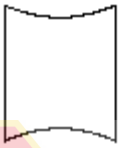
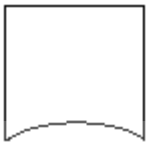
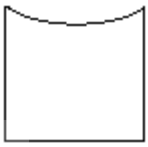
Original				
Mark Results				
Solutions	Increase the X value of field	Reduce the X value of field	Reduce the value of –X (Advance)	Reduce the value of +X (Advance)
Mark Results				
Solutions	Increase the Y value of field	Reduce the Y value of field	Reduce the value of –Y (Advance)	Reduce the value of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

Table4.1

Correction of trapezoid distortion

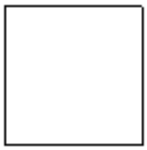
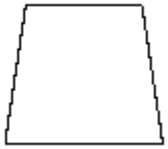
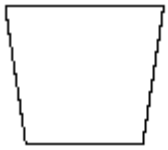
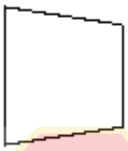
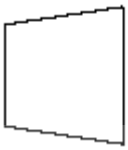
Original		
Mark Results		
Solutions	Enlarge the X value of field	Reduce the X value of field
Mark Results		
Solutions	Enlarge the Y value of field	Reduce the Y value of field

Table4.2

Correction of parallelogram distortion

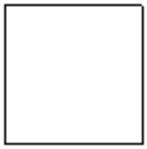
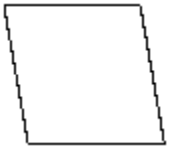
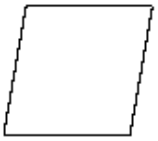
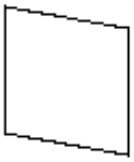
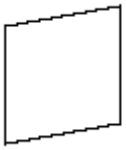
Original		
Mark Results		
Solutions	Enlarge the X value of field	Reduce the X value of field
Mark Results		
Solutions	Enlarge the Y value of field	Enlarge the Y value of field

Table4.3

4.3 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. 4.3.01.

Once finding that still need to adjust these values after finishing lens correction, users can come back to this dialog box to modify them.

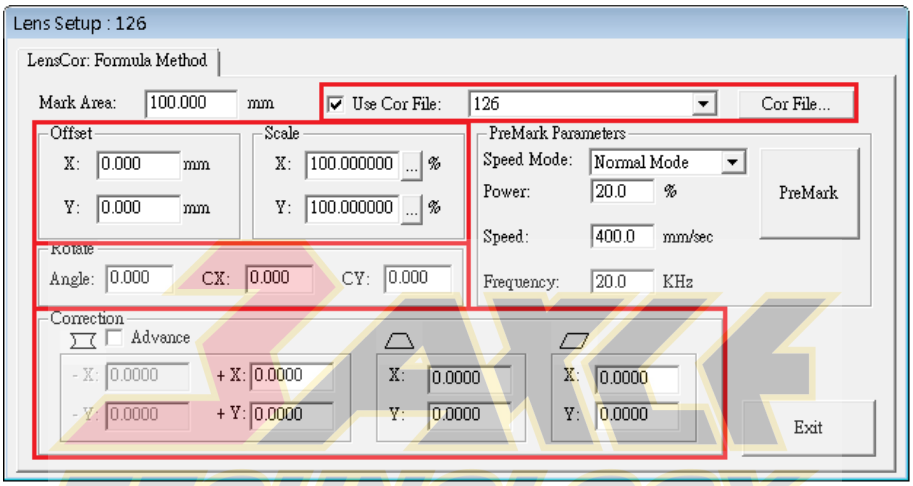


Fig. 4.3.01

4.3.1 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. 4.3.02. Please note that each lens can only choose one method.

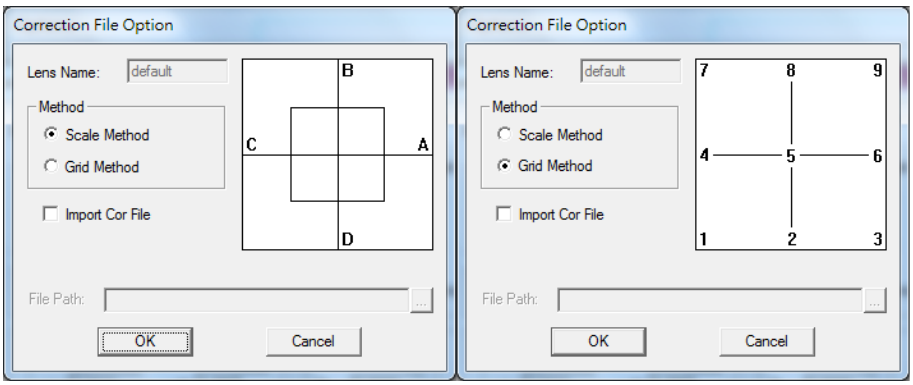


Fig. 4.3.02

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.

4.3.2 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.4.3.03.

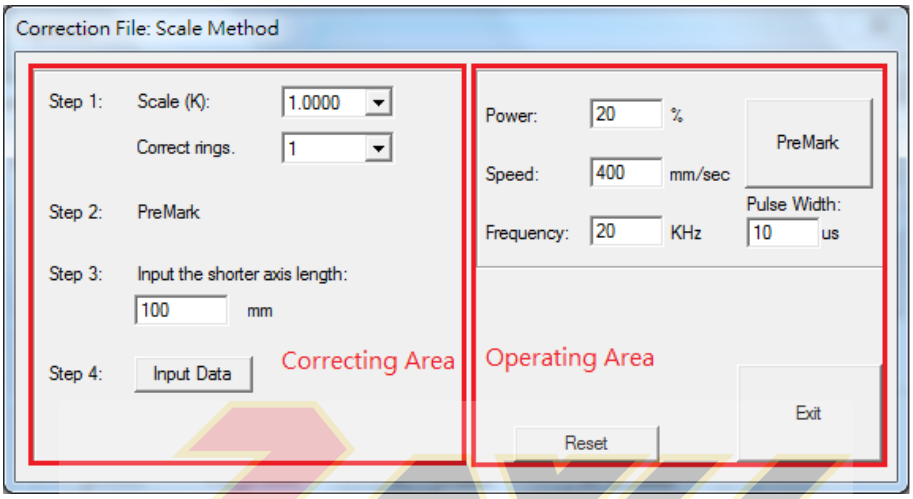


Fig. 4.3.03

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.13**)

Reset

The purpose of this function is to reset the setting of correcting area, or import a correction file to do correction, see Fig.4.3.04.

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.

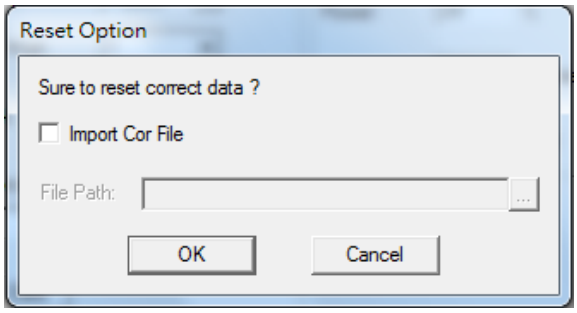


Fig. 4.3.04

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.4.3.05.

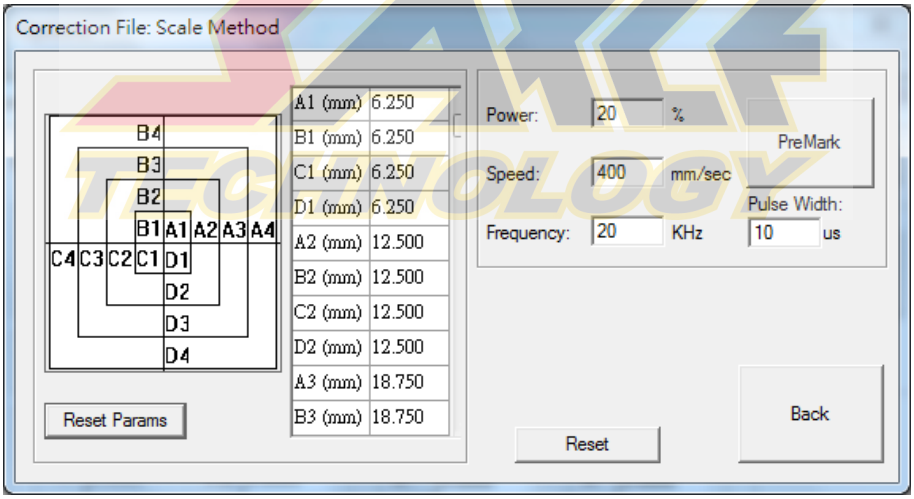


Fig. 4.3.05

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.

4.3.3 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 4.3.06.

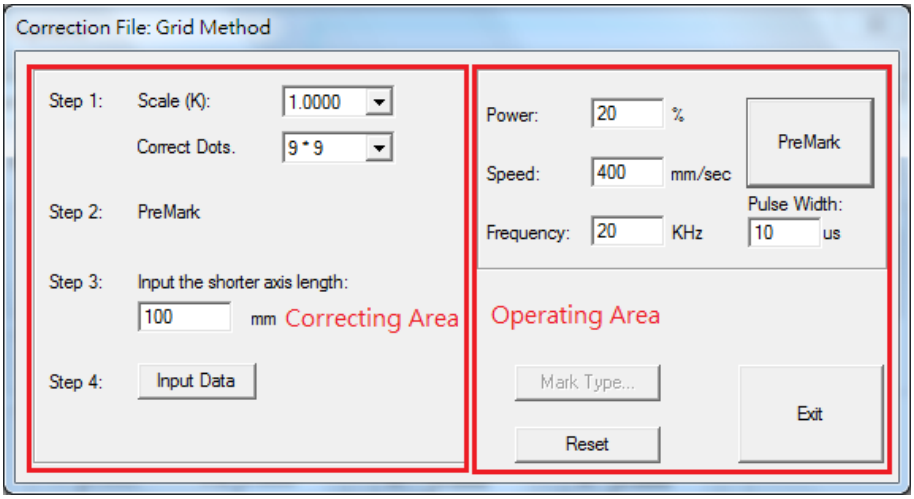


Fig. 4.3.06

Operating Area

On the top of this area is the Premark parameters (refer to **p.13**)

Mark Type

To use the function, users must click “Input Data” at “Correcting Area” first, see Fig.4.3.07.

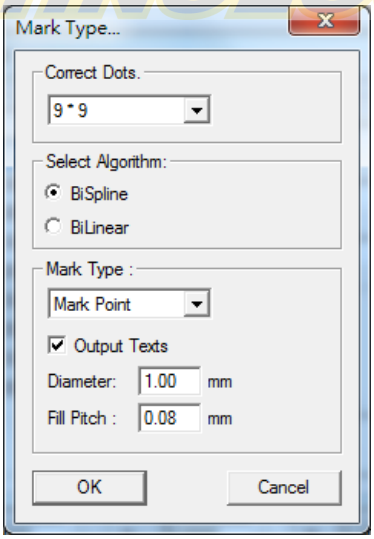


Fig. 4.3.07

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.4.3.08.

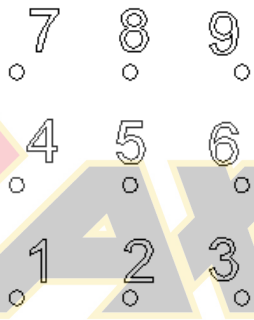


Fig. 4.3.08

Reset

Please refer to page 18.

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.4.3.09.

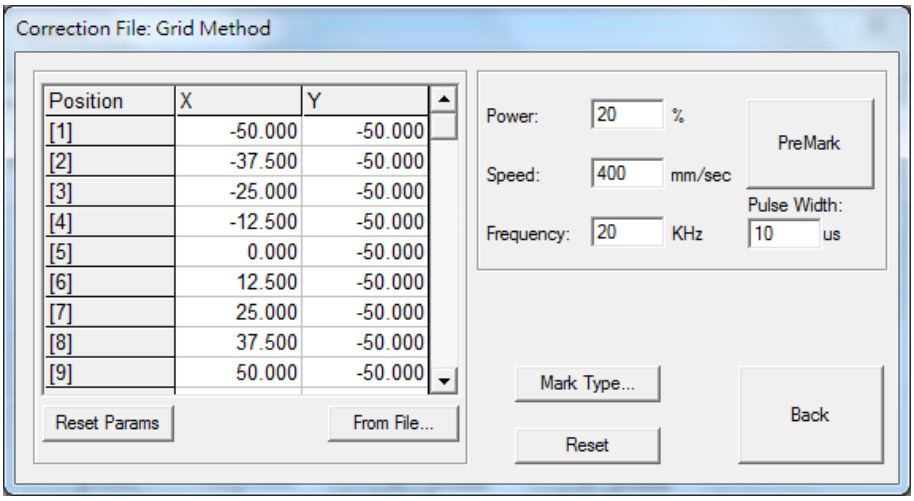


Fig. 4.3.09

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.4.3.10.

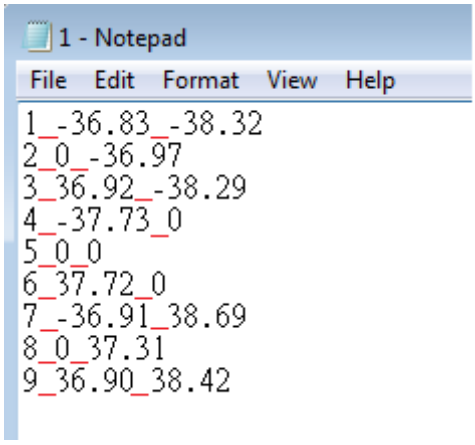


Fig. 4.3.10

4.4 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.4.4.01.

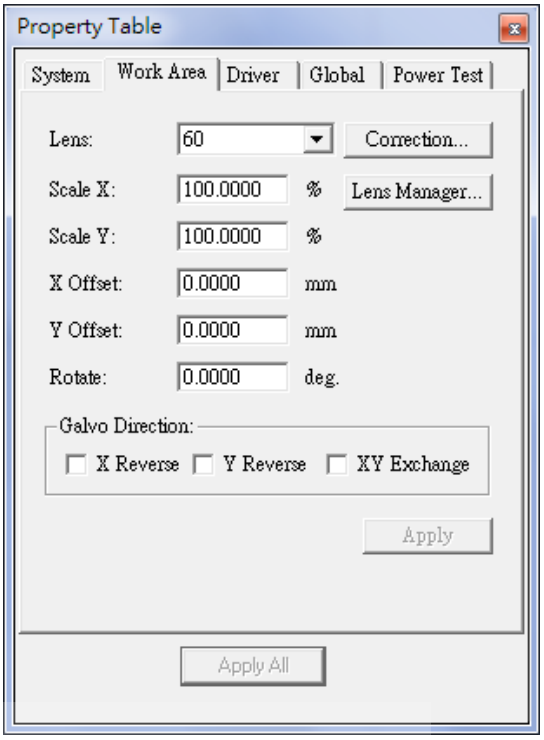


Fig. 4.4.01

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.

5.Alignment

5.1 Mark Preview

This function is used to position the marking object. The interface shows as Fig.5.1.01. It uses align light instead of laser to display marking route on work piece. Users can adjust the position of work piece to fit the marking area through this function.

To exit preview, click  on the upper right of the interface.

Speed: Movingspeed of align light.

Position: Click the four arrows around the control lever in Fig.5.1.01 to move the align light, and the moving distance depends on X or Y value which is set at "**Unit**."

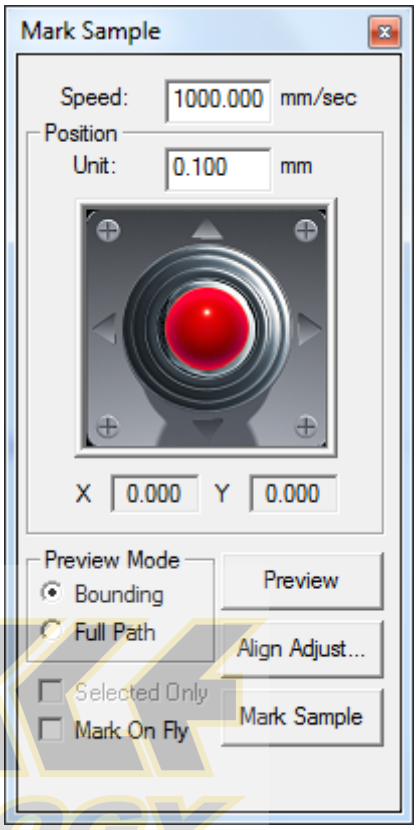


Fig. 5.1.01

Preview Mode

Bounding: The preview only shows the marking frame.

Full Path: The preview shows the whole marking path.

Selected Only: Preview the selected object only.

Mark On Fly: Preview the marking position under "**Mark On Fly**" mode.

Preview: Start preview.

Align Adjust

If the position of laser does not match with align light, users can use this function to adjust the offset, scale, and rotate angle of the align light, see Fig.5.1.02.

Offset: Adjust the align light's offset of X or Y direction.

Scale: Adjust the align light's scale of X or Y.

Rotate: Adjust the angle of align light.

Mark Sample: Execute marking directly.

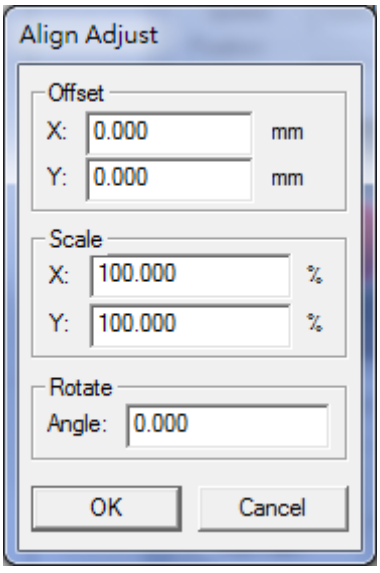


Fig. 5.1.02

5.2 Align Light Test

Set the parameters for align light, see Fig.5.2.01.

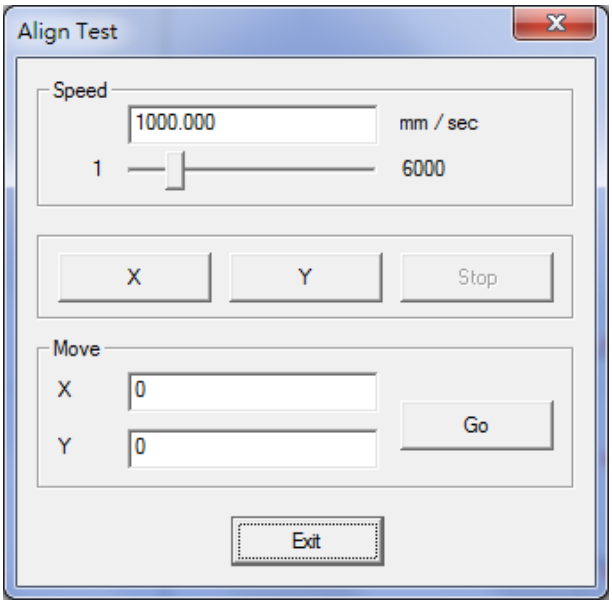


Fig. 5.2.01

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.

5.3 How to Control Align Light with MC-1 and MC-3

The default settings of align light of MC-1 and MC-3 Controller is disabled. If users want to enable this function, please follow the steps listed below:

Step 1

To enable the align light control, users need to use "**Notepad**" to open the driver's *.cfg file they use (for example, standard_co2.cfg)which is under the path of "**MarkingMate Insatllation Folder (for example: C:\Program Files\MarkingMate)\Drivers\MCx\cfg**", see Fig.5.3.01. Modifies one of the line "Align_Out=0" to become "Align_Out=3". (0 means function disabled, 3 means the third output will be defined as align control.) There are total 16 outputs can be defined, please refer to the description of MC-1 or MC-3 controller user manual. And then save the file.

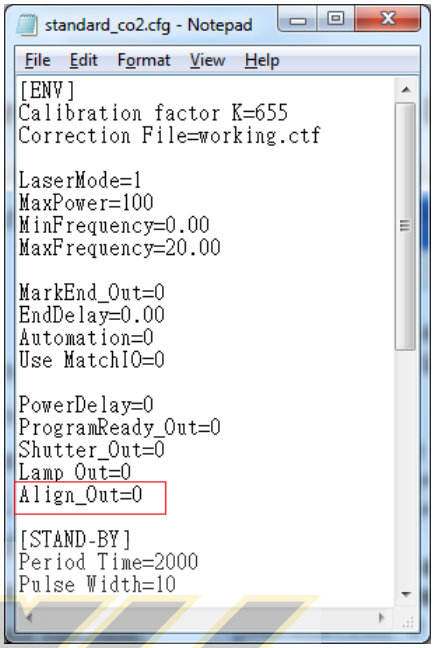


Fig. 5.3.01

Step 2

Restart the MarkingMate software. Go to the "Property Table – Driver" page, and click "I/O Test" button, then will see a dialog box like Fig.5.3.02 that the third output is lighted. If users have connected the third output point of MC-1 or MC-3 controller to the right position of the laser machine, then they can use the  button to control the align light in the software already.

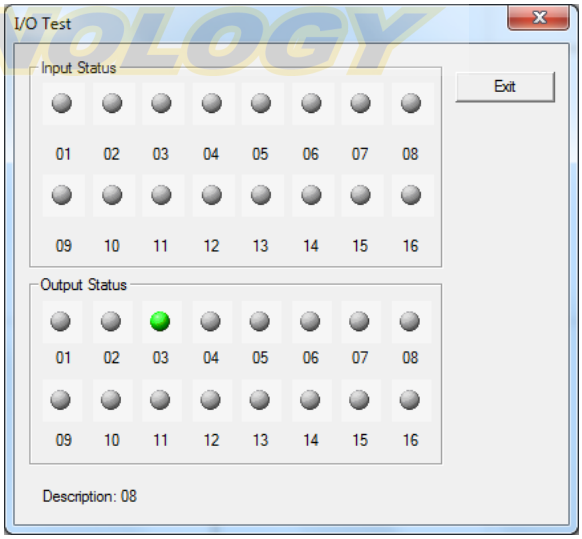


Fig. 5.3.02

6.Rotary Marking

6.1 Enable Rotary Marking

To control the **Rotary Axis**, users need 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. Or users can decide to enable rotary marking for each object or not under「**Mark-Related Property Table**」→「**Rotary**」. Layer rotary marking and object rotary marking are mutually exclusive.

Layer-Related Rotary

There are two methods of rotary: Cylinder Mode (see Fig.6.1.01) and Disc Mode (see Fig.6.1.02). The difference between cylinder and disc is the figure of the rotary axis.

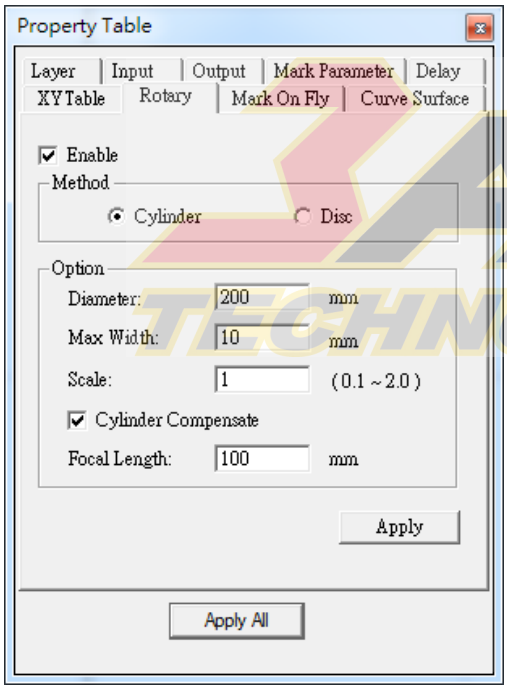


Fig. 6.1.01

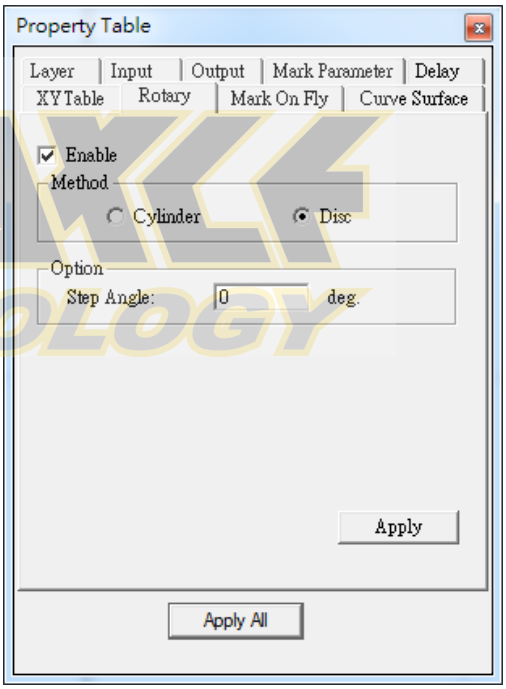


Fig. 6.1.02

Cylinder Mode

Diameter: The diameter of the object.

