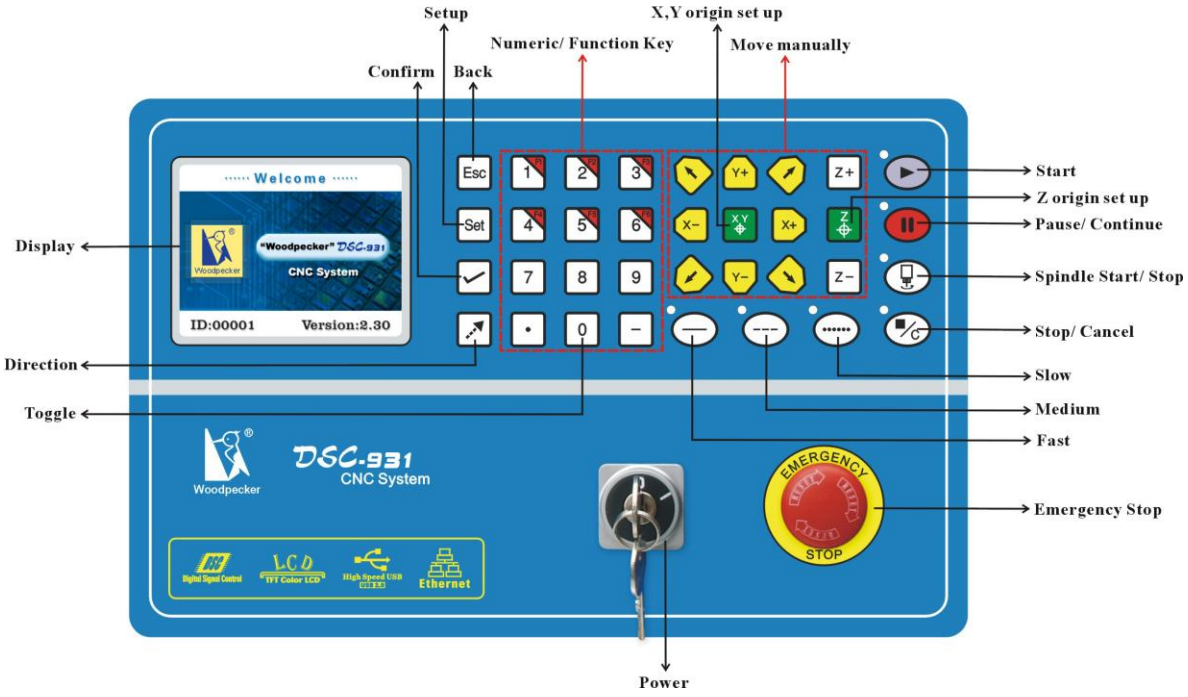
Woodpecker DSC-931 CNC Controller
User Manual



Contents

Chapter 1 - Machine Initialization and Password Input

Press " Esc "key，the machine will initialize and go to screen 1

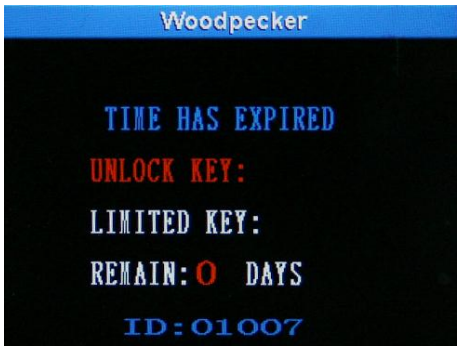
Press " ↗ "key，the machine will not initialize and goes directly to screen 1.

(⚠ this may make the machine origin not accurate).

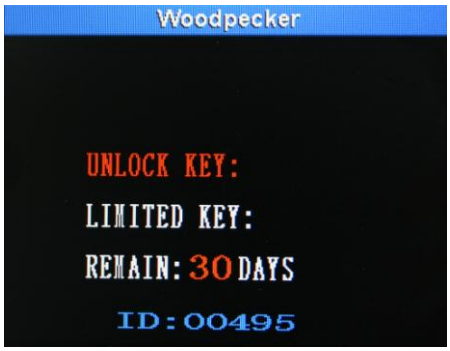
NOTE：If after turning on the machine, the screen displays "Days Left" or "WAITING", please wait for "ID ***" to appear and then initialize the machine.**

If the expiration date has past and the permanent password or time limit password needs to be inputted, please perform the following:

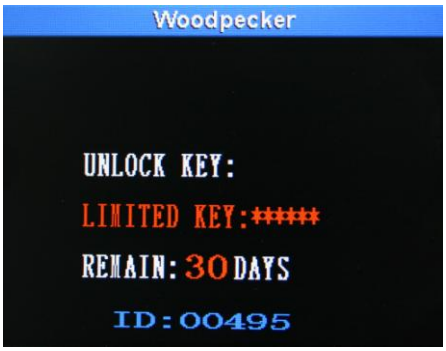
Press " Set "key to go to the screen to input the password. Then press " ↗ " to toggle between the Permanent Password and the Time Limit Password. Input the password, then press the " ✓ " to save. The Time Limit Password is only good for 30 days.



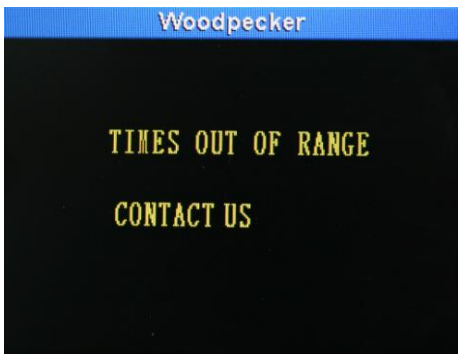
Time has expired



Input unlock key

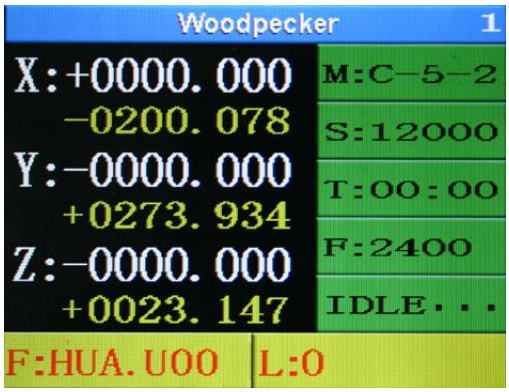


Time limit key



If the key is entered incorrectly 6 times, the controller will be locked and show this screen.

Chapter 2 - Main Menu



Description of above screen：

1. XYZ represents the machine home position, the numbers below it represent the work piece position.

2. **Work Mode:**C-5-2/L-5-2 (C is Curve Mode，L is Line Mode，5 is the speed， 2 is the angle speed.)

3. **S: 12000** represents the actual RPM of the spindle.
4. **T:00:00** represents the job working time (in hours and minutes).
5. **F: 2400** represents the current feed rate (in mm/min).
6. **IDLE:** there is nothing running, **JOG:** moving the machine manually，
   RUN: the machine is working，**HALT:**the machine is paused，
   STOP:the machine is stopped.
7. F:HUA.U00 the name of the file in internal memory (the file name can be changed，in this example, the HUA can be changed to anything and will be in this format (*.U00').
8. L: 0 the current line of the work piece.
9. Press  +  (to make X,Y,Z axis back to machine 0 point)

Main Menu Screen Operation：

On this screen, Run, Pause and Stop can be used, changing speeds, sensor calibration, origin points, RPM and other parameters can be set.

Run, Pause, Stop keys:  Located on the keyboard.

To change speed during operation, press "  "to increase the speed. The maximum speed increment is 25% of the feed rate. Press"  "to lower the speed.

