

DDCS-*Expert*

Standalone Motion Controller Users Manual V1



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深圳市众联拓数控科技有限公司

Shenzhen Digital Dream Numerical Technology Co., Ltd.

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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

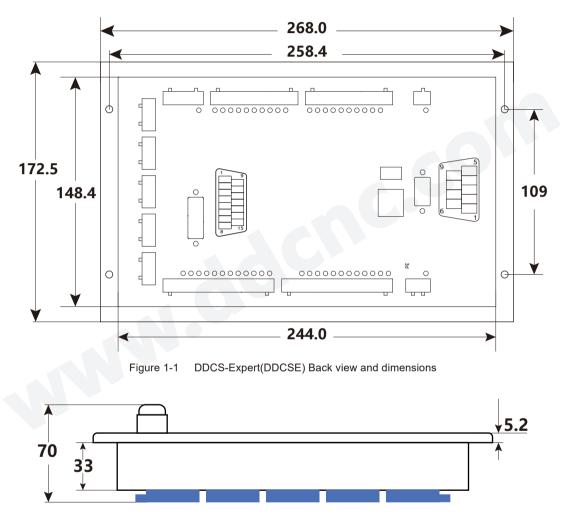


Figure 1-2 (DDCSE) Side view and dimensions

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

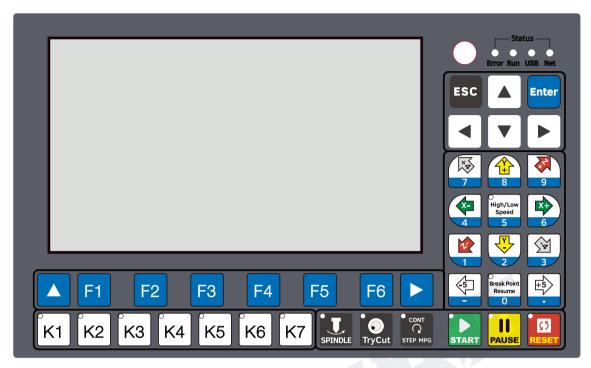


Figure 2-1 DDCS-Expert (DDCSE) Controller Panel

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				^			-				
	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	Close			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	signal √: Means the					
the status is	System alarm signal	signal is	to output 21	Positive pole			
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".

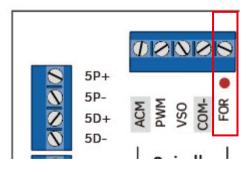


Figure 3-3 FOR Output Port

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	NT 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.

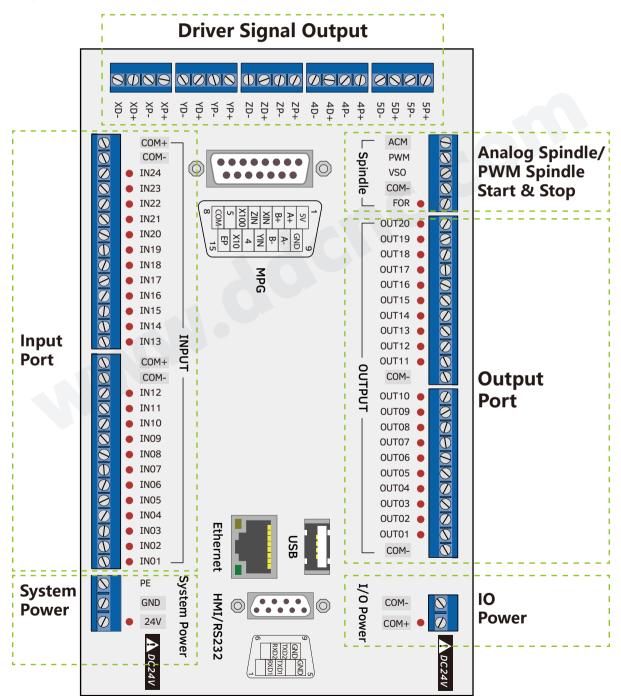
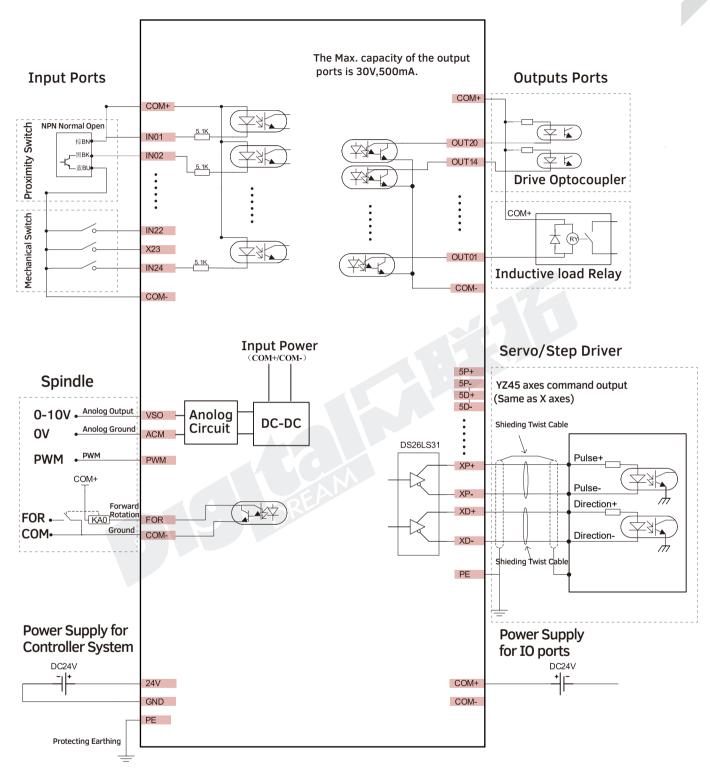
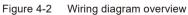


Figure 4-1 Controller Wiring Ports Overview





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.

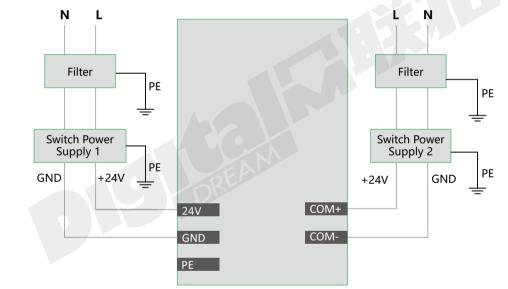


Figure 4-3 Power Supply Wiring Methods

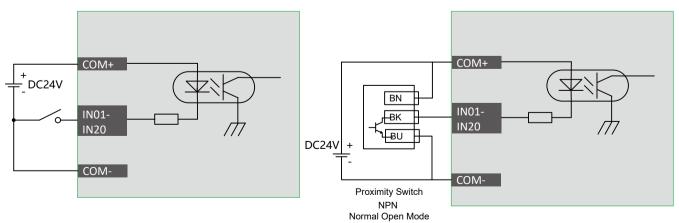
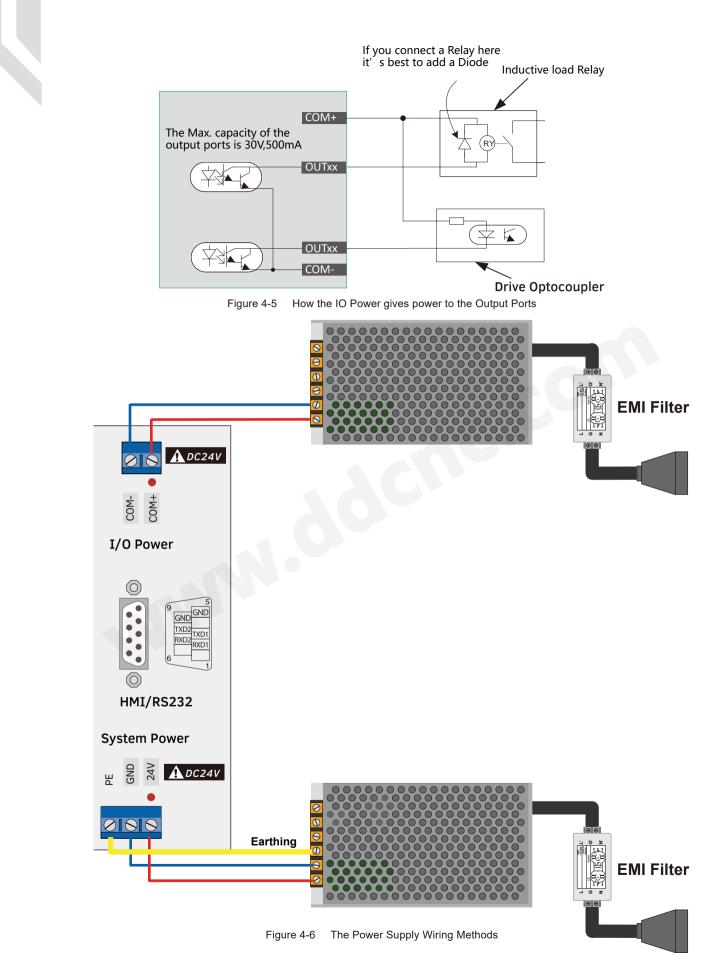


Figure 4-4 How the IO Power gives power to the Input Ports



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.

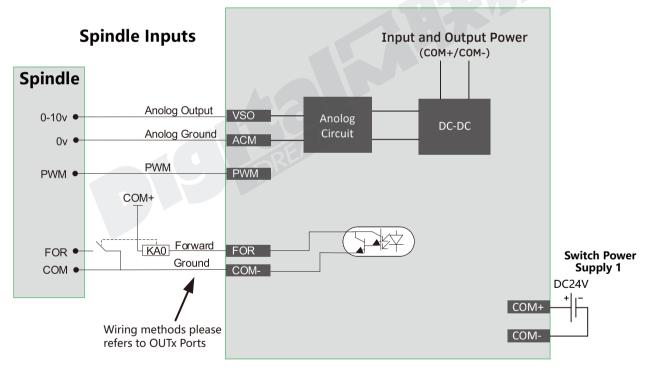


Figure 4-7 Spindle Wiring Methods

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.

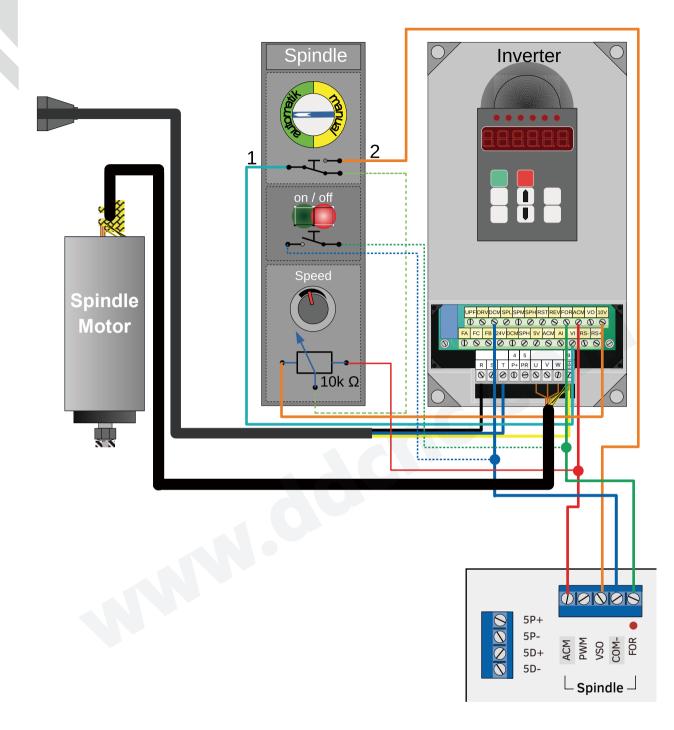


Figure 4-8 Spindle Wiring Example

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

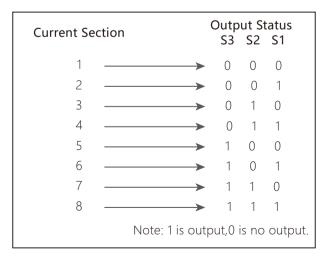


Figure 4-10 The Relationship between the Current Section and Output Status

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:

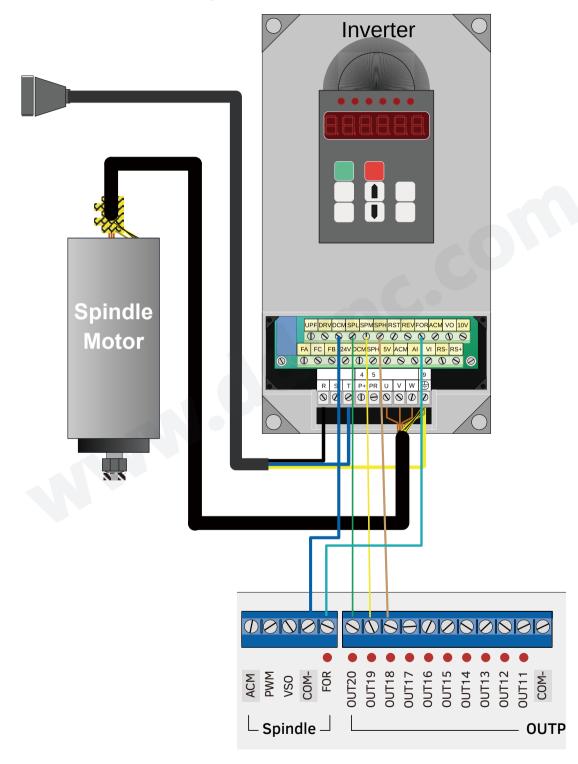


Figure 4-11 The Wiring for the Multi-Speed Spindle

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.

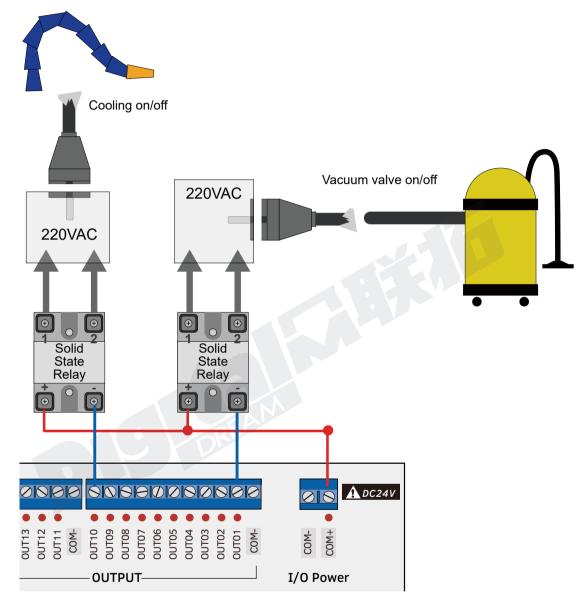


Figure 4-12 The Relay Wiring

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 4-13, Max. 1Mhz per axis. There is 3 or 4 or 5 axis for optional.

The Figure 4-13 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.

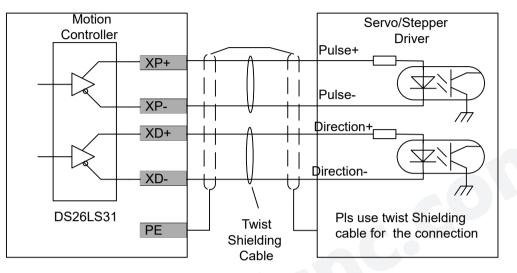


Figure 4-13 Pluse and direction signal wiring methods

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

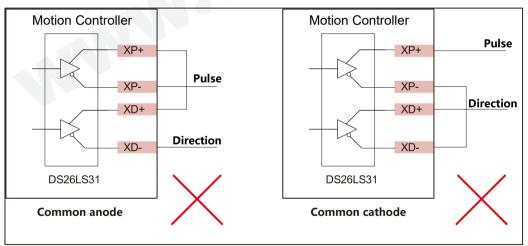
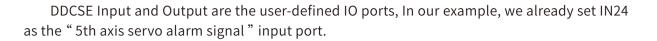


Figure 4-14 Wrong wiring of pulse and direction



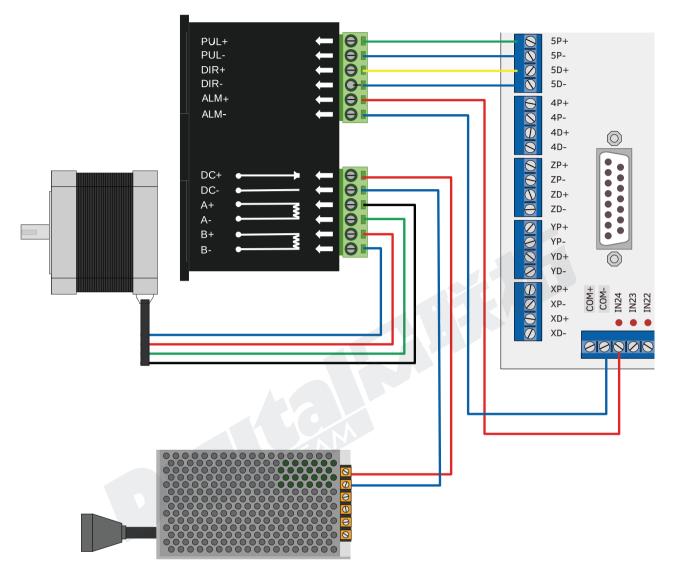


Figure 4-15 Stepper/Servo driver connect with DDCS Expert

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.