Max Width: The ideal section width when marking. This value is based on the radius of axle.

Scale: Adjust the ratio of radius to reach the optimum marking effect. The default value is 1. Please refer to the following example and figures.

Example: Suppose that users set the value of rotate rate as 1.5, and the marking result

is shown as Fig.6.1.03, all sections are overlapped. In this case, users should lower that value, such as 1.0, to make the marking effect optimum, see Fig.6.1.04. On the contrary, if the value of rotate rate is 0.5, and the marking result displays like Fig.6.1.05, there are intervals between each section. As a result, users should increase this value to make the marking effect become ideal, like Figure 6.1.04.

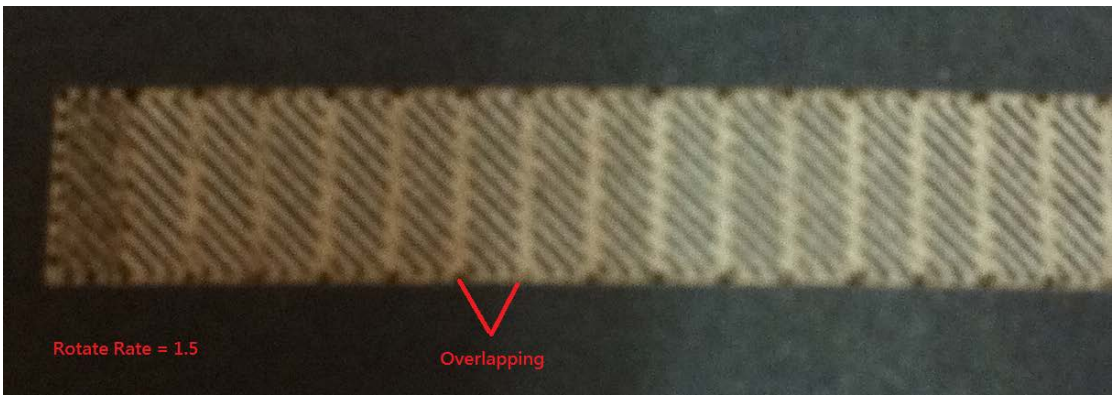


Fig. 6.1.03

Fig. 6.1.04

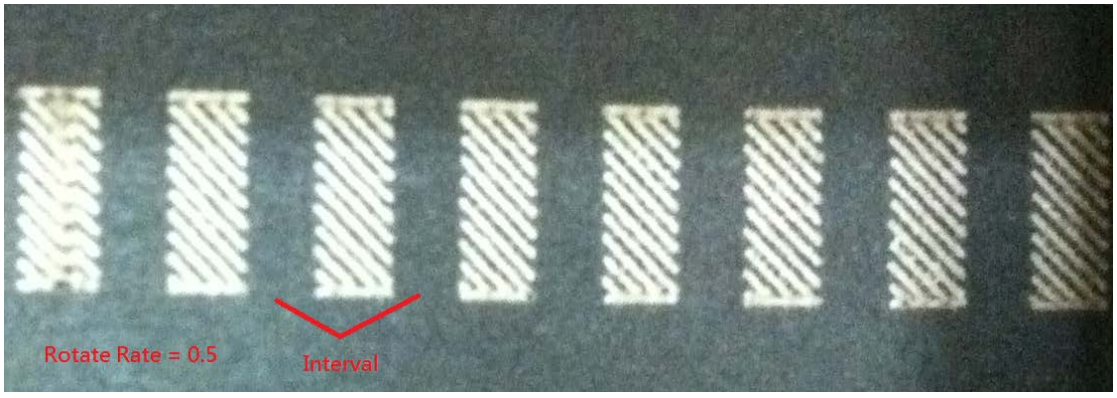


Fig. 6.1.05

Cylinder Compensate: The default value of this function is disable. Enable the function, **MarkingMate** system will fix the overlapping of marking result according

to the object's radius and the Focal Length.

Focal Length: Input the focal length of the lens.

Disc Mode

Step Angle: Set the rotary angle for each step of marking.

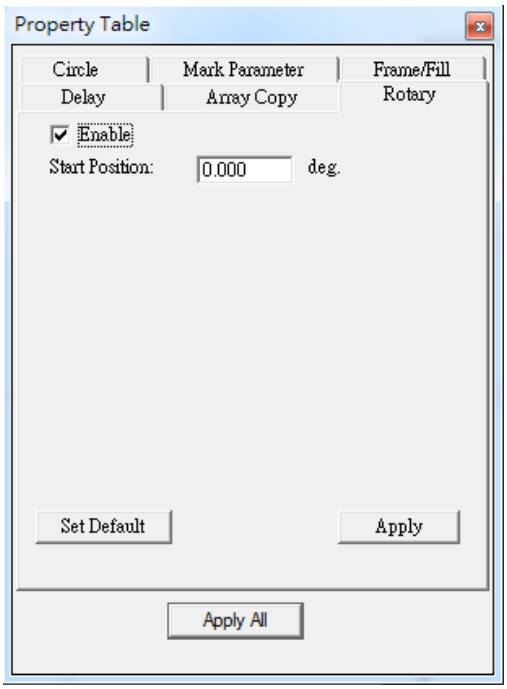


Fig. 6.1.06

Mark-Related Rotary

This page allows users to enable rotary marking for individual object. Fig.6.1.06 is the property page when selecting a general object.

General Object

Enable

Allow users to enable or disable the rotary axis function.

Start Position

The start angle of the rotary axis.

Text Object

When a general text object has being selected, the Rotary Page has some particular options, like Fig.6.1.07.

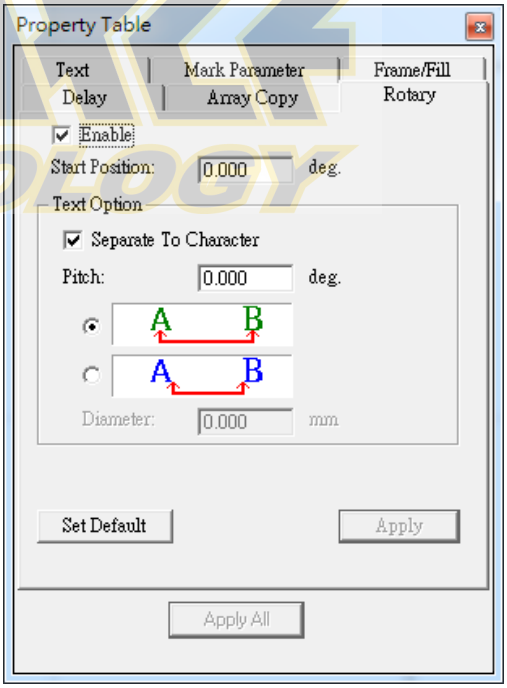


Fig. 6.1.07

Text option

Separate To Character

Separate the selected text into individual characters.

Pitch

The distance between each character.

Center: Calculate the pitch based on the center of the character, see Fig.6.1.08.

Edge: Calculate the pitch based on the edge of the character, see Fig.6.1.09.

Diameter: The software needs the diameter of the workpiece to calculate the pitch when select Edge mode.

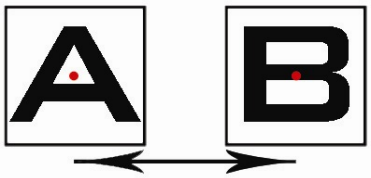


Fig. 6.1.08

Fig. 6.1.09

6.2Rotary Control Panel

After enableing rotary, click  button and do the further setting, see Fig.6.2.01.

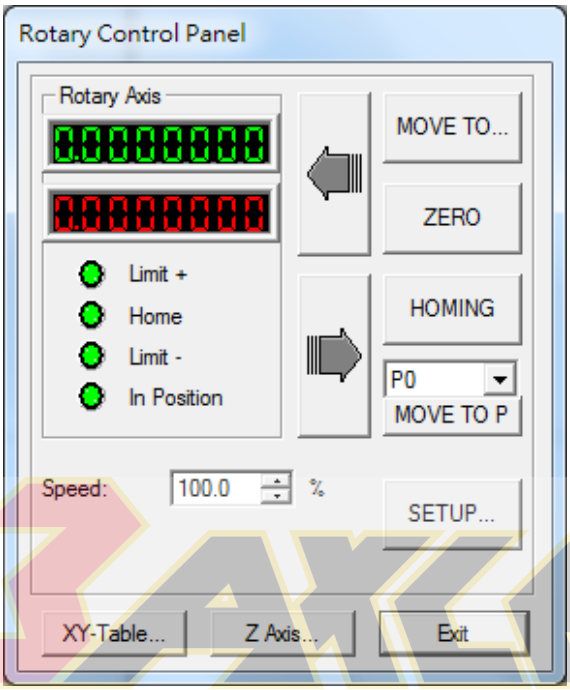


Fig. 6.2.01

1. Click “MOVE TO…” button and input the degree value in the dialog box like Fig.6.2.02 and click “GO,” the rotary axis will rotate to that specific angle. The rotating speed can be adjusted from “Speed” parameter.

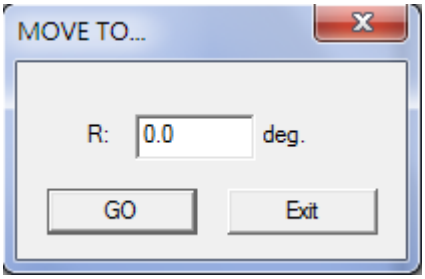


Fig. 6.2.02

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.6.2.03.
7. Click “XY-Table…” button can do X/Y Table control setting.
8. Click “Z-Axis…” button can do Z-Axis control setting.

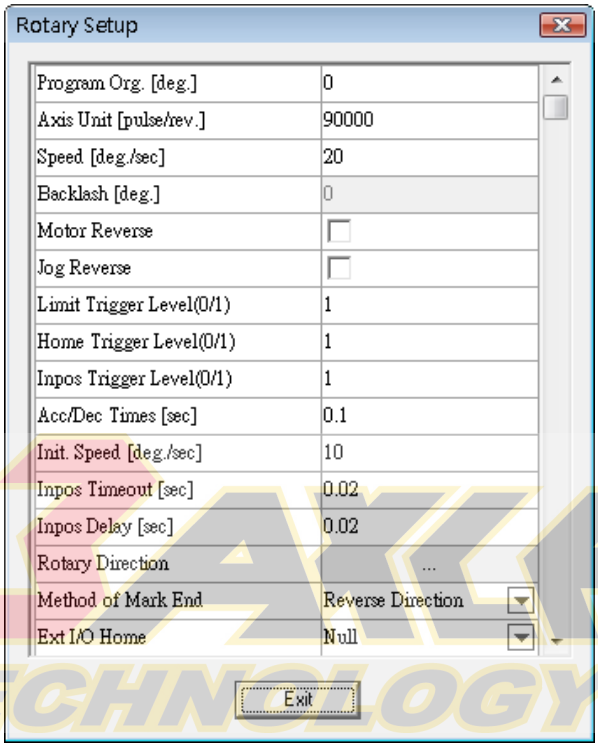


Fig. 6.2.03

Program Org. [deg]	The program will consider this point as the program origin.
Axis Unit [Pulse/rev]	The pulse needed for rotary to move 1 round (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.6.2.04.

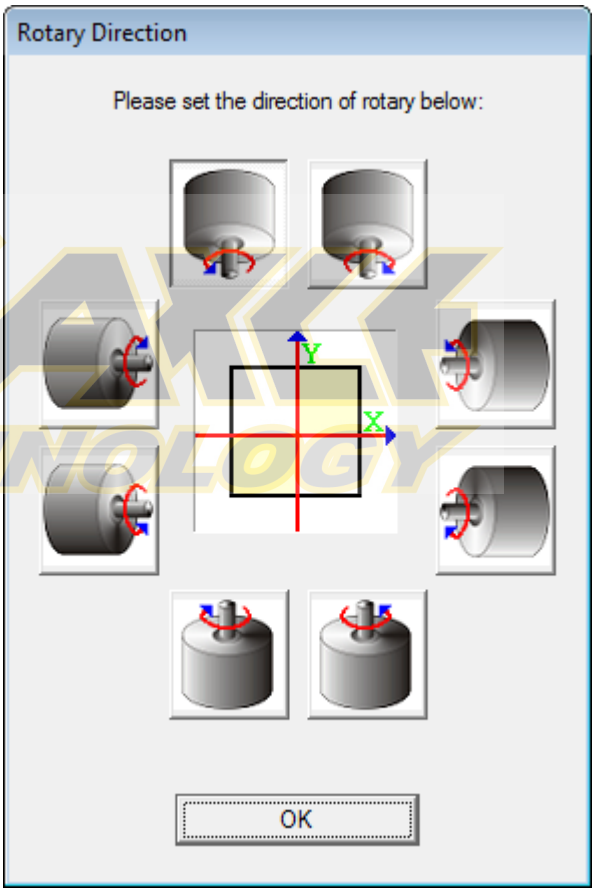


Fig. 6.2.04

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.

6.3Rotary Setup Wizard

The system provides three common used rotary marking functions for users to select, see Fig.6.3.01. Moreover, it also allows users to set the motor. If users click “Setting››,” then the “Rotary Control Panel” will display as Fig.6.3.02.

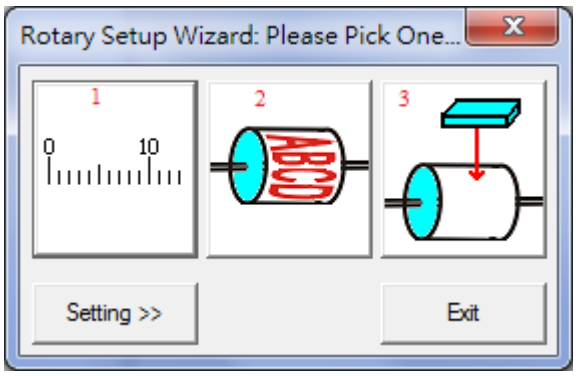


Fig. 6.3.01

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

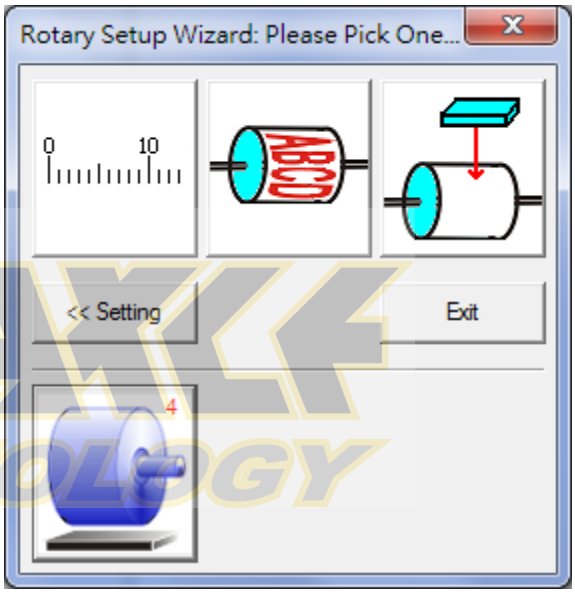


Fig. 6.3.02

6.3.1 Calibration Marking

Press  to display the "**Calibration Marking**" dialogue box, see Fig.6.3.03.

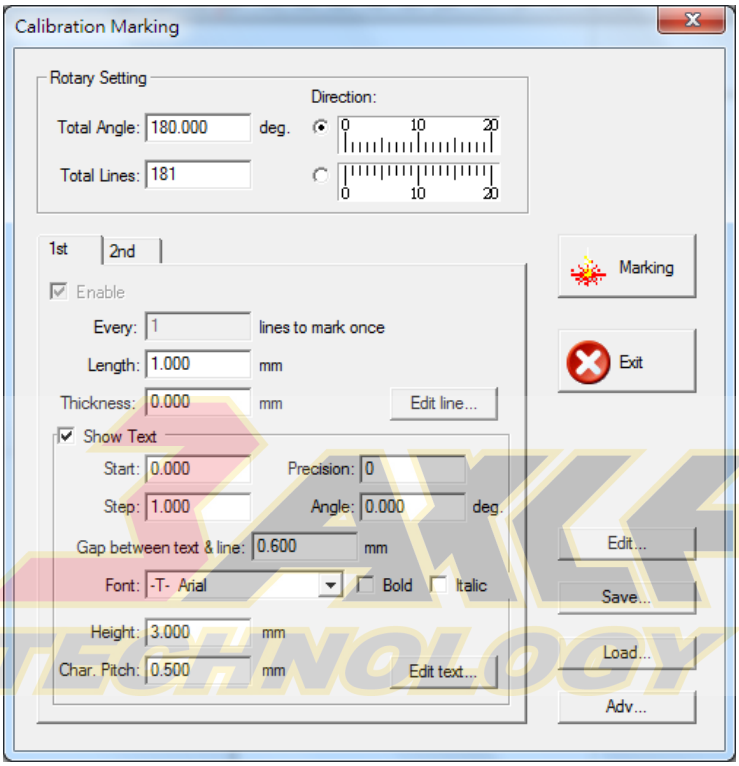


Fig. 6.3.03

Rotary Setting

Total Angle	Set the total mark angle.
TotalLines	The amount of lines users want to mark in the range of total angle.
Direction	Select the corresponding position of scale lines as well and text.

1st / 2ndScale Line

Every xxx lines to mark once

The system will mark the selected scale line in every setting amount of lines. For example, if the value of 2nd scale line is 10, then the system will mark the seconf scale line every 10 lines.

Please note that 1st scale line is a default value and cannot be changed.

Length	Length of scale line (unit: mm)
Thickness	Width of scale line (unit: mm)
Show Text	Check this option to show text when marking and set the text parameters.
Start	Initial value of text(can be reversed calculation).
Step	The increasing value of text.
Precision	Set the decimal digits (from 0 to 3), and 0 means the integer mode.
Angle	The rotary angle for the text.
Text-Line Gap	Set the distance of text and scale lines.
Font	Set the text font (TrueType, SHX, FON, FNT, etc.)
Bold	This option can be checked if the select font supports Bold type.
Italic	This option can be checked if the select font supports Italic type.
Height	Set the height of text.
Char Pitch	Set the spacing of each character.

Edit Line / Edit Text

Click the button to edit the mark parameters of the line or text, see Fig.6.3.04.

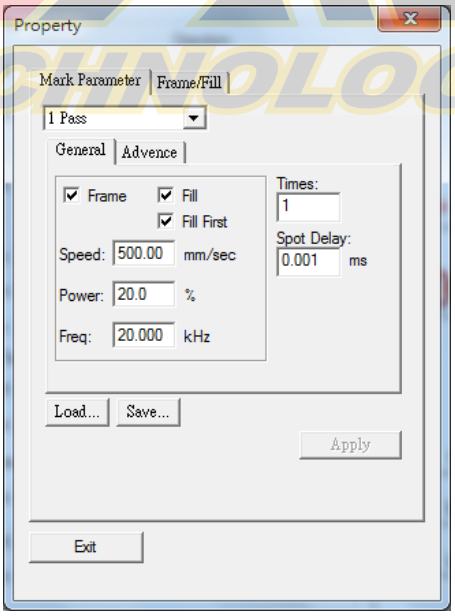


Fig. 6.3.04

Advanced

Click the button to do the further setting, see Fig.6.3.05.

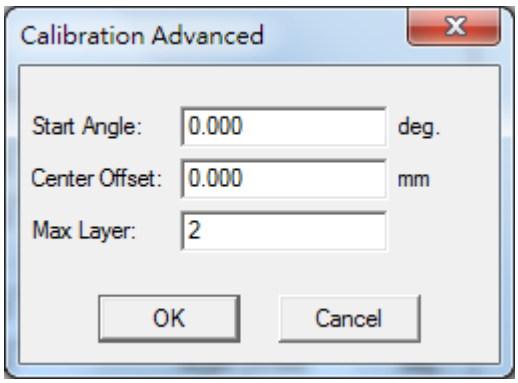


Fig. 6.3.05

Start Angle	Set the start marking angle of the scale line.
Center Offset	The offset on center. The default value is 0.
Line's Layer	Set theamount of scale line layer. The default layer is 2 which means there will be two kinds of scale lines. If users want to have 3 scale lines, please input 3 here.

Edit

Allow the users to edit the scale line.

Save

Export the setting values to assigned folder as a configuration file.

Load

Import the assigned configuration file.

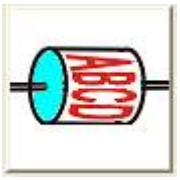
Marking

Click this buttonand the Marking dialog will pop up. Users can click "Exec" button to execute marking or click "Exit" button to return to the setting dialog box.

Exit

Click this button to exit the dialogue box.

6.3.2 Ring Text Marking



Press to display the "**Ring Text Marking**"dialogue box, see Fig.6.3.06.

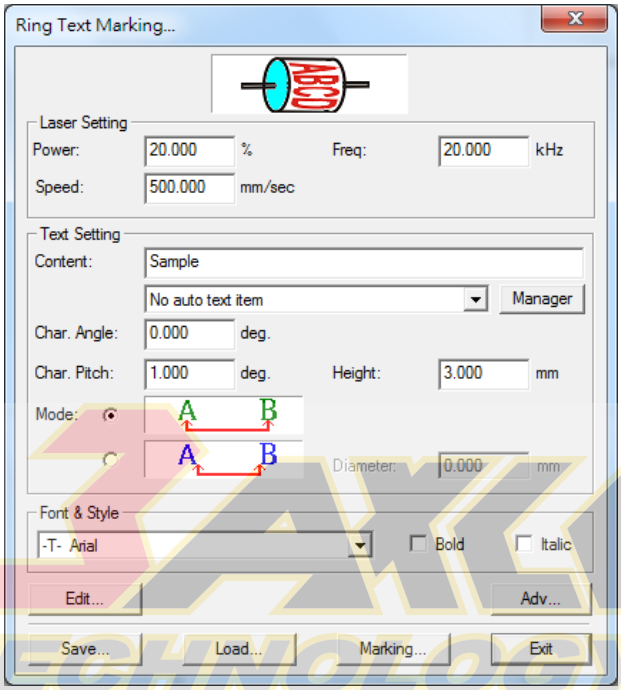


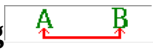
Fig. 6.3.06

Laser Setting

Speed	Set the marking speed.
Power	Set the marking power percentage.
Freq	Set the laser frequency when marking.

Text Setting

Content	Input the text content here or click "Manager"button to insert an auto text item.
Height	Set theheight of text.
Char Angle	The rotary angle for the text.
Char Pitch	Set the spacing of each character.There are two spacing modes for users to select:

(1) Center to center spacing 

A. Check the first option of"Char Pitch."

B. The system will calculate the rotary position for each character according to the "Char Pitch"which is based on the center distance of

the characters.