To manually set the origin of the work piece, press"  ", "  "or"  ", the light next to the button will turn green. After this, press"  ", "  ", "  ", "  ", "  ", "  "to move the X,Y,Z axis. To move XY together, press "  ", "  ", "  ", "  " keys.

Start/Stop the spindle：Press"  "key. Press"  "during machine operation，the spindle will start running and go to the RPM that was inputted and start the job.

Adjust the speed of spindle：In the following modes: IDLE，RUN or HALT, press "  " increases the spindles RPM， press"  " to decrease the speed (go to screen 6 to setup the speed increment/decrement of the spindle 

Go into parameter setup screen：In the IDLE mode，press"  " to go into parameter setup screen（See Figure 5）

Sensor：On this screen, machine must be in IDLE mode，press"  " +"  "，to adjust the sensor.

Return to home position：On this screen, machine must be in IDLE mode，press"  " +"  "， to make the machine return to the home position.

Chapter 3 - Parameter Setup

On this screen, all the parameters can be setup

Parameter Setup Screen (Screen 2)：Machine must be in IDLE mode，press " Set **" to enter Screen 2. Press F1-F6 to enter the different parameter setups.**

F1 Para Setup: Parameters for the work operations.

F2 Select File: USB files, Internal memory files, Ethernet files.

F3 Option： Multi origin points, start job from any line number, restart from last point (power failure), matrix job, parameter backup, etc..

F4 System Setup： Initialize home position, tasks after completing job, spindle parameter setup, height of the sensor.

F5 Simulate： Simulate the job program.

F6 Machine Setup： Pulse, screw, XYZ range, maximum speed, etc…

3.1 - Machine Parameter Setup (F1)

Press F1 to go to Parameter Setup.

1. Feed Rate：Controls G01 code speed during operation (mm/sec).
2. Rapid Rate：Controls G00 code speed during operation (mm/sec).
3. Curve Rate：Controller adjusts speed for curves in the work piece.

（⚠ The larger the number, the faster the speed）.

4. Work Mode: Press 0 to change from L mode (2D) to C Mode (3D).
5. Acceleration Coefficient：Interval allowed: 1-9. After inputting the feed rate, the machine will use the acceleration coefficient accordingly.
6. Curve Coefficient：Interval allowed: 1-5.
7. Start Rate：The system's lowest speed.
8. Rate of Acceleration：The rate of acceleration.
9. Jog Rate：Movement speed of the machine (mm/sec).
10. Z Down Rate：Speed of the Z axis down movement. (mm/sec).
11. Z Up Rate：Speed of the Z axis up movement (mm/sec).
12. Z Safe Height：Safety distance between tabletop and the spindle.

⚠**Note: For more details on acceleration and curve coefficient, refer to Page 40.**

Use the following keys to navigate "  ", "  " ,"  ", "  ".

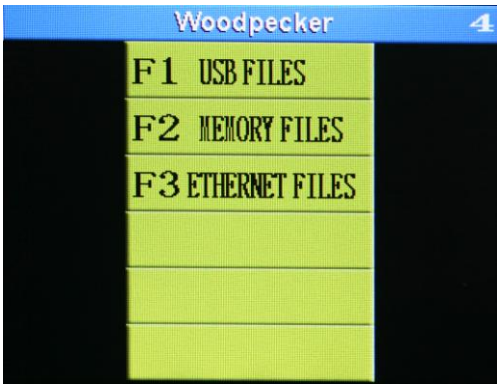
Use the keypad to enter numbers.

(1) To change 2D/3D mode, press"  " to toggle between the modes.

(2) Press"  "to save the current parameters and quit the screen.

(3) Press"  "to cancel the changes.

3.2 - Select File (F2)



Press F2 to select the files, F1-F3 to choose among the 3 options.

1. USB Files：After inserting USB disk, choose the file from the USB disk to copy to internal memory or use the file.
2. Internal memory：Press"  "to choose the file.
3. Ethernet files：Use Ethernet transmission to save the file to internal memory.

Operate like below：

（1） Press F1 key to copy the USB disk file.

Copy the USB file into internal memory.

Use the following keys to navigate "  ", "  " ,"  ", "  ". Choose the file to copy into internal memory.

(a) Press"  "to clear internal memory and copy the selected file into internal

memory.

(b) Press"  "to copy selected file into internal memory.

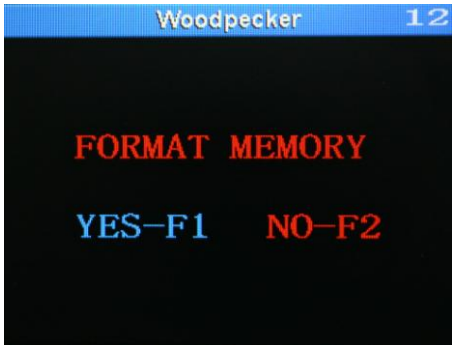
(c) Press"  " to enter oblique mode copy screen.

（2）Press F2 to access internal memory files

Use the following keys to navigate "  ", "  ", "  ", "  " and select the file.

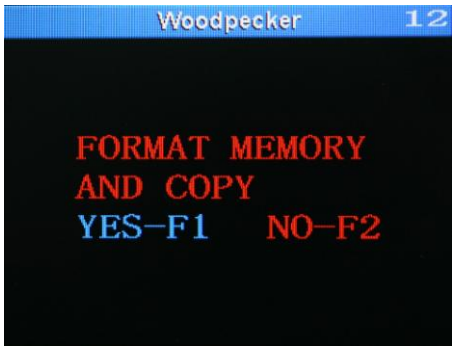
(a) Press"  " to select the file. Once selected, it will display the file name on the main menu.

(b) Press"  "to quit the screen.



If the internal memory is full, use Format Memory to release space.

Note: The size of the file that is copied cannot be larger than the internal memory.



During copying of the file, if the file is too large for the internal memory, use the Format Memory and Copy to free up the internal memory and copy the file .

Note: The size of the file that is copied cannot be larger than the internal memory.

（3）Press F3 to use Ethernet Transmission.

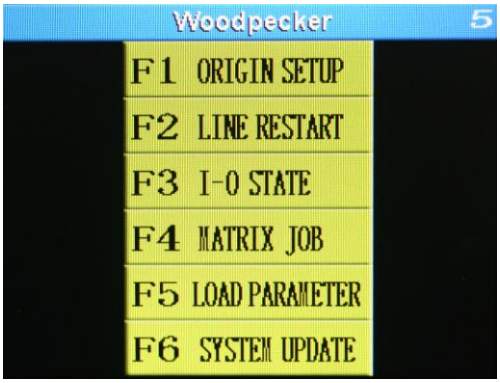
Use Ethernet to input the file

When Screen 17 displayed, turn on the computer to download your Ethernet file.After the file is downloaded, it will display completed.

Press"Esc"to quit Ethernet Transmission screen.

Ethernet transmission refer to Page 30.

3.3 - Option

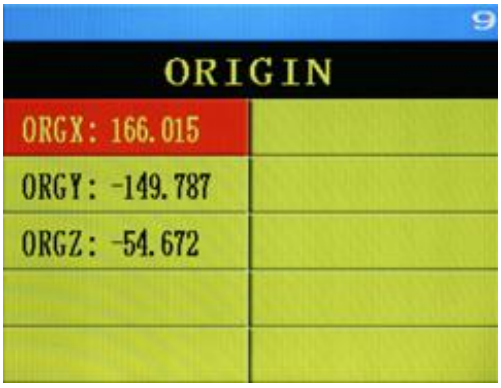


Press F3 to choose the functions. F1-F6 to select the different functions.