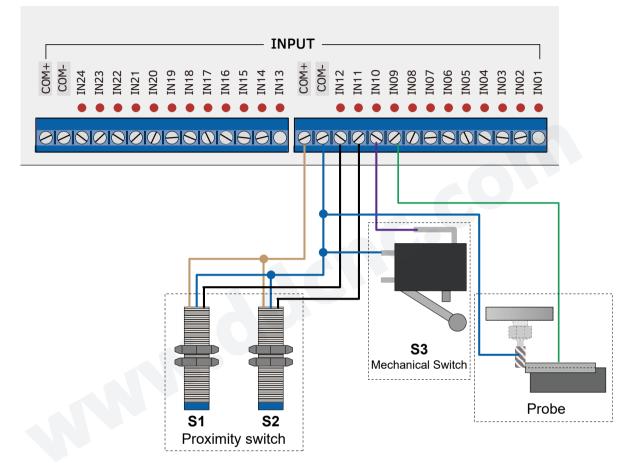


Figure 4-16 Proximity switch/Mecahnical switch and normal Probe wiring methods

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

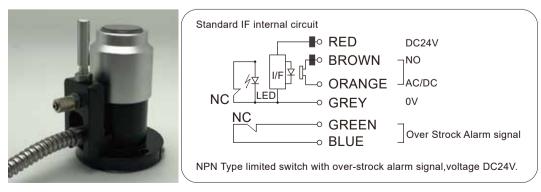


Figure 4-17 The Probe sensor with over-strock alarm signal

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":

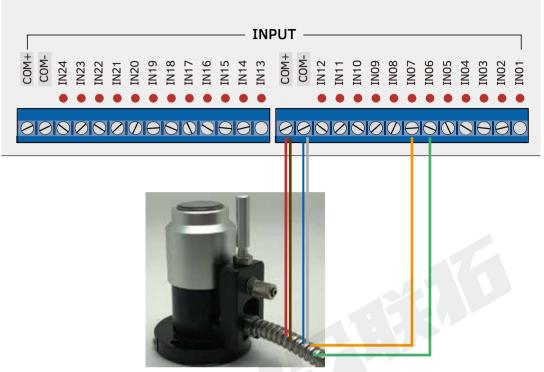
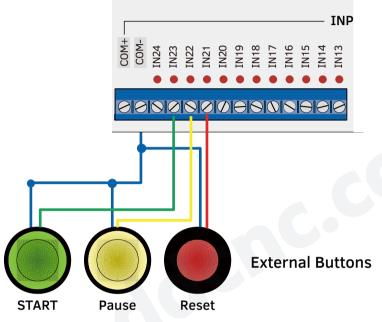


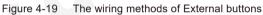
Figure 4-18 The wiring methods of Probe sensor with over-strock signal

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	20:	2020/01/29 00:00:08			Guest	
Stat	Port Na	ame					<u> </u>	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		N		
			hard li					×		NULL			2222	
			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	Guest		
Stat Port Name								Enable		Pin No.			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

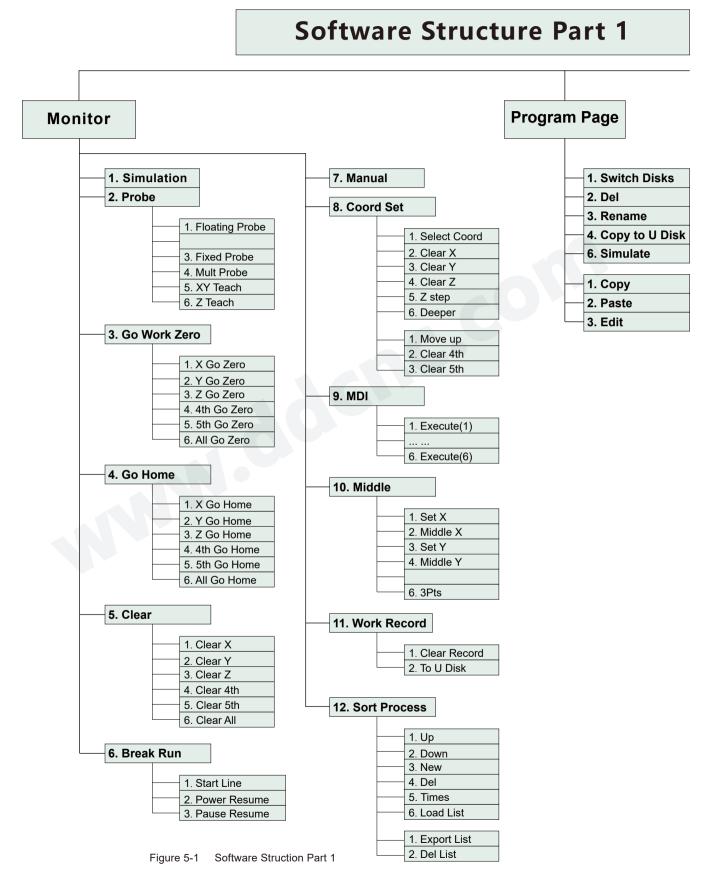
6

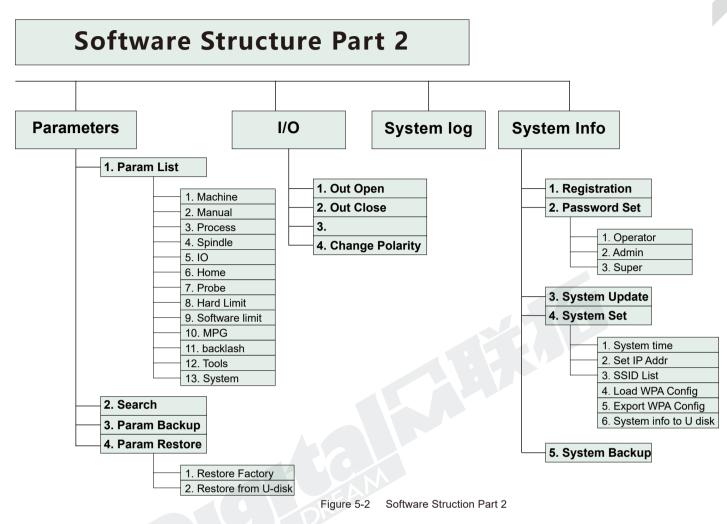
Series Port is for Modbus extension, it helps to extend with IO card, or the communication with PLC. If some users need it please contact factory and we will guide you for it.

		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 Monitor





5.1 The Main Page of the software

34		5	6	7		8	
)Y /udisk-sda1/bal	l1.nc	Monitor	2000/11/24	03:41:42	Guest	
G54	Ma	ch	Abs	FRO		100%	9
Х	0.0		0.000			100%	10
Y Z	0.0		0.000		Lo	ow 100%	11
Z	0.0		0.000		late	0 3000	12
A	0.0		0.000		g S	0 14000	13
В	0.0	00	0.000	Cur To	ol	T1	14
0:G40 G17 G49	9 G80 G90 G54			Total	No.	0	15
1:G00 X3. Y0.0	S24000 M03			CurN	o.	0	16
2:Z10.		2		Cycle		0	17
3:G01 Z3.1 F10				Work	Time	00:00:00	18
4:G01 X2.996 2	2.948 F3000. M08			G49 F	0		19
					_		
Monito	r Program	Param	10	System Log	System	n 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 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

5.1.2 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

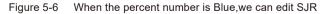
5.1.3 SJR/Jog Step

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	



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

500		0.001			
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 Distance					

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 5-10 new distance active

5.1.4 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%
SRO	100%
SJR	Low 100%
Feed Rate	0 3000
Analog S	0 24000
Cur Tool	T1
Total No.	0
Cur No.	0
Cycle Times	0
Work Time	00:00:00
G49 H 0	

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 Yes						
Set default F						



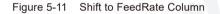


Figure 5-12

Ingore F from G-code file

Figure 5-13 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 5-14 Ingore FeedRate Value



Figure 5-15 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.

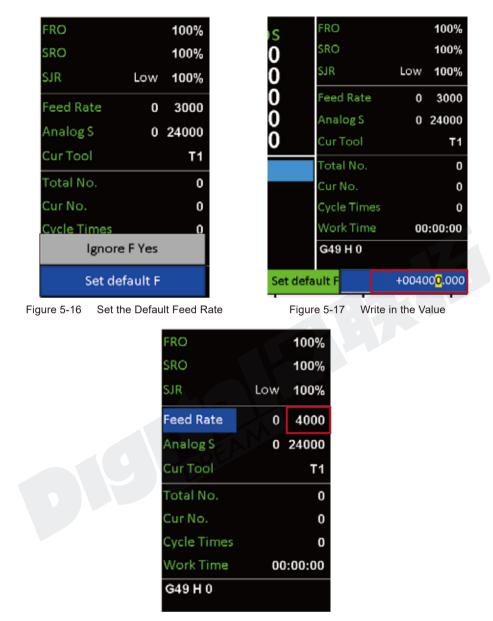


Figure 5-18 The new Feed Rate Value already set

5.1.5 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	READY	/udisk-sda1/test.nc			Param	2020/01/27	06:47:12	Super	
Paran	n List:	No.	Note				Value		
	Machine	e 0230 Execute action after Finished					No action		
	Manual	0282					2000.000		
	Process	0079	Spind Spind	e le interface type	_	_	Analog		
	Spindle	0080 0081	Spind	e mapping axis			A	nalog	
	10	0082	2 Maximum spindle speed				P	lu/dir	
	Home Probe	0083 0084	4 Stop spindle when program is paused?					Multi-speed	
Н	lard Limit	0085 0088					8	8	
Sof	ftware limit	0089					0.000		
	MPG	0092	IO Duration of M8/M9 commands				2.000		
I	Backlash	2.000 Zionation of Mis/M9 commands Ziono							
	Tools	Range:	$[0 \sim 2]$		Active:	Immediately	User. (Operator	
	System	Details: Spindle interface type.							
▲	Param List	Sear	ch	Param Backup	Param Restore				

Figure 5-19 3 different spindle modes

FRO	100%
SRO	100%
SJR	Low 100%
Feed Rate	0 4000
Analog S	0 24000
Cur Tool	T1
Total No.	0
Cur No.	0
Cycle Times	0
Work Time	00:00:00
G49 H 0	

Figure 5-20 Spindle in Analog Mode



Figure 5-21	Spindle in Pul/Dir Mode
-------------	-------------------------

G49 H 0

FRO

SRO

SJR

Feed Rate

Mult S

Cur Tool

Total No.

Cycle Times

Work Time

Cur No.

Figure 5-22 Spindle in Multi-Speed Mode

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) 🕢 or the 🔺 and 🛡 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%	FF	RO		100%	FR	0		100%
SRO		100%	SF	20		100%	SR	0		100%
SJR	Low	100%	SJ	R	Low	100%	SJF	2	Low	100%
Feed Rate	0	3000	Fe	ed Rat	e 0	3000	Fe	ed Rate	0	3000
Analog S	0	24000	A	nalog S	0	24000	An	alogS	0	24000
Cur Tool		T1	C	ur Tool		T1	Cu	r Tool		T1
Total No.		0	Т	otal No.		0	То	tal No.		0
Cur No.		0	C	ur No.		0	Cu	r No.		0
Cycle Times		0	C)	/cle Tim		0	Су	cle Times		0
Work Time	00	0:00:00		lg	nore S Yes		W	ork Time	00):00:00
G49 H 0				Se	et default S		G4	49 H O		
	RO RO		100% 100%	C P		RO RO		100% 100%		
	RO JR	Lo	100% w 100%			RO IR	Low	100% 100%		
	eed Rat		0 3000			eed Rate	0	3000		
	nalog S		0 24000			nalog S	0	24000		
C	ur Tool		T1		С	ur Tool		T1		
Т	otal No),	0		т	otal No.		0		
C	ur No.		0		С	ur No.		0		
C	vcle Tir		0		C	ycle Time	S	0		
		gnore S N	10		14	/ork Time	00	0.00.00		
	<u> </u>	gnoresi	10		V 1	ork time	00	0:00:00		

Figure 5-26 Ingore Analog S Value

Figure 5-27 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		T1
Total No.		0
Cur No.		0
Cvcle Times		0
Ignore	F Yes	
Set def	fault S	



Figure 5-28 Set the Default Spindle Speed

Figure 5-29 Write in the Value

FRO	100%
SRO	100%
SJR	Low 100%
Feed Rate	0 3000
Analog S	0 40000
Cur Tool	Т1
Total No.	0
Cur No.	0
Cycle Times	0
Work Time	00:00:00
G49 H 0	

Figure 5-30 The new Spindle speed setting is done

5.2 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 :

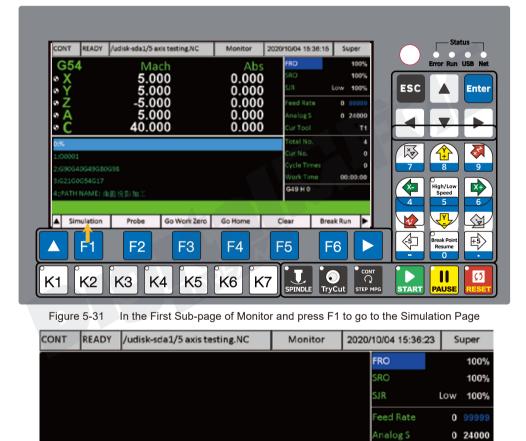


Figure 5-32 Simulation Page

Go Home

Go Work Zero

Cur Tool

Total No.

Cur No.

G49 H 0

Clear

Τ1

Δ

0 0 00:00:00

Break Run

Simulation

Probe

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

AUTO	BUSY	/udisk-sda1/5 ax	is testing.NC	Monitor	2020/	10/04 15:36	:31 S	uper
						FRO		100%
						SRO		100%
						SJR	Low	100%
						Feed Rate	49	10000
						Analog S	24000	24000
						Cur Tool		T1
						Total No.		4
						Cur No.		0
						Cycle Times		0
						Work Time	00	0:00:05
						G49 H 0		
Analy	sis2356							
▲ :	Simulation	Probe	Go Work Zero	Go Home	Cl	ear	Break Ru	in 🕨

Figure 5-33 Simulate a G-code file

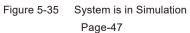
Important:

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-sda1/5axis	s testing.NC	Monitor	2020/01/24 01:1	1:02 5	Super
			8		FRO		1005
			健		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	5-34 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	Supe	er 🛛
			A		FRO		10	00%
) I		SRO		10	00%
			8		SJR	L	ow 10	00%
					Feed Ra	te 1	191 99	
			the state of the s		Mult S	2400	0-2 24	000
					Cur Too	I		T
					Total N			
			and the second se		Cur No.			
			1000		Cycle Ti	mes		(
		•	4		Work Ti	me	00:22	:2
					G43 H 0)		
alysis	212126							
Sir	nulation	Probe	Go Work Zero	Go Home	Clear	Brea	k Run	Т

Figure 5-36 System is in Simulation



Figure 5-37 System is in Simulation

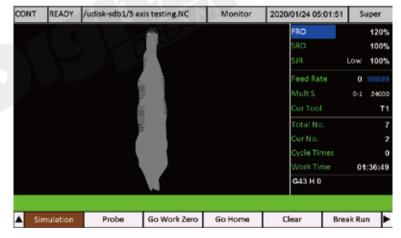


Figure 5-38 Simulation finished

5.3 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	h	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	Feach Z	Teach	
			Figure 5-39	Probe Page				

5.3.1 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.NO	:	Monitor	2020/10/04 17:21:2	3 Guest		Status —
G54 • X • Y • Z • A • C	Ma 5.00 50.99 50.99 40.00	00 00 56 00	Abs 0.000 0.000 83.178 0.000 0.000	FRO SRO SJR Feed Rate Analog S Cur Tool	100% 100% Low 100% 0 99999 0 24000 T1	ESC	Error Run USB M
2.[Fixed Probe]In	G54 T1 10.000 (Floating Probe),Pls m put the curter Nources obe several tools at on	Fixed Probe X Fixed Probe Y: Fixed Probe Z ove tool above the bi of the offset of 2 arc	10.000 10.000 10.000 lock and set Param 7 is after tool change,	G49 H 0	4 0 0 00:00:00	7	High/Low Speed 5 6
Floating Pro	be	Fixed Probe	Mult Probe	XY Teach	Z Teach		
▲ F1	F2	F3	F4	F5	F6 🕨	- -	Break Point Resume
			<u> </u>	7			

Figure 5-40 Floating Probe

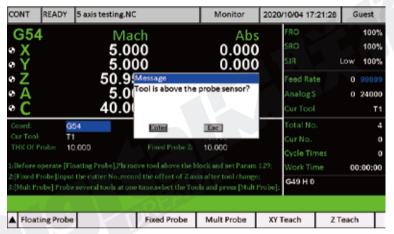


Figure 5-41 Star to Floating Probe

CONT READ	Y 5 axis tes	ting.NC	Monitor	2020/10/04 17:23:1	11 Guest
G54	-	Mach	Abs	FRO	100%
οX		5.000	0.000		100%
θŶ		5.000	0.000		Low 100%
۰Ż		2.010	20.099		0 99999
• A		5.000	0.000	AnalogS	0 24000
• C	4	0.000	0.000	Cur Tool	T1
Coord:	G54	Fixed Probe)	10.000	Total No.	4
Cur Tool:	T1	Fixed Probe 1		Cur No.	0
THK Of Probe:	10.000		10.000	Cycle Times	0
1:Defore operate	[Floating Prob	e],Pls move tool above the	block and set Param	129: Work Time	00:00:00
		Nourecord the offset of Z is at one time select the T		G49 H 0	
_					
Floating Provide America Pr	obe	Fixed Probe	Mult Probe	XY Teach	Z Teach

Figure 5-42 Floating Probe Finished

5.3.2 Fixed Probe

	Definition	Remark	Range		
#130	Is the fixed tool set valid?	Enable or Disable the Floating Probe	Yes/No		
#131	Probing cycle count	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.	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.

	Y 5 axis testing	NC	Monitor	2020/10/04 18:07:2	5 Guest		Status —
G54		lach	Abs		100%		Error Run USB N
οX		000 000	0.000 0.000		100% Low 100%	ESC	Ent
νŻ		000	0.000		0 99999		
• A	5.	000	0.000		0 24000		
• C	40.	000	0.000	Cur Tool	T1		I ▼ I P
Coord: Cur Took	G54 T1	Fixed Probe X: Fixed Probe Y:	10.000 10.000	Totel No. Cur No.	4	F	
THK Of Probe:	10.000		10.000	Cycle Times	ŏ		
				and the second second	· · · ·	7	X 9
2 [Fixed Probe]In		move tool above the bi- seord the offset of 2 ad- one time select the Too	is after tool change	129; Work Time	00:02:00		O High/Low
2 [Fixed Probe]In			is after tool change	129; Work Time	00:00:00		
2 [Fixed Probe]In	put the cutter No, r obe several tools at		is after tool change	129; Work Time G49 H 0	00:00:00		High/Low Speed 5 6
2 [Fixed Probe]fr 3 [Mult Probe] Pr	put the cutter No, r obe several tools at	ecord the offset of 2 act one time select the Too	is after tool change Is and press [Mult i	129; Work Time G49 H 0			High/Low Speed
2 [Tool Probe]fr 3 [Mult Probe] Pr	put the cutser No.,r obe several took at	reard the of first of 2 ac one time solect the Too	is after tool charge to and press [Mult i Mult Probe	129: Work Time G49 H 0 XY Teach 2	Z Teach		High/Low Speed 5 6 0 3
2 [Fixed Probe]fr 3 [Mult Probe] Pr	put the cutter No, r obe several tools at	ecord the offset of 2 act one time select the Too	is after tool change Is and press [Mult i	129: Work Time G49 H 0 XY Teach 2			High/Low Speed 5 6

Figure 5-43 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 5-44 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 REA	DY 5 axis te	sting.NC	Monitor	2020/10/04 18:09:12	2 Guest
G54		Mach 0.000 0.000 3.862 0.000 0.000	Abs 5.000 5.000 5.533 -5.000 -40.000	SRO SJR Feed Rate Analog S	100% 100% Low 100% 0 99999 0 24000
2:[Fixed Probe]	Input the cutter	Fixed Probe X: Fixed Probe Y: Fixed Probe Z: Fixed Probe Z: No,record the offset of Z a ols at one time,select the To	10.000 10.000 block and set Param xis after tool change	G49 H 0	4 0 00:00:00
▲ Floating P	robe	Fixed Probe	Mult Probe	XY Teach Z	Teach

Figure 5-45 Fixed Probe Finished

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

5.4 Go work Zero

CONT READY 5 axis testing.NC Monitor 2020/01/25 19:14:01 Guest G54 1001 X ESC 100 Ente Ζ A 0-3 240 ſ 066 n. X¥ 00:00:0 G49 H 0 ligh/Lo Speed X Simulation Probe Go Work Zero Go Home Clear Break Run ► ﴾ أ∢ Break Poi 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 5-46 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 5-47 Sub-page of Go Work Zero

CONT READY	5 axis testing.NC		Monitor	2020/01/25 19:14	I:20 Guest
G54	Mac	:h	Abs	FRO	100%
x	0.00	0	0.000		100%
Ŷ	0.00		0.000		Low 100%
ŶZĄ	5.00		5.000		0 99999
А	0.00		0.000		0-1 24000
С	39.93	4	-0.066	Cur Tool	T1
				Total No.	7
				Cur No.	2
				Cycle Time	s 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 5-48 All axis Go Zero

5.5 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.

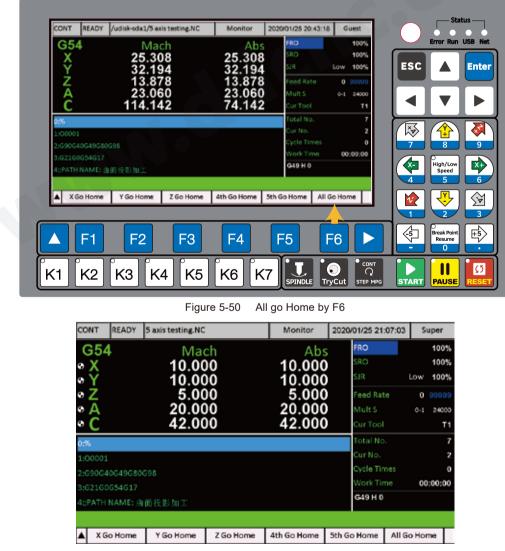
There are many Parameters related to the Home function, we need to understand them and try to set each parameters correctly for our own usage.