C. For instance, the text content is "Text", the character pitch is 5 degrees in the center mode, the Start Angle is 90 degrees, then the marking flow is as follows:

I. The rotary axis will first turnto 90 degrees
II. Mark “T” (T in the center of the lens)
III. Turn the rotary axis forward by 5 degrees
IV. Mark “e” (e in the center of the lens)
V. Turn the rotary axis forward by 5 degrees
VI. Mark “x” (x in the center of the lens)
VII. Turn the rotary axis forward by 5 degrees
VIII. Mark “t” (t in the center of the lens)
IX. Turn the rotary axis to 0 degree

(2) Margin spacing mode 

A. Check the first option of“Char Pitch.”

B. The system will calculate the rotary position for each character according to the “Char Pitch” which is based on the margin distance of the characters.

C. For instance, the text content is "Ring", the font size is 2mm, the character pitch is 5 degrees in the margin mode, the Start Angle is 90 degrees, the diameter of work is 50mm, then the marking flow is as follows:

I. The rotary axis will first turnto 90 degrees
II. Mark “R” (R in the center of lens)
III. Turn the rotary axis forward by (2/50 * 360+5 = 19.4) degrees
IV. Mark “I” (i in the center of lens)
V. Turn the rotary axis forward by (2/50 * 360+5 = 19.4) degrees
VI. Mark “n” (n in the center of lens)
VII. Turn the rotary axis forward by (2/50 * 360+5 = 19.4) degrees
VIII. Mark “g” (g in the center of lens)
IX. Turn the rotary axis to the 0 degree position

Font & Style

Font Set the font of text(TrueType, SHX, FON, FNT, etc.)

Bold This option can be checked if the select font supports Bold

type.

Italic This option can be checked if the select font supports Italic type.

Advanced

Click this button to do the futher setting, see Fig.6.3.07.

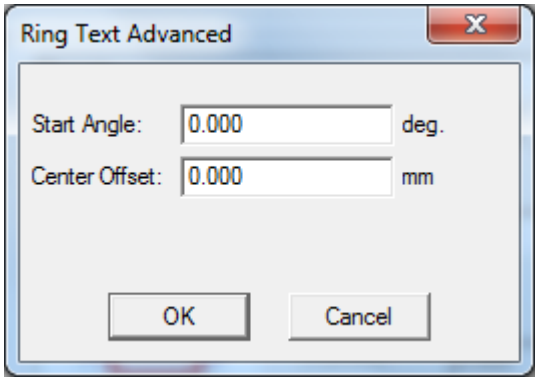


Fig. 6.3.07

Start Angle Set the start marking angle of the scale line.

Center Offset The offset on center. The default value is 0.

Edit

Allow the users to edit the text.

Save

Export the setting values to assigned folder as a configuration file.

Load

Import the assigned configuration file.

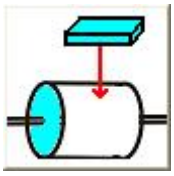
Marking

Click this buttonand the Marking dialog will pop up. Users can click "Exec" button to execute marking or click "Exit" button to return to the setting dialog box.

Exit

Click this button to exit the dialogue box.

6.3.3 Cylinder Marking



Press button to display the "**Cylinder Marking**"dialogue box, see Fig.6.3.08. Users can import image to mark through this function.

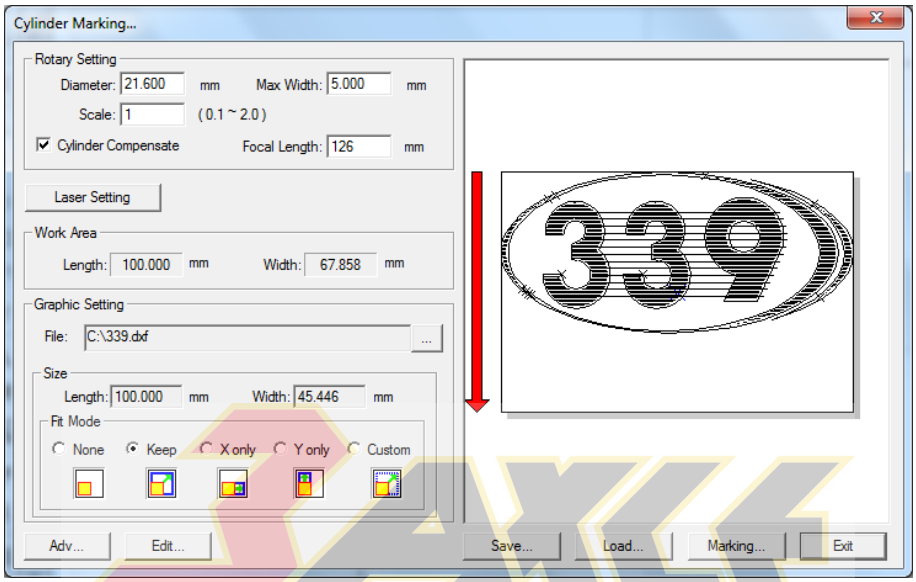


Fig. 6.3.08

Rotary Setting

About rotary setting, please refer to p.28 "Cylinder Mode."

Laser Setting

Click this button and enter the "Mark Parameter Page" to set the mark parameters.

Work Area Info.

The length and width are based on the lens mark area and the diameter of rotary users set.

Graphic Setting

File	Display the image file users import.
Size	The image size will be displayed here according to the "Fit Mode" users selected.
Fit Mode	
None	Keep the original size.
Keep	Enlarge the imageisometrically to fit the work area.
X only	Enlarg the image in X direction.

Y only	Enlarg the image inYdirection.
Custom	Users can assign the size of image themselves.

Preview Window:

The image file usersimport will be displayed in this Preview Window. Any changes usersmake will be shown in the Preview Window synchronously.

Edit

Allow the users to edit the image.

Save

Export the setting values to assigned folder as a configuration file.

Load

Import the assigned configuration file.

Marking

Click this buttonand the Marking dialog will pop up. Users can click "Exec" button to execute marking or click "Exit" button to return to the setting dialog box.

Exit

Click this button to exit the dialogue box.

6.3.4 Motor Setting

Press button and“Rotary Control Panel”dialog box will pop up for users to dofurther setting of rotary axis. More details please refer to the section **6.2 Rotary Control Panel**.

7.X/Y(/Z) Table Control

7.1 Enable X/Y(/Z)Table Control

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.7.1.01.

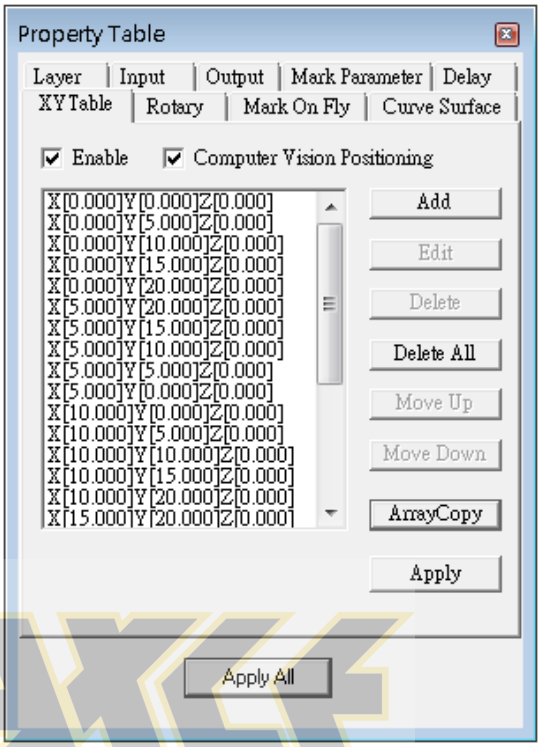


Fig. 7.1.01

Enable

Enable XY table motion.

Computer Vision Positioning

Enable CVP marking at each XY position.

Add/Edit

Add or edit the XY(/Z) position, see Fig.7.1.02.

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.7.1.03.

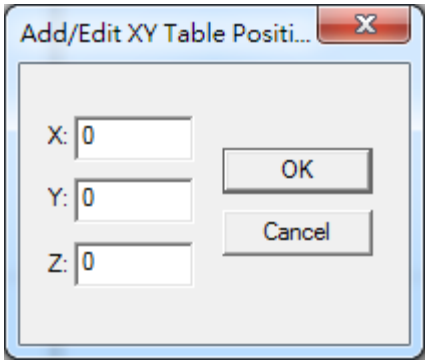


Fig. 7.1.02

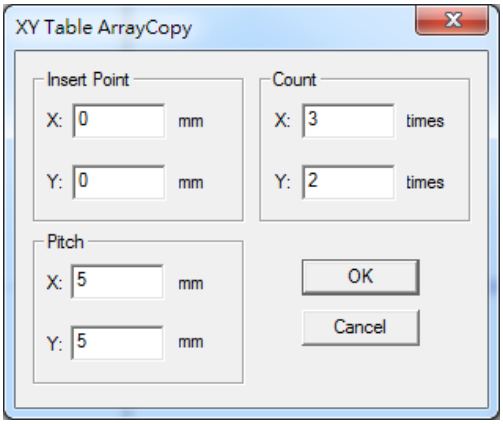


Fig. 7.1.03

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

7.2 X/Y Table ControlPanel

After enableing X/Y Table, click  button and do the further setting, see Fig.7.2.01.

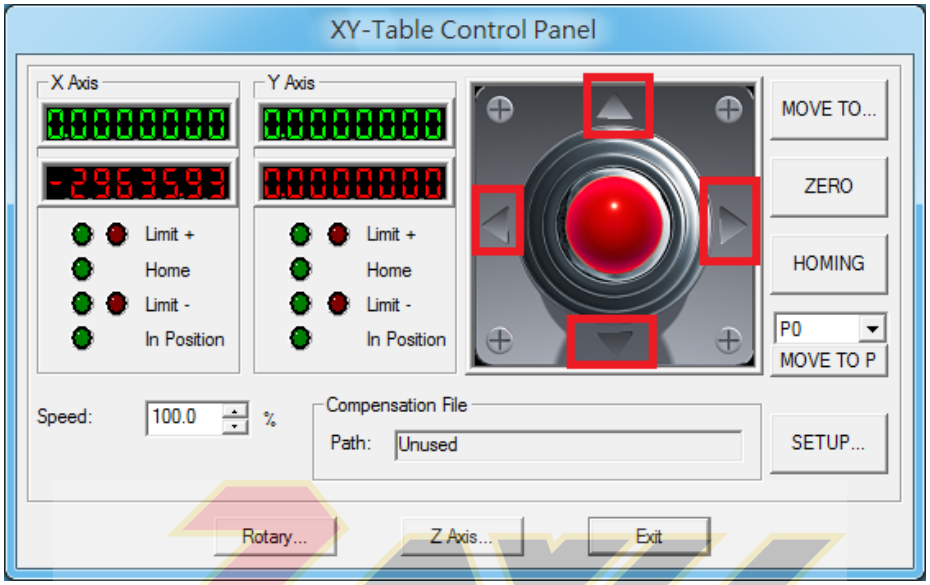


Fig. 7.2.01

1. Click “MOVE TO…” button and then input the X and Y values in the dialog box like Fig.7.2.02 and click “GO,” the XY Table will move to that specific position. The moving speed can be adjusted from “Speed” parameter.

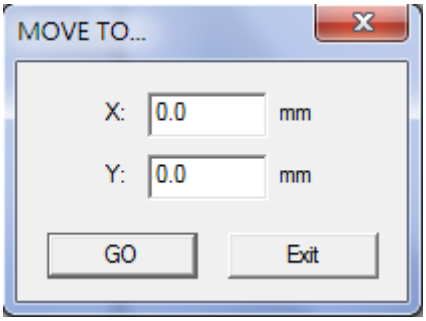


Fig. 7.2.02

2. Click the four direction buttons (the red part of Fig.7.2.01) 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.7.2.03.
7. Click “Rotary…” button can do Rotary control setting.
8. Click “Z-Axis…” button can do Z-Axis control setting.
9. “Load Compensation File” shows the compensation file users loaded.

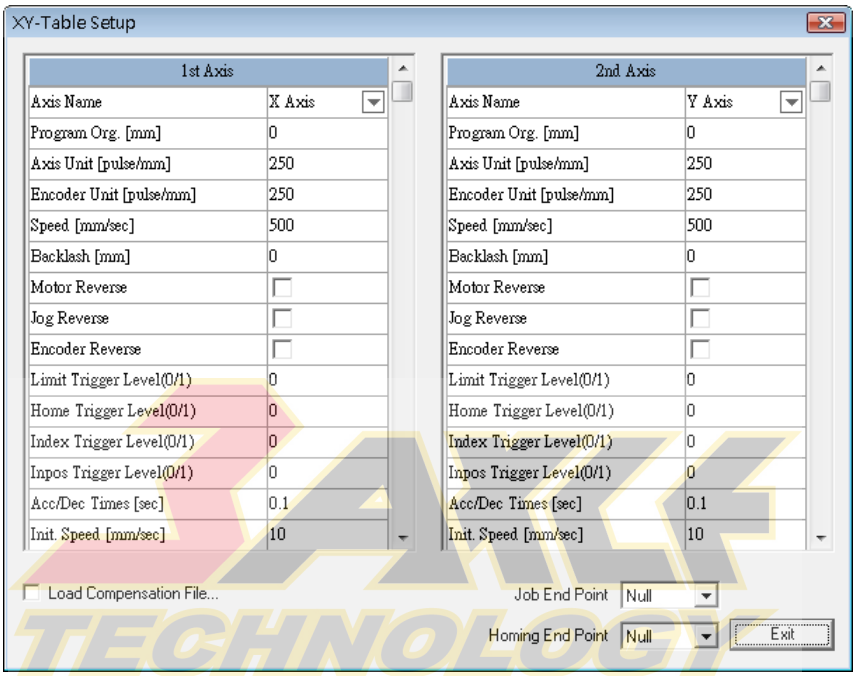


Fig. 7.2.03

Axis Name	Users can set the 1st Axis as X or Y, and the 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
Index Trigger Level (0/1)	0: active low; 1: active high(Need motor Z-phase support)
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 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.
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.
Index Direction	Choose Index direction.(Need motor Z-phase support)
Limit Stop Mode(0/1)	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.7.2.04 is an example of the compensation file.

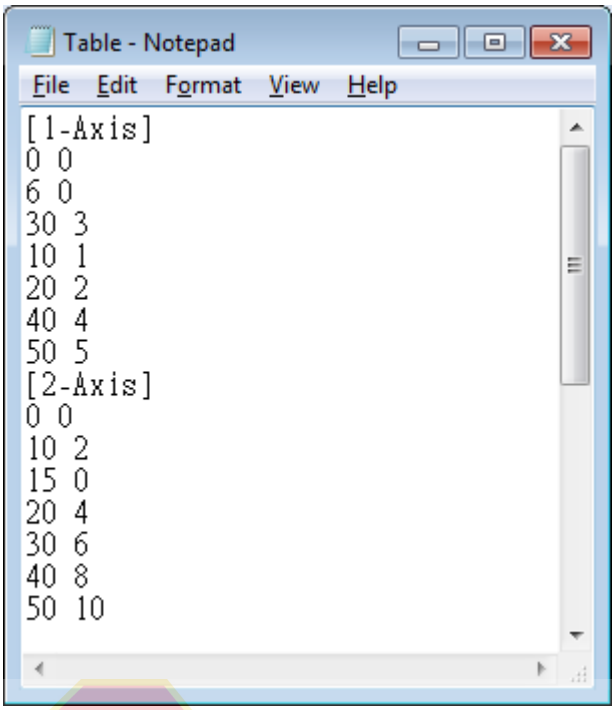


Fig. 7.2.04

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 will change 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 maximum compensation 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.

7.3 Z AxisControlPanel

After enableing Z Axis,click  button and do the further setting, see Fig.7.3.01.

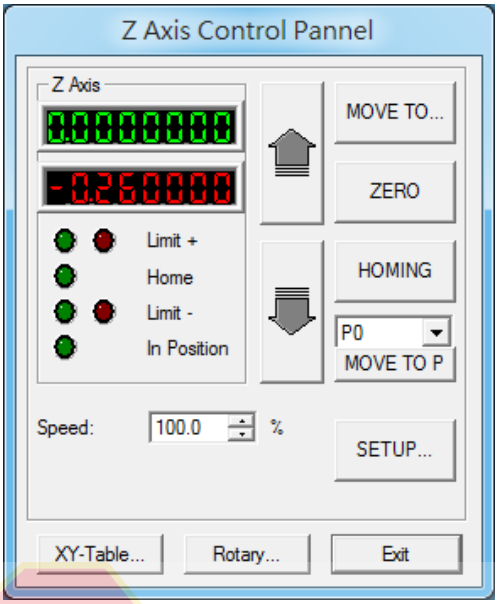


Fig. 7.3.01

1. Click “MOVE TO…” button and input the value in the dialog box like Fig.7.3.02 and click “GO,” the Z Axis will move to that specific position. The moving speed can be adjusted from “Speed” parameter.

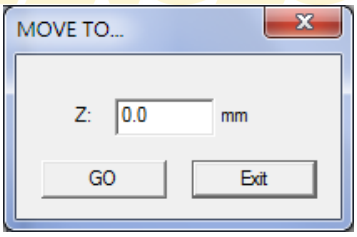


Fig. 7.3.02

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.7.3.03.
7. Click “XY-Table…” button can do X/Y Table control setting.
8. Click “Rotary…” button can do Rotary control setting.

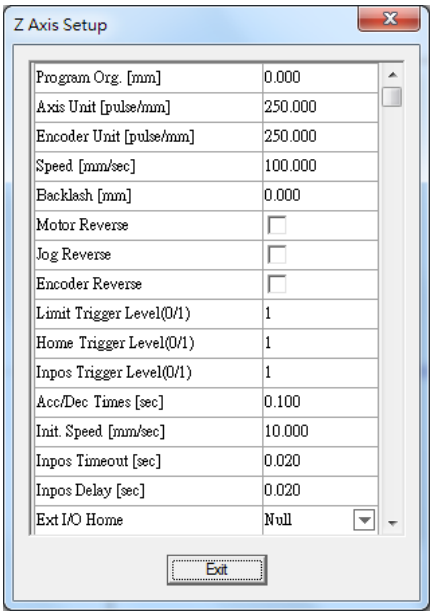


Fig. 7.3.03

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.

8.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

8.1 Enable Mark on Fly

Users can enable “**Mark on Fly**” function from「 **File Menu** 」→「 **Option** 」→「 **System** 」→「 **Mark on Fly** 」, see Fig.8.1.01. After the parameters setting of X/Y Axis (depends on the users’ demand) were finished, users can start using this function.

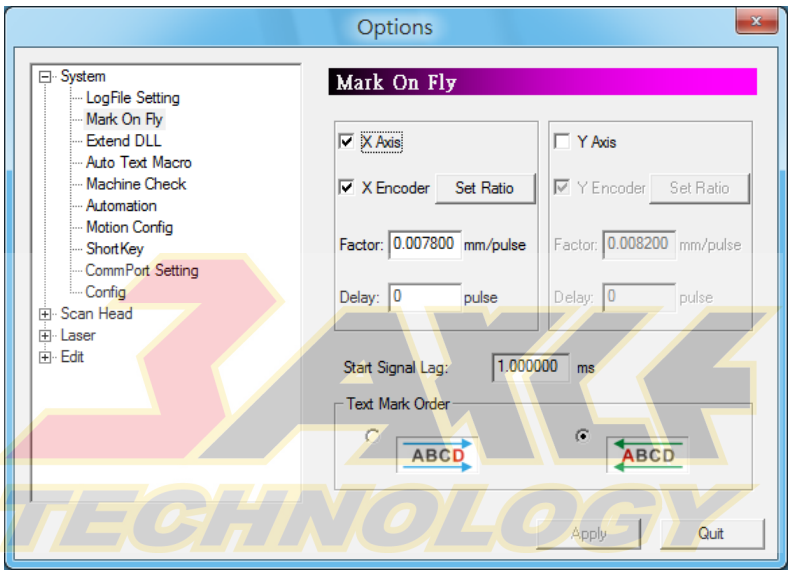
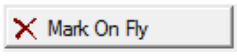
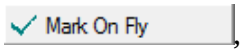


Fig. 8.1.01

Additionally, users can also enable this function from「 **Property Table** 」→「 **Global** 」, see Fig.8.1.02.

When the button is like 

, that means this function is disable.If the button shows like 

, that means this function is enable.

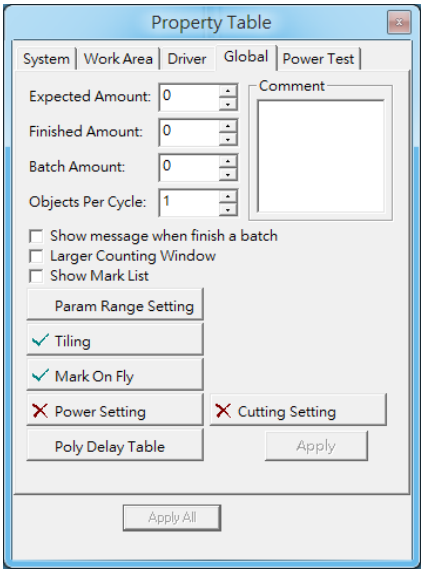


Fig. 8.1.02

8.2 Mark On Fly Setting

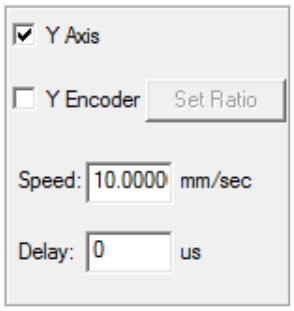


Fig. 8.2.01

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.8.2.01.

Speed

Theoretical speed of conveyer.

Delay

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

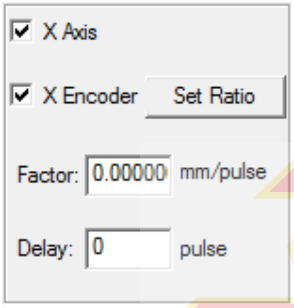


Fig. 8.2.02

X/Y Encoder (checked)

The parameter will change from “Speed” and “Delay” to “Factor” and “Delay”, see Fig.8.2.02. 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.8.2.03.

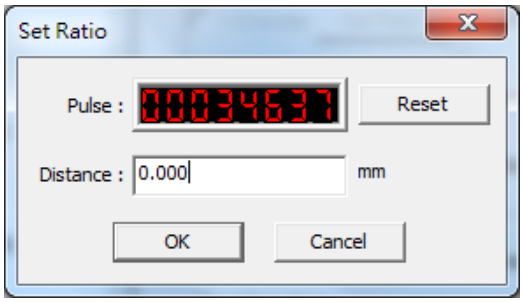


Fig. 8.2.03

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.8.2.04. 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.8.2.05.

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, workpiece and sensor must be placed such as Fig.8.2.04.

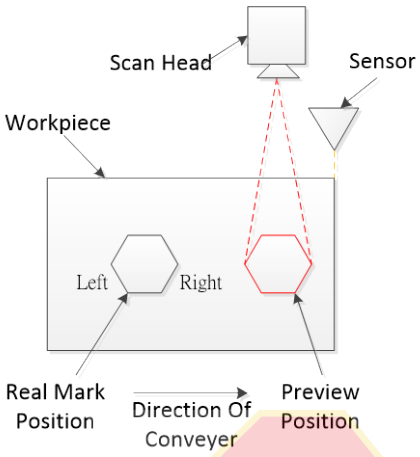


Fig. 8.2.04 Different Position

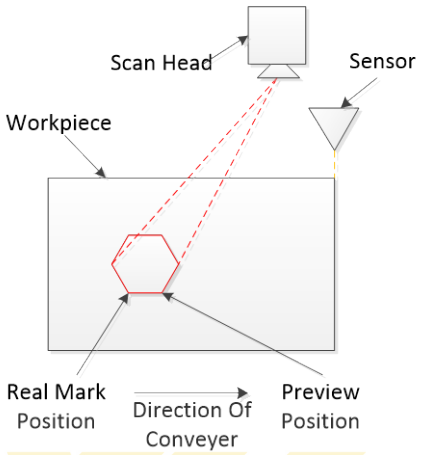


Fig. 8.2.05 Same Position

Adjustment Description

Take Fig.8.2.05 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.

