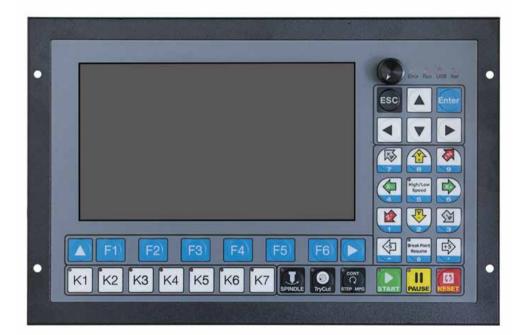


DDCS-*Expert*

Standalone Motion Controller Users Manual V1



This Manual based on: Software Version: 2020-09-28 Hardware Version:2020-401-0

All copyrights reserved Shall not be reproduced without permission.

深圳市众联拓数控科技有限公司

Shenzhen Digital Dream Numerical Technology Co., Ltd.

Contents

1	DDCS-Expert Brief Introduction 3
1.1	Product Brief Introduction 3
1.2	DDCS-Expert Brief technical feature 4
1.3	Appe arance, Structure and Size of Product 5
1.4	Explanation of Abbreviations 7
2	Contr oller Panel and Operation 8
3	Input and Output Ports 10
4	Wiring
4.1	Wiring Board Overview 15
4.2	Power Supply Input 18
4.3	Spindle Wiring · · · · · · 20
4.3.1	Analog Spindle 20
4.3.2	Servo Spindle (PLUSE/DIRECTION) 22
4.3.3	Multi-Speed Spindle 22
4.3.4	Relay Wiring 24
4.4	Stepper /Servo Driver Wiring
4.5	Limit, Home and Probe Inputs 27
4.6	External Buttons · · · · · 29
4.7	MPG Wiring 29
4.8	Series Port Wiring
5	Softw are and Operation 33
5.1.1	The Main Page of the software 34
5.1.1.1	FRO
5.1.1.2	SRO
5.1.1.3	SJR/Jog Step
5.1.1.4	Feed Rate
5.1.1.5	Analog S/Ser vo S/Multi-Speed 43
5.1.2	Simulation 46
5.1.3	Probe
5.1.3.1	Floating Probe 49
ana Otan de	Jone Matter Centralian Dans 4

5.1.3.2	Fixed Probe	51
5.1.4	Go work Zero	53
5.1.5	Go Home	54
5.1.6	Clear	57
5.1.7	Break Run (Breakpoint Resume)	
5.1.8	Manual	
5.1.9	Coord Set	
5.1.9.1	Select Coord	
5.1.9.2	Clear X / Y / Z / 4th / 5th A xis	64
5.1.9.3	Set Z Step	65
5.1.9.4	Deeper and Move up	65
5.1.10	MDI	66
5.1.11	Middle	
	l Find Middle Point in X Axis · · · · · · · · · · · · · · · · · · ·	
5.1.11.2	2 Find Middle Point in Y Axis	
5.1.11.3	B Find a middle point f or the Arc · · · · · · · · · · · · · · · · · · ·	
5.1.12	Work Record	
5.1.13	Sort Process	
6	Program ·····	
7	Parameters	
7.1	Parameters List and Details	
7.2	Search the Parameters by the Number	
7.3	Parameter Setting Backup	
7.4	Parameters Restore	
8	System Info	
8.1	Registration ·····	
8.2	Password Setting	
8.3	System Update (System Software Update)	111
8.4	System Set	114
8.4.1	System Time Setting	114
8.4.2	Set IP Address manually by Ethernet Cable	
8.5	System BackUp	131
9 Digital Dream Standa	G Code and M Code alone Motion Controller Page-2	DDCS-Expert Users Manual

The copyright of this manual belongs to Shenzhen Digital Dream Numerical Technology Co., Ltd. (herein after referred as Digital Dream Company). This manual and any image, table, data or other information contained in this manual may not be reproduced, transferred, or translated without any prior written permission of Digital Dream Company.

The information contained in this manual is constantly being updated. You can login to the official website of Digital Dream Company www.ddcnc.com to download the latest PDF edition for free.

1 DDCS-Expert Brief Introduction

1.1 Product Brief Introduction

Thank you for your interest in our standalone motion controller and for taking the time to read this manual.

Digital Dream is a numerical control company specializing in the research, development and production of various CNC (Computer Numerical Control) systems since 2008. Digital Dream aims to combine high quality and high reliability with affordability.

The DDCS Expert is a 3~5 axes motion controller for open or close stepper and servo systems with 7/10.2 full color display screen. The highest output pulse per axis is 1MHz. The users can self-define the functional keys. This controller supports multiple spindle mode, support straight Tool Magazine, gantry type Magazine, disk type magazine. The Operation system interface even though very comprehensive, can be learned in very short time.

The DDCS Expert numerical control system adopts the ARM+FPGA design framework. ARM controls the human-computer interface and code analysis and the FPGA provides the underlying algorithms and creates the control pulse. This guarantees reliable control and easy operation. The internal operating system is Linux based.

The DDCS Expert can be used for many styles and types of CNC machines. Lathes, Routers, Pick&Place and Mills, lathe and cutters are just a few examples. The DDCS Expert operates as a Stand Alone system without the need of a computer. This guarantees high precision, accuracy and reliability.

1.2 DDCS-Expert Brief technical feature:

1) Max. 5 Axis; 1M Hz output frequency for each axis; 2-4 Axis linear interpolation, any 2 axis circular interpolation;

2) 7 inch full color display screen; resolution ratio: 1024*600, 40 operation keys;

3) 24 photoelectric isolated digital inputs, 21 photoelectric isolated digital outputs;

4) Analog spindle control 0-10V spindle control, also support PWM Output;

5) Magazine type: Supports multiple spindle mode, support straight Tool Magazine, gantry type Magazine, disk type magazine;

6) Probe Mode: Supprt Floating Probe and Fixed Probe;

7) Backlash compensation methods: direction gap compensation, radius gap compensation, length compensation;

8) Interpolation Algorithm: S type, circular hard algorithem, circular soft algorithm;

9) Language: Chinese, English;

10) Software Alarms: Program Error, operation Error, overtravel Error, Driver Error and so on;

11) Network: Support file share and online machining the remote files by Ethernet;

12) Spindle control mode support Multi-speed (3 lines 8 kinds speed), 0-10V Analog output, and servo spindle output;

13) Compatible with standard G-code, support popular CAD/CAM software, such as ArtCam, MasterCam, ProE, JDSoft SurfMill, Aspire, Fusion 360 and so on;

14) The control system can preview the processing path before machining, and it makes the system more steady, working smoothy and precise;

15) Support high speed machining in continuous Polyline segment, system can choose a most efficient algorithm automatically from different kinds Polyline segment algorithm;

16) Support un-limited size file for machining;

17) Support Pause Breakpoint resume, "Power Cut" recovery, Start from the specific line;

18) Support time-lock function;

19) Support 4 kinds operation rights: visitor, operator, admin, super admin;

20) Support function of "Try cutting" (handwheel guiding) and "Single-stage processing mode" and so on;

21) Support the fuction of Back to orignal point

21) The Power Supply for the controller is 24VDC, minimum Current is 0.5A;

22) The Power Supply for IO Port is 24VDC, minimum current is 0.5A; By the IO power supply, system already supply the power to IO ports. So no need the external power supply.

1.3 Appearance, Structure and Size of Product

The DDCS-Expert is a small box that can fit in a window of a small control box or control cabinet. Four locking hooks fix this controller from the frame. The dimension you find in Figure 1-1 and Figure 1-2.

The front panel is 268mm*172.5mm*5.2mm;

The main body is 268mm*172.5mm*70mm;

To mount the unit in an equipment cabinet, cut the hole 258.4mm*109mm

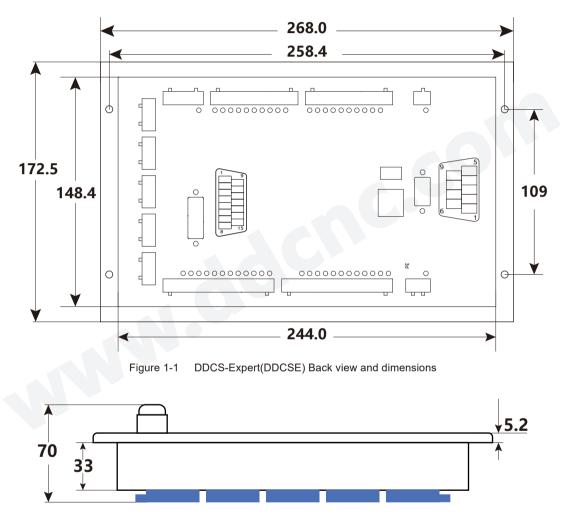


Figure 1-2 (DDCSE) Side view and dimensions

The front panel consists of 40 user keys and the 7 inch (1024*600) LCD.



Figure 1-4 Back Side of the controller

The only accessories is the USB extended cable.



Figure 1-5 USB extended cable

1.4 Explanation of Abbreviations

When operating the DDCS, the users will come across some English abbreviations. Here a list with explanations:

- FRO: Feed Rate Override
- SRO: Spindle Rate Override
- SJR: Jog Speed Setting
- F: Feed rate, unit is mm/min
- S: Spindle Speed, unit rev/min.
- X: The coordinate code of the X axis.
- Y: The coordinate code of the Y axis.
- Z: The coordinate code of the Z axis.
- A: The coordinate code of the A axis
- B: The coordinate code of the B axis

BUSY: The system is busy. You still can adjust FRO and SRO

READY: READY mode, any operation can be done

RESET: Reset mode, controller is in "OFF" mode, no operation can be performed

CONT: Continuous mode, each axis can be manually jogged with the arrow keys

Step :Manual Step Mode, each axis can be jogged in defined steps

MPG: MPG mode. Operate the machine with the MPG (Manual Pulse Generator)

BUSY: Run G code. Auto is showing when file is processing

1.5 Notes and Warnings

Keep away from exposure to moisture or water. This product contains sophisticated electronics and must not get wet.

Wiring warning: the IO input terminal of this controller supports equipment with source power (such as Inductive Proximity Switch). When using this kind of equipment, pay attention to the polarity. Avoid the +terminal to be connect with GND. This controllers has analog output for spindle control (0-10V). Please avoid this terminal to ever connect with GND as damage to

the controller may occur.

Operation warning. Please observe all security measures when operating the machine. The ESTOP must be connected and properly labelled. In case of a problem, press the E-stop at once to avoid damage to humans, animals and the equipment.



High voltage danger. The DDCS is connected to 24V DC. Obey and follow the electricity safety rules of your country when connecting this equipment.

2 Controller Panel and Operation

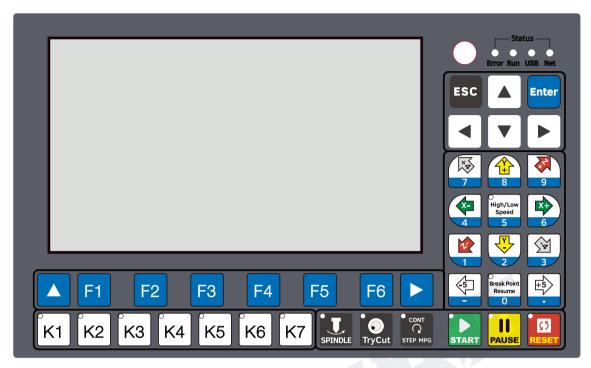


Figure 2-1 DDCS-Expert (DDCSE) Controller Panel

Keys Icon	Definition	Notes
	Return to previous menu	In the software, press the key to return to previous menu.
	Go to Next Page	In the software, press the key to the next page of the sub-menus.
F1~F6	Sub-menu key F1~ F6	Sub-menu keys need to work according with the controller software.
о К1~К7	Extend function key K1~ K7	In the Para Page, the users can define K1-K7 Keys.
SPINDLE	Spindle manual start/close	Press this key to manually switch the spindle on or off. Can not be used if Reset is blinking and while processing an operation (Busy) When the LED lights up, then the spindle start.
TryCut	Try cut Enable/Disable	Press this key to Enable or Disable the Try-Cut (Handwheel guiding) function.
CONT Q STEP MPG	Mode switch	When in READY, this key changes the Jog mode from Continuous to Step and MPG control.
START	Start operation	After loading the G code file, please press this key to start the operation. In case of Pause Status, press this key to continue the processing operation.
	Pause operation	Press this key to Pause the operation.
	Reset and E-STOP	If Reset is blinking, press this key to activate the controller again. Press this key to stop the programming urgently.

Keys Icon	Definition	Notes
\odot	1: Cursor moves quickly 2: Ratio/Values increase or decrease 3: Push to Enter	In the Monitor Page, by turnning the knob, it can move among different column; after selecting the column, we can adjust the values fast and easily; In the Program page, by turnning the knob, we can select files quickly and press it to confirm; In the Parm and IO page, it also have the same functions.
	1: Cursor moves Up 2: Parameter value increases 3: Highlight the Selections	In Monitor,the key can highlight the processing parameters FRO/SRO/SJR and so on; In Program/Param/IO page, it hightlight the selections.
	1: Cursor moves Down 2: Parameter value decreases 3: Highlight the Selections	In Monitor, the key can highlight the processing parameters FRO/SRO/SJR and so on; Program/Param/IO page, it hightligh the selections.
	1: Cursor moves Left 2: Moves through Para Kinds	In Param Page, the key moves among the Para Kinds; In IO page It moves the cursor left.
	1: Cursor moves Right 2: Switch through Para Kinds	In Param Page, the key moves among the Para Kinds; In IO page It moves the cursor right.
ESC	1: BackSpace Key 2: Cancel or Delete Key	By it we can come back to the main page, cancel and delte the value input, cancel the current action and so on.
Enter	1: Confirm and Enter key	In "CONT Mode", the X axis will Continuously move positive after pressing this key. In "STEP Mode" X will move positive in steps.
6	1: X axis moves right; 2: Number "6".	In "CONT Mode", the X axis will Continuously move positive after pressing this key. In "STEP Mode" X will move positive in steps.
	1: X axis moves left; 2: Number "4".	In "CONT Mode", the X axis will Continuously move negative after pressing this key. In "STEP Mode" X will move negative in steps.
	1: Y axis moves forward; 2: Number "8".	In "CONT Mode", the Y axis will continuously move positive after pressing this key. In "STEP Mode" Y will move positive in steps.
	1: Y axis move backward; 2: Number "2".	In "CONT Mode", the Y axis will continuously move negative after pressing this key. In "STEP Mode" Y will move negative in steps.
	1: Z axis Up 2: Number "9".	In "CONT Mode", the Z axis will continuously move positive after pressing this key. In "STEP Mode" Z will move positive in steps.
	1: Z axis down 2: Number "1".	In "CONT Mode", the Z axis will continuously move negative after pressing this key. In "STEP Mode" Z will move negative in steps.
	1: The 4th Axis rotates in forward direction 2: Number "7".	In "CONT Mode", the 4th axis will continuously move positive after pressing this key. In "STEP Mode" it will move positive in steps.
	1: The 4th Axis rotates in inversion direction 2: Number "3".	In "CONT Mode", the 4th axis will continuously move negative after pressing this key. In "STEP Mode" it will move negative in steps.
-5	1: The 5th Axis in forward direction 2: The Symbol "-".	In "CONT Mode", the 5th axis will continuously move positive after pressing this key. In "STEP Mode" it will move positive in steps.
±5	1: The 5th Axis in inversion direction 2: The Symbol "."	In "CONT Mode", the 5th axis will continuously move negative after pressing this key. In "STEP Mode" it will move negative in steps.
O High/Low Speed	1: High or Low Speed selection 2: Number "5".	When the LED lights up, it is in high-speed mode.
O Break Point Resume	1: Breakpoint resume active 2: Number "0".	When the LED lights up,t he breakpoint resume is active.

Input and Out Ports 3

DDCS-Expert controller creates a self-defined IO ports method. According to the user's favorite, the users can define the input and output ports as which they want. In the IO page, the users can define the input port and output port, and also can inpect the input/output port and MPG status.

Power on the DDCS-Expert controller, system popup the main page, and press F4 Key to go to the IO Port Page:

CONT READ	/local/BMP5.bmp	Monitor 2	020/01/22 00:59:47	Super		Status
G59	Mach	Abs	FRO SRO	100% 100%		rror Run USB Net
ο X ο Y	5.000 5.000	5.000 5.000		Low 100%	ESC	Enter
∘Z ∘A	-5.000 5.000	-5.000 5.000	Feed Rate Analog S	0 3000		
βÂ	40.000	40.000	CurTool	0 24000 T1	I◄I	▼ ►
0:BM6			Total No. Cur No.	0	K	🚯 🚯
1: 2:			Cycle Times	0		+ ◆ 8 9
3:			Work Time	00:00:00		High/Low Speed
4:						Speed 6
Monitor	Program Param	10 1	System Log Syste	em Info		₽ 🕅
						2 3
▲ F1	F2 F3	F4	F5 F	6		Break Point Resume
K1 K2	K3 K4 K	5 K6 K7	SPINDLE Try	Cut STEP MPG	START	

Figure 3-1 Press F4 to IO Page

Page of the IO pop up as below. In the page, you can use the Up/Down arrow, Right/Left arrive and Knob to select and change the settings.

MPG	RE	ADY /	/local/白	菜加大	43转.N	С		10	20	020/01/22	2 00:0	3:37	S	uper	
Stat	Port N	ame					<u> </u>	Enable		Pin No	o.	P	olar	ity i	1
•	X-axis s	ervo ala	arm sign	al				x		NULL			Ν	_	
	Y-axis s	ervo al:	arm sign	a				×		NULL			Ν		
			arm sign	al				×		NULL			Ν		
		e alarm						×		NULL			Ν		1
			alarm si					×		NULL			Ν		-
			s hard lii					×		NULL			ZZZZZ		
			s hard lii					×		NULL			N		
			s hard lir					×		NULL					
			xis hard					×		NULL			Ν		
			xis hard					×		NULL			Ν		
	positiv	e X-axis	hard lin	nit signa				×		NULL			N		
	People in	ann anna		nesi Bris				^		110465	-				
	IN01	IN02	IN03	IN04	IN05	IN06	IN07	IN08	IN09	IN10	IN1	1 IN1	12	IN13	2
	IN14	IN 15	IN16	IN17	IN18	IN19	IN 20	IN 21	IN22	IN23	IN 2	4			
MPG	X1	X10	X100	HX	HY	HZ	HΛ	HB			0		()	3
OUT	OUT01	OUT02	OUT03	OUT04	OUT05	OUT06	OUT07	OUT08	OUTOS	9 OUT10	OUT	11 OUT	12	OUT13	
	OUT14	OUT15	OUT16	OUT17	OUT18	OUT19	OUT20	OUT21							4
	Out O	pen	Out	lose			Chan	ge Polari	ity						
5	6		7					8							-
					Fic			Dago							

Figure 3-2 IO Page

Status	Port Name	Enable	Pin No.	Polarity
🔵 or 🔴	X-axis servo alarm signal	X or √	NULL or	N or p
	Y-axis servo alarm signal		IN01-IN24	
	Z-axis servo alarm signal			
Green: Means	Spindle alarm signal	X: Means the		N:
the status is	5th-axis servo alarm signal	signal is	No definition.	Negative pole
not active.	Negative X-axis hard limit signal	disabled.	IN01-IN24:	P:
Red: Means	Negative Y-axis hard limit signal	V: Means the	Input port 1 to	P. Positive pole
the status is	Negative Z-axis hard limit signal	signal is	Input port 1 to	rositive pole
active.	Negative 4th-axis hard limit signal	enabled.		
	Negative 5th-axis hard limit signal			
	Positive X-axis hard limit signal			
	Positive Y-axis hard limit signal			
	Positive Z-axis hard limit signal			
-	Positive 4th-axis hard limit signal			
	Positive 5th-axis hard limit signal			
	X-axis Zero Signal			
	Y-axis Zero Signal			
	Z-axis Zero Signal			
	4th-axis Zero Signal			
	5th-axis Zero Signal			
	Floating Probe signal			
	Fixed Probe signal	· · · · ·		
	External key 1			
	External key 2			
	External key 3			
	External key 4			
	External key 5			
	External key 6			
	External Start			
	External Pause			
	External Estop			
	Spindle Stop Signal (M300)			
	Tool release input signal (M301)			
	Tool lock input signal (M302)			
	Tool open input signal (M303)			
	Dust cover open/close input signal (M305/M306)			
	Inverter Alarm input signal			
	Customs alarm input signal 1			
	Customs alarm input signal 2			
	Customs alarm input signal 3			
	Customs alarm input signal 4			
	Customs alarm input signal 5			
	Tool close input signal (M304)			

Column 1: The input and output port definitions:

Status	Port Name	Enable	Pin No.	Polarity
🔵 or 🔴	Spindle forward rotation control signal	X or √	NULL or	N or p
	Spindle reverse rotation control signal		OUT01-OUT21	
	Spindle section speed 1			
Green: Means	Spindle section speed 2	X: Means the		N:
the status is	Spindle section speed 3	signal is	No definition.	Negative pole
not active.	M8/M9 control signal	disabled.	OUT1-OUT24:	P:
Red: Means	M10/M11 control signal	V: Means the	Output port 1	P. Positive pole
the status is	System alarm signal	signal is	to output 21	
active.	System Running signal	enabled.		
	System Brake signal			
	System ready signal			
-	Tool release/lock signal (M154/M155)			
	Tool lauch/retract signal (M152/M153)			
	Front positioning/off signal (M156/M157)			
	Vacuum pump on/off output signal (M158/M159)	-		
	Dust cover open/close output signal (M150/M151)			
	Push cylinder open/close output signal (M160/M161)			
	Vacuum cleaner on/off output signal (M162/M163)			
	Left positioning on/off output signal (M164/M165)			
	Vacuum valve open/close output signal (M166/M167)			
	Multi-process 1 Open/close output signal (M168/M169)			
	Multi-process 2 Open/close output signal (M170/M171)			
	Multi-process 3 Open/close output signal (M172/M173)			
	Multi-process 4 Open/close output signal (M174/M175)	1		
	Cooling 1 on/off output signal (M176/M177)			
	Cooling 1 on/off output signal (M178/M179)			

Important:

In the controller default setting, we already define the Output port 21 as the "Spindle forward rotation control signal". On the controller wiring board, we didn't name it as "Out21", we name it as "FRO".