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/mir	
#109	Z-axis homing speed	Z-axis initial speed when Home	99~99999 mm/mir	
#110	4th-axis homing speed	4th-axis initial speed when Home	99~99999 mm/mir	
#111	5th-axis homing speed	5th-axis initial speed when Home	99~99999 mm/mir	
#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			
#239	5th-axis Mach zero offset			

CONT READY	5 axis testing.NC		Monitor	2020/01/25 19:44:15	Super		Status —	
G54 X Y Z A	Mac 25.30 32.19 13.87 23.06	84	Abs 25.308 32.194 13.878 23.060	SRO SJR I Feed Rate	100% 100% Low 100% 0 99999 0-1 24000	ESC	Error Run USB M	
C 0:% 1:00001 2:0900640649080	114.14		114.142		T1 7 2 0 00:00:00			- 18
3:62160654617 4:PATH NAME: 1	Probe	Go Work Zero	Go Home	G49 H 0 Clear Brea	ik Run 🕨		High/Low Speed 5 6 V - 2 3	2 1
▲ F1 K1 K2	F2 K3 K4	F3 4 K5	F4 K6 K	F5 F 7 Spindle Try	CONT	-	Break Point Resume	5

Figure 5-49 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 5-52 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 5-52 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 5-53. Because we already set the Parameters as below:

CONT	READY	5 axis tes	ting.NC	Param	2020/01/25	21:05:40	Super
Param Li	iste	No.	Note	-		Value	
Ma	chine	0114	Z-axis homing direct	tion		Positiv	Ne
M	anual	0115	4th-axis homing dir			Negat	
		0115	5th-axis homing dir			Negat	
Pri	ocess	0122	Mach position after			10.000	
Sp	indle	0123	Mach position after			10.000)
	10	0124	Mach position after			5.000	
		0125	Mach position after			20.000	
н	lome	0126	Mach position after			42.000	,
P	robe	0127 0235	Home after booting			Yes	
Har	d Limit	0235	X-axis Mach zero of Y-axis Mach zero of			0.000	
C. Com	are limit	0236	Z-axis Mach zero of			0.000	
		0237	4th-axis Mach zero			0.000	
0	4PG	0239	5th-axis Mach zero			0.000	
Bai	dash	V235				0.000	
Т	ools	Range:	[+999.000999.000] n	im Active:	Immediately	User: C	perator
Su:	stem	Details:	Mach position.				
39	steta						
Pa	iram List	Sea	rch Param Backi	p Param Restore			

Figure 5-53 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 5-54, that is because of #127 "Home after booting". If we don't need it, we just disable it.

CONT	READY							
		Ma	ch	Abs	5	FRO		100%
x		0.00		0.000		SRO		100%
Ŷ		0.00		0.000		SJR		100%
XYNAC		0.00	Message	0)	Feed Rat	99999	99999
Α		0.00	Go to home?	0)	Mult S	99999	99999
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		
м	lonitor	Program	Param	ю	Syste	em Log	System In	nfo

Figure 5-54 System ask If go to Home when Power on

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

5.6 Clear

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

CONT READY	5 axis testing.NC	Monitor 2	020/01/25 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	FRD SRD SIR I Feed Rate Mult S Cur Tool	100% 100% Low 100% 0 99999 0-1 34000 T1	ESC	Error Run USB Net
0:05 1:00001 2:090040049080 3:02100054017 4:PATH NAME: ±			Total No. Cur No. Cycle Times Work Time G49 H 0	7 2 0 00:00:00	7	High/Low 5peed 5
Simulation	Probe Go Work Zero	Go Home	Clear Brea	ik Run 🕨		
▲ F1	F2 F3	F4	F5 F	6	-	Break Point Resume
K1 K2	K3 K4 K5	K6 K7	SPINDLE Try	Cut	START	

Figure 5-55 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	READY	5 axis testing.NC		Monitor	2020/01/25 21:46:15	Guest		Status
G5 XYZAC	L L	Ma 10.00 10.00 5.00 20.00 42.00	00 00 00	Abs 10.000 10.000 5.000 20.000 42.000	SRO SJR Lon Feed Rate Mult S 🍝	100% 100% v 100% 0 99909 -1 24000 T1	ESC	Error Run USB Net
3:62160	10G49G80G 1G54G17	598 阿投影加工			Total No. Cur No. Cycle Times Work Time G49 H 0	7 2 0 00:00:00	7	B B High/Low Speed
▲ <	lear X	Clear Y	Clear Z	Clear 4th	Clear 5th Clear	All		
	F1	F2	F3	F4	F5 F6			Break Point Resume
<1	K2	 кз к	4 K5	К6 _ К		CONT Q It STEP MPG	START	

Figure 5-56 Sub-page of CLEAR

CONT READ	Y 5 axis testing.NC	;	Monitor	2020/01/25 21:	46:23 Guest
G54	Ma	ch	Abs	FRO	100%
	10.00		0.000		100%
Ŷ	10.00		0.000		Low 100%
X Y Z A	5.00		0.000		e 0 99999
А	0.00	00	0.000	Mult S	0-1 24000
С	0.00	00	0.000	Cur Tool	T
0:%				Total No.	. 1
1:00001				Cur No.	:
2:6906406490	80G98			Cycle Tim	nes (
3:G21G0G54G	17			Work Tin	ne 00:00:00
4;;PATH NAME	:曲面投影加工			G49 H 0	
Clear X	Clear Y	Clear Z	Clear 4th	Clear 5th	Clear All

Figure 5-57 Clear All axis

5.7 Break Run (Breakpoint Resume)

READY /udisk-sda1/5 axis testing.NC Monitor 2020/01/25 22:00:13 CONT Gue G54 RO Abs Mach 0.000 X 10.000 ESC Ente 0.000 0.000 ed Ra Ó 0.000 0-1 2400 000 00:00:00 X G49 H 0 Go Work Zero Go Home Clear Probe Break Run ► Simulation 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 5-58 "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.



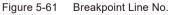
Figure 5-59 Start from a specific line



Figure 5-60 Input the line number

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

CONT	READY	/udisk-sda1/5 ax	is testing.NC	Monitor	2020	01/25 22:03:50	G	uest
G54		Ma	ch	Abs		FRO		100%
X		8.49		-1.506		SRO		100%
Ŷ		5.50		-4.440		SJR	Low	100%
ż		90.03		85.030		Feed Rate	0	99999
Ā		355.61		355.610		MultS	0-1	24000
3		322.81		322.818		CurTool		Τ1
Break No	: 58	41				Total No.		7
						Cur No.		2
						Cycle Times		0
						Work Time	00	:00:12
						G49 H 0		
A 52	irt Line	Power Resume	Pause Resume					
▲ 30	ITC CITHE	Power Resume	Pause kesume					
		E 04	.					



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.

5.8 Manual

In the Monitor Page and we press \triangleright key to go to the second page of Monitor.

CONT	READY	/udisk-sda1/5a	is testing.NC	Monitor	2020/01/26 00:32	15 Guest		Status —
G54 X Y Z A C	ļ	Ma 9.5 1.0 89.3 352.3 246.1	56 90 72 50	Abs -0.444 -8.910 84.372 352.350 246.162	SRO SIR Feed Rate Mult S	100% 100% Low 100% 0 00000 0-1 24000 71	ESC	Error Run USB Net
65403X4 65413X4 65423X4	0.444¥-8.9 0.4567¥-8 0.4628¥-8	104254.3723A-7 9044284.372A-7 9011A-7.6463C4			Total No. Cur No. Cycle Times Work Time G19 H 0	00:00:12		High/Low Speed 5
Sim	nulation	Probe	Go Work Zero	Go Home		Break Run 🕨		Break Point
▲ K1	F1 K2	F2 K3 K	F3 [4] K5	F4 K6 K	F5	F6		Break Point Resume

Figure 5-62 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	7 Guest		\bigcirc	Status –
G54 X Y	4	Mach 9.556 1.090		Abs -0.444 -8.910		100 100 Low 100	s (ESC	Error Run USB
ŻĄC		89.372 352.350 246.162		84.372 352.350 246.162	Feed Rate Mult \$	0 999 0-1 240			•
		9191284.3741A-7.654 104 28 4.3723A-7.6501			Total No. Cur No. Cycle Times		7	7	
		9044284.372A+7.6479 9011A-7.646304567.			Work Time G59 H 0	00:00:	12		High/Low Speed 5
A N	lanual	Coord Set	MDI	Middle	Work Record So	art Proces			
	F1	F2	F3	F4	F 5	F6		- -	Break Point Resume
K1	K2	์ K3 ์K4	К5	К6К	7 J	\mathbf{O}	CONT Q TEP MPG	START	

Figure 5-63 Press F1 key to Manual Page

CONT	READY	Saxis t	esting.NC		Moni	tor	2020	001/26 00:40:21	G	iuest
G54	N	tach	Abs	Go Home	Clear All	Go Z	lero	FRO		100%
х	9.	556	-0.444	XHome	X Clear	XGo	Zero	SRO		100%
Y	1.0	090	-8.910	YHome	YClear	YGo	Zero			
z	89.3	372	84.372	2 Home	2 Clear	ZGo	Zero	SJR	Low	100%
А	352.3		352.350	4th Home	4th Clear		Zero	Feed Rate	0	99999
С	246.	162	246.162	5th Home	5th Clear	5th Go	o Zero			
	EXT	KEY			IN			Mult S	0-1	24000
FUT	VC K01	FI	JNC K08	IN01	IN09	IN:	17	Cur Tool		T1
FUI	NC K02	FI	JNC K09	IN02	IN10	IN:	18	Total No.		7
FUI	NC K03	FI	JNC K10	IN03	IN11	- IN	19			
	NC KD4	_	JNC K11	IN04	IN12	IN	20	Cur No.		(
				IN 05	IN13	IN	21	Cycle Times		0
	NC K05		JNC K12	IN06	IN14	IN	22	Work Time	00	0:00:12
FUI	NC K06	FL	JNC K13	IN07	IN15	IN	23	G49 H 0		
FUI	NC K07	- FI	JNC K14	INGS	IN16	IN	24	043110		
								'		
	Ianual				T		_	_	_	Þ

Figure 5-64 Manual Page Page-60 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	Saxis te	sting.NC		Moni	tor	2020	/01/26 00:41:54	G	uest
G54	ħ	fach	Abs	Go Home	Clear All	Go Z	Zero	FRO		1005
οx	10.	000	0.000	XHome	X Clear	X Go	Zero	SRO		1005
θY	10.	000	0.000	YHome	Y Clear	YGo	Zero			
θZ	5.	000	0.000	ZHome	Z Clear	ZGo	Zero	SJR	Low	1005
ΟA	20.	000	20.000	4th Home	4th Clear	4th Go	o Zero	Feed Rate	0	
• C	42.	000	42.000	5th Home	5th Clear	5th Go	o Zero			
	EXT	KEY			IN			Mult S	0-1	2400
FUN	VC K01	FU	NC K08	IN01	IN09	IN	17	Cur Tool		т
FUN	NC K02	FU	NC K09	IN02	IN10	IN	18	Total No.		
FUN	NC KO3	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	:00:1
FUN	NC K06	FU	NC K13	IN07	IN15	IN		G49 H 0		
FUN	NC K07	FU	NC K14	IN08	IN16	IN	24	040110		
A N	Aanual				T					þ

Figure 5-65 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 5-66 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 found in the INSTALL folder for DDCS-Expert.

CONT	READY	Saxis testing.NC		Moni	tor	2020	01/26 00:41:54	G	uest
G54	M	ach Abs	Go Home	Clear All	Go Z	ero	FRO		100%
οX	10.0	000.0 000	XHome	X Clear	XGo	Zero	SRO		100%
θY	10.0	000.0 000	YHome	Y Clear	YGo	Zero			
οz	5.0	000.0 000	ZHome	2 Clear	ZGol	Zero	SJR	Low	100%
οA	20.0		4th Home	4th Clear	4th Go	Zero	Feed Rate	0	
O C	42.0	00 42.000	5th Home	5th Clear	5th Go	Zero			
	EXT K	ΈY		IN			Mult S	0-1	24000
FUI	NC K01	FUNC K08	IN01	IN09	INC	17	Cur Tool		T
FUI	NC K02	FUNC K09	IN02	IN10	IN	18	Total No.		
FUI	NC K03	FUNC K10	IN03	IN11	INI	19	Cur No.		
	NC K04	FUNC K11	IN04	IN12	INC				,
			IN05	IN13	ING	21	Cycle Times		(
_	NC K05	FUNC K12	IN06	IN14	ING	22	Work Time	00	:00:12
FUI	NC K06	FUNC K13	IN07	IN15	ING	23	G49 H 0		
FUI	NC K07	FUNC K14	IN08	IN16	ING	24	0.010		
				T	_				- 1
A 1	Manual				- 1				- P

5.9 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 0	iuest	\bigcirc	Sta	
G5 XYZAC	ļ	Maci 9.55 1.09 89.37 352.35 246.16	6020	Ab -0.44 -8.91 84.37 352.35 246.16	\$ 0 2 0	FRO SRO SJR Feed Rate Mult S Cur Tool		100% 100% 100% 2000 T1	ESC	Error Run	USB Net
6540:X4 65411X0	0.444 Y-8.9 0.4567Y-8	9191284.3741A-7.6 104284.3723A-7.6 9044284.372A-7.64 9011A-7.6463C456	07C4566.1056			Total No. Cur No. Cycle Tim Work Tim G49 H 0		7 0 0 0:00:12		8 High/Low Speed 5	9 8 6
▲ N	lenuel	Coord Set	MDI	Middle	Work	Record	Sort Proc	es 🕨		2	3
	F1	F2	F3	F4	F	5	F6		-	O Break Point Resume O	₽ E D
K1	K2	K3 K4	K5	К6 Î	<7		TryCut		START	PAUSE	

Figure 5-68 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 5-69 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	/udis	ik-sda1/5a	xis testing	.NC	Monito	or	2020	01/26 01:54:	27 G	iuest			Sta	
G57	7		Ma				Abs		FRO		100%	~		Error Run	USB Net
οX			-30.0	52		-30.0	052		SRO SJR	Low	100%		ESC		Ente
οΥ οΖ			51.2 49.9			51.2 48.4			Feed Rate		99999				
Ā			75.4			75.4			Mult S	0-1	24000				
• Ĉ		:	320.9			320.9			Cur Tool		T1				
63		655	656	657	658	659	Offs		Total No.		7	۲			
X 22.1 Y 22.7	768 0	000	0.000	0.000	0.000	0.000	0.00	00	Cur No.		0	((1)	
Z 18.9 A 20.0		000	0.000	0.000	0.000 0.000	0.000	1.50		Cycle Times		0		7	8	9
C 42.0		000	0.000 InterImodif	0.000	0.000	0.000	0.00)0 .	Work Time G49 H 0	00	:00:12			O High/Low	X+
			todified Z e		Z Step	P.	5.00 r	nm						Speed 5	
A N	love up		lear 4th	Clea	r Seb						Þ	ſ			
▲ M	love up	<u> </u>	Jear 4th	Cies	rotn	_	_	_		_	-			\ 🗹 J	<u> </u>
								_						2	3
	F1		F2		3	F4		F	5	F6				O Break Point Resume	∎₫
			12		5	F 4							-	0	•
	0			<u> </u>		<u>م</u>	ρ	- 88	• • • •		CONT				<u>ک</u>
(1 📗	K2	ΙK	3 🗌 🖌	(4	K5 🛛	K6	K7	7 📗	SPINDLE .	TryCut	Q STEP M		START	PAUSE	RESE

Figure 5-70 Second Page of Coor Set

5.9.1 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:

CONT	READY	/udisk-sda1/5	axis testing	g.NC	Monito	or 202	20/01/26 02:10:	55 Gu	lest
G5	4	Ma	ach		A	۱bs	FRO		100%
οX		-30.0			-52.1		SRO		100%
οŶ		51.2			28.4		SJR	Low	100%
۰Z		49.9	38		29.4	92	Feed Rate	0	
۰A		75.4	170		55.4	70	MultS	0-1	24000
• C		320.9	900		278.9	00	Cur Tool		T1
	354 G	55 G56	657	G58	G59	Offset	² Total No.		7
		000 0.000	0.000	0.000	0.000	0.000	Cur No.		0
		000.000	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	0.000	Work Time	00:	00:12
		ursor,[Enter]mod re Up]Modified 2		Z Step	c .	5.00 mm	G49 H 0		
▲ Se	lect Coord	Clear X	Cle	arY	Clear Z		Z Step	Deeper	►

Figure 5-71 Current Coordinate is G54

co	NTF	READY	/udisk-sda1	/5axis test	ing.NC	Monit	or 202	20/01/26 01:54:27	Guest
G	357		Ν	/lach		,	Abs	FRO	100%
0				.052		-30.0		SRO	100%
ø	Ŷ			.210		51.2		SJR	Low 100%
ø	ż			.938		48.4		Feed Rate	0 99999
Ø	A		75	.470		75.4	170	MultS	0-1 24000
ø	С		320	.900		320.9	900	CurTool	T1
	G54	G5	5 G56	657	G58	659	Offset	^o Total No.	7
X	22.110					0.000	0.000	Cur No.	0
ż	18.946					0.000	1.500	Cycle Times	0
AC	20.000					0.000	0.000	Work Time	00:00:12
			rsor,[Enter]m Up]Modified		Z Ste	p.	5.00 mm	G49 H 0	
	Mov	/e up	Clear 4t	h C	lear 5th				Þ

Figure 5-72 Select the Coordinate to G57

5.9.2 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	NT R	EADY 5	axis testing.N	IC		Monito	or 20	20/01/26 02:	24:32	Guest
C	357		Ma	ach		A	bs	FRO		100%
e	X		-30.0			0.0	00	SRO		100%
ø	Ŷ		50.0			50.0		SJR	Lor	w 100%
ø	ż		57.6			-1.5		Feed Rate	e	0 99999
ø	A		75.4	70		75.4	70	MultS	0	-1 24000
ø	С		320.9	000		320.9	00	CurTool		T1
	G54	G55	656	657	658	659	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 Tim	nes	0
AC	0.000	0.000		0.000	0.000	0.000 0.000	0.000	Work Tim	ne	00:00:12
	(nob]Mo	ve the curso	p,[Enter]modi p]Modified Z e	fy.	Z Step		0.50 mm	G49 H 0		
	Select	Coord	Clear X	Clea	arY	Clear Z		Z Step	Deep	er 🕨

Figure 5-73 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.

5.9.3 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.

CONT	READY	/udisk-sda1/5ax	is testing.NC	Monitor	2020/01/26 01:3	7:25 Guest
G5	4	Mad	ch	Abs	S FRO	100%
οX		-30.05		-52.162		100%
οŶ		51.21		28.442		Low 100%
۰Ż		49.93		24.49		0 99999
۰A		75.47	70	55.470) Mult S	0-1 24000
• C		320.90)0	278.900	Cur Tool	T1
G	54 G53	5 G56	G57 G58	659 0	ffset 🍟 Total No.	7
	.110 0.00 .768 0.00		0.000 0.000		.000 Cur No.	0
	.946 0.00		0.000 0.000		500 Cycle Time	es0
	.000 0.00 .000 0.00		0.000 0.000		.000 0.10 mm	00:00:12
-		sor,[Enter]modify Up]Modified 2 ext		ep: 0.0	0.50 mm 1 mm 1.00 mm	
					5.00 mm	
🔺 Se	lect Coord	Clear X	Clear Y	Clear Z	Z Step	Deeper 🕨

Figure 5-74 Sub-page of CLEAR

5.9.4 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.