8.3 Mark on Fly—Distance to Next Layer

This function is set up when using “Mark on Fly” function for marking, enable or disable the delay marking between layers, see Fig.8.3.01.

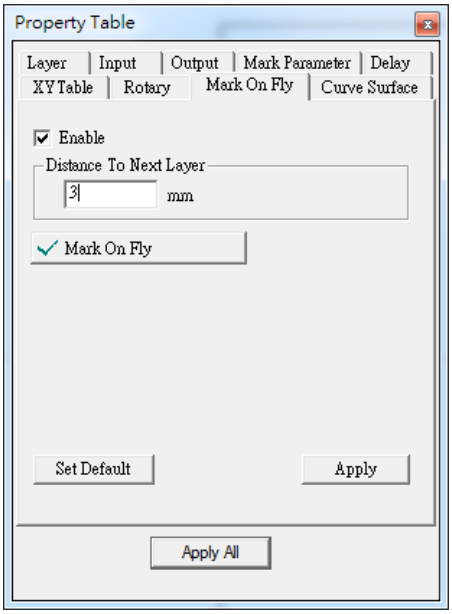


Fig. 8.3.01

Enable this function, the system will mark the first layer and then wait for conveyer moving this setting distance, and then continue the next layer’s marking. The distance between layers is the calculation of encoder factor multiplied by encoder feedback value.

The following lists are conditions for enable this function:

1. Driver need to support encoder function, and make sure encoder have connected to controller. About encoder connection method, please refer to encoder manual.

2. Need to enable the “Mark on Fly” function, and checked the “Encoder” options, in addition, input the rational value at “Factor” section. About the Mark on Fly Settings, please refer to section 1.1.6.6.

3. Input a rational value for “Distance to Next Layer” option. This value need larger than the distance which conveyer has moved while marking this layer. When system has finished marking this layer’s objects, will wait until conveyer has moved this distance, and then start marking next layer’s objects. If the setting value is less than the distance conveyer has moved when marking this layer, it will cause incorrect result.

For example:
Suppose the EZM file has a circle object and a text object like Fig.8.3.02, and the “Mark on Fly” function is enabled and the “Encoder” option is checked:

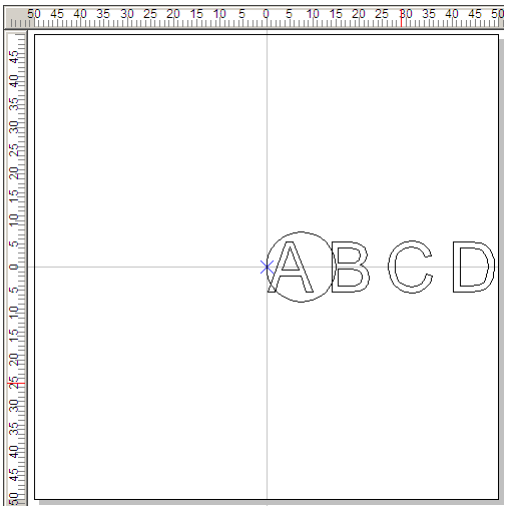


Fig. 8.3.02

1. If two objects are in the same layer, the result of marking will like Fig.8.3.03.

Fig. 8.3.03

2. If in different layer which the circle object is in layer 1, and the text object is in Layer 2, and the moving direction of objects is right-to-left, the system will reset encoder position, and consider the current position as the origin point while marking different layers.

(a) If Layer 1 (circle object) disable the encoder delay function, the marking result will like Fig.8.3.04.

Fig. 8.3.04

Distance between red arrows pointed means which conveyer has moved while executing Layer 1 marking process. Because of disable the layer encoder delay function, so the system will reset encoder position after finishing marking Layer 1, and then consider the current position as the origin point to mark Layer 2. This distance will be changed depends on the marking speed.

(b) If Layer 1 (circle object) enable the encoder delay function, the marking result will like Fig.8.3.05.

Fig. 8.3.05

Distance between red arrows pointed means the setting value of “Distance to Next Layer” at Encoder page. This value cannot be less than the distance which conveyer has moved when marking this layer. Otherwise, it will cause incorrect result.

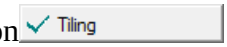
Suppose when finishing marking Layer 1, conveyer has moved 30 mm, just as triangle position as the figure. Because of enable the layer delay function, so after system finishing marking Layer 1, the system will wait until conveyer has moved 50 mm as settings. In this example, conveyer only moved 30 mm after finish marking Layer 1, so the system will wait for conveyer to continue moving 20 mm, such as distance between orange arrows pointed. After conveyer has moved 50 mm, the system will reset encoder position, and consider the current position as origin point to execute marking Layer 2.

9. Split

9.1 Tiling

Users can activate "**Split**" function from 「**Property Table**」→「**Golbal**」, see Fig.9.01. If the button is like 

, it means the function is disable. If the button is 

, then users can execute this function. "**Split**" is used when the size of object users want to mark is over the lens mark area or when users have any special demands. Click this button 

and the setting page will pop up, see Fig.9.02.

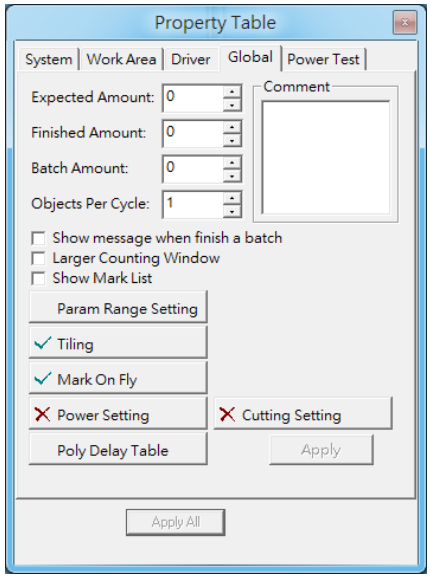


Fig. 9.01

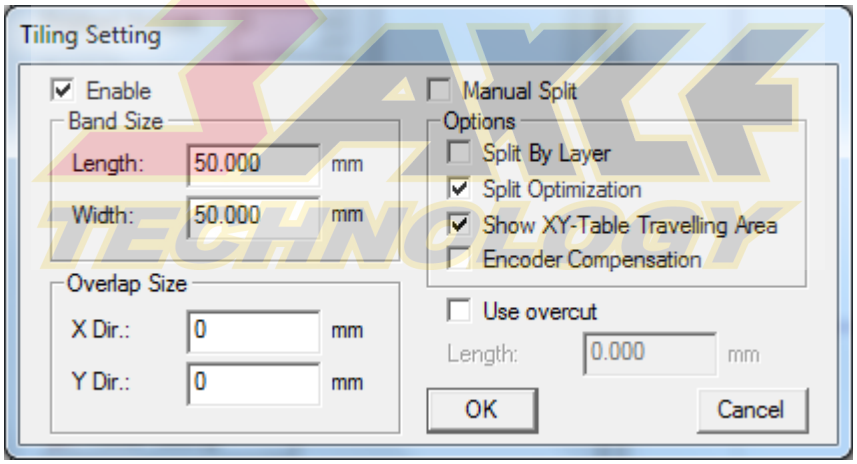


Fig. 9.02

Enable	Enable this function
Band Size	**Length:** Length of each divided part. **Width:** Width of each divided part.
Overlap Size	**X Dir.:** Length of the allowed overlap part. **Y Dir.:** Width of the allowed overlap part.
Manual Split	Enable manual split function, and the manual split bar will be activated.
Options	**Split By Layer:** Split graphic by layer. **Split Optimization:** Optimize the split path. If a graphic is smaller than the Band Size, this option will ensure it to be marked

at one time. Please note that this option will be disabled under manual split mode.

Show XY-Table Traveling Area: Decide to show the traveling area of XY-Table or not.

Encoder Compensation: Decide to use encoder to do compensation

Use Overcut

Set the overcut length. This value must follow the rule of lens area is equal to or greater than the sum of tiling size and twice overcut length, see Fig.9.03. The difference between overlap and overcut is that the overlapping area will be marked twice but overcut won't, see Fig.9.04 and Fig.9.05. Overlap and overcut cannot be used at the same time.

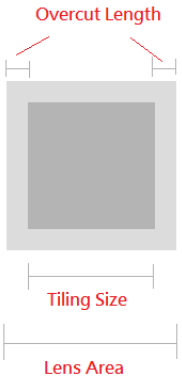


Fig. 9.03

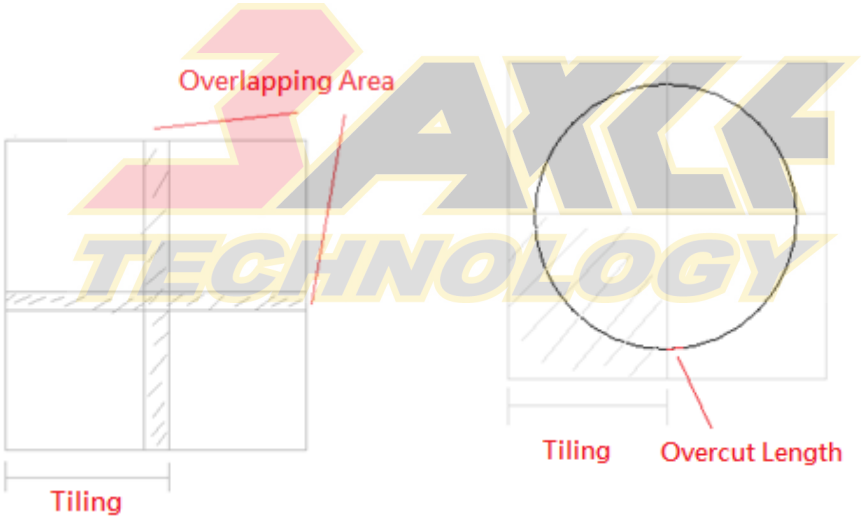


Fig. 9.04

Fig. 9.05

When graphic split function is activated, the working area will be changed according to the settings of XY Table area and lens area as Fig.9.06.

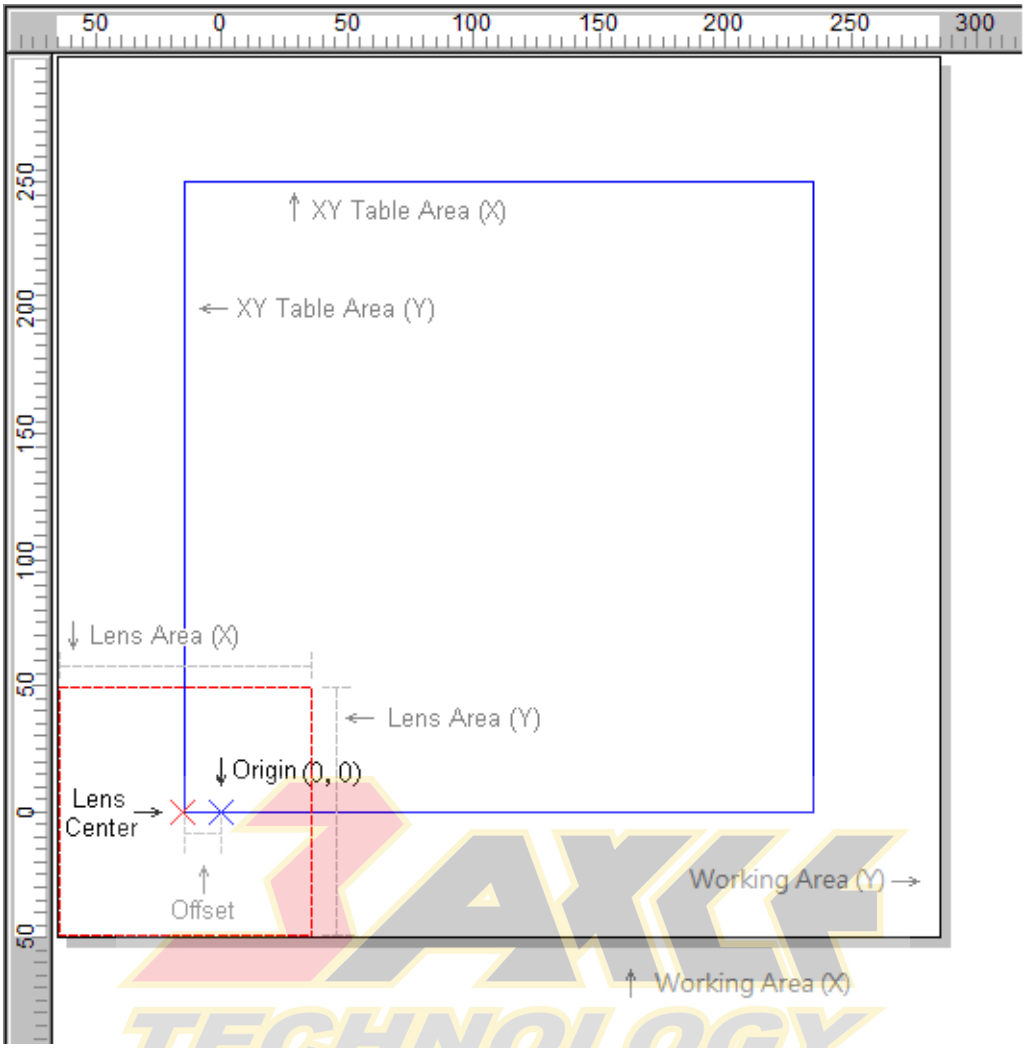


Fig. 9.06

Working Area	The Working Area for graphic split is the sum of XY Table Area and the half of Lens Area.
XY Table Area	When the lens center moves along with the edge of XY Table Area, the marking area will be the same as Working Area. The setting method please refer to XY Table Control Panel.
Lens Area	The setting method please refer to Lens Manager.
Offset	The distance between origin (0, 0) and the program origin. Origin setting method please refer to XY Table Control Panel.

9.2 Manual Split

Allowed users to arrange bands position and marking order, which "**Manual Split Bar**" allowed users to adjust the tiling settings under "**Manual Split**" mode, see Fig.9.07.

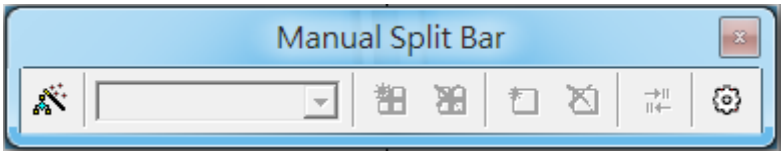


Fig. 9.07

Edit Split Bands		Enable or disable Manual Split Mode.
Select Current Layer	Layer-1	Select an editing layer.
Auto Create Bands		Build default bands at current layer.
Clear All Bands		Delete all bands at current layer.
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 Setting Dialog.

After build a new band by “Auto Create Bands” or “Create A New Band”, users could adjust band parameter from property page—band. See fig. 9.08

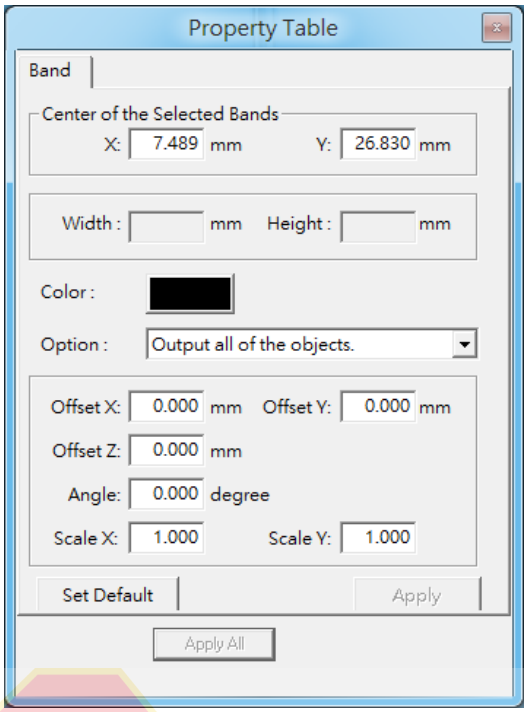


Fig. 9.08

Center of the selected band	The center of the selected band.
Width	Band width
Height	Band height.
Color	Band color.
Option	Output option.
Output complete objects only	Only output whole graphic located within this band.
Output all of the objects	Output all graphic located within this band.
Offset X	Band output offset at X-axis direction.
Offset Y	Band output offset at Y-axis direction.
Offset Z	Z-axis motion distance while band is outputting.
Angle	Band output rotate angle.
Scale X	Band output scale at X-axis direction.
Scale Y	Band output scale at Y-axis direction.

After complete bands arrangement, users may would like to use this one as template, which “**Split By Layer**” allowed you to do this. Refer to chapter 9.1 to enable this function.

Enter manual split mode during enable “Split By Layer” will allow you choose a template from property page—Template. See fig 9.09. To use a template:

1. Select a layer from manual split bar.
2. Pick up a template from Template property page.
3. Click “Apply”.

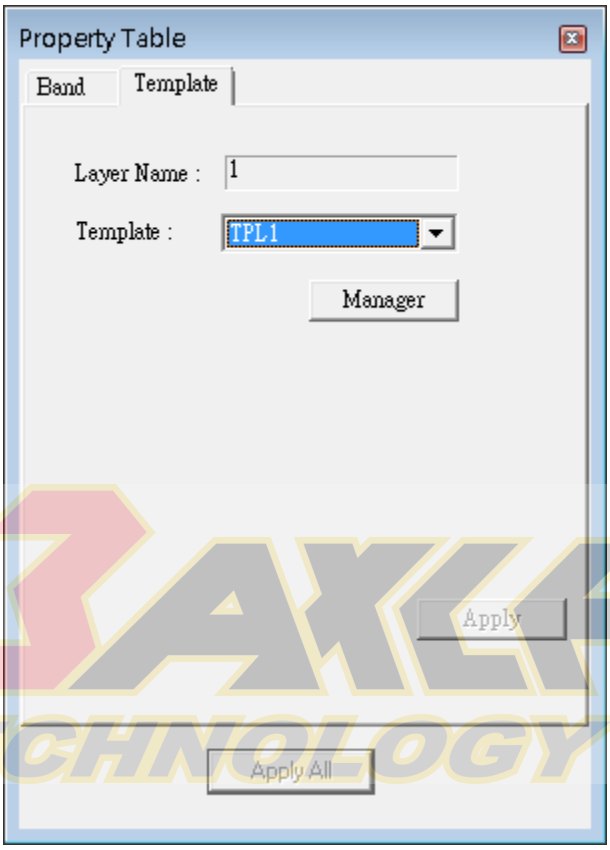


Fig. 9.09

Users could use template manager to manage templates. See fig 9.10.

New Create a new template.

Delete Delete a choosen template. A using template couldn`t be deleted.

Rename Rename a choosen template.

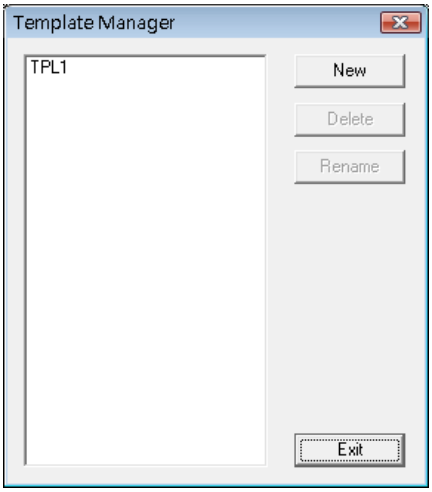


Fig. 9.10

10.Auto Text

To apply Auto Text, users first need to create a text object. After that, go to「**Property Table**」→「**Text**」and enable Auto Text, see Fig.10.01. Then a Auto Text setting page will pop up for users to select mode and do another setting, see Fig.10.02.

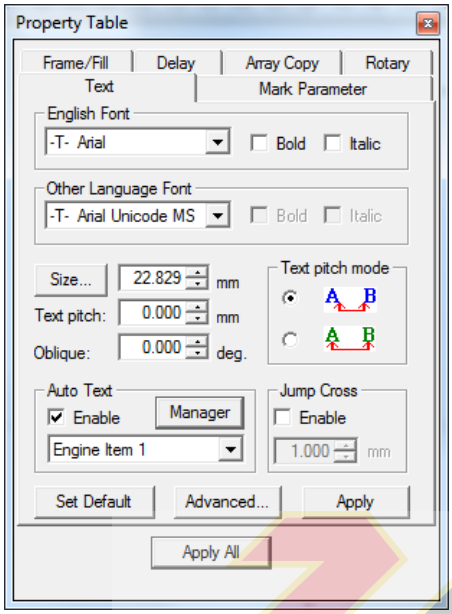


Fig. 10.01

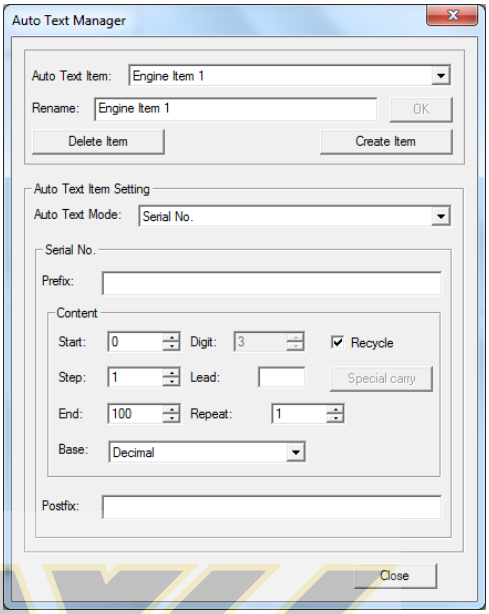


Fig. 10.02

Auto Text Item

The default Auto Text Item is named: “Engine Item 1”.Users can change the name in the field of “Rename” and click “OK” button. If click “Create Item” button, then the second Auto Text Itemwill be created. “Delete Item” button allows users to delete the selected item.

Auto Text Item Setting

The system provides several modes of Auto Text such as: “Serial No.”, “File”, “Keyboard”, “Date”, “Com Port”,“Serial No. Advance” and “Excel” for users to use.Please refer to the following descriptions for more details.

10.1 Auto Text — Serial No.

The text content will be an accumulation serial number which depends on the users' setting.Auto Text has three parts to set, which are "Prefix", "Content", and "Postfix", see Fig.10.02.

Prefix Set a specificconstant string at the beginning of the Auto Text. This can be blank.

Postfix Set a specificconstant string at the ending of the Auto Text.This can be blank.

Content

- **Start** The initialserial number. If "Auto-recycled" has been checked, the serial number will repeat from this number when reach the end number.
- **Step** The accumulation value.
- **End** The end number.
- **Digit** The total digit of serial number. 0 means no limitation.
- **Lead** Fill up characters. For example, if the digit value is 4andleadvalue is 0, then 1 would be displayedas 0001.
- **Repeat** The repeatedmarking amount for each number.
- **Recycle** The system will repeat marking automatically from the start number when finishing marking the end number.
- **Base** The default setting is Decimal system. Users can select another method. If choosing"Special Carry," a setting dialog will pop up for users to modify, see Fig.10.03.

Example

If the settings are"Start: 0, Step: 1, End: 100, Repeat: 1, Base: Decimal, Digit: 3, Lead: 0, and checked the Recyclecheckbox", the marking result will be 000, 001, 002, 003, 004,……099, 100, 000, 001, 002….

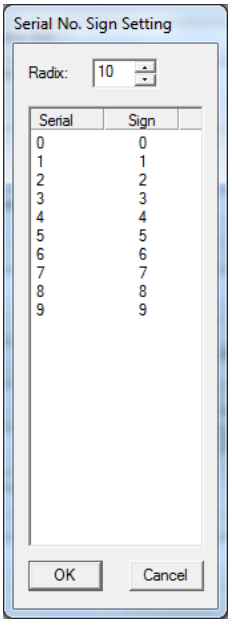


Fig. 10.03

10.2 Auto Text — File

Allow users to import notepad file (*.txt) as the content of Auto Text, see Fig.10.04.

