ADT-TP3540DJ

Double-Station Dispenser System

User Manual

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Version History

Item No.	First uploaded on	Version No.	Pages	Compiled by	Typeset by
BZ001B080A	2012-9-22	A0201	48	Shu Guo	

Revision			
Date	Version/Page	Result	Confirmed by

Precautions

※ Transportation and storage

- ☞ The packaging boxes shouldn't be stacked more than six layers
- ☞ Do not climb onto, stand on or put heavy objects on the packaging box
- ☞ Do not drag or convey the product with a cable connected to the product
- ☞ Do not impact or scratch the panel and display
- ☞ Keep the packaging box away from moisture, insulation and rain

※ Unpacking and checking

- ☞ Unpack and check whether the product is the one you ordered
- ☞ Check whether the product is damaged during transporting
- ☞ Check whether the parts are complete and intact according to the packing list
- ☞ If the model doesn't match, any accessories are missing or damaged, please contact us immediately

※ Wire connection

- ☞ The personnel for wire connection and checking should be qualified
- ☞ The product must be grounded reliably (resistance < 4Ω) and do not use neutral wire to replace the earth wire
- ☞ The wires must be connected properly and firmly to avoid failures and accidents
- ☞ The surge absorption diode must be connected to the product properly, or else it will damage the product
- ☞ Please cut off the power supply before inserting/removing the plug or opening the enclosure

※ Checking and repairing

- ☞ Please cut off the power supply before repairing or replacing the components
- ☞ Check the failure if short circuit or overload occurs, and restart after eliminating all failures
- ☞ Do not connect/cut off the power supply frequently; wait for at least one minute before restarting

※ Others

- ☞ Do not open the enclosure without permission
- ☞ Please cut off the power supply if it won't be used for a long time
- ☞ Prevent dust and iron powder from entering the controller
- ☞ If non-solid state relay is used for output, please connect freewheeling diode to relay coil in parallel. Check whether the connected power supply is qualified to avoid burning out the controller
- ☞ The lifetime of the controller depends on the environment temperature. If the temperature of processing field is too high, please install cooling fan. The allowable temperature range of the controller is 0℃-60℃
- ☞ Avoid using in the environment with high temperature, moisture, dust or corrosive gas
- ☞ Install rubber cushion if the vibration is severe

※Maintenance

Under normal condition (environment: daily average 30℃, load rate 80%, running rate 12 hours every day), please perform daily and periodic checking according to the items below.

Daily checking	Daily	● Confirm environment temperature, humidity and dust ● Whether there is abnormal vibration or sound
Periodic checking	1 year	● Whether the fixed parts are loose ● Whether the terminal block is damaged

Contents

1 System Overview

TP3540 4-axis double-station dispenser control system allows setting the single station and double station. The system completes operations such as human-machine interface, motion control and IO port, achieving 3-dimension, high precision and dedicated motion control system. This system supports 4 motion axes and 8 dispensing output controls, providing users with abundant instruction set, which includes motion instructions such as straight line, circular arc, single point, and oval. In addition, instructions like port output, wait for input, pause and delay, glue gun selecting, and motor reset are provided, as well as many other advanced editorial functions, including batch modification, array copy, graphics shift, graph zoom in and zoom out, auto round corner, and frequently-used graphics library. Besides setting coordinates manually and in teaching, the system also supports importing PC graphics, which can be converted to PLT file, TCF file or G-code files, and further converted to processing files by the controller for processing. Each processing file can save 100 thousand processing points with 128MB memory. This system also supports USB flash drive reading and writing, and allows reading and writing the processing files on USB disk directly.

1.1 Hardware Features

- Display: TFT5.6” 24-bit true color touch screen, 640*480 pixels
- Slim design, compact
- Motor axis No.: 4 axes (XYZU)
- Pulse frequency: 2MHz; if the pulse of motor per turn is 25600, the maximum speed can then reach 5000 turn/min
- Numbers of IO interface: 16-line dedicated input (XYZU origin, positive & negative limit, start-up 1, start-up 2, stop, reset button), 16-line general input, 16-line dedicated output; when the positive & negative limit in dedicated input are not used, the ports can be used as general input; when U axis isn’t used, the origin port can be used as general input; in single station, start-up 2 can be used as general input.
- IO input type: OC isolation input
- IO output type: short circuit protection; maximum output current: 1A
- Communication: RS232, USB flash drive, USB communication, Ethernet
- Memory space: 128MB; a processing file can occupy a space of as large as 3MB (100 thousand processing points)
- Operating voltage: 24V DC
- Operating temperature: 45°C
- Storage temperature: -40°C —55°C
- Operating humidity: 40%—80%
- Storage humidity: 0%—95%

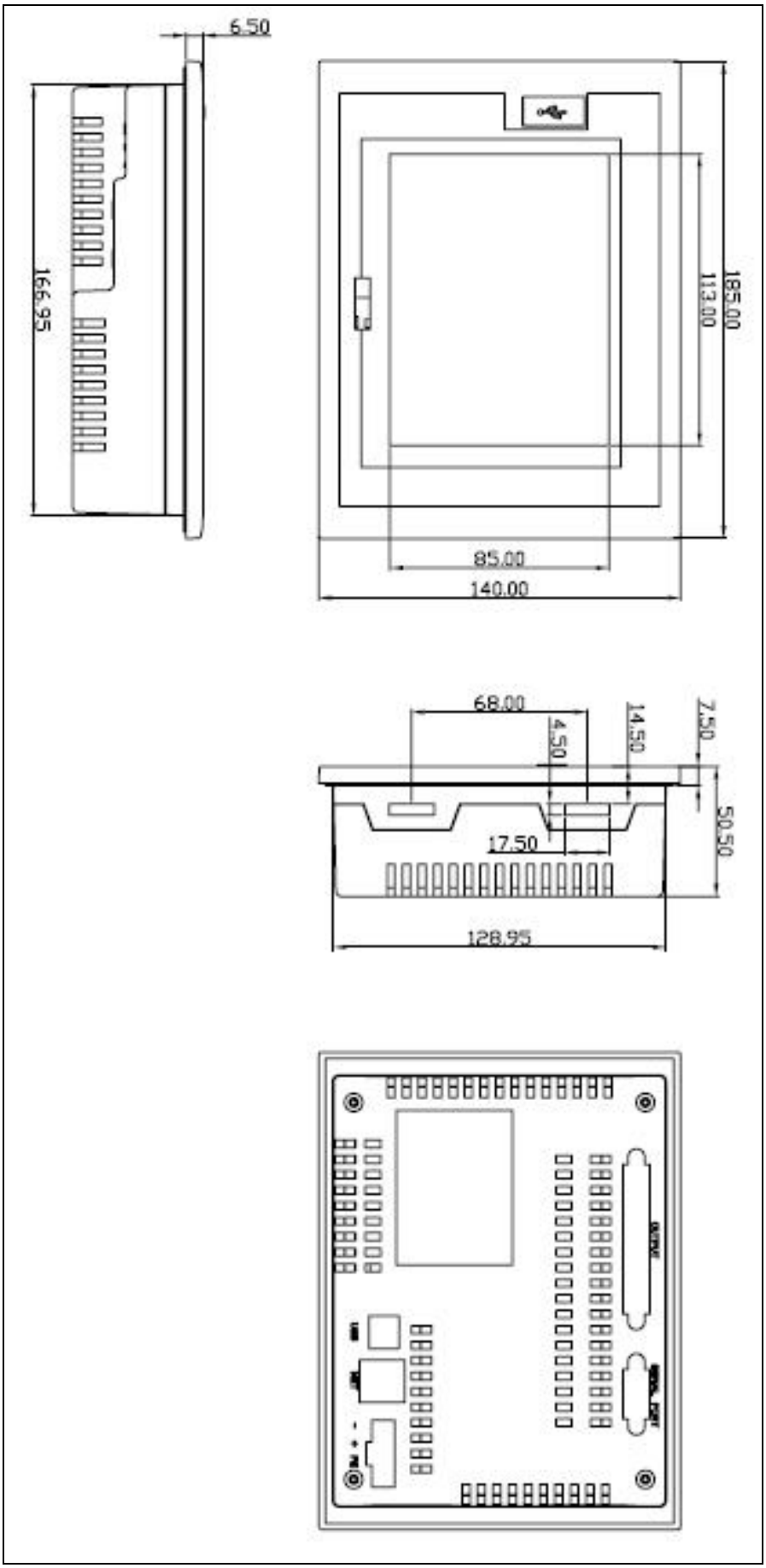
1.2 Software Features

- Support the 3-axis linear interpolation, 3-axis arc interpolation and elliptical arc interpolation.
- Speed look-ahead algorithm is adopted to smooth the turning speed automatically.
- PC picture import is supported. PLT files, TCF files and G code files can be imported.
- Feature the delay opening glue-gun and advance closing glue-gun for track, resolving the glue piling at the starting point and the end-point.
- Contain abundant motion instructions and auxiliary instruction sets.
- With user-friendly file instruction and edition functions, offering many advanced editorial functions such as batch modification, array copy, picture translation, picture zoom, and auto fillet; common graph library is provided for users for their convenient use.
- Graphical display function enables to show the shape of graphics in the processing files clearly.
- Processing track is shown in real time dynamically.
- Cycle processing, single processing, auto processing, and single step processing are supported.
- The color of background and keys can be customized.

1.3 Fittings List

Fitting Name	Model	Qty.	Profile
4-axis motion controller	TP3540	1 set	Interface operation and motion control
PCBA	TP3540 F2 VER:B	1 piece	Port terminal board
Data transmission line	L0130262GG1	1 piece	Used for the connect the controller and port terminal board
USB download cable	L1319200001	1 piece	USB cable to connect the controller and PC

1.4 Structural Dimensions



2 Operating Instructions

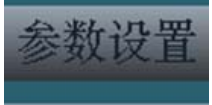
2.1 Step 1: Main Interface

When the machine is connected to the power supply and powered on, it enters the main interface as below:

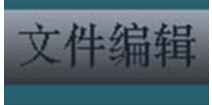
Station 1

Station 2

Select file



Parameter Settings



File Edit

Align Tool

Process

Processing time

Current instruction:

Current state:

Single step running

Disable open glue

System Settings / File Manager

Hardware Test / Version Info

Reset / Pause / Stop

The single station and double station of the system can be set; refer to factory parameter settings for details (2.5 step 5: set factory parameter)

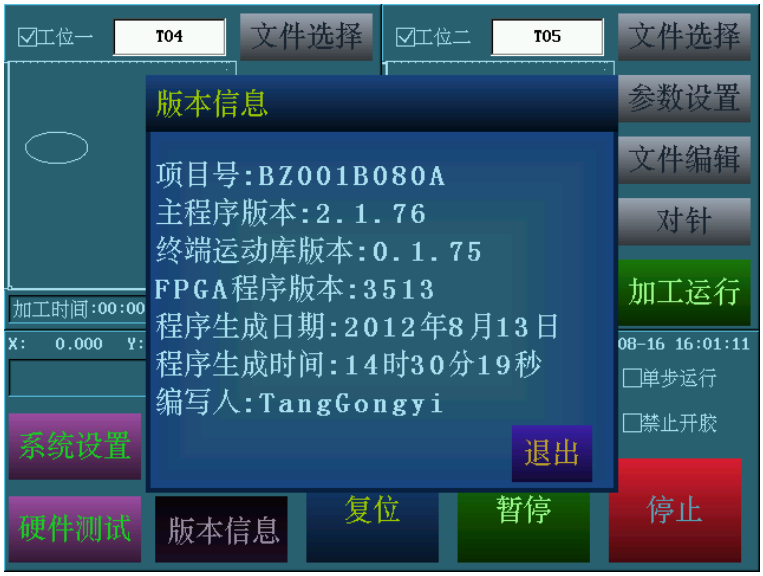
Boot screen and the main interface background images:

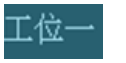
You may use the "Paint" program provided by Windows to produce a 640 * 480 pixel true color images in ".bmp" format, the boot screen named "logo.bmp", the main interface background image named "back.bmp", put them to the TP3540's "\ ADT \" directory.

For the key functions in the main interface, refer to "**Step 12: Processing**".

2.2 Step 2: Viewing software version

In the main interface, press "Version Info" to view the software version:





Station 1

Select file

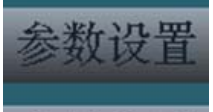
Station 2

Processing time

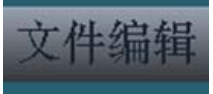
System Settings

Hardware Test / Version Info

Select file



Parameter Settings



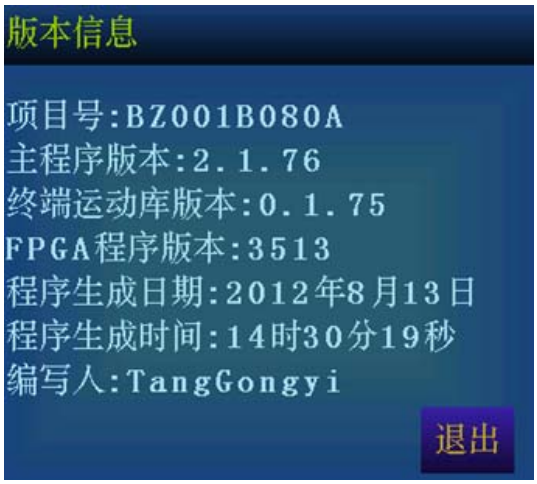
File Edit

Align Tool

Process

Single step running

Disable open glue



Version Info
Item No.: BZ001B080A
Main program version: 2.1.76
Terminal motion library version: 0.1.75
FPGA program version: 3513
Program generation date: August 13, 2012
Program generation time: 14:30:19
Written by: Tang Gongyi
Exit

Reset / Pause / Stop

Generally, just note the main program version.

2.3 Step 3: Updating the programs

The program should be updated if the program version of the controller isn't latest.

- Copy program to controller (3 ways)

1) Via serial port (the first time of updating must use this method.)
Connect the D-shape USB interface of TP3540 to the USB port of PC, restart the device, press and hold the human-machine interface when "****" appears in the upper left of the interface to enter "System start interface", select "1-USB disk" as prompted, then, TP3540 will be connected to PC as a USB disk, and you can copy TP3540 client (file name: adtrom.bin) to "\ADT\" directory of the controller through PC.

2) Connect TP3540 to the USB interface of PC, turn on the power, enter "File Manager" interface, press "USB connection", TP3540 will be connected to PC as a USB disk, and then you can copy TP3540 client (file name: adtrom.bin) to "\ADT\" directory of the controller through PC.

3) Connect the USB disk to TP3540, enter "File Manager" -> "File Operation" interface, and then copy the client (file name: adtrom.bin) to "\ADT\" directory of the controller.

- Update the client.
Copy the program to TP3540, select "2-Update" as prompted. After update, turn off the power and restart the device or press "3-Restart" to run the latest program.

2.4 Step 4: Hardware connecting and I/O test

In the main interface, press “Hardware Test” to enter the interface of hardware testing:

Hardware Test

X origin Y origin Z origin U origin X positive limit X negative limit Y positive limit Y negative limit

Z positive limit Z negative limit U positive limit U negative limit Start-up 1 Stop Reset Start-up 2

Manual X positive Manual X negative Manual Y positive Manual Y negative Manual Z positive Manual Z negative DI22 Teach

X-axis

Y-axis

Z-axis

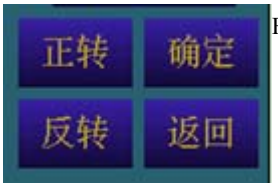
U-axis

Low speed

High speed

Relative position

Output control

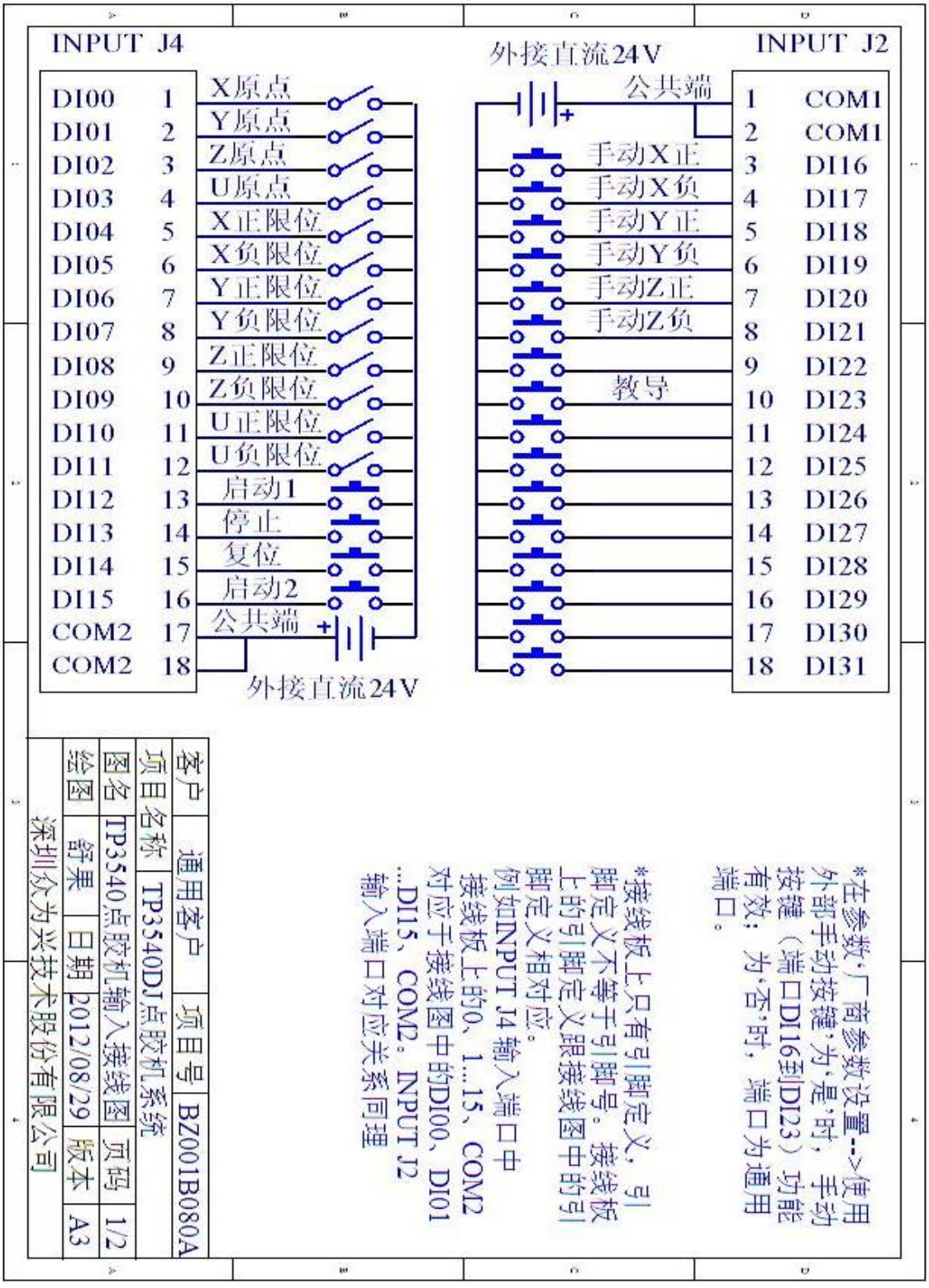


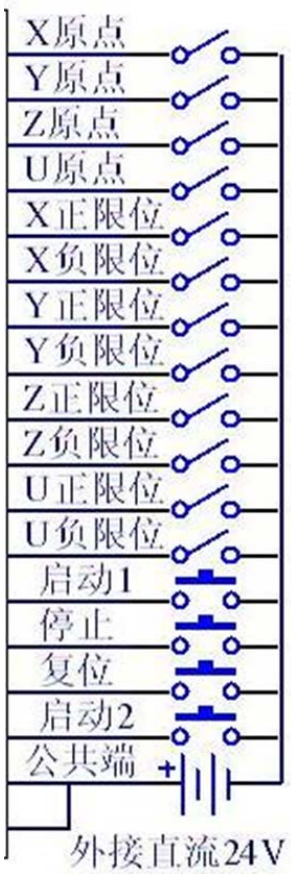
Forward rotation Enter

Reverse rotation Return

In above figure, the four lines from “X origin” to “DI31” are 32 input ports. You can press “Output control” to switch to output port key interface, corresponding to opening and closing of the 16 output ports. DI is input signal, and DO is output signal. Please follow the wiring drawings below to test whether the positive inversion of motor is normal, and whether input signal and output signal are one-to-one corresponding.