5.10 MDI

CONT READY	Saxis testing.NC	Monitor 20	20/01/26 19:54:28	Super		Status —
G54	Mach	Abs	FRO	100%	\bigcirc	Error Run USB Ne
• X • Y	10.000	0.000	SRO SIR L	100% ow 100%		
oγ oZ	10.000 5.000	0.000 0.000	Feed Rate	0 99999	ESC	Ente
Ā	0.000	0.000	MultS	0-1 24000		
• C	0.000	0.000	Cur Tool	T1		
			Total No.	7		
			Cur No. Cycle Times	0		
			Work Time	00:00:00		
			G49 H 0			High/Low Speed
					4	5 6
Manual	Coord Set MDI	Middle W	ork Record Sort I	Proces 🕨		🤣 😥
						2 3
▲ F1	F2 F3	F4	F5 F6		6	Break Point Resume
	F2 F3		F5 F6			Resume -
			I.L. G	CONT		្រា
<1 K2	K3 K4 K5	5 K6 K7		Q UL STEP MPG	START	PAUSE RESE

Figure 5-75 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	h	Abs		100%	
	• Х		10.00		0.000		100%	
	۰Υ		10.00		0.000		Low 100%	
	۰Z		5.00		0.000		0 99999	
	• A		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) (6)					Work Time	00:00:12	
		ob]Move th	e cursor,[Enter]Edit	current line,[Exect	ite]Execute current	G49 H 0		
	▲ Exe	ecute(1)	Execute(2)	Execute(3)	Execute(4)	Execute(5) E	xecute(6)	
				Figure 5-76	MDI Page			
By the	Rotary	buttor	(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 Virtu	ual keyboai	rd is active.
There a	are 3 pa	ages Vit	tual keyboa	rd, by the pa	anel Key 🔽	we can sł	nift 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)



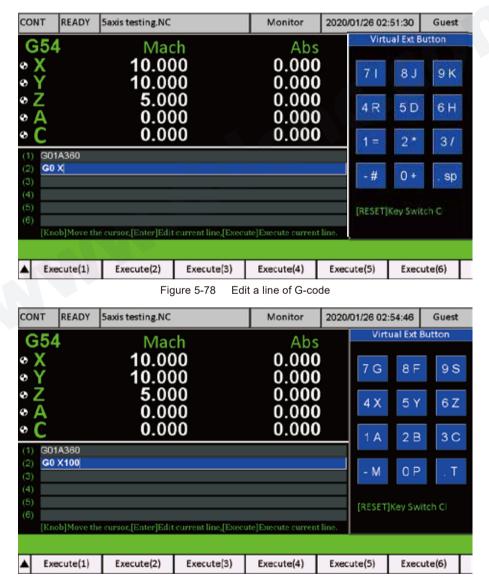


Figure 5-79 Edit a line of G-code with another Vitial keyboard

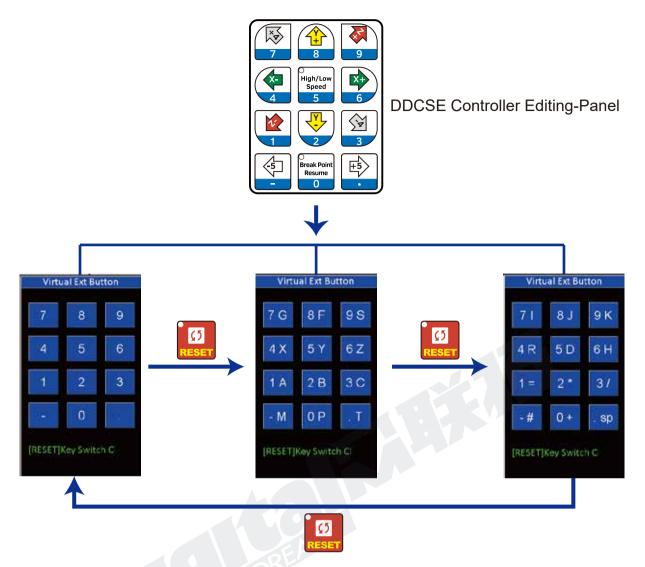


Figure 5-80 The 3 pages vitual keyboard shifted alternately by pressing Reset Key

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

5.11 Middle

CONT READY	Saxis testing.NC	Monitor	2020/01/26 19:54:28	Super	\frown	Status —
G54	Mach	Abs	FRO	100%	\bigcirc	Error Run USB Net
• Х	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		
• C	0.000	0.000	Cur Tool	T1		
			Total No.	7		
			Cur No.	0		
			Cycle Times Work Time	00:00:00	7	
			G49 H 0	00.00.00		O High/Low Speed
				_	4	5 6
						V
Manual	Coord Set MDI	Middle	Work Record Sort	Proces 🕨		
▲ F1	F2 F3	F4	F5 F6			Break Point Resume
				CONT		
K1 K2	K3 K4 K5	K6 K7	SPINDLE Try		START	PAUSE RESET

Figure 5-81 Press F4 key to Middle Page

CONT	READY	/udisk-sda1/5a	xis testing.NC	1	Aonitor	2020/01/27 00:2	8:47 Gues	t
G5	4	Ma	ach		Abs	FRO	10	0%
οX		0.0			0.000		10	0%
۰Ŷ		0.0			0.000		Low 10	00%
۰Ż		0.0			0.000		0 999	
οA		0.0	00		0.000	MultS	0-1 24	юоо
• C		0.0	00		0.000	Cur Tool		T1
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
Mannal (Center Operat	ion(X):				Work Tim	e 00:00	:00
			ess [Set X] to set; ess [Middle X].get 1	nidenint	and not the 3	G49 H 0		
Z: Fake ti	le toor to the	ponier xe and pr	ess (muute Aj.get 1	nupoint	and set the 2	(<u>zero</u> ;		
				_				_
▲	Set X	Middle X	Set Y	M	iddle Y		3Pts	

Figure 5-82 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);

5.11.1 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 5-83 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	¢	N N	Aonitor	2020	01/26 22:	52:37	G	uest
G5	4	M	ach	XI	Abs	\$	FRO			100
οX		50.0	00	N 45	0.000		SRO			1005
θŶ		0.0			0.000		SJR	I	Low'	100
۰Ż		0.0			0.000		Feed Rat	e	0	
۰Ā		0.0			0.000		Mult S		0-1	2400
۰C		0.0			0.000)	Cur Tool			т
4 Pts:							Total No			
Pic1:	0.000		0.000		0.000		Cur No.			
Py1:	0.000	Py2	0.000	Pyrne	0.000		Cycle Tin	nes		
	Center Oper						Work Tin	ne	00	:00:0
		e point Px1 and pr e point Px2 and pr			and ant the	V mercer	G49 H 0			
		e point rate and pr	ess formine stil	ger und pour	and set the.					
	Set X	Middle X	Set Y	M	iddle Y			3	Pts	
		•	Figure	- 5-84	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 5-85 First point saved

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

			20/01/26 22:52:53	Guest
G54	Mach	Abs	FRO	100%
Х	100.000	100.000	SRO	100%
Ŷ	0.000	0.000	SJR	Low 100%
Z	0.000	0.000	Feed Rate	0 99999
A	0.000	0.000	Mult S	0-1 24000
C C	0.000	0.000	Cur Tool	T1
Pts:			Total No.	7
Px1: 50.0		Prone 0.000	Cur No.	0
Py1: 0.00	0 Py2 0.000	Pyrrc 0.000	Cycle Times	0
annal Center Op			Work Time	00:00:00
	the point Px1 and press [Set X] to set; the point Px2 and press [Middle X].get		G49 H 0	

Figure 5-86 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	Ionitor	2020	/01/26 22:52:57	7 G.	Jest
G5	4	Ma	ch	_	Abs	:	FRO		100%
οX		100.00		2	5.000		SRO		100%
θŶ		0.0			0.000		SJR	Low	100%
۰Ż		0.0			0.000		Feed Rate	0	
۰Ā		0.00			0.000		MultS	0-1	24000
۰C		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	ation(X):					Work Time	00	:00:00
		e point Px1 and pres e point Px2 and pres			and set the X	(zero;	G49 H 0		
	Set X	Middle X	Set Y		iddle Y			3Pts	

Figure 5-87 Find Middle Point in X Axis

5.11.2 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	-	N	Ionitor	2020/01/26 22:53:13	Guest
G54	4	Ma	ich		Abs	FRO	100%
×Χ		100.0		2	5.000		100%
۰Ŷ		50.0			0.000		Low 100%
οZ		0.0			0.000		0 99999
οA		0.0	00		0.000	Mult S	0-1 24000
° C		0.0	00		0.000	Cur Tool	T1
Pts:						Total No.	7
	50.000		100.000		75.000	Cur No.	0
Py1:	0.000	Py2	0.000	Pyrne	0.000	Cycle Times	0
tannal C	enter Opera					Work Time	00:00:00
		point Picl and pro point Pic2 and pro			and set the)	G49 H 0	
4	Set X	Middle X	Set Y	Mi	ddle Y		3Pts

Figure 5-88 X=50

Step 2: Press "Set Y" (F3)

Then the first point is saved.

CONT	READY 5	axis testing.NC	;	N	Aonitor	2020/01/26 22:53:1	6 Guest
G5	54	Ma	ch		Abs	FRO	100
οX		100.0		2	5.000		100
θŶ		50.0			0.000		Low 100
۰Ż		0.0			0.000		0 9999
οA		0.0	00		0.000		0-1 240
۰C		0.0	00		0.000	Cur Tool	T
4 Pts:			V			Total No.	
Px1:	50.000	Px2:	100.000	Pxm:	75.000	Cur No.	
Py1:	50.000	Py2	0.000	Pym:	0.000	Cycle Times	
	l Center Operatio					Work Time	00:00:0
	the tool to the po the tool to the po				and set the)	G49H0	
A	Set X	Middle X	Set Y		iddle Y		3Pts

Figure 5-89 First point saved

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

CONT	READY	Saxis testing.NC		N	Ionitor	2020	01/26 22:53:	31 0	Guest
G5	4	Ma	ch		Abs		FRO		100%
οX		100.00		2	5.000		SRO		100%
θŶ		100.00)0	10	0.000		SJR	Low	100%
οZ		0.00			0.000		Feed Rate	0	
οA		0.00	00		0.000		Mult S	0-1	24000
۰C		0.00	00		0.000		Cur Tool		T1
4 Pts:							Total No.		7
	50.000	Px2:	100.000		75.000		Cur No.		0
Py1:	50.000		0.000	Pyrre	0.000		Cycle Times		0
Mannal	Center Operat	ion(X):					Work Time	0	0:00:00
		point Px1 and pres point Px2 and pres		idpoint:	and set the X		G49 H 0		
	Set X	Middle X	Set Y	Mi	ddle Y			3Pts	
			Figure 5-9	0)	/=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/	01/26 22:	53:35	Guest
G5 × Y × Z × A × C	4	Ma 100.00 100.00 0.00 0.00	00 00 00 00	Ab 25.000 25.000 0.000 0.000 0.000	0000	FRO SRO SJR Feed Rat Mult S Cur Tool		- 100 100 .ow 100 0 9999 0-1 240
1:Take		point Px1 and pres		Pxm: 75.000 Pym: 75.000 nidpoint and set the		Total No Cur No. Cycle Tin Work Tin G49 H 0	nes	00:00:0
	Set X	Middle X	Set Y	Middle Y			3	Pts
			e 5-91 Find	Middle point in	Y axis			

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.

5.11.3 Find a middle point for the Arc

CONT READY	/udisk-sda1/5axis te	esting.NC	Monitor	2020/01/27 00:28	47 Guest		Status —
G54	Mach	-	Abs		100%		Error Run USB N
οX	0.000)	0.000	SRO	100%		
• Y	0.000		0.000	SJR	Low 100%	ESC	Ent
• Z • A	0.000 0.000		0.000 0.000	Feed Rate Mult S	0 99999		
č	0.000		0.000	Cur Tool	T1		▌▼▌▶
4 Pta:				Total No.	7		
Pel: 0.000 Py1: 0.000	Px2: 0.0 Py2: 0.0		Perm: 0.000 Pyrm: 0.000	Cur No. Cycle Times	0		🏠 🔮
				Work Time	00:00:00		
	e point Px1 and press [5 e point Px2 and press [N		idpoint and set the X	G49 H 0			High/Low Speed
						4	5 6
▲ Set X	Middle X	Set Y	Middle Y		3Pts		🖑 🚱
					<u> </u>		2 3
F1	F2	F3	F4	F5	F6 🕨		Break Point Resume
		го	Г4				0 ·
			к 6 К	-) .			
<1 🛛 K2 🛛	K3 K4	K5					
				SPINDLE	TryCut STEP M		PAUSE RES
	Figu	ire 5-92		Go to Middle	TryCut STEP M e Arc Page		
	Figu READY Saxis to	re 5-92	Press F6	Go to Middle Monitor	TryCut sтер м е Arc Page 2020/01/26 3		Quest
G54	Figu READY Saxis to	re 5-92	Press F6	Go to Middle Monitor	ттуCut <u>этер м</u> е Arc Page 2020/01/26 5 500		Guest
G54 • X	Figu READY Saxis to	esting.NC	Press F6	Go to Middle Monitor Abs 0.000	ттуСиt втер м е Arc Page 2020/01/26 ; S 5 70 S 80 S 80		Guest
G54 • X • Y	Figu READY Saxis to	esting.NC Mac 0.000 0.000	Press F6	Go to Middle Monitor Ab: 0.000	TryCut STEP M e Arc Page 2020/01/26 S FAO S RO S J T	23:01:03	Guest 100% 100%
G54 • X	Figu READY Saxis to	esting.NC Macl 0.000 0.000 0.000	Press F6	Go to Middle Monitor Abs 0.000 0.000	TryCut STEP M e Arc Page 2020/01/26 S FRO SRO SJR Feed I	23:01:03 (Low	PAUSE RES Suest 100% 100% 100% 99999 99999
G54 • X • Y • Z	Figu READY Saxis to	re 5-92 esting.NC Macl 0.000 0.000 0.000 0.000	Press F6	Go to Middle Monitor Ab: 0.000 0.000 0.000 0.000	TryCut STEP M Arc Page 2020/01/26 S S S S S S S S S S S S S S S M Ult S	23:01:03 (Low Rate 0 5 0-5	PAUSE RES Suest 100% 100% 100% 99999 99999
G54 • X • Y • Z	Figu READY Saxis to	esting.NC Macl 0.000 0.000 0.000	Press F6	Go to Middle Monitor Abs 0.000 0.000	TryCut STEP M Arc Page 2020/01/26 S S S S S S S S S S S S S S S M Ult S	23:01:03 4 Low Rate 0 5 0-1 500	PAUSE RES Suest 100% 100% 100% 20099 24000
G54 • X • Y • Z • A • C	Figu READY Saxis te 4	re 5-92 esting.NC Macl 0.000 0.000 0.000 0.000 0.000	Press F6	Go to Middle Monitor Ab: 0.000 0.000 0.000 0.000 0.000 0.000	TryCut STEP M a Arc Page 2020/01/26 S FAO S FAO S FAO S FAO S FAO S Curror Mult S Curror	23:01:03 (Low Rate 0 5 0-1 501 No.	PAUSE RES Guest 100% 100% 99999 24000 T1
G54 × X × Y × Z Arc 3 pts. X	Figu READY Saxis te 4 First pts: S 0.000 0	re 5-92 esting.NC Maci 0.000 0.000 0.000 0.000	Press F6	Go to Middle Monitor Ab 0.000 0.000 0.000 0.000 0.000	TryCut STEP M A Arc Page 2020/01/26 S FRO SRO SIR Freed I Mult S Cur To Total	23:01:03 (Low Rate 0 5 0-1 501 No. 5.	PAUSE RES Guest 100% 100% 100% 24000 T1 7
G54 • X • Y • Z • A • C	Figu READY Saxis to 4	re 5-92 esting.NC Macl 0.000 0	Press F6	Go to Middle Monitor Ab: 0.000 0.000 0.000 0.000 0.000 0.000	TryCut STEP M a Arc Page 2020/01/26 SR FRO SR FRO SR Freed I Mult S Cur To Total Cur N	23:01:03 (Low Rate 0 5 0-5 500 No. 5. Times	PAUSE RES Guest 100% 100% 100% 24000 T1 7
G54 × X × Y × Z × A C Arc3 pts. Xo Y: 1-More to 2-More to 2-More to	Figu READY Saxis te 4 First ptze S 0.000 D 0.000 D	re 5-92 esting.NC Macl 0.000 0	Press F6	Go to Middle Monitor Ab 0.000 0.000 0.000 0.000 0.000 0.000	TryCut STEP M Arc Page 2020/01/26 / 2020/01/26 / FRO SJR Feed I Mult S Cur To Cycle Work Gap H	23:01:03 4 Low Rate 0 5 0-5 5001 No. 5. Times Time 0	PAUSE RES Suest 100% 100% 100% 24000 T1 7 0 0 0
G54 × X × Y × Z × A C Arc3 pts. Xo Y: 1-More to 2-More to 2-More to	Figu READY Saxis to 4 First pts: S 0 000 0 0 000 0 0 the first point and yo o the provide and yo the point and yo	re 5-92 esting.NC Macl 0.000 0	Press F6	Go to Middle Monitor Ab 0.000 0.000 0.000 0.000 0.000 0.000	TryCut STEP M Arc Page 2020/01/26 / 2020/01/26 / FRO SJR Feed I Mult S Cur To Cycle Work Gap H	23:01:03 4 Low Rate 0 5 0-5 5001 No. 5. Times Time 0	PAUSE RES Suest 100% 100% 100% 24000 T1 7 0 0 0

Figure 5-93 MIddle Arc Page

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 23:01:1	IS Guest
G	54	Mac	h	Abs	FRO	100%
οX		50.00	0	50.000	SRO	100%
εŶ	;	100.00		100.000	10 A 10	Low 100%
οZ		0.00	0	0.000	Feed Rate	0 99999
οA		0.00	0	0.000	Mult S	0-1 24000
۰C		0.00	0	0.000	Cur Tool	T1
Are 3 p	its:				Total No.	7
	First pts:	Second pts:	Third pts:		Cur No.	0
	0.000	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[Midd]		e and pat it to mean	G49 H 0	
	e to the third p	concerne pressionen	elifer center of a	canal section to sector.		
▲	Set 1	Set 2	Middle			4pts
		Figur	e 5-94 X=	50,Y=100		

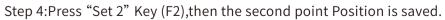
Step 2:Press "Set 1" Key (F1), then the first point Position is saved.

MPG	RE.	ADY 2	3232.tx	t				10	200	00/12/22	2 05:13:4	19 G	uest
Stat	Port Na	ame						Enable	•	Pin No).	Pola	rity
•	X-axis s	ervo ala	rm sign	al				x		NULL		N	
	Y-axis s	ervo ala	irm sign	al				×		NULL		N	
		ervo ala		al				×		NULL		N	
		alarm :						×		NULL		N	
		s servo a						×		NULL		N	
				mit sign				×		NULL		N	_
				mit sign				×		NULL		N	_
				mit sign				×		NULL		N	_
				limit sig				×		NULL		N	_
				limit sig nit signa				×		NULL		22	
1	positiw	e V-akis	hard lin	nit signa nit signa				×		NULL		Ň	
IN	IN01	INC2	IN03	IN04	IN05	IN06	IN07	IN08	IN09	IN10	IN11	IN12	IN13
	IN 14	IN 15	IN16	IN17	IN 18	IN19	IN 20	IN 21	IN22	IN23	IN 24		
MPG	X1	X10	X100	HX	HY	HZ	ΗΛ	HB		-!	54)
DUT	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			Chang	ge Polari	ity				

Figure 5-95 First point Position is saved

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

CONT R	EADY	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	Ō	0.000	Feed Rate	0 99999
οA		0.00		0.000	Mult S	0-1 24000
• C		0.00	0	0.000	Cur Tool	T1
Are 3 pts:					Total No.	7
Firs		Second pts:	Third pts:		Cur No.	0
X: 50.0		0.000	0.000	0.000	Cycle Times	0
	000	0.000	0.000	0.000		-
		oint and press [Set 1]			Work Time	00:00:00
		point and press [Set oint and press[Middl		and set it to zero:	G49 H 0	
▲ Set	1	Set 2	Middle		4	lpts
		Figur	e 5-96 X=	100,Y=50	•	



CONT READY	5axis testing.NC		Monitor	2020/01/27 00:23:55	Guest
G54	Mac	h	Abs	FRO	100%
θX	100.00		100.000	SRO	100%
۰Ŷ	50.00		50.000	SJR	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
	oint and press [Set 1];		5.000	Work Time	00:00:00
	d point and press [Set joint and press[Middle		and eat it to zero.	G49 H 0	
distove to the unity	some and presspondur	epgercenter of are	and secre to zero,		
	1				
Set 1	Set 2	Middle			4pts

Figure 5-97 The second point Position is saved

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

CONT READY 5	axis testing.NC		Monitor	2020/01/26 23:01:47	Guest
G54	Mac	n	Abs	FRO	100%
e X	50.00		50.000		100%
Ŷ	0.00		0.000		Low 100%
οZ	0.00		0.000		0 99999
• A	0.00		0.000		0-1 24000
° C	0.00		0.000	Cur Tool	т1
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 Move to the first point	50.000	0.000	0.000	Work Time	00:00:00
2:Move to the second p 3:Move to the second p	oint and press [Set]		and set it to zero:	G49 H 0	00.00.00
Set 1	Set 2	Middle			4pts
	F	igure 5-98	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	Guest	;
G5	4	Mac	n	Abs		FRO	100	0%
οX		50.000	0	0.000		SRO	100	0%
θŶ		0.00		-50.000	-	SJR	Low 100	0%
۰Ż		0.000		0.000		Feed Rate	0 999	
θA		4.1 0.00	Oring B	020.000	ver	Miles	0-1 240	000
• C		0.00)	0.000)	Cur Tool		T 1
Are 3 pts	S:					Total No.		7
	First pts:	Second pts:	Third pls:	- Conter:		Cur No.		(
	50.000	100.000	50.000	50.000		Cycle Times		
Y:	100.000	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 1]; d point and press [Set 3 point and press[Middle		and satitto zero:		G49 H 0	00.00.	
			Jager Genter Dr are	and secreto zero,				
	Set 1	Set 2	Middle				4pts	Г
		Figure	e 5-99 Find	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.