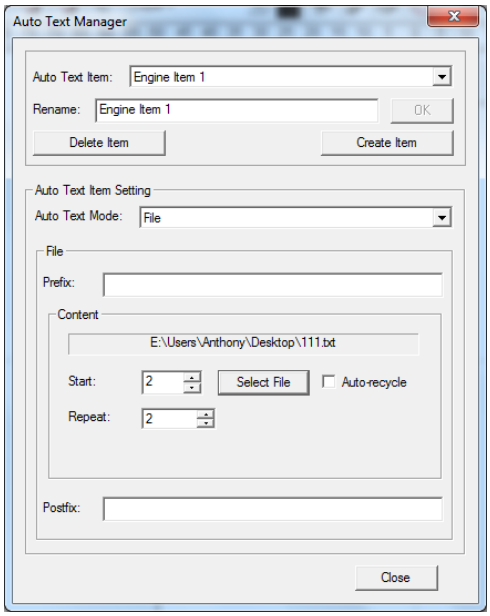


Fig. 10.04

Content

Select File Select the file users want to use as the content of Auto Text.

Start Decide the which row of the file will be marked as the first content.

Repeat The marking times of each row.

Example

If the content of the file is like Fig.10.05, and the value of Start and Repeat are both 2, then the marking result will be 222, 222, 333, 333…999,999.

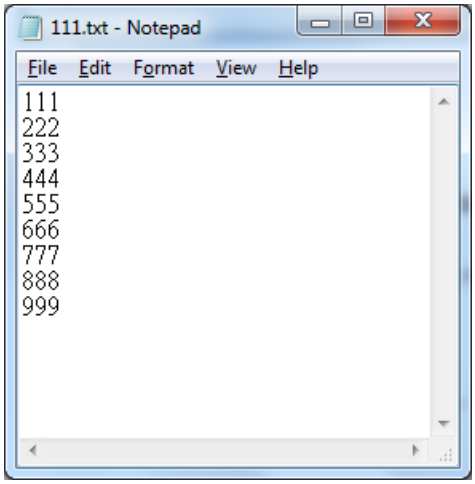


Fig. 10.05

10.3 Auto Text — Keyboard

Users can input the text content through external keyboard such as keyboard or Barcode Reader by applying this option, see Fig.10.06.

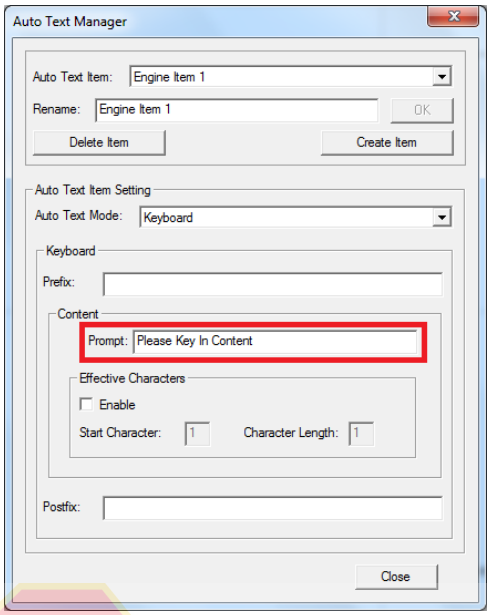


Fig. 10.06

Content

Prompt

Under this mode, when users try to execute marking, a dialog box will pop up for users to key in the text content. Prompt allows users to name the title of this dialog box, see Fig.10.07.

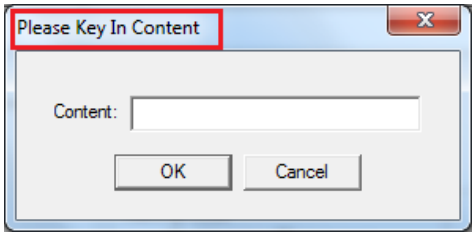


Fig. 10.07

Effective Characters

Enable

Users can set the start character and character length of the input content.

For example

If the“Start Character”is 3; the “Character Length”is 2, and the content of the input text is “ABCDE”, then themarking result will be “CD”.

10.4 Auto Text— Date

Allow users to use date as the content of Auto Text, see Fig.10.08.

Content

Users can decide the form and format of date from here.The following descriptions are the meanings of each format.

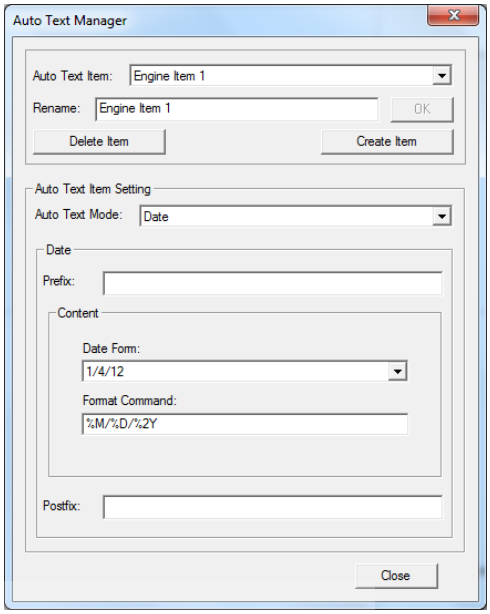


Fig. 10.08

%Y	Year
%M	Month(number)
%B	Month(English)
%b	Month(abbr.)
%?M	Month(assign)
%?W	Week(assign)
%D	Day
%J	Solar Day
%H	Hour(24-hours)
%-H	Hour(12-hours)
%N	Minute
%A	AM or PM
%S	Second
%W	Week(English)
%w	Week(abbr.)
%U	Current Week Number

Note

"%?M" is filled in the Auto Text by the system according to the file "**MON.txt**" which is under"**MarkingMate Insatllation Folder (for example: C:\Program Files\MarkingMate)\DATA.**

The first line in the file represents the content of January; while the second line represents the content of February, and so on. The system will automatically ignore the contents which are listed after the twelfth line.

Each line can only contain 18 characters at most (a Chinese character or holomorphy characteris regarding as 2 characters). An unexpected error will occur if there have more than 18 characters in one line .

If the amount of lines in the fileare less than 12, the system will replace the lacking part of content by the string of "FMonth".

"%?W" is filled in the Auto Text by the system according to the file "**Week.txt**" which is under"**MarkingMate Insatllation Folder (for example: C:\Program Files\MarkingMate)\DATA.**

The first line in the file represents the content of 1st week; while the second line represents the content of 2nd week, and so on. The system will automatically ignore the contents which are listed after the twelfth line.

Each line can only contain 18 characters at most (a Chinese character or holomorphy characteris regarding as 2 characters). An unexpected error will occur if there have more than 18 characters in one line .

If the amount of lines in the fileare less than 52, the system will replace the lacking part of content by the string of "FWeek".

10.5 Auto Text —ComPort

Users can transmit the Auto Text content through communication port by using this option, see Fig.10.09.

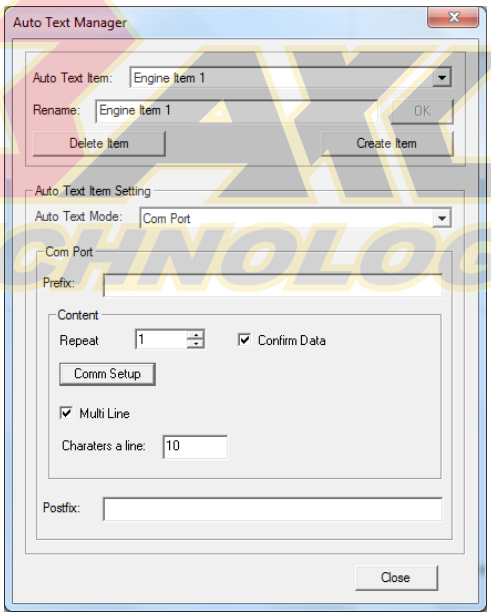


Fig. 10.09

Content

Repeat

Set the repeated marking times for each data.

Confirm Data

Under Com Port Auto Text mode, a status dialog box will pop up when users execute marking. If **Confirm Data** is been checked, this dialog box will show the text content users input while receiving data and users need to click "**OK**" to execute marking, see Fig.10.10. If users do not check this option, the system

will start to mark automatically after receive data, which means users no need to click "**OK**," see Fig.10.11.

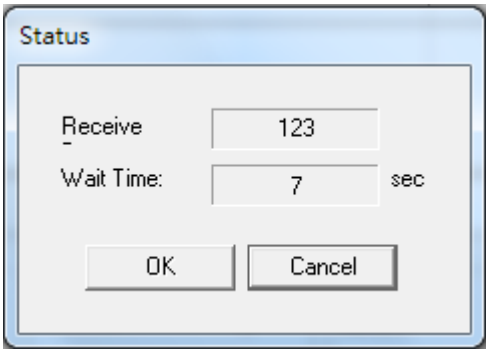


Fig. 10.10

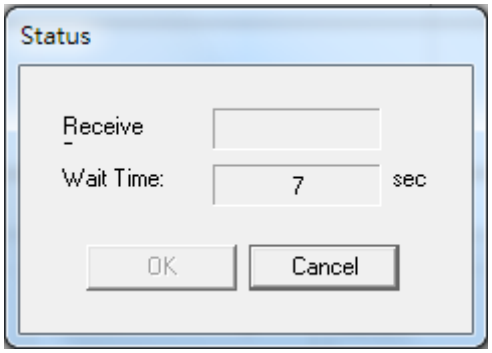


Fig. 10.11

Comm Setup

In order to make "Auto Text—Com Port" working, users need to enable com port setting first. To do com port settings, please click "Comm Setup" button to enter "CommPort Setting" page. Users can also enter this page from 「**File**」→ 「**Option**」→ 「**System**」→ 「**Commport Setting**」, see Fig.10.12.

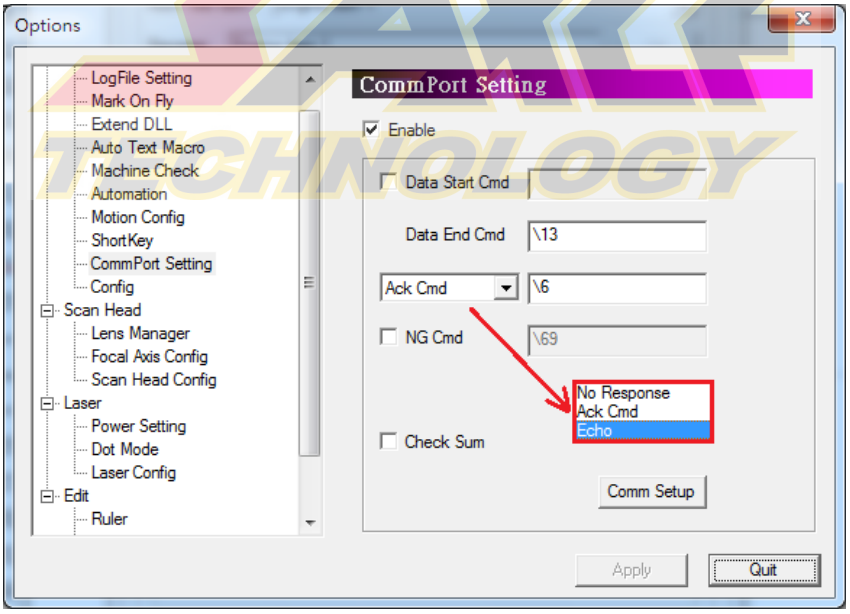


Fig. 10.12

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.10.13.

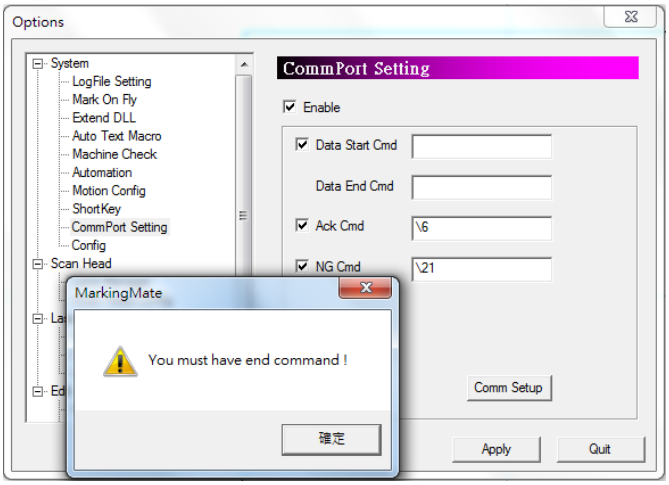


Fig. 10.13

NoResponse

No any reply after receiving “Data End Cmd” and “Check Sum”(if checked).

AckCmd

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. Default value is \6.

Echo

Setting this parameter, the software will transmit “Data Start Cmd (if checked) + transmitted data from host + Data End Cmd + Check Sum (if checked)” 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.10.14.

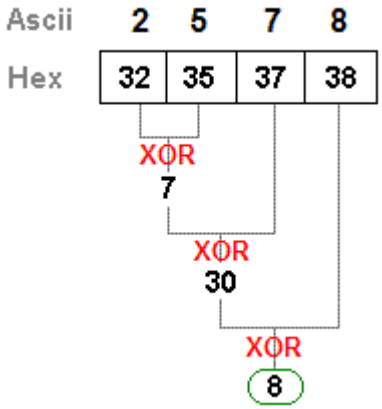


Fig. 10.14

CommSetup

Another dialog box will appear for users to select using Com Port or TCP/IP and do further settings when clicking this button.

COM1 ~ COM8

If select any port from COM1 to COM8, it means the content of Auto Text will be transmited via RS-232,see Fig.10.15.

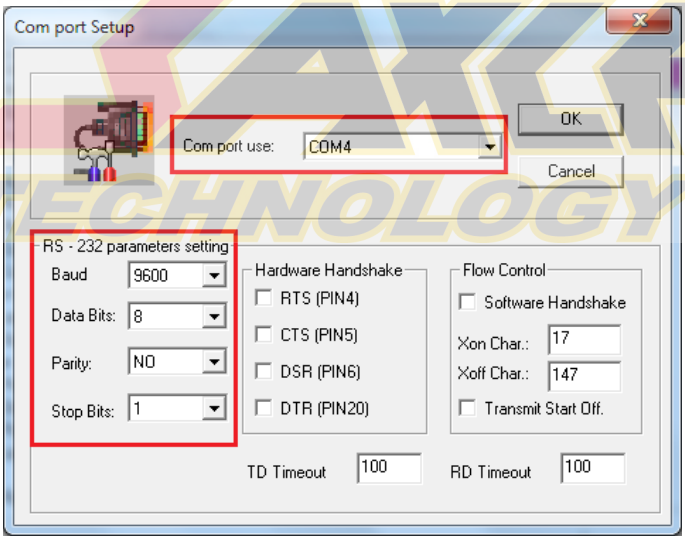


Fig. 10.15

Com Port Use

Choose the proper Com Port according to the computer device.

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.10.15 if not necessary.

TD/RD Timeout

This function is available only when “NG Cmd” is active. After receiving data, the system will wait for the time setting here to receive “Data End Cmd” and then do the next step.If “Data End Cmd” is not been received, the system will send a “NG Cmd” and clear all received data.

TCP/IP:

If select TCP/IP port, it means the data of Auto Text will be transmitedviaTCP/IP, see Fig.10.16. Please input the IP address of the remote host.The port number must be the same as the remote host and users also need to select “CLIENT” here.

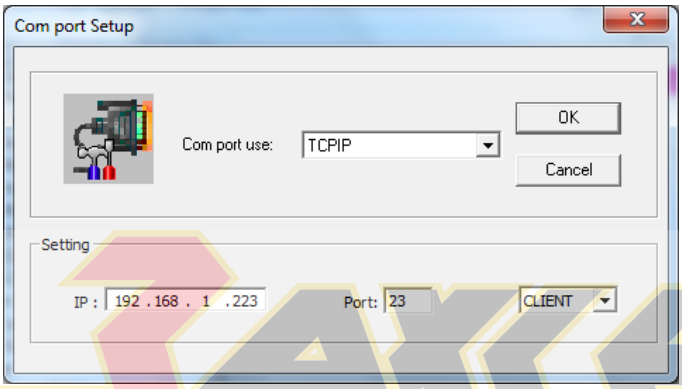


Fig. 10.16

Note

When entering the marking dialog box, the system will connect with the remote host at the same time. Therefore, users must enable the service of remote host before that. Otherwise, the connection between two systems will fail and the marking job will terminate.

Multi Line

Set the amount of character for one line. If exceed this value, the system will automatically do the line feed.

10.6 Auto Text — Serial No. Advance

If usershave further requirements for Serial Nunber, they can use “Serial No. Advance,” see Fig.10.17. Some settings here are the same as “Serial No.,” in this case, this section only introduce the different parts.

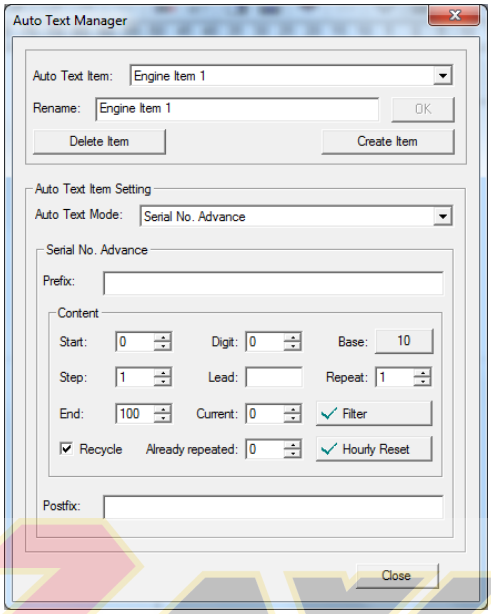


Fig. 10.17

Content

Current

This value can be any number which is between “Start” and “End” number. When users execute marking, the system will mark this valur first rather than the “Start” number.

Already repeated

The current repeat marking times of current number.

For example

Suppose that Start: 0, Step: 1, End: 9, Current: 7, Repeat: 3, Already repeated: 2, and check “Recycle”, then the mark result will be “7, 8, 8, 8, 9, 9, 9, 0, 0, 0, 1, 1, 1, 2, 2, 2…”

Hourly Reset

The serial number will be reset as the Start number on the hour if enable this function.

Filter

If users do not want to mark certain number, they can use this function. When clicking “Filter” button, an edit window like Fig.10.18 will pop up for users to input the filter rule.

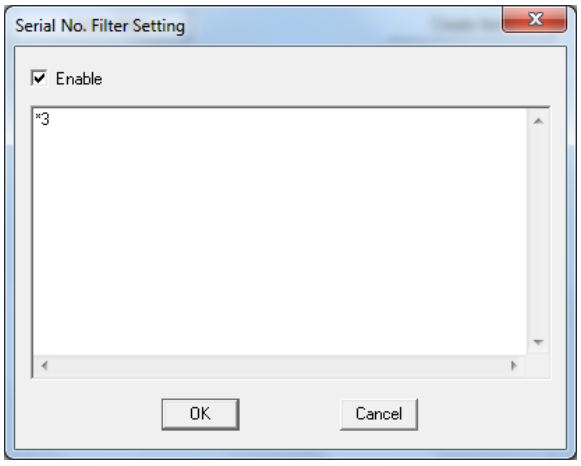


Fig. 10.18

Filter Rule

- If uesers want to filter just one assigned number, for example, 4, then just input "4" in the edit area, and the mark result will be 0, 1, 2, 3, 5, 6…, 12, 13, 14, 15…
- If users want to filter any units digit, for example, 4, then input "*4" in the edit area, and the mark result will be 0, 1, 2, 3, 5, 6…, 12, 13, 15, 16…, 22, 23, 25…
- If users want to filter the first number of the string, for example, 1, then input "*1" in the edit area, and the mark result will be 0, 2, 3, 4,…, 9, 20, 21, 22, 98, 99, 200, 201…
- If users want to filter every certain unmber of assigned digit of the string, for example, every hunderds digit 7 of a five-figure serial number, then input "**7**" in the edit area, and the mark result will be 0, 1, 2, 3, 4, 5, 6, 7, 8…, 69, 70, 71…698, 699, 800, 801, 1698, 1699, 1800, 1801…
- Suppose that users want to filter every string which Start value is 2; End value is 8 and the hundreds digit is 5, they should input "2*5*8" in the edit area, and then each serial number which Start value is 2; End value is 8 and the hundreds digit is 5 will not be marked, for example, 2508, 2518, 20528, 210538… and so on.
- If users want to filter the serial numbers which include a specific number, for example, 8, then all the serial numbers with "8" will not be marked and the filter rule are listed below (take four-figure for example):

  *8

  8

  *8**

  8*

10.7 Auto Text — Excel

Users can import an excel file as the content of Auto Text, see Fig.10.19.

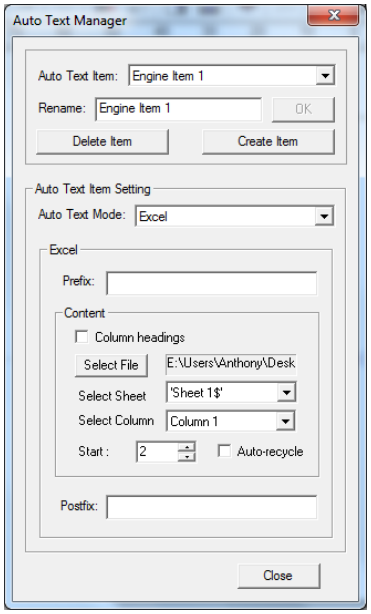


Fig. 10.19

Content

Column headings

If this option has been checked, then the "**Select Column**" will display the heading of the selected column. Otherwise, it will only show the column's number.

Select File

Select the excel file users want to import.

Select Sheet

Select which sheet users want to mark.

Select Column

Select which column users want to mark.

Start

System will start marking the content from the setting row.

If content of excel file at first column is all digits, such as 123, 234, the marking result will be 123.000000, 234.000000.

10.8 Auto Text — External

Users can set text content. What`s different to normal text object is if used frequently to multiple position, users just need to change one time for changing all content,which is allowed to save massive time. See Fig.10.20.

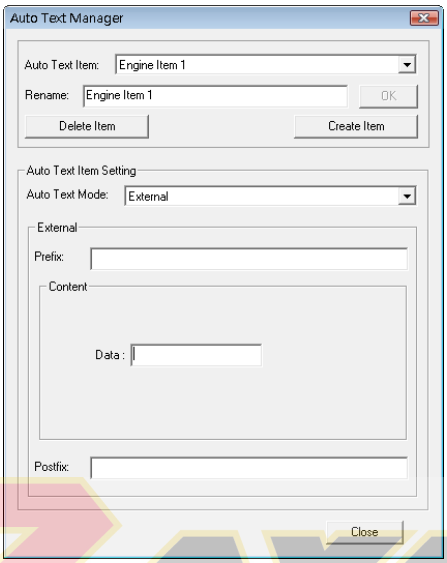


Fig. 10.20

Content

Data

Enter text content.

10.9 Multi Auto Text Setting

If users want to use two or more same or different Auto Text in one text object (take serial number and date for example), please refer to the following steps.

Step 1

Create a text object and then go to「**Property Table－Text**」, then check "**Enable**" from "**Auto Text**," like Fig.10.21, and the "**Auto Text Manager**" will pop up.

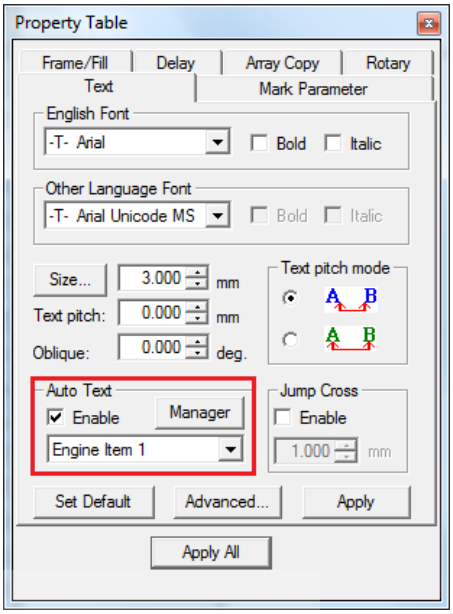


Fig. 10.21

Step 2

Set the mode of the first **Auto Text Item** (for example, **Engine Item 1**) as "**Serial No.**," see Fig.10.22. Then create a new item and set the mode as "**Date**" and click "**Close**" to do the next step.