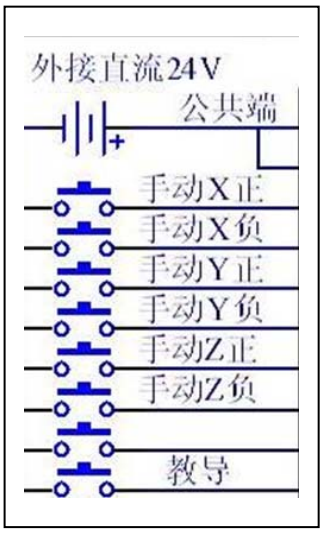
Wiring diagram:





X origin
Y origin
Z origin
U origin
X positive limit
X negative limit
Y positive limit
Y negative limit
Z positive limit
Z negative limit
U positive limit
U negative limit
Start-up 1
Stop
Reset
Start-up 2
Common terminal

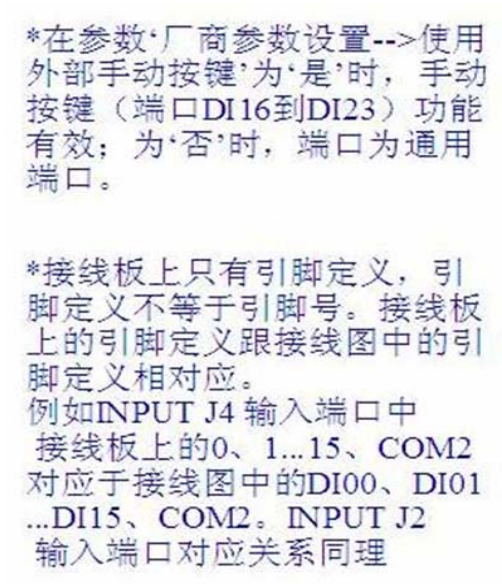
Connect to 24VDC



Connect to 24VDC
Common terminal

Manual X positive
Manual X negative
Manual Y positive
Manual Y negative
Manual Z positive
Manual Z negative

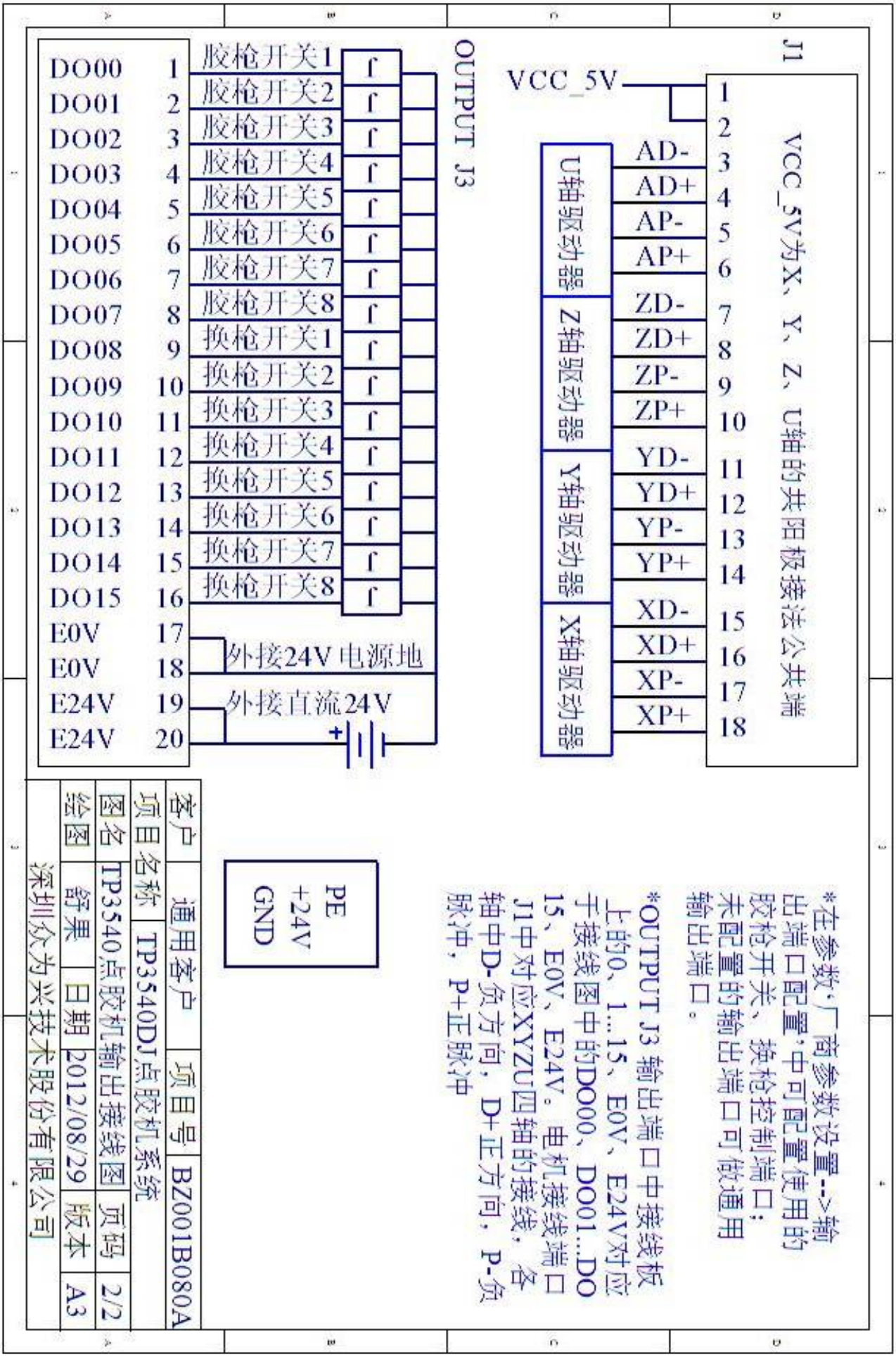
Teach



* If "Factory parameter settings → Use external manual key" is set to "Yes", manual key (port DI16 to DI23) function is valid; if it is "No", the port is used as general port.
* The terminal board only has pin definition, which isn't pin number. The pin definition on the terminal board corresponds to the pin definition in the wiring diagram.
For example, in INPUT J4, 0, 1…15, COM2 on the terminal board corresponds to DI00, DI01…DI15, COM2 on the wiring diagram. Input port correspondence of INPUT J2 is similar.

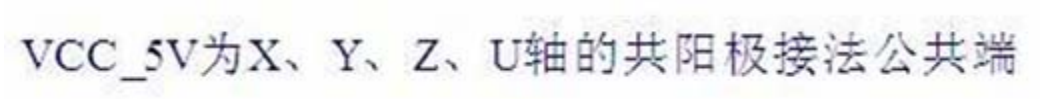
客户	通用客户	项目号	BZ001B080A
项目名称	TP3540DJ点胶机系统		
图名	TP3540点胶机输入接线图	页码	1/2
绘图	舒果	日期	2012/08/29	版本	A3
深圳众为兴技术股份有限公司			

Client	Universal		Item No.	BZ001B080A	
Item name	TP3540DJ Dispenser System				
Drawing name	TP3540DJ Dispenser Input Wiring Diagram			Page	1/2
Drawn by	Shu Guo	Date	2012/08/29	Version	A3
ADTECH (SHENZHEN) TECHNOLOGY CO., LTD.					

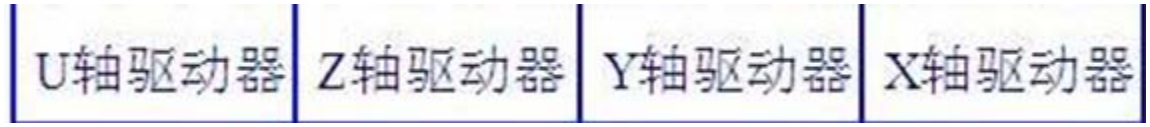

J1
VCC_5V为X、Y、Z、U轴的共阳极接法公共端
VCC_5V
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
AD- AD+ AP- AP+ ZD- ZD+ ZP- ZP+ YD- YD+ YP- YP+ XD- XD+ XP- XP+
U轴驱动器
Z轴驱动器
Y轴驱动器
X轴驱动器
OUTPUT J3
DO00 1 胶枪开关1
DO01 2 胶枪开关2
DO02 3 胶枪开关3
DO03 4 胶枪开关4
DO04 5 胶枪开关5
DO05 6 胶枪开关6
DO06 7 胶枪开关7
DO07 8 胶枪开关8
DO08 9 换枪开关1
DO09 10 换枪开关2
DO10 11 换枪开关3
DO11 12 换枪开关4
DO12 13 换枪开关5
DO13 14 换枪开关6
DO14 15 换枪开关7
DO15 16 换枪开关8
E0V 17
E0V 18 外接24V 电源地
E24V 19 外接直流24V
E24V 20
+
*在参数'厂商参数设置-->输出端口配置'中可配置使用的胶枪开关、换枪控制端口；未配置的输出端口可做通用输出端口。
*OUTPUT J3 输出端口中接线板上的0、1...15、E0V、E24V对应于接线图中的DO00、DO01...DO15、E0V、E24V。电机接线端口J1中对应XYZU四轴的接线，各轴中D-负方向，D+正方向，P-负脉冲，P+正脉冲
PE
+24V
GND
客户 通用客户 项目号 BZ001B080A
项目名称 TP3540DJ点胶机系统
图名 TP3540点胶机输出接线图 页码 2/2
绘图 舒果 日期 2012/08/29 版本 A3
深圳众为兴技术股份有限公司

Glue gun switch 1
Glue gun switch 2
Glue gun switch 3
Glue gun switch 4
Glue gun switch 5
Glue gun switch 6
Glue gun switch 7
Glue gun switch 8
Glue gun change switch 1
Glue gun change switch 2
Glue gun change switch 3
Glue gun change switch 4
Glue gun change switch 5
Glue gun change switch 6
Glue gun change switch 7
Glue gun change switch 8

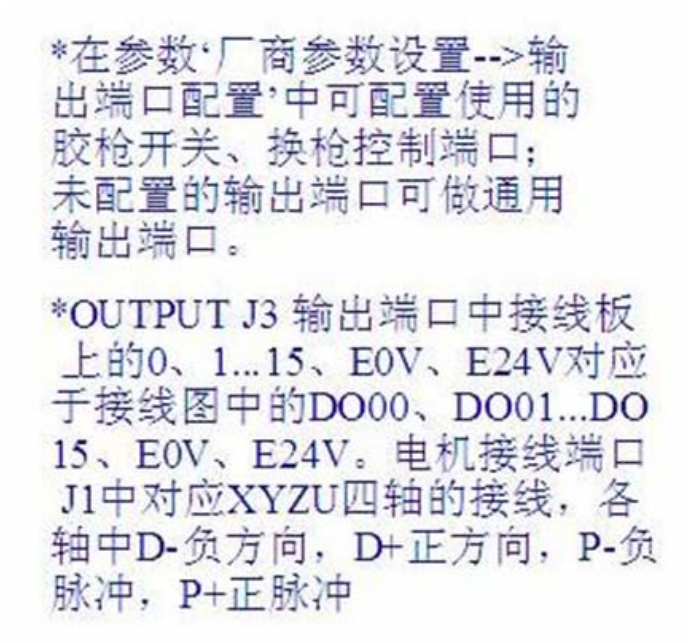
Connect to 24V power grounding
Connect 24VDC



VCC_5V is the common terminal of X, Y, Z and U axes in common anode connection method



U-axis drive Z-axis drive Y-axis drive X-axis drive



* The control ports glue gun switch and glue gun change can be configured in “Factory parameter settings → Output port configuration”; the output ports that aren’t configured can be used as general output ports.
* In OUTPUT J3, 0, 1…15, E0V, E24V on the terminal board corresponds to DO00, DO01…DO15, E0V, and E24V on the wiring diagram. Motor wiring port J1 corresponds to the wire of XYZU axes, of which D- is negative direction, D+ is positive direction, P- is negative pulse and P+ is positive pulse

客户	通用客户	项目号	BZ001B080A
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图名	TP3540点胶机输出接线图	页码	2/2
绘图	舒果 日期 2012/08/29	版本	A3
深圳众为兴技术股份有限公司			

Client	Universal		Item No.	BZ001B080A	
Item name	TP3540DJ Dispenser System				
Drawing name	TP3540DJ Dispenser Input Wiring Diagram			Page	2/2
Drawn by	Shu Guo	Date	2012/08/29	Version	A3
ADTECH (SHENZHEN) TECHNOLOGY CO., LTD.					

2.5 Step 5: Factory parameter setting

In the main interface, press “System Settings” -> “Factory parameter setting” and enter the interface of factory parameter setting:

System Settings

Factory parameters

System parameters

User parameters

Processing parameters

Reserved function

Page 01/01 OK Cancel

Factory parameters settings

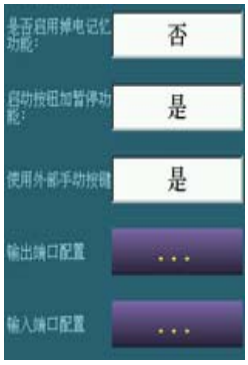
Password

Motor characteristics setting

Track split precision (mm)

Corner deceleration coefficient

Stop button lift reset: No



Enable power failure memory: No

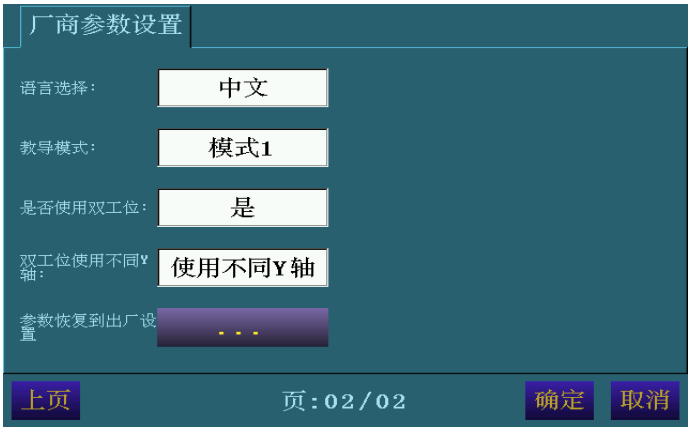
Start button + pause function: Yes

Use external manual key: Yes

Input port configuration

Output port configuration

Next Page 01/02 OK Cancel



Factory parameters settings

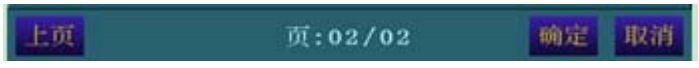
Voice selection: Chinese

Teaching mode: Mode 1

Whether use double station: Yes

Double station use different Y axes: Yes

Reset parameters:



Back Page 02/02 OK Cancel

- Password for factory parameter settings: This password is required when entering into the factory parameter settings interface. You can enter the interface directly if it is empty.
- Motor characteristic settings: Including some parameters related to motor hardware

  Select Motor characteristic, and then press Enter to enter the corresponding interface:

X-axis characteristic/Y-axis characteristic/Z-axis characteristic

Pulse per round (pulse):

Origin switch effective level: Low

Pulse equivalent (mm/pulse)

Limit switch effective level: Low

Pulse equivalent setup wizard

Effective stroke (mm)

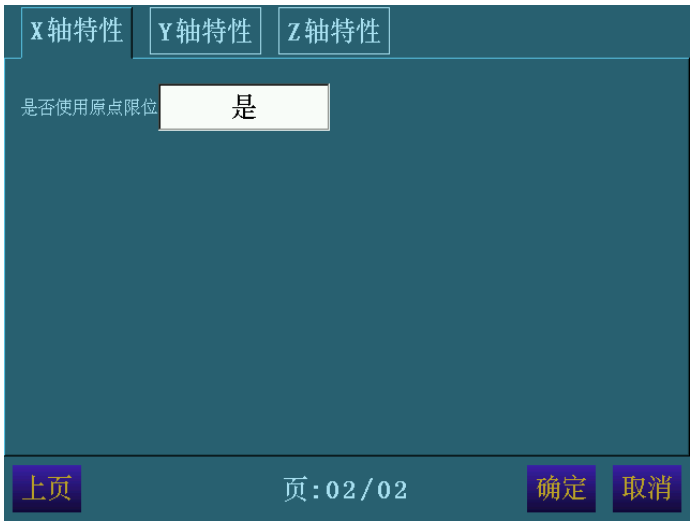
Reset mode: Reciprocation

Maximum speed (mm/s)

Reset direction: Left

Use positive/negative limit mode: Both

Next Page 01/02 OK Cancel

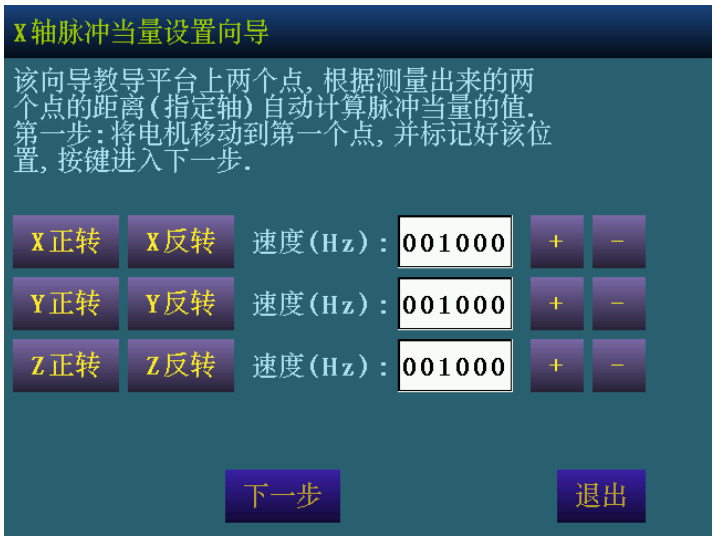


X-axis characteristic/Y-axis characteristic/Z-axis characteristic

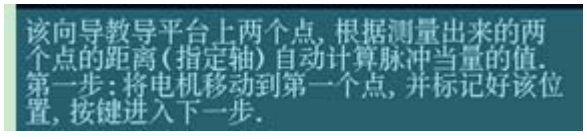
Whether use origin limit: Yes

Back Page 02/02 OK Cancel

1) Pulse per round (PPR): it means the number of pulses required for the motor to turn one round.
2) Millimeter per pulse (MMPP): refers actual distance corresponding to a pulse of the motor.
3) MMPP Setup Wizard: Get two points on the platform, then measure the actual distance to calculate the PPR.