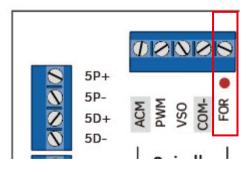


Figure 3-3 FOR Output Port

Column 2 and Column 4:

Show the input ports or output ports are on the short-circuit or not.

If the little block becomes Red, the according port is on the short-circuit; if it's still black, the according port is not on the short-circuit.

For example, we define the IN01 as the "X-axis Zero Signal", and when the X axis touched the limited switch, it will show as below:

CON	T RE	ADY /	local/B	MP1.bm	p			10	20:	20/01/22	2 03:37:	34 G	uest
Stat	Port Na	ame						Enable	•	Pin No).	Pola	rity
			hard lin					×		NULL		N	
			hard lin					×		NULL		Ν	
			hard lin					×		NULL		N	
			is hard					×		NULL		N	
			is hard	limit sig	nal			×		NULL		<u>N</u>	_
		ero sign						 V 		IN01		N	_
		ero sign						×,		IN 02		N	_
		ero sign						×,		IN 03 IN 04		2 2 2	_
		s zero si s zero si						*		IN 04		N	
		g Probe						×		NULL		Ň	
		robe sig						x		NULL		N	
IN	IN01	IN02	IN03	IN04	IN05	IN06	IN07	IN08	IN09	IN10	IN11	IN12	IN13
	IN14	IN15	IN16	IN17	IN 18	IN19	IN 20	IN 21	IN22	IN23	IN 24		
MPG	X1	X10	X100	HX	ΗY	HZ	HΛ	HB			0	1	5
OUT	OUT01	OUT02	OUT03	OUT04	OUT05	OUT06	OUT07	OUT08	OUT09	OUT10	OUT11	0UT12	OUT13
	OUT14	OUT15	OUT16	0UT17	OUT18	OUT19	OUT20	OUT21					
▲	Out O	pen	Out 0	lose			Chan	ge Polari	ity				

Figure 3-4 Input 01 is conducting with COM-

But,the status is active, doesn't mean that the according signal is active. For example,we reverse the signal's polarity, and moves the X axis away from the limit switch, the status light and IO block show as below: the X-axis zero signal is active, and IN01 Block is not on, because IN01 is not conductiong with COM-.

CON	T RE	ADY /	local/B	MP0.bm	p			ю	202	20/01/22	2 03:52:3	30 S	uper
Stat	Port N	ame						Enable		Pin No).	Polar	rity i
			hard lin					×		NULL		N	
			hard lin					×		NULL		N	
			hard lin					×		NULL		N	
			is hard					×		NULL		N	
			is hard	limit sig	nal			x		NULL		N	
		ero sign						<u> </u>		IN01		Р	
		ero sigr						✓.		IN02		N	
		ero sigr						✓.		IN03		N	
		s zero s						×.		IN04		N	
		s zero s						~		IN05		N	
		g Probe						×		NULL		N	
	Fixed P	robe sig	znal					×		NULL		N	
	IN01	IN02	IN03	IN04	IN05	IN06	IN07	IN08	IN09	IN10	IN11	IN12	IN13
	IN14	IN15	IN16	IN17	IN 18	IN19	IN 20	IN 21	IN22	IN23	IN 24		
MPG	X1	X10	X100	HX	ΗY	HZ	ΗA	HB		-	0		5
OUT	OUT01	OUT02	OUT03	OUT04	OUT05	OUT06	OUT07	OUT08	OUT09	OUT10	0UT11	0UT12	OUT13
	OUT14	OUT15	OUT16	0UT17	OUT18	OUT19	OUT20	OUT21					
▲	Out O	pen	Out	lose			Chan	ge Polari	ity				

Figure 3-5 The status is active but IN01 is not ON

Here we move the X axis to touch the limit switch, but status light doesn't light up.So the Status shows the signal is active or not, the IN01-IN24 Block shows the port is conducting or not.

CON	DNT READY /local/BMP0.bmp						10	203	20/01/22	25 SI	uper		
Stat	Port N	ame						Enable		Pin No).	Polar	rity i
	positiv positiv positiv positiv X-axis z Y-axis z 2-axis z 4th-axi 5th-axi	e Y-axis e Z-axis e 4th-ax	ial ial ignal ignal	nit signa nit signa limit sig	il I nal			× × × × × × × × × ×		NULL NULL NULL NULL NULL IN01 IN02 IN03 IN04 IN05 NULL		zzzzazzzzz	
		robe sig						x		NULL		Ň	
	IN01	IN02	IN03	IN04	IN05	IN06	IN07	IN08	IN09	IN10	IN11	IN12	IN13
	IN14	IN15	IN16	IN17	IN 18	IN19	IN 20	IN 21	IN22	IN23	IN 24		
MPG	X1	X10	X100	HX	HY	HZ	ΗA	HB			0		5
OUT			OUT03 OUT16						OUT09	OUT10	0UT11	0UT12	OUT13
▲	Out O		Out					ge Polari	ity				

Figure 3-6 The Signal is not active but port in conducting

Column 3:

Shows MPG setting status. As the following figure shows, the MPG current setting is X10, in Y axis; "-54" block is the calculator of wheels turnning step; "0" block shows the the current cursor position.

MPG	RE	ADY 2	3232.tx	t				10	20	00/12/22	2 05:13:	56 G	iuest
Stat	Port Na	ame						Enable		Pin No).	Pola	rity i
•	X-axis s	ervo ala	arm sign	al				×		NULL		N	
			arm sign					×		NULL		N	
			irm sign	al				×		NULL		N	_
		alarm:						×		NULL		N	_
			alarm si					×		NULL		N	_
			hard lir					×		NULL		N	_
			hard lir					×		NULL		222	_
			hard lir					×		NULL			_
			xis hard					×		NULL		2 2	_
			xis hard hard lin					×		NULL		Ň	_
			hard lin					× ×		NULL		Ň	
IN	IN01	IN02	IN03	IN04	IN05	IN06	IN07	IN08	IN09	IN10	IN11	IN12	IN13
	IN14	IN15	IN16	IN17	IN 18	IN19	IN 20	IN 21	IN22	IN23	IN 24		
MPG	X1	X10	X100	HX	HY	HZ	HA	HB		-{	54	(0
OUT	OUT01	OUT02	OUT03	OUT04	OUT05	OUT06	OUT07	OUT08	OUT09	OUT10	0UT11	0UT12	OUT13
	OUT14	OUT15	0UT16	OUT17	OUT18	OUT19	OUT20	OUT21					
	Out O	pen	Out 0	lose			Chane	ge Polar	ity				

Figure 3-7 MPG Input Page

Column 6: Open the output signal;

Column 7: Close the output signal;

Column 8: Change the Polarity to the reverse.

So now we finished the indroduction on the IO port.Only when the users understand how to set the IO port and how to inspect the IO page,it will help us on Wiring.

4 Wiring

4.1 Wiring Board Overview

DDCS-Expert wiring board, there are about 7 parts as following:

1) System Power and IO Power supply input Ports; 2) Driver Signal output Ports; 3) Input and Output Ports; 4) Spindle Output Ports; 5) MPG Port; 6) Ethernet and USB interface; 7) HMI/RS232 interface.

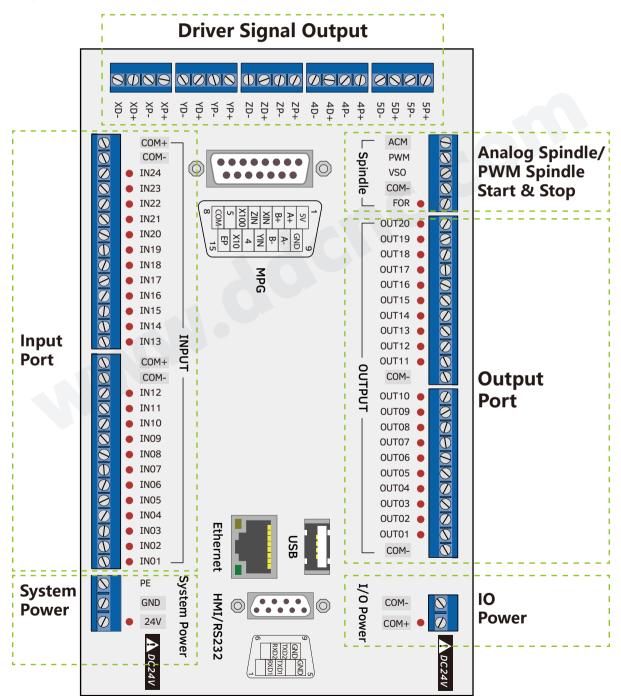
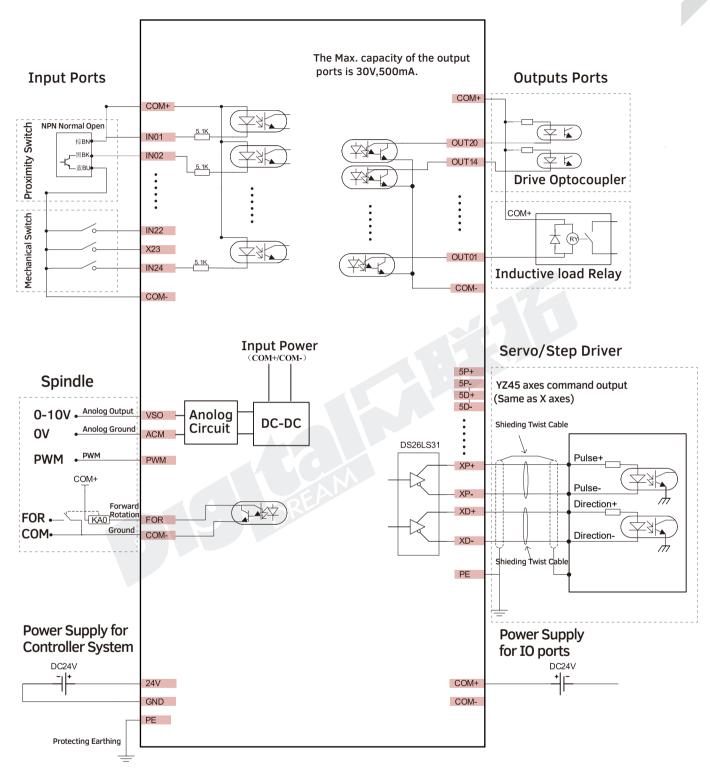
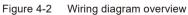


Figure 4-1 Controller Wiring Ports Overview





Pin Mark	Name	Function	Parameter		
PE	Protecting Earthing	Connect it to the Earth.			
24V	Power Supply Input	Positive Side of Power Supply for Controller system			
GND	for Controller System	Ground	DC24V 3A		
COM+	Power Supply Input	Positive Side of Power Supply for IO Port			
COM-	for IO Ports	Negative side of Power Supply for IO Port			
XP+		Pulse Signal Positive Output of the X Axis (5V)			
XP-	V Avia Cianal autout	Pulse Signal Negative Output of the X Axis (5V)			
XD+	X Axis Signal output	Direction Signal Positive Output of the X Axis (5V)			
XD-	-	Direction Signal Negative Output of the X Axis (5V)			
YD+		Direction Signal Positive Output of the Y Axis (5V)			
YD-		Direction Signal Negative Output of the Y Axis (5V)			
YP+	Y Axis Signal output	Pulse Signal Positive Output of the Y Axis (5V)			
YP-	-	Pulse Signal Negative Output of the Y Axis (5V)			
ZP+		Pulse Signal Positive Output of the Z Axis (5V)	Cable-driven Output;		
ZP-		Pulse Signal Negative Output of the Z Axis (5V)	RS422 Standard;		
ZD+	Z Axis Signal output	Direction Signal Positive Output of the Z Axis (5V)	Max. Interpolation Pulse		
ZD-	-	Direction Signal Negative Output of the Z Axis (5V)	Frequency 1Mhz.		
4P+		Pulse Signal Positive Output of the 4th Axis (5V)			
4P-		Pulse Signal Negative Output of the 4th Axis (5V)			
4D+	4th Axis Signal output	Direction Signal Positive Output of the 4th Axis (5V)			
4D-	-	Direction Signal Negative Output of the 4th Axis (5V)	-		
5P+		Pulse Signal Positive Output of the 5th Axis (5V)			
5P-		Pulse Signal Negative Output of the 5th Axis (5V)			
5D+	5th Axis Signal output	Direction Signal Positive Output of the 5th Axis (5V)			
5D-		Direction Signal Negative Output of the 5th Axis (5V)			
FOR	Spindle Start/Stop	Forward Rotation and Stop Output of spindle(OUT21)	The Max. capacity of the output ports is 30V,500mA.		
COM-	Spindle Output COMMON	Cannot short connect with ACM			
VSO	Analog Output	Connect with Anaog input port of the inverter	0-10V spindle control		
ACM	Analog Ground	Connect with Analog input port of the inverter			
PWM	PWM Output	Connect with PEM input port of the inverter	Duty ratio		
ACM	PWM Ground				
IN01		In the IO page,can configurate the ports as Servo	Support Mechanical, photoelectric		
 IN24	24 Input Ports	Alarm ,limited,Zero,Probe,Start/Pause/Stop and so on.	and promixity switch,24VDC; Type: NPN Active Level:0V		
OUT01			Open collector output; Build-in		
 OUT20	20 Output Ports	In the IO page,can configurate the ports as Lubrication,Cooling and so on.	Backward Diode;Driven current: 500mA; Driver voltage: 30V.		

4.2 Power Supply Input

DDCS-Expert needs two power supplies, Main power is for controller system, IO Port power is for Input and Output and MPG ports. Both power supply is 24VDC, current is 3A.In the System Power input port, the marked 24V and GND is the main power input ports; In the IO power input ports, the COM+ and COM- is the power input ports for Input/Output Port and MPG. Please keep in mind, only when the two power supplies are connected correctly the controller can be work properly.

Many new users only give system power, then the limited switches, the relay, and MPG and spindle don't work at all, then please go to check if you also give power to IO ports.

IO power gives the power to all the IO ports, include the Limited switch, Relay, MPG, Etop and all other Input and output Ports, without it, spindle, MPG, Input and Output ports cannot work.

In order to avoid electrical noise it is highly recommended to use two separate 24V power supplies.

In order to avoid high-frequency electrical noise from power supply cable, it is highly recommended to intall a noise filter at the power input to the switch power supply.

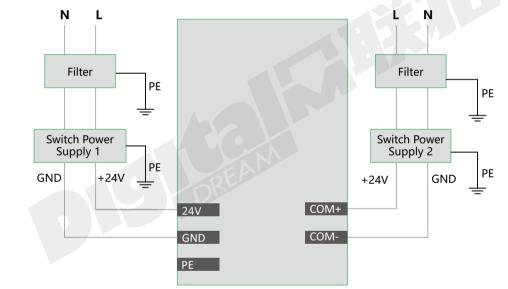


Figure 4-3 Power Supply Wiring Methods

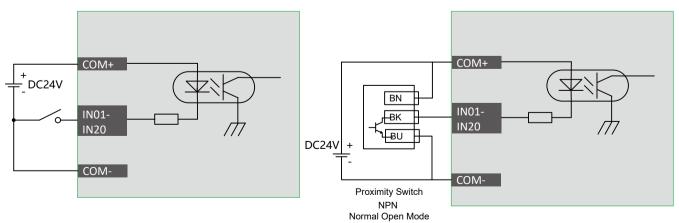
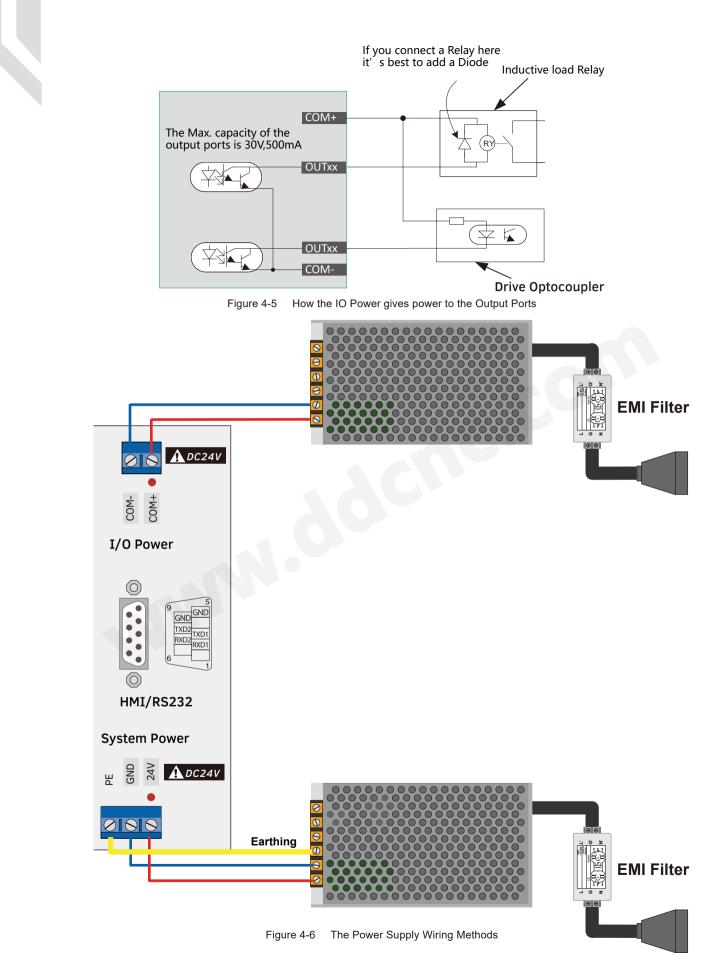


Figure 4-4 How the IO Power gives power to the Input Ports



4.3 Spindle Wiring

DDCS-Expert Support 3 kinds Spindle Mode: Analog Spindle / Servo Spindle (PUL+DIR) / Multi-Speed Spindle. In the Param Page, by #079, we can define the spindle mode.

4.3.1 Analog Spindle

In Analog Spindle, the speed controlling output terminal can output 0-10V. It can adjust the speed of the spindle motor by sending the voltage between 0 and 10V to the VFD according the the Spindle Speed Setting.

Controlling the speed of a spindle with a VFD (variable frequency drive) only needs the Start / Stop signal and the 0-10V signal to control the frequency.

FOR port is same wiring methods as the normal Output Ports.

FOR is for spindle forward rotation output or start / stop output;

Analog circuit is isolated with Power supply output,Never short connect the ACM and COM-(DCM);

If only need the Start and Stop command for the spindle, then just connect FOR output port of the controller with Start input port of the inverter.

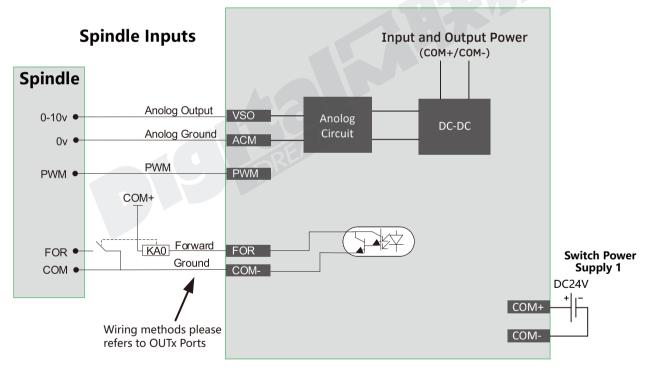


Figure 4-7 Spindle Wiring Methods

Important:

The "VSO" and "PWM" only one port is avaiable for one configuration. Use "VSO" port or "PWM" port, the two ports cannot be used at the same time.