1. F1 Origin setup：To setup the origin XYZ (zero position) of the work piece. Multi-origin point can also be setup here.
2. F2 Line restart：Input the line job to start job from.
3. F3 I-O state：After power interruption, turning on the power will restart the job from where it stopped.
4. F4 Matrix Job：Repeat the last job from a different position.
5. F5 Load Parameter：Backup all the parameters.
6. F6 System Update：New functions can be downloaded via USB to upgrade the system. Only ROC-Mese machines can be upgraded via this proprietary system. Unauthorized users trying to update machines may be damaged and is not the responsibility of ROC-Mese.

To Operate:

（1） Press F1 to go "Origin Setup"

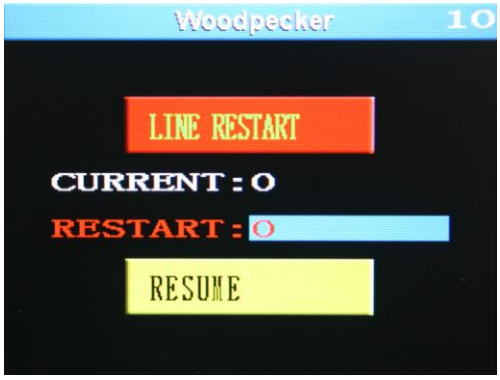


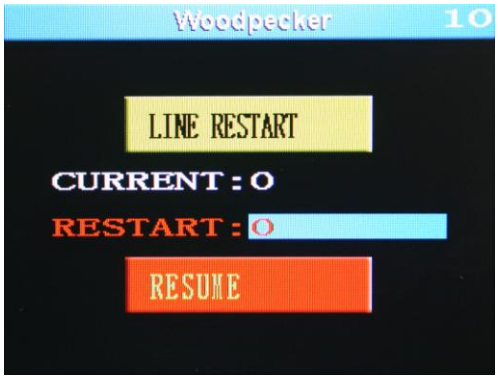
Use the following keys to navigate "  ", "  " ,"  ", "  " and select among the choices.

Press"  "to save the current parameters and quit the screen.

Press"  "to cancel the changes.

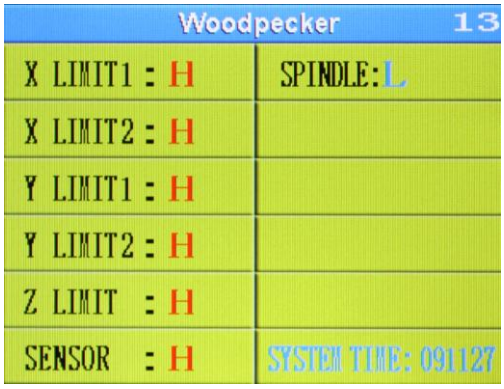
（2） Press F2 to go "Line Restart"





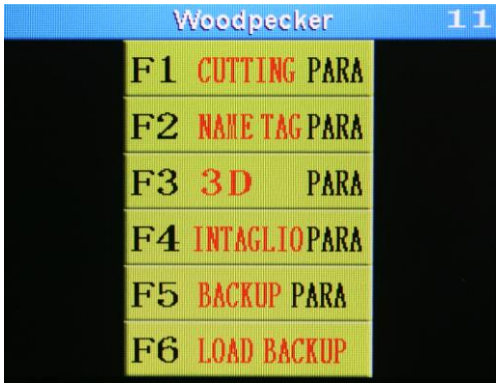
Any line number can be inputted to start the job. After inputting the line number, press the "  " key， to start the job. If the input line is greater than the number of lines in the program, the system will display an error message, "Out of range".

(3) Press F3 to go I-O State

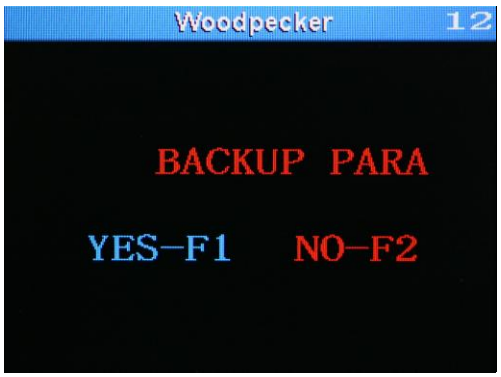


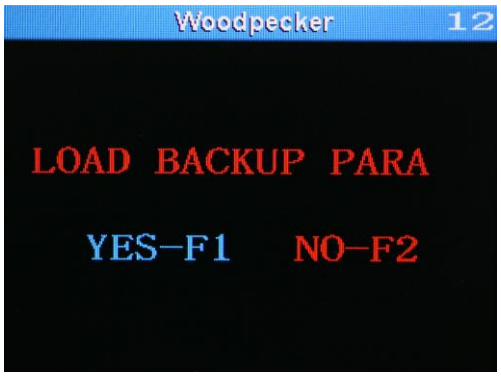
This screen is to see if the limit switch is working or not. If there is questions as to whether the limit switch is working, go to this screen. Use a screwdriver and touch the limit switch. If the values toggle between "H" and "L" when touching the limit switch, it means the limit switch is working correctly.

(4) Press F4 to go Load Parameter



F1-F4 are manufacturer parameters. Located here are default parameters for different kinds of jobs which can be used if the user is unsure of what parameters to use in his job.





F5 is used to backup the parameters that were set up by the user. After pressing F5,the system will ask again if you wish to back up the parameters. F6 can recover the previous parameters and work mode which was used. The system will ask twice if you wish to recover the previous parameter and work mode. （⚠ **Note: Use the F5 and F6 parameters wisely. The manufacturer or current parameters may be overridden by these function keys.**）

Press F6 to go "System Update"

First, copy the update file to the USD disk then read the file from the machine. The file must be in the following format "*.rut". Press the ✓ key to update.

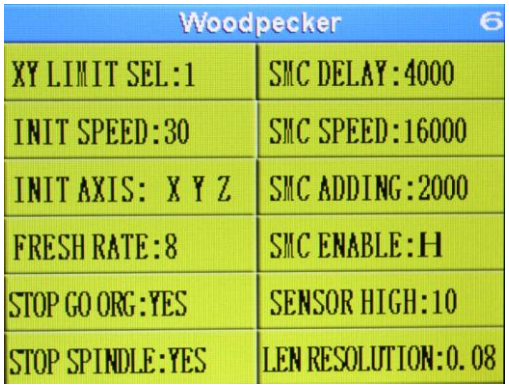
（⚠**Before updating, contact ROC-Mese. If the update file is not given by ROC-Mese, the machine may end up being disabled. ROC-Mese takes no responsibility from updates performed by non ROC-Mese files.**

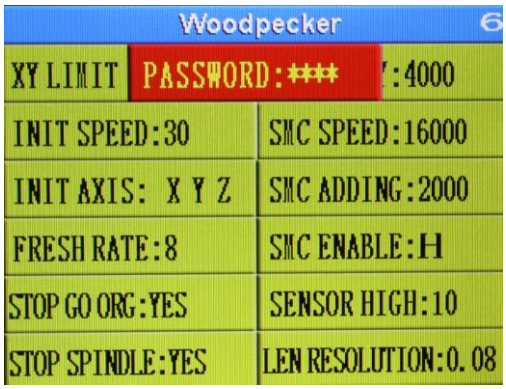
When updating make sure no virus in USB disk, then keep the power on and no touch the USB disk during updating which may damage the system permanently.