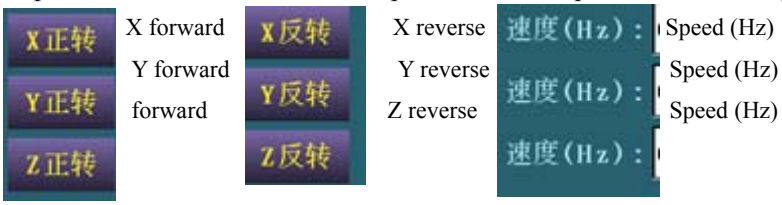
X-axis pulse equivalent setup wizard



The teaching platform has two points. The pulse equivalent is calculated according to the measured distance

between the two points (specified axis).

Step 1: move the motor to the first point, mark this position, and then press the key to enter next step.

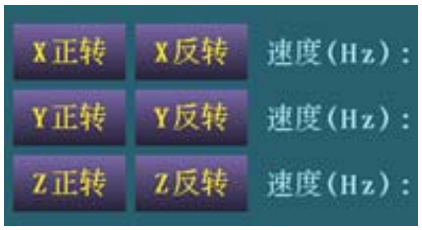


X forward
Y forward
forward
X reverse
Y reverse
Z reverse
Speed (Hz)
Speed (Hz)
Speed (Hz)

Next Exit'

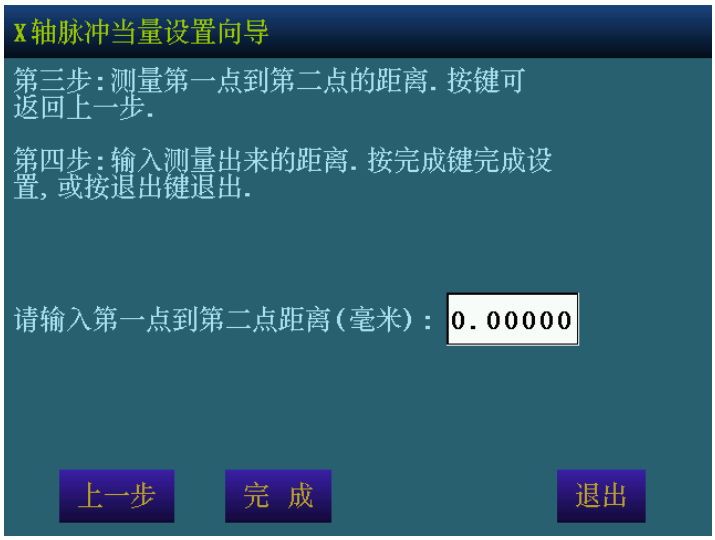
X-axis pulse equivalent setup wizard

Step 2: move the motor to the second point, mark this position, and then press the key to enter next step or return to previous step.

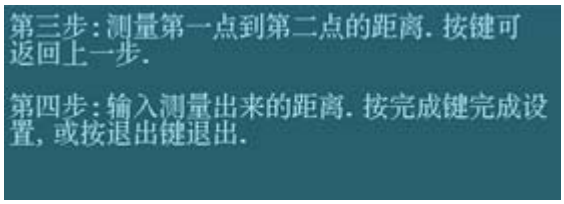


X forward X reverse Speed (Hz)
Y forward Y reverse Speed (Hz)
Z forward Z reverse Speed (Hz)

Back Next Exit



X-axis pulse equivalent setup wizard



Step 3: Measure the distance between the first point and the second point, and press the key to return to previous step.

Step 4: Input the measured distance. Press OK to finish setting, or press the Exit key to exit.

Please enter the distance between the first point and the second point (mm):

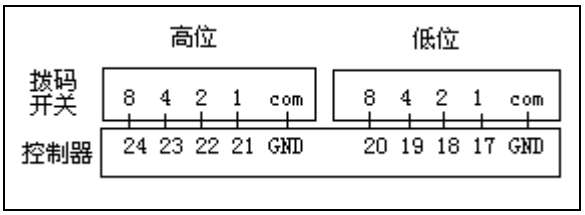
Back Done Exit

4) Reset Mode: There are three modes to select: Line, Circle, Do not reset. Line is generally used for reciprocating screw, belt and other drive mode; Circle is generally used for dial cam transmission mode, choose Don't Reset, reset directly to the current position as the origin.
5) Reset direction: Please make sure the directions for movement of the motor and the manual button that on hand-held box are on the same direction before setting this parameter when you teach.
6) Origin sensor electrical level: Checking in the hardware test to find the effective level of the origin. When the motor is not at the origin, if the corresponding input signal level is low, then the effective switch level of origin is high, and versa level is low.
7) Limit sensor electrical level: checking in the hardware test to confirm the effective limit level. When the motor is not at the origin, if the corresponding input signal level is low, then the effective level is high, the contrary was low. The parameter modifications will not take effect until the controller is restart.
8) Effective stroke: This parameter will affect the scope of graphical display and the area where motor can move to when you teach, if can not pre-determine the effective stroke, you can enter the editing interface to move the motor manually, and then by checking the coordinate value, you can determine the motor's effective stroke.

9) Maximum speed: stepping motor's maximum speed is generally 15 r/s, the servo motor's maximum speed is generally 50 r/s, the actual value need to be tested before determination.
10) Use limit mode: There are four ways, 1) Used all; 2) Used limit+; 3) Used limit-; 4)Used none; the input that is not used for limit can be used as general input.
11) Use ORG limit or not: The default case is using origin limit function; the limit direction is determined by the movement direction of axis. If the effective stroke is positive to the origin, then it moves to negative will touch the limit of the origin. If the effective stroke is negative to the origin, then move forward to touch the origin limit.

- Track split precision: The controller splits all the graphics into tiny segments of equal length. The track split precision is the length of a tiny segment. Too small the value may affect the effect of controller motion. It is recommended to set the value to be larger than the moving distance of 1/50 round of motor turning.
- Reset when STOP key up: Whether motor reset the same time as stop button is up.
- Save position when move: The position will be saved if this function is active when the power is down, and begin with the saved position if restart (no corresponding key yet), this function has a certain influence to the path display and external key response.
- Start/Pause key: While in processing state, if press the start button again, the process will pause.
- Use external manual key: if set to yes, DI16~DI23 will be used as XYZ manual control key interfaces and teaching keys.
- Output port config: you can set the corresponding output port number which is frequently used, set to -1 to turn off the feature
  1) Port number of working led: the output signal is low when program is stopped or dispensing, and run-time output is high.
  2) Port number of alarm led: indicates abnormal status in parameter set
  3) Jet up/down: when the gun is cylinder mode you need to configure this parameter, otherwise set to -1.
  4) STOP signal output: if emergency stop button is pressed, the output signal is high, output is not low until reset again, the signal can be used for axes lock
  5) Output when Reset is over: output is high after completion of reset, and the output signal is low after pressing the emergency stop.
  6) Output when stay at stop position: the output signal is high when motor is at the stop position, output is low while moving.
  7) Jet 1-8 port: corresponding to open and close of glue gun 1-8.
  8) Switch jet 1-8 port: corresponding to switch signal of glue gun 1-8.
- Input port config: You can set corresponding port number that is frequently used input function, set to -1 to turn off the feature.
  1) STEP key: This button execute a single step process
  2) Alarm signal input: When this signal is low, it will stop processing and generate an alarm output.
  3) OFFSET key: if this button is first pressed, XY will move to needle position, and pressed again within 3 seconds, Z-axis will move to position of the needle.
  4) Go to end position: This button is pressed, move to set the stop position (in the system parameter settings)
  5) Loop work button: When this button is pressed down, the state is circulation process, and up is single process state.
  6) External glue gun control button: press this button to open all set glue gun ports.
  7) Jet down sensor: If use cylinder mode, corresponding to the gun arrive signal
  8) Jet up sensor: If use cylinder mode, corresponding to the gun back signal
  9) Up/down sensor electrical level: low or high
  10) Jet 1-8 open sensor: The signal will be detected before opening gun if use the signal, it will not move until the signal is valid

11) Jet 1-8 close sensor: The signal will be detected before closing gun if use the signal, it will not move until the signal is valid
12) Open/close electrical level: low or high
13) Switch jet 1-8 on sensor: if more than one epoxy glue gun are in use, the signal is detected before the gun advance, it won't move until the signal is valid.
14) Switch jet 1-8 off sensor: if more than one epoxy glue gun are in use, the signal is detected before the gun retreat, it won't move until the signal is valid.
15) Switch on/off electrical level: low or high
16) Start work for layer 1-8: when epoxy glue gun on multiple stratified operation, use the specified start processing signal to select a certain layer. glue gun hierarchical setting is in file parameter setting, select the "The layer of jet belong setting"
17) Quick select file key 1-8: Use specified start signal to select specified file quickly, and the keys 1~8 correspond to the processing files 0~7.
18) BCD switch begin port(used 8 port): You can use the BCD8421 two DIP switches to select file, the switches were occupied by two DIP switch 8 consecutive input points, such as input the starting point is set to 17, the wiring is as follows:



高位 低位

High Low

拨码开关

控制器

DIP switch

Controller

- Language select: English or Chinese
- Teach Mode: There are two modes: Mode 1: Press the speed key down is high-speed, and button up is low speed; Mode 2: Press the button down is high speed, and press again to switch to low speed
- Whether use double station: the default option is No, i.e. use single station. If it is yes, the system uses double station.
- Double station use different Y axes: when the system uses double station, this parameter determines whether the second axis of station 2 is Y axis or U axis.
- Reset all parameters to default: the vendor parameters, system parameters, user parameters to the factory settings.

2.6 Step 6: Setting system parameters

In the main interface, press "System settings" -> "System parameter settings" to enter the interface of system parameters setting:

System parameter settings

User password management

G code tool relation setting

Motor parameter setting

File number correspondence

Jet offset setting

Initial file number correspondence

PLT file conversion ratio

Debugging switch: OFF

PLT tool relation setting

Origin test before running: First time

Next Page 01/02 OK Cancel

System parameter settings

Reset interval automatically (sec)

Auto dispensing time (sec):

Jet up delay (sec)

Auto jet selection

Jet down delay (sec)

Back to stop position after reset: No

Jet change delay (sec)

Stop position setting

Auto dispensing waiting time (sec)

Color setting

Back Page 02/02 OK Cancel

- User Password Management: You can set the administrator password, and Grade 1/2/3 password, the priority level of which is descending accordingly. System parameter settings and the file management require the administrative password; processing parameter settings require Grade-1 password; file parameter settings, file edition, and PLT file, TCF file and G-code file conversion require Grade-2 password; file parameter setting and processing file selection require Grade-3 password.

User password management

Administrator password:

Level-1 password:

Level-2 password:

Level-3 password:

Page 01/01 OK Cancel

- Motor Parameter Settings: Set parameters related to motor speed.

X-axis parameters/Y-axis parameters/Z-axis parameters

Start speed (mm/sec)

Reset high speed (mm/sec)

Manual low speed (mm/sec)

Reset acceleration time (sec)

Manual high speed (mm/sec)

Manual trimming pulses

Shift acceleration time (sec)

Reset low speed (mm/sec)

Page 01/01 OK Cancel

1) Start speed: normal speed of the stepper motor should be less than the initial 3 r/s, and the servo motor is less than 5 r/s.
2) Manual low speed: for precise location when teach manually
3) Manual high speed: for quick location when teach manually
4) Pass accelerated time: the time from start speed to shift speed, the smaller the value is, the faster the speed. If set to 0, it will move on average speed.
5) Reset low speed: for precise location when reset
6) Reset high speed: for quick location when reset
7) Reset accelerated time: the time from reset low speed to reset high speed, the smaller the value is, the faster the speed. If set to 0, it will move on average speed.
8) Vernier regulation pulse: when move the axis manually, press the movement button one time, the number of pulses will be emitted by the system correspondingly.
9) Manual fine-tuning pulses: each fast axis movement key is pressed, the number of pulses emitted by the system when the motion key of each axis is pressed quickly during manual control of the motion of each axis.

- Jet offset Settings: The relative position of the eight glue-guns has offset. You can use this function to set the position offset.

Jet offset settings

Teach jet reference point

Jet 5 offset setting

Jet 1 offset setting

Jet 6 offset setting

Jet 2 offset setting

Jet 7 offset setting

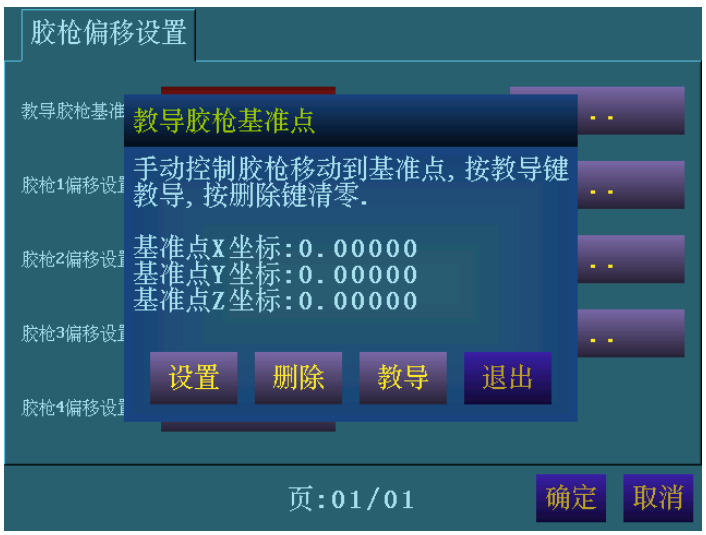
Jet 3 offset setting

Jet 8 offset setting

Jet 4 offset setting

Page 01/01 OK Cancel

Set a reference point first, move each glue gun to the reference point manually to compare and get the offset.



Teach jet reference point

Manually move the jet to the reference point, press the Teach key to teach, or press the Delete key to clear.

Reference point X coordinates:
Reference point Y coordinates:
Reference point Z coordinates:

Setup Delete Teach Exit

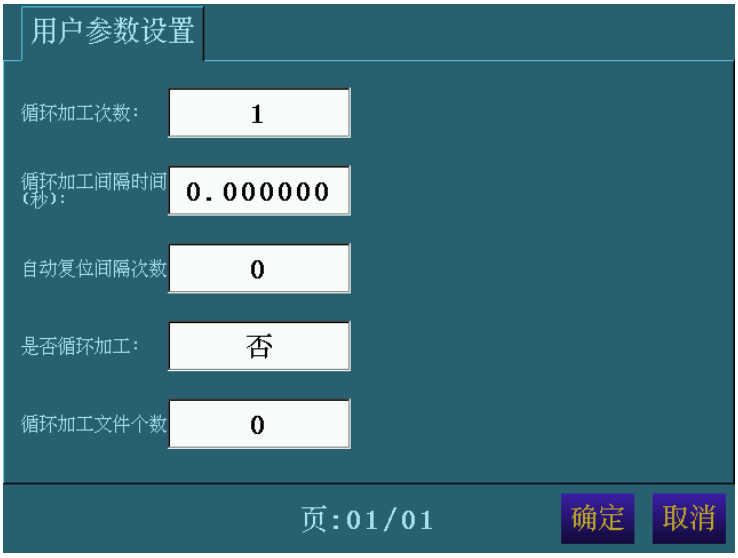
- PLT file transfer ratio: Because the coordinate unit of PLT file is different from that of the processing file, you need to multiply the conversion proportion to adjust it. The actual value is related to the settings of software generating PLT files.
- PLT pen relation setting: Pen of each color in PLT file corresponds to a pen number. There are eight glue guns, glue gun 1 to 8, in the processing files. This function is used to set the corresponding relationship of pen number and glue gun number.
- G code knife relation setting: Set the corresponding relationship of G-code knife number and glue gun.
- Set file table: There are 100 file numbers in total, each of which is corresponding to a processing file. When using expanded display panel, you can select the corresponding processing file by selecting the file number.
- Initialize file table: rearrange the file numbers
- Debug switch: In general processing, please set this parameter to off; otherwise, it will influence the processing effect.
- Check origin before running: available options are “No”, “First time” and “Every time”. If “No” is selected, the system considers that it has been reset before every processing; if “First time” is selected, the system checks whether it has been reset before the first processing; if “Every time” is selected, the system checks whether it has been reset every time before processing. During processing, press the emergency stop button and it requires resetting.
- Auto reset interval: The controller is reset automatically after a while once electrified. Auto reset is not performed if this parameter is of negative value.
- Jet down delay/Jet up delay: If the "Factory parameter setting"/"Output port config"/ "Jet up/down" is set to a non-negative, then the gun up and down delay becomes effective. This signal will restrict the cylinder action together with the "Jet down sensor" and "Jet up sensor", waiting for the sensor arrive and the wait time should not less than the set delay time before the next gun action.
- Switch jet delay: Response time for switch gun action, and for the gun up/down sensor will restrict gun switch action, waiting for the gun up/down sensor and wait time should no less than the set delay action when the time for the next step.
- Wait time of auto drip: if the set time is up and there is no operation, it will dispense automatically.
- Time of auto drip: the time for opening the gun when automatic dispensing
- Select auto drip jet number: select automatic dispensing of glue gun.
- Go to stop pos after reset: If set to "Yes", then it will move to the set position after reset.
- Stop position setting: you can set a stop position, use "Factory parameter setting"/"Go to the end position" to

move to the stop position

- Set color: totally 16 colors are available; “color 01” is the background color, “color 02” ~ “color 06” are keys’ color, and “color 07” ~ “color 16” are reserved.

2.7 Step 7: Setting user parameters

In the main interface, press “System settings” -> “User parameter settings” to enter the interface of user parameters setting:



User parameter settings

Cycle processing times:

Cycle processing interval (sec):

Auto reset interval times

Whether process in cycle: No

Number of cycle processing files

Page 01/01 OK Cancel

- Cycle processing times: the times of cycle processing
- Cycle processing interval: the interval of cycle processing
- Automatically reset interval times: processing times before automatic reset

- Whether cycle processing: select “Yes” for cycle processing, or select “No” for single processing
- Cycle processing file number: the number of files that will be processed; if it is set to "0", and only process the current file; if is set to nonzero digit, the files from No. 0 to the setting number minus 1 will be processed; the setting number doesn’t exceed 8.