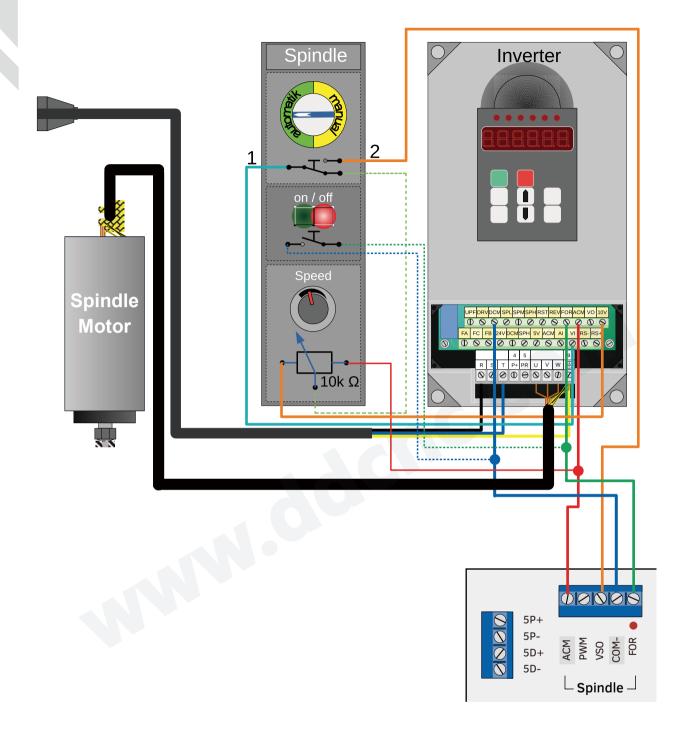


Figure 4-8 Spindle Wiring Example

4.3.2 Servo Spindle (PLUSE/DIRECTION)

In Param Page #079, we set the "Spindle interface type" to "Plu/dir", and In Param Page #080 define "Spindle mapping axis" to the axis as you need, this axis is defined to be a servo spindle.

4.3.3 Multi-Speed Spindle

There are 3 parameters related to the Multi-speed spindle:

#079 -- " Spindle interface type "; Here we need to set it to " Multi-speed ";

#088 -- "Multi-speed section counts"; The section count value range is 2-8, the users can set 2-8 different spindle speed.

#082 -- "Max. Spindle Speed".

For example, if the #088 set as 8,and the #082 is 24000, then if the current section is 2, the current spindle speed is 6000; if the current section is 3, the current spindle speed is 9000; If the current section is 4, the current spindle speed is 12000, ect...

There are 3 Output ports related to the Multi-speed spindle, the users need to define them to the according output ports.

Spindle section speed 1 = S1;

Spindle section speed 2 = S2;

Spindle section speed 3 = S3;



Figure 4-9 The relationship between the Multi-speed section and Spindle section output

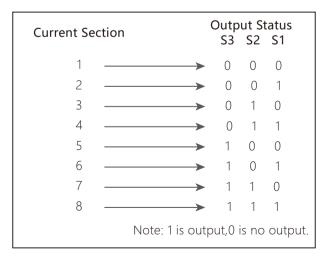


Figure 4-10 The Relationship between the Current Section and Output Status

In the IO port Page, we already define the Out20 as "Spindle section speed 1",Out 19 as "Spindle section speed 2",Out18 as "Spindle section speed 3".The the wiring for the Multi-Speed Spindle as follolwing:

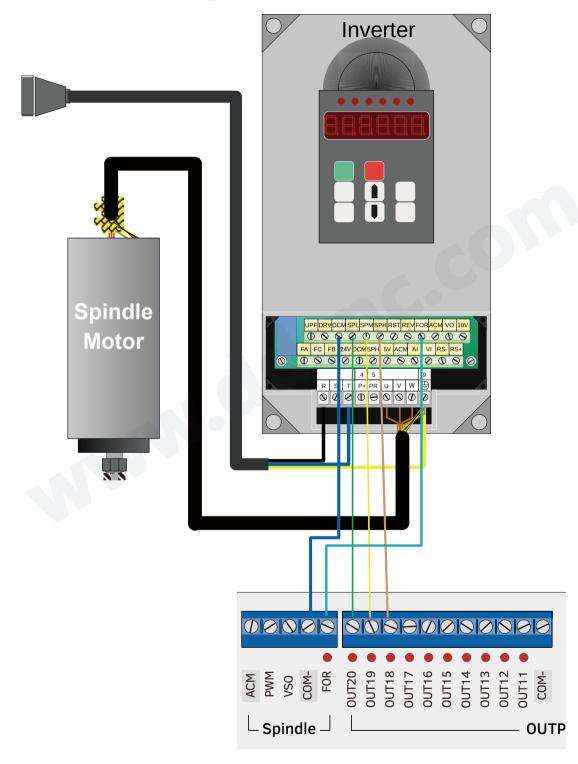


Figure 4-11 The Wiring for the Multi-Speed Spindle

4.3.4 Relay Wiring

By Configuration of more Spindle Output ports, the spindle control output terminal offers connections for Start / Stop of Cooling (M8 / M9) and Start / Stop of Lubrication (M10 / M11) and so on.

For example, it can be used for a Relay output port. Figure 4-12 shows the wiring methods.

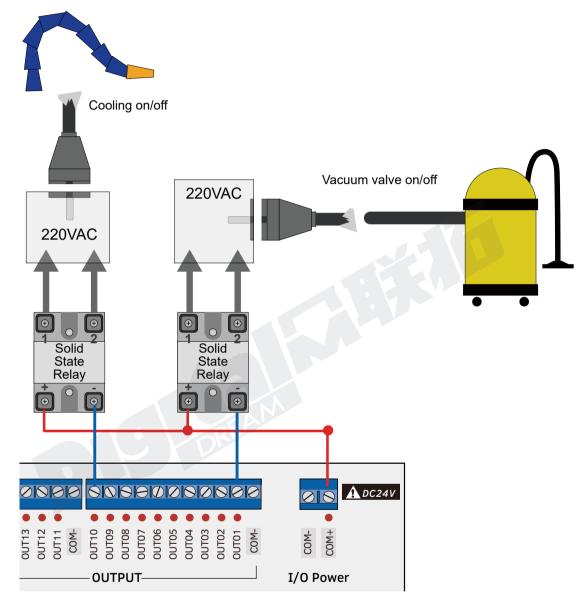


Figure 4-12 The Relay Wiring

If Relay Power Supply is 24VDC:

DDCS Expert Input and Output are the user-defined IO ports, as our example here, we already set OUT10 as the "Cooling on/off" output port, and we already set the OUT01 as Vacuum valve on/off" output port.

If Relay Power Supply is not 24VDC:

The users need to use an external power supply, then please contact us to get the Schematics drawing.

4.4 Stepper / Servo Driver Wiring

The stepper / servo control output, we cite differential Pulse and Direction output method as Figure 1-12, Max. 1Mhz per axis. There is 3 or 4 or 5 axis for optional.

The Figure 1-12 we took X axis as the example, the Y, Z, A, B as the same wiring methods.

The Pulse and Direction signal output voltage is \pm 5V.

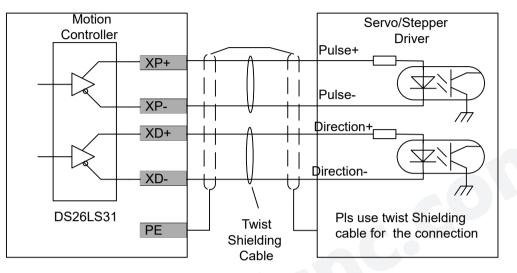


Figure 4-13 Pluse and direction signal wiring methods

Common anode wiring or common cathode wiring, is not DDCS-EXPERT wiring methods. The Figure 4-14 is the wrong wiring method.

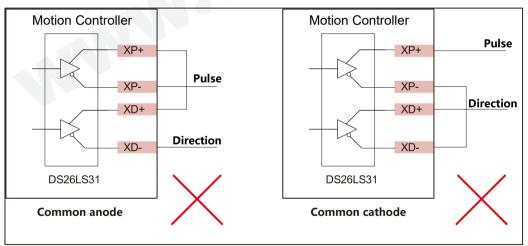
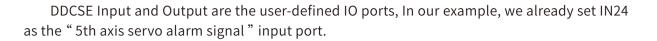


Figure 4-14 Wrong wiring of pulse and direction



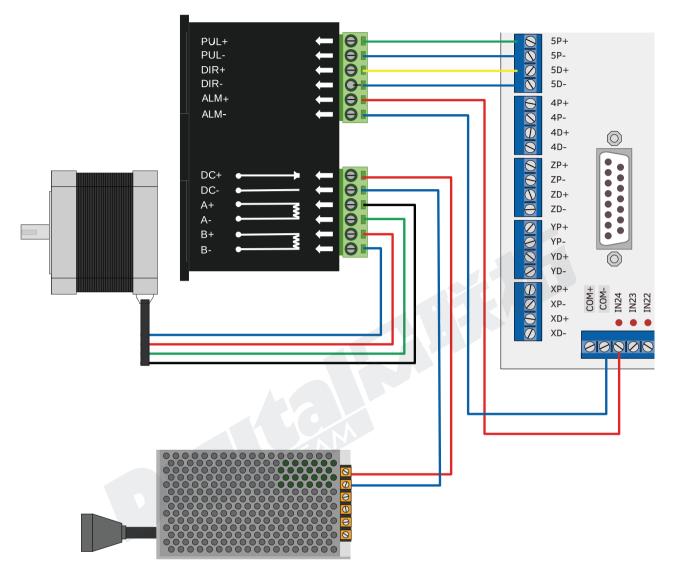


Figure 4-15 Stepper/Servo driver connect with DDCS Expert

4.5 Limit, Home and Probe Inputs

DDCSE Input and Output are the user-defined IO ports, In our example, we already set IN12, IN11 and IN10 as the "axis limit signal" Input port, and we already set the IN09 as "Probe" output port.

Please note that the limit switch type should be NPN Normal Open, and the voltage range is 24VDC.

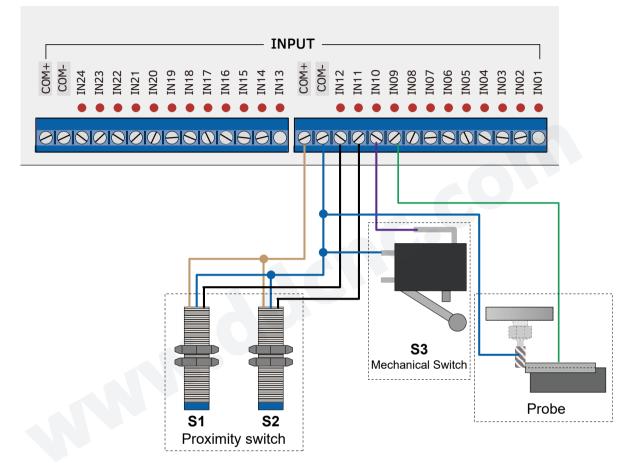


Figure 4-16 Proximity switch/Mecahnical switch and normal Probe wiring methods

Some users asked for the wiring methods for the probe with over-strock alarm, here we also set one sample for it.

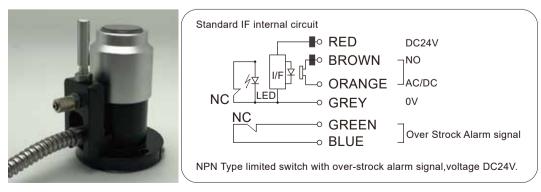


Figure 4-17 The Probe sensor with over-strock alarm signal

In the example, we go to the IO port to sent the IN07 as the "Probe signal", IN06 as "Negative Z- axis hard limit signal":

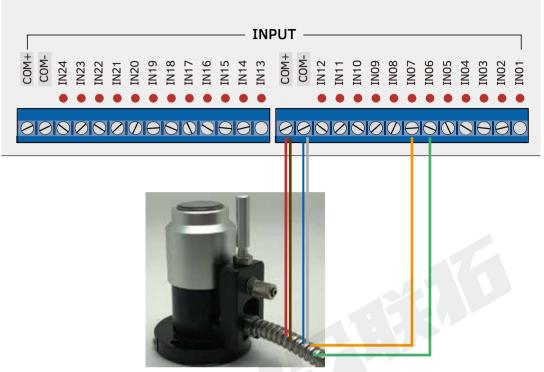
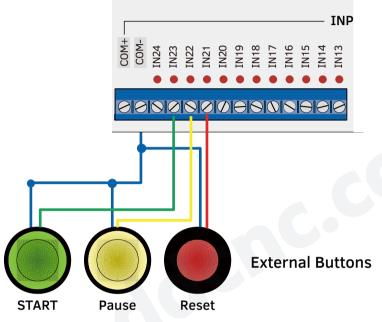


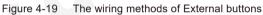
Figure 4-18 The wiring methods of Probe sensor with over-strock signal

4.6 External Buttons

DDCSE Input and Output are the user-defined IO ports, In our example, we already set IN23 as the "External Start" input port, IN22 as the "External Pause" input port, and IN21 as "External Stop" input Port.

Please choose the external buttons which is 24VDC Power supply input. Then no need an external power supply for them





4.7 MPG Wiring

1		Pin No.	Mark	Definition	Notes
	9	1	+5V	Power Supply +	MPG Power supply input positive terminal
5V		2	A+	Encoder A Phase +	MPG A phase differential input positive terminal
Λ.	GND	3	B+	Encoder B Phase +	MPG B differential input positive terminal
A+	A-	4	XIN	Select X Axis	Connect with GND, then X axis is selected
B+		5	ZIN	Select Z Axis	Connect with GND, then Z axis is selected
	B-	6	X100	X100 Ratio	Connect with GND, then X100 ratio is selected
XIN	YIN	7	5	Select 5th Axis	Connect with GND, then 5th axis is selected
ZIN	TIIN	8	COM-	Input signal COMMON	The switch signal common trenimal.
	4	9	GND	Ground	MPG power supply ground
X100	V10	10	A-	Encoder A Phase -	MPG A phase differential input negative terminal
5	X10	11	B-	Encoder B Phase -	MPG B differential input negative terminal
5	EP	12	YIN	Select Y Axis	Connect with GND, then Y axis is selected
COM-		13	4	Select 4th Axis	Connect with GND, then the 4th axis is selected
8	15	14	X10	X10 Ratio	Connect with GND, then X10 ratio is selected
0		15	EP	ESTOP Input	Connect with GND, then Estop is active

*** Never short connect the COM- and GND *** Figure 4-20 MPG wiring table

IMPORTANT:

1) All the input signal COMMON termimal is COM-, not GND; Never short connect GND and COM-;

2) The MPG need the power from IO power port (COM+ / COM-), or the MPG cannot work;

3) Because of the limit of the pins, if X10 and X100 is not selected, the system just select X1 by default.

4) With the MPG, and press the "Try Cut" key, the system can change to "Handwheel guiding" modePlease Turn the Handwheel to counterclockwise direction, the Try Cut (Handwheel guiding) can be active.

DDCS-Expe	rt Pin and Mark	MPG Function	MPG Pin and Mark	MPG Output Cable Color				
1	+5V	Power Supply +	5V	RED				
2	A+	A Phase +	A+	GREEN				
3	B+	B Phase +	B+	PURPLE				
4	XIN	X Axis	X	YELLOW				
5	ZIN	Z Axis	Z	BROWN				
6	X100	X100 Ratio	X100	ORANGE				
7	5	5th Axis	5	PINK				
8	COM-	MPG common COM-	СОМ	ORANGE/BLACK				
9	GND	Ground	GND	BLACK				
10	A-	B Phase -	В-	PURPLE/BLACK				
11	В-	A Phase -	A-	WHITE				
12	YIN	Y Axis	Y	YELLOW/BLACK				
13	4	4th Axis	A	BROWN/BLACK				
14	X10	X10 Ratio	X10	GREY/BLACK				
15	EP	ESTOP	EP	BLUE				

Figure 4-21 DDCS - Expert Wiring with DDMPG

In order to make the convenient for the users, we already solder the MPG cables to the PIN15 male interface plug, the users can just insert the MPG plug into the DDCS-Expert MPG interface.

After finished the wiring, we can check the MPG wiring is correct or not in the IO Page.

Look the figure 4-22 and 4-23, X100 and X block turns to red color, that means the X axis and X100 ratio is selected; -499 means the wheels was turned to counterclockwise direction; 922 means the wheels was turned to clockwise direction; -499 or 922 is not the actual distance, they are a meansure of the turnning speed . + or - shows the direction. So by this way, it is so easy to check the wiring of the MPG.

MPG	BU	ISY /	/udisk-sda1/test.nc					10	2020/01/29 00:00			:08 Guest		
Stat	Port Na	ame						Enable		Pin No).	Polar	rity i	
			arm sign					×		NULL		N		
			arm sign					×		NULL		N		
			irm sign	al				×		NULL		N		
		alarm :						×		NULL		N		
			alarm si					×		NULL		2222		
			hard li					×		NULL		N		
			hard li					×		NULL		N		
			hard lir					×		NULL		N		
			xis hard					×		NULL			N	
			xis hard					×		NULL		22		
			hard lin hard lin					×		NULL		22		
	positiv	e traxis	naru iin	nt signa				×		NULL		IN		
	IN01	IN02	IN03	IN04	IN05	IN06	IN07	IN08	IN09	IN10	IN11	IN12	IN13	
	IN14	IN15	IN16	IN17	IN 18	IN19	IN 20	IN 21	IN22	IN23	IN 24			
MPG	X1	X10	X100	HX	HY	HZ	HΛ	HB		٢	49)	
OUT	OUT01	OUT02	OUT03	OUT04	OUT05	OUT06	OUT07	OUT08	OUT09	OUT10	OUT11	0UT12	OUT13	
	OUT14	OUT15	OUT16	OUT17	OUT18	OUT19	OUT20	OUT21						
	Out O	nen	Out	lose			Chan	ge Polar						

Figure 4-22 Turnning wheels in CCW direction

MPG BUSY /udisk-sda1/test.nc							10	203	20/01/29	00:01:2	28 G	uest		
Stat Port Name								Enable	nable Pin N).	Polar	Polarity	
•	X-axis s	ervo ala	arm sign	a				×		NULL		N		
	Y-axis s	ervo ala	arm sign	a				×		NULL		N		
			arm sign	al				×		NULL		N		
		e alarm :						×		NULL		N		
			alarm si					×		NULL		N		
			s hard li					×		NULL		N		
			hard li					×		NULL N				
			hard lir					×		NULL		N		
			xis hard					×		NULL		N		
			xis hard					x		NULL		N		
			hard lin					×		NULL		22		
	positiv	e 1-axis	hard lin	nit signa	11			×		NULL		N		
	IN01	IN02	IN03	IN04	IN05	IN06	IN07	IN08	IN09	IN10	IN11	IN12	IN13	
	IN14	IN15	IN16	IN 17	IN18	IN19	IN 20	IN 21	IN22	IN23	IN 24			
		X10	X100	HX	HY	HZ	HA	HB		922				
MPG	X1	112.0	11200			me		me			66		,	
MPG OUT									OUT09		0UT11			
MPG OUT	OUT01	OUTO2	OUT03	OUT04		OUT06	OUT07	OUT08	OUT09					

Figure 4-23 Turnning wheels in CW direction

And in the Main Page, no matter the controller is in MPG or CONT or Step mode, just swtich the MPG from Off to ON, the controller mode just turns to MPG mode; and also easily to see which axis the MPG is in, there will be a little mark on the related axis.

MPG READY	/udisk-sda1/test	.nc	Monitor	2020/	01/29 00:	05:16	G	uest
G54	Ma	ch	Abs	5	FRO			100%
X *	67.50		57.502		SRO			1009
Y	10.00		0.000		SJR		Low	100%
Z A	5.00	00	0.000)	Feed Rat	e	0	4000
Α	0.43	30	0.430		Analog S		0	24000
С	1.49	00	1.490		Cur Tool			T
0:G0 x-20 y0 z2					Total No			(
1:G1 z-2 F300					Cur No.			(
2:G2 x20 y0 r20					Cycle Tin	nes		(
3:g0 z2					Work Tin	ne	00	:00:00
4:x-20					G49 H 0			
Monitor	Program	Param	10	Syste	em Log	Syst	em In	fo

Figure 4-24 The MPG channel is on X axis

Note: It you want to use the single-terminal MPG (there is no A-B-MPG), please refer to Figure 4-25 for reference. As for the unlisted MPG, please take the differential MPG wiring mode.