5.12 Work Record

CONT READY	Saxis testing.NC	Monitor 202	20/01/26 19:54:28	Super		Status —
G54 • X • Y • Z • A	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% ow 100% 0 99999 0-1 24000 T1	ESC	Error Run USB Net
			Total No. Cur No. Cycle Times Work Time G49 H 0	7 0 00:00:00	7	B B High/Low Speed 5 6
Manual	Coord Set MDI	Middle Wo	rk Record Sort I	Proces 🕨		
▲ F1 K1 K2	F2 F3	F4 f K6 K7			•	Break Point Resume

Figure 5-100 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 5-101 "Work Record" Page

No.: The Processed G-code file Number;

Name: The G-code file name;

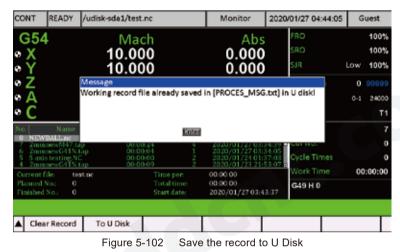
Total Time: The according G-code file processing time;

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

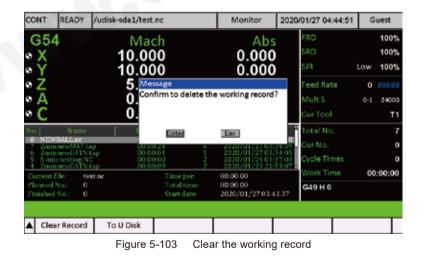
Start date: The G-code file start processing time;

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.



5.13 Sort Process

"Sort Process" function is in reservation now.

CONT READY Saxis te	sting.NC	Monitor	2020/01/26 19:54:20	8 Super	Status —
e Y 1	Mach 10.000 10.000	Abs 0.000 0.000	FRO SRO SJR	100% 100% Low 100%	Error Run USB Net
• Z • A • C	5.000 0.000 0.000	0.000 0.000 0.000	Feed Rate Mult S Cur Tool Total No.	0 99999 0-1 24000 T1 7	
			Cur No. Cycle Times Work Time	0 0 00:00:00	
Manual Coor	rd Set MDI	Middle	G49 H 0	rt Proces	High/Low Speed 5 6
	=2 F3	F4		6	1 2 3 Break Point Resume - 0
K1 K2 K3	K4 K5	5 K6 K		CONT Q STEP MPG	START PAUSE C
	Figure 5-104	Press F6	key to "Sort P	rocess" Page	
	/udisk-sda1/test.	.nc	Monitor	2020/01/27 05	::07:49 Guest
G54	/udisk-sda1/test. Mac	.nc :h	Monitor	2020/01/27 05 FRO	
	/udisk-sda1/test. Mac 10.00	nc ch 00	Monitor Abs 0.000	2020/01/27 05 FRO SRO	07:49 Guest
G54 ∘ X	/udisk-sda1/test. Mac 10.00 10.00 5.00	nc ch 00 00 00	Monitor Abs 0.000 0.000 0.000	2020/01/27 05 FRO SRO SJR Feed Ra	07:49 Guest 100% 100% Low 100%
G54 • X • Y • Z • A	/udisk-sda1/test. Mac 10.00 10.00 5.00 0.00	inc 10 10 10 10	Monitor Abs 0.000 0.000 0.000 0.000	2020/01/27 05 FRO SRO SJR Feed Ra Mult S	07:49 Guest 100% 100% Low 100% te 0 99999 0-1 24000
G54 • X • Y • Z • A • C	/udisk-sda1/test. 10.00 10.00 5.00 0.00 0.00	nc 20 00 00 00 00 00	Monitor Abs 0.000 0.000 0.000 0.000 0.000	2020/01/27 05 FRO SRO SJR Feed Ra Mult S Cur Tool	07:49 Guest 100% 100% Low 100% te 0 99999 0-1 24000
G54 • X • Y • Z • A	/udisk-sda1/test. Mac 10.00 10.00 5.00 0.00	inc 10 10 10 10	Monitor Abs 0.000 0.000 0.000 0.000	2020/01/27 05 FRO SRO SJR Feed Ra Mult S Cur Tool	07:49 Guest 100% 100% Low 100% te 0 99999 0-1 24000
G54 • X • Y • Z • A • C	/udisk-sda1/test. 10.00 10.00 5.00 0.00 0.00	nc 20 00 00 00 00 00	Monitor Abs 0.000 0.000 0.000 0.000 0.000	2020/01/27 05 FRO SRO SJR Feed Ra Mult S Cur Tool S5) Total No Cur No. Cycle Tis	Guest 100% 100% 100% Low 100% Low 100% te 0 99999 0-1 24000 I T1 0. 7 0 0
G54 • X • Y • Z • A • C	/udisk-sda1/test. 10.00 10.00 5.00 0.00 0.00	nc 20 00 00 00 00 00	Monitor Abs 0.000 0.000 0.000 0.000 0.000	2020/01/27 05 FRO SRO SJR Feed Ra Mult S Cur Tool Cur No.	Guest 100% 100% Low 0 99999 0-1 0-1 24000 I T1 0. 0 0 0 0 0.1 24000 I T1 0. 0 0 0 0
G54 • X • Y • Z • A • C	/udisk-sda1/test. 10.00 10.00 5.00 0.00 0.00	nc 20 00 00 00 00 00	Monitor Abs 0.000 0.000 0.000 0.000 0.000	2020/01/27 05 FRO SRO SJR Feed Rat Mult S Cur Tool S5) Total No Cur No. Cycle Th Work Th	Guest 100% 100% Low 0 99999 0-1 0-1 24000 I T1 0. 0 0 0 0 0.1 24000 I T1 0. 0 0 0 0

Figure 5-105 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 05	5:08:49	Guest
Local	Disk(O)	Name			Size (DIR)		y time /24 09:19
U Di	sk(N)	2mmnewM47.ta ball1.nc			1.58 M 🔅	2020/01/	27 13:05 27 13:05
Net C	iisk(G)	2mmnewG41N.t. NEWBALL.nc 2mmnew.tap	ap		2.37 M	2020/01/	/27 13:05 /27 13:05 /27 13:05
Cur Pati	n: <i>N</i> ocal	Free	Space: 824.	77 MB			
▲ Swit	tch disks	Del	Rename	Copy To U Disk	New	E	dit 🕨

Figure 5-106 Import the G-code files from the Local Disk

CONT	READY	/udisk-sda1/test	.nc	Monitor	2020/01/27	7 05:09:14	Guest	ŧ
G54 ⊙ X	1	Mac 10.00		Abs 0.000			100 100	
οΥ οΖ		10.00 5.00	00	0.000	Feed	Rate	Low 100	
∘ A ∘ C		0.00		0.000	Cur	rool	0-1 240	000 T1
No. 1	Status READY	0/1	Name(local) /local/ball1.nc	(G54/G G54		INo.		7 0
2345	READY READY READY READY	0/1 /b 0/1 /b	local/2mmnewM47 ocal/2mmnewG411 /local/NEWBALL. /local/2mmnew.t	N.tap G54 ne G54	Cycle	e Times k Time	00:00:	0
					G49	H 0		
	Up	Down	New	Del	Times	Loa	d List	►
		Figure	5-107 The G	G-code files imp	orted in			

6 Program

In the main page, press F2 to Program Page.

In the program page, the users can browse the internal memory of the controller, and the USB Stick, or the Net Disk when the enternet is built up.

In the Program Page, the users can Delete a file, Rename a file, Create a file, Copy and Paste a file;

In the Program Page, the users can edit a file with the vitual keyboard;

In the Program Page,the users can copy a file from USB-stick / Net Disk to Local, or Copy a file from Local to USB-stick / Net Disk.

In the Program Page, the users can simulate a G-code file, only to preview toolpath, without sending any pulse.

CONT	READY	/local/ball1.nc		Monitor	2020/01/29 23:41:51	Guest		Status —
G54 X Y Z A C	ļ	Mac 10.00 10.00 5.00 0.00 0.00	0 0 0 0	Abs 0.000 0.000 0.000 0.000 0.000	FRO SRO SJR Feed Rate Analog S Cur Tool	100% 100% Low 100% 0 4000 0 24000 T1	ESC	Error Run USB Net
1:600 X3 2:210. 3:601 23	Y0.0 S24	0 690 654 000 M03 18 F3000. M08			Total No. Cur No. Cycle Times Work Time G49 H 0	0 0 0 00:00:00	7	High/Low Speed 5 6
M	lonitor	Program	Param	0	System Log Syst	em Info		
	F1	F2	F3	F4	F5 F	6 🕨		Break Point Resume
K1	K2	 เห	4 K5	K6 K	7 J. Try	Cut STEP MPG	START	

Figure 6-1 Press F2 To Program Page

In the first Program Page, press F1 (Switch Disks), System will swtich between the Local and USB Disk / Net Disk. Please note that, if Ethernet build up and controller can communicate the computer, then the system only can swtich between the Local and Net Disk;

Press F2 (Del), the System will delete the current file;

Press F3 (Rename) , we can rename the file by the panel keyboard or by external USB keyboard.

Press F4 (Copy To U Disk), the system can copy the current file from Local to USB-Stick; If in the U Disk, this column will be "Copy To Local", then can quickly copy file from USB-Stick to Local.

Press F5 (New), the system will create a new ".nc" file;

Press F6 (Edit), the system can open the current file, and on the right page, pop up a vitual keyboard to edit. The vitual keyboard usage, please refers to Chapter 5.1.10.

U Disk(N) 2mmnewM47.tap 879 B 2020/01/24 09:19 U Disk(N) 379 B 2020/01/27 13:05 ball1.nc 1.58 M 2020/01/27 13:05 Net Disk(G) WWBALL.nc 2.37 M 2020/01/27 13:05 Ymmnew.tap 80 B 2020/01/27 13:05 Immnew.tap	Error Run USB Net
U Disk(W) Net Disk(G) U Disk(M) Net Disk(G) U Disk(M)	Ente
Net Disk[G] Network and a response 2020/01/27 13:05 2020/01/27 13:05 2020/01/27 13:05	
	▼►
	谷 🐼
	8 9
	High/Low Speed
Cur Path: Aceal Free Space: 824.75 MB	5 6
Switch disks Del Rename Copy To U Disk New Edit	[♥] 🖗
	2 3
▲ F1 F2 F3 F4 F5 F6 ► 🤄	Break Point Resume
K1 K2 K3 K4 K5 K6 K7 🖳 💽 🕅	

Figure 6-2 First Sub-Page of Program Page



Figure 6-3 Edit a program by the vitual keyboard

▶ to the second sub-page of Program Page.

In the second Program Page, press F1 (Copy), System copy the current file;

Press F2 (Paste), the System will Paste the current file;

Press F3 (Simulate), the system will simulate the current file, just for users to preview the toolpath, the control system don't send any commands;

Press F4 (Load NC), the system load the current file;

Press F5 (Clear Local) , the system will delete all the files or folders in the Local,the Local memory is empty.

Press

CONT	READY	/local/ball1.nc		Program	2020/10/10	0 15:37:55	Guest	\square	Status —
Local	Disk(O)	Name			Size	Modif 2020/01		\bigcirc	Error Run USB Ne
_	isk(N)	 2mmnewM47.ta ball1.nc			[DIR] 879 B 1.58 M	2020/01/ 2020/01/ 2020/01/	27 13:05	ESC	Ente
Net	Disk(G)	2mmnewG41N.t NEWBALL.nc	ар		80 B 2.37 M	2020/01/ 2020/01/		Eac	
		2mmnew.tap			1.45 M	2020/01	27 13:05		
		new-0.nc 8MP10.bmp			0 B 1.17 M	2020/01/ 2020/01/			▼ ▶
									High/Low Speed
Cur Pat	h: Aocal		Space: 824.	66 MB				4	
A	Сору	Paste	Simulate	Load NC	Clear loca	il i	•		👎 🕸
• •									2
	F1	F2	F3	F4	F5	F	6	- -	Break Point Resume

Figure 6-4 Second Sub-Page of Program Page

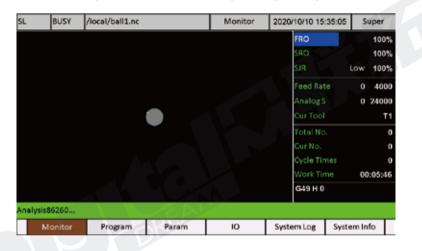


Figure 6-5 Preview the toolpath by Simulating a file

7 Parameters

In the main page, press F3 to Parameters Page.

All the parameters setting are in this page.

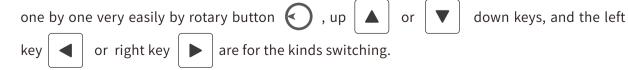
CONT	READY	/local/ball1.nc		Monitor	2020/01/29 23:41:51	Guest	\bigcirc	Status —
G54 X	ţ.	Mac 10.00		Abs 0.000		100% 100%		Error Run USB Net
Y		10.00	0	0.000	SJR Lo		ESC	Enter
ŻĄ		5.00	0	0.000	Analog S	0 4000		
0:640 6:	17 G49 G8	0.00	0	0.000	Total No.	0		
1:600 X3 2:210.	3. YO.O 524	000 M03			Cur No. Cycle Times	0		
	3.1 F1000. 2.996 Z2.94	48 F3000. M08			Work Time G49 H 0	00:00:00		High/Low Speed 5 6
м	Ionitor	Program	Param	10	System Log System	Info		
	F 1	F2	F3	F4	F5 F6		-	Break Point Resume
K1	์ K2	์ ห3 ์ ห	4 K5	[°] К6 [°] К	7 J SPINDLE TryCu	CONT Q STEP MPG	START	

Figure 7-1 Press F3 to Parameters Page

7.1 Parameters List and Details

CONT R	EADY	/local/bi	ill1.nc		Param	2020/10/	10 16:05:49	Guest	\square	Statu:	
Parani Gist		No.	Note				Value	-		Error Run U	SB
Machi	100 - E	-	Machine								_
Manu	al	0000	Motor star X-axis puls				50.000 500.00				
Proce	99	0002	Y-axis puls	es per mm			\$00.00	0	ESC		En
Spind	le la la	0005	Z-axis puls	es per mm Isen per uni			500.00 500.00				_
ID	5 5	0007	4th-exis un				pulse/c				,
Носа	*	0008	5th-axis pu	ises per uni			500,00	0			
Prob	- 1	0009	Sth-exis un Delay fairty		on and polse ."		pulse/c 7000	205			_
Hard L	mit	0012	X-axis direc	ction electri	c level		low:				-
Software	amit	0013		tion electrition electriti			low				4
MP	1.	0015		mon electric mettion elect			low		7	8	
Berida					Action						
Tool		Linger Detaile								High/Low	
Syste	th :	Concarte								Speed 5	
									4		
A Para	n List	Sea	rch Para	am Backup	Param Restore					🕂	5
						-					
											_
										O Break Point	ŧ
	-1		2	F3	F4	F5	F6		(\$)	Resume	<u>.</u>
<u> </u>		<u>ه</u>						CONT			
K1 🛛 I	<2	K3	K4	K5	K6 I	<7	J. 🛛 🔾	Q Q			
	<u>`</u>	-	Л	\cdots		SPI SPI	NDLE TryCi	UT STEP MPG	START		RE
	_										_

In the Parameters Page, there are 13 kinds parameters. The users can view the parameters



1) Machine (Totally 23 items)

No.	Parameter definition	Default value	Range and Unit	User
	Motor starting speed	50	1~999, mm/min	Operator
#0	If the given speed is higher than this speed, the run at given speed.	motor will start to a	accelerate from this speed, or	the motor will
#1	X-axis pulses per mm	500	50~99999.000, pulse/mm	Operator
#	When the axis is used to drive the spindle, the ur	nit of this /paramete	er is the number of pulses per i	revolution.
#2	Y-axis pulses per mm	500	50~99999.000, pulse/mm	Operator
#2	When the axis is used to drive the spindle, the ur	nit of this /paramete	er is the number of pulses per i	revolution.
<i>#</i> 2	Z-axis pulses per mm	500	50~99999.000, pulse/mm	Operator
#3	When the axis is used to drive the spindle, the ur	hit of this /paramete	er is the number of pulses per r	revolution.
щС	4th-axis pulses per unit	500	50~99999.000, pulse/mm	Operator
#6	When the axis is used to drive the spindle, the ur	hit of this /paramete	er is the number of pulses per i	revolution.
	4th-axis unit	pulse/deg	pulse/deg or pulse/circle	Operator
#7	When this axis is used to drive the spindle motor,	set the parameter t	o " pulse/deg ".	
" 0	5th-axis pulses per unit	500	50~99999.000	Operator
#8	When this axis is used to drive the spindle motor, th	ne unit of this param	eter is the number of pulses per	r revolution.
	4th-axis unit	pulse/deg	pulse/deg or pulse/circle	Operator
#9	When this axis is used to drive the spindle motor,	set the parameter t	o " pulse/deg ".	
	Delay between direction and pulse	7000	0~9999.000, ns	Operator
#11	The default value is 7000, which is suitable for mo	ost drivers.		
	X-axis direction electric level	Low	High / Low	Operator
#12	This parameter is used to set the direction of X-a	xis.		
	Y-axis direction electric level	Low	High / Low	Operator
#13	This parameter is used to set the direction of Y-a	xis.	3 • •	1
	Z-axis direction electric level	Low	High / Low	Operator
#14	This parameter is used to set the direction of Z-a	xis.	5,	1
	4th-axis direction electric level	Low	High / Low	Operator
#15	This parameter is used to set the direction of 4th	-axis.	<u> </u>	- 1
	5th-axis direction electric level	Low	High / Low	Operator
#16	This parameter is used to set the direction of 5th	l -axis.		- 1
	X axis Pulse signal Electric Level	Low	High / Low	Operator
#17	If the X axis gradually offset during machining, re	Leverse this paramete		- 1
	Y axis Pulse signal Electric Level	Low	High / Low	Operator
#18	If the Y axis gradually offset during machining, re			- 1
	Z axis Pulse signal Electric Level	Low	High / Low	Operator
#19	If the Z axis gradually offset during machining, re	l verse this paramete	-	- 1
	4th axis Pulse signal Electric Level	Low	High / Low	Operator
#20	If the 4th axis gradually offset during machining,		-	- 1
	5th axis Pulse signal Electric Level	Low	High / Low	Operator
#21	If the 5th axis gradually offset during machining,		-	operater
	4th-axis name	A	X/Y/Z/A/B/C	Admin
#443	After restart the controller, the new setting is activ			
	5th-axis name	В	X/Y/Z/A/B/C	Admin
#444	After restart the controller, the new setting is activ		.,,,_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	4th-axis Type	A A	Linear/Rotation	Admin
#449	The parameter define the 4th axis is Linear axis o		E. Iourretution	Admin
	5th-axis name	B	Linear/Rotation	Admin
#450	The parameter define the 5th axis is Linear axis o	_	Encurrotation	Admin

2) Manual (Totally 30 items)