2.8 Step 8: Setting processing parameters

In main interface, press “System settings” -> “Processing parameter settings” to enter the interface of processing parameters setting:

Processing parameter settings

X-axis shift speed (mm/sec):

Y-axis shift speed (mm/sec):

Z-axis down speed (mm/sec):

Z-axis up speed (mm/sec):

Z-axis accelerated up time (sec):

Page 01/01 OK Cancel

- X-axis space shift speed: quick positioning speed of X-axis

- Y-axis space shift speed: quick positioning speed of Y-axis
- Z-axis move down speed: quick downwards positioning speed of Z-axis
- Z-axis move up speed: quick upwards positioning speed of Z-axis
- Z-axis accelerated up time: It is the required time for changing from start speed to fast location speed. The smaller the value is, and the faster of speed change will be. If it is set to be 0, it means on average velocity.

2.9 Step 9: Choosing/Creating processing file

In main interface, press the file name or “Select file” to enter the processing file selection interface:

Select processing file [DJJ]

Copy Paste Delete New Up

Page up

Page down

Previous

Open

Back

Click the selected file, press “Open” key to select the file, or press “Return” to give up. Press “Up” to select folder or disk.

Press the “Preview” key to preview the file:

Processing file preview

Move left

Move right

Move front

Move back

Zoom out

Zoom in

Default size

Exit

In processing file selection interface, press “New” to create a file:

Please enter the new file name:

OK Cancel

When you have finished the input of file name and file number, you can press OK to generate a processing file with a “.DJJ” suffix.

Note: The operation of processing file selection only applies to the files in local disk (ADT-TP3540). To process files in removable disk (USB drive), please copy the files to local disk through file manager (pressing “File manager” -> “File operation” key in main interface); to delete the file, enter file manager (pressing “File manager” -> “File operation” key in main interface).

2.10 Step 10: Setting file parameters

In main interface, press “Parameter settings” to enter the interface of file parameter setting:

File parameter settings

Current station pin point

Lag open jet delay (sec)

Track speed (mm/sec)

Close jet distance in advance (mm)

Track acceleration time (sec)

Drawbench height (mm)

Open jet delay (sec)

Drawbench speed (mm/sec)

Close jet delay (sec)

Drawbench delay (sec)

Next Page 01/02 OK Cancel

File parameter settings

Jet layer setting

Back to stop position after processing: No

File number correspondence

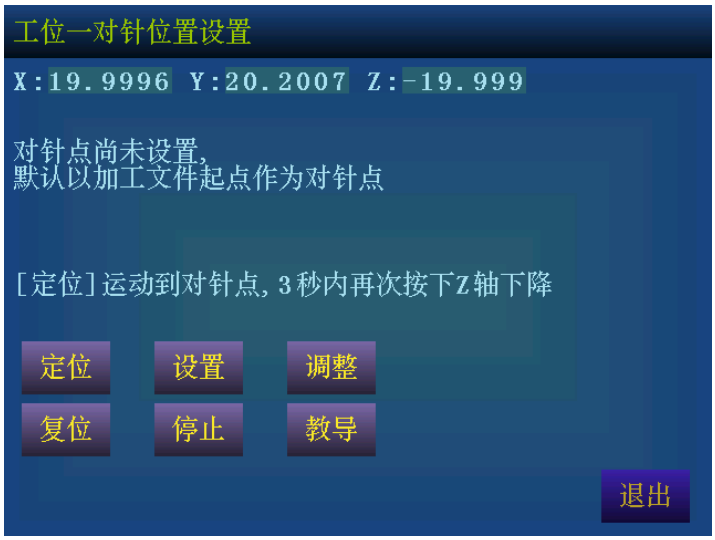
Clear current output

Clear total output

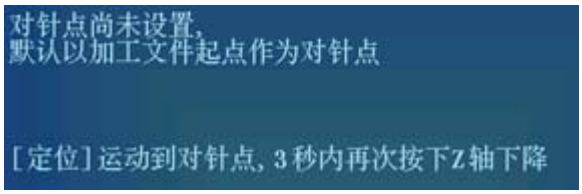
Back Page 02/02 OK Cancel

Each file has independent file parameters.

- Base position setting: set the base position of the process file, the default starting point of the file is the first point.



Station 1 tool aligning position setting



The tool aligning point hasn't been set.

The start point of processing file is used as the aligning point by default

[Position] Move to aligning point, and press Z axis down again in three seconds

Position	Set	Adjust
Reset	Stop	Teach

Exit

- Track speed: The track speed of process
- Track acceleration time: It is the time needed to change from starting speed to track speed. The smaller the value is, the faster the speed change will be. If it is set to be 0, it is processed on average of track speed.
- Open jet delay: responding time before opening glue gun
- Close jet delay: responding time before closing glue gun
- Lag open jet delay: It is the delay time before opening glue gun if lag open jet is used.
- Close jet distance in adv.: It is the distance before closing glue gun in advance if close jet in advance feature is used.
- Drawbench height: When the jet is up, it will move back at a low speed for a tiny distance, and then continue to move back. If set to 0, this function is invalid
- Drawbench speed: The speed is generally set relatively small, so that it can draw slowly.
- Drawbench delay: reach the drawbench height, pause for some time and then continue to back the gun.
- The layer of jet belong setting: Epoxy drip always use this parameter to select the layer in which is to drip (1 to 8 layers), the parameter can be input by factory configuration settings to select the corresponding input

signal to process a single layer.

- Go to end pos when stop: If set to "Yes", after finish processing the file, it will move back to the stop position which is set before.
- Set file table: View and set the corresponding file number to the file. This function is convenient to choose files in numerical way.
- Clear current output: Clear the current output of the current station, and start re-count.
- Clear total output: Clear the total output of the current station, and start re-count.

2.11 Step 11: Editing files

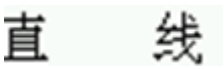
In main interface, press “Edit file” to enter the file editorial interface:

Page up

Page down

Specify point

Start point



Straight line

Lag open jet: No

Speed

Type Position Insert

Needle height

Teach

Straight line Shift Delete

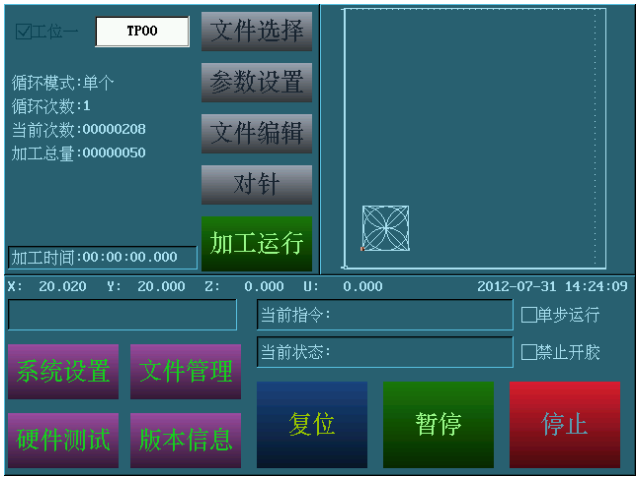
Arc Zoom Save

Single point Advance Exit

For detailed functions of file edition, please see Chapter III "*Details of File Edition*".

2.12 Step 12: Processing operation

In main interface, press "Processing operation" to start the processing; in double station, press on the view area to switch between output and view.



Station 1

Select file
Parameter Settings
File Edit
Align Tool
Process

Processing time

Current instruction:
Current state:

Single step running
Disable open glue

System Settings / File Manager

Hardware Test / Version Info

Reset / Pause / Stop

Station 1

Select file

Parameter Settings

File Edit

Align Tool

Process

Station 2

Processing time

Current instruction:

Current state:

Single step running

Disable open glue

System Settings / File Manager

Hardware Test / Version Info

Reset / Pause / Stop

- Station 1 (2): open and close the corresponding station.
- File name/file selection: two key functions are to enter the file selection interface.
- Parameter settings: press the key to enter the processing file parameter settings.
- File edit: press the key to enter the processing file editing.
- Base position: press the key to locate the base position of corresponding station.
- Processing operation: press the key to start processing.

- System settings: press the key to enter the setup interface of the factory parameters, system parameters, user parameters, and processing parameters.
- File manager: press the key to enter the file operation interface.
- Hardware test: press the key to enter the hardware test interface.
- Version information: press the key to check the program version information.

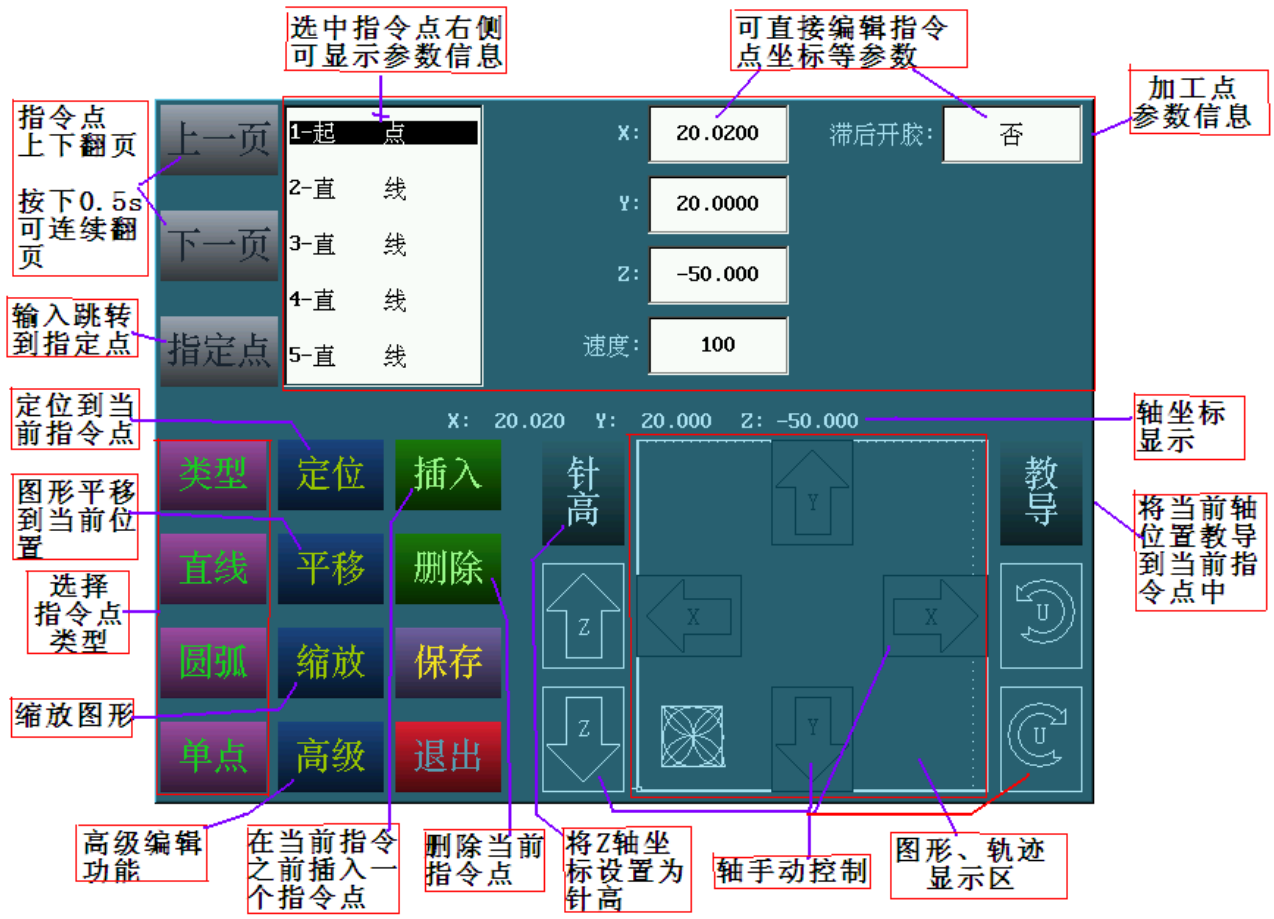
- Reset: Press the key to reset
- Pause: Press the key to pause
- Stop: Press the key to stop
- Single-step operation: press the key to switch between automatic and single step. In single-step mode, press once to start running one processing point; in automatic mode, run the processing points in sequence automatically.
- Disable dispensing: press the key to enable or disable dispensing.

- Cycle mode: the display mode is cycle or single, which is set in "System Settings" -> user parameters.
- Cycles: display the current set cycle processing times, which is set in "System Settings" -> user parameters.
- Current times: display the current cycle processing times of the corresponding station, which can be cleared in the “Parameter settings” - Clear station production.
- Total amount of processing: display the current processing amount of the corresponding station, which can be cleared in the “Parameter settings” - Clear station production.
- Processing time: display the processing time of the corresponding station.

- Status: the current operating status, there are such status like "RUN", "STOP", "PAUSE", "RESET", “Dispense” etc.
- Current instruction: the instruction number of the current processing and processing location points.
- The processing error displays in the column on the left of the current instruction. Processing graphics and processing trajectory are displayed in the upper right.

3 Details of File Edition

3.1 File editing interface



选中指令点右侧可显示参数信息 Select the right side of the instruction point to show the parameter information

可直接编辑指令点坐标等参数 Edit the instruction point coordinates and other parameters directly

加工点参数信息 Processing point parameter information

指令点上下翻页

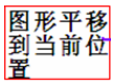
按下0.5s可连续翻页

Turn pages of processing points

Press and hold 0.5sec to turn pages consecutively

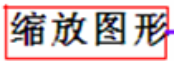
输入跳转到指定点 Input and go to specified point

定位到当前指令点 Locate current instruction point

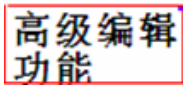


Shift graph to current position

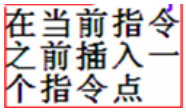
Select type of instruction point



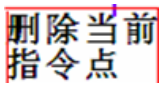
Zoom in/out graph



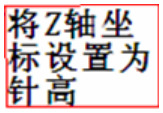
Advanced edit function



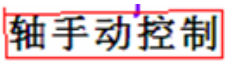
Insert an instruction point before current instruction



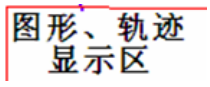
Delete current instruction point



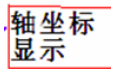
Set Z-axis coordinates to needle height



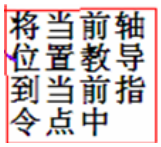
Manual axis control



Graph, track display area



Axis coordinate display



Teach current axis position to current instruction point

Page up

Page down

Specify point

Start point

Straight line

Lag open jet: No

Speed

Type Position Insert

Needle height

Teach

Straight line Shift Delete

Arc Zoom Save

Single point Advance Exit

- XY axis manual shift key will be hidden after a certain period of time after the operation, and press the corresponding position again to show.
- XYZU motor manual key: Manually move the motor; jog speed points, manual low speed, manual high-speed (set in the system parameters); speed switching is determined by pressing time, click for jogging, or press and hold for 0.15~2.15 seconds is manual low speed, press and hold for 2.15 seconds is manual high speed.
- Teach key: save the current coordinates to the current point and skip to the next point
- Pin height key: save Z coordinates to the pin height parameters of the current point; end point and single-point instructions have pin height parameters.
- Insert key: Insert a point before the current point.
- Delete key: delete the current point
- Save key: save the modified file. The key is invalid and dark if the file has not been modified; if the file is modified, the modification can be saved
- Exit key: Exit the editing interface
- Positioning key: position the motor to the current point
- Shift key: shift the graph; this function is used to adjust the XY coordinates of the graphs. Determine the starting point of the graph first, and then move the XY coordinates to desired position; after the function is called, the entire graph is automatically shifted to the current location.
- Zoom key: This function is mainly used for unified zooming in and out of XY coordinates. Different to the bulk edit mode, the function will also zoom in and out the radius of the arc and ellipse.
- Advance key: advanced editing features
- Type key: select the type of processing points
- Straight line key: switch type (starting point / straight line / end point)
- Arc key: switch type (arc / full circle / arc endpoint)
- Single point key: switch type (single point / null shift)

- Previous key: turn to previous page of processing points
- Next key: turn to next page of processing points
- Go-to key: go to a specified processing point
- Selection keys of 5 processing points, edit box keys of 8 (the number of keys depends on the type of processing point) processing point parameters

3.2 Selecting type of processing instruction

In file editing interface, press the “Type” key to pop up the interface for selecting type of processing point, and click the keys to select instructions.

Select the type of processing point

Motor reset Port output Wait for input

Delay pause Select jet Jet control

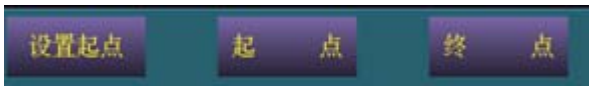
Define label Set speed Processing end

Call program Call file Go-to program

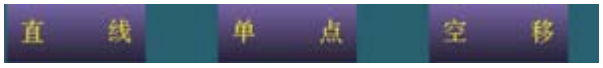
Set offset Increase offset Reference point

Page up Page down Page 01/02 Help Cancel

Select the type of processing point



Set start point Start point End point



Straight line Single point Shift

CW arc CCW arc Arc

Circle Arc end CW oval

CCW oval Oval end

Page up Page down Page 02/02 Help Cancel

Press the "**Help**" key to view the description of the instruction.

- Reset: Specify one or some motors to reset; the appointed motor go on performing the next instruction after the reset
- Output: Specify some port outputs to switch on or off signal, and keep performing the next instruction after the set delay time
- Wait input: Wait for some input ports to open/close to perform the next action; delay time can be set, if it is set to be 0, it will not continue to process until the signal arrive. If delay time is not zero. If time is out to delay time, it will jump to the appointed label to start to process.
- Delay: Go on performing the next step after the set delay time; if the delay time is 0, the program is paused until Start or Pause key is pressed again.
- Select jet: Select the operating glue gun. It is default to use the first one.
- Jet control: It is capable of controlling a glue gun to open and close independently. This instruction is usually used in graph importing function. Generally, "START" and "END" or "PTP" instructions are used to control the open/close of glue gun.
- Define label: The label can be named by numbers, letters, symbols or Chinese, the program will jump to the

position where the program called or enter the corresponding label when jump.