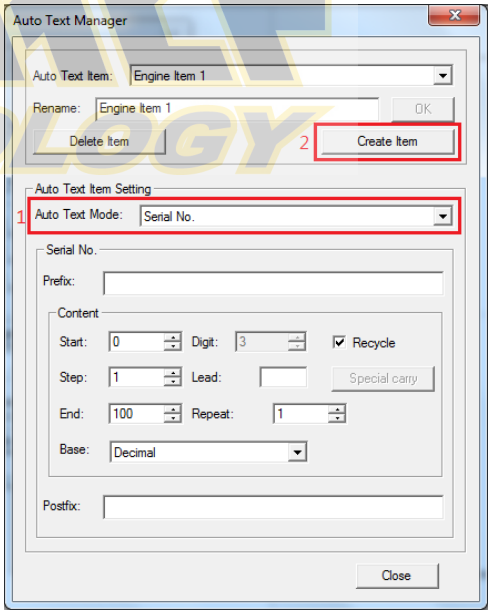


Fig. 10.22

Step 3

Click "**Advanced**" from「**Property Table－Text**」to enter "**Text Advanced.**" Users can edit the text content at the blank area.

In this example, input "**No.:**" first (users can input any word they want or input nothing) and then click "**Insert auto text item**" to select "**Engine Item 1**."At this time, the blank area will be like "**No.:\[1]**."This is the first Auto Text object.

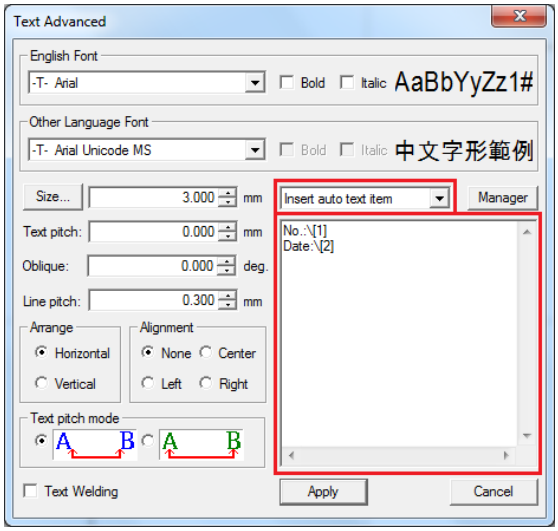


Fig. 10.23

If users wish the second text object and the first object are at the same row, then just input the content of object 2 from the end of object 1. If users want the second object is at the next row, just press "**Enter**" and then input the text content.

In this example, the second object is at the next row. After inputing the content, for example, "Date:," select "Engine Item 2" from "Insert auto text item" drop list. The blank area will display like Fig.10.23. Exit "Text Advanced" and the working area of software will be like Fig.10.24, and this means that users create two Auto Text successfully.

Fig. 10.24

11. Automation

11.1 Automation and I/O

If users want to apply this system in automatic process, all they need to do is understanding how the system works with I/O signals and do the right setting.

11.1.1 Time Sequence Signal

Program Ready/Mark Ready

Program Ready and Mark Ready signals are programmable. System integrators are able to plan the signal as Program Ready or Mark Ready signal depending on their requirements.The setting method is to open "**Config.ini**" with notepad which is under the installation folder of **MarkingMate** and find the parameter "**PR2MR=0/1**." If the value is 0, it means enable **Program Ready**signal. If the value is 1, it means users are using **Mark Ready** signal.If users cannot find this parameter, they can add this parameter under the "**SignalRule**" tag by themselves.

If set as**Program Ready**, the signal will be "**OFF**" when powering up the computer, and will continuing be "**ON**" when executing the software until exiting the software. This signal is mainly planned to tell that the marking software is ready.

If set as **Mark Ready**, the signal will be "**ON**" when entering "**Mark**" dialog, and will turn to "**OFF**" if exiting the dialog.

Ready for Start Signal

Ready for Start signal was called "**Mark Ready**" before. This signal is initially set as "**OFF**".When entering "**Mark**" dialog, the system will wait for "**START**" signal, and the signal will become "**ON**"at this time. After receiving "**START**" signal, the system will start to mark, and this signal will change to "**OFF**". When finishing marking, the system will continue to wait for "**START**" signal, and the signal will become "**ON**" again.

If users add a control object "**DO PAUSE**" into the marking flow, this signal will also be "**ON**" and waiting for "**START**" signal when executing to "**DO PAUSE**" object.

Stop/Error

This signal is also programmable. Under**Normal Mode**, this signal can be planned

as ”**Stop**” signal, while in **Automation Mode**, it can be planned as “**Error**” signal. In **Normal Mode**, when users press “**STOP**” button to break down the marking process, the “**Ready for Start**” signal will be “**ON**” and wait for “**START**” signal to continue the marking process.

Under **Automation Mode**, once the program detecting the “**Error**” signal, the system willexit the “**Mark**” dialog, and the “**Mark Ready**” signal will become “**OFF**” as well as the “**Ready for Start**” and “**Marking End**” signals. Only whenthe breakdown hasbeen eliminated and re-enter the “**Mark**” dialogue, the “**Mark Ready**” and “**Ready for Start**” Signal will be changed to be “**ON**” again.

Mark End/Mark End Pulse

This signal is also programmable. The default setting is Mark End, which means Mark End Pulse Time= 0(this parameter can be changed in Config.ini.)

The signal will be “**OFF**” at the start when the parameter is set as **Mark End.**When the marking process finish,it will become “**ON**.” The signal will be “**OFF**” again when the system receives “**START**” signal. If the system stop marking because of “**DO PAUSE**” (**Ready for Start**signal will be**ON** at this time), then even receive “**START**” signal again and continue marking process (**Ready for Start**signal will become**OFF**), the “**Marking End**” signal will stillbe “**OFF**” until the marking finished.

If set as **Mark End Pulse** signal (**Mark End Pulse Time**wasassigned as acertain value), it will be “**OFF**” at the beginning and will become “**ON**” when markingprocessfinish. However, the time this signal keeps “**ON**” isaccording to the value of **Mark End Pulse Time**.

Fig.11.1.01 and Fig.11.1.02 are the signal time sequence under **Normal Mode** and **Automation Mode**.

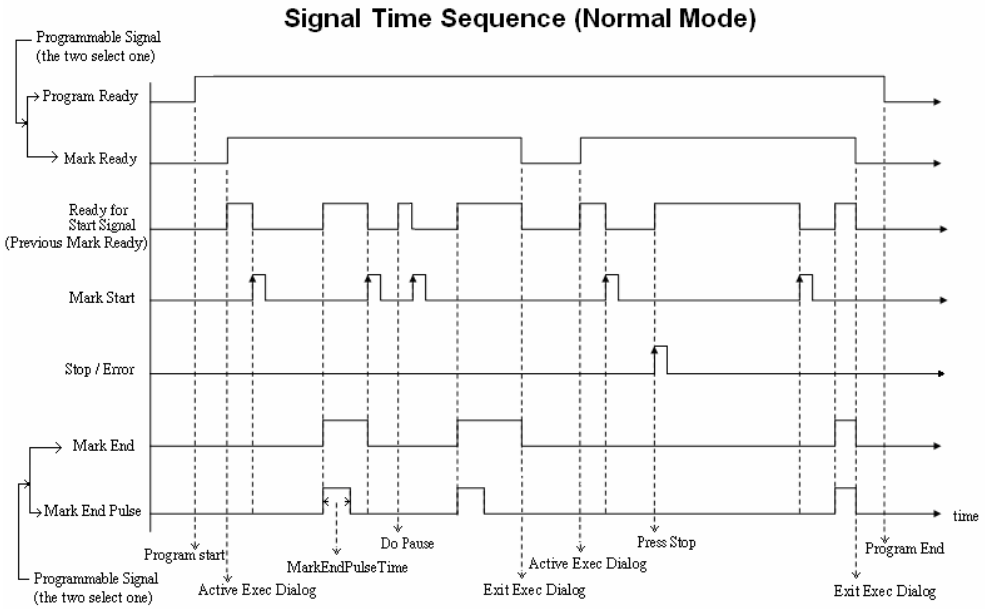


Fig. 11.1.01

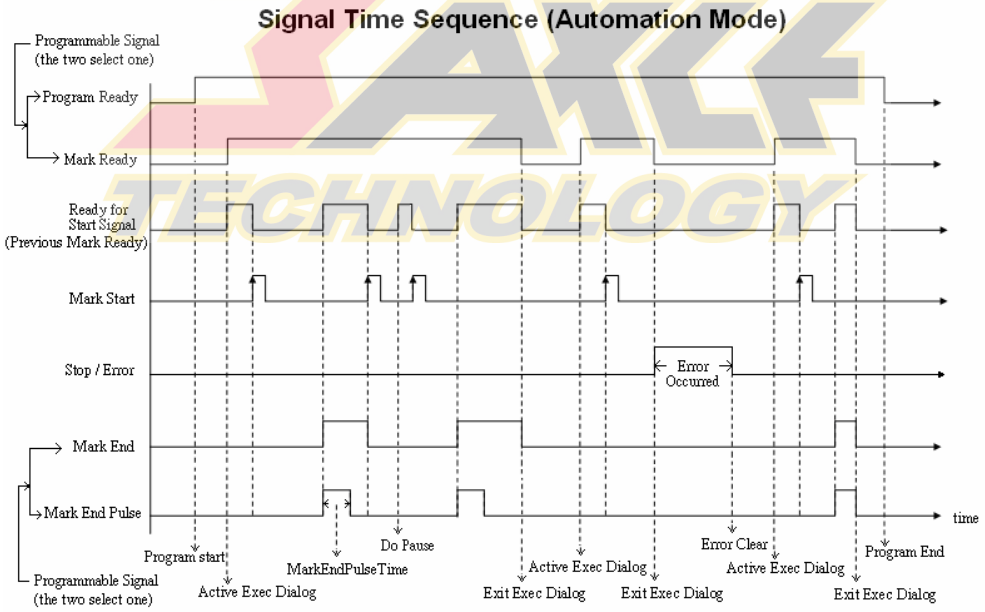


Fig. 11.1.02

11.1.2 Machine Check Error Message Planning

Enable Machine Check function, users can edit some I/O signals and error messages to help themrealize what happen while mistakes took place.

1. **Activate**

To activate **Machine Check** function, users need to open a file "**config.ini"**which is under the installation folder of **MarkingMate**(for example, **C:\Program Files (x86)\MarkingMate**) first and then change the value of parameter "**MachineChk=**" from "**0**" to "**1**." Otherwise, users can also enable this function by **MarkingMate** and the path is「**File**」→「**Option**」→「**System**」→「**Machine Check**」, see Fig.11.1.03.

If users want to activate the error message, change the value of parameter "**MachineChk_ShowMessage=**" (which is also under the file "**config.ini**") from "**0**" to "**1**."

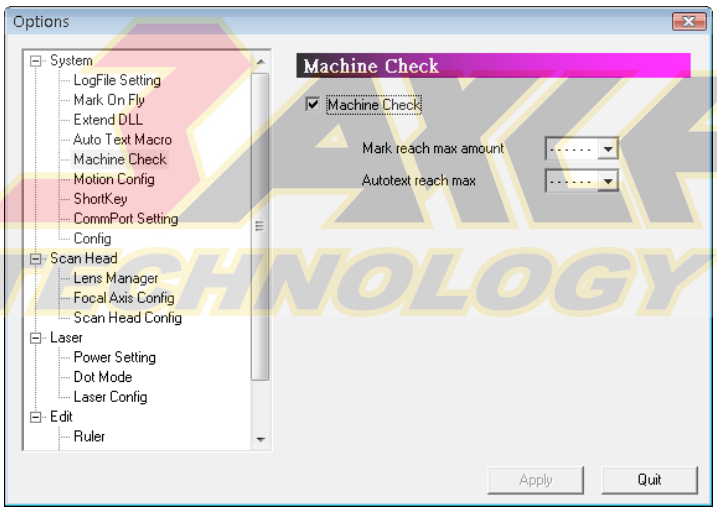


Fig. 11.1.03

Mark reach max amount	Signal will be sent out while mark count reach target amount.
Autotext reach max amount	Signal will be sent out while serial number reach End value.

2. **Edit Messages**

To edit the erroe message, please open the file"**MachineChk.cfg**"which is also under the installation folder of **MarkingMate**(for example, **C:\Program Files (x86)\MarkingMate**). Table 11.1 is the description of the error message.

Please note that this file is **not** under the folder of "**MachineChk**."

Name	Setting method	Description
[I10]		From [I1] to [I16]. [I10] means the tenth input
	ENABLE=1	1 means open, 0 means close.
	LEVEL = 1	INPUT activated potential, 1 means activated when signal changed from 0 to 1, 0 means activated when signal changed from 1 to 0
	OUTLEVEL= 0	Output potential (0 or 1)
	OUT=3	Output number (0 means no output)
	MSG_EN=Error Message(001)\nX Scanner head failure\nResolve Method: Contact with us	Input the error message after "MSG_EN=" (\n means line feed)
	PRIORITY=6	Users can add several different messages for the same I/O; they will show in accordance with priority. Less number means higher priority. (from 0 to 15)
	QUITMARKING=1	Decide to exit Mark dialog or not. (1 means exit; 0 meants not)
[EMG_STOP]		Emergency Stop
	ENABLE=1	1 means open, 0 means close
	OUTLEVEL= 1	Output potential (0 or 1)
	MSG_EN=Error Message\nEmergency Stop!	Input the error message after "MSG=EN" (\n means line feed)
	PRIORITY=7	Less number means higher priority. (from 0 to 15)
	OUT=0	Output number (0 means no output)
	QUITMARKING=1	Decide to exit Mark dialog or not. (1 means exit; 0 meants not)
[GALVO_MOTOR_1]		First GALVO motor error, if the scanhead supports.
	ENABLE=1	1 means open, 0 means close
	MSG_FAIL_EN=X Galvo is unusual	Input the error message after "MSG_FAIL_EN=" (\n means line feed)

	MSG_SUCC_EN=X Galvo is normal	Input the normal message after “MSG_SUCC_EN=” (\n means line feed)
	IN=9	Input number
	LEVEL=1	INPUT activated potential, 1 means activated when signal changed from 0 to 1, 0 means activated when signal changed from 1 to 0
	PRIORITY=10	Less number means higher priority. (from 0 to 15)
[GALVO_MOTOR_2]		Second GALVO motor error, if the scanhead supports
	ENABLE=1	1 means open, 0 means close
	MSG_FAIL_EN=Y Galvo is unusual	Input the error message after “MSG_FAIL_EN=” (\n means line feed)
	MSG_SUCC_EN=Y Galvo is normal	Input the normal message after “MSG_SUCC_EN=” (\n means line feed)
	IN=11	Input number
	LEVEL=1	INPUT activated potential, 1 means activated when signal changed from 0 to 1, 0 means activated when signal changed from 1 to 0
	PRIORITY=9	Less number means higher priority. (from 0 to 15)
[CONNECT]		Controller connect error, only MC1 Driver supports
	ENABLE=1	1 means open, 0 means close
	MSG_EN=Error Message\nController connect error\nResolve Method:\nStep 1: Make sure the USB connector is connected well.\n Step 2: Make sure the controller power is on and wired\n Step 3: See if the Emergency Stop is activated\n Step 4: Contact us if the above steps do not work.	Input the error message after “MSG_EN=” (\n means line feed)

	OUT=9	Output number (0 means no output)
	PRIORITY=8	Less number means higher priority. (from 0 to 15)
	OUTLEVEL= 1	Output potential (0 or 1)
	QUITMARKING=1	Decide to exit Mark dialog or not. (1 means exit; 0 meants not)

Table 11.1

11.2 Control Object

The Control Object Tool Bar allows user to insert control objects, see Fig.11.2.01.

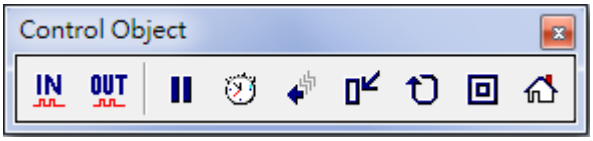


Fig. 11.2.01

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 an assigned 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.

11.2.1 Digital In

Digital_In

"**Digital In**" is used to check the input potential signal is correct or not when marking. Users can set potential signal (high or low) at IN 1~8, see Fig.11.2.02. If the input signal is correct, then the system will do the next step.

SET: High potential.

CLEAR: Low potential.

----------: Ignore.

Time Out: The time that system needs to wait for the input signal.

Example: Suppose that this value is 10ms. If there is no signal input within 10ms, then the system will start to mark the next object.

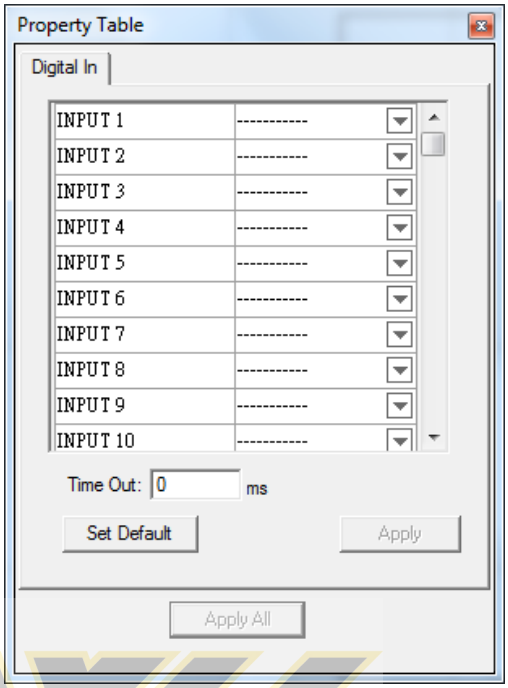


Fig. 11.2.02

11.2.2 Digital Out

Digital_Out

Set the output potential signal (high or low) at OUT 1~8, see Fig.11.2.03. When the mark process execute to "Digital Out" object, the system will follow the settings on this page and do the next step.

SET: High potential.

CLEAR: Low potential.

----------: Ignore.

Clear Signal: Activate this function and then users can set the Wait Time. The system will change the high potential signal (SET) to low potential signal (CLEAR) after passing the Wait Time.

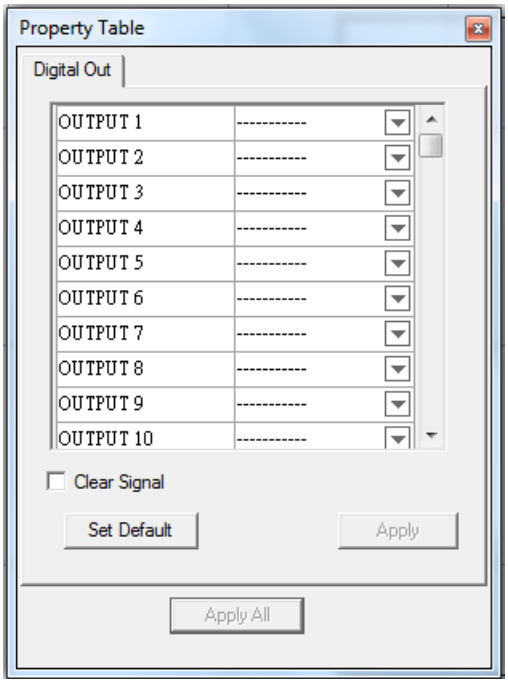


Fig. 11.2.03

11.2.3 DoPause

Do Pause

Stop marking and wait for the Start signal.

11.2.4 Delay Time

Delay_Time

Suppose a mark process order is “Object A→Delay Time Object→ObjectB.” After Object A has been marked, the system will wait for the setting delay time and then start to mark Object B. The Delay Time can be set at Delay Time Property Table, see Fig.11.2.04.

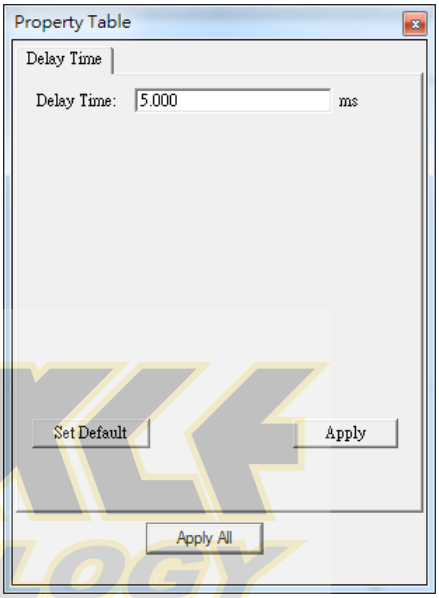


Fig. 11.2.04

11.2.5 Motion

Motion

When the mark process execute to “Motion” object, the axis will move to the assigned position or angle (Only PMC2 driver supports Z axis control), see Fig.11.2.05.

Relative

If check the box, the assigned position will be considered as a relative position, otherwise, it will be considered as an absolute position.

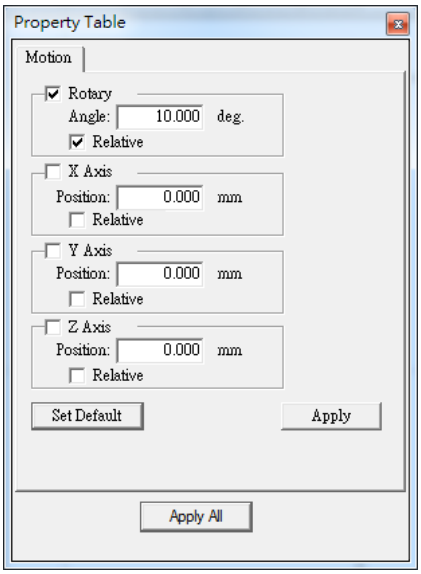


Fig. 11.2.05

11.2.6 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.11.2.06.

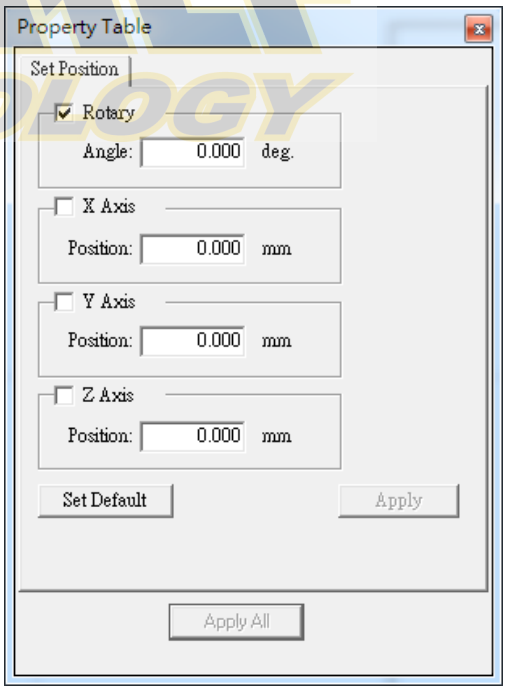


Fig. 11.2.06

11.2.7 Loop

Loop

"Loop" is used to mark the selected objects repeatedly. Users can set the repeated time at Loop Property Table, see Fig.11.2.07. When insert this object, users will see two sub-objects (Loop Begin and Loop End) in the Object Browser and then drag the objects users want to repeated mark into the loop, like Fig.11.2.08.