No.	Parameter definition	Default value	Range and Unit	User					
	X-axis max. speed in manual mode	20000	99~99999, mm / min	Operator					
#35	The X-axis Max. speed in Manual Mode,even w spindle, the unit is revolution / min. This Paramet			ired to servo					
	Y-axis max. speed in manual mode	20000	99~99999, mm / min	Operator					
#36	The Y-axis Max. speed in Manual Mode,even w spindle, the unit is revolution / min. This Parameter			ired to serve					
	Z-axis max. speed in manual mode	8000	99~99999, mm / min	Operator					
#37	The Z-axis Max. speed in Manual Mode,even w spindle, the unit is revolution / min. This Paramet			ired to serve					
	4th-axis max. speed in manual mode	6000	99~99999, deg / min	Operator					
#38	The 4th-axis Max. speed in Manual Mode,even w spindle, the unit is revolution / min. This Paramet			ured to serve					
	5th-axis max. speed in manual mode	6000	99~99999, deg / min	Operator					
#39	The 5th-axis Max. speed in Manual Mode, even with the effect by SJR. When the 4th-axis is configur spindle, the unit is revolution / min. This Parameter must be bigger than #44.								
#40	X-axis manual control HIGH speed	10000	1000~99999, mm / min	Operator					
#40	When the axis is configured to servo spindle, the	unit of this /parame	eter is rpm.						
<i>щ</i> 11	Y-axis manual control HIGH speed	10000	1000~99999, mm / min	Operator					
#41	When the axis is configured to servo spindle, the unit of this /parameter is rpm.								
#42	Z-axis manual control HIGH speed	5000	1000~99999, mm / min	Operator					
#42	When the axis is configured to servo spindle, the	unit of this /parame	eter is rpm.						
#42	4th-axis manual control HIGH speed	3000	1000~99999, deg / min	Operator					
#43	When the axis is configured to servo spindle, the	unit of this parame	ter is rpm.						
	5th-axis manual control HIGH speed	4000	1000~99999, deg / min	Operator					
#44	When the axis is configured to servo spindle, the	unit of this /parame	eter is rpm.						
# 1 5	X-axis manual control LOW speed	1000	1000~99999, mm / min	Operator					
#45	When the axis is configured to servo spindle, the	unit of this parame	ter is rpm.						
# 10	Y-axis manual control LOW speed	1000	1000 ~ 99999, mm / min	Operator					
#46	When the axis is configured to servo spindle, the	unit of this /parame	eter is rpm.						
# 17	Z-axis manual control LOW speed	1000	1000 ~ 99999, mm / min	Operator					
#47	When the axis is configured to servo spindle, the	unit of this parame	ter is rpm.						
# 40	4th-axis manual control LOW speed	1000	1000 ~ 99999, deg / min	Operator					
#48	When the axis is configured to servo spindle, the	unit of this parame	ter is rpm.						
# 10	5th-axis manual control LOW speed	2000	1000 ~ 99999, deg / min	Operator					
#49	When the axis is configured to servo spindle, the	unit of this /parame	eter is rpm.						
#50	X-axis start acceleration in manual mode	1000	9 ~ 9999, mm / s2	Operator					
#50	When the axis is configured to servo spindle, the	unit of this parame	ter is the number of revolution	per s2.					
<i>щ</i> г1	Y-axis start acceleration in manual mode	1000	9 ~ 9999, mm / s2	Operator					
#51	When the axis is configured to servo spindle, the	unit of this parame	ter is the number of revolution	per s2.					
	Z-axis start acceleration in manual mode	1000	9 ~ 9999, mm / s2	Operator					
#52	When the axis is configured to servo spindle, the	unit of this parame	ter is the number of revolution	per s2.					
	4th-axis start acceleration in manual mode	600	9 ~ 9999, mm / s2	Operator					
#53	When the axis is configured to servo spindle, the	unit of this parame	ter is the number of revolution	per s2.					
	5th-axis start acceleration in manual mode	600	9 ~ 9999, mm / s2	Operator					
#54	When the axis is configured to servo spindle, the								

No.	Parameter definition	Default value	Range and Unit	User						
<i>4</i> ГГ	X-axis stop acceleration in manual mode	1000	9~9999, mm / s2	Operator						
#55	When the axis is configured to servo spindle, the unit of this parameter is the number of revolution per s2.									
#56	Y-axis stop acceleration in manual mode	1000	9~9999, mm / s2	Operator						
#50	When the axis is configured to servo spindle, the unit of this parameter is the number of revolution per s2.									
#57	Z-axis stop acceleration in manual mode	1000	9~9999, mm / s2	Operator						
#) /	When the axis is configured to servo spindle, the unit of this parameter is the number of revolution per s2.									
#58	4th-axis stop acceleration in manual mode	600	9~9999, mm / s2	Operator						
#58	When the axis is configured to servo spindle, the unit of this parameter is the number of revolution per s2.									
#59	5th-axis stop acceleration in manual mode	600	9~9999, mm / s2	Operator						
#39	When the axis is configured to servo spindle, the unit of this parameter is the number of revolution per s2.									
#285	X-axis max. ACC G00	1000	9~9999, mm / s2	Operato						
#200	G00 command maximum acceleration.									
#286	Y-axis max. ACC G00	1000	9~9999, mm / s2	Operator						
#200	G00 command maximum acceleration.									
#287	Z-axis max. ACC G00	1000	9~9999, mm / s2	Operator						
#201	G00 command maximum acceleration.									
#288	4th-axis max. ACC G00	1000	9~9999, mm / s2	Operator						
#200	G00 command maximum acceleration.									
#289	5th-axis max. ACC G00	1000	9~9999, mm / s2	Operato						
#209	G00 command maximum acceleration.									

3) Process (Totally 26 items)

No.	Parameter definition	Default value	Range and Unit	User	
	Speed Selection	Default	G Code / Default ;	Operator	
#60	If #60 is set to Default,system will use the #61 s G-code file.This parameter can be quickly set b			ommand in the	
	default operation speed	3000	10~99999, mm/min	Operator	
#61	If the G code file has no F command or #60 is set to Default, system will cite #61 as the feed rate. This parameter can be quickly set by "Feed Rate" on the Main page.				
#62	G01 ACC	500	9~9999, mm/s2	Operator	
#02	G01 \ G02 \ G03 acceleration. This parameter should be set according to the actual situation of the machine.				
#63	G00 speed	10000	99~99999, mm/min	Operator	
#03	By the Parameter,we can set the speed of G0 Command.				
#64	Maximum speed	12000	99~99999, mm/min	Operator	
#04	Maximum speed of the machine during machining.				
#65	Z-axis lifting protection speed	99999	99~99999, mm/min	Operator	
#05	Z++ maximum speed. G00 is also valid.	l			
#66	Z-axis dropping protection speed	99999	99~99999, mm/min	Operator	
#00	Z maximum speed. G00 is also valid.				
#67	X-axis protection speed	99999	99~99999, mm/min	Operator	
#07	X-axis protection speed. G00 is also valid.				
#68	Y-axis protection speed	99999	99~99999, mm/min	Operator	
#08	Y-axis protection speed. G00 is also valid.				
#60	Z axis safe height	5	0~999 mm	Operator	
#69	When starting or restoring machining and go t	o work zero, the Z axi	is will move to Z axis safety h	eight.	

No.	Parameter definition	Default value	Range and Unit	User		
#70	Z-axis retraction dist. when paused	3	0~99 mm/min	Operator		
#70	Z lift distance, when paused.					
#70	G0 command motion characteristics	Independent	Interpolation / Independent	Operator		
#72	Interpolation: Synergistic movement of each axi	is; Independent: each	axis independently moves at (GO speed.		
	Arc-interpolation algorithm	0	Hard alg / Soft alg	Operator		
#73	Hard alg. : Interpolation accuracy is 0.5 pulses.	Soft alg. : Accuracy is	set by parameter #74.			
11 7 A	Soft-arc algorithm linear error	0	0.001 ~ 0.1, mm	Operator		
#74	The precision of the Soft-arc Algorithm.					
#7F	Circular centrifugal acceleration	0	0~9999, mm/s2	Operator		
#75	Hard alg. : Interpolation accuracy is 0.5 pulses.	Soft alg. : Accuracy is	set by parameter #74.			
	Macro scan switch	0	closed / open	Operator		
#76 Closed:do not scan file before processing; open: Scan files before processing; If the users se will asume a lot of time and calculation memory for scannning, please be careful to set the p						
#77	Macro program file main program No.	0	0~9999	Operator		
#//	In the Macro program,there will be a lot of the	program number, so	we need to assign a main prog	ram numbe		
#90	Action selection before starting	No Action	No action / To Safety Z	Operator		
#90	Here we set the Z axis movement when starting or resuming the controller; Safety height set by Param #69.					
#01	Z-axis movement mode during pause	No Action	No action / Z Distance	Operator		
#91	Here we set the Z axis movement when pause t	the controller; Z-axis	lifting distance set by Param #	70.		
#220	Go to home before processing?	No	Yes / No	Operator		
#220	A processing cannot be started without Go Hor	me				
	Ref speed of arc with radius 5mm	0	0~3600000; mm/min	Operator		
#221	The reference Arc Radius is 5mm; Other Arc speed please refers to this speed; If #221=0,The arc speed is related to parameters #62 and #75.					
#222	4th-axis protection speed	0	99~99999; mm/min	Operator		
#222	4th-axis protection speed. G00 is also valid.					
#223	5th-axis protection speed	0	99~99999, mm/min	Operator		
#223	5th-axis protection speed. G00 is also valid.	·				
#224	G73/G83 drilling retraction	0	0~20, mm	Operator		
#224	G73 G83 drilling hole retraction distance.	·	· · · · · ·			
#220	Execute action after Finished	No Action	No action/Ref Pos/Work Zero	Operator		
#230	Add M30 at the end of the file. Ref Pos: Mach p	oos of No.122-126.	·			
	G00 ACC	2000	0~9999, mm/s2	Operator		
#282	Here we acceleration in G00 interpolation mod value except 0, each axis accleration is limited b			e set it othe		

4) Spindle (Totally 9 items)

No.	Parameter definition	Default value	Range and Unit	User		
#79	Spindle interface type	Analog	Analog/Plu&Dir/Multi-Speed	Operator		
#19	3 kinds spindle interface mode, users can choose according to the usage.					
	Spindle mapping axis	4th Axis	X / Y / Z / 4th / 5th Axis	Operator		
#80	When the Spindle interface type is Pul&Dir, this pa of Servo Spindle, all the related parameter Unit is			; In the mode		
#81	Spindle start delay	2	0~9; S	Operator		
<i>#</i> 01	Delay time after spindle start command (M03/M0)4) response.				
#82	Maximum spindle speed	24000	0~99999; rpm	Operator		
#02	When the spindle is in Multi-Speed Spindle, this parameter and #88 decide the spindle output segment.					
	Ignore the S command	No	No / Yes	Operator		
#83	Start or resume the controller, spindle speed adopts parameter #85; This parameter also can be quickly set in the Main page.					
#84	Stop spindle when program is paused?	Yes	No / Yes	Operator		
#04	When controller paused, this parameter decide to	stop the spindle c	or not.			
	Default spindle speed	24000	0~99999; rpm	Operator		
#85	If there is no S command in the G-code file, or #82 is Yes, the spindle speed can adopt this value . This parameter can be quickly set on the Main page.					
	Multi-speed section count	8	2~8, S	Operator		
#88	When the section is 2, please define the "Spindle section Speed" outport 1; When the section is 3 or 4, please define the "Spindle section speed" output 1 and 2; When the section is bigger than 4, please define "Spindle section speed" output 1 and 2 and 3.					
#89	Spindle stop delay	0	0~9, S	Operator		
"05	Delay time after spindle stop command (M05) res	sponse.				

5) IO (Totally 17 items)

No.	Parameter definition	Default value	Range and Unit	User		
#92	Duration of M8/M9 commands	2	Analog/Plu&Dir/Multi-Speed	Operator		
#92	Delay time after cooling command response.					
#94	Duration of M10/M11 commands	2	0~9, S	Operator		
#94	Delay time after lubrication command response.					
#95	IO input filter time width	50	0~100000, ms	Operator		
#95	This parameter helps the users to filter the electrical interference, to avoid the noise.					
Reset IO Configuration bit 01-16 65535		65535	0~65535	Operator		
#96	We use decimal system to set the value; For Example, If OUT01~ OUT16 assigned to 1, then when reset, the current output port closed.					
	Reset IO Configuration bit 17-32	65535	0~65535	Operator		
#97	We use decimal system to set the value; For Example, If OUT17~ OUT21 assigned to 1, then when reset, the current output port closed.					
	Alarm output status configuration bit 01-16	0	0~65535	Operator		
#98	We use binary system to to set the value; For example: 7=0111 / OUT0 OUT1 OUT2 output is Open after Alarm, or closed; By #264, the corresponding bit is configured as 1, then current output port enable status: 1: Enabled; 0: Disabled.					
	Alarm output status configuration bit 17-32	0	0~65535	Operator		
#99	We use binary system to to set the value; For example: 7=0111 / OUT0 OUT1 OUT2 output is Operation after Alarm, or closed; By #265, the corresponding bit is configured as 1, then current output port current status setting is : 1: Enabled; 0: Disabled.					

No.	Parameter definition	Default value	Range and Unit	User	
#210	K1 key Function	1	0~2000	Operator	
#211	K2 key Function	1	0~2000	Operator	
#212	K3 key Function	1	0~2000	Operator	
#213	K4 key Function	1	0~2000	Operator	
#214	K5 key Function	1	0~2000	Operator	
#215	K6 key Function	1	0~2000	Operator	
#216	K7 key Function	1	0~2000	Operator	
	K8 key Function	1	0~2000	Operator	
#217	Note for K1 - K8: 0=run macro file " key-1.nc" ; 1-32=Close or Open OUT1-OUT32; >1000=define as Function shortcuts key, please contact factory fro details information for the details.				
	Alarm output enable configuration bit 01-16	0	0~65535	Operator	
#264	We use binary system to set the value; For Examp enable status 1: Enable; 0: Disable; Before set par				
	Alarm output enable configuration bit 17-32	0	0~65535	Operator	
#265					
#265 We use binary system to set the value; For Example, If OUT17~ OUT21 assigned to 1, then when Alarm enable status 1: Enable; 0: Disable; Before set parameter #99, we need to enable the corresponding					

6) HOME (Totally 28 items)

No.	Parameter definition	Default value	Range and Unit	User		
#100	Home mode	Switch	Switch/Absolute	Admin		
#100	Switch: Wire with Mechanical/Proximity limited Switch; Absolute: Bus absolute servo mode.					
#101	Servo absolute laps at the X-axis Home	0	-99999~99999; r	Operator		
#101	The revolution when servo is in null position, flo	ating type with direct	ion.			
#102	Servo absolute laps at the Y-axis Home	0	-99999~99999; r	Operator		
#102	The revolution when servo is in null position, flo	ating type with direct	ion.			
#103	Servo absolute laps at the Z-axis Home	0	-99999~99999; r	Operator		
#103	The revolution when servo is in null position, flo	ating type with direct	ion.			
#104	Servo absolute laps at the 4th-axis Home	0	-99999~99999; r	Operator		
#104	The revolution when servo is in null position, floating type with direction.					
#105	Servo absolute laps at the 5th-axis Home	0	-99999~99999; r	Operator		
#105	The revolution when servo is in null position, floating type with direction.					
#106	Homing cycle count	3	1 ~ 5	Operator		
#100	The repeated Home detection times.	· ·				
#107	X-axis homing speed	500	99~99999, mm/min	Operator		
#107	The Initial speed When the X-axis go home.					
#108	Y-axis homing speed	500	99~99999, mm/min	Operator		
#100	The Initial speed When the Y-axis go home.					
#109	Z-axis homing speed	500	99~99999, mm/min	Operator		
#109	The Initial speed When the Z-axis go home.			•		
#110	4th-axis homing speed	500	99~99999, mm/min	Operator		
#110	The Initial speed When the 4th-axis go home.					
#111	5th-axis homing speed	500	99~99999, mm/min	Operator		
π	The Initial speed When the 5th-axis go home.	·				

No.	Parameter definition	Default value	Range and Unit	User		
#110	X-axis homing direction	Negative	Negative / Positive	Operator		
#112	The initial moving direction When Home	X-axis.		1		
	Y-axis homing direction	Negative	Negative / Positive	Operator		
#113	The initial moving direction When Home Y-axis.					
#114	Z-axis homing direction	Positive	Negative / Positive	Operator		
#114	The initial moving direction When Home	Z-axis.				
<i>u</i> 44 F	4th-axis homing direction	Negative	Negative / Positive	Operator		
#115	The initial moving direction When Home	4th-axis.				
#110	5th-axis homing direction	Negative	Negative / Positive	Operator		
#116	The initial moving direction When Home	5th-axis.				
#122	Mach position after X go home	5	-999~999; mm	Operator		
#122	When X axis homing finished, system will e	excute G28 command, X axis	move to the position this p	arameter set;		
	Mach position after Y go home	5	-999~999; mm	Operator		
#123	When X axis homing finished, system will excute G28 command, Y axis move to the position this parameter set;					
	Mach position after Z go home	-5	-999~999; mm	Operator		
#124	When X axis homing finished, system will excute G28 command, Z axis move to the position this parameter set;					
#100	Mach position after 4th go home	5	-999~999; mm	Operator		
#125	When X axis homing finished, system will e	excute G28 command, 4th ax	is move to the position this	parameter se		
#120	Mach position after 5th go home	40	-999~999; mm	Operator		
#126	When X axis homing finished, system will a	excute G28 command, 5th ax	is move to the position this	parameter se		
#127	Home after booting	Yes	Yes / No	Operator		
#127	Yes: When power on the controller, syster	n pop-up dialog box to ask H	Home System or not;			
	X-axis Mach zero offset	0	-999~999; mm	Operator		
#235	We can reduce the error made by machir	ne struction or any other facto	ors by setting the offset for	X axis.		
"226	Y-axis Mach zero offset	0	-999~999; mm	Operator		
#236	We can reduce the error made by machine struction or any other factors by setting the offset for Y axis.					
	Z-axis Mach zero offset	0	-999~999; mm	Operator		
#237	We can reduce the error made by machine struction or any other factors by setting the offset for Z axis.					
#220	4th-axis Mach zero offset	0	-999~999; mm	Operator		
#238	We can reduce the error made by machir	ne struction or any other factor	ors by setting the offset for	4th axis.		
#220	5th-axis Mach zero offset	0	-999~999; mm	Operator		
#239	We can reduce the error made by machir	ne struction or any other facto	ors by setting the offset for	5th axis		

7) Probe (Totally 11 items)

No.	Parameter definition	Default value	Range and Unit	User		
#120	Is the Floating tool set valid?	Yes	Yes/No	Operator		
#128	Enable or Disable the Floating Probe					
#129	Floating tool set thickness	Yes	0 ~ 99; mm	Operator		
#129	Before floating probe,we need to meansure ou	It the sensor's thickness	and set the #129.			
#130	Is the fixed tool set valid?	Yes	Yes/No	Operator		
#150	Enable or Disable the Fixed Probe.	I				
	Probing cycle count	5	1-5	Operator		
#131 The probe times. When the user active the Probe, the system can probe 1 - 5 times as w At last system calculate an average value.				rs set.		
#132	Initial speed of Probing	150	50 - 99999; rpm	Operator		
#152	The initial down speed of the Z axis after starting the tool setting.					
#135	Fixed probe X mach position	10	-9999 ~ 9999; mm	Operator		
#155	The initial Position of X axis before Probe in Ma	ach coordinate				
#136	Fixed probe Y mach position	10	-9999 ~ 9999; mm	Operator		
#150	The initial Position of Y axis before Probe in Ma	ach coordinate				
#137	Fixed probe Z mach position	10	-9999 ~ 9999; mm	Operator		
#157	The initial Position of Z axis before Probe in Mach coordinate					
#138	Fixed probe 4th mach position	10	-9999 ~ 9999; mm	Operator		
#150	The initial Position of 4th axis before Probe in Mach coordinate					
#139	Fixed probe 5th mach position	10	-9999 ~ 9999; mm	Operator		
7129	The initial Position of 5th axis before Probe in N	Mach coordinate				
#140	Retraction distance after the end of probe	10	0 - 999; mm	Operator		
#140	This parameter is relative.					