- Set speed: in unit of mm / sec, can only set the track speed and can not set shift speed, set to 0 means to restore to the initial track speed.
- End work: This is the end of processing which the program will no longer execute.
- Function call: You can set these labels, such as "File number", "Start label", "End label", and “Call times".
  - File number: the file to be called by the program, set to null (directly press the OK button) to call the contents of this document. The correspondence of file number and file can be set in "System parameter setting"/"Set file table" or "File parameter setting"/"Set file table".
  - Start label, end label: labels must have been defined, before or after the line, or specify file to be called, if set to empty (input directly press the OK button) , it means to call from the beginning of the file line to the end of the line.
  - Call times: If set to 0, it can be called unlimited.
- Call file: You can set such parameters: "File number", "Call times", "Used start pos", "X/Y/Z Start"
  - File number: the file to be called by the program, the File number can not be set to be empty. The correspondence between File number and the file can be set in "System parameter setting"/"Set file table" or "File parameter setting"/"Set file table"
  - Call times: Can be called unlimited if set to 0
  - Use start pos: The called file will adjust start position to this new position if using start position.
- Function Jump: jump to the specified label, if the label is set to be empty (directly press OK), it will jump to the end of the program.
- Set Offset: The actual position=coordinates which is set + Offset
- Add Offset: Offset increase or decrease
- Base Position: Play a role of adjusting the graphical, not add any action, it is generally defined in the start of a file for calibration.
- Adjust Start: adjust the start point of the graph which is called by the program, generally used with instruction of Function Call.
- START: It is start point of track. When process, Z-axis will move down the glue gun to the start point and open the gun. You can set whether use delay open gun at the start point. If so, it does not open the glue gun when moved to the starting point, but opening it after the set delay time. This feature is mainly to prevent piling glue at the start point.
- END: It is the end-point of track. When process, close the glue gun at the end-point, and make Z-axis return to the needle height position. A piece of graphic can have several starting points and end-points. You can set whether to close the glue gun in advance at the endpoint. If so, it will close the glue gun in advance at the set distance before the endpoint. This function is used to avoid the piling glue at the endpoint.
- LINE: Run to this coordinate with straight-line mode.
- PTP: Locate the XY quickly first, and then advance the glue gun at Z-axis. After that, open the glue gun for a while, and then close it; then, Z-axis returns to the needle height position.
- PASS: XYZ is located to this point quickly.
- CW ARC & CCW ARC: The previous point and next point must be bonded, forming a circular arc by specifying circular arc starting point, semi-diameter, and circular arc end-point.
- ARC: The previous point and next point must be bonded, forming a circular arc by specifying the starting point of circular arc, a point on the arc, and the circular arc end-point.
- CIRCLE: The previous point and next point must be bonded, forming a circular arc by specifying the starting point of circular arc, a point on the arc, and the other point on circular arc.
- END ARC: This point should follow the instruction of ARC, CW ARC, CCW ARC, and CIRCLE to bind with the previous two points to form a circular arc. If the end-point of ARC is the end-point of track, the end-point of circular arc can be replaced by “END” instruction.
- CW OVAL & CCW OVAL: The previous point and next point must be bonded, forming an oval by

specifying the starting point of oval, oval center, semi-diameter of long/short axis, and the oval end-point.

- END OVAL: This point should follow the instruction of clockwise oval and anti-clockwise oval to bind with the previous two points to form an oval. If the end-point of oval is the end-point of track, the end-point of oval can be replaced by “END” instruction.

3.3 Modifying data of processing point

There are two ways of modifying data of processing point, manual input and teach.

3.3.1 Manual input

Press the key of the processing point that needs to be modified; if the modified parameter is numerical value, you can click the edit box directly to input the number; if it has multi options, you can click the edit box to select content:

Page up

Page down

Specify point

Start point

Straight line

Lag open jet: No

Speed

Type Position Insert

Needle height

Teach

Straight line Shift Delete

Arc Zoom Save

Single point Advance Exit

Page up

Page down

Specify point

Start point

Straight line

Lag open jet: No

Speed

Type Position Insert

Needle height

Teach

Straight line Shift Delete

Arc Zoom Save

Single point Advance Exit

Click on the corresponding processing point to view the parameters of the point. You can press the page up/down key to view other processing points. Press the “Specify point” key and then input the number of a processing point to go to the processing point directly.

Note: If the file has been modified but not saved, the "Save" button will be in bright color (upper left figure), the key is valid and you can press it to save files. After saving, the "Save" button will be in dark (upper right figure), and the key is invalid.

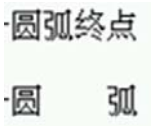
3.3.2 Teach

Except inputting directly, the coordinates of processing point can also be input in the teach way: First, select the processing type. Only such types as “START”, “LINE”, “END”, “PTP”, “PASS”, “CW ARC”, “CIRCLE”, “END ARC”, “CW OVAL”, “CCW ARC”, and “END ARC” can be taught. And only the needle height of “PTP” and “END” can be taught.

Once the process point is selected, use manual key to move the motor to the target position, and press “Teach” key, the current coordinates will be saved in the processing point. For the convenience of continuous teach, the current point number will become the next one when teach key is pressed. Therefore, in order to view the teach result, you have to use Left key to return to the previous point.

When teach the needle height, select the processing type (must be “END” or “PTP”), move Z-axis to the proper needle height, and press “Height” key to save the current Z-axis coordinate in “Needle height” parameters of processing point.

Page up
Page down
Specify point



Arc end point
Arc

End point
Start point

Lag open jet: No

Speed

Type Position Insert

Needle height

Teach

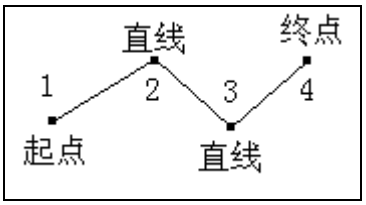
Straight line Shift Delete

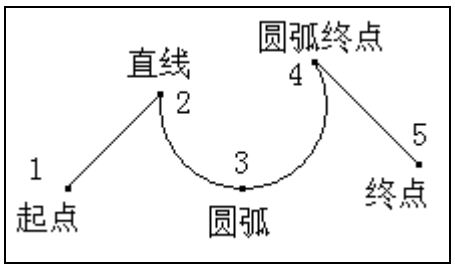
Arc Zoom Save

Single point Advance Exit

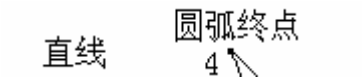
3.4 Constraint condition for the type of processing point

- A continuous track should be started with a “Starting point”, and ended with an “End point”, which may contain processing point types such as straight line, circular arc, and oval midway.



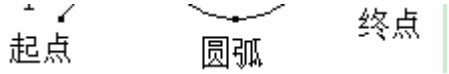


Straight line End-point



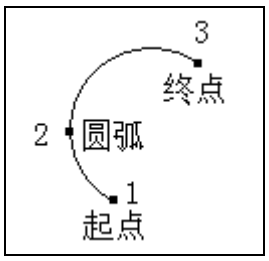
Straight line Arc end-point

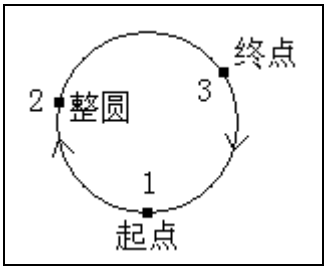
Start point Straight line

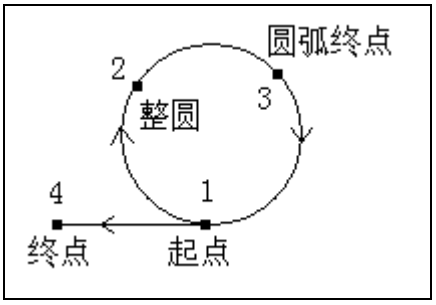


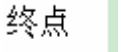
Start point Arc End point

- “Clockwise circular arc”, “Anti-clockwise circular arc”, “Circular arc”, “Circle”, “Clockwise oval”, and “Anti-clockwise oval” instructions should not be used independently, and should be combined with the previous point and the next point to form a graph.

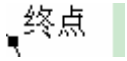




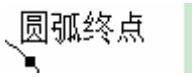




End point



End point

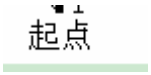


Arc end-point

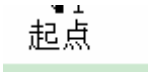
Arc

Circle

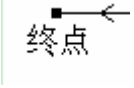
Circle



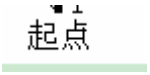
Start point



Start point

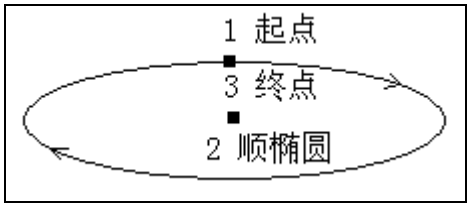


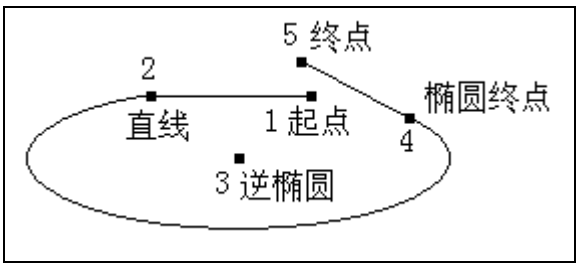
End point

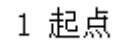


Start point

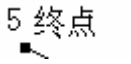
- The End Point of “Circle” is superposed with the starting point. The “End Point” is for auxiliary effect only.`



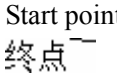




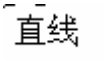
Start point



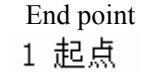
End point



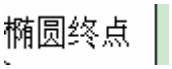
End point



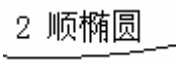
Straight line



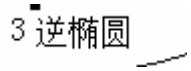
Start point



Oval end point

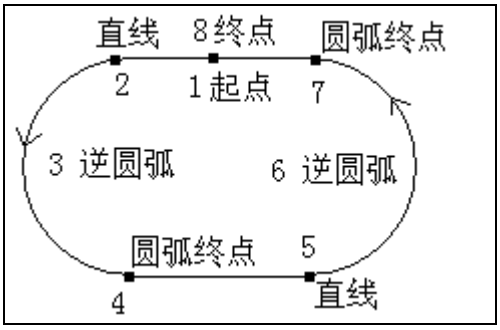


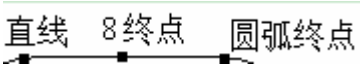
CW oval



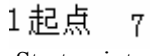
CCW oval

- The oval center and semi-diameter of long and short axes are given out by “Clockwise oval”, and “Anti-clockwise oval”. The coordinates of oval Starting and End Points are given out by the previous point and the next point (Because the oval starting point, end-point, and center are not convenient to regulate, you can use the “Common graph” in advanced edition to regulate a rectangle to help complete the regulation of an oval).

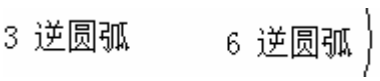




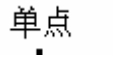
Straight line End point Arc end point

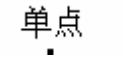


Start point

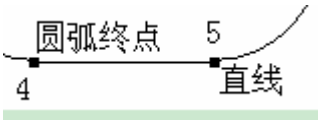


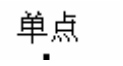
CCW arc CCW arc

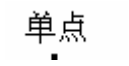




Single point Single point







Arc end point Straight line Single point Single point

- "Anti-clockwise circular arc" and "Clockwise circular arc" instructions only specify the arc semi-diameter, and the coordinates of arc starting point and end-point. They are given out by the previous and next points.
- The semi-diameter of the "Anti-clockwise circular arc" and "Clockwise circular arc" should not be set to be less than half of distance between these two points; otherwise, it cannot form a circular arc.
- The regulation of "Single point" is much easier; however, "Single point" cannot be used combining with circular arc or oval instruction.
- "Travel" instruction means to locate the XYZ axes to the appointed coordinates swiftly at the same time without opening or closing the glue gun. "Starting point" instruction is to locate XY axes swiftly to the appointed position, and then locate the Z-axis, together with opening the glue gun.
- Only "End-point" and "Single point" can regulate the "Needle height".

3.5 Skills for continuous teaching

To easy and convenient to finish the regulation of a graph, three switching shortcuts are set:
"Straight line" key: Switch the type of current processing point to Origin, Straight line, and End-point.
"Arc" key: Switch the type of current processing point to Arc, Circle, and Arc end-point.
"Single point" key: Switch the type of current processing point to Single point and Shift.
In addition, the software contains intelligent judgment function; it can generate the type of next point according to the type of previous point. For example, if the previous point is "Starting point", the next point will be the "Straight line" automatically. If the previous point is "End point", the next point will be the "Starting point"; if the previous point is "Circular arc", the next point will be the "Circular arc end-point"; and if the previous point is "Single point", the next point will be the "Single point". In addition, the set parameters, such as "Single point time", "Needle height", and "Speed", will be recorded automatically and applied to the next point. When inserting a new processing point, it will generate the processing point of proper type according to the types of processing point before and after.

4 Advanced Applications

4.1 Advanced editing functions

In file editing interface, you can press the "Advance" key to call the advanced edit functions:

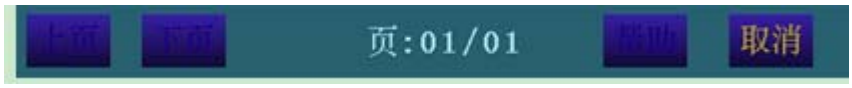
Advanced editing function

Batch edit Array copy Z-axis depth

Needle lift height Batch delete Automatic corner

Program expand Common graph Find type

Local adjustment Multiple arrays



Page up Page down Page 01/01 Help Cancel

You can press corresponding key to select desired edition function.

4.1.1 Batch edit

Batch edit is used to modify large amount of data.

Batch edit

Edit range:

Start point

End point

Edit content: X coordinates

Edit condition: No

Edit mode: Specify value

Specify value Teach

OK Cancel

Batch edit

Edit range:

Start point

End point

Edit content: X coordinates

Edit condition: X coordinates

Edit mode: Specify value

Specify value Teach

OK Cancel

- Modified range: Number of the start process point and end process point that need to be modified
- Modified field: Following contents are available to modify:

Select edit content

X coordinates Y coordinates Z coordinates

R coordinates Needle height Speed

Open jet time Lag open jet Close jet in advance

Type Arc radius

up Page down Page 01/01 Help Cancel

- Modified condition: You can specify a certain data, and the data need to be modified to be equal to, not equal to, more than, or less than an appoint value.
- Modified mode: It includes Appointing Value, Appointing Increment, and Appointing Rate. Appointed Value means to set the modified contents as the appointed value. Appointing Increment means to add a value to the original value (if the appointed value is a negative number, it decreases the value). Appointing Rate means to multiply the original value with a value.

4.1.2 Array copy

Array copy function is used to replicate a single graph to multiple copies in the array way, it can generate a parallelogram array as well.

Array copy

Copy range:

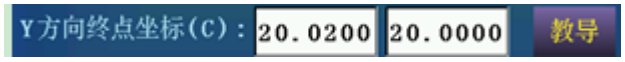
Start point: End point:

Reference point (A): Locate

Groups in X direction:

Groups in Y direction:

End point coordinates in Y direction (B): Teach



End point coordinates in Y direction (C): Teach

Start direction: Word wrap mode: S OK Cancel

- Copy range: the number of start process point and end process point of graph needs to be copied
- Base point (A): It is a certain reference point on the graph needs to be copied. Teach the distance between X and Y direction needs to take this point as reference. It is default to select the first point

of the graph.

- X array number: Group numbers of the array in X direction
- Y array number: Group numbers of the array in Y direction; if you just copy once, set the group numbers in XY direction to 1.
- X end point (B): This coordinate should be the coordinate of last group in X direction that is corresponding to the reference point A.
- Y end point (B): This coordinate should be the coordinate of last group in Y direction that is corresponding to the reference point A.
- First offset: From A to B, or from A to C
- New line mode: It includes S-shape and Z-shape of changing new line. Z-shape: when the process of a line is finished, it will return to the starting point to start processing the next line. S-shape: It does not return to the starting point, but processing the next line in a turn-back way.
- Press “Position” button can locate to the reference point

4.1.3 Z-axis depth

This function is used to adjust the Z-axis coordinate and needle height uniformly. First, confirm the starting point of the graph, and then move Z-axis to Z coordinate that the point needs to adjust. After having applied this function, the Z-axis coordinates and the needle height of the whole graph will be adjusted according to the value of Z-axis. (The needle height after shifted shouldn’t exceed the limit, or else it can’t run normally and will cause overrun errors)

4.1.4 Needle height

This function changes the value of needle height by way of relative to Z-axis coordinate.

For example, the processing point type of a point is “PTP”, Z-axis coordinate is -70, if you set the needle lifting height to be 30, the needle height of this point is then changed to (-70+30) = -40.

4.1.5 Batch delete

Select the range of processing points that need to be deleted, and press OK to delete.

4.1.6 Automatic corner

This function is used to change the break angle to circular arc. The arc length of circular arc can be set. If the side length of these two break angles is not enough for changing to the set arc length, the fillet arc length will be reduced automatically to fit for the side length of break angle.

Automatic corner

Edit range:

Start point:

End point:

Corner arc length:

Note: before edit, please save or back up the original file

OK Cancel

Page up

Page down

Specify point

End point

Straight line

Needle height:

Close jet in advance: No

Speed

Type Position Insert

Needle height

Teach

Straight line Shift Delete

Arc Zoom Save

Single point Advance Exit

Page up

Page down

Specify point

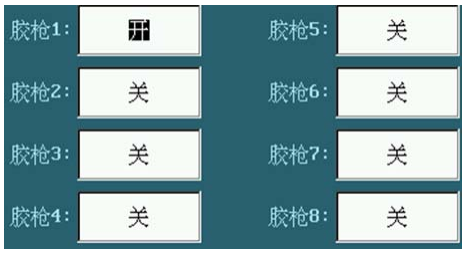
Select jet

Start point

Straight line

CWW arc

Straight line



Jet 1: On Jet 5: Off

Jet 2: Off Jet 6: Off

Jet 3: Off Jet 7: Off

Jet 4: Off Jet 8: Off

Type Position Insert

Needle height

Teach

Straight line Shift Delete

Arc Zoom Save

Single point Advance Exit

Before performing automatic corner

After performing automatic corner

4.1.7 Extend program

This function will extend the instruction of "Function call" and "Call file" which is available for selection, and directly insert into the location of the instruction. Note that instruction whose call time is 0 can not be carried out.

4.1.8 Graphics library

The common graphics interface is shown below:

Select graph

Test graph Oval Runway Rectangle fill

Circle fill Corner rectangle

Page up Page down Page 01/01 Help Cancel

- Test graph
  Step 1: Select a plane for the test graph
  Step 2: Input the length of the side
  Step 3: Teach coordinates of the third axis
  Step 4: Generate the following graph

Page up
Page down
Specify point

Start point

Straight line

Lag open jet: No

Speed

Type Position Insert

Needle height

Teach

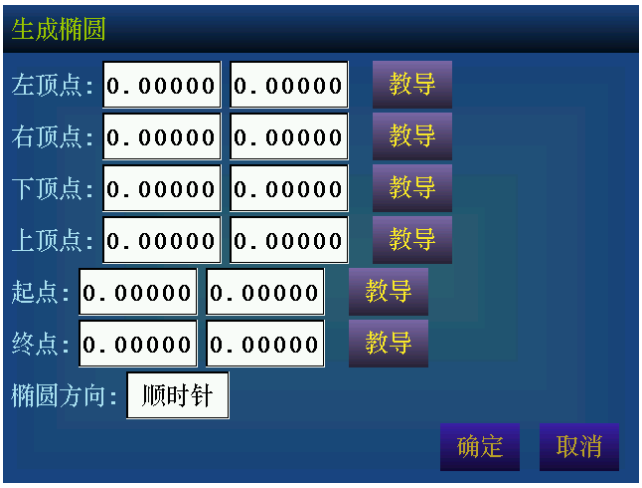
Straight line Shift Delete

Arc Zoom Save

Single point Advance Exit

You can move the graph to a proper position by functions of graph shift or batch edit.