If update fails, you can do as follows to back: first press button, and make the power on until showing normal DSC screen. ⚠ It also can be used for system paralysis or abnormal.）

Update finished, restart

3.4 – System Parameters





Press F4 to go to "System Parameter Setup"

Parameters on this screen are the following:

1. XY Limit: The user can choose 1 or 2 limit switches. On larger machines, there are 2 limit switches. On machines with 2 limit switches, if the home position is chosen, the machine will move quickly to the first limit switch and then proceed slowly to the second limit switch and then stop.
2. Init Speed: After turning on the machine, the speed to go to the home position.
3. Init Axis: After turning on the machine, choice between X,Y,Z axis going to the home position or not going to the home position.
4. Refresh Rate: During the job, the speed of the system to refresh the data on the screen. (The range is 1-10. 1: slow, 10: fast)
5. Stop Go ORG: When the job stops, go to the work home position.

6. Stop Spindle：Upon completion of job, stop the spindle.
7. Spindle Delay：Time for spindle to run before starting the job.
8. Spindle speed：Spindle RPM for the job.
9. SMC Adding：Spindle RPM increment.
10. SMC Enable：Based upon the machine inverter, spindle type could be high or low frequency.
11. Sensor height：Machine calibrator height in millimeters.

Use the following keys to navigate "  ", "  ","  ", "  ".

Use the numeric keys to change or input the parameters.

(1) XY Limit： X,Y Limit is set at "1" or "2". These are manufacturer's parameters and cannot be changed;

(2) Initialization speed must be between 25-30;

(3) Setup axis initialization:

Press "  " key for X axis initialization.

Press "  " key for Y axis initialization.

Press "  " key for Z axis initialization.

（4）Initialization direction：（Do not change this parameter. It may damage the machine.）

（5）Back to origin，press "  " key to go to the job's origin after stopping the job.

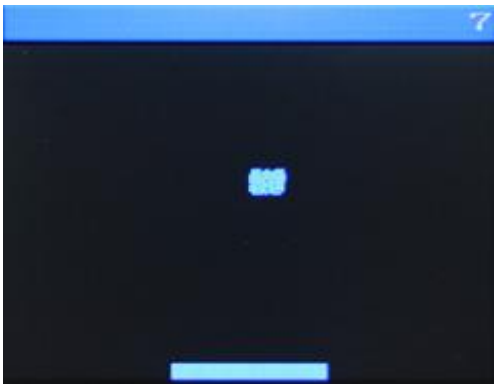
（6）Stop spindle：press "  " key to start/stop the spindle after the job is completed.

（7）Spindle type: press "  " key to toggle between high/low frequency.

Press "  " key to save all the changes and quit the screen.

Press "  " key to cancel the changes.

3.5 - Preview



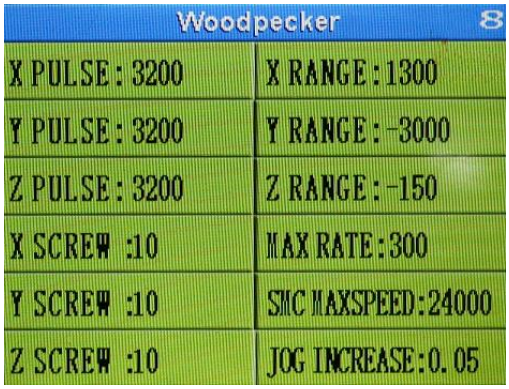
Preview the tool path

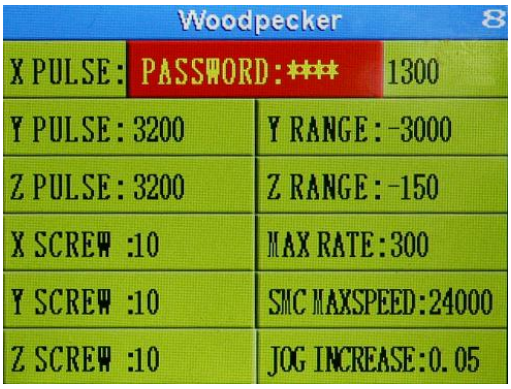
Display the tool path

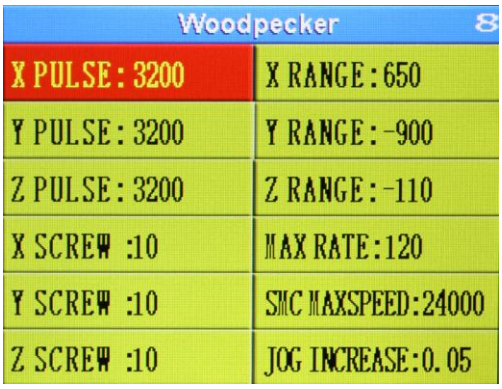
Press F5 key to go "Preview" screen

1. On this screen, preview the toolpath and determine if the job it is too large.
2. On this screen, it will simulate the job on the screen. Press "F5" to display the whole job.
3. During Preview, press "ESC" key to quit at anytime.

3.6 – Machine Parameter







1. X Pulse：X Driver step.
2. Y Pulse：Y Driver step.
3. Z Pulse：Z Driver step.
4. X Screw：Distance between the X ball screw threads.
5. Y Screw：Distance between the Y ball screw threads.
6. Z Screw：Distance between the Z ball screw threads.
7. X Range ：The X-axis total range of movement. The number must be positive.

（⚠ **The parameter cannot be larger than the machine working size.**）

8. Y Range：The Y-axis total range of movement. The number must be negative.

（⚠ **The parameter cannot be larger than the machine working size.**）

9. Z Range：The Z-axis total range of movement. The number must be negative.

（⚠ **The parameter cannot be larger than the machine working size.**）

10. Maximum Speed：The maximum movement speed of the machine during a job.

MM/sec.

11. Maximum RPM： The maximum RPM of the spindle.

12. Jog Increase: The jog increment

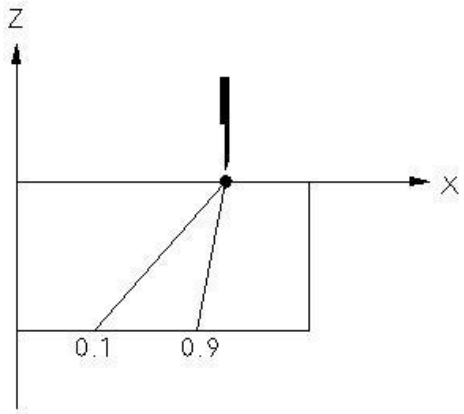
⚠**Note: Above parameters are set by the manufacturer. Any changes may damage the machine. If you need to change the parameters, a password must be entered.**

Chapter 4 Oblique

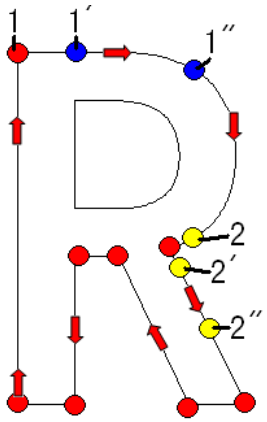
In the USB screen, choose the file to copy, press "Set" key, to enter the OBLIQUE screen.

On this screen, the oblique angle can be setup here for the job. The range is between 0.1 to 0.9.， the larger the number, the larger the angle. After copying the file, the name of the file will become "*.RMP" and saved into internal memory.

Drawing to explain Oblique：



This function is ideally suited when cutting acrylic so double sided tape is not needed to keep the material down. Choosing the starting point is very important when cutting acrylic if the design contains curves. If starting the cut on a curve, the material will pop out before it is completed. Look at the diagram below for the ideal starting points.



All the red dots shown in the diagram below show the angles. The arrow keys show the direction of the cut.

1) If the starting point is 1 and the angle is 0.5, then the ending point will be 1'.This is the proper way to operate this job.

2) If the starting point is 1 and the angle is 0.2, then the ending point will be 1''. This is the proper way to operate this job.

3) If the starting point is 2 and the angle is 0.5, then the ending point will be 2'. Because you started at an angle, before the job completes, the material will pop out.