8) Hard Limit (Totally 5 items)

No.	Parameter definition	Default value	Range and Unit	User
#150	Stop mode when X-axis hard limit trigger	Emergency	Deceleration / Emergency	Operator
#151	Stop mode when Y-axis hard limit trigger	Emergency	Deceleration / Emergency	Operator
#152	Stop mode when Z-axis hard limit trigger	Emergency	Deceleration / Emergency	Operator
#153	Stop mode when 4th-axis hard limit trigger	Emergency	Deceleration / Emergency	Operator
#154	Stop mode when 5th-axis hard limit trigger	Emergency	Deceleration / Emergency	Operator

9) Software limit (Totally 15 items)

No.	Parameter definition	Default value	Range and Unit	User
	Enable software limits	Disable	Disable / Enable	Admin
#155	Total control switch for soft limit function of all ax the soft limit value of negative direction bigger th			s, just set
#156	Stop mode when X-axis software limit trigger	Emergency	Deceleration / Emergency	Operator
#157	Stop mode when Y-axis software limit trigger	Emergency	Deceleration / Emergency	Operator
#158	Stop mode when Z-axis software limit trigger	Emergency	Deceleration / Emergency	Operator
#159	Stop mode when 4th-axis software limit trigger	Emergency	Deceleration / Emergency	Operator
#160	Stop mode when 5th-axis software limit trigger	Emergency	Deceleration / Emergency	Operator
#161	Negative X-axis software limit	-9999	-9999~9999; mm	Operator
#162	Negative Y-axis software limit	-9999	-9999~9999; mm	Operator
#163	Negative Z-axis software limit	-9999	-9999~9999; mm	Operator
#164	Negative 4th-axis software limit	-9999	-9999~9999; mm	Operator
#165	Negative 5th-axis software limit	-9999	-9999~9999; mm	Operator
#166	Positive X-axis soft limit	9999	-9999~9999; mm	Operator
#167	Positive Y-axis soft limit	9999	-9999~9999; mm	Operator
#168	Positive Z-axis soft limit	9999	-9999~9999; mm	Operator
#169	Positive 4th-axis soft limit	9999	-9999~9999; mm	Operator
#170	Positive 5th-axis soft limit	9999	-9999~9999; mm	Operator

10) MPG (Totally 15 items)

No.	Parameter definition	Default value	Range and Unit	User		
	Enable MPG Precision Control Mode	Disable	Enable / Disable	Operator		
#171	If #171 = Enable, the system will store the pulses the wheels generated and send every single one out, so sometimes when the user stoped turning the wheel but machine axis will still move. This can lead to a crash; If #171 = Disable, when the user stoped turning the wheel the machine axis just immediately decelerate and stop.					
#172	MPG precision	0.004	0.001~0.01	Operator		
#172	When the handwheel rate is X1, the distance one	step of the wheel ca	n move;	·		
#173	Enable ESTOP signal on MPG	Disable	Enable / Disable	Operator		
#1/5	Enable or disable the reset function of the MPG.					
#174	Electric level of ESTOP on MPG	Low	Low / High	Operator		
Please set this parameter according to the actual MPG status.						
#175	MPG handwheel direction	Positive	Positive/ Negative	Operator		
#176	Handwheel X1 speed	50	50~99999	Operator		
#176	When the MPG speed Mode is on X1, the axis moving speed;					
#177	Handwheel X10 speed	50	50~99999	Operator		
# //	When the MPG speed Mode is on X10, the axis moving speed;					
#178	Handwheel X100 speed	50	50~99999	Operator		
#1/0	When the MPG speed Mode is on X100, the axis r	moving speed;				
#179	Handwheel stop adjustment increment value	0.05	0.001~0.5	Operator		
#179	In handwheel guiding mode, stop turnning the wheel, the deceleration adjustable increment value.					
#180	Handwheel change adjustment increment value	0.01	0.001~0.5	Operator		
#100	In handwheel guiding mode, the deceleration or acceleration adjustable increment value when turnning the wheel.					
#181	X-axis hand wheel manual Acc	50	9~9999; mm/s2	Operator		
#182	Y-axis hand wheel manual Acc	50	9~9999; mm/s2	Operator		
#183	Z-axis hand wheel manual Acc	50	9~9999; mm/s2	Operator		
#184	4th-axis hand wheel manual Acc	50	9~9999; mm/s2	Operator		
#40F	5th-axis hand wheel manual Acc	50	9~9999; mm/s2	Operator		
#185	5th-axis hand wheel manual Acc 50 9~9999; mm/s2 Operator In MPG mode, the start or stop acceleration of each axis.					

11) Backlash (Totally 15 items)

No.	Parameter definition	Default value	Range and Unit	User	
	Enable X-axis reverse direction backlash	Disable	Disable / Enable	Operator	
#190	When X axis reverse direction backlash enabled, backlash distance (#195) automatically.	if X axis change the o	direction, the system will com	pensate the	
	Enable Y-axis backlash	Disable	Disable / Enable	Operator	
#191	When Y axis reverse direction backlash enabled, backlash distance (#196) automatically.	if X axis change the o	direction, the system will com	pensate the	
	Enable Z-axis backlash	Disable	Disable / Enable	Operator	
#192	When Z axis reverse direction backlash enabled, backlash distance (#197) automatically.	if X axis change the o	direction, the system will com	pensate the	
	Enable 4th-axis backlash	Disable	Disable / Enable	Operator	
#193	When 4th axis reverse direction backlash enable backlash distance (#198) automatically.		e direction, the system will co	ompensate the	
	Enable 5th-axis backlash	Disable	Disable / Enable	Operator	
#194	When 5th axis reverse direction backlash enabled backlash distance (#199) automatically.	d, if X axis change the	e direction, the system will co	ompensate the	
#195	X-axis backlash distance	0	0~9.999; mm	Operator	
#196	Y-axis backlash distance	0	0~9.999; mm	Operator	
#197	Z-axis backlash distance	0	0~9.999; mm	Operator	
#198	4th-axis backlash distance	0	0~9.999; mm	Operator	
#199	5th-axis backlash distance	0	0~9.999; mm	Operator	
#200	Backlash speed	0	0~99999; mm/min	Operator	
#200	If the current speed is less than parameter #0, then the Backlash speed is #0 parameter.				
#400	H01 tool length offset	0	-999.999~999.999; mm	Operator	
#400	When the tool length compensation number is 1 (H1), the compensation value; G43\G44 H01.				
# 101	H02 tool length offset	0	-999.999~999.999; mm	Operator	
#401	When the tool length compensation number is 2	(H2), the compensa	tion value; G43\G44 H02.		
# 100	H03 tool length offset	0	-999.999~999.999; mm	Operator	
#402	When the tool length compensation number is 3	(H3), the compensa	tion value; G43\G44 H03.		
# 100	H04 tool length offset	0	-999.999~999.999; mm	Operator	
#403	When the tool length compensation number is 4	(H4), the compensa	tion value; G43\G44 H04.		
	H05 tool length offset	0	-999.999~999.999; mm	Operator	
#404	When the tool length compensation number is 5	(H5), the compensa	tion value; G43\G44 H05.	I	
# 105	H06 tool length offset	0	-999.999~999.999; mm	Operator	
#405	When the tool length compensation number is 6	(H6), the compensa	tion value; G43\G44 H06.		
	H07 tool length offset	0	-999.999~999.999; mm	Operator	
#406	When the tool length compensation number is 7	(H7), the compensat	tion value; G43\G44 H07.		
	H08 tool length offset	0	-999.999~999.999; mm	Operator	
#407	When the tool length compensation number is 8	(H8), the compensa	tion value; G43\G44 H08.		
	H09 tool length offset	0	-999.999~999.999; mm	Operator	
#408	When the tool length compensation number is 9	(H9), the compensa	tion value; G43\G44 H09.		
	H10 tool length offset	0	-999.999~999.999; mm	Operator	
#409	When the tool length compensation number is 1	0 (H10), the compens	ation value; G43\G44 H10.		
	H11 tool length offset	0	-999.999~999.999; mm	Operator	
#410	When the tool length compensation number is 1	1 (H11), the compensa		,	
	H12 tool length offset	0	-999.999~999.999; mm	Operator	
#411	When the tool length compensation number is 1	2 (H12), the compens		1	

No.	Parameter definition	Default value	Range and Unit	User					
1112	H13 tool length offset	0	-999.999~999.999; mm	Operator					
#412	H13 tool length offset0-999.999~999.999; mmWhen the tool length compensation number is 13 (H13), the compensation value; G43\G44 H013.H14 tool length offset0-999.999~999.999; mmWhen the tool length compensation number is 14 (H14), the compensation value; G43\G44 H014.H15 tool length offset0-999.999~999.999; mmWhen the tool length compensation number is 15 (H15), the compensation value; G43\G44 H015.H16 tool length offset0-999.999~999.999; mmWhen the tool length compensation number is 16 (H16), the compensation value; G43\G44 H016.D01 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 1 (D1), the compensation value; G41\G42 D01.D02 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 2 (D2), the compensation value; G41\G42 D02.D03 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 3 (D3), the compensation value; G41\G42 D03.D04 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 4 (D4), the compensation value; G41\G42 D04.D05 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 6 (D5), the compensation value; G41\G42 D05.D06 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 6 (D6), the compensation value; G41\G42 D05.D06 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 7 (D7), the compensation value; G41\G42 D05.<								
// 112	H14 tool length offset	0	-999.999~999.999; mm	Operator					
#413	When the tool length compensation number i	is 14 (H14), the compens	sation value; G43\G44 H014.	1					
<i>щ</i> д 1 д	H15 tool length offset	-999.999~999.999; mm	Operator						
#414	When the tool length compensation number i	is 15 (H15), the compens	sation value; G43\G44 H015.						
// A1E	H16 tool length offset	0	-999.999~999.999; mm	Operator					
#415	When the tool length compensation number is 16 (H16), the compensation value; G43\G44 H016.D01 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 1 (D1), the compensation value; G41\G42 D01.D02 tool Radius offset0D02 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 2 (D2), the compensation value; G41\G42 D02.D03 tool Radius offset0D03 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 3 (D3), the compensation value; G41\G42 D03.D04 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 4 (D4), the compensation value; G41\G42 D04.D05 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 5 (D5), the compensation value; G41\G42 D05.D06 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 6 (D6), the compensation value; G41\G42 D05.D06 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 6 (D6), the compensation value; G41\G42 D06.D07 tool Radius offset0-999.999~999.999; mmWhen the tool radius compensation number is 7 (D7), the compensation value; G41\G42 D07.D08 tool Radius offsetD08 tool Radius offset0-999.999~999.999; mm								
	When the tool length compensation number is 13 (H13), the compensation value; G43\G44 H013. H14 tool length offset 0 -999.999~999.999; mm When the tool length compensation number is 14 (H14), the compensation value; G43\G44 H014. H15 tool length offset 0 -999.999~999.999; mm When the tool length compensation number is 15 (H15), the compensation value; G43\G44 H015. H16 tool length offset 0 -999.999~999.999; mm When the tool length compensation number is 16 (H16), the compensation value; G43\G44 H016. 0 D01 tool Radius offset 0 -999.999~999.999; mm When the tool radius compensation number is 2 (D2), the compensation value; G41\G42 D01. D02 tool Radius offset 0 -999.999~999.999; mm When the tool radius compensation number is 3 (D3), the compensation value; G41\G42 D02. D03 tool Radius offset 0 -999.999~999.999; mm When the tool radius compensation number is 4 (D4), the compensation value; G41\G42 D04. D05 tool Radius offset 0 -999.999~999.999; mm When the tool radius compensation number is 5 (D5), the compensation value; G41\G42 D04. D05 tool Radius offset 0 -999.999~999.999; mm When the tool radius compensation number is 6 (D6), the compensation value; G41\G42 D06. D07 tool Radius offset 0 -999.999~999.999; mm								
#420	When the tool radius compensation number i	is 1 (D1), the compensati	ion value; G41\G42 D01.	1					
11 4 2 1	D02 tool Radius offset	0	-999.999~999.999; mm	Operator					
#421	When the tool radius compensation number i	is 2 (D2), the compensat	tion value; G41\G42 D02.						
	D03 tool Radius offset	0	-999.999~999.999; mm	Operator					
#422	When the tool radius compensation number i	is 3 (D3), the compensat	tion value; G41\G42 D03.	1					
" 422	D04 tool Radius offset	-999.999~999.999; mm	Operator						
#423									
	D05 tool Radius offset	0	-999.999~999.999; mm	Operator					
#424	When the tool radius compensation number is 5 (D5), the compensation value; G41\G42 D05.								
	D06 tool Radius offset	-999.999~999.999; mm	Operator						
#425	When the tool radius compensation number i	is 6 (D6), the compensat	tion value; G41\G42 D06.						
	D07 tool Radius offset	0	-999.999~999.999; mm	Operator					
#426	When the tool radius compensation number i	is 7 (D7), the compensat	tion value; G41\G42 D07.						
	D08 tool Radius offset	0	-999.999~999.999; mm	Operator					
#427	When the tool radius compensation number i	is 8 (D8), the compensat	tion value; G41\G42 D08.						
	D09 tool Radius offset	0	-999.999~999.999; mm	Operator					
#428	When the tool radius compensation number i	is 9 (D9), the compensat	tion value; G41\G42 D09.						
	D10 tool Radius offset	0	-999.999~999.999; mm	Operator					
#429	When the tool radius compensation number i	is 10 (D10), the compens	ation value; G41\G42 D10.						
	D11 tool Radius offset	0	-999.999~999.999; mm	Operator					
#430	When the tool radius compensation number i	is 11 (D11), the compensa	ation value; G41\G42 D011.						
	D11 tool Radius offset	0	-999.999~999.999; mm	Operator					
#431	H14 tool length offset 0 -999.999-999.999, mm O) When the tool length compensation number is 14 (H14), the compensation value; G43\G44 H014. H15 tool length offset 0 -999.999-999.999, mm O) When the tool length compensation number is 15 (H15), the compensation value; G43\G44 H015. 0 -999.999-999.999; mm O) When the tool length compensation number is 16 (H16), the compensation value; G43\G44 H016. D01 tool Radius offset 0 -999.999-999.999; mm O) When the tool radius compensation number is 1 (D1), the compensation value; G41\G42 D01. D02 tool Radius offset 0 -999.999-999.999; mm O) D03 tool Radius offset 0 -999.999-999.999; mm O) When the tool radius compensation number is 2 (D2), the compensation value; G41\G42 D02. D03 tool Radius offset 0 -999.999-999.999; mm O) D04 tool Radius offset 0 -999.999-999.999; mm O) When the tool radius compensation number is 5 (D5), the compensation value; G41\G42 D03. D05 tool Radius offset 0 -999.999-999.999; mm O) D04 tool Radius offset 0 -999.999-999.999; mm O) Mhen the tool radius compensation number is 5 (D5), the compensation value; G41\G42 D05. D06 tool Radius offset 0 -999.999-999.999; m								
	D11 tool Radius offset	0	-999.999~999.999; mm	Operator					
#432	H15 tool length offset 0 -999.999-999.999; mm C When the tool length compensation number is 15 (H15), the compensation value; G43\G44 H015. 0 -999.999-999.999; mm C When the tool length offset 0 -999.999-999.999; mm C D01 tool Radius offset 0 -999.999-999.999; mm C D02 tool Radius offset 0 -999.999-999.999; mm C D03 tool Radius offset 0 -999.999.999; mm C D03 tool Radius offset 0 -999.999-999.999; mm C D04 tool Radius offset 0 -999.999-999.999; mm C D03 tool Radius offset 0 -999.999-999.999; mm C When the tool radius compensation number is 3 (D3), the compensation value; G41\G42 D03. D04 tool Radius offset 0 -999.999-999.999; mm C D04 tool Radius offset 0 -999.999-999.999; mm C C D05 tool Radius offset 0 -999.999-999.999; mm C D04 tool Radius offset 0 -999.999-999.999; mm C C D06 tool Radius offset 0 -999.999-999.999; mm C D04 tool Radius offset 0 -999.999-999								
	D11 tool Radius offset	0	-999.999~999.999; mm	Operator					
#433	When the tool radius compensation number i	is 14 (D14), the compens	sation value; G41\G42 D014.						
				Operator					
#434	When the tool radius compensation number i	is 15 (D15), the compens							
	D11 tool Radius offset	0	-999.999~999.999; mm	Operator					
#435	When the tool radius compensation number i	is 16 (D16), the compens							

No.	Parameter definition	Default value	Range and Unit	User
	Current tool No.	1	0~20	Operator
#800	When Tool number greater than 20 then it is the	virtual tool	number.	
	Total number of tools in Magazine	12	0~20	Operator
#801	Parameter demintion value Range and Onit urrent tool No. 1 0~20 then Tool number greater than 20 then it is the virtual tool number. Ital number of tools in Magazine 12 0~20 the actual magazine capacity should be less than 20. NULL NULL/Multiple/Fixed row/Servo discetc. the virtual Tool function turned on? No No No / Yes able Virtual tool. When the tool no, is over 20, the system execute as it is the virtual tool, utomatic tool setting after tool change or not. -9999.999-9999.999.999; mm eaks Mach position 0 -9999.999-9999.999; mm -axis Mach position 0 -9999.999-9999.999; mm -axis tool change front Mach position 0 -9999.999-999.999; mm -axis tool change front Mach position 0 -9999.999-999.999; mm -axis tool change front Mach position 0 -9999.999-999.999; mm -axis tool change front Mach position 0 -9999.999-999.999; mm -axis tool change front Mach position 0 -9999.999-999.999; mm -axis tool change front Mach position 0 999.999.999; mm/min -axis tool change front Mach position 0		I	
	Tool magazine type	NULL	NULL/Multiple/Fixed row/Servo disc	Operato
#802	Tool Magazine type selection: Support multiple,	Follow row,	Fixed row、Servo disc etc.	
	The virtual Tool function turned on?	No	No / Yes	Admin
#803	Enable Virtul tool. When the tool no. is over 20,	the system e	execute as it is the virtual tool.	
	Automatic tool setting after tool change?	No	No / Yes	Operato
#805	Automatic Probe after tool change or not.			
	The highest position when chang Tool	0	-9999.999~9999.999; mm	Operato
#806	Z-axis Mach position			
		0	-9999.999~9999.999; mm	Operato
#807	Z-axis Mach position			
		0	-9999.999~9999.999; mm	Operato
#808		before enter		
				Operato
#809		-		
				Operato
#810				
				Operato
#811		100	5 55555, 1111,1111	
		100	9~99999: mm/min	Operato
#812		100	5** 55555, mm/mm	
		100	000000: mm/min	Operato
#813			5~55555, 1111/11111	Operato
		-	0.00000; mm/min	Operato
#814		100	9~99999, 1111/11111	Operato
		NL-	N = 7 / Y= -	Orenete
#815				Operato
#816				Operato
		1	-	
#817				Operato
		1	-	
#818		-		Operato
		-		1
#819	· · · · · · · · · · · · · · · · · · ·		9~99999; mm/min	Operato
<i></i> \$20	Pushing start X mach pos			Operato
			hing	1
#821	Pushing start Y mach pos	-		Operato
	The Starting Position of Y axis in Mach coordinat	e when Push	ning	
#822	Push Delay	1	0~600000; us	Operato
022	The delay time before Pushing			