- Oval



Generate oval

Left vertex: Teach

Right vertex: Teach

Top vertex: Teach

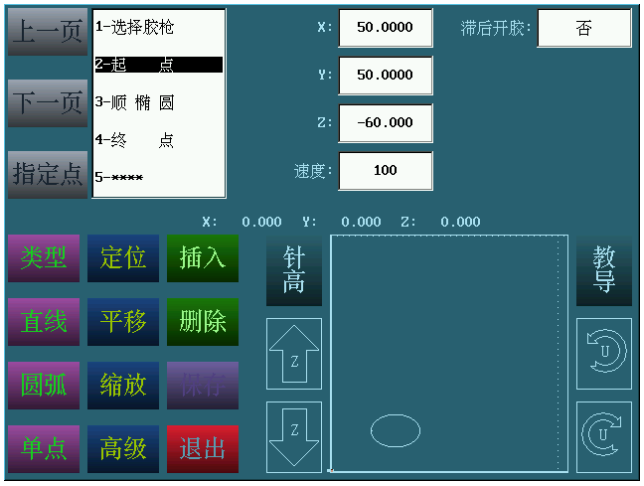
Bottom vertex: Teach

Start point: Teach

End point: Teach

Oval direction: CW

OK Cancel



Page up
Page down
Specify point

Select jet
Start point
CW oval
End point

Lag open jet: No

Speed

Type Position Insert

Needle height

Teach

Straight line Shift Delete

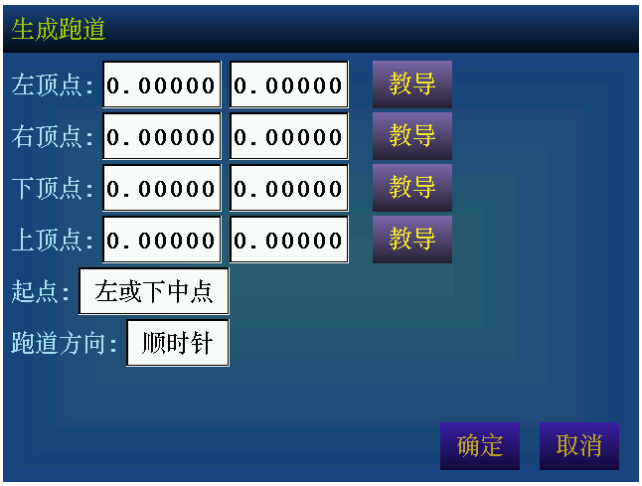
Arc Zoom Save

Single point Advance Exit

Generated oval graph

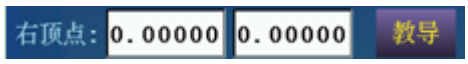
Press the Teach key in the interface of oval to teach all vertexes of the oval (to generate an oval, you need to regulate at least one vertex at both X and Y directions). Once starting point and end point have been taught, select the oval direction, and then press OK to generate the oval. The data of all vertexes in this interface are saved at all times, even you exit the interface. Therefore, you can exit midway while teaching the oval and the data will still be there when you re-enter.

- Runway



Generate runway

Left vertex: Teach



Right vertex: Teach

Top vertex: Teach

Bottom vertex: Teach

Start point: left or bottom center point

Runway direction: CW

OK Cancel

Page up

Page down

Specify point

Start point

Straight line

Arc

Arc end point

Straight line

Lag open jet: No

Speed

Type Position Insert

Needle height

Teach

Straight line Shift Delete

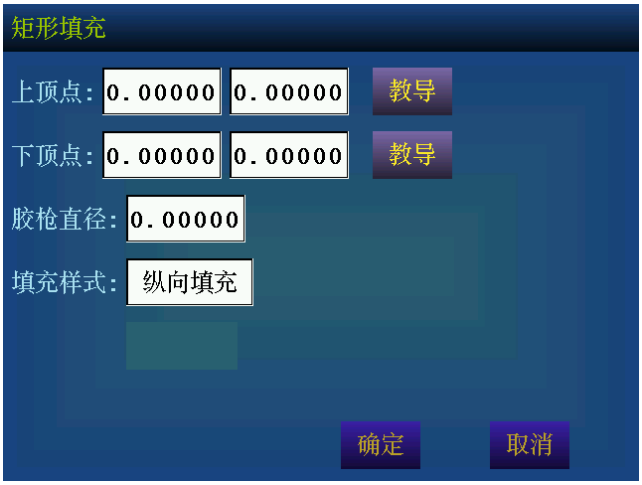
Arc Zoom Save

Single point Advance Exit

Generated runway graph

Press the Teach key in the interface of generated track to teach all vertexes of the track. Select the starting point (the starting point can only occur in the middle of the long side), select the track direction, and press OK to generate the track. The data of all vertexes in this interface are saved at all times, even you exit the interface. Therefore, you can exit midway while teaching the oval and the data will still be there when you re-enter.

- Rectangle fill



Rectangle fill

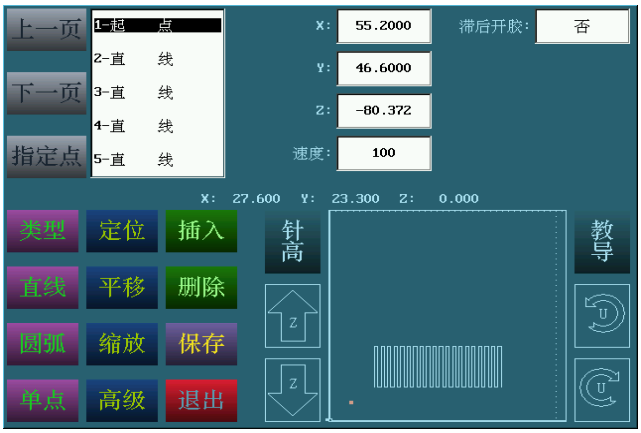
Top vertex: Teach

Bottom vertex: Teach

Jet diameter:

Fill type: Vertical

OK Cancel



Page up

Page down

Specify point

Start point

Straight line

Lag open jet: No

Speed

Type Position Insert

Needle height

Teach

Straight line Shift Delete

Arc Zoom Save

Single point Advance Exit

Generated rectangle fill graph

Teach the diagonal points of the rectangle, and the rectangle fill graphic will be generated automatically. If the diameter of the glue gun can not be divisible by the length of the side, there will be indicative messages which show that whether to enlarge or reduce the diameter of the glue gun so that it will be divisible by the length of side.

- Circle fill

Circle fill

First point on circle: Teach

Second point on circle: Teach

Third point on circle: Teach

Jet diameter:

OK Cancel

Page up
Page down
Specify point

Start point
CCW arc
Arc end point
CCW arc
Arc end point

Lag open jet: No

Speed

Type Position Insert

Needle height

Teach

Straight line Shift Delete

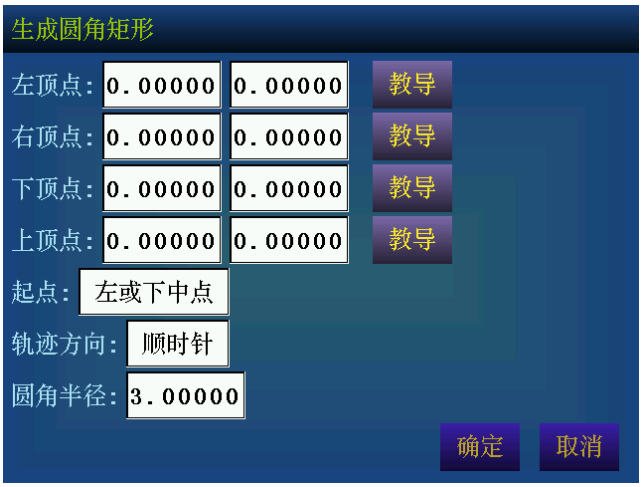
Arc Zoom Save

Single point Advance Exit

Generated circle fill graph

Teach three points of the circle which needs to be filled, and it will automatically generate a spiral-like filled shape. When the diameter of the glue gun can not be divisible by the radius of the circle, there will be indicative messages that whether to enlarge or reduce the diameter of the glue gun to make it can be divisible by the radius of the circle.

- Fillet rectangle

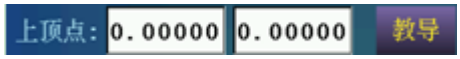


Generate fillet rectangle

Left vertex: Teach

Right vertex: Teach

Top vertex: Teach



Bottom vertex: Teach

Start point: left or bottom center point

Track direction: CW

Corner radius:

OK Cancel

Page up
Page down
Specify point

Start point
Straight line
CW arc
Arc end point
Straight line

Lag open jet: No

Speed

Type Position Insert

Needle height

Teach

Straight line Shift Delete

Arc Zoom Save

Single point Advance Exit

Generated fillet rectangle graph

Press the "Teach" key in the fillet rectangle interface to teach each vertex of the rectangle. Select the starting point (starting point can only choose the midpoint of the long side), select the runway direction, and press OK to generate a fillet rectangle. The data of all vertexes in this interface are saved at all times, even you exit the interface. Therefore, you can exit midway while teaching the oval and the data will still be there when you re-enter.

4.1.9 Find type

Find the Nth same process point with the specified type, press the Shift +9 quick access to the file editing interface, and then press Shift + the up arrow or Shift + down arrow to find previous or next point of this type.

4.1.10 Adjust area

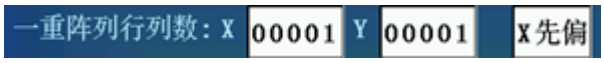
Adjust the coordinates of the graphics between the current point and the next reference point. The first point of the graph in the area will be adjusted to the current coordinates, and the other parts of the graphics will be adjusted as well. This feature is mainly used in the partial adjustment of area in the graphics array, the array of graphics need a reference point, the reference point is used to adjust the height of needle, and does not produce the actual movement. When you adjust, first use the feature of "Find Type" to find the reference point which needs to be adjusted, and then do partial adjustment.

4.1.11 Multiple arrays

Multiple arrays

Copy range:

Start point: End point:



Single array rows and columns: X prior

Array pitch

Double array rows and columns: X prior

Array pitch

Triple array rows and columns: X prior

Array pitch

OK Cancel

- Copy range: start processing point number and end processing point number of the graphics to be copied.
- Single array rows and columns: group number in X direction and Y direction of single array. The

copied object is the processing points specified in the copy range.

- Offset: the direction that the array starts copying.
- Array pitch: the pitch between the X and Y directions of single array copy.
- Double array rows and columns: group number in X direction and Y direction of single array. The copied object is the processing points after single array copy.
- Offset: the direction that the array starts copying.
- Array pitch: the pitch between the X and Y directions of double array copy.
- Triple array rows and columns: group number in X direction and Y direction of single array. The copied object is the processing points after double array copy.
- Offset: the direction that the array starts copying.
- Array pitch: the pitch between the X and Y directions of triple array copy.
- OK: generate multiple arrays according to set parameters.
- Cancel: exit multiple array function.

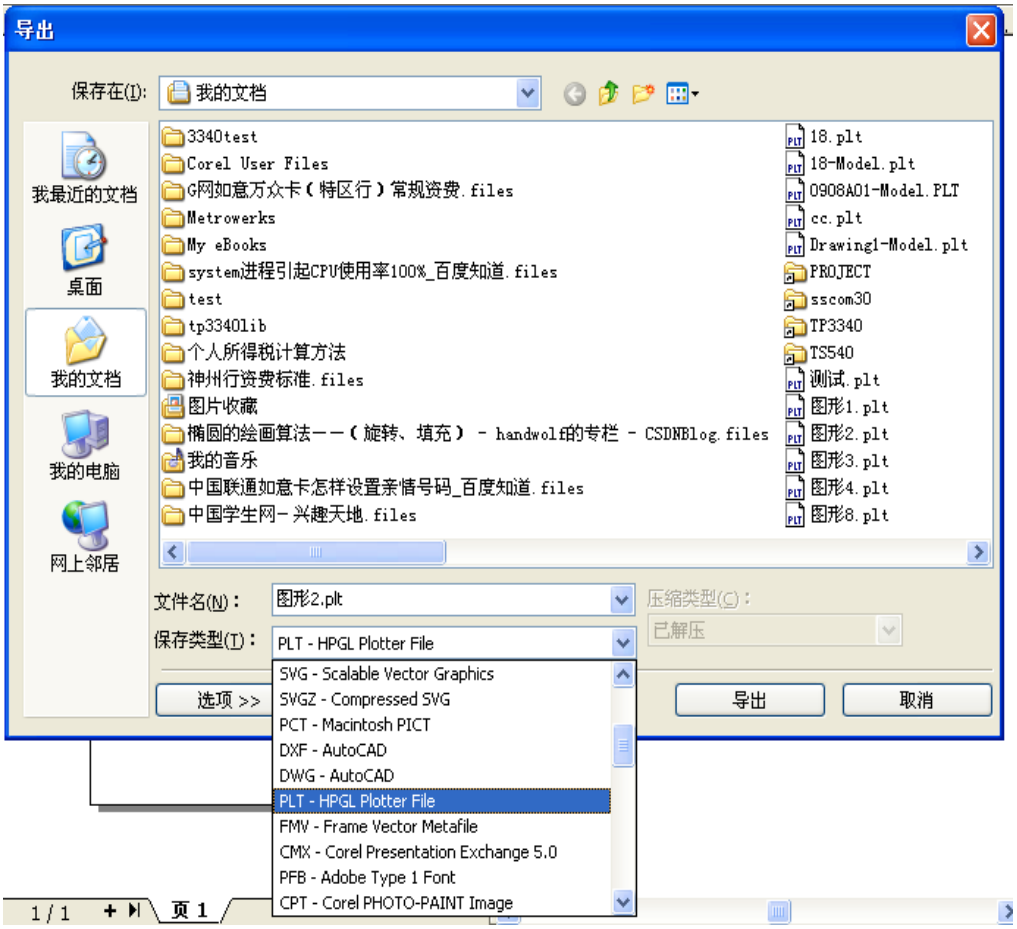
4.2 PLT graph importing function

Set the PLT file conversion proportion in system parameters, and then press “File manager” -> “PLT file conversion” in the main interface to select PLT files and convert into processing files of the same name with .DJJ suffix, save in “\PRG\” folder automatically, and then exit to the main interface for debugging and processing. PLT format is a format of printing file containing XY coordinate, starting point, end-point, and color of graph without info about Z-axis coordinate. Therefore, graph after conversion does not have Z-axis coordinate and needle height value. You can use the batch modification function to modify the Z-axis coordinate and needle height. There are many kinds of software generating PLT files. Here, we just introduce the ways of generating PLT files using two kinds of widely used software: CorelDRAW 12 and AutoCAD 2004. The interface may be a little bit different in case of different version.

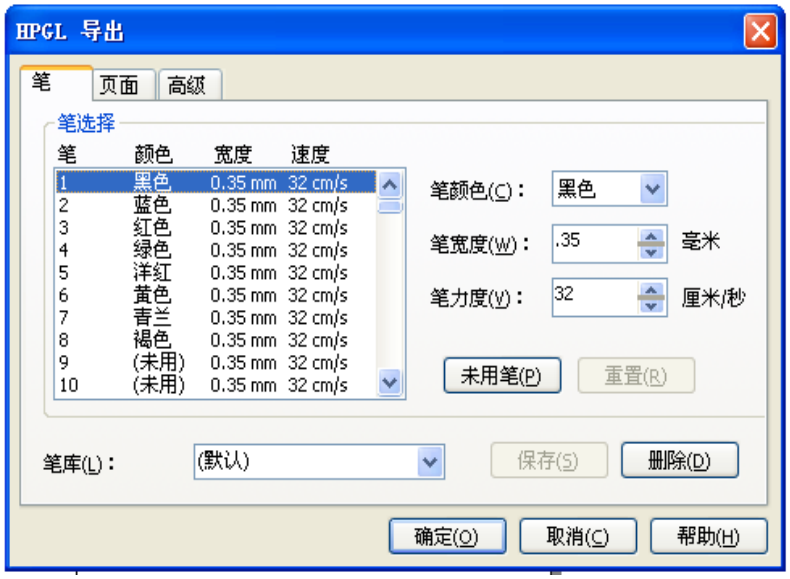
4.2.1 Use CorelDRAW 12 to generate PLT files

<1>. Draw the graph

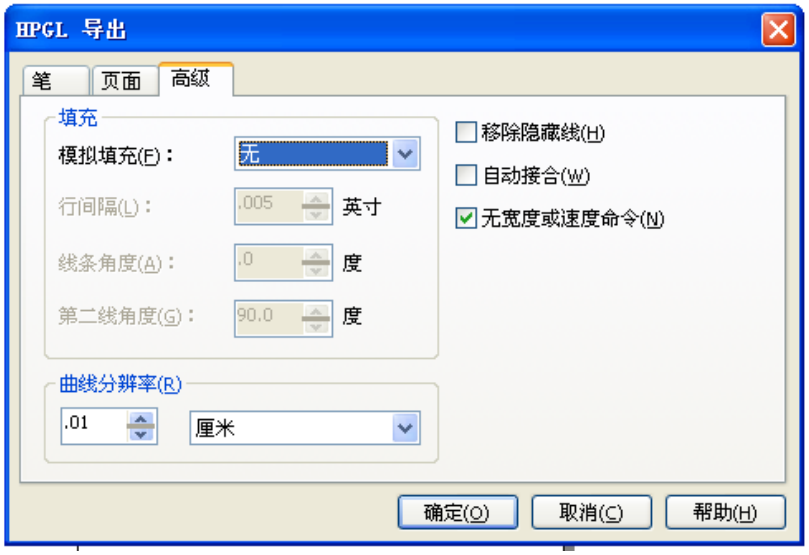
<2>. Click menu “File” → “Export”, and a dialog box appears as follows:



<3>. Select PLT-HPGL Plotter File in “Type”, and click “Export”, a dialog box appears as follows:



<4>. In “Page” tab, select “Bottom left” in “Graphic plotter origin”, and leave other settings as default.