4) If the starting point is 2 and the angle is 0.2, then the ending point will be 2''. Because you started at an angle, before the job completes, the material will pop out.

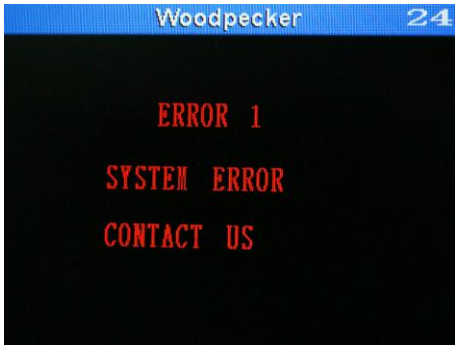
Note: For better quality, do not start at an angle. It is important to choose a good starting point, angle and direction of cutting.

Chapter 5 Errors and Warnings

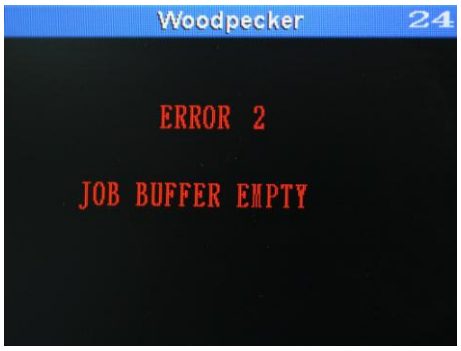
During processing, if the machine encounters a problem, an error message will be displayed. The machine spindle will then be raised to its safety height. Press "ESC" key to go to the main menu to find out the problem and restart the job. The machine must be restarted by turning it off and then on.

5.1 Errors

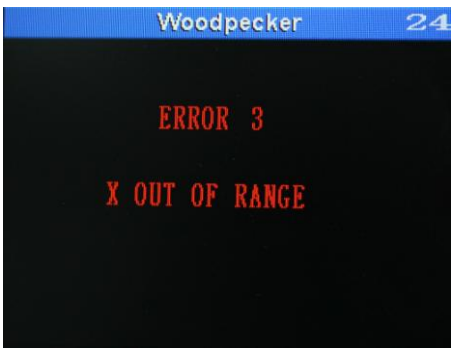
Error 1: System Error. Please contact ROC-Mese.



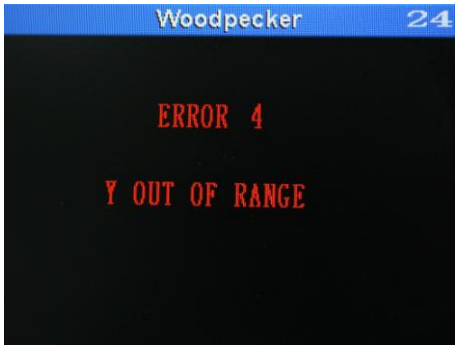
Error 2: Job Buffer Empty. The job is empty.



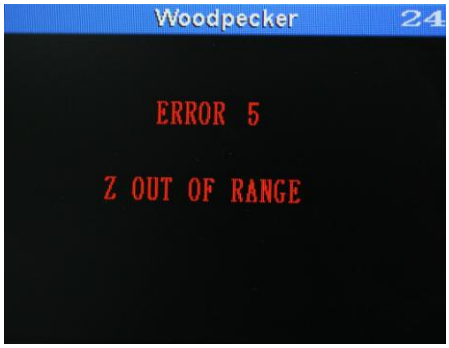
Error 3：X out of range.



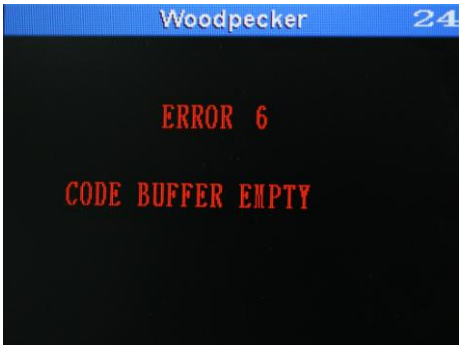
Error 4：Y out of range



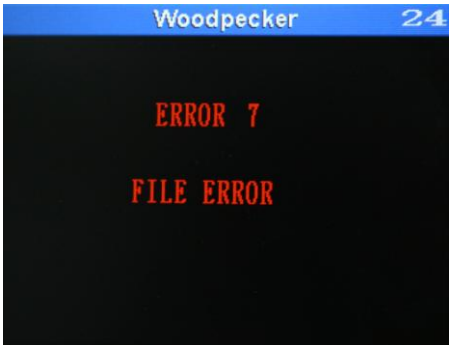
Error 5：Z out of range



Error 6: Code Buffer Empty



Error 7: File Error



The file has no data or the job is empty.

Reason 1：The code is incorrect in the file.

Reason 2：The speed is too fast, the feed rate speed must be lowered. Restart the job after this.

Error 8: Code Error Oxff

Inside the file, some of the code is incorrect.

Reason 1：The original file had errors in the code.

Reason 2：USB Disk has a virus and has corrupted the file. The USB disk must be reformatted and the files must be recopied.

Reason 3：Internal memory chips have a problem. Main board must be changed.

Error 9: System Error Please Restart

Error 10: System Error (Feed rate Overflow)

5.2 Warnings

1. No Job File

Reason:

No chosen files , you need choose files first then press "run".

2. Open File Error

Reason:

The touching of U disk is not good when copying, or U disk error, and you need format U disk and test again.

3. No USB Disk

Reason:

Copying files without using U disk or U disk error , you need format it first and try again.

4. Sensor Error

Reason:

System not finding the sensor, you need check the connection of the sensor, or the setting height of it.

5. File Has Changed

Reason:

The File has been changed, cant going on from breakpoint.

6. Job Completed

Reason:

The File has been finished, cant going on from breakpoint.

7. Line Out Of Range

Reason:

The line you put in is out of the file range line

8. File Error

Reason:

The kind of the file is not right.

9. Write Memory Error

Reason:

Write Memory is broken, if format and copy file again still not working, please contact the company.