No.	Parameter definition	Default value	Range and Unit	User
	Pushing end X mach pos	0	-9999.999~9999.999; mm	Operato
#823	The Position of X axis when the Pushing fin	ished.		
	Pushing end Y mach pos	0	-9999.999~9999.999; mm	Operato
#824	The Position of Y axis when the Pushing fini	ished.		I
	Pushing completed X mach pos	0	-9999.999~9999.999; mm	Operato
#825	The Position of X axis when the Pushing Pushing end Y mach pos The Position of Y axis when the Pushing Pushing completed X mach pos The X axis position in Mach Coordinate Pushing completed Y mach pos The Y axis position in Mach Coordinate Push speed Each axis moving speed when Pushing. T01 X mach pos T02 X mach pos T03 X mach pos T04 X mach pos T05 X mach pos T06 X mach pos T07 X mach pos T08 X mach pos T08 X mach pos T09 X mach pos T10 X mach pos T11 X mach pos T11 X mach pos T12 X mach pos T13 X mach pos T13 X mach pos	en pushing finished each	axis will back distance;	1
#026	Pushing completed Y mach pos	0	-9999.999~9999.999; mm	Operato
#826	The Y axis position in Mach Coordinate whe	en pushing finished each	axis will back distance;	1
4027	Push speed	0	9~9999; mm/min	Operato
#827	Each axis moving speed when Pushing.			1
#830	T01 X mach pos	0	-9999.999~9999.999; mm	Operato
#831	T02 X mach pos	0	-9999.999~9999.999; mm	Operato
#832	T03 X mach pos	0	-9999.999~9999.999; mm	Operato
#833	T04 X mach pos	0	-9999.999~9999.999; mm	Operato
#834	T05 X mach pos	0	-9999.999~9999.999; mm	Operato
#835	T06 X mach pos	0	-9999.999~9999.999; mm	Operato
#836	T07 X mach pos	0	-9999.999~9999.999; mm	Operato
#837	T08 X mach pos	0	-9999.999~9999.999; mm	Operato
#838	T09 X mach pos	0	-9999.999~9999.999; mm	Operato
#839	T10 X mach pos	0	-9999.999~9999.999; mm	Operato
#840	T11 X mach pos	0	-9999.999~9999.999; mm	Operato
#841	T12 X mach pos	0	-9999.999~9999.999; mm	Operato
#842	T13 X mach pos	0	-9999.999~9999.999; mm	Operato
#843	T14 X mach pos	0	-9999.999~9999.999; mm	Operato
#844	T15 X mach pos	0	-9999.999~9999.999; mm	Operato
#845	T16 X mach pos	0	-9999.999~9999.999; mm	Operato

13) System (Totally 12 items)

No.	Parameter definition	Default value	Range and Unit	User				
#240	Language	Eng	Eng/中文	Operator				
#241	Enable buzzer feedback	Yes	Yes/No	Operator				
#244	Enable realtime toolpath	No	Yes/No	Operator				
#244	If enabled the reatime toolpath, the system ope	ration can be	slow down by the realtime processing					
#245	Toolpath mode	Statue	Statue/Line/3D	Operator				
#240	The 3D mode consumes minimum memory cor	nparing the 3	D or Statues Mode.					
#217	Interpolation period	0.005	0.001~0.010; s	Operator				
#247	The smaller interpolation period, the higher the	machining a	ccuracy, but it will cost longer machinn	ing time.				
#248	LOGO display time	0.100	0.1~10; s	Operator				
#261	X-axis rotation angle in 3D toolpath mode	0.000	-180~180; deg	Operator				
#262	Y-axis rotation angle in 3D toolpath mode	0.000	-180~180; deg	Operator				
#263	Z-axis rotation angle in 3D toolpath mode	0.000	-180~180; deg	Operator				
#266	Serial 1 baud rate	B2400	B2400/B4800/B9600/B19200/B115200	Admin				
#267	Serial 1 baud rate	B2400	B2400/B4800/B9600/B19200/B115200	Admin				
#278	USB keyboard type	Closed	Closed/keyboard/Scanner	Admin				
#279	Barcode file location	Local	Local/Udisk/NetDisk	Admin				
#283	Barcode scanning processing	No	No/Yes/Test	Admin				
#203	Please contact the factory to enable and design	the Barcode	scanning function.					
#284	267 Serial 1 baud rate B2400 B2400/B4800/B9600/B19200/B115200 278 USB keyboard type Closed Closed/keyboard/Scanner 279 Barcode file location Local Local/Udisk/NetDisk 283 Barcode scanning processing No No/Yes/Test 284 Please contact the factory to enable and design the Barcode scanning function. Network boot mode							
#204	In the surrent version, we only support the Cat t	the IP address	Manually					

7.2 Search the Parameters by the Number

In our Parameters List, there are hundreds parameters, it is very difficuilt for the users if there is no search functions. By the search function, the users can search out the according parameters very fast.

CONT	READY	/local/ba	ill1.nc	Param	2020/10/10 16:05:49	Guest	\cap	Status —
Pacani G	1	No.	Note		Value	E		Error Run USB Ne
Ma	chine	-	Machine		S. marine			
M	heart	0000	Motor starting up X-axis pulses per r		50.000 500.00			
Po	ocess	0002	Y-axis pulses per l		500.00		ESC	Ente
Sp	indle	0005	Z-axis pulses per s		500,00			
8. 27	1D	0005	4th-exis pulses pe 4th-exis unit		500.00 pulse/			
2 H	otare	0005	5th-axis pulses pe		500.00	0		
in in	robe	0009	5th-axis unit		pulse/	leg		
Har	Limit	0011	X-axis direction el	inection and pulse	2000 low			
Softe	are limit	0013	Y-axis direction el	lectric level	low			
2 3	696	0014	2-axis direction el 4th-axis direction		low .			
Be	ideate	0013	40-sets cometica		ion			
1	sols	Linger						High/Low
59	utetu	Dytaile					(🖓	Speed
							4	5 6
A Pa	ram List	Sear	rch Param Bac	kup Param Restore				₿ 🖓
								2 3
								Break Point
	F1	F	2 F3	F4	F5 F6	\mathbf{i}		Break Point +5 Resume
		<u>ρ</u>				CONT		
(1	K2	K3	K4 K	5 K6 K	7			¢ک
		n.1						

Figure 7-3 Press F3 to Search Page

CONT	READY	/local/ba	ll1.nc		Param	2020/10/13 17	:23:35	Guest
Param Li	st:	No.	Note				Value	- -
Ma	chine		Mach					
Ma	mual	0000		r starting speed pulses per mm			50.000 500.00	
Pro	ocess	0002	Y-anie	pulses per min		-	500.00	
Sp	indle	0003	2-			×	500.00	00
	10	0006		ut searching paran	aeter No. :		500.00	
		0007	4t		_		pulse/	
He	ome	0008	St				500.00	
Pr	obe	0009	St				pulse/	deg
Hard	Limit	0011	De X-	Esc	Enter		7000 low	
Softwa	are limit	0013		direction electri	c level		low	
N	IPG	0014		direction electri			low	
		0015	4th-a	is direction elec	tric level		low	
Bac	klash		Fa					
Te	ools	Range:	[0~1]		Active:	Immediately U:	sen (Operator
Sys	stem	Details:		When this axis is us	sed to drive the spi	ndle, set this param	eter	
			to 0!					
🔺 Pa	ram List	Sea	rch	Param Backup	Param Restore			

Figure 7-4 Press "Search" dialog box pop up

CONT	READY	/local/ba	ll1.nc		Param	2020/10/13 17	:23:42	Guest
Param Li	st:	No.	Note				Value	
Ma	chine		Machi					
Ma	anual	0000		starting speed pulses per mm			50.00 500.0	-
Pro	ocess	0002	Y-axis	pulses per min			500.0	
Spi	indle	0003	4.2			×	500.0	
	10	0006		at searching param	eter No. :		500.0	
	ome	. 0007 0008	4t 5t	285			pulse, 500.0	
	robe	0009	St				pulse,	
		0011	De	Esc	Enter		7000	
	lLimit	0012	X-				low	
Softwa	are limit	0013		direction electric			low	
M	4PG	0014		direction electric is direction elect			low low	
Bac	klash		-101-07	is underion elect			1017	
T	ools	Range:	[0~1]		Active:	Immediately U	ser:	Operator
Sv	stem	Details:	Note: V	When this axis is us	ed to drive the spi	ndle, set this paran	neter	
			to 0!					
🔺 Pa	ram List	Sear	rch	Param Backup	Param Restore			



CONT	READY	/local/ba	ll1.nc	Param	2020/10/13 17	:23:48	Guest
Param Li	st:	No.	Note			Value	
Ma	chine	0047	Z-axis manual control I	LOW speed		1000.0	00
M	anual	0048	4th-axis manual contro			1000.0	
		0049	5th-axis manual contro			2000.0	
Pro	ocess	0050	X-axis start acceleratio			1000.0	
Sp	indle	0051	Y-axis start acceleratio			1000.0	
	10	0052	Z-axis start acceleratio			1000.0	
		0053	4th-axis start accelerat			600.00	
H	ome	0054	5th-axis start accelerat			600.00	
Pr	robe	0055	X-axis stop acceleratio			1000.0	
	Limit	0056	Y-axis stop acceleratio			1000.0	
Hart	Limit	0057	Z-axis stop acceleratio			1000.0	
Softw	are limit	0058	4th-axis stop accelerat			600.00	
N	4PG	0059	5th-axis stop accelerat	ion in manual m	ode	600.00	
		0285	X-axis max. ACC G00			1000.0	00
Bac	klash		[2 222 2222 2222]				
T	ools	Range:	[9.000~9999.000] mm/s	2 Active:	Immediately U	ser: C	perator
Sy:	stern	Details:	G00 command maximum	acceleration.			
		1					
🔺 Pa	ram List	Sear	ch Param Backup	Param Restore			

Figure 7-6 Now the according parameters searched out

7.3 Parameter Setting Backup

As the users spend time and engery to configure all the parameters, and want to save all the data, here in DDCS-Expert, we supply One-Key Backup function, convenient and easily.

CONT READY	/local/2n	nmnew.	tap	Param	2020/01/30	00:34:48	Guest	
Param List:	No.	Note				Value		
Machine		Machi	ine					
Manual	0000		r starting speed			50.000	-	
	0001		pulses per mm			500.00		
Process	0002	Y-axis	pulses per mm			500.00		
Machine	e		pulses per mm		500.00			
			is pulses per uni	1		500.00		
Manual			dis unit			pulse/		
-			5th-axis pulses per unit			500.000 pulse/deg		
Process		Sth-axis unit Delay between direction and pulse			7000			
Culturella		X-axis direction electric level			low			
Spindle		Y-axis direction electric level			low			
10		Z-axis direction electric level			low			
10			4th-axis direction electric level			low		
Home								
				Active:		User: •		
Probe								
Hard Lim		•						
A Param List	Sear	rch	Param Backup	Param Restore				

Figure 7-7 Press F3 to Backup the parameters

Please note here, that the system will backup the parameters information in a setting file to the USB-Stick, so we must insert a USB-stick on the controller before the action.

CONT	READY	/local/2n	nmnew.	tap	Param	2020/01/30 00	:35:11	Guest
Param Li	st:	No.	Note				Value	e l
Ma	chine		Mach					
Ma	anual	0000		r starting speed pulses per mm			50.00 500.0	-
Pro	ocess	0002		pulses per mm			500.0	00
Spi	indle	0003	Z-a M	essage			500.0	
J	10	0006			up to the U disk!		500.0 pulse	
He	ome	0008	Sth				500.0	
Pr	obe	0009	5th				pulse	/deg
Hard	Limit	0011	Del X-a	Enter			7000 low	
Softwa	are limit	0013	Y-a				low	
M	IPG	0014		direction electri dis direction elect			low low	
Bac	klash	0015	4001-62	as an eccion elec	unc level		IOW	
Т	ools	Range:			Active:	Us		
Sy:	stem	Details:						
🔺 Pa	ram List	Sear	ch	Param Backup	Param Restore			

Figure 7-8 Parameters back up successfully

22126	the second second second second second second	XIAKE		
< >		and the second se	arch .	
Pavorites	N Show items as icons, in a list, in c	olumns, or in a gallery	Size	Kind
O Downloads	2mmnew.tap	Jul 15, 2018 at 5:12 PM	1.5 MB	Document
ID Distance	2mmnewG41N.tap	Jan 14, 2020 at 1:55 PM	80 bytes	Document
Pictures	2mmnewM47.tap	Jan 14, 2020 at 12:00 PM	879 bytes	Document
Desktop	5 axis testing.NC	Oct 4, 2020 at 1/24 PM	36.5 MB	Document
1 chenhuan	ball1.nc	Jan 1, 1980 at 12:00 AM	1.7 MB	Document
	D12.nc	Nov 24, 2019 at 4:15 PM	4 KB	Document
Documents	D13.nc	May 25, 2020 at 5:38 PM	4 KB	Document
Recents	NEWBALL.nc	May 24, 2020 at 10:20 AM	2.5 MB	Document
Applications	PROCES_MSG.txt	Jan 27, 2020 at 4:44 AM	1 KB	Plain Text
yor applications	setting	Today at 5:52 PM	8 K8	Unix executable
Cloud				
(A) ICloud Drive				
ocations				
□ 藤环的Mac				
A XIAKE =				
Remote Disc				

Figure 7-9 Parameters back up in the Setting file

7.4 Parameters Restore

The users can restore the parameters from the USB-stick. Here as we already had the setting file, we can just copy the setting file in the root direction of the USB-stick as the Figure 7-9, and insert it to controller.

We press F4 and turn knob to "Restore from U", then a dialog box pop up to ask the password of admin or higher user. Input the correct password, and Enter, the system start to restore the parameters, when it finished the system can pop up a dialog box to show it is done.

CONT	READY	/local/2n	nmnew.	tap		Param	202	0/01/30 00	35:27	Guest	t
Param Li	st:	No.	Note						Valu	e	Ľ
Ma	chine		Machi								
Ma	anual	0000		r starting sp pulses per r					50.00 500.0		
Pro	ocess	0002		pulses per r					500.0		
Sp			Z-axis	Z-axis pulses per mm					500.0	000	
	10 0006 0007			cis pulses pe cis unit	er unit				500.0 pulse	000 e/deg	
H	Home 0008			Sth-axis pulses per unit				500.000			
Pr	Probe 0009			Sth-axis unit						e/deg	
Hara	l Limit	0011		Delay between direction and pulse X-axis direction electric level				7000 low			
Softw	are limit	0013	Y-axis direction electric level					low			
M	IPG	0014		direction el dis direction			low				
Bac	klash		1011100	as an ection	erectric	19491			10.47		
Т	ools	Range:				Active:		Us			
Sy:	stem	Details:			Re	store Facto	ny				
					Re	store from	U				
🔺 Pa	ram List	Sea	rch	Param Bac	kup Pa	ram Restor	e				Г

Figure 7-10 Parameters Restore from USB-Stick

CONT	READY	/local/ba	ll1.nc	Param	2020/10/13 19:58:49		Super	
aram Li	st	No.	Note			Value		
Machine			Machine					
Manual		0000				50.000		
Process		0001	X-axis pulses per mm Y-axis pulses per mm			500.000 500.000		
Spindle		0003	Z-axis Message			500.000		
10		0006	4th-5 Restore successful from U diski			500.000 pulse/deg		
Home		0008	5th-a:			500.00		
Pr	robe	0009	5th-ac			pulse/	deg	
Hard	d Limit	0011	Delay X-axis Mitta	8		7000 low		
Software limit		0013	Y-axis			low		
MPG		0014 0015				low low		
Bac	idash	0013	PROPAGES CITACOLOUR DISC	STITE 18481		10 11		
T	ools	Range:	[1.000~999.000] mm/m	in Active:	Immediately		Operator	
Sy	stem	Details:	If the given speed is high from this speed; otherwi Effective range:[1-999]					
A Pa	ram List	Sear	rch Param Backup	Param Restore				

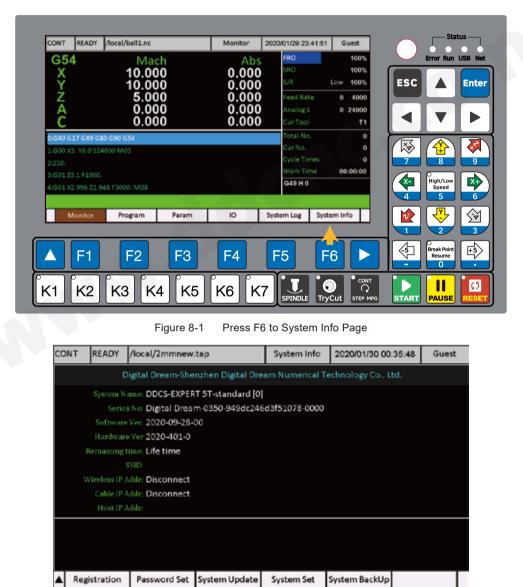
Figure 7-11 Parameters Restore Successful from USB-Stick

8 System Info

In the main page, press F6 to System Info Page.

In the Page, the users can:

- 1) Registraion: The users can set a system working time;
- 2) Set the password for Operator, for Admin, and for Super Admin;
- 3) Can update the system software from the USB-stick;
- 4) Set the system date and time;
- 5) Set the IP address.



8.1 Registration

For the customers who want to control the controller working time, we supply a working time setting software "DDCS-Expert Key Generator", please visit our website :

www.ddcnc.com

or our Facebook Forum:

https://www.facebook.com/groups/1724999967517167/?ref=group_header

to find the software and download it.

Now your zip program can recognise the file as a compressed file and you can decompress it as the Figure 8-3.

< >				
Favorites	Name	Date Modified	Size	Kind
O Downloads	DDCS-Expert Key Generator V1_2.exe	Jan 15, 2019 at 12:00 PM	2.2 MB	Microslication
Dictures	fkey	Oct 7, 2020 at 6:47 PM	Zero bytes	Unix executable
	Read Me.txt	Dec 5, 2019 at 3:48 PM	1 KB	Plain Text
Desktop				
😭 chenhuan				
Documents				
Recents				
Applications				
Cloud				
ICloud Drive				
Locations				

Figure 8-3 DDCS-Expert Key Gernerator Software folder

Double click the "DDCS-Expert key Generator V1_2.exe", there will be a windows as Figure 8-3 pop on.

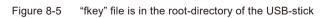
1) Series No: Each controller will have a unique series Number, we can input the number to the Series No. in Generator ; It only allow 6 charactors, so only write in "Digita" .

2) Time Setting: "-1" means no limited time; if you put any other numbers (Number range is 1-9999), the system will calculate the power on time, when the time reached to the limit, the controller don't work.

3) Super Admin Password, here only the users input right Super Admin Password, the setting can be active.Please note the default Super Admin Password is 888888.

4) When we finished input the numbers and Press button "Generate", the software can update a new "fkey" in the same folder. The Users just copy the "fkey" file to root-directory of the USB-stick and insert it to the controller.

CONT READY	/local/2mmnew.	tap	System Info	2020/01/30	0 00:35:48	Guest
	Digital Dream-She	nzhen Digital Drea	am Numerical Te	echnology C	o., Ltd.	
Seri	Name: DDCS-EXPER es No: Digital Drear	m 0350 949dc246	d3f51078-0000			
Hardwa	re Ver: 202()-09-28-(re Ver 202()-401-0 ; time: Life time	00				
Kemanni	, and the inte					
KEY Key Gene	rator V1 <mark>.</mark> 2					×
Controller	Information-					
Series No	Digita	0350				
Time Setti	ng					
Working T	ime: -1 f there is no :	limited time.P	Hours	-1:Range:	1-9999. In	teger.
-Factory In		00				
Super Adm	in Password:		(6 digits)			
		Generate				
	Figure	8-4 DDCS-Expert	Key Gernerator So	ftware		
	500 🗮 📖 🔜	en ~ ☆ ~) (☆		Q Search	1	
Favorites Downloads	Name	Date Modifi Oct 7, 2020	ed at 6:47 PM	Size Zero bytes	Kind Unix executab	ble



Desktop

5) Then Press F1 to "Registration", and system will ask if the USB-stick have the "Fkey" file? We Press Enter key and system registrate automatically.

CONT	READY	/local/ball1.nc		System Info	2020/10/13 21:1	0:08 Guest
	C	igital Dream-She	nzhen Digital Dre	am Numerical T	echnology Co., Lto	1 .
System Name: DDCS-EXPERT 5T-standard [0]						
			m-0350-949dc246	d3f51078-0000		
		Ver: 2020-09-2M		a tha life of file 2		
		e Ver 2020-401-De time: Life time	pes the U disk hav	e the [fkey] file?		
		ssib:				
, I		Addr: Disconne	Enter	Esc		
		ddr: Disconnect				
	Host IP /	\ddr:				
A Reg	istration	Password Set	System Update	System Set	System BackUp	
				сі і і и		
Fig	ure 8-6	System ask in	r there is "tkey"	file is in the roc	t-directory of th	e USB-stick
CONT	READY	/local/ball1.nc		System Info	2020/10/13 21:1	3:38 Guest
	C	igital Dream-She	nzhen Digital Dre	am