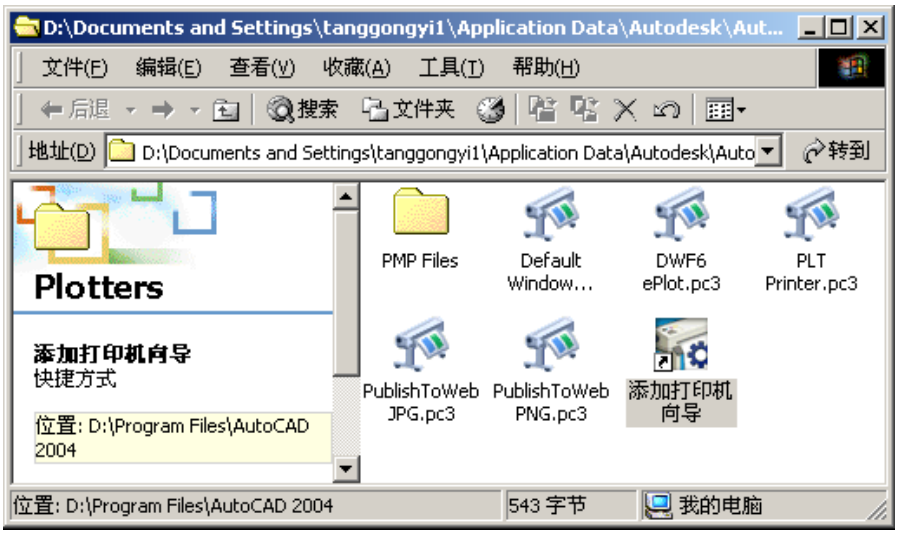


<5>. In “Advance” tab, tick off “No width or speed order”, and leave others as default. Then, press OK to generate PLT file.

4.2.2 Use AutoCAD2004 to generate PLT files

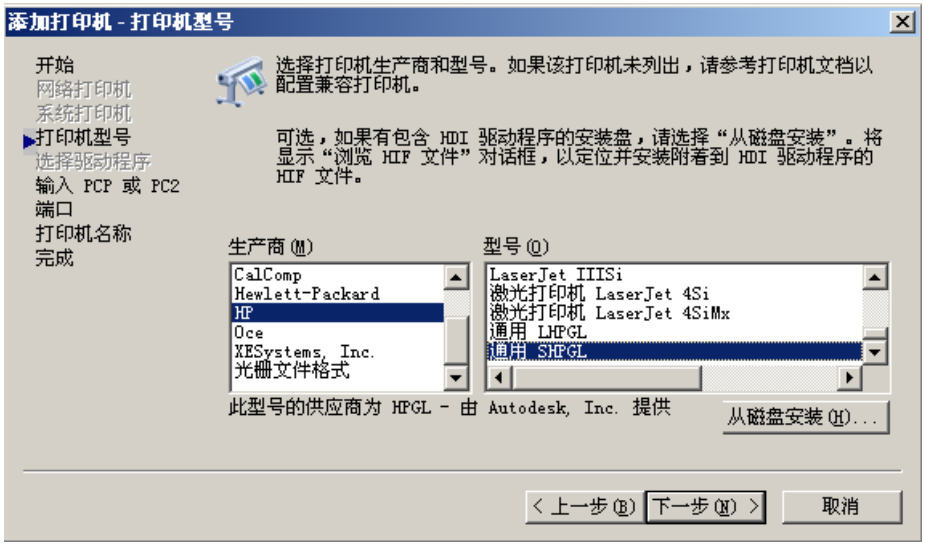
Please check whether there is a printer named “Universal SHPGL” in printer type. If no, follow the following steps to install:

Click menu “File” → “Printer Manager” to pop up the interface as below



Double click the icon of “Add Printer Wizard”, and click “Next” to enter the following interface:

Continue to click “Next”

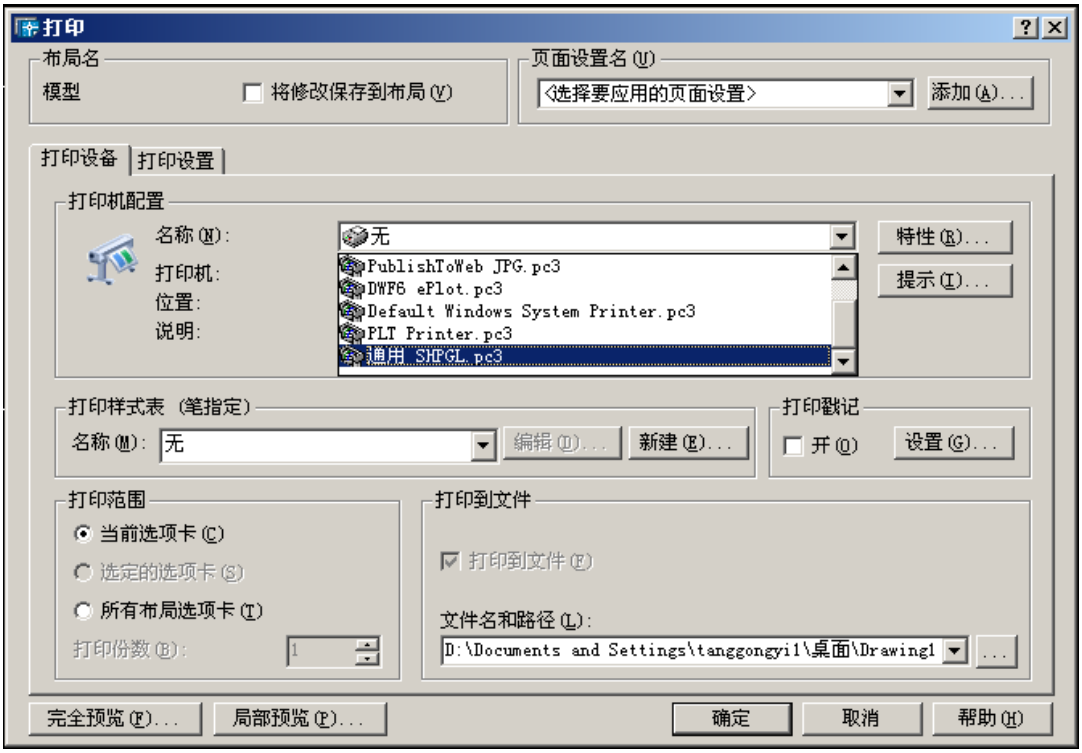


Select “Universal SHPGL” printer of HP, and keep clicking “Next” until the finish of printer installation.

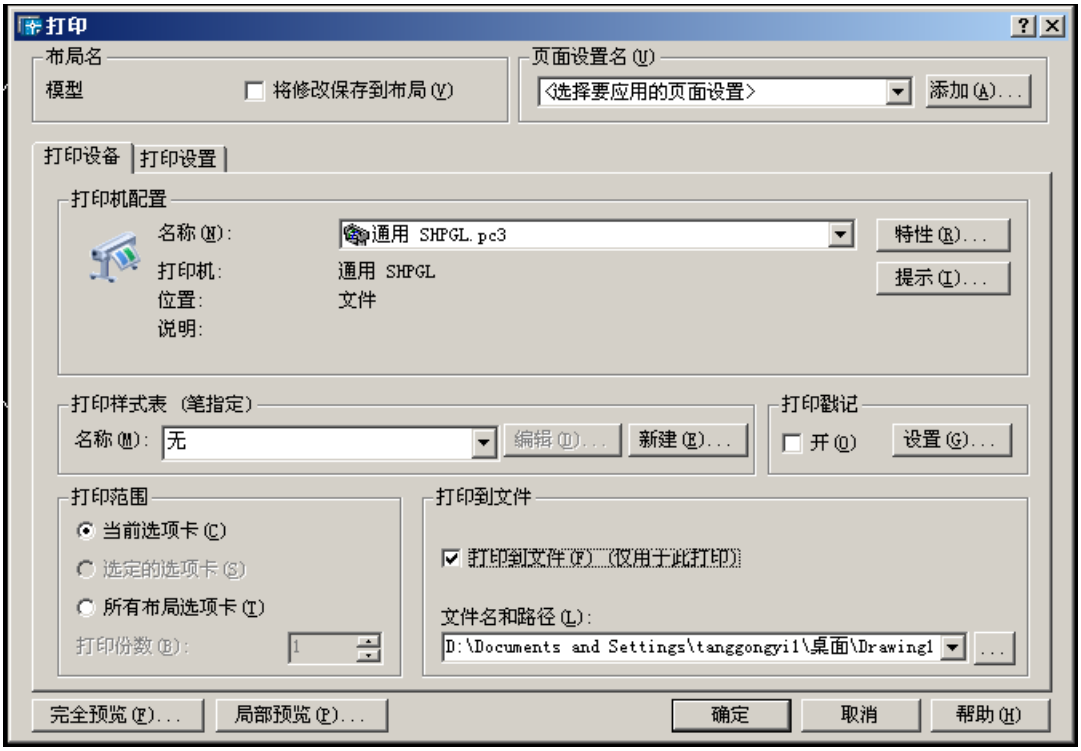
After the finish of installation, you can then export the PLT file in the following steps:

<1>. Draw the graph

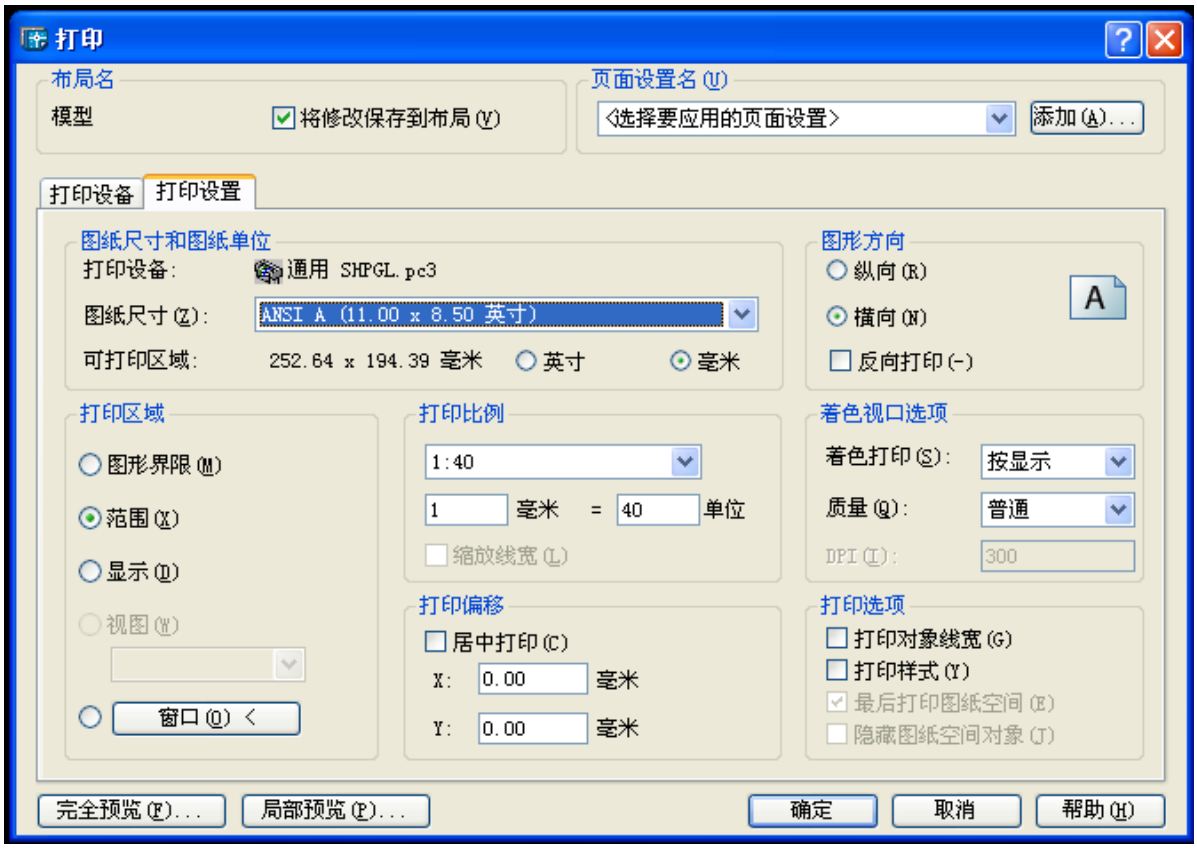
<2>. Click “File” → “Print” to pop up the dialog box as below



<3>. Select “Universal SHPGL.PC3” printer in “Printer device”, check the “Print to file” check box, and set the path and name of the exported file



<4>. In “Print setup”, uncheck “Print style” and “Line width of printing object” in the printing options. Pay attention to the selection of “Graph direction”. A wrong selection may lead to wrong direction of the exported graph (Take letter “A” normal display as standards).



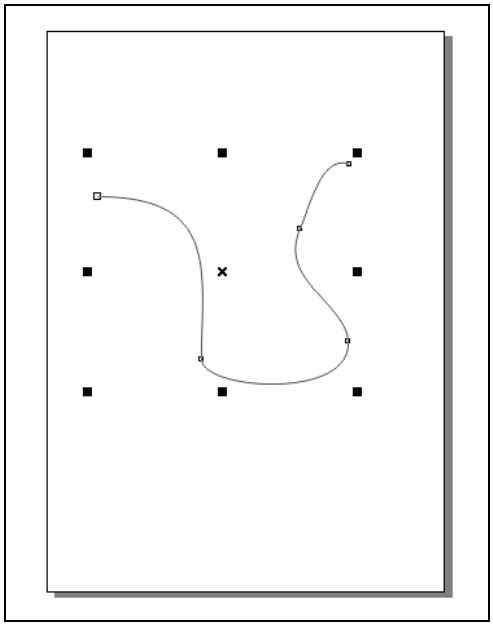
<5>. Click “OK” to export PLT file

PLT file can be opened by text editor. The following is a sample of PLT file:

_.(;_.I81;;17:_.N;19:IN;SC;PU;IP;IW;VS20,1;VS20,2;VS20,3;VS20,4;VS20,5;VS20,6;VS20,7;VS20,8;SP1;PU;PA0,0;SP1;LT;PA3985,3940;PD;PA5344,3940;PA5344,2497;PA3985,2497;PA3985,3940;PU;PA0,0;SP;PG1;

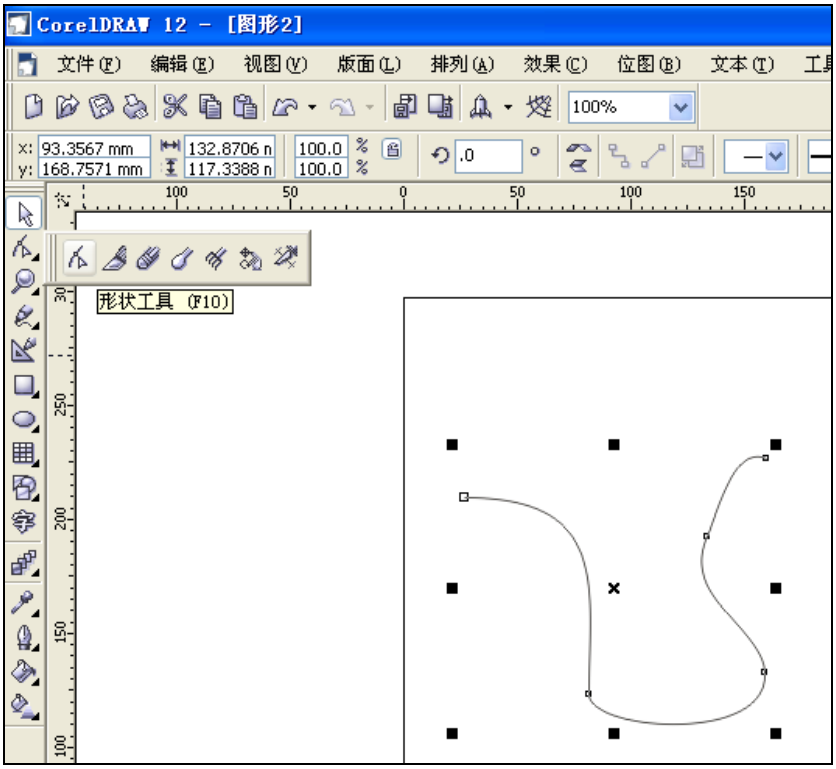
4.2.3 Changing sequence of PLT file track with CorelDRAW12

<1>. The adjustment of point sequence inside the curve

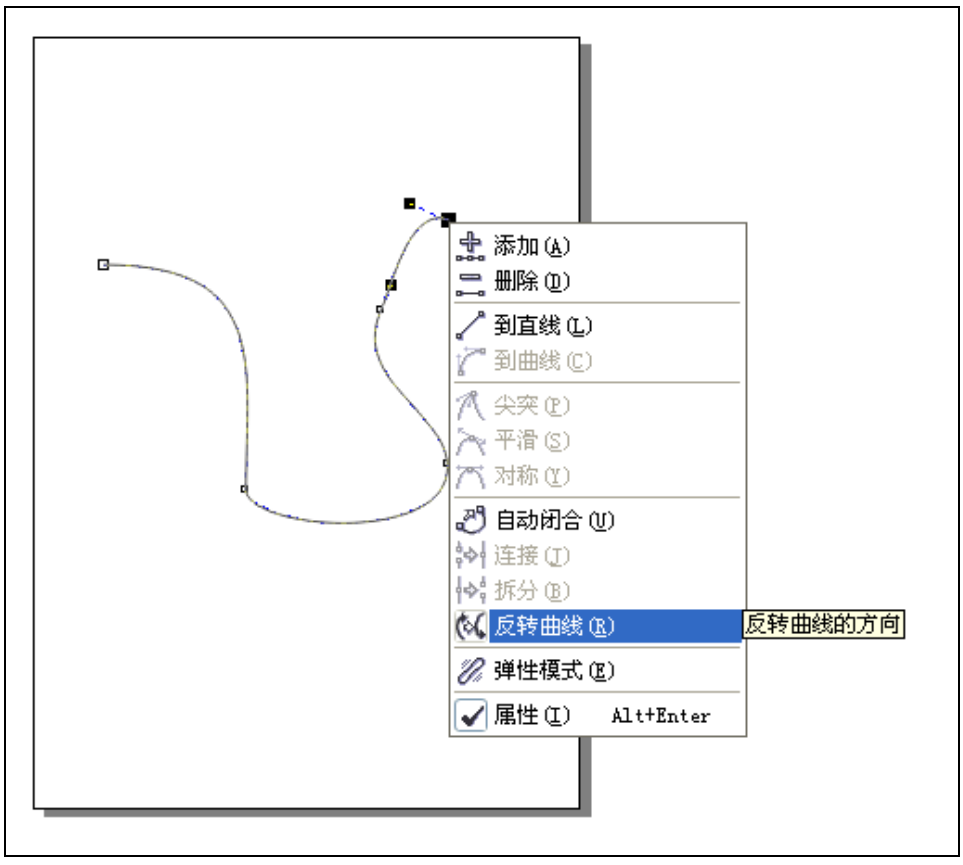


As shown in picture above, we can see that one endpoint of the curve is big and the other one is small.