10. Memory Id Error

11. Verifying Ok

12. Verifying Failed

13.Verifying

14. Memory Overflow

15. File Type Error

16.Ok Restart

17.Failed Contact Us

18. Z Out Of Range

Appendix 1：DSC Transferring via Ethernet

1. Setting up Network on PC

1.1 Under "My Computer", Right click the mouse key and go into Properties. See Figure 1.1

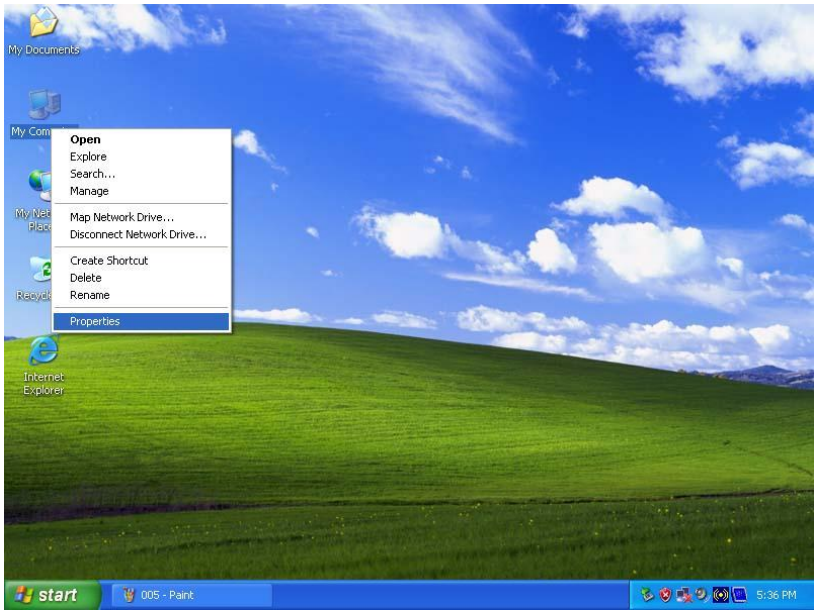


Figure 1.1

1.2 Go to "Computer Name" and click on "Change" See Figure 1.2

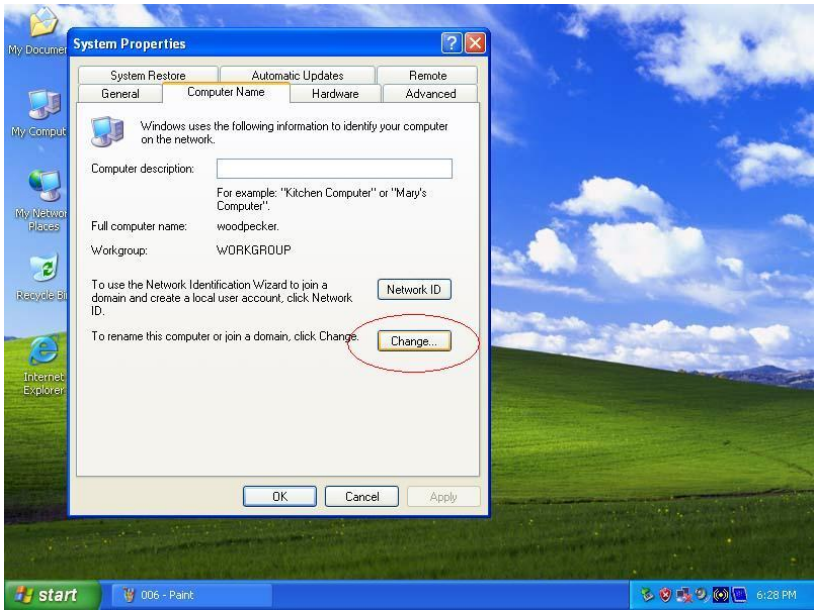


Figure 1.2

1.3 Make sure there is name under "Computer Name" and a "Workgroup" name. If there are none, input a computer name and workgroup name. Usually the workgroup name is "Workgroup". See Figure 1.3