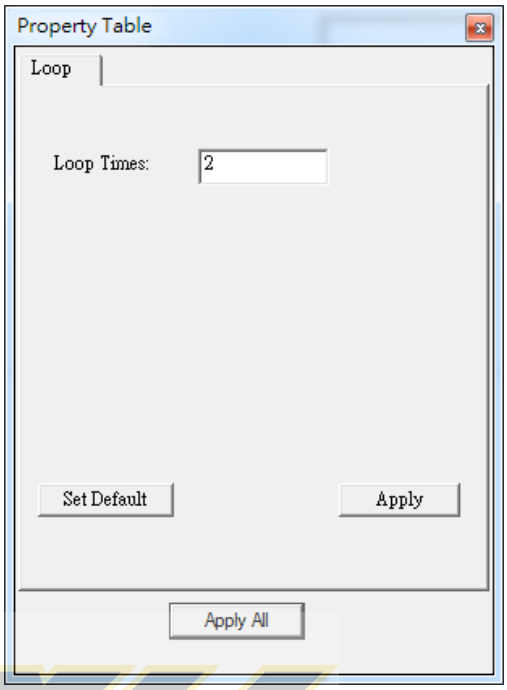


Fig. 11.2.07

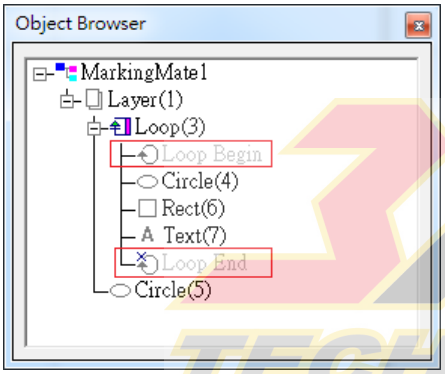


Fig. 11.2.08

11.2.8 Ring

Ring

"Ring" object must be used accompanied with rotary axis.

When the mark process execute to "Ring" object, the Galvo will move to the X/Y position users set at Property Table (see Fig.11.2.09) first and the laser will strat 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.

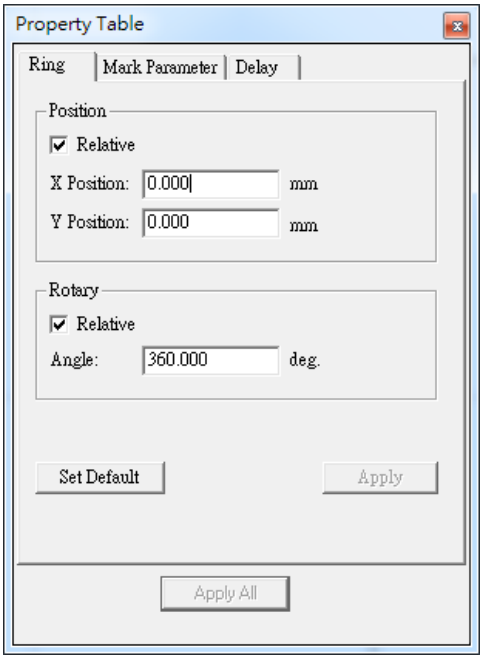


Fig. 11.2.09

11.2.9 Homing

Homing

When the mark process execute to “Home” object, the axis users select at Property Table (see Fig.11.2.10) will go back to origin.

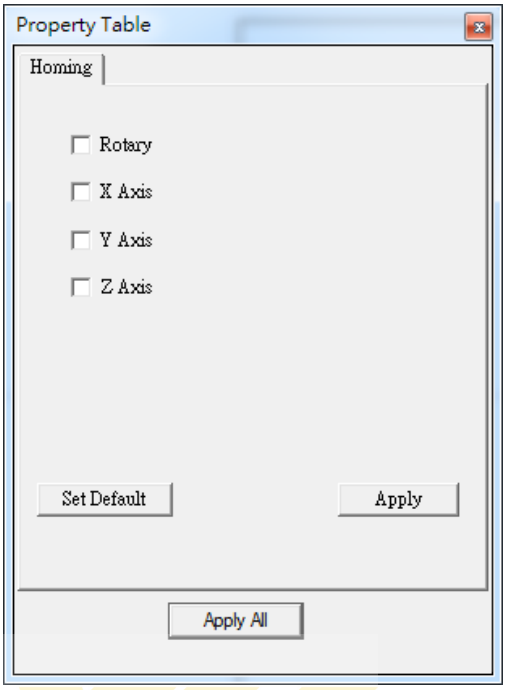


Fig. 11.2.10

12. Make Font Description

12.1 Execute Make Font Function

To Execute Make Font function, please refer to the following step.

Step 1

Select Make Font Bar from View Manu, see Fig.12.01, and Make Font Bar will pop up like Fig.12.02.

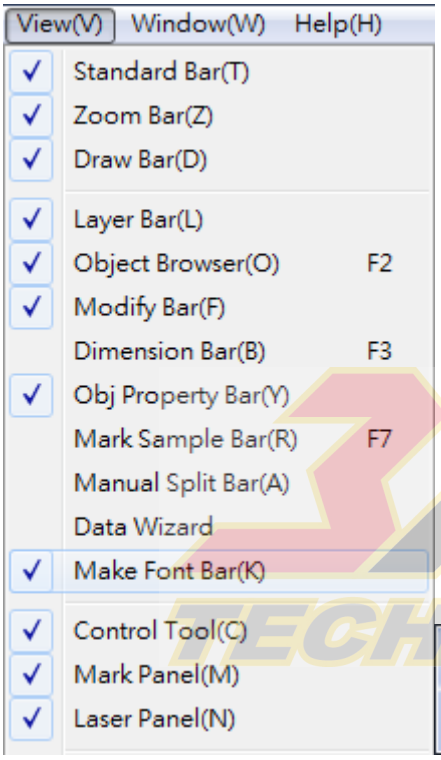


Fig. 12.01

Fig. 12.02

Step 2

Click  and enter make font mode, like Fig.12.03. The make font property page will also be displayed at property page, like Fig.12.04.

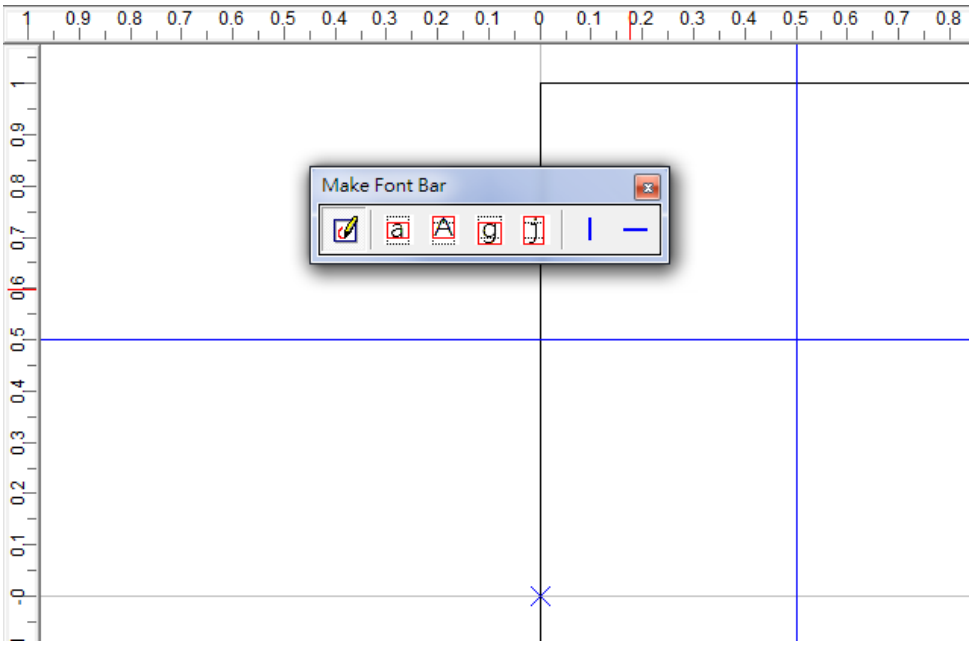


Fig. 12.03

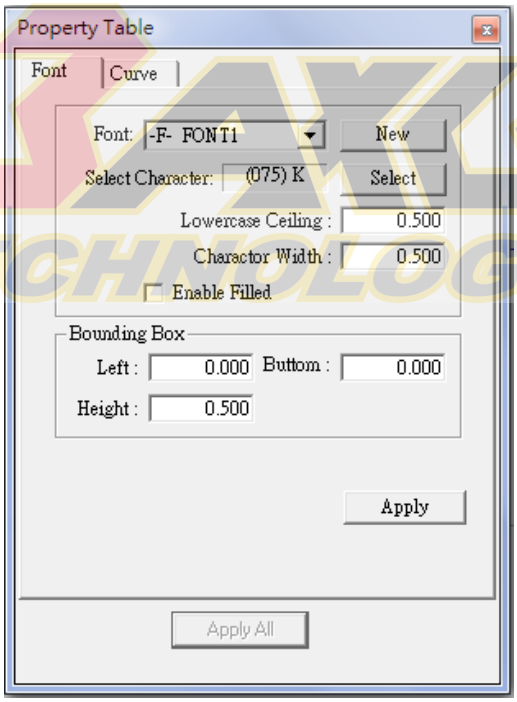


Fig. 12.04

12.2 Parameter Description

The following stayements are the description of Make Font parameters.

Make Font Property Page

Font	Select the font users want to use or create a new font.
Select Character	Select the character users want to edit.
Lowercase Ceiling	Set the upper boundary when select a lowercase character.
Character Width	Set the maximum character width (right boundary). If the right side of the character exceeds this value, then this character will overlap with other ones.
Enable Filled	Decide to fill the character or not when marking.
Bounding Box	
Left	Set the distance between the character and the left boundary.
Bottom	Set the distance between the character and the bottom boundary.
Height	Set the font size.

Make Font Tool Bar

Enter or Exit Make Font mode.

Use the default edge to set the new font.

Adjust the right and up edge of the font.

12.3 Operating Method

Select the font and character first when entering make font mode, see Fig.12.05. After this, users can use drawing objects or adjust the parameters under property page to edit the character, see Fig.12.06.

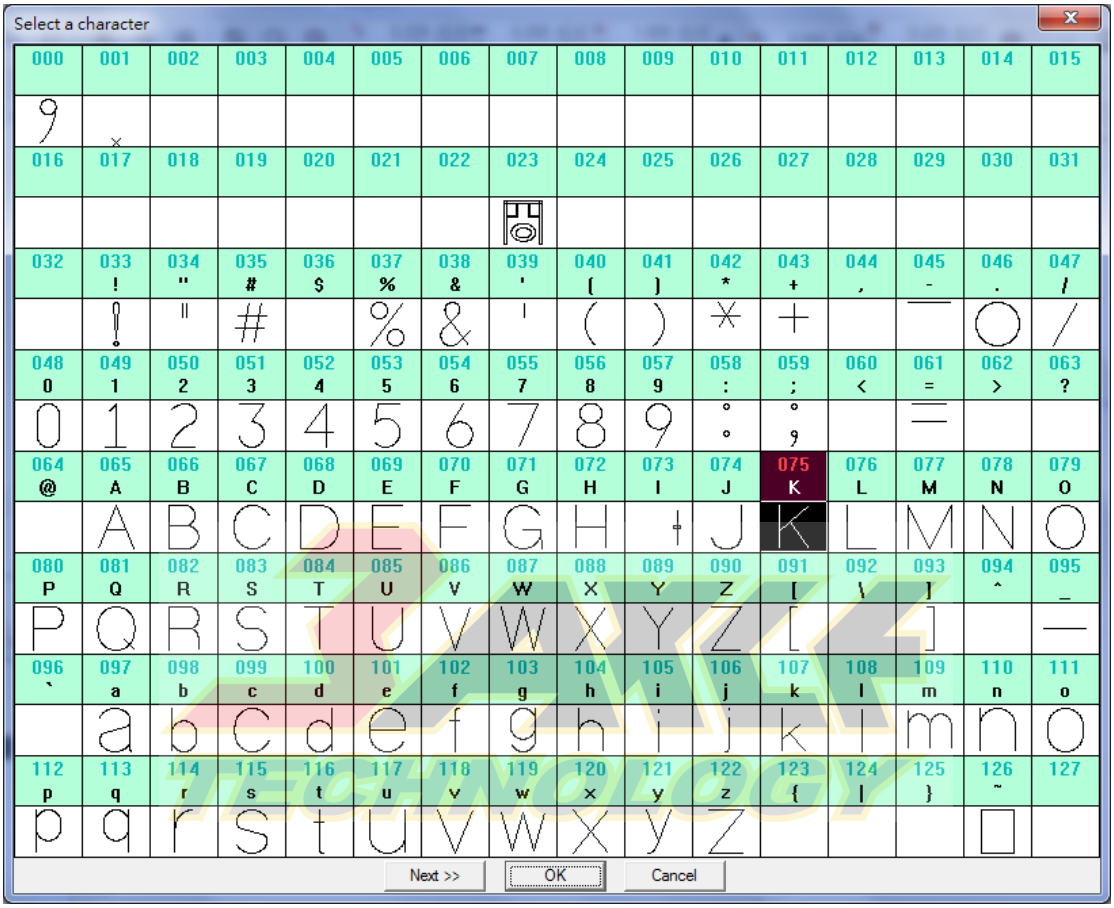


Fig. 12.05

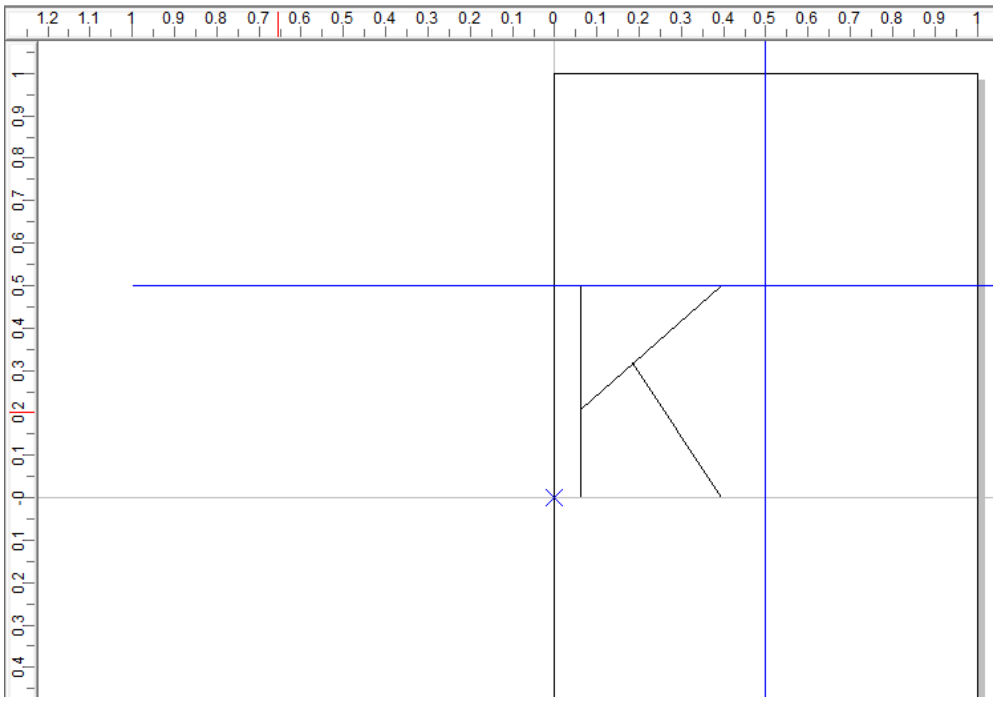

1.2 1.1 1 0.9 0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
1 0.9 0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1 -0 0.1 0.2 0.3 0.4

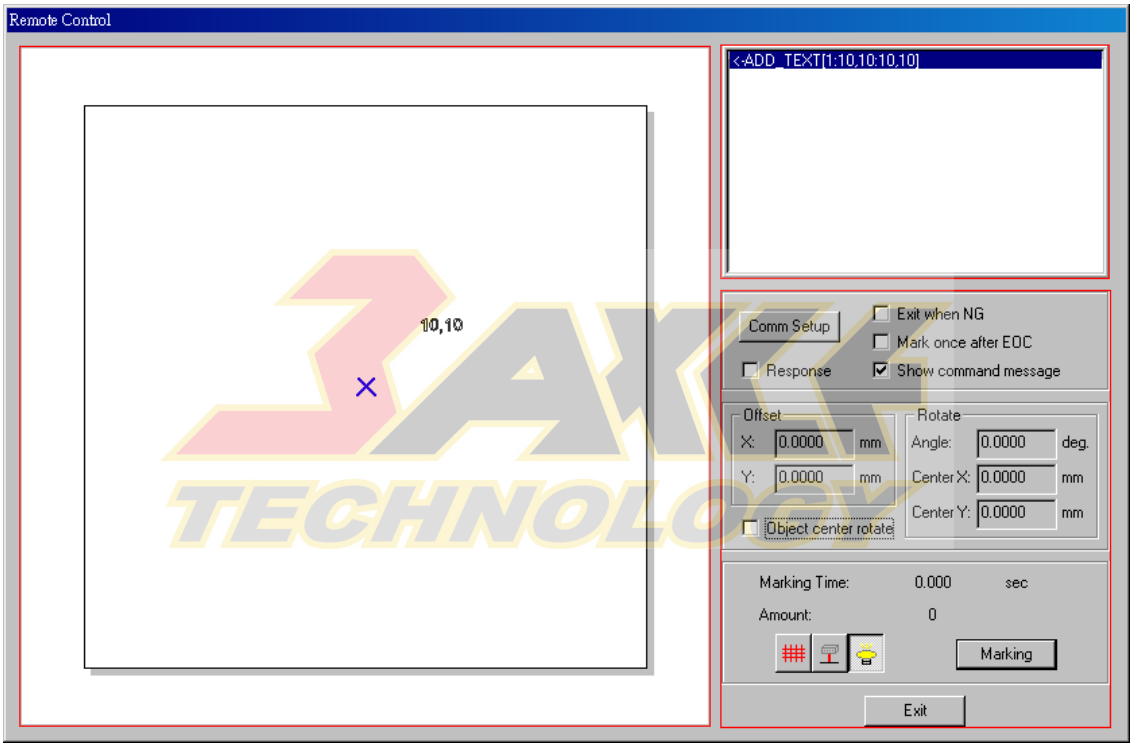
Fig. 12.06

13. Remote Control

User could use remote control function to make local host editing graphic or marking by remote command.Provided since MarkingMate 2.7A-15.4 or above.

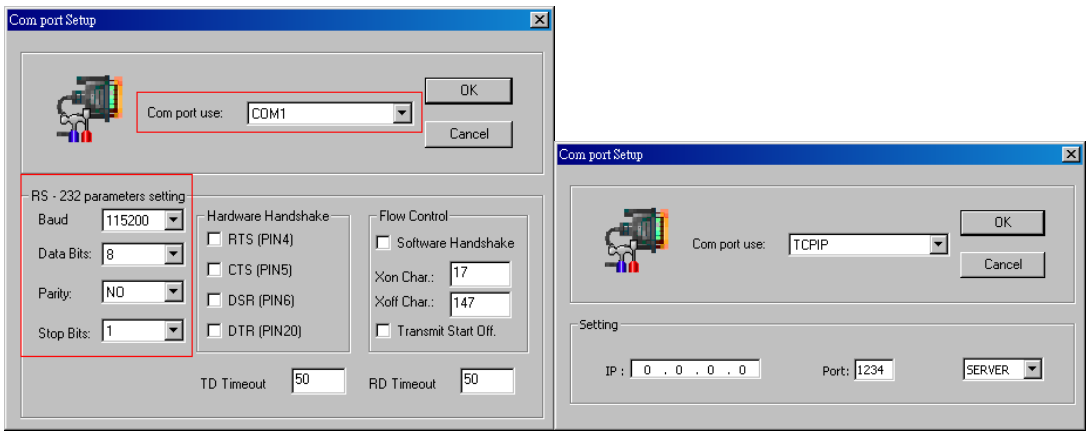
13.1 Operation

13.1.1 Click on  within  to enable remote control function.



13.1.2 Remote control window looks like the picture above. Following will introduce each sector within the red frames.

Preview Window	Reveal current marking content.
Comm. status window	Until know received or sent commands or information.
Control panel	For setting communication port or revealing current marking status.
Comm. Setting	Click to bring up “Comm port Setting”window.



Com port use User could choose transfer remote control command through Com Port or TCP/IP. Choose COM1~COM8 to use Com Port, choose TCPIP to use TCP/IP.

a.Use Com Port For RS-232 communication port setting please do the same setting as the information transmission source. Please do not change the parameters within the red frame if not necessary.

b.Use TCP/IP Fill the IP address of the remote host. The port number must be the same as the remote host. Besides, mode must set as “SERVER”.

Response Setting if system will send response message to remote host. The message it return will be original command. NG message will still be sent to remote host even if this option is unchecked.

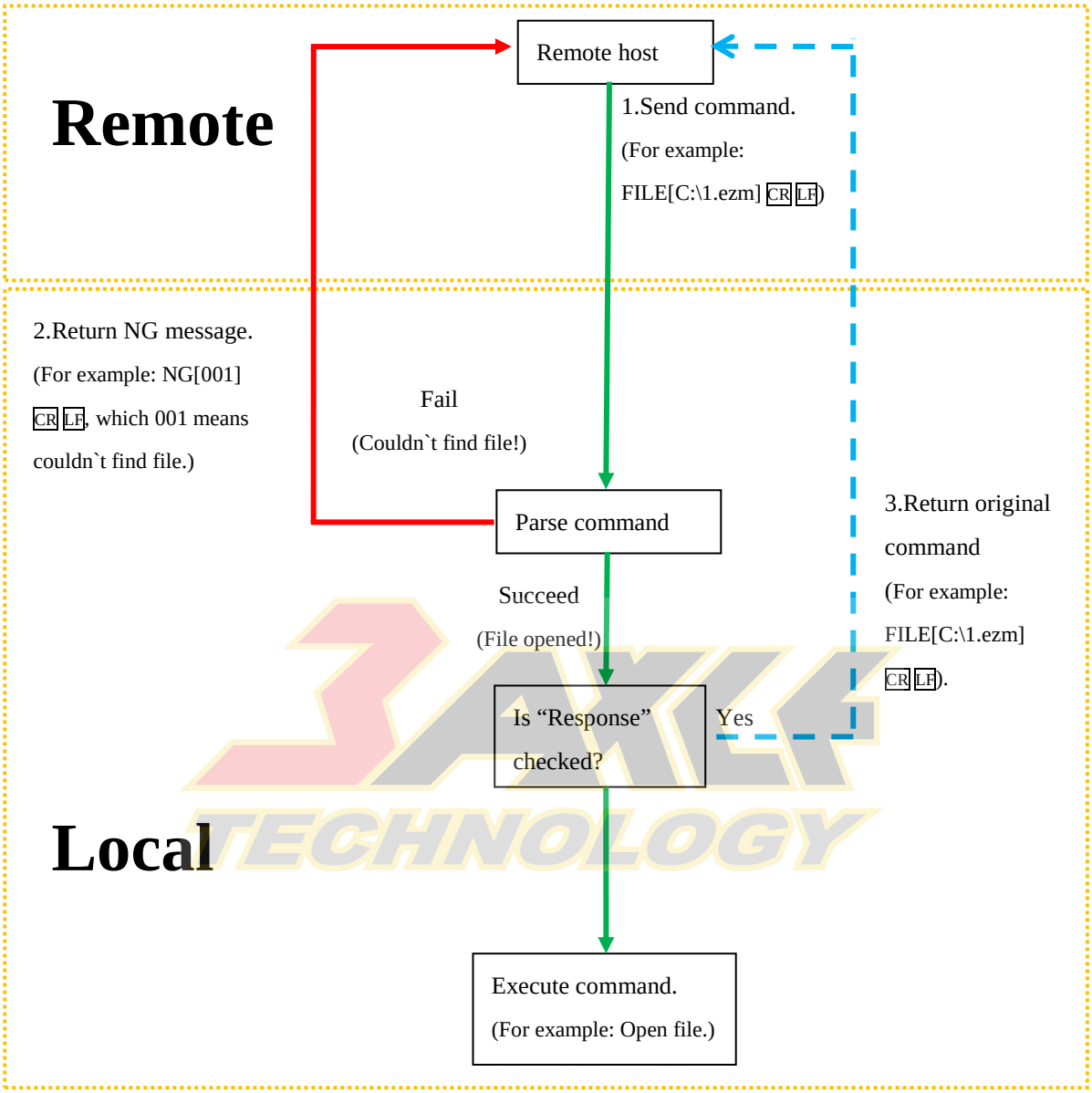
Exit when NG Exit remote control while NG is occurred. NG message will still be sent to remote host even if this option is checked.