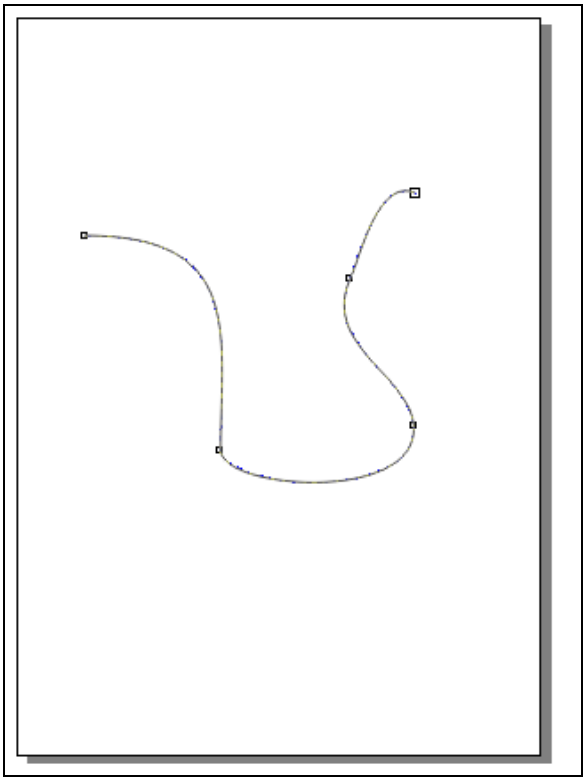
Big endpoint means the starting point, and the small endpoint means the end-point. To change their sequence, use the method below:



Left click on the icon on the second row of the left toolbar, select shape tool (as above picture), right click an endpoint of the curve, and select “Reverse curve”; then, the point sequence within the curve will be changed. (As the following picture)

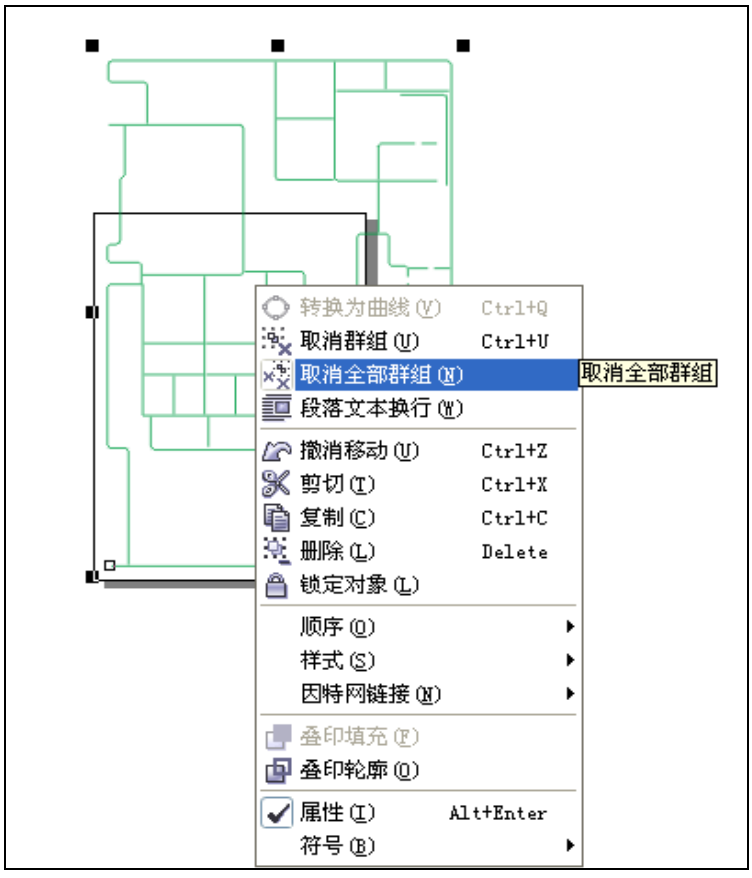


The graph after reversing is as follows:



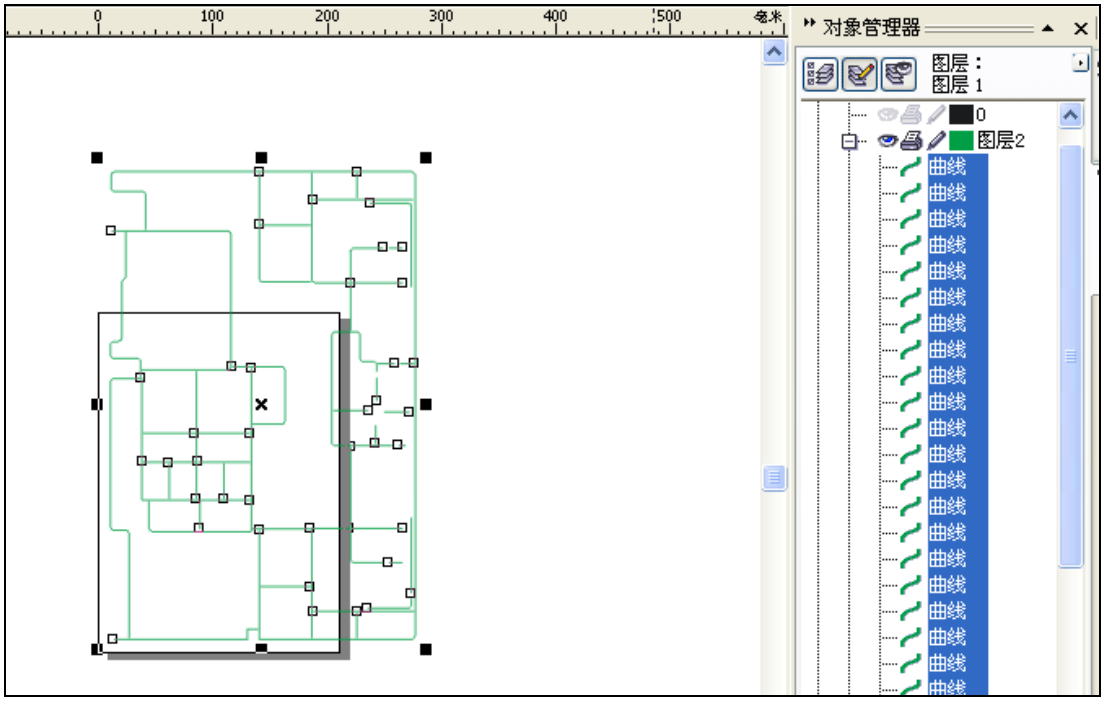
<2>. Graph sorting

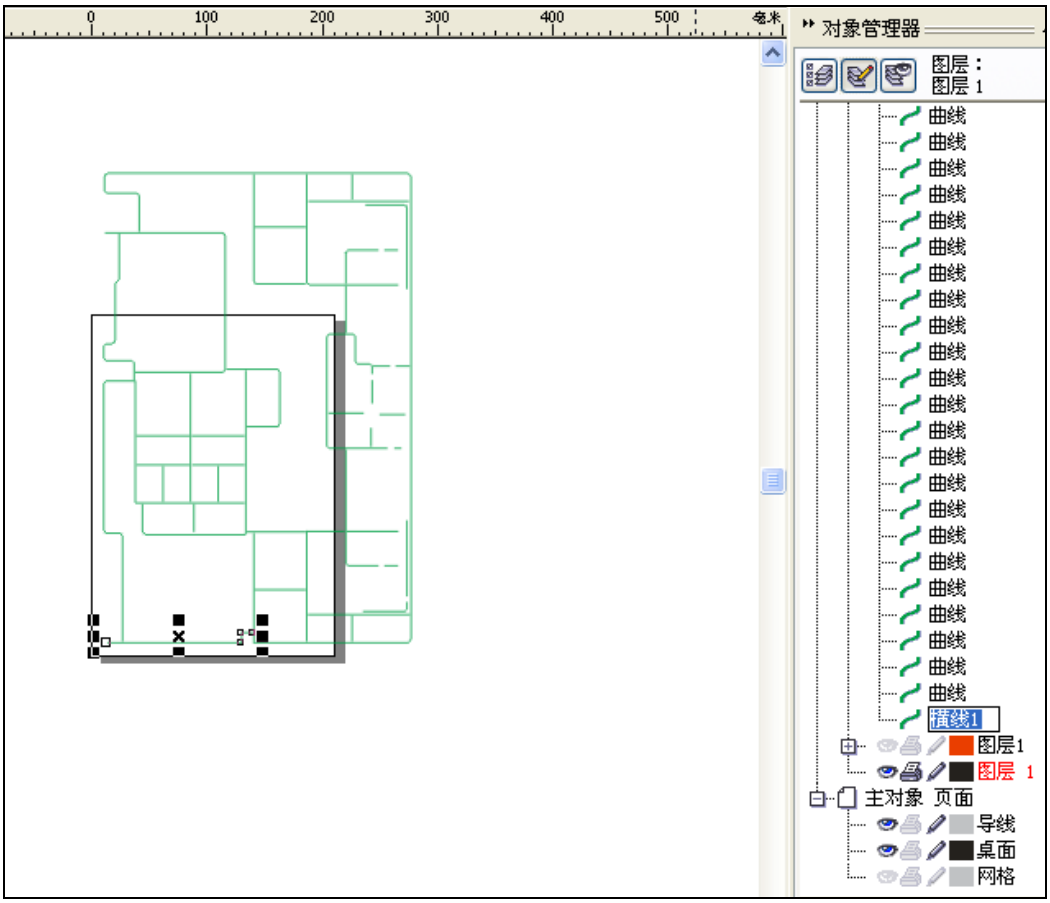
If a graph is a group, you need to cancel the grouping of the graph. To do this, right click on the graph, and select “Cancel all grouping” (As the picture below):



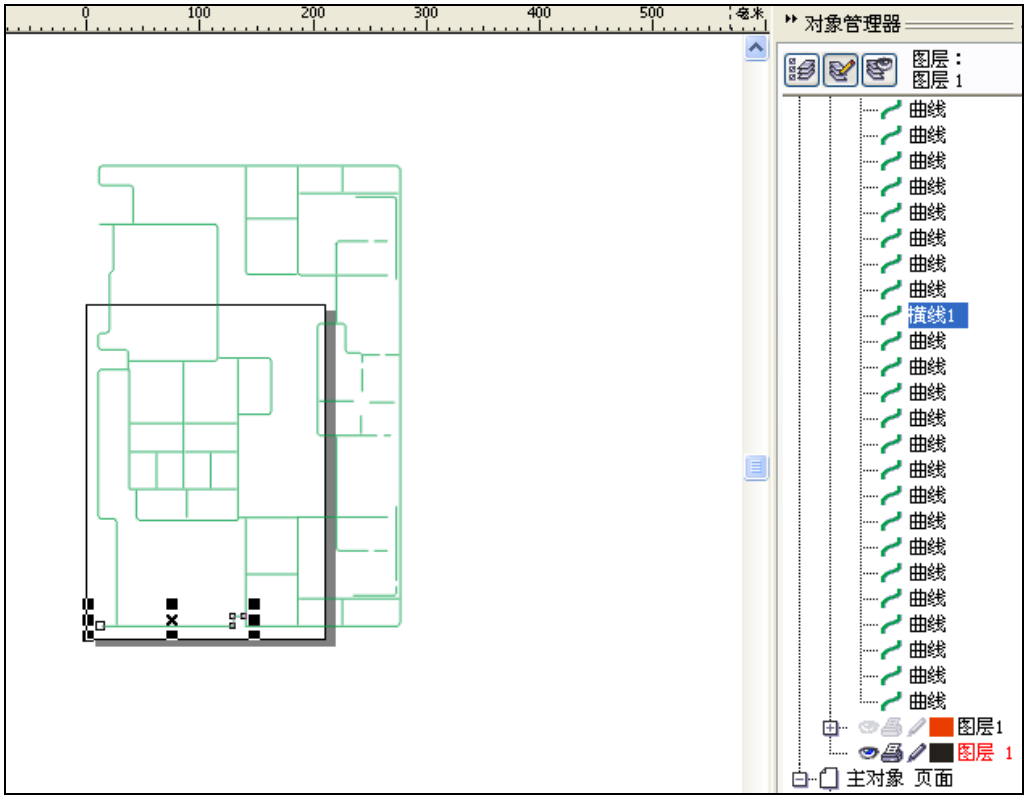
Generate several curves (As picture below):

(To open the object manager on the right side, click “Tool”→“Object manager”)





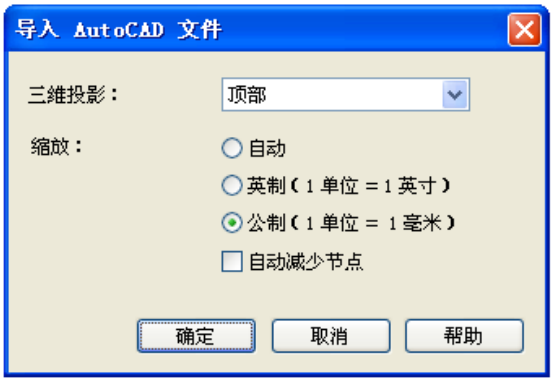
Select any one of the curves (As picture above), you can name it, and move it to the desired position (as picture below):



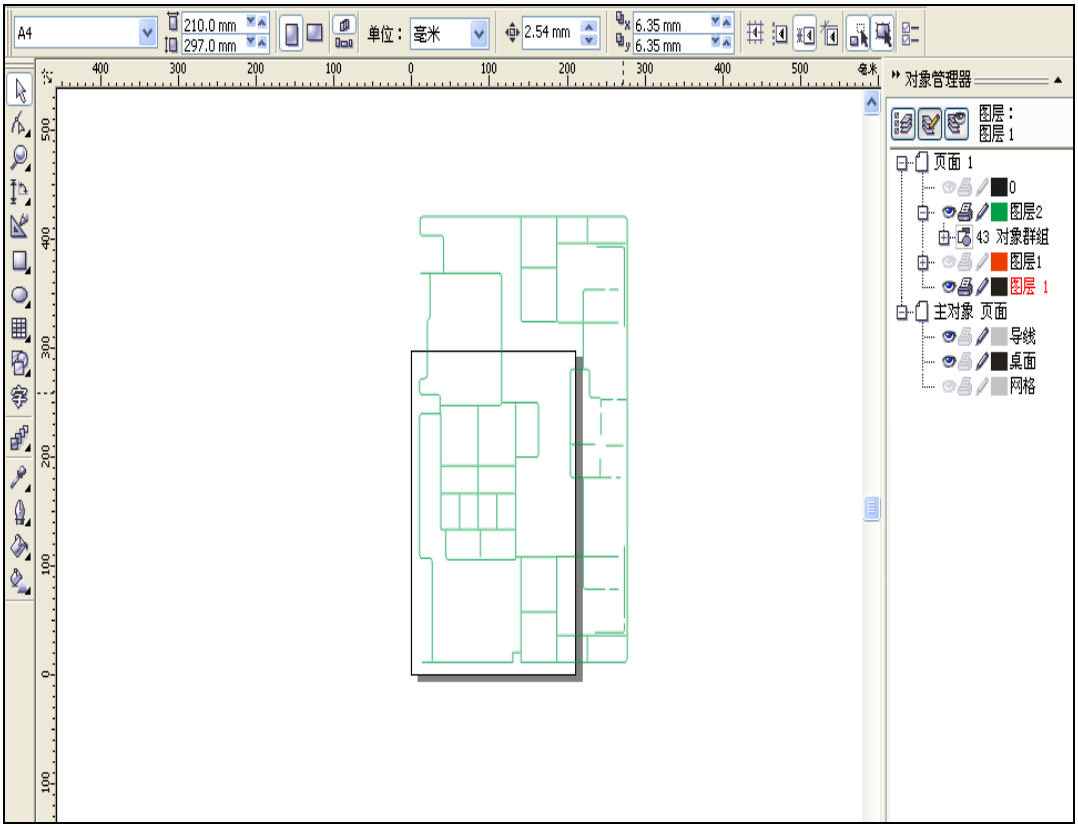
Export PLT file when the sequence is arranged. Remember the position of starting point, which is the position when setting the starting point position during the processing.

4.2.4 Importing dxf files with CorelDRAW12

After generating dxf file with AutoCAD, you have to close AutoCAD before importing dxf file into CorelDRAW; otherwise, the import will fail. Pay attention to the unit when using AutoCAD. If you use millimeter, the zoom unit should use “Metric system”; if you use inch, select the “Imperial system”.



You’d better put the imported graph on the bottom left corner of the page (as picture below)



4.3 G code importing function

In main interface, you can press “File manager” -> “G code conversion” to switch the G code files to processing files with .DJJ suffix.

The supported G codes nowadays include G00, G01, G02, G03, G17, G18, G19, G90, G91, G20, G21, and too change instruction begun with T.

4.4 TCF file conversion function

In the main interface, press the "File manager" -> "TCF file conversion" to select TCF file, open and convert into processing files of the same name with .DJJ suffix, which is automatically stored in "\ PRG \" folder, and then exit to the main interface for debugging and processing. TCF file may be obtained by drawing with Logoshop drop processing software. TCF file saves the XY coordinates, reference point, starting point, end point, selected glue gun and other information of the graph, but the Z-axis coordinate information isn’t saved, so that the converted graph doesn’t have Z-axis coordinates and pin height value, which can be modified in batch edit.

4.5 USB connection and USB disk usage

USB connection: First, connect the controller and the PC using the USB cable, then press the "File manager" -> "USB connection" in the main interface, and the controller will be connected to the PC as USB disk.

USB disk usage: first connect the USB disk to the USB interface (only store useful files in the disk, because too many files will extend the reading time). In the main interface, press the "File manager" -> "File operation" to enter into the file management interface, press "Up" to find the" Removable Disk" (reading U disk requires a period of time), select and open USB disk. You can copy, paste, or delete files in the USB disk or controller.

Note:

1. After PLT files is generated, in the transferred files with the suffix of DJJ, there are empty command in both the beginning and end, it is recommended to manually remove them, so as not to affect the process.
2. Be sure to back up before Smoothing Graphics, just one opportunity to chamfer for each file.
3. External quick file selection and processing switch are invalid while the file is being edited.
4. Quick layer selection or quick file selection function are set as follows: 1. In the main interface, enter "System settings" -> “Factory parameters”, select the "input port configuration", select the layer or the input point corresponding to the shortcut file number; 2. In the main interface, enter the "File Preferences" interface, select the layer for the glue gun or the number corresponding to the file.
5. After converting TCF file, you should not start to process until you perform the needle calibration or graph shift.
6. Gun-related parameters such as delay, advance, arrive and retreat are not valid unless the gun signal of the cylinder is effective.
7. Manual tuning method as follows: press axis movement button once. Each time you press the movement button and the corresponding axis will move the distance which is set for one fine-tuning pulse.
8. Reference for cycle processing steps: 1. In the main interface, press “System settings” -> “User parameters” to open circulation; 2. Set the number and times of cycle files, which correspond to the selected file under the "quick file number selection" of "File Preferences"; 3. Select a processing file for cycle, and then start cycle; if there is outer cycle selection switch, the cycle open and close of the hand-held box is invalid.
9. Please note that the quick selection file, the corresponding number of the file, and the corresponding layer of the file are three different conceptions.