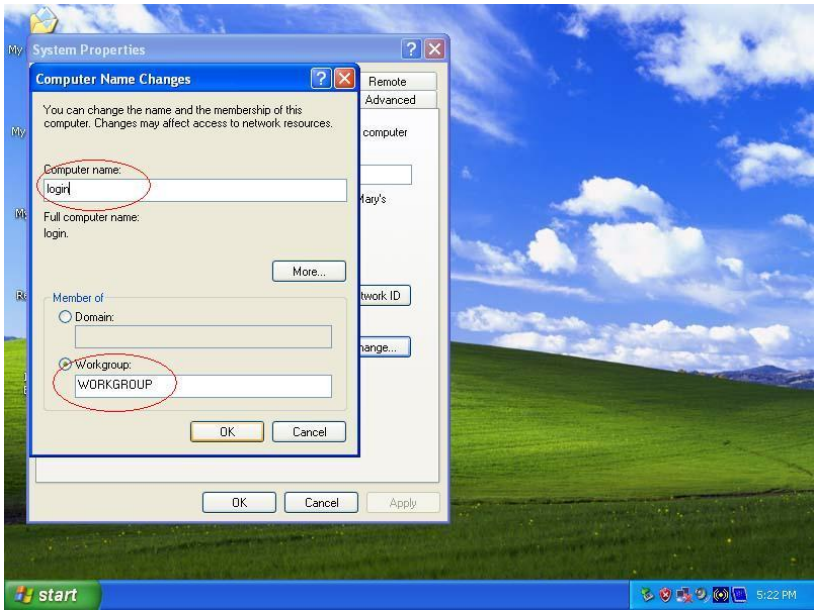


Figure 1.3

1.4 Go into My Network Places, right click on the mouse and go into Properties. See Figure 1.4

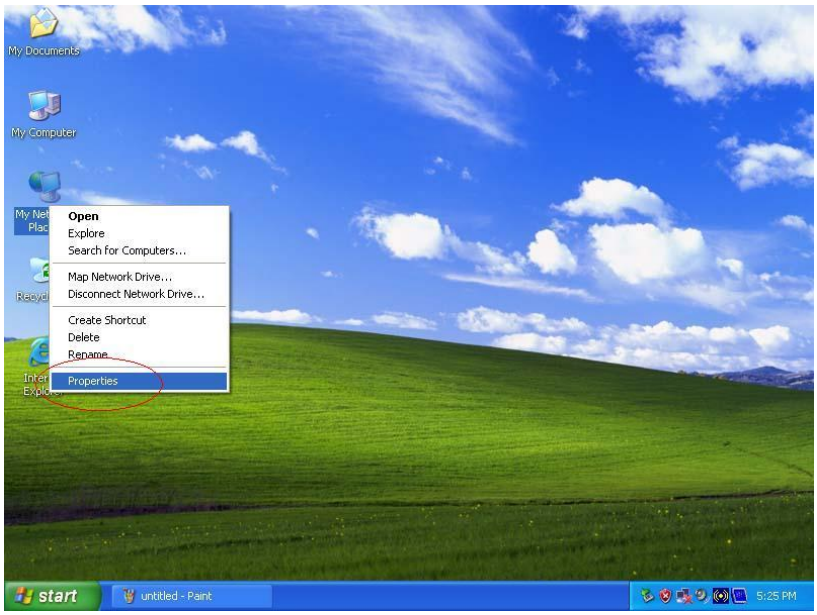


Figure 1.4

1.5 Go into Local Area Connection, right click on the mouse and go into Properties. See Figure 1.5

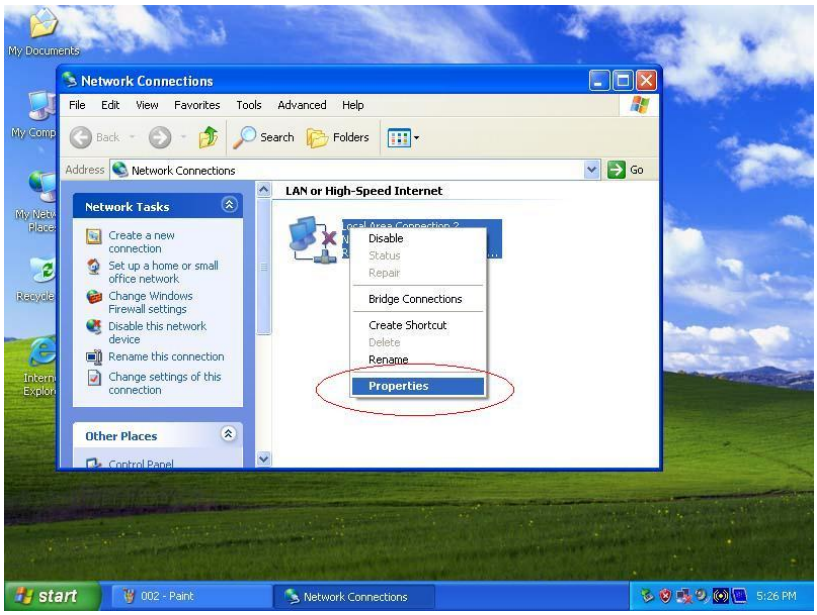


Figure 1.5

1.6 Double click on "Internet Protocol (TCP/IP). See Figure 1.6

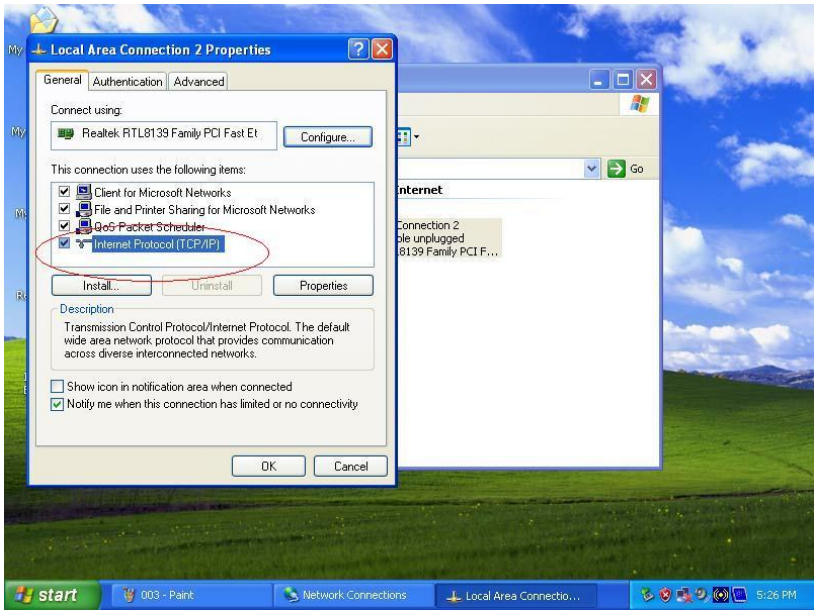


Figure 1.6

1.7 Setup the IP address and Subnet Mask. For example use 192.168.1.15（DSC controller IP address is fixed at 192.168.1.8). Note: the PC IP Address cannot be the same as the ARM controller address but it should share the same Workgroup name. Click on "OK" to save it. See Figure 1.7.

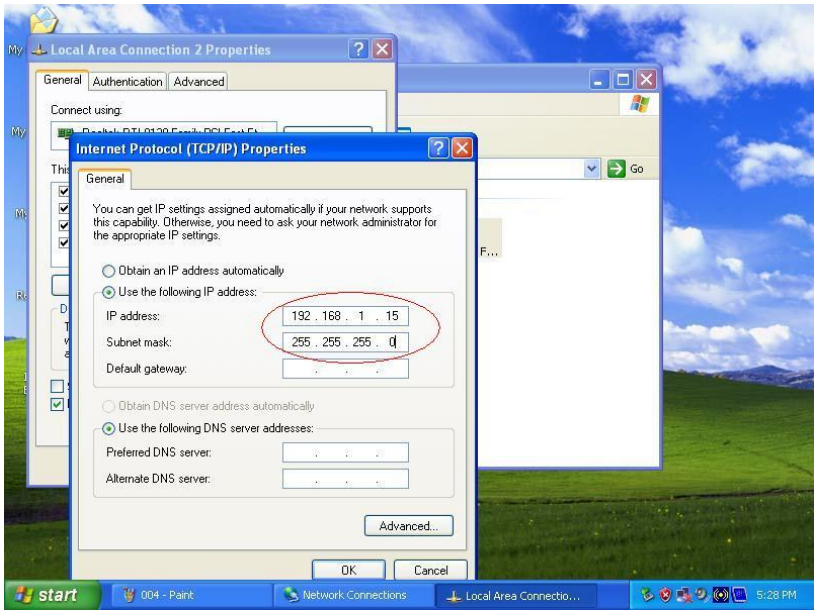


Figure 1.7

1.8 Go to "Start" then "Run" and then type in "cmd" and hit OK. A DOS screen will show up. Type "PING 192.168.1.8" and see if the PC is connected with the DSC controller. See Figure 1.8

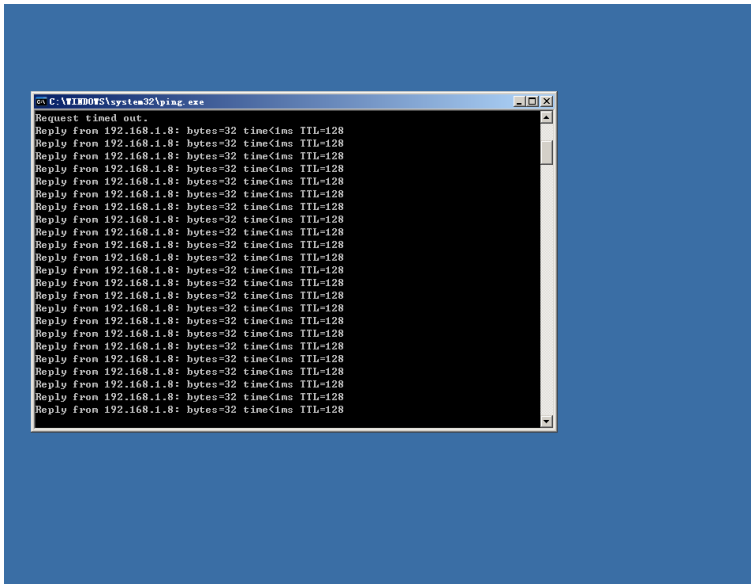


Figure 1.8

2. How to transfer the file via Ethernet

2.1 Double click on TFTPD32. See Figure 2.1

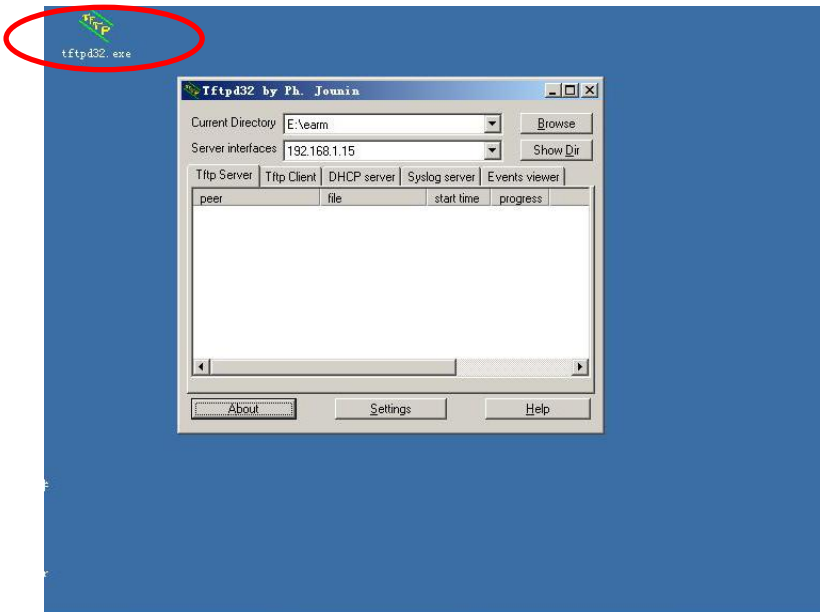


Figure 2.1

2.2 First choose TFTP CLIENT Set the HOST with DSC IP address (192.168.1.8)，Under FILE, enter the directory and the file name. Note: You must include the extension with the file name. See Figure 2.2.