Mark once after EOC Mark instantly after receiving E[] instead of waiting for END[].

Show command message Reveal received command on communication status window.

Offset	Show the global offset.
Rotate	Show the global rotate.
Object center rotate	Rotate center set as bounding box center.
Marking time	Same as marking dialog.
Amount	Same as marking dialog.
Align	Same as marking dialog.
Shutter	Same as marking dialog.
Lamp	Same as marking dialog.
Marking	Same as marking dialog.
Exit	Close remote control function.

13.2Control flow chart



13.3Command List

File Operation	
FILE	Open EZM File
Add Object	
ADD_RECT	Create rectangle object(Version 2.7A-23.8 or above)
ADD_CIRCLE	Create circle object(Version 2.7A-23.8 or above)
ADD_1DBC	Create 1D Barcode object(Version 2.7A-23.10 or above)
ADD_2DBC	Create 2D Barcode object(Version 2.7A-23.10 or above)
ADD_CURVE	Create curve object(Version 2.7A-23.8 or above)
ADD_DOT	Create dot object(Version 2.7A-23.8 or above)
ADD_IMAGE	Create image object(Version 2.7A-23.10 or above)
ADD_TEXT	Create text object(Version 2.7A-23.8 or above)
ADD_ARCTEXT	Create arctext object(Version 2.7A-23.8 or above)
Delete Object	
DEL_OBJ	Delete object(Version 2.7A-23.8 or above)
Global Setting	
G_START_DELAY	Set all objects start delay
G_MARK_SPEED	Set all objects mark speed
G_MARK_POWER	Set all objects mark power(Version 2.7A-23.14 or above)
G_FILL_PITCH	Set all objects fill pitch(Version 2.7A-23.14 or above)
G_FILL_STYLE	Set all objects fill style(Version 2.7A-23.14 or above)
G_POLY_DELAY	Set all objects poly delay
G_END_DELAY	Set all objects end delay
G_OFFSET_X	Set all objects offset on X direction
G_OFFSET_Y	Set all objects offset on Y direction
G_ANGLE	Set all objects rotate angle
G_ANGLE_CENTER_X	Set all objects rotate center on X direction
G_ANGLE_CENTER_Y	Set all objects rotate center on Y direction
Text Object	
TEXT_NAME	Set text nickname
TEXT_WIDTH	Set text width
TEXT_HEIGHT	Set text height
TEXT_CENTER_X	Set text center position X
TEXT_CENTER_Y	Set text center position Y
TEXT_PITCH	Set text pitch
TEXT_FREQ	Set text mark frequency
TEXT_MARK_SPEED	Set text mark speed
TEXT_WOBBLE	Set text wobble
TEXT_WOBBLE_WIDTH	Set text wobble width
Arc-Text Object	

ARC_TEXT_REFERENCE_ANGLE	Set arc-text reference angle
ARC_TEXT_SPREAD_ANGLE	Set arc-text spread angle
ARC_TEXT_RADIUS	Set arc-text radius
Text Content	
TEXT_CONTENT	Set text or barcode content (Version 2.6B-3 or above)
Graphic Object	
GRAPHIC_NAME	Set graphic nickname
GRAPHIC_WIDTH	Set graphic width
GRAPHIC_HEIGHT	Set graphic height
GRAPHIC_CENTER_X	Set graphic center position X
GRAPHIC_CENTER_Y	Set graphic center position Y
GRAPHIC_FREQ	Set graphic mark frequency
GRAPHIC_MARK_SPEED	Set graphic mark speed
GRAPHIC_WOBBLE	Set graphic wobble
GRAPHIC_WOBBLE_WIDTH	Set graphic wobble width
GRAPHIC_ANGLE	Set graphic rotate angle
Poly-Line Object	
GRAPHIC_POLYLINE	Add poly-line
AutoText	
AUTOTEXT_NAME	Set autotext nickname
AUTOTEXT_START	Set autotext start value
AUTOTEXT_END	Set autotext end value
AUTOTEXT_STEP	Set autotext step value
ArrayCopy	
ARRAY_COPY	Array copy
Mark	
E	Mark standby
END	Mark
Matrix Cell Marking	
MATRIX_MATCH	Enable matrix object cell marking

13.4Command Description

If error is occured, NG code will be returned as following format: NG[NG Code] CR LF

CR：ASCII Code 13

LF：ASCII Code 10

File Operation

Command	**FILE**
Example	FILE[C:\1.EZM] CR LF
Description	Open EZM file.
Unit	Full Path
NG Code	001: Path file didn`t existence.
	002: Invalid command.
	003: Instruction or Parameter beyond range Min value: 1 ANSI character Max value: 256 ANSI characters

Add Object

Command	**ADD_RECT**
Example	ADD_RECT[Name:x,y] CR LF Name: Object name X: Object center position X coordinate Y: Object center position Y coordinate
Description	Create rectangle object(Version 2.7A-23.8 or above)
Unit	X：mm Y：mm
NG Code	200: Created fail, or object is existed.

Command	**ADD_CIRCLE**
Example	ADD_CIRCLE[Name:cx,cy:r] CR LF Name: Object name CX: Object center position X coordinate CY: Object center position Y coordinate R: Radius
Description	Create circle object(Version 2.7A-23.8 or above)
Unit	CX：mm CY：mm R：mm
NG Code	201: Created fail, or object is existed.

Command	**ADD_1DBC**
Example	ADD_1DBC[Name:CodeTyp:Content:CX,CY] CR LF Name: Object name CodeType: Code type index 0：Code39 1：Code128 2：Code128A

	3：Code128B 4：Code128C 5：Code93 6：CodeBar 7：ITF 8：MSI Code 9：US PostNet 10：UPC-A 11：UPC-E 12：EAN8 13：EAN13 14：UCC128 15：EAN128 16：FIM 17：Code25 18：ITF25 Content: Code content
Description	Create 1D Barcode object(Version 2.7A-23.10 or above)
Unit	CX：mm CY：mm
NG Code	202: Created fail, or object is existed.

Command	**ADD_2DBC**
Example	ADD_2DBC[Name:CodeTyp:Content:CX,CY] CR LF Name: Object name CodeType: Code type index 0：Data Matrix (ECC 000~140) 1：Data Matrix (ECC 200) 2：PDF417 3：QR Code 4：Maxi Code 5：PDF417 Truncated 6：Micro PDF417 7：Micro QR Code Content: Code content
Description	Create 2D Barcode object(Version 2.7A-23.10 or above)
Unit	CX：mm CY：mm
NG Code	203: Created fail, or object is existed.

Command	**ADD_CURVE**
Example	ADD_CURVE[Name:X1,Y1:X2,Y2:…:Xn,Yn] CR LF Name: Object name X1: The first line start point X coordinate Y1: The first line start point Y coordinate X2: The second line end point X coordinate Y2: The second line end point Y coordinate Xn: The (n-1)th line end point X coordinate

	Yn: The (n-1)th line end point Y coordinate
Description	Create curve object(Version 2.7A-23.8 or above)
Unit	X1：mm Y1：mm X2：mm Y2：mm Xn：mm Yn：mm
NG Code	204: Created fail, or object is existed.

Command	**ADD_DOT**
Example	ADD_DOT[Name:x,y] CR LF Name: Object name X: Dot X coordinate Y: Dot Y coordinate
Description	Create dot object(Version 2.7A-23.8 or above)
Unit	X：mm Y：mm
NG Code	205: Created fail, or object is existed.

Command	**ADD_IMAGE**
Example	ADD_IMAGE[Name:CX,CY :Path] CR LF Name: Object name Path: Image file path
Description	Create image object(Version 2.7A-23.10 or above)
Unit	CX：mm CY：mm
NG Code	206: Created fail, or object is existed.

Command	**ADD_TEXT**
Example	ADD_TEXT[Name:Content:cx,cy] CR LF Name: Object name Content: Text content CX: Object center X coordinate CY: Object center Y coordinate
Description	Create text object(Version 2.7A-23.8 or above)
Unit	CX: mm CY: mm
NG Code	207: Created fail, or object is existed.

Command	**ADD_ARCTEXT**
Example	ADD_ARCTEXT[Name:Content:cx,cy:r] CR LF Name: Object name Content: Text content CX: Object center X coordinate CY: Object center Y coordinate R: Radius

Description	Create arctext object(Version 2.7A-23.8 or above)
Unit	CX: mm CY: mm R: mm
NG Code	208: Created fail, or object is existed.

Delete Object

Command	**DEL_OBJ**
Example	DEL_OBJ[ObjName] CR LF
Description	Delete object(Version 2.7A-23.8 or above)
Unit	N/A
NG Code	290: Created fail, or object is existed.

Global Setting

Command	**G_START_DELAY**
Example	G_START_DELAY[100] CR LF
Description	Set all objects start delay
Unit	μs
NG Code	020: Instruction or Parameter beyond range. Min value: -42949672(P.S.) Max value: 42949672
P.S.	42949672 μs is the maximum value of delay parameter in PMC2. If controller is not listed below, user will have to check official spec. Check value is mainly restricted by PMC2. The value which is beyond the PMC2 capable value will be reported as NG. Other controller also couldn`t beyond the capable range, otherwise will be considered as NG.

Controller	PMC2/UMC4	MC1	RTC3 & RTC4	RTC5
Start Delay	Range: - 42949672us ~ + 42949672us	Range: - 3276.8us ~ + 3276.7us	Range: - 8000us ~ + 8000us	Range: - 1073741824us ~ + 1073741824us

Command	**G_MARK_SPEED**
Example	G_MARK_SPEED[800] CR LF
Description	Set all objects mark speed
Unit	mm/sec
NG Code	021: Instruction or Parameter beyond range. Min value: 0 Max value: According to setting

Command	**G_MARK_POWER**
Example	G_MARK_POWER[50] CR LF
Description	Set all objects mark power (Version 2.7A-23.14 or above)
Unit	%
NG Code	109: Instruction or Parameter beyond range. Min value: 0 Max value: 100

Command	**G_FILL_PITCH**
Example	G_FILL_PITCH[0.1] CR LF
Description	Set all objects fill pitch (Version 2.7A-23.14 or above)
Unit	mm
NG Code	110: Instruction or Parameter beyond range. Min value: 0 Max value: N/A

Command	**G_FILL_STYLE**
Example	G_FILL_STYLE[2] CR LF
Description	Set all objects fill style (Version 2.7A-23.14 or above)
NG Code	111: Instruction or Parameter beyond range. Min value: 0 Max value: 5

Command	**G_POLY_DELAY**
Example	G_POLY_DELAY[100] CR LF
Description	Set all objects poly delay
Unit	μs
NG Code	022: Instruction or Parameter beyond range. Min value: 0 Max value: 42949672(P.S.)
P.S.	42949672 μs is the maximum value of delay parameter in PMC2. If controller is not listed below, user will have to check official spec. Check value is mainly restricted by PMC2. The value which is beyond the PMC2 capable value will be reported as NG. Other controller also couldn`t beyond the capable range, otherwise will be considered as NG.

Controller	PMC2/UMC4	MC1	RTC3 & RTC4	RTC5
Poly Delay	Max. value is 42949672us	Max. value is 327670us	Max. value is 327670us	Max. value is 42949672960us

Command	**G_END_DELAY**
Example	G_END_DELAY[300] CR LF
Description	Set all objects end delay
Unit	μs
NG Code	023: Instruction or Parameter beyond range. Min value: 0 Max value: 42949672(P.S.)

P.S.	42949672 μs is the maximum value of delay parameter in PMC2. If controller is not listed below, user will have to check official spec. Check value is mainly restricted by PMC2. The value which is beyond the PMC2 capable value will be reported as NG. Other controller also couldn`t beyond the capable range, otherwise will be considered as NG.

Controller	PMC2/UMC4	MC1	RTC3 & RTC4	RTC5
End Delay	Max. value is 42949672us	Max. value is 6553.6us	Range: + 2us ~ + 8000us	Max. value is 1073741824us

Command	**G_OFFSET_X**
Example	G_OFFSET_X[10] CR LF
Description	Set all objects offset on X direction
Unit	mm
NG Code	024: Instruction or Parameter beyond range.

Command	**G_OFFSET_Y**
Example	G_OFFSET_Y[10] CR LF
Description	Set all objects offset on Y direction
Unit	mm
NG Code	025: Instruction or Parameter beyond range.

Command	**G_ANGLE**
Example	G_ANGLE[30] CR LF
Description	Set all objects rotate angle
Unit	degree
NG Code	026: Instruction or Parameter beyond range.

Command	**G_ANGLE_CENTER_X**
Example	G_ANGLE_CENTER_X[10] CR LF
Description	Set all objects rotate center on X direction
Unit	mm
NG Code	107: Instruction or Parameter beyond range.

Command	**G_ANGLE_CENTER_Y**
Example	G_ANGLE_CENTER_Y[10] CR LF
Description	Set all objects rotate center on Y direction
Unit	mm
NG Code	108: Instruction or Parameter beyond range.

Text Object

Command	**TEXT_NAME**
Example	TEXT_NAME[3] CR LF
Description	Set text nickname
Unit	character
NG Code	030: No such text object.

Command	**TEXT_WIDTH**
Example	TEXT_WIDTH[10] CR LF
Description	Set text width
Unit	mm
NG Code	031: Parameter error.

Command	**TEXT_HEIGHT**
Example	TEXT_HEIGHT[10] CR LF
Description	Set text height
Unit	mm
NG Code	032: Parameter error.

Command	**TEXT_CENTER_X**
Example	TEXT_CENTER_X[10] CR LF
Description	Set text center position X
Unit	mm
NG Code	033: Parameter error.

Command	**TEXT_CENTER_Y**
Example	TEXT_CENTER_Y[10] CR LF
Description	Set text center position Y
Unit	mm
NG Code	034: Parameter error.

Command	**TEXT_PITCH**
Example	TEXT_PITCH[1] CR LF
Description	Set text pitch
Unit	mm
NG Code	035: Parameter error.

Command	**TEXT_FREQ**
Example	TEXT_FREQ[20] CR LF
Description	Set text mark frequency
Unit	KHz
NG Code	036: Instruction or Parameter beyond range. Min value: According to setting Max value: According to setting

Command	**TEXT_MARK_SPEED**
Example	TEXT_MARK_SPEED[800] CR LF
Description	Set text mark speed
Unit	mm/sec
NG Code	037: Instruction or Parameter beyond range. Min value: 0 Max value: According to setting

Command	**TEXT_WOBBLE**

Example	TEXT_WOBBLE[50] CR LF
Description	Set text wobble
Unit	%
NG Code	038: Instruction or Parameter beyond range.

Command	**TEXT_WOBBLE_WIDTH**
Example	TEXT_WOBBLE_WIDTH[1] CR LF
Description	Set text wobble width
Unit	mm
NG Code	039: Parameter error.

Arc-Text Object

Command	**ARC_TEXT_REFERENCE_ANGLE**
Example	ARC_TEXT_REFERENCE_ANGLE[45] CR LF
Description	Set arc-text reference angle
Unit	degree
NG Code	042: Parameter error.

Command	**ARC_TEXT_SPREAD_ANGLE**
Example	ARC_TEXT_SPREAD_ANGLE[90] CR LF
Description	Set arc-text spread angle
Unit	degree
NG Code	043: Parameter error.

Command	**ARC_TEXT_RADIUS**
Example	ARC_TEXT_RADIUS[10] CR LF
Description	Set arc-text radius
Unit	mm
NG Code	044: Value less than 0. Min value: 0

Text Content

Command	**TEXT_CONTENT**
Example	TEXT_CONTENT[ABC] CR LF
Description	Set text or barcode content (Version 2.6B-3 or above)
Unit	character
NG Code	003: Instruction or Parameter beyond range. Min value: 1 ANSI character Max value: 256 ANSI characters

Graphic Object

Command	**GRAPHIC_NAME**
Example	GRAPHIC_NAME[3] CR LF
Description	Set graphic nickname
Unit	character
NG Code	050: No such object.

Command	**GRAPHIC_WIDTH**

Example	GRAPHIC_WIDTH[10] CR LF
Description	Set graphic width
Unit	mm
NG Code	051: Parameter error.

Command	**GRAPHIC_HEIGHT**
Example	GRAPHIC_HEIGHT[10] CR LF
Description	Set graphic height
Unit	mm
NG Code	052: Parameter error.

Command	**GRAPHIC_CENTER_X**
Example	GRAPHIC_CENTER_X[10] CR LF
Description	Set graphic center position X
Unit	mm
NG Code	053: Parameter error.

Command	**GRAPHIC_CENTER_Y**
Example	GRAPHIC_CENTER_Y[10] CR LF
Description	Set graphic center position Y
Unit	mm
NG Code	054: Parameter error.

Command	**GRAPHIC_FREQ**
Example	GRAPHIC_FREQ[20] CR LF
Description	Set graphic mark frequency
Unit	kHz
NG Code	055: Instruction or Parameter beyond range. Min value: According to setting Max value: According to setting

Command	**GRAPHIC_MARK_SPEED**
Example	GRAPHIC_MARK_SPEED[800] CR LF
Description	Set graphic mark speed
Unit	mm/sec
NG Code	056: Instruction or Parameter beyond range. Min value: 0 Max value: According to setting

Command	**GRAPHIC_WOBBLE**
Example	GRAPHIC_WOBBLE[50] CR LF
Description	Set graphic wobble
Unit	%
NG Code	057: Instruction or Parameter beyond range. Max value: 100

Command	**GRAPHIC_WOBBLE_WIDTH**

Example	GRAPHIC_WOBBLE_WIDTH[1] CR LF
Description	Set graphic wobble width
Unit	mm
NG Code	058: Parameter error.

Command	**GRAPHIC_ANGLE**
Example	GRAPHIC_ANGLE[30] CR LF
Description	Set graphic rotate angle
Unit	degree
NG Code	060: Parameter error.

Poly-Line Object

Command	**GRAPHIC_POLYLINE**
Example	GRAPHIC_POLYLINE[StartX, StartY, EndX, EndY:…,EndY] CR LF
Description	Add Poly-Line StartX: Set add line start point X StartY: Set add line start point Y EndX: Set add line end point X EndY: Set add line end point Y
NG Code	104: Instruction format error.

AutoText

Command	**AUTOTEXT_NAME**
Example	AUTOTEXT_NAME[3] CR LF
Description	Set autotext nickname
Unit	character
NG Code	003: Value beyond range. Min value: 1 ANSI character Max value: 256 ANSI character

Command	**AUTOTEXT_START**
Example	AUTOTEXT_START[0] CR LF
Description	Set autotext start value
Unit	Integer
NG Code	081: Parameter error.

Command	**AUTOTEXT_END**
Example	AUTOTEXT_END[100] CR LF
Description	Set autotext end value
Unit	Integer
NG Code	082: Parameter error.

Command	**AUTOTEXT_STEP**
Example	AUTOTEXT_STEP[1] CR LF
Description	Set autotext step value
Unit	Integer
NG Code	083: Parameter error.

Array Copy

Command	**ARRAY_COPY**
Example	ARRAY_COPY[ObjName:PositionX,PositionY:PitchX,PitchY:NumberX,NumberY] CR LF
Description	Array copy ObjName :Set array nickname PositionX :Set array object center position X PositionY :Set array object center position Y PitchX: Set array object unit pitch on X direction PitchY: Set array object unit pitch on Y direction NumberX: Set array object unit count on X direction NumberY :Set array object unit count on Y direction
NG Code	103: Instruction format error.

Mark

Command	**E**
Example	E[] CR LF
Description	Mark standby
NG Code	001: Path file didn`t existence.
	040: Beyond marking range Min value: According to setting Max value: According to setting
	102: Couldn`t find protection dongle

Command	**END**
Example	END[] CR LF
Description	Mark
NG Code	003: Marking buffer under run.

Matrix Cell Marking

Command	**MATRIX_MATCH**
Example	MATRIX_MATCH[11001101] CR LF Instruction rule please refer to MMOCX.SetMatrixMatch
Description	Enable matrix object cell marking
Unit	character
NG Code	105: Parameter error. Min value: 0 Max value: 1

13.5NG Code List

NG	NG Definition
001	Path file didn`t existence
002	Invalid Command
003	Instruction , Parameter beyond range, or marking buffer under run
020	Instruction or Parameter beyond range
021	Instruction or Parameter beyond range
022	Instruction or Parameter beyond range
023	Instruction or Parameter beyond range
024	Parameter error
025	Parameter error
026	Parameter error
030	No such text object
031	Parameter error
032	Parameter error
033	Parameter error
034	Parameter error
035	Parameter error
036	Instruction or Parameter beyond range
037	Instruction or Parameter beyond range
038	Instruction or Parameter beyond range
039	Parameter error
040	Beyond working range
042	Parameter error
043	Parameter error
044	Value less than 0
050	No such object
051	Parameter error
052	Parameter error
053	Parameter error
054	Parameter error
055	Instruction or Parameter beyond range
056	Instruction or Parameter beyond range
057	Instruction or Parameter beyond range
058	Parameter error
060	Parameter error
081	Parameter error

082	Parameter error
083	Parameter error
102	Couldn`t find protection dongle
103	Instruction format error
104	Instruction format error
105	Parameter error
107	Parameter error
108	Parameter error
109	Instruction or Parameter beyond range
110	Instruction or Parameter beyond range
111	Instruction or Parameter beyond range
200	Created fail, or object is existed
201	Created fail, or object is existed
202	Created fail, or object is existed
203	Created fail, or object is existed
204	Created fail, or object is existed
205	Created fail, or object is existed
206	Created fail, or object is existed
207	Created fail, or object is existed
208	Created fail, or object is existed
290	Deleted fail, or object is not existed

14. Hot Key

The list below is a list of default shortcut key. Users could define most of them from option→shortkey.

File Menu	
Ctrl + N	Create a new document
Ctrl + O	Open an existing document
Ctrl + S	Save the current document using the existing file name
Ctrl + I	Import
Ctrl + P	Print
Edit Menu	
Ctrl + Y	Replace a cancelled action
Ctrl + Z	Cancel un unwanted action
Ctrl + X	Remove the selected object and place it in the clipboard
Ctrl + C	Duplicate the selected object and place it in the clipboard
Ctrl + V	Place the data on the clipboard on to the document
DEL	Delete the selected object
Ctrl + K	Combine
Ctrl + B	Break
Ctrl + M	Group
Ctrl + Q	UnGroup
Ctrl + H	Mirror Horizontal
Ctrl + L	Mirror Vertical
Ctrl + E	Baseline
Ctrl + D	Split
Ctrl + U	Transfer to a curve
Ctrl + A	Trimming
Ctrl + G	Welding
Ctrl + W	Contour
Execute Menu	
F5	Marking
F6	Quick Mark
F7	Dry Run

F10	Close Dialogue Box of Marking, Quick Mark, and Dry Run
Others	
F1	Open HELP
F2	Open the Object Browser
Shift+F2	Move the Object Browser to the lower left corner
F3	Open the Dimension Bar
F4	Open the User Level dialogue box
Ctrl + F4	Close the current file
Ctrl + F6	Switch to another opened file
Ctrl	1. Force the angle of a line segment to be 15°when drawing a line, and force the width equal to the height when drawing an arc, circle, or rectangle. 2. The XY axis of the object will be adjusted simultaneously
Ctrl + T	Open the Property Table
Shift	The center of a circle or rectangle will be the center of the initial axis The XY axis of the object will be adjusted simultaneously
Tab	Select object by marking order
C	When you are drawing lines, arcs, and curves, press C key will make the continuous segments become a closed loop.
X/Y	Set the start point or end point of the object