DDCS Wiring Pin Mark	MPG Pin	Mark and Color
A+	A+	Green
A-	0V	Black
B+	B+	White
В-	0V	Black

Figure 4-25 DDCS Expert Wiring with Single-terminal MPG

4.7 Series Port Wiring

(9

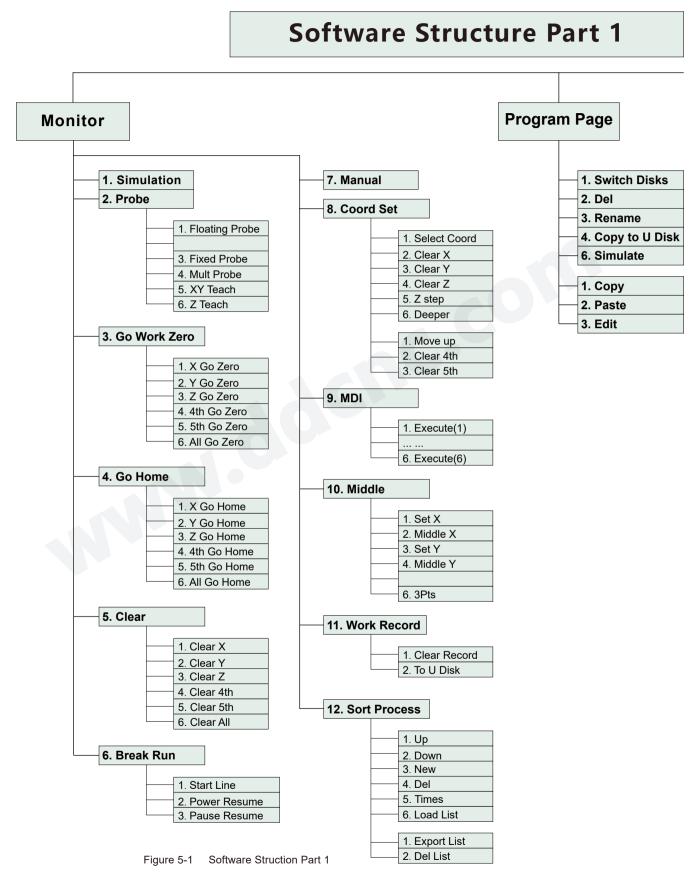
6

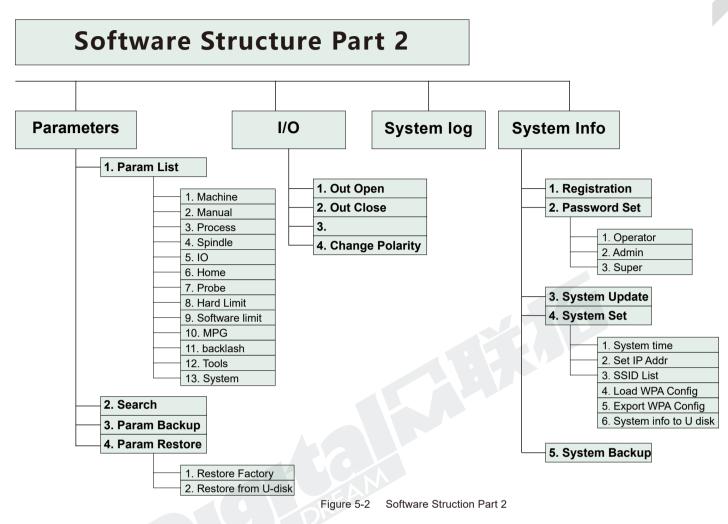
Series Port is for Modbus extension, it helps to extend with IO card, or the communication with PLC. If some users need it please contact factory and we will guide you for it.

		Pin No.	Mark	Definition	Notes
	5	1			
	GND	2	RXD1	Serial port 1 Receiver	
GND		3	TXD1	Serial port 1 Sender	
TXD2		4			
RXD2	TXD1	5	GND1	Serial port 1 Ground	
	RXD1	6			
		7	RXD2	Serial port 2 Receiver	Serial port level is 232
	1	8	TXD2	Serial port 2 Sender	Serial port level is 232
	_	9	GND2	Serial port 2 Ground	

Figure 4-26 Series Ports wiring

5 Software and Operation





5.1.1 The Main Page of the software

34		5	6	7	8	
CONT	Y /udisk-sda1/bal	1.nc	Monitor	2000/11/24 03	3:41:42 Guest	
G54	Ma	ch	Abs	FRO	100%	
х	0.00	00	0.000	SRO	100%	10
Y Z	0.00		0.000		Low 100%	11
Z	0.00		0.000		te 0 3000	
A	0.00		0.000		S 0 14000	13
В	0.00	00	0.000	Cur Too	I T1	14
0:G40 G17 G49	G80 G90 G54			Total No	o. O	
1:G00 X3. Y0.0	S24000 M03			Cur No.	0	16
2:Z10.		2		Cycle Ti	mes 0	
3:G01 Z3.1 F10				Work Ti	me 00:00:00	
4:G01 X2.996 Z	2.948 F3000. M08			G49 H ()	19
Monitor	Program	Param	10	System Log	System Info	

Figure 5-3 Main Page of Monitor

The Figure 5-3 shows the Main Page of the DDCS Expert. It is divided into status column, coordinate display column, basic parameter column, and notification column. In total, it is divided into 19 sections in detail. Here the detailed description of the 19 sections :

1、XYZAB Coordinate

This column shows the Machine coordinate and Current coordinate value of XYZAB axis. The display range is -99999.999 ~ +99999.999 in mm;

2、Status

When the controller runs the G code file, it will show the current operation line and operation status.

3、Feed status

This window shows the feed status of CONT.

AUTO: displayed while processing and executing the G code file

CONT: indicates Jog CONTINUOUS. You can Jog manually with the " - " or " + " keys of X Y Z and A and B.

STEP: Indicates STEP Jog mode.You can Jog manually in a defined distance with the "-" or

"+" keys of X Y Z and A and B.

MPG: Only when shift to MPG mode, you can operate MPG on the controller.

4、Operating Status

This column shows the operating state. The status and implications can be displayed as follows:

Busy: Operation is running

Reset: Reset flashing = controller not active. To activate the controller click Reset

READY: Ready state. Controller is ready and all operations can be performed

5、Processing file

This column shows the name of the processing file and file path.

6、Software Interface

This column shows the current software interface.

7. Date and working time

This column shows the date and working time. The Date can be reset.

8、User's rights

This controller Support 4 kinds operation rights: visitor, operator, admin, super admin.T his column shows the current rights.

9、FRO

FRO controls the Feed Speed. Click FRO till FRO is highlighted. Use rotary button (knob) or Up / Down keys to adjust the Feed Speed in 1% increments, the range is 0% - 120%.

10、SRO

SRO controls the Spindle Speed. Click FRO till SRO is highlighted, use rotary button(knob) or Up / Down keys adjust the Spindle Speed in 1% increments, the range is 0% - 150%.

11、SJR / Jog Step

Press the CONT STEP MPG Key, the feed status shift among in CONT, STEP and MPG. When the controller mode is CONT and MPG, it will show the SJR.

SJR controls the jogging of the machine. Turnning the rotary button (knob) till SJR is highlighted. Turnning rotary button (knob) or Up / Down keys to adjust the speed in 1% increments. The range is 0% - 120%. Press knob to enter the setting.

When in Step Mode, Pressing the rotary button (knob) or keys to change between the 4 distances 0.001 / 0.01 / 0.1 / 1 or define any distance.

When in MPG mode you can use the MPG to jog the machine

High/Low Speed: Manually speed

12、Feed speed

F stands for Feed Speed. Turnning the rotary button or clicking up or down keys till F is highlighted, click button or Enter to modify and edit the value you want.

Here you can Ignore the F value, then the system will use the F value from Gcode file, and also you can define a default F value. When the color the number is blue, then the system uses the default value, if the color is white, the system uses F speed from G-cdode file.

13、Speed of spindle

Anolog S stands for Spindle Speed. Turnning the rotary button or clicking up or down keys till Analog S is highlighted, click button or Enter to modify and edit the value you want.

Here you can Ignore the S value, then the system will use the S value from Gcode file, and also you can define a defalt S value.

When the color the number is blue, then the system uses the default value, if the color is white, the system uses S speed from G-cdode file.

14、Cur Tool : This column display the current Tool No.

15、Total No. Total Machinning No.

16、Cur No.

Current Machinning No.

When the Gcode file changed, the number will be cleared to 0.

When excute M47 or M30, the counter will add 1, the working time cleared to 0; When M47 reached to the cycle times, the system pauses, and the number cleared to 0.

17、Cycle Times

Set a limited number of cycle times.

When system excute M47 from cycle Gcode file, and M47 excuting time reaches to cycle times which you set, system just pause itself, and clear current machinning No.

18.Work Time

The working time for the current G-code file.

When restart the program, it will start to count.

19. G49 H 0

The compensation setting.

5.1.1.1 FRO

FRO: Feed Rate Override.

In the Main Page, By the Rotary button (Knob) or the and keys, we can shift among the different colums. We move the cursor, select FRO and enter, the percent number becomes blue, then we can use the knob or the Up / Down keys to edit the numbers. The percent number increase or decrease in 1%, range is 0% - 120%.

After the setting done, don't forget to press Enter to active the FRO.

FRO		98%
SRO		100%
SJR	Low	100%
Feed Rate	0	3000
Analog S	0	24000
Cur Tool		T1
Total No.		7
Cur No.		0
Cycle Times		0
Work Time	00	0:00:00

Figure 5-4 When the percent number is Blue,we can edit FRO

5.1.1.2 SRO

SRO: Spindle Rate Override

In the Main Page, By the Rotary button(Knob) Or the and keys, we can shift among the different colums. We move the cursor, select SRO and enter, the percent number becomes blue, then we can use the knob or the Up/Down keys to edit the numbers. The percent number increase or decrease in 1%, range is 0% - 150%.

After the setting done, don't forget to press Enter to active the SRO.

FRO	98%
SRO	133%
Jog step	Low 0.001
Feed Rate	0 3000
Analog S	0 24000
Cur Tool	T1
Total No.	7
Cur No.	0
Cycle Times	0
Work Time	00:00:00
G49 H 0	

Figure 5-5 When the percent number is Blue,we can edit SRO

5.1.1.3 SJR/Jog Step

When the controller mode is CONT or MPG, it is "SJR"; When the controller mode is STEP, it is "Jog Step".

When in the CONT or MPG mode, By the Rotary button(Knob) O or the and verse, we can shift among the different colums. We move the cursor, select SJR and enter, the percent number becomes blue, then we can use the knob or the Up / Down keys to edit the numbers. The percent number increase or decrease in 1%,range is 0% - 120%.

After the setting done, don't forget to press Enter to active the SJR.

FRO	98%
SRO	137%
SJR	Low 118%
Feed Rate	0 3000
Analog S	0 24000
Cur Tool	T1
Total No.	7
Cur No.	0
Cycle Times	0
Work Time	00:00:00
G49 H 0	

Figure 5-6 When the percent number is Blue,we can edit SJR

Now we Press key and shift the mode to STEP.

We press Enter and there a pull-down menu pop out.Now We have 5 choise: 0.001mm, 0.01mm, 0.1mm, 1mm and " INC Distance ". INC Distance means the users can define the distance at any value. We move the cursor to " INC Distance ",Press Enter and input 50,Enter,then a 50mm Step distance is active.

FRO	98%
SRO	137%
Jog step	Low 0.001
Feed Rate	0 3000
Analog S	0 24000
Cur Tool	T1
Total No.	7
Cur No.	0
Cycle Times	0
Work Time	00:00:00
G49 H 0	

Figure 5-7 In Jog Step Mode

FRO	98%
SRO	137%
Jog step	Low
Feed Rate	0 3000
Analog S	0 24000
Cur Tool	T1
Total No.	7
Cur No.	0
Cycle Times	0
Work Time	00:00:00
G49 H 0	
ance	+00005 <mark>0</mark> .000

Figure 5-9 Input Number

FRO		98%		
SRO		137%		
Jog step	Low	0.001		
Feed Rate	0	3000		
Analog S	0	24000		
0.001				
0.01				
0	.1			
1				
INC D	istance	$\langle 0 \rangle$		

Figure 5-8 Define Distance

FRO	98%
SRO	137%
Jog step	Low 50.000
Feed Rate	0 3000
Analog S	0 24000
Cur Tool	T1
Total No.	7
Cur No.	0
Cycle Times	0
Work Time	00:00:00
G49 H 0	

Figure 5-20 new distance active

5.1.1.4 Feed Rate

In the "Feed Rate " column, we can define the default feeding rate, we can define the current working feedrate is F command from G-code or the feedrate value we set.

By the Rotary button(Knob) 😧 or the 🔺 and

keys, we can shift among the

different colums to "Feed Rate". We press the Enter button, a small windown pop up from the bottom. The "Ignore F Yes", means Ignore the F command from the G-code, then the system will process by the F command we set here; The "Ignore F No" means the system ignore the Feed rate we set, control system will process by the F command from G-code file.

FRO	100%	FRO	100%	FRO	100
SRO	100%	SRO	100%	SRO	10
SJR	Low 100%	SJR	Low 100%	SJR	Low 10
eed Rate	0 3000	Feed Rate	0 3000	Feed Rate	0 30
Analog S	0 24000	Analog S	0 24000	Analog S	0 240
Cur Tool	Т1	Cur Tool	Т1	Cur Tool	
Fotal No.	0	Total No.	0	Total No.	
Cur No.	0	Cur No.	0	Cur No.	
Cycle Times	0	Cvcle Times	o	Cycle Times	
Work Time	00:00:00	Ignor	e F Yes	Work Time	00:00:
G49 H 0		Set de	fault F	G49 H 0	

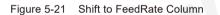


Figure 5-22

Ingore F from G-code file

ile Figure 5-23

e 5-23 FeedRate value is active

FRO		100%	
SRO		100%	
SJR	Low	100%	
Feed Rate	0	3000	
Analog S	0	24000	
Cur Tool		T1	
Total No.		0	
Cur No.		0	
Cvcle Times		0	
Ignore F N0			
Set default F			

Figure 5-24 Ingore FeedRate Value



Figure 5-25 F command from G-code file is active

And we can define the FeedRate Value by the pressing enter on "Set Default F". We can write in numbers and press Enter again. Then the Feedrate value is done.

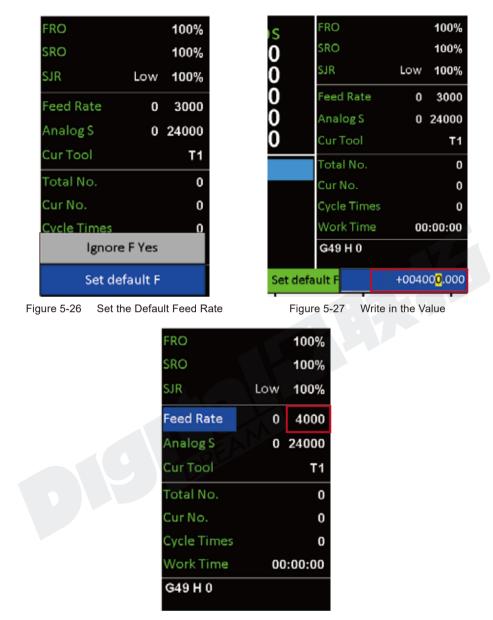


Figure 5-28 The new Feed Rate Value already set

5.1.1.5 Analog S/Servo S/Multi-Speed

Because DDCS-Expert Controller has three kind Spindle Mode:

1) Analog: When the controller control the spindle speed by the anolog 0-10V voltage output;

2) Plu/Dir: When define the spindle mode as the Servo Spindle;

3) Multi-Speed (Multi Spindle Speed): When the controller control the spindle speed by 3 input ports, this is Multi spindle speed control.

Go to the Param Page and find the #79 parameter, press Enter, there are 3 options. Each option decide different spindle Mode:

STEP READ	Y /udisk-so	/udisk-sda1/test.nc Pa		Param	2020/01/27	06:47:12	Super
Param List:	No.	Note				Value	
Machine	0230		te action after Fi	nished		No ac	
Manual	0282	G00 A				2000.	000
Process	0079	Spind Spind	le le interface type	_		Analo	
Spindle	0080	Spind	e mapping axis le start delay				nalog
10 Home	0082	Maxin	num spindle spe			P	lu/dir
Probe	0083	Stop spindle when program is paused?				lti-speed	
Hard Limit	0085	Multi-speed section counts \$					
Software limit							
MPG	0092	IO					
Backlash	- 0002	Durat	ion of maying co	anni an as		21000	
Tools	Range:	$[0 \sim 2]$		Active:	Immediately	User:	Operator
System	Details:	Spindle	interface type.				
A Param Lis	t Sea	rch	Param Backup	Param Restore			

Figure 5-29 3 different spindle modes

FRO	100%
SRO	100%
SJR	Low 100%
Feed Rate	0 4000
Analog S	0 24000
Cur Tool	Т1
Total No.	0
Cur No.	0
Cycle Times	0
Work Time	00:00:00
G49 H 0	

Figure 5-30 Spindle in Analog Mode



Figure 5-31	Spindle in Pul/Dir Mode
-------------	-------------------------

Figure 5-32 Spindle in Multi-Speed Mode

Cycle Times

Work Time

G49 H 0

FRO

SRO

SJR

Feed Rate

Mult S

Cur Tool

Total No.

Cur No.

100%

100%

100%

4000

24000

Τ1

0

0

Û

00:00:00

Low

0

0-1

Here we only take the exmpale of "Analog S" when the spindle mode is in Analog, to set the example:

By the Rotary button(Knob) \bigcirc or the $| \blacktriangle |$ and $| \blacktriangledown |$ keys, we can shift among the differ-

ent colums to "Analog S". We press the Enter button, a small windown pop up from the bottom. The "Ignore S Yes", means Ignore the S command from the G-code, then the system will process by the S command we set here; The "Ignore S No" means the system ignore the Analog Spindle speed we set, control system will process by the S command from G-code file.

FRO		100%	FRO		100%	FRO	100%
SRO		100%	SRO		100%	SRO	100%
SJR	Low	100%	SJR	Low	100%	SJR	Low 100%
Feed Rate	0	3000	Feed	Rate 0	3000	Feed Rat	e 0 3000
Analog S	0	24000	Anal	og S O	24000	Analog S	0 24000
Cur Tool		T1	CurT	ool	Τ1	Cur Tool	τ1
Total No.		0	Total	No.	0	Total No	. 0
Cur No.		0	Cur N	lo.	0	Cur No.	0
Cycle Times		0	Cvcle	e Times	0	Cycle Tir	nes O
Work Time	00	0:00:00		Ignore S Yes		Work Tir	ne 00:00:00
G49 H 0				Set default S		G49 H 0	
	RO RO		100% 100%		RO RO	1009 1009	
s.	IR	Lov	v 100%	S	JR	Low 1009	6
F	eed Rat	te	0 3000	F	eed Rate	0 300	0
A	nalog S	; (0 24000	A	nalog S	0 2400	0
С	ur Tool		T1	C	ur Tool	т	1
т	otal No),	0	Т	otal No.		0
С	ur No.		0	C	ur No.		0
C	vcle Tin		0	C	ycle Times		0
	l,	gnore S N(0	V	Vork Time	00:00:0	D
				_			

Figure 5-36 Ingore Analog S Value

Figure 5-37 S command from G-code file is active

And we can define the Analog Spindle Speed Value by the pressing enter on "Set Default S". We can write in numbers and press Enter again. Then the Analog Spindle Speed setting is done.

When the spindle mode is in other two kinds mode, the operation is the same.

FRO		100%						
SRO		100%						
SJR	Low	100%						
Feed Rate	0	3000						
Analog S	0	24000						
Cur Tool	Cur Tool T1							
Total No.		0						
Cur No.		0						
Cvcle Times		0						
Ignore F Yes								
Set def	Set default S							



Figure 5-38 Set the Default Spindle Speed

Figure 5-39 Write in the Value

FRO	100%
SRO	100%
SJR	Low 100%
Feed Rate	0 3000
Analog S	0 40000
Cur Tool	T1
Total No.	0
Cur No.	0
Cycle Times	0
Work Time	00:00:00
G49 H 0	

Figure 5-40 The new Spindle speed setting is done

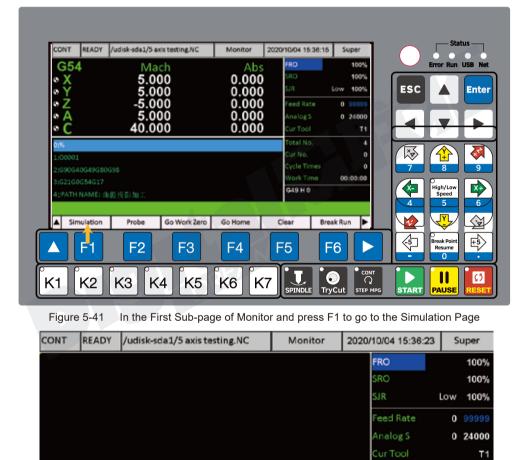
5.1.2 Simulation

Param #	Definition	Remark	Range	
#244	Enable realtime toolpath	When processing a file, active realtime toolpath or not	Yes/No	
#245	Toolpath mode	The Toolpath display modes	Statue/Line/3D	
#261	X-axis rotation angle in 3D toolpath mode	Can set a angle to simulate Based on X axis	-180~180	
#262	Y-axis rotation angle in 3D toolpath mode	Can set a angle to simulate Based on Y axis	-180~180	
#263	Z-axis rotation angle in 3D toolpath mode	Can set a angle to simulate Based on Z axis	-180~180	

There are many Parameters related to the Simulation function:

In order to make the Simulation function active, we must set #244 to "Yes";

And if the setting of #245 is "Line", the system response can be quicker than Statue and 3D. In the Monitor Page and Press F1, go to First Sub-Page of Monitor :



Simulation

Probe

Go Home

Simulation Page

Go Work Zero

Figure 5-42

Total No.

Cur No.

G49 H 0

Clear

Δ

0 0 00:00:00

Break Run

Press Start Key and the system start to simulate the G-code file :

AUTO	D BUSY	/udisk-sda1/5 ax	is testing.NC	Monitor	2020/1	10/04 15:36:	31 S	uper
		-		-		FRO		100%
					1	SRO		100%
						SJR	Low	100%
						Feed Rate	49	10000
						AnalogS	24000	24000
						Cur Tool		T1
						Total No.		4
						Cur No.		0
						Cycle Times		0
						Work Time	00	0:00:05
						G49 H 0		
Analy	rsis2356							
A	Simulation	Probe	Go Work Zero	Go Home	Cle	sar t	Break Ru	in 🕨

Figure 5-43 Simulate a G-code file

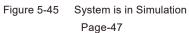
Important:

1) Some users want that the system simulate the G-code file, but system does not send any signals. Then we need to go to Program file, select the file and simulate.

2) If it's first time the controller simulate the G-code file, the screen may not match well with the toolpath screen. But after one time simulation, the system can match the file well with the screen.

AUTO	BUSY	/udisk-sda1/5axi	s testing.NC	Monitor	2020/01/24 01:1	11:02 5	Super
			8		FRO		1005
					SRO		1009
			1		SJR	Low	1005
					Feed Rate	5266	
					Mult S	24000-2	2400
					Cur Tool		т
					Total No.		
					Cur No.		
					Cycle Tim	es	
					Work Tim	e 0	0:01:32
					G43 H 0		
nalysis	10831						
Sir	nulation	Probe	Go Work Zero	Go Home	Clear	Break R	un 🕨
		Figure	5-44 Syst	em is in Sim	ulation		

AUTO	BUSY	/udisk-sda1/5 axi	is testing.NC	Monitor	2020/01/24 03	:24:20	Sup	er
	-	-	<u>a</u>	-	FRO		1	00%
			()		SRO		1	00%
					SJR	L	ow 1	00%
					Feed Rat	te 48	351 98	9999
			ý tře		Mult S	2400	0-2 2	4000
			संस्थ		Cur Tool			T1
			100		Total No			6
			88		Cur No.			1
					Cycle Tir	mes		0
					Work Tir	ne	00:00	2:38
					G43 H 0			
Analy	sis18899							
A	Simulation	Probe	Go Work Zero	Go Home	Clear	Brea	k Run	►



AUTO	BUSY	/udisk-sda1/5 axis	testing.NC	Monitor	2020/01/24 03:	44:04	Super
			3		FRO		1005
		8			SRO		1009
			8		SJR	Lo	w 1005
					Feed Rat	e 119	1 99991
		472	Sejigla		Mult S	24000	2 2400
			d a fan		Cur Tool		т
			2 2		Total No		
			2. 2.		Cur No.		
					Cycle Tin	nes	
			4		Work Tin	ne	00:22:2
			1		G43 H 0		
nalysis	212126						
A Sir	nulation	Probe 0	So Work Zero	Go Home	Clear	Break	Run I

Figure 5-46 System is in Simulation



Figure 5-47 System is in Simulation

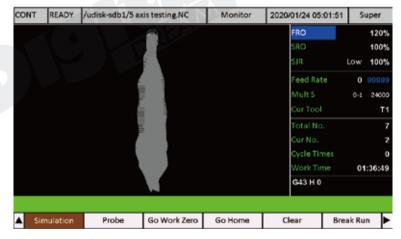


Figure 5-48 Simulation finished

5.1.3 Probe

The DDCS Expert has two kinds of the Probe mode: Floating Probe and Fix Probe. Firstly we must configurate right input ports to Fllating probe and fix probe in IO page, wire the ports correctly, as the Chapter 4.5 introducted.

CONT R	EADY /	/udisk-sdb1/5 ax	is testing.NC	Monitor	2020	10/04 15:52:07	S	uper
G54		Mad	ch	Abs		FRO		100%
οX		5.00		0.000		SRO		100%
۰Ŷ		5.00		0.000		SJR	Low	100%
۰Ż		-5.00		0.000		Feed Rate	0	99999
• A		5.00	0	0.000)	Analog S	0	24000
• C		40 .00	0	0.000)	Cur Tool		T1
Coord:	G54	4	Fixed Probe X:	5.720		Total No.		4
Cur Tool:	T1		Fixed Probe Y:	-58.053		Cur No.		0
THK Of Pro	be: 10.0	000	Fixed Probe Z:	-38.677		Cycle Times		0
1:Before ope	erate [Floa	ting Probe],Pls mo	ve tool above the b	lock and set Param	129;	Work Time	00	:01:38
			d the offset of Z axi time.select the Too			G49 H 0		
Floating	g Probe		Fixed Probe	Mult Probe	XYT	each Z	Teach	
			Figure 5-49	Probe Page				

5

5.1.3.1 Floating Probe

There are many Parameters related to the Floating Probe:

Param #	Definition	Remark
#128	Is the Floating tool set valid?	Enable or Disable the Floating Probe
#129	Floating tool set thickness	Before floating probe, we need to meansure out the sensor's thickness and set the #129.
#131	Probing cycle count	The probe times.When the user active the Probe,the system can probe 1 - 5 times as what the users set. At last system calculate an average value.
#132	Initial speed of Probing	The initial down speed of the Z axis after starting the tool setting.
#140	Retraction distance after the end of probe	This parameter is relative.
#63	G00 speed	Here the G00 is the probe speed.

Step 1: Firstly we must configurate the IO port, and wire the cables properly;

Step 2: We set the #128 to Yes, and we meansure out the Tool sensor's thickness and set #129, and other parameters above;

Now we start to floating probe.

Firstly we must move the tool above the sensor manually.

We press F1 Key to active the floating probe, the system pops up a window to ask if the tool is just above the sensor, we press Enter the cutter start to probe down. It will probe the times we set, and calculate an average value, then the cutter retract a distance. Then the Floating probe finished.

CONT READ	Y 5 axis testing.N	:	Monitor	2020/10/04 17:21:2	3 Guest		Status —
G54 • X • Z • A • C	Ma 5.0 50.9 50.9 40.0	00 00 56 00	Abs 0.000 0.000 83.178 0.000 0.000	FRO SRO SIR Feed Rate Analog S Cur Tool	100% 100% Low 100% 0 99999 0 24000 T1	ESC	Error Run USB N
2.[Fixed Probe]1	G54 T1 10.000 [Floating Probe],Pls m sput the curter Nources robe several tools at on		s after tool change;	049 H 0	4 0 00:00:10	7	High/Low Speed 5
Floating Pr	obe	Fixed Probe	Mult Probe	XY Teach	Z Teach		
	F2	F3	F4	F5	F6 🕨	-	Break Point Resume
▲ F1							

Figure 5-50 Floating Probe

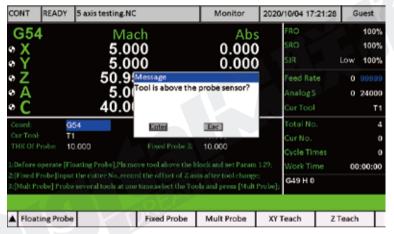


Figure 5-51 Star to Floating Probe

CONT READ	Y 5 axis test	ing.NC	Monitor	2020/10/04 17:2	3:11 Guest
G54		Mach	Ab	s FRO	100%
οX		5.000	0.00		100%
οŶ		5.000	0.00		Low 100%
۰Ż		2.010	20.09		0 99999
• A		5.000	0.00		0 24000
• C	40	0.000	0.00	Cur Tool	T1
Coord:	G54	Fixed Probe	× 10.000	Total No.	4
Cur Tool:	T1	Fixed Probe	101000	Cur No.	0
THK Of Probe:	10.000		2 10.000	Cycle Time	15 O
1:Defore operate	[Floating Probe],Pls move tool above th	e block and set Paran	a 129; Work Time	00:00:00
		lourecord the offset of 2 is at one time.select the '		G49 H 0	
	_				
Floating Pro	obe	Fixed Probe	Mult Probe	XY Teach	Z Teach

Figure 5-52 Floating Probe Finished

5.1.3.2 Fixed Probe

	Definition	Remark	Range
#130	Is the fixed tool set valid?	Enable or Disable the Floating Probe	Yes/No
#131	Probing cycle count	At last system calculate an average value. al speed of Probing The initial down speed of the Z axis after starting	
#132	Initial speed of Probing	The initial down speed of the Z axis after starting the tool setting.	99 - 99999mm
#135	Fixed probe X mach position	The initial Position of X axis in Mach coordinate	-9999 ~ 9999mm
#136	Fixed probe Y mach position	The initial Position of Y axis in Mach coordinate	-9999 ~ 9999mm
#137	Fixed probe Z mach position	The initial Position of Z axis in Mach coordinate	-9999 ~ 9999mm
#138	Fixed probe 4th mach position	The initial Position of 4th axis in Mach coordinate	-9999 ~ 9999mm
#139	Fixed probe 5th mach position	The initial Position of 5th axis in Mach coordinate	-9999 ~ 9999mm
#140	Retraction distance after the end of probe	This parameter is relative.	0 - 999 mm
#63	G00 speed	Here the G00 is the probe speed.	99 - 99999

There are many Parameters related to the Fixed Probe:

Step 1: Firstly we must configurate the IO port, and wire the cables properly;

Step 2: We set the #130 to Yes;

Step 3: Set the parameter #135 / 136 / 137 / 138 / 139 to find an inital position of probe tool;

Step 4: And set other parameters according to your request above;

Now we start to Fixed probe.

We press F3 Key to active the fixed probe, the system pops up a window to ask you to type in right Tool Number, we press Enter, the system start to Fix probe.

CONT READY 5 axis	testing.NC	Monitor	2020/10/04 18:07:25	Guest		
G54	Mach	Abs	FRO	100%		Error Run USB
• X	5.000	0.000		100% Low 100%	ESC	Ent
∘γ ∘Z	5.000 -5.000	$0.000 \\ 0.000$	Feed Rate	0 99999		
Ā	5.000	0.000	AnalogS	0 24000		
° C	40.000	0.000	Cur Tool	т1		▋▼┃▶
Coord: G54	Fixed Probe X:	10.000	Total No.	4		
Cur Tool: T1 THK Of Probe: 10,000	Fixed Probe Y: Fixed Probe 2:	10.000	Cur No.	0		A A A A A A A A A A A A A A A A A A A
 References to Dilastica R 			Cycle Times	0	7	89
2 [Fixed Probe] Input the cutt	robe].Ph move tool above the b er No, record the offset of 2 as	cis after tool change;	29; Work Time	00:00:00		
2 [Fixed Probe] Input the cutt		cis after tool change;	29; Work Time	0 00:02:00		High/Low Speed
2 [Fixed Probe]Input the cut 3 [Mult Probe] Probe several	er No, record the offset of 2 as tools at one time select the Too	tis after tool change; ols and press [Mult P	29) Work Time G49 H 0			High/Low Speed
2 [Fixed Probe] Input the cutt		cis after tool change;	29) Work Time G49 H 0	0 00:00:00 Teach		High/Low Speed
2 [Fixed Probe]Input the cut 3 [Mult Probe] Probe several	er No, record the offset of 2 as tools at one time select the Too	tis after tool change; ols and press [Mult P	29) Work Time G49 H 0			High/Low Speed 5 6
2 [Toxel Probe] figure the cort 3 [Mult Probe] Probe several Floating Probe	er Nourscord the of first of 2 at took at one time select the Tor Fixed Probe	is after tool change; ob and press (Mult P Mult Probe	2% Work Time G49 H 0 XY Teach Z	Teach		High/Low Speed 5 6 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
2 [Toxel Probe] figure the cort 3 [Mult Probe] Probe several Floating Probe	er No, record the offset of 2 as tools at one time select the Too	tis after tool change; ols and press [Mult P	2% Work Time G49 H 0 XY Teach Z			High/Low Speed 5 6 7 3
2 [Toxel Probe] figure the cort 3 [Mult Probe] Probe several Floating Probe	er Nourscord the of first of 2 at took at one time select the Tor Fixed Probe	is after tool change; ob and press (Mult P Mult Probe	2% Work Time G49 H 0 XY Teach Z	Teach		High/Low Speed 5 2 3 Break Point Resure

Figure 5-53 Fixed Probe

CONT READ	0Y 5 axis testing.NC	:	Monitor	2020	/10/04 18:07:30) Gue	st
G54	Ma	ch	Abs	;	FRO	1	00%
οX	5.00		0.000		SRO	1	00%
۰Ŷ	5 00	າດ	0.000		SJR	Low 1	00%
۰Ż	-5. m	t ter the tool number:		×	Feed Rate	0 99	9999
• A	5.	1			Analog S	0 24	1000
• C	40.				Cur Tool		T1
Coord:	G54	Esc	Enter		Total No.		4
Cur Tool:	T1	Fixed Probe Y:	10.000		Cur No.		0
THK Of Probe:	10.000	Fixed Probe Z:	10.000		Cycle Times		0
-	[Floating Probe],Pls m				Work Time	00:00	0:00
	nput the cutter No, reco robe several tools at one				G49 H 0		
octoria e Frobej Fr	obe several tools at the	e unite.select the Too	ns and press [Mult	robej:			
							-
Floating Provide America Pr	obe	Fixed Probe	Mult Probe	XY	Feach Z	Teach	

Figure 5-54 Type In the tool number and Enter

The X / Y/ Z / 4th / 5th start to move to the initial positon in Mach coordinate. after arrive to that position, it start to probe down. It will probe the times as we set, and calculate an average value, and the cutter retract a distance. Then the fixed probe finished.

CONT READ	Y 5 axis test	ing.NC	Monitor	2020/10/04 18:09:1	2 Guest
G54 • X • Y • Z • A	1	Mach 0.000 0.000 3.862 0.000	Abs 5.000 5.533 -5.000 -40.000	SRO SJR Feed Rate Analog S	100% 100% Low 100% 0 99999 0 24000
© Coord: Cur Tool: THK Of Probe:	G54 T1 10.000	Fixed Probe X: Fixed Probe Y: Fixed Probe Z:	10.000 10.000 10.000	Cur Tool Total No. Cur No. Cycle Times	T1 4 0 0
2:[Fixed Probe]I	put the cutter N	Pls move tool above the b io, record the offset of Z ax is at one time, select the Too	is after tool change	G49 H 0	00:00:00
Floating Pro	obe	Fixed Probe	Mult Probe	XY Teach	2 Teach

Figure 5-55 Fixed Probe Finished

The probe squence of each a axis is Z axis -- X axis -- Y axis -- 4th axis -- 5th axis.

5.1.4 Go work Zero

CONT READY 5 axis testing.NC Monitor 2020/01/25 19:14:01 Guest G54 1001 X ESC 100 Ente Ζ AC 0-3 240 066 n. X¥ 00:00:0 G49 H 0 ligh/Lo Speed X Simulation Probe Go Work Zero Go Home Clear Break Run ► ﴾ Break Poin أ∢ E F3 F4 **F1** F2 F5 F6 11 \mathbf{O} ζ5 K2 K3 K1 K4 K5 K6 K7 PALIS TryCut

In the Monitor Page, Press F3 to go to "Go work Zero" Page.

Figure 5-56 Go work Zero Page

Here the users can choose singal axis go to zero, or can choose the All axis go to zero. In our example here we press F6 to "All go Zero".



Figure 5-57 Sub-page of Go Work Zero

CONT READY	5 axis testing.NC		Monitor	2020/01/25 19:14	20 Guest
G54	Mad	:h	Abs	FRO	100%
Х	0.00	0	0.000	SRO	100%
Ŷ	0.00		0.000		Low 100%
YNAC	5.00	00	5.000	Feed Rate	0 99999
А	0.00		0.000		0-1 24000
С	39.93	34	-0.066	Cur Tool	T1
				Total No.	7
				Cur No.	2
				Cycle Times	0
				Work Time	00:00:00
				G49 H 0	
X Go Zero	Y Go Zero	Z Go Zero	4th Go Zero	5th Go Zero	All Go Zero

Figure 5-58 All axis Go Zero

5.1.5 Go Home

Firstly no forget to go to IO page to configurate right ports for the X / Y / Z / 4th / 5th axis, and wire them correctly. Then we can start to Home.

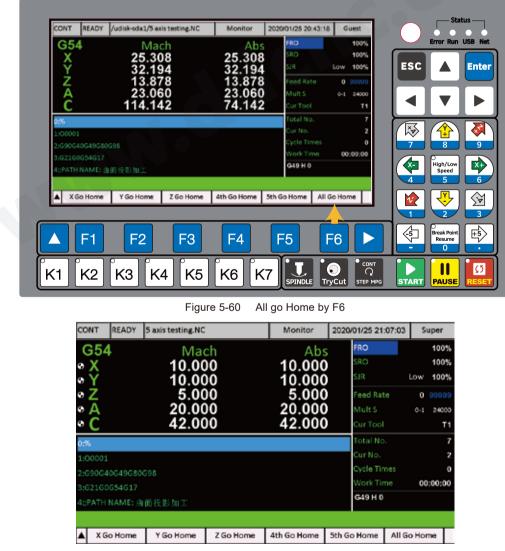
There are many Parameters related to the Home function, we need to understand them and try to set each parameters correctly for our own usage.

Param #	Definition	Remark	Range	
#100	Home mode	There are two mode of Home Mode, Here we only introduce Swtich Mode. If the users need Absolute mode, please contact our engineer to configurate.	Switch/Absolute	
#106	Homing cycle count	Detection Times of Home action	1~5	
#107	X-axis homing speed	X-axis initial speed when Home	99~99999 mm/mir	
#108	Y-axis homing speed	Y-axis initial speed when Home	99~99999 mm/mii	
#109	Z-axis homing speed	Z-axis initial speed when Home	99~99999 mm/mi	
#110	4th-axis homing speed	4th-axis initial speed when Home	99~99999 mm/mii	
#111	5th-axis homing speed	5th-axis initial speed when Home	99~99999 mm/mi	
#112	X-axis homing direction	The movement direction when Home of X-axis	Negative/Positive	
#113	Y-axis homing direction	The movement direction when Home of Y-axis	Negative/Positive	
#114	Z-axis homing direction	The movement direction when Home of Z-axis	Negative/Positive	
#115	4th-axis homing direction	The movement direction when Home of 4th-axis	Negative/Positive	
#116	5th-axis homing direction	The movement direction when Home of 5th-axis	Negative/Positive	
#122	Mach position after X go home			
#123	Mach position after Y go home	X / Y / Z / 4th / 5th-axis Position in Mach Coordinate		
#124	Mach position after Z go home	after Home. After all axis finished Homing,they will move to the according position we set here.	-999~999mm	
#125	Mach position after 4th go home	The values are in Mach coordinate.		
#126	Mach position after 5th go home			
#127	Home after booting	Whether pop-up a dialog box to ask if Go Home when Power On the Controller.	Yes/No	
#235	X-axis Mach zero offset			
#236	Y-axis Mach zero offset			
#237	Z-axis Mach zero offset	We can reduce the error made by machine struction or any other factors by setting the offset for each axis.	-999~999mm	
#238	4th-axis Mach zero offset	or any other factors by setting the onset for each axis.		
#239	5th-axis Mach zero offset			

CONT READY	5 axis testing.NC	_	Monitor	2020/01/25 19:44:15	Super		Status —
G54 X Z Z A	Mac 25.30 32.19 13.87 23.06 114.14	8 4 80	Abs 25.308 32.194 13.878 23.060 114.142	SRO SJR Feed Rate Mult S	100% 100% Low 100% 0 99999 0-1 24000 T1	ESC	Error Run USB Net
0:5 1:00001 2:690640649680 3:62160654617 4:0PATH NAME: <u>4</u>	G98	.2	114.142	Cur I tool Total No. Cur No. Cycle Times Work Time G49 H 0	7 2 0 00:00:00		High/Low
Simulation	Probe	Go Work Zero	Go Home	Clear Brei	ak Run 🕨		
▲ F1 K1 K2	F2	F3	F4 K6 K	7 1 6	Cut STEP MPG		Break Point Resume 0 PAUSE

Figure 5-59 In Monitor Page Press F4 to "Go Home"

Here we can choose the single axis to Home, or we can All axis go home. In our example here, we choose the "All Go Home" by F6.





As figure 5-20 showed, when the system finished Homing, that little symbol will appear on the related axis.

If the users only Home X axis, then only X axis has that symbol; If the users home all axis, all axis have that symbol. By the symbol, the users easily knows the machine was home or not.

Figure 5-62 Home Finished Symbol

So now we can see that our Homing action finished. Now the current position of each axis are not zero but like the figure 5-63. Because we already set the Parameters as below:

CONT REA	DY 5a	xis test	ing.NC			Param	2020/01/2	5 21:05:40	Super
aram List		No.	Note					Val	ue
Machine		0114	Z-axis	homing dire	ction			Pos	itive
Manual		0115		is homing d					ative
r ran rann		0115		is homing d					ative
Process		0122		position aft				10.0	
Spindle		0123		position aft				10.0	
10		0124		position aft				5.00	
		0125		position aft				20.0	
Home		0126		position aft		go home		42.0	
Probe)127)235		after bootii Mach zero o				Yes	
Hard Limi		0235		Mach zero o				0.00	
Software lin		0237		Mach zero o				0.00	
		0238		is Mach zer				0.00	
MPG		0239		is Mach zen				0.00	
Backlash		1200	001 00	as integration	0 01190			0101	
Tools	Rat	ige:	[+999.0	00999.000]	mm		Immediately		Operator
	Det		Machig	osition.					
System									
Parami	ist	Sear	ch	Param Bac	kup P	aram Restore			

Figure 5-63 Mach Postion after Home

We already set the Mach positon after Homing. So when the system finished Homing, it will continue to move to the position which we set, this is the same function of Back distance after Home from DDCS V3.1.

We have a parameter also need to be noted also: #106 Homing cycle count, it is the Home times for each axis. For example, if we set 2 times, the each axis will go to the limited swtich to be detected by two times.

Everytime we power on the controller DDCS-Expert, the system will pop-up a diagram as Figure 5-64, that is because of #127 "Home after booting". If we don't need it,we just disable it.

CONT READY							
	Mac	h	Abs	s	FRO		100%
х	0.00		0.000		SRO		100%
Ŷ	0.00		0.000		SJR		100%
XYZAC	0.00	Message)	Feed Rat	e 99999	99999
A	0.00	Go to home?	0)	Mult S	\$9999	999999
С	0.00		0)	Cur Tool		T1
		Enter	Esc		Total No		G54
					Cur No.		0
					Cycle Tin		0
					Work Tin	ne O	0:00:00
					G43		
Monitor	Program	Param	ю	Syste	em Log	System Ir	nfo

Figure 5-64 System ask If go to Home when Power on

The Home squence is Z Axis -- X axis -- Y axis -- 4th axis -- 5th axis.

5.1.6 Clear

In the Monitor Page, Press F5 to go to "Clear" Page.

CONT READY	5 axis testing.NC	Monitor 20	20/01/25 21:46:06	Guest		– Status ––––––––––––––––––––––––––––––––––––
G54 X Y Z A C	Mach 10.000 10.000 5.000 20.000 42.000	Abs 10.000 10.000 5.000 20.000 42.000	FRO SRO SJR I Feed Rate Mult S Cur Tool	100% 100% Low 100% 0 99999 0-1 24000 T1	ESC A	Run USB Net
00% 1:00001 2:6906406496800 3:62160654617 4:PATH NAME: (b)			Totel No. Cur No. Cycle Times Work Time G49 H 0	7 2 0 00:00:00	High Sp	B y/Low 6
Simulation	Probe Go Work Zero	Go Home	Clear Brea	ik Run 🕨		
▲ F1	F2 F3	F4	F5 F	6	Res	(Point ume
K1 K2	K3 K4 K5	K6 K7		Cut		

Figure 5-65 Go to "Clear" Page

Here the users can choose singal axis go CLEAR, or can choose the All axis CLEAR. In our example here we press F6 to "Clear All".

CONT RE	ADY 5 axis testing.NO		Monitor	2020/01/25 21:46:15	Guest	\bigcirc	Status
G54 X Y Z A C	Ma 10.0 10.0 5.0 20.0 42.0)0)0)0	Abs 10.000 10.000 5.000 20.000 42.000	SRO SJR Low Feed Rate (Mult S o-	100% 100% / 100% / 99999 1 24000 T1	ESC	Error Run USB Net
0:% 1:00001 2:69064064 3:62160654 4:9ATH NAM				Total No. Cur No. Cycle Times Work Time G	7 2 0 0:00:00	7	High/Low Speed 5 6
▲ Clear	X Clear Y	Clear Z	Clear 4th	Clear 5th Clear /			
▲ F	1 F2	F3	F4	F5 F6		- t	O Break Point Resume
K1 K	2 K3 K	4 K5	K6 K		CONT Q STEP MPG	START	

Figure 5-66 Sub-page of CLEAR

CONT READY	5 axis testing.NC		Monitor	2020/01/25 21	:46:23 Gue	est
G54	Mac	:h	Abs	FRO		100%
	10.00		0.000		1	100%
Ŷ	10.00		0.000		Low 1	100%
Z 5.000			0.000	te 0 9		
A	0.00	0	0.000	Mult S	0-1	24000
С	0.00	0	0.000	Cur Tool		T
0:%				Total No		7
1:00001				Cur No.		2
2:690640649680	G98			Cycle Tir	mes	
3:G21G0G54G17				Work Tir	me 00:0	0:00
4::PATH NAME: 🗎	面技影加工			G49 H 0		
Clear X	Clear Y	Clear Z	Clear 4th	Clear 5th	Clear All	Т

Figure 5-67 Clear All axis

5.1.7 Break Run (Breakpoint Resume)

READY /udisk-sda1/5 axis testing.NC Monitor 2020/01/25 22:00:13 CONT Gues G54 RO Abs Mach 1004 0.000 X 10.000 ESC Ente 000 0.000 0.000 ed Rat Ó 0.000 0-1 2400 000 00:00:00 X-G49 H 0 Go Work Zero Go Home Clear Simulation Probe Break Run ► Ś¥ **F**5 F1 F2 F3 F4 F5 F6 CONT \mathbf{O} ζ5 K2 K3 K4 K5 K6 K7 K1 TryCut STEP N START PAUSE

In the Monitor Page and we Press F6 to enter into the "Break Run" page:

Figure 5-68 "Break Run" Page

As for the breakpoint resume function, we have 3 kinds breakpoint resume:

1) Start Line: Start from a specific line; the line number range from 1 - 10,000,000 lines;

2) Power Resume: Power Cut off recovery. When the power cutt off, the system can remember the line when power cut off, and create a breakpoint.

3) Pause Resume: When pause the processing, the system remember the line when pause, and create a breakpoint.

In the Sub-page of "Break Run", we press F1, the system will pop up a window to ask the user to input the start line no. We write in numbers and press enter, system will start to work from this specific line.



Figure 5-72 Start from a specific line



Figure 5-73 Input the line number

After power cut off or Pause, the controller can create a breakpoint number:

 CONT	READY	/udisk-sda1/5 axis testing.NC	Monitor	2020/01/25 22:03:50	Guest
G54		Mach	Abs	FRO	100%
X		8.494	-1.506		100%
Ŷ		5.560	-4.440		Low 100%
ż		90.030	85.030		0 99999
Ā		355.610	355.610		0-1 24000
C		322.818	322.818		T1
Break No	- 58	41		Total No.	7
				Cur No.	2
				Cycle Times	0
				Work Time	00:00:12
				G49 H 0	
A 644	rt Line	Power Resume Pause Resume	1 1		
▲ Sta	it Line	Power Resume Pause Resume			•



If it is Power breakpoint, press F2, the systme can power cut off recovery;

If it is Pause Resume, Press F3, the system will Pause breakpoint resume.

5.1.8 Manual

In the Monitor Page and we press 🕟 key to

key to go to the second page of Monitor.

CONT	READY	/udisk-sda1/5a	ds testing.NC	Monitor	2020/01/28 00:32	15 Guest		Status
G5 X	4	Ma 9.5		Abs -0.444		100% 100%		Error Run USB Net
Ŷ		1.0 89.3	90	-8.910 84.372	SIR	Low 100%	ESC	Enter
AC		352.3 246.1	50	352.350 246.162		0-1 24000 T1		V
6538:	0.41777.8	9191784 37414-	7,6544C4564.735		Total No. Cur No.	7	K	
6540:X-	0.4441-8.5	104284.3723A-7	6507C4566.1056		Cycle Times Work Time	0 00:00:12	7	
		9011A-7.6463C4			G49 H 0			High/Low Speed 5 6
🔺 Sir	nulation	Probe	Go Work Zero	Go Home	Clear	Break Run 🕨		😍 🖄
	F1	F2	F3	F4	F5	F6		Break Point Resume
~ 1	K2		4 K5		7			
	K 2	I K X III K	4 KO K		SPINDLE	TryCut STEP		PAUSE RESET

Figure 5-75 Go to second page of Monitor

Then we press F1 key to go to "Manual" Page.

CONT	READY	/udisk-sda1/Saxis te	sting.NC	Monitor	2020/01/28 00:32.0	07 Gue	st		Status —
G54	4	Mach		Abs	FRO		00% 00%		Error Run USB
Ϋ́		9.556 1.090		-0.444 -8.910	SIR		00%	ESC	🔺 En
Z		89.372		84.372	Feed Rate	0.93			
Â		352.350 246.162		352.350 246.162	Mult S Cur Tool		0000 T 1		▼)
6538:					Total No. Cur No.		7	F	
		9191284.3741A-7.65 104284 3723A-7 650			Cycle Times		0		
65410	0.4567Y-8	9044284.372A-7.647 9011A-7.646304567	904566.8065		Work Time G59 H 0	00:00	:12		High/Low Speed
A	Aanual	Coord Set	MDI	Middle	Work Record S	ort Proces	▶		
	F 1	F2	F3	F4	F 5	F6		•	Break Point Resume
K1	K2	K3 K4	K5	К6 К			CONT		

Figure 5-76 Press F1 key to Manual Page

CONT	READY	5axis	testing.NC		Moni	tor :	2020/01/26 00:40:21	Guest
G54	N	vlach	Abs	Go Home	Clear All	Go Ze	ro FRO	100%
х	9.	556	-0.444	XHome	X Clear	X Go Ze	F0 580	100%
Y	1.	090	-8.910	YHome	YClear	Y Go Ze		
z	89.	372	84.372	2 Home	2 Clear	Z Go Ze	ro	Low 100%
А	352.		352.350	4th Home	4th Clear	4th Go Z	Feed Kate	0 99999
С	246.	162	246.162	5th Home	5th Clear	5th Go 2	ero Mult S	
	EXT	KEY			IN		MULT 5	0-1 24000
FUN	C K01	F	UNC K08	IN01	IN09	IN17	Cur Tool	T1
FUN	C K02	F	UNC K09	IN02	IN10	IN18	Total No.	7
FUN	C K03	F	UNC K10	IN03	IN11	IN19	Cur No.	
	C K04	_	UNC K11	IN04	IN12	IN20		
		_	UNC K12	IN05	IN13	IN21	Cycle Times	0
	C K05	_		IN06	IN14	IN22	AAAAAA HILIDA	00:00:12
	C K06	_	UNC K13	IN07	IN15	IN23	G49 H 0	
FUN	C K07	F	UNC K14	INGS	IN16	IN24		

In Manual page, we can operate some simple functions as: Home, Clear and Zero; We can check the input ports status, to check it is conducting or not. And there is 14 virtual keys, by which, the users can define them as what they want.



different blocks.

CONT	READY	5axis testing.NC		Moni	tor	2020/01/26 0	0:41:54	G	uest
G54	Ma	ach Ab	Go Home	Clear All	Go Z	ero FRO			100%
οx	10.0	00 0.000	XHome	X Clear	X Go 2	Zero SRO			1005
θY	10.0	00 0.000	YHome	YClear	Y Go 2	<i>Lero</i>			
θZ	5.0	00 0.000	ZHome	Z Clear	2 Go 2	Zero		Low	1005
ΘA	20.0		4th Home	4th Clear	4th Go	Zero Feed R	ate	0	
O C	42.0	00 42.000	5th Home	5th Clear	5th Go	Zero			
	EXT KE	EY		IN		• Mult S		0-1	2400
FUI	NC K01	FUNC KOS	IN01	IN09	IN 1	00 Cur To			T
FUI	NC K02	FUNC K09	IN02	IN10	IN1	18 Total N	lo.		
FUI	NC K03	FUNC K10	IN03	IN11	IN1	19			
	NC K04	FUNC K11	IN04	IN12	IN 2	20 Cur No			
			IN05	IN13	IN 2	Cycle T	lmes		
	NC K05	FUNC K12	IN06	IN14	IN 2	22 Work T	lime	00	:00:12
FUI	NC K06	FUNC K13	IN07	IN15	IN 2	3 G49 H	0		
FUI	NC K07	FUNC K14	IN08	IN16	IN 2	24	•		
A 1	lanual			T					- It

Figure 5-78 Here we can operate these functions

CONT	READY	5axis te	sting.NC		Moni	tor	2020	/01/26 00:41:50	G	uest
G54	Ň	fach	Abs	Go Home	Clear All	Go Z	lero	FRO		100%
οx	10.0	000	0.000	XHome	XClear	XGo	Zero	SRO		100%
θY	10.0	000	0.000	YHome	YClear	YGo	Zero			
οz	5.0	000	0.000	ZHome	Z Clear	ZGo	Zero	SJR	Low	1005
ΘA	20.0		20.000	4th Home	4th Clear	4th Go	Zero	Feed Rate	0	
O C	42.0	000	42.000	5th Home	5th Clear	5th Go	Zero			
	EXT (KEY			IN			Mult S	0-1	2400
FUI	NC K01	FU	NC KO8	IN01	IN09	IN	17	Cur Tool		т
FUI	NC K02	FU	NC K09	IN02	IN10	IN	18	Total No.		
_	NC KOB	FU	NC K10	IN03	IN11	IN	19			
	NC K04		NC K11	IN04	IN12	IN	20	Cur No.		
_				IN05	IN13	IN	21	Cycle Times		
	NC K05		NC K12	IN06	IN14	IN	22	Work Time	00	:00:12
FUI	NC K06	FU	NC K13	IN07	IN15	IN	23	G49 H 0		
FUI	NC K07	FU	NC K14	IN08	IN16	IN	24	045110		
					-					-
▲	Manual				1	I				- P

Figure 5-79 The Monitor or the Input ports: IN01-09 iare conducting, IN17 to IN24 no conducting

There are 14 virtual keys we can define the function in Slib-m.nc file. "Slib-m.nc "file can be find in the INSTALL folder for DDCS-Expert.

CONT	READY	5axis te	sting.NC		Moni	tor	2020	/01/26 00:41:54	G	uest
G54	Ň	fach	Abs	Go Home	Clear All	Go Zo	ero	FRO		100%
οx	10.0	000	0.000	XHome	X Clear	X Go Z	ero	SRO		100%
÷Υ	10.0	000	0.000	YHome	Y Clear	Y Go Z	ero			
θZ	5.	000	0.000	ZHome	Z Clear	Z Go Z	ero	SJR	Low	100%
O A	20.0		20.000	4th Home	4th Clear	4th Go	Zero	Feed Rate	0	
O C	42.0	000	42.000	5th Home	5th Clear	5th Go	Zero	14.44		
	EXT (KEY			IN			Mult S	0-1	24000
FUI	NC KO1	FUI	NC KOS	IN01	IN09	IN 1		Cur Tool		T1
FUI	NC K02	FUI	NC KOS	IN02	IN10	IN1:	-	Total No.		7
FUI	NC KO3	FUI	NC K10	IN03	IN11	IN1				
	NC K04		NC K11	IN04	IN12	IN 2	4	Cur No.		0
				IN05	IN13	IN 2		Cycle Times		0
_	NC K05		NC K12	IN06	IN14	IN 2		Work Time	00	:00:12
FUI	NC K06	FUI	NC K13	IN07	IN15	IN2		G49 H 0		
FUI	NC K07	FUI	NC K14	IN08	IN16	IN 2		010110		
		_	_		· · · ·					-
• •	Manual									_ P

Digital Dream Standalone Motion Controlligure 5-80 FUNC K01 -- FUNG-K14 Vitual Keys can be defined

5.1.9 Coord Set

Then we press F2 key to go to "Coord Set " Page. In the Coord Set Page, we can Select coordinate, and also we can edit the offset between the G54 / G55 / G56 / G57 / G58 / G59 and Machanical Coordinate.

CONT	READY	/udisk-sda1/Saxis	testing.NC	Monitor	2020	/01/28 00:3	2:07 6	ivest	\bigcirc	Sta	tus —
G5 ⁴ XYZAC	4	Macl 9.55 1.09 89.37 352.35 246.16	6 0 2 0	At -0.44 -8.91 84.37 352.35 246.16	4022	FRO SRO SJR Feed Rate Mult S Cur Tool		100% 100% 100% 2000 24000 T1	ESC	Error Run	USB Net
65402X 65411X (65422X (2 444Y-8.9 2.4567Y-8 2.4528Y-8	9191284.3741A-7.6 204284.3723A-7.6 9044284.372A-7.64 9011A-7.6463C456	0704566.1056 17904566.8065 7.1607			Total No. Cur No. Cycle Tim Work Tim G49 H 0	• o	7 0 0:00:12	7	High/Low Speed 5	9
	F1	Coord Set	F3	F4		Record	Sort Proc			2 D Break Point Resume	
K1	К2	K3 K4	K5	K6	K7	SPINDLE	TryCut	CONT Q STEP MPG	START	PAUSE	

Figure 5-81 Press F1 key to "Coord Set" Page

In the first Page, there is functions as:Select Coord / Clear X / Clear Z / Z Step / Deeper:



Figure 5-82 First Page of Coord Set

We Press the

Key to go to the second page of Coord Set:

In the second page, there are function as Move Up / Clear 4th / Clear 5th.

CONT	READY	/udisk-sda1/5	axis testing	.NC	Monito	и 20	20/01/26 01:54	4:27 G	uest			itus —
G57			ach		A	bs	FRO		100%		Error Run	USB Ne
οX		-30.0	52		-30.0		SRO		100%			
۰Y		51.2			51.2		SJR.	Low	100%	ESC		Ente
۰Z		49.9			48.4		Feed Rate	0	99999			
۰A		75.4			75.4		MultS	0-1	24000			
• C		320.9	00		320.9	00	Cur Tool		T1			
654			G57	658	659	Offset	^o Total No.		7			
X 22.1 Y 22.7	0.0 88	000.0 00	0.000	0.000	0.000	0.000	Cur No.		0			
Z 18.9- A 20.0			0.000	0.000	0.000	1.500	Cycle Time		0	7	8	9
C 42.0	0.0 0.0	000.0 00	0.000	0.000	0.000	0.000	Work Time	00	:00:12			
		rsor,[Enter]modi Up]Modified 2 e				5.00 mn	G49 H 0			(🐥	High/Low Speed	X+
										4	5	6
A M	ove up	Clear 4th	Clea	r 5th					►			S ₩
		1	1			_						<u>>*</u>
				_	_				_			
	F1	F2		3	F4		F5	F6		-5	Break Point Resume	Ð
		F2		3	F4		го	го			Resume 0	
	, ,					ρ			CONT			
(1	K2	K3	<4	K5	K6	K7		\odot				Ç5
		1 I X ()	ヽ┿				SPINDLE	TryCut	STEP M	G STAR	PAUSE	RESE

Figure 5-83 Second Page of Coor Set

5.1.9.1 Select Coord

By the Rotary button(Knob) 🕢 or the 🔺 and 💌 keys,wen can shift among the

different blocks. We select the block, and press Enter or knob, then we can write in numbers.

So we can move our cursor to any Coordinate, and we press "Select Coord", then the current coordinate is the one we choose.

For example, we move the cursor to any block on G57, and we press "Select Coord" key, then the current Coordinate change from G54 to G57:

CON	T READY	/udisk-sda1	/5axis testin	g.NC	Monito	or 2020	0/01/26 02:10:55	5 Gu	iest
G	54	N	1ach		A	٨bs	FRO		100%
•)			.052		-52.1		SRO		100%
οÝ	è i		210		28.4		SJR	Low	100%
οŻ	Z	49	.938		29.4	92	Feed Rate	0	
• /	4	75	.470		55.4	70	MultS	0-1	24000
• (2	320	.900		278.9	00	Cur Tool		T1
	G54 (G55 G56	657	658	659	Offset	Total No.		7
		000 0.000		0.000	0.000	0.000	Cur No.		0
Z 1	18.946 0	000.0 000	0.000	0.000	0.000	1.500	Cycle Times		0
		.000 0.000 .000 0.000		0.000 0.000	0.000	0.000	Work Time	00:	00:12
		ursor,[Enter]m ve Up]Modified		Z Step	ĸ	5.00 mm	G49 H 0		
A :	Select Coord	l Clear X	Cle	ar Y	Clear Z	z	Step [Deeper	Þ

Figure 5-84 Current Coordinate is G54

CON	T REAL	DY /ud	isk-sda1/5a	kis testing	g.NC	Monite	or 202	0/01/26 01:54:27	Gu	Jest
G	57		Ma	ch		ļ	۱bs	FRO		100%
•)			-30.0			-30.0		SRO		100%
0	<i>`</i>		51.2			51.2		SJR	Low	100%
ΘZ	Ż		49.9			48.4		Feed Rate	0	99999
• /	4		75.4	70		75.4	70	MultS	0-1	24000
• (0		320.9	00		320.9	00	Cur Tool		T1
	G54	G55	656	G57	G58	659	Offset	Total No.		7
	22.110 22.768	0.000	0.000	0.000	0.000	0.000	0.000	Cur No.		0
	22.788 18.946	0.000	0.000	0.000	0.000	0.000	1.500	Cycle Times		0
	20.000 42.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	Work Time	00:	00:12
			[Enter]modify Modified Z ex		Z Step	ĸ	5.00 mm	G49 H 0		
	Move u	p	Clear 4th	Clea	ır 5th					Þ

Figure 5-85 Select the Coordinate to G57

5.1.9.2 Clear X / Y / Z / 4th / 5th Axis

When we move the cursor to any block of the coordinate, this coordinate is selected. Then we press "Clear X", then the X axis value is cleared, and the X axis offset in G57 is created.

со	NTR	EADY 5	axis testing.N	с		Monito	r 2020	/01/26 02:24:32	2 Guest
C	357		Ma	ch		Δ	bs	FRO	100%
ø	X		-30.0			0.0	00	SRO	100%
Ð	Ŷ		50.0			50.0		SJR	Low 100%
Ð	ż –		57.6			-1.5		Feed Rate	0 99999
Ð	A		75.4	70		75.4	70	MultS	0-1 24000
Ð	С		320.9	00		320.9	00	CurTool	T1
	G54	655	G56	657	658	G59	Offset	Total No.	7
X	22.110			-30.052 0.000	0.000	0.000	0.000	Cur No.	0
ż	18,946			57.652	0.000	0.000	1.500	Cycle Times	0
A C	0.000	0.000		0.000 0.000	0.000 0.000	0.000	0.000	Work Time	00:00:12
			or,[Enter]modif [p]Modified Z e:		Z Step	x	0.50 mm	G49 H 0	
	Select	Coord	Clear X	Clea	arY	Clear Z	z	Step D	Deeper 🕨

Figure 5-86 Clear X in Coordinate 57

Here we took X axis for example.

If the users want to clear other axis, just press the according function key.

5.1.9.3 Set Z Step

We can set Z step by pressing the "Z step" Key (F5). The one step number can be shift among 0.01mm, 0.1mm, 1.00mm, 5.00mm. It's good both for big distance and small distance setting.

со	NT	READY	/udisk-sda	1/5axis	testing.N	IC	Monito	or	2020/	01/26 01:	37:25	Gu	est
C	G54			Mac	า		A	۱bs		FRO			100%
e				.05			-52.1			SRO			100%
ø	Ŷ			.21			28.4			SJR	I	.ow	100%
ø	ż			.93			24.4			Feed Rat	e	0	99999
ø	Α		75	.47	0		55.4	70		Mult S		0-1	24000
Ð	С		320	.90	0		278.9	00		Cur Tool			T1
	G5+	4 G	55 G5	5	657	658	G59	Off	set	Total No.			7
X	22.1		00 0.00		000	0.000	0.000	0.0		Cur No.			0
ž	22.7 18.9		00 0.00 100 0.00		000	0.000	0.000 0.000	0.0 6.5		Cycle Tin	nes		0
A	20.0 42.0				000	0.000	0.000	0.0	00	0.10 m	_	00:	00:12
			irsor,[Enter]i							0.50 m	m		
2:[[Deeper] and [Mov	e Up]Modifie	d Z ext-o	ffse	Z Step	x	0.01	mm	<u>1.00 m</u>			
										5.00 m	m		
	Sele	ct Coord	Clear	х	Clear	Y	Clear Z	T	ZS	tep	De	eper	
										-		-	

Figure 5-87 Sub-page of CLEAR

5.1.9.4 Deeper and Move up

By the "Deeper" and "Move up" key we can set the Z axis offset very convenient and easily. Each pressing the Z axis offset will change by the value of "Z step" Setting.

5.1.10 MDI

CONT REAL	DY Saxis testing.NC		Monitor	2020/01/28 19:54:28	Super		Status —
G54	Mac		Abs		100%	\bigcirc	Error Run USB Ne
οX	10.00		0.000		100% Low 100%		
∘Y ∘Z	10.000 5.000		0.000 0.000		0 99999	ESC	Ente
Ā	0.00		0.000		0-1 24000		
° C	0.00)	0.000		T1		
				Total No.	7		
				Cur No. Cycle Times	0		
				Work Time	00:00:00		
				G49 H 0		(🐢	High/Low Speed
						4	5 6
Manua	Coord Set	MDI	Middle	Work Record Sort	Proces 🕨		[↓] 🖓
-						1	2 3
						<u></u> _5	Break Point Resume
▲ F ⁻	I F2	F3	F4	F5 F6			Resume 5
		<u> </u>			CONT		
<1 🛛 K	2 🛛 K3 🗌 K4	. K 5	K6 K			START	PAUSE RESE

Figure 5-88 Press F3 key to MDI Page

In the MDI Page,we can edit the G-code ourself with the controller panel. Here we can edit 6 lines G-code by vitual keyboard.

	CONT	READY	5axis testing.NC		Monitor	2020/01/26 02:49:	56 Guest	
	G54	4	Mac	ch	Abs		100%	
	οX		10.00	00	0.000		100%	
	θY		10.00		0.000		Low 100%	
	÷Ζ		5.00		0.000		0 99999	
	οA		0.00		0.000		0-1 24000	
	• C		0.00	00	0.000	Cur Tool	T1	
		1A360				Total No.	7	
	(2) (3)					Cur No.	0	
	(4)					Cycle Times	0	
	(5)					Work Time	00:00:12	
	(6) [Kn	ob]Move the	cursor,[Enter]Edit	t current line,[Exect	ate]Execute current	G49 H 0		
	▲ Ex	ecute(1)	Execute(2)	Execute(3)	Execute(4)	Execute(5)	Execute(6)	
				Figure 5-89	MDI Page			
By the	Rotary	button	(Knob)) or the	▲ and	▼ keys, we	e can shift a	among the
different Li	nes. W	e move	the cursor,	select a line	e and Enter,	then the Virt	ual keyboai	rd is active.
There a	are 3 pa	ages Vit	ual keyboa	rd, by the pa	anel Key 🔽	we can s	hift the 3 vi	tual

keyboards.

CONT READY	5axis testing.NC		Monitor	2020	01/26 02:	50:26	Guest
G54	Mac	h	Abs		Virt	ual Ext B	Button
• X	10.00		0.000		7	8	9
e γ	10.00)0	0.000)	· '	•	
o Ζ	5.00)0	0.000)		-	
• A	0.00		0.000		4	5	6
<u> </u>	0.00		0.000				
۰L	0.00		0.000	<u> </u>	1	2	3
(1) G01A360							
(2)					-	0	
(3)						U	
(4) (5)				_			
(6)				_	[RESET]	Key Swi	tch Cl
	e cursor,[Enter]Edit	current line,[Exec	ate]Execute curren	t line.			
Execute(1)	Execute(2)	Execute(3)	Execute(4)	Exec	ute(5)	Exec	ute(6)



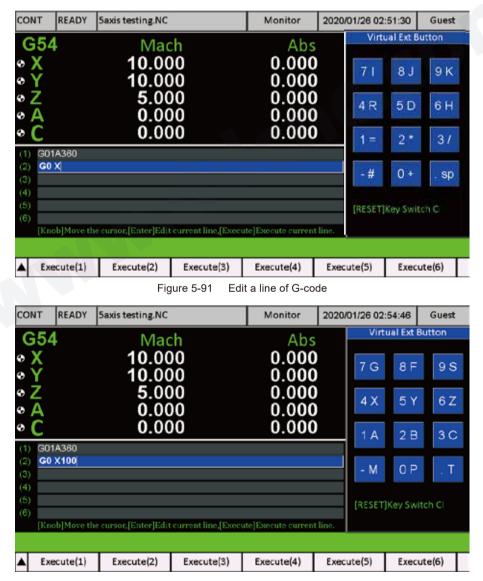


Figure 5-92 Edit a line of G-code with another Vitial keyboard

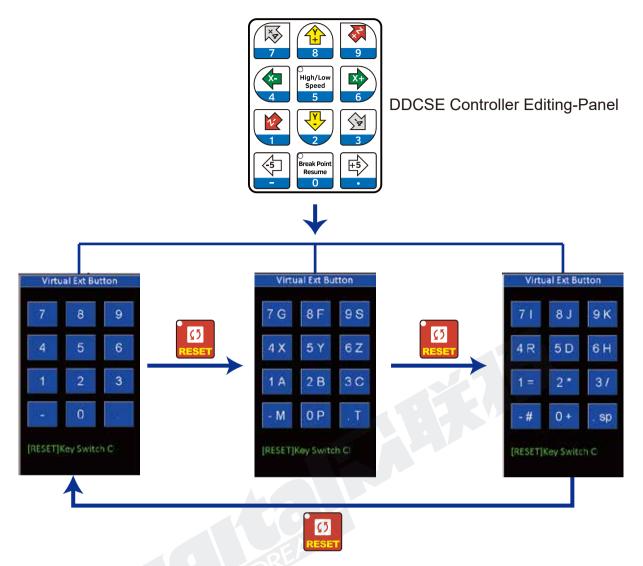


Figure 5-93 The 3 pages vitual keyboard shifted alternately by pressing Reset Key

As the users finished editing the G-code, press "Execute(1)"--"Execute(6)" (F1--F6) to execute the according G-code line.

5.1.11 Middle

CONT READY	Saxis testing.NC	Monitor	2020/01/26 19:54:28	Super		Status —
G54	Mach	Abs	FRO	100%	\bigcirc	Error Run USB Net
οX	10.000	0.000	SRO	100%		
۰Y	10.000	0.000	SJR	Low 100%	ESC	Enter
۰Z	5.000	0.000	Feed Rate	0 99999		
• A	0.000	0.000	MultS	0-1 24000		
<u>ه (</u>	0.000	0.000	Cur Tool	T1		
			Total No.	7		
			Cur No.	0		
			Cycle Times Work Time	00:00:00		8 9
			G49 H 0	00.00.00		High/Low Speed
			0.010	_	4	5 6
Manual	Coord Set MDI	Middle	Work Record Sort	Proces 🕨		
▲ F1	F2 F3	F4	F5 F6		-5	Break Point Resume
				CONT		
K1 K2	K3 K4 K5	K6 K7			START	

Figure 5-94 Press F4 key to Middle Page

CONT	READY	/udisk-sda1/5a	xis testing.NC	1	Aonitor	2020/01/27 00:28	8:47 Gu	est
G5-	4	Ma	nch		Abs	FRO		100%
οX		0.0			0.000			100%
۰Ŷ		0.0			0.000		Low	100%
۰Ż		0.0			0.000		0	
οA		0.0	00		0.000	MultS	0-1	24000
• C		0.0	00		0.000	Cur Tool		T 1
4 Pts:						Total No.		7
Px1:	0.000	Px2:	0.000	Pxm:	0.000	Cur No.		0
Py1:	0.000	Py2	0.000	Pym:	0.000	Cycle Time	es	0
	enter Operat					Work Time	e 00:	00:00
		point Px1 and pro point Px2 and pro	rss [Set X] to set; rss [Middle X].get 1	midnoint	and not the Y	G49 H 0		
a rake u	le toor to the	point rx2 and pre	as founder vitiger i	anapoint	and set the A	(1210),		
			1	_				_
▲	Set X	Middle X	Set Y	M	iddle Y		3Pts	

Figure 5-95 MIddle Page

DDCS-Expert Controller can support two kinds function:

1) Find a middle point for a line: find the Middle point from two points for X or Y axis. And set the middle point as the Zero in the current workpiece coordinate (G54 - G59);

2) Find a middle point for the Arc:find the Middle from 3 points. And set the middle point as the Zero in the current workpiece coordinate (G54 - G59);

5.1.11.1 Find Middle Point in X Axis

In the First Page of Middle, there are 5 funcitional buttons. Following, we will take example of how to set the Middle to introduce how to use them.

CONT	READY	/udisk-sda1/5a	dis testing.NC	. N	Monitor	2020/0	1/27 00:28	:47 G	luest	(atus —
G54	4	Ma			Abs	•	'RO IRO		100%	G		Error Rur	USB N
×X		0.0			0.000			Low	100%		ESC		Ente
• Y • Z		0.0			0.000		eed Rate		00000				
Ā		0.0			0.000		Mult S		24000				
۰C		0.0	00		0.000)	Cur Tool		Τ1				▮▶
4 Pts:						1	fotal No.		7				
	0.000		0.000		0.000				0		×\$		
							Cycle Times		0		7	8	9
Maratal O	enter Opera	ition(X):					Nork Time		00-00				
					and are the l		Work Time G49 H O	00	00:00			O High/Low	
					and set the)			00	0:00:00				
L:Take th 2:Take th				et midpoint	and set the)			00 3Pts	0:00:00		4	O High/Low Speed 5	
L:Take th 2:Take th	e tool to the	point Px2 and pre	ss [Middle X],gr	et midpoint					0.00.00		•	High/Low Speed 5	
L:Take th 2:Take th	e tool to the	point Px2 and pre	ss [Middle X],gr	et midpoint								High/Low Speed 5	
L:Take th 2:Take th	e tool to the e tool to the Set X	point 7x1 and pre point 7x2 and pre Middle X	ss [Middle X] ge	et midpoint	iddle Y	Ksero;	G49 H 0	3Pts				High/Low Speed 5	
L:Take th 2:Take th	e tool to the	point Px2 and pre	ss [Middle X],gr	et midpoint			G49 H 0					High/Low Speed 5 V Break Point	
L:Take th 2:Take th	e tool to the e tool to the Set X	Middle X	ss [Middle X] ge		iddle Y F4	(sero;) Ft	5 (3Pts				High/Low Speed 5 5 8 8 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7	

Figure 5-96 Middle Page

Now we set a start point is X = 50, an end point is X = 100. We need to find a Middle from this two point.

Step 1: We move the X axis to X = 50 :

CONT	READY	Saxis testing.N	¢	<u> </u>	Nonitor	2020	01/26 22	:52:37	Gu	Jest
G5	4	Ma	ach	X	Abs	\$	FRO			100
οX		50.0	00		0.000		SRO			100
θŶ		0.0			0.000		SJR	I	Low'	100
οŻ		0.0			0.000		Feed Rat	e	0	
۰Ā		0.0			0.000		Mult S		0-1	2400
• C		0.0			0.000		Cur Tool			т
4 Pts:							Total No			
Px1:	0.000		0.000		0.000		Cur No.			
Py1:	0.000	Py2	0.000	Pyrre	0.000		Cycle Tin	nes		
	Center Oper						Work Tir	ne	00:	00:0
		e point Px1 and pr e point Px2 and pr			and ant the	V marrow	G49 H 0			
		e point rate and pr	eso formune str	ger unoponn	and set the					
	Set X	Middle X	Set Y	M	iddle Y			3	Pts	
			Figure	e 5-97	X=50					

Step 2: Press "Set X" (F1)

Then the first point is saved.

CONT READY	5axis testing.NC		Monitor	2020	/01/26 22:52:41	Guest
G54	Mad	ch	Ab	s	FRO	100%
οX	50.00		50.00		SRO	100%
۰Ŷ	0.00		0.00		SJR	Low 100%
۰Z	0.00	00	0.00	0	Feed Rate	0 99999
• A	0.00	00	0.00	0	MultS	0-1 24000
• C	0.00	00	0.00	0	Cur Tool	T1
4 Pts:					Total No.	7
Px1: 50.000		3.000	Pxm: 0.000		Cur No.	0
Py1: 0.000	Py2	0.000	Pym: 0.000		Cycle Times	0
Mannal Center Operat					Work Time	00:00:00
1: Take the tool to the 2: Take the tool to the			dnoint and set the	X zero:	G49 H 0	
a runa the coorto the	portion of the press	- the second secon	apointeand oct the			
				_		
Set X	Middle X	Set Y	Middle Y			3Pts

Figure 5-98 First point saved

Step 3:Move the X axis to X = 100 :

CONT	READY 5	iaxis testing.N	IC		Monitor	2020/0	1/26 22:52:53	Guest
G54		Ma	ach		Abs	1	RO	100%
οX		100.0	000	10	00.000	5	RO	100%
θŶ		0.0			0.000			Low 100%
οŻ		0.0			0.000		eed Rate	0 99999
οA		0.0	000		0.000		Mult S	0-1 24000
• C		0.0	000		0.000	¢	Cur Tool	T
i Pts:							fotal No.	7
	50.000		0.000		0.000	0	Cur No.	(
Py1:	0.000	Py2	0.000		0.000	(Cycle Times	0
	nter Operatio					١	Work Time	00:00:00
		oint Px1 and pr oint Px2 and pr			it and set the)	zero;	G49 H 0	

Figure 5-99 X=100

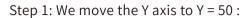
Step 4: Press the "Middle X" key (F2), the system will record the second point, and calculate the Middle point, and set this point position as the Zero.

CONT	READY	5axis testing.NC		N	lonitor	2020	01/26 22:52:57	7 GI	Jest
G5	4	Ma	ch		Abs		FRO		100%
οX	-	100.00		2	5.000		SRO		100%
θŶ		0.00			0.000		SJR	Low	100%
۰Ż		0.00			0.000		Feed Rate	0	
۰Ā		0.00			0.000		MultS	0-1	24000
• C		0.00	00		0.000		Cur Tool		T1
4 Pts:							Total No.		7
Px1:	50.000	Px2:	100.000	Pxm:	75.000		Cur No.		0
Py1:	0.000	Py2	0.000	Pym:	0.000		Cycle Times		0
Mannal	Center Opera	tion(X):					Work Time	00	:00:00
		point Px1 and pres point Px2 and pres			and set the)	(zero;	G49 H 0		
	Set X	Middle X	Set Y		ddle Y			3Pts	

Figure 5-100 Find Middle Point in X Axis

5.1.11.2 Find Middle Point in Y Axis

Now we set a start point is Y = 50, an end point is Y = 100. We need to find a Middle from this two point.



CONT	READY	Saxis testing.N	с	N	Ionitor	2020/01/26 22:53:1	3 Guest
G54	4	Ma	ach		Abs	FRO	100%
X		100.0		2	5.000		100%
۰Ŷ		50.0			0.000		Low 100%
ъZ		0.0			0.000		0 99999
λs		0.0			0.000	Mult S	0-1 24000
° C		0.0	000		0.000	Cur Tool	T1
Pts:						Total No.	7
	50.000		100.000		75.000	Cur No.	0
Py1:	0.000	Py2	0.000	Pyrn:	0.000	Cycle Times	0
tannal C	enter Opera	ation(X):				Work Time	00:00:00
		e point Px1 and pr e point Px2 and pr			and set the X	G49 H 0	
	Set X	Middle X	Set Y		ddle Y		3Pts

Figure 5-101 X=50

Step 2: Press "Set Y" (F3)

Then the first point is saved.

CONT	READY 5	5axis testing.NC	;	N	Aonitor	2020/01/26 22:5	53:16	Guest
G	54	Ma	ch		Abs	FRO		100%
οX		100.0		2	5.000			100%
θŶ		50.0			0.000		Low	100%
οŻ		0.0			0.000		⊧ 0	
θA	Ι	0.0	00		0.000	MultS	0-1	24000
• (0.0	00		0.000	Cur Tool		T1
4 Pts:			V			Total No.		7
Px1:		Px2:	100.000	Pxm:	75.000	Cur No.		0
Py1:	50.000	Py2	0.000	Pym:	0.000	Cycle Tim	es	0
Manna	al Center Operati	on(X):				Work Tim	ie 0	0:00:00
		oint Px1 and pre- oint Px2 and pre-			and set the 2	G49H0		
	Set X	Middle X	Set Y		iddle Y		3Pts	

Figure 5-102 First point saved

Step 3: Move the Y axis to Y = 100 :

CONT	READY	5axis testing.NC		N	Ionitor	2020	01/26 22:	53:31	G	uest	
G5	4	Ma	ch		Abs		FRO			1005	
οX		100.00		2	5.000		SRO			1005	6
θŶ		100.00	0	10	0.000		SJR		Low	1005	
οZ		0.00	0		0.000		Feed Rat	e	0		
οA		0.00	00		0.000		Mult S		0-1	2400	0
• C		0.00			0.000		Cur Tool			T	1
4 Pts:							Total No			i	7
	50.000	Px2:	100.000	Pom:	75.000		Cur No.				0
Py1:	50.000	Py2	0.000	Pyrne	0.000		Cycle Tin	nes		(0
	Center Operati						Work Tin	ne	00	:00:00	D
		point Px1 and pres point Px2 and pres	s [Set X] to set; s [Middle X],get_mi	idpoint	and set the X	26101	G49 H 0				
	Set X	Middle X	Set Y	Mi	ddle Y			3	BPts	Т	
-			Figure 5-1	03	Y=100						

Step 4: Press the "Middle Y" key (F4), the system will record the second point, and calculate the Middle point, and set this middle point position as the Zero.

CONT	READY	5axis testing.NC		Monitor	2020/0	1/26 22:53:35	Guest
G5 X Y Z A	4	Ma 100.00 100.00 0.00 0.00	00 00 00 00	Ab 25.00 25.00 0.00 0.00 0.00	0 0 0 0 0 0	RO RO JR eed Rate Iult S ur Tool	100 ⁴ 100 ⁴ Low 100 ⁴ 0 9999 0-1 2400 T
I:Take I		point Px1 and pres		Pxm: 75.000 Pym: 75.000 midpoint and set th		otal No. ur No. ycle Times /ork Time 549 H 0	00:00:0
▲]	Set X	Middle X Figur	Set Y re 5-104 Fir	Middle Y nd Middle point	in Y axis	3	Pts

Px1 = First point Position in X Axis in Mechanical Coordinate;

Py1 = First point Position in Y Axis in Mechanical Coordinate;

Px2 = The second point Position in X Axis in Mechanical Coordinate;

Py2 = The second point Position in Y Axis in Mechanical Coordinate;

Pxm = The Middle Point Position in X Axis in Mechanical Coordinate;

Pym = The Middle Point Position in Y Axis in Mechanical Coordinate.

5.1.11.3 Find a middle point for the Arc

						\sim	- Status
CONT READY	/udisk-sda1/5ax		Monitor	2020/01/27 00:28:4	17 Guest		Error Run USB Net
• X	Ma 0.00	00	Abs 0.000	SRO	100%		
∘Y ∘Z	0.00		0.000		Low 100%	ESC	Enter
• A	0.00	00	0.000	Mult S	0-1 24000		
• C 4 Pts:	0.00	00	0.000	Cur Tool Total No.	T1 7		
Px1: 0.000 Py1: 0.000			Pxm: 0.000 Pym: 0.000	Cur No.	0		🚯 🐼
			- y	Cycle Times Work Time	0 00:00:00		
1:Take the tool to the 2:Take the tool to the			aidpoint and set the)	G49 H 0			High/Low Speed
▲ Set X	Middle X	Set Y	Middle Y		3Pts		
▲ Set X	Middle X	Set Y	Middle Y		3Pts		
							Break Point Resume
▲ F1	F2	F3	F4	F5	F6		Resume
							ា
K2 K2	์ 🛛 🕅	4 K5	<mark>К6</mark> К		CONT C TryCut	START	
K2 K2				SPINDLE	C Q TryCut STEP MPG	START	
<1 K2	Fi	4 K5 gure 5-105		6 Go to Middl	тусиt sтер мрс		
CONT	Fi READY Saxi			SPINDLE	PryCut STEP MPG	01:03 Gu	PAUSE RESET
CONT G54	Fi READY Saxi	gure 5-105 is testing.NC Mac	5 Press F	6 Go to Middl Monitor Abs	ryCut STEP MPG	01:03 Gu	PAUSE RESET
CONT G54 • X	Fi READY Saxi	gure 5-105 is testing.NC Mac 0.00	5 Press F	6 Go to Middl Monitor Abs 0.000	PryCut STEP MPG Ie Arc Page 2020/01/26 23:0 FR0 580	01:03 Gu	PAUSE RESET
CONT G54	Fi READY Saxi	gure 5-105 is testing.NC Mac 0.00 0.00	5 Press F h 0 0	6 Go to Middl Monitor Abs 0.000 0.000	PryCut STEP MPG le Arc Page 2020/01/26 23:1 2020/01/26 23:1 SRO SRO SRO SIT SIT	01:03 Gu Low	est 100%
CONT G54 • X	Fi READY Saxi	gure 5-105 is testing.NC 0.000 0.000 0.000 0.000	5 Press Fr 0 0 0 0 0	6 Go to Middl Monitor Abs 0.000 0.000 0.000 0.000	PyCut STEP MPG	01:03 Gu Low e 0 9	PAUSE RESET
CONT G54 • X	Fi READY Saxi	gure 5-105 is testing.NC Mac 0.000 0.000 0.000	5 Press Fr 0 0 0 0 0	6 Go to Middl Monitor Abs 0.000 0.000 0.000	PyCut STEP MPG	01:03 Gu Low e 0 9	PAUSE RESET
CONT G54 • X • Y • Z • A • C Arc 3 pts.	Fi	gure 5-105 is testing.NC 0.00 0.00 0.00 0.00 0.00	5 Press Fr 0 0 0 0 0 0	6 Go to Middl Monitor Abs 0.000 0.000 0.000 0.000 0.000	PyCut STEP MPG Ie Arc Page 2020/01/26 23: FRO SRO SIR Feed Rate Mult S Cur Tool Total No.	01:03 Gu Low e 0 9 0-1	PAUSE RESET
CONT G54 • X • Y • Z • A • C Arc 3 pts.	Fi READY Saxi	gure 5-105 is testing.NC 0.000 0.000 0.000 0.000	5 Press Fr 0 0 0 0 0	6 Go to Middl Monitor Abs 0.000 0.000 0.000 0.000	PyCut STEP MPG Ie Arc Page 2020/01/26 23: FRO SRO SIR Feed Rate Mult S Cur Tool Total No. Cur No.	01:03 Gu Low e 0 9 0-1	PAUSE RESET
CONT G54 • X • Y • Z • A • C	Fi READY Saxi	gure 5-105 is testing.NC Mac 0.000 0.000 0.000 0.000	5 Press Fi 0 0 0 0 0 0 0 0 0 0 0 0 0	6 Go to Middl Monitor Abs 0.000 0.000 0.000 0.000 0.000	PyCut STEP MPG Ie Arc Page 2020/01/26 23: FRO SRO SIR Feed Rate Mult S Cur Tool Total No.	01:03 Gu Low e 0 9 0-1	PAUSE RESET
CONT G54 • X • Y • Z • A • C Arc 3 pts. * (1:Move to 2:Move to	First pts: 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0	gure 5-105 is testing.NC Mac 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	5 Press Fi	6 Go to Middl Monitor Abs 0.000 0.000 0.000 0.000 0.000 0.000	PyCut STEP MPG	01:03 Gu Low e 0 9 0-1	PAUSE RESET
CONT G54 • X • Y • Z • A • C Arc 3 pts. * (1:Move to 2:Move to	First pts: 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0	gure 5-105 is testing.NC Mac 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	5 Press Fi	6 Go to Middl Monitor Abs 0.000 0.000 0.000 0.000 0.000	PyCut STEP MPG	01:03 Gu Low e 0 9 0-1	PAUSE RESET
CONT G54 • X • Y • Z • A • C Arc 3 pts • X • C • C • C • C • C • C • C • C • C • C	First pts: 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0	gure 5-105 is testing.NC Mac 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	5 Press Fi	6 Go to Middl Monitor Abs 0.000 0.000 0.000 0.000 0.000 0.000	PyCut STEP MPG	01:03 Gu Low e 0 9 0-1	PAUSE RESET

Here we also take an example to introduce the function.

To find a middle point for an Arc, we need to set 3 points on the Arc. Lets say, the first point is X = 50 / Y = 100, the second point is X = 100 / Y = 50, the third point is X = 50 / Y = 0.

Step 1: Set the first Point Position: We move the machine to X = 50 / Y = 100:

CONT	READY	Saxis testing.NC		Monitor	2020/01/26 23:01:15	Guest
G	54	Mac	h	Abs	FRO	100%
ъX		50.00	0	50.000	SRO	100%
÷Ϋ́		100.00		100.000		Low 100%
οZ		0.00	0	0.000	Feed Rate	0 99999
οA		0.00		0.000	Mult S	0-1 24000
۰C		0.00	0	0.000	Cur Tool	T1
Arc 3 p	its:				Total No.	7
	First pts:	Second pts:	Third pts:		Cur No.	0
X		0.000	0.000	0.000	Cycle Times	0
	0.000	0.000	0.000	0.000		-
		oint and press [Set 1]:			Work Time	00:00:00
		d point and press [Set joint and press[Middl		a send and it to serve a	G49 H 0	
30.000.00	e to the third p	come and press[Midel	ejager centrer of ar	c and set it to zero;		
	Set 1	Set 2	Middle			4pts
		Figur	e 5-107 X	=50,Y=100		

Step 2:Press "Set 1" Key (F1), then the first point Position is saved.

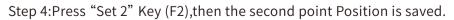
MPG	RE.	ADY 2	3232.tx	t				10	20	00/12/22	2 05:13:4	9 G	uest
Stat	Port Na	ame						Enable		Pin No).	Polar	ity i
•	X-axis s	ervo ala	arm sign	al				×		NULL		N	
			arm sign					×		NULL		N	
			irm sign	al				×		NULL		N	
		alarm :						×		NULL		N	
			alarm si					×		NULL		ZZZZ	
			hard li					×		NULL		. N	
			hard lii hard lir					×		NULL		Ň	
			xis hard					××		NULL		Ň	
			xis hard					x		NULL		Ň	
			hard lin					ŵ		NULL		Ň	
			hard lin					x		NULL		Ň	
IN	IN01	INC2	IN03	IN04	IN05	IN06	IN07	IN 08	IN09	IN10	IN11	IN12	IN13
	IN14	1N 1 5	IN16	IN17	IN 18	IN19	IN 20	IN 21	IN22	IN23	IN 24		
MPG	X1	X10	X100	HX	HY	HZ	ΗA	HB			54)
OUT	OUT01	OUT02	OUT03	OUT04	OUT05	OUT06	OUT07	OUT08	OUT09	OUT10	0UT11	0UT12	OUT13
	OUT14	OUT15	OUT16	OUT17	OUT18	OUT19	OUT20	OUT21					
	Out Op	pen	Out	lose			Chane	ze Polari	ity				

Figure 5-108 First point Position is saved

Step 3: Set the second Point Position: We move the machine to X = 100 / Y = 50:

CONT READY	Saxis testing.NC		Monitor	2020/01/26 23:01:32	Guest
G54	Mac	:h	Abs	FRO	100%
οX	100.00	0	100.000	SRO	100%
۰Ŷ	50.00		50.000		Low 100%
۰Z	0.00	0	0.000	Feed Rate	0 99999
• A	0.00	0	0.000	Mult S	0-1 24000
• C	0.00	0	0.000	Cur Tool	T1
Are 3 pts:				Total No.	7
	Second pts:	Third pts:		Cur No.	0
X: 50.000 X: 100.000	0.000	0.000	0.000	Cycle Times	0
	oint and press [Set 1]		0.000	Work Time	00:00:00
	d point and press [Set oint and press[Middl		c and set it to zero:	G49 H 0	
▲ Set 1	Set 2	Middle			4pts
	Eigur	9.5_109 X	-100 V-50		

Figure 5-109 X=100,Y=50



CONT READY	5axis testing.NC		Monitor	2020/01/27 00:23:55	Guest
G54	Mac	:h	Abs	FRO	100%
οX	100.00		100.000		100%
۰Ŷ	50.00		50.000		Low 100%
۰Z	0.00	Ō	0.000	Feed Rate	0 99999
• A	0.00	0	0.000	MultS	0-1 24000
• C	0.00	0	0.000	Cur Tool	T1
Are 3 pts:				Total No.	7
First pts:	Second pts:	Third pts:	Center:	Cur No.	0
X: 50.000 Y: 100.000	100.000 50.000	0.000	0.000	Cycle Times	0
1:Move to the first poi			5.000	Work Time	00:00:00
2:Move to the second ; 3:Move to the third po			and set it to zero-	G49 H 0	
and a second construction of the second s	and presspondu	epger center of arc	and sector bero,		
▲ Set 1	Set 2	Middle			4pts

Figure 5-110 The second point Position is saved

Step 5: Set the third Point Position: We move the machine to X = 50 / Y = 0:

CONT READY	5axis testing.NC		Monitor	2020/01/26 23:01:47	Guest
G54	Mac	h	Abs	FRO	100%
a X	50.00		50.000		100%
γŶ	0.00		0.000	SJR	Low 100%
θŻ	0.00		0.000	Feed Rate	0 99999
• A	0.00		0.000		0-1 24000
• C	0.00	0	0.000	Cur Tool	T1
kre 3 pts:				Total No.	7
First pts:	Second pts:	Third pts:		Cur No.	0
X: 50.000	100.000	0.000	0.000	Cycle Times	0
Y: 100.000	50.000 point and press [Set 1];	0.000	0.000	Work Time	00:00:00
	nd point and press [Set 4]; I point and press [Middle		and set it to zero;	G49 H 0	
Set 1	Set 2	Middle			4pts
		igure 5-111	X=50.Y=0		

Step 6: Press "Middle "Key (F3), then the third point Position is saved. And The system calculate the Middle point from the 3 point position, and set this middle point position as the Zero in the workpiece coordinate (G54 - G59).

CONT	READY	5axis testing.NC		Monitor	2020	/01/26 23:01:54	G	uest
G5	4	Mac	h	Abs		FRO		100%
οX		50.00		0.000		SRO		100%
θŶ		0.00		-50.000		SJR	Low	100%
۰Z		0.00		0.000)	Feed Rate	0	99999
οA		4.1 0.00		029.000		Milesw	0-1	24000
۰C		0.00	0	0.000)	Cur Tool		T1
Are 3 pts	S:					Total No.		7
	First pts:	Second pts:	Third pts:	- Center:		Cur No.		0
	00.000	100.000	50.000	50.000		Cycle Times		0
Y: 1-Move	100.000 to the first r	50.000 point and press [Set 1];	0.000	50.000		Work Time	00	:00:00
2:Move	to the secon	d point and press [Set	2];			G49 H 0		100100
3:Move	to the third j	point and press[Middle	e],get center of are	and set it to zero;				
▲	Set 1	Set 2	Middle				4pts	T
		Figur	e 5-112 Find	I Middle for the	Arc			



Arc 3 pts				
	First pts:	Second pts:	Third pts:	Center:
X:	50.000	100.000	50.000	50.000
Y:	100.000	50.000	0.000	50.000

First Pts:

X: The First Point Position in X axis in Mechanical Coordinate;

Y: The First Point Position in X axis in Mechanical Coordinate; Second Pts:

X: The second point Position in X Axis in Mechanical Coordinate;

Y: The second point Position in Y Axis in Mechanical Coordinate; Third Pts:

X: The Third point Position in X Axis in Mechanical Coordinate;

Y: The Third point Position in Y Axis in Mechanical Coordinate; Center Pts:

X: The Center Points in X Axis in Mechanical Coordinate;

Y: The Center Points in X Axis in Mechanical Coordinate.

5.1.12 Work Record

CONT READY	Saxis testing.NC	Monitor 20	20/01/26 19:54:28	Super	\frown	Status —
G54 • X • Y • Z • A • C	Mach 10.000 10.000 5.000 0.000 0.000	Abs 0.000 0.000 0.000 0.000 0.000	FRO SRO SJR L Feed Rate Mult S Cur Tool	100% 100% .0W 100% 0 99999 0-1 24000 T1	ESC	Error Run USB Net
			Total No. Cur No. Cycle Times Work Time G19 H 0	7 0 0 00:00:00	7	High/Low 5 6
Manual	Coord Set MDI	Middle Wo	ork Record Sort	Proces		
▲ F1 K1 K2	F2 F3	F4 K6 K7				Break Point Resume

Figure 5-113 Press F5 key to "Work Record" Page

In the Work Record Page, we can check out the work record after the controller power on.

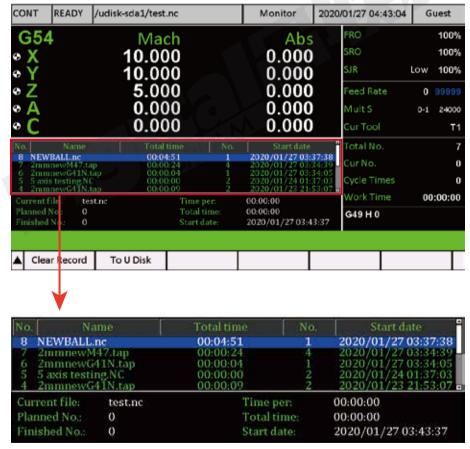


Figure 5-114 "Work Record" Page

No.: The Processed G-code file Number;

Name: The G-code file name;

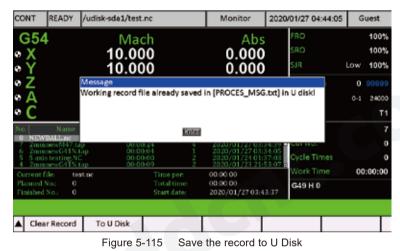
Total Time: The according G-code file processing time;

No.: The processing times of the according G-code file;

Start date: The G-code file start processing time;

Current File: The current G-code file, if you press G-code file, system will process the current file.

Press F2, the system will export the working record to USB stick and named it as " PRO-CESS MSG.txt".



Press F1, The System clear all the record.



Figure 5-116 Clear the working record

5.1.13 Sort Process

"Sort Process" function is in reservation now.

CONT READY Saxis testing	,NC Monitor	2020/01/26 19:54:28	Super	Status —
• X 10 • Y 10	Alach Al .000 0.00 .000 0.00	O SRO O SJR LA	100% 100% ow 100%	Error Run USB Net
• A 0.	.000 0.00 .000 0.00 .000 0.00	0 Mult S 0 Cur Tool	0 99999 0-1 24000 T1	< 7 ►
		Total No. Cur No. Cycle Times	7 0 0	
		Work Time G49 H 0	00:00:00	4 High/Low Speed 5 6
Manuel Coord Se		Work Record Sort P		2 Sreak Point Resure
K1 K2 K3		F5 F6		
		SPINDLE TryCu	UT STEP MPG	START PAUSE RESET
F	Figure 5-117 Press F	6 kev to "Sort Pro	cess" Page	
	Figure 5-117 Press Fi	6 key to "Sort Pro	cess" Page 2020/01/27 05:	07:49 Guest
CONT READY /uc	disk-sda1/test.nc Mach	Monitor : Abs		07:49 Guest 100%
CONT READY /ud	disk-sda1/test.nc Mach 10.000 10.000	Monitor 2 Abs 0.000 0.000	2020/01/27 05: FRO SRO SJR	100% 100% Low 100%
CONT READY /uc G54 • X	disk-sda1/test.nc Mach 10.000	Monitor 2 Abs 0.000	2020/01/27 05: FRO SRO	100% 100% Low 100%
CONT READY /u G54 ↔ X ↔ Y ↔ Z ↔ A ↔ C	disk-sda1/test.nc Mach 10.000 10.000 5.000 0.000 0.000	Monitor 2 Abs 0.000 0.000 0.000 0.000 0.000	2020/01/27 05: FRO SRO SJR Feed Rat Mult S Cur Tool	100% 100% Low 100% e 0 99999 0-1 24000 T1
CONT READY /uc G54 © X © Y © Z © A	disk-sda1/test.nc Mach 10.000 10.000 5.000 0.000	Monitor 2 Abs 0.000 0.000 0.000 0.000 0.000	2020/01/27 05: FRO SRO SJR Feed Rat Mult S Cur Tool	100% 100% Low 100% e 0 99999 0-1 24000 T1
CONT READY /uc G54 ↔ X ↔ Y ↔ Z ↔ A ↔ C	disk-sda1/test.nc Mach 10.000 10.000 5.000 0.000 0.000	Monitor 2 Abs 0.000 0.000 0.000 0.000 0.000	2020/01/27 05: FRO SRO SJR Feed Rat Mult S Cur Tool Cur No. Cycle Tin	100% 100% Low 100% e 0 99999 0-1 24000 T1 . 7 0 nes 0
CONT READY /uc G54 ↔ X ↔ Y ↔ Z ↔ A ↔ C	disk-sda1/test.nc Mach 10.000 10.000 5.000 0.000 0.000	Monitor 2 Abs 0.000 0.000 0.000 0.000 0.000	2020/01/27 05: FRO SRO SJR Feed Rat Mult S Cur Tool () Total No Cur No.	100% 100% Low 100% e 0 99999 0-1 24000 T1 . 7 0 nes 0
CONT READY /uc G54 ↔ X ↔ Y ↔ Z ↔ A ↔ C	disk-sda1/test.nc Mach 10.000 10.000 5.000 0.000 0.000	Monitor 2 Abs 0.000 0.000 0.000 0.000 0.000	2020/01/27 05: FRO SRO SJR Feed Rat Muit S Cur Tool Cur No. Cycle Tin Work Tin	100% 100% Low 100% e 0 99999 0-1 24000 T1 . 7 0 nes 0

Figure 5-118 Press F6 key to "Sort Process" Page

In the Sort Process Page, we can organize, sort, and set times and sequenze of different G-code files in our control system.

Press "New" Key (F3) to import some G-code file from the Local Disk. Please note that the files can only be imported from the Local Disk. If you have the files in USB-stick, please copy them into the local disk firstly.

CONT	READY	/udisk-sda1/test	.nc	Program	2020/01/27 0	5:08:49	Guest
Local	Disk(O)	Name			Size [DIR]		y time * 24 09:19
U Di	sk(N)	2mmnewM47.ta ball1.nc			879 B 1.58 M	2020/01/ 2020/01/	27 13:05 27 13:05
Net D	Disk(G)	2mmnewG41N.t NEWBALL.nc 2mmnew.tap	ap		2.37 M	2020/01/	27 13:05 27 13:05 27 13:05
Cur Pat	h: /local	Free	Space: 824.	77 MB			
🔺 Swi	tch disks	Del	Rename	Copy To U Disk	New	Ec	dit 🕨

Figure 5-119 Import the G-code files from the Local Disk

CONT	READY	/udisk-sda1/test	.nc	Monitor	2020/01/27 05	:09:14 Guest
G54	54 Mach		Abs	FRO	100%	
οX		10.00	00	0.000	SRO	100%
θY		10.00		0.000		Low 100%
۰Z		5.00	00	0.000	Feed Ra	te 0 99999
οA		0.00		0.000		0-1 24000
• C	0.000		0.000	Cur Too	T1	
No.	Status		Name(local)	(G54/G		». 7
2	READY	0/1 /	/local/ball1.nc local/2mmnewM47	G54 Atap G54	Cur No.	0
2345	READY READY READY	071	ocal/2mmnewG411 /local/NEWBALL. /local/2mmnew.t.	ne G54	Cycle Tir	mes O
5	KEADT	0/1	/iocal/2mmnew.t	ap 0.51	Work Ti	me 00:00:00
					G49 H 0)
	Up	Down	New	Del	Times	Load List 🕨
Figure 5-120 The G-code files imported in						

www.nvcnc.net