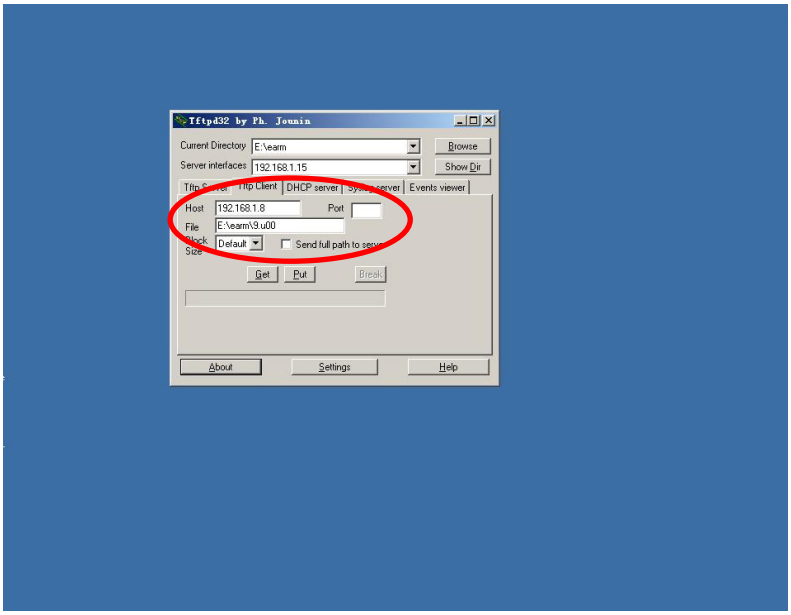


Figure 2.2

2.3 After this, click on "Put". This will send the file to the DSC controller internal memory. Note: At this time, the ARM controller will show the file is transferring. See Figure 2.3.

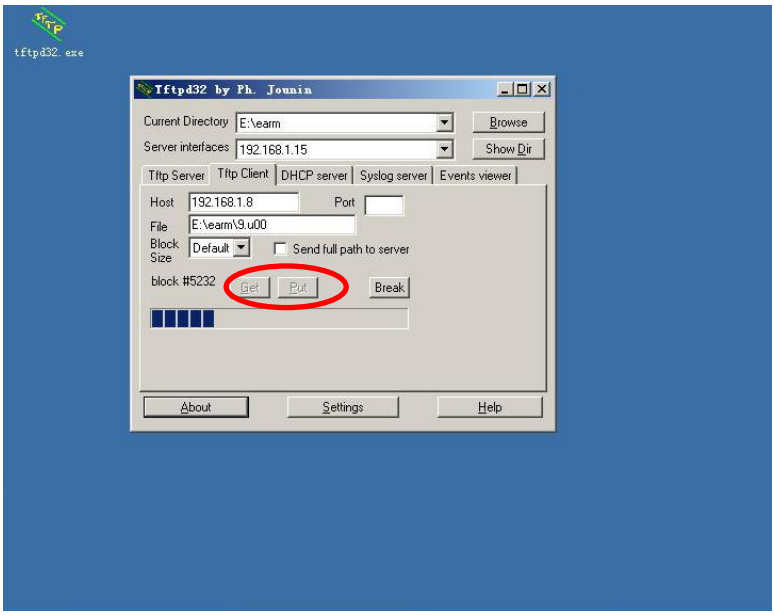


Figure 2.3

2.4 After the file is successfully transferred, it will show the message box as shown in Figure 2.4

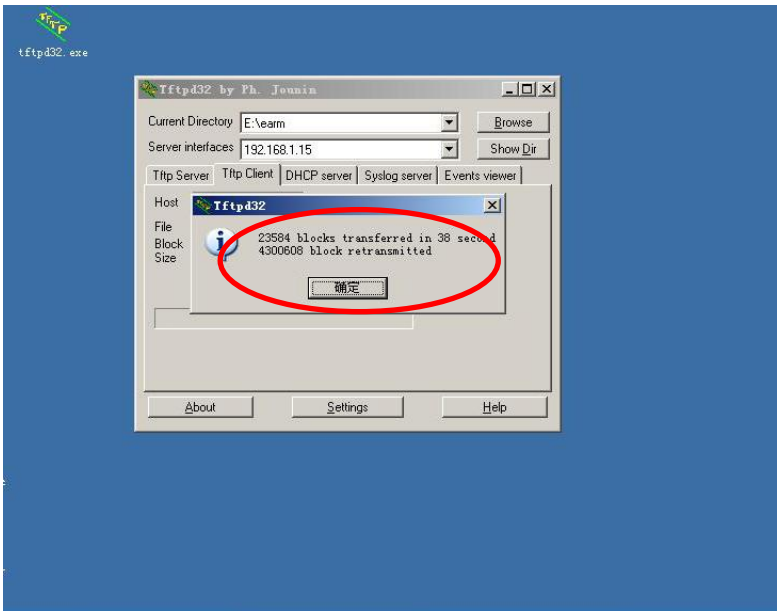


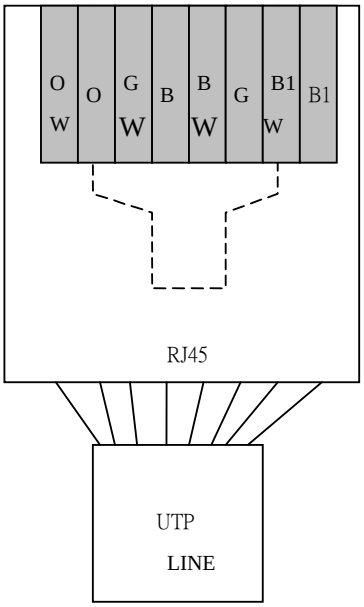
Figure 2.4

2.5 After the PC has completed the transfer, the DSC controller will also show the file has been transferred. You can transfer another file now.

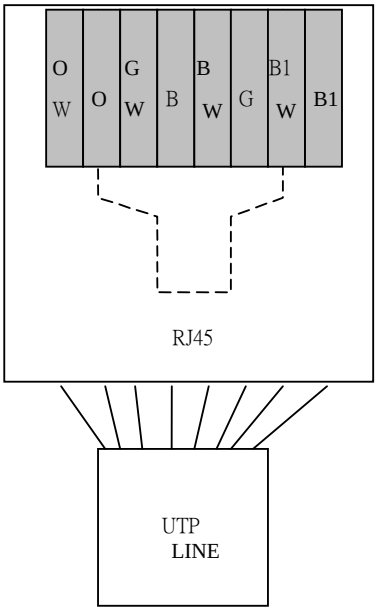
Figure 2.5

HUB Connection

SEND PORT



RECEIVE PORT



O – orange O W—orange and white
B –blue B W—blue and white
G—green G W—green and white
B1—brown B1 W—brown and white

Appendix 2: DSC Working Tips

Work mode：

1、Type of file：2D (Suitable for tags and signs)

a) Acceleration speed（Range between:1-9）

If the job contains a lot of curves, to prevent the machine from shaking, the work speed should be 5 or less. Sometimes if the job speed is lower than 3, there may be low speed shaking. The best choice is to start with a work speed of around 3. The exact number will depend on the following:

1.Customer's quality and efficiency demand，

2.The type of job，

3.The type of machine.

Set the feed rate between 1-9. 1 is very slow, 9 is very fast.

b) Curve speed（Depends on the start rate and feed rate, mm/sec.）

The curve speed will only work in 2D mode.

The curve speed can make the curves smoother. On sign making machines, it is better to set this up at less than 30 mm/sec.

c) Curve Coefficient（Range：1-5，1 is slow, 5 is fast）

When the number is set to a high value, during a curve, the work speed won't change. A low number, the speed will slow down during the curve. It is better to set this at around "2".

2、Type of File：3D（Suitable for cutting and contours）

a) Acceleration coefficient（Range:1-9）'1' is slow'9' is fast. Recommended range is 2-6.

b) The curve speed is not applicable in this mode.

c) Curve coefficient（Range：1-5）Recommended setting is "2".

Note：Cutting or oblique mode, the file must be 3D (To make the speed steady) If the feed rate is low, less than 15, the recommended acceleration coefficient is "9" and the curve coefficient is "2" to avoid low speed shaking.（Note：Curve speed is not applicable in this mode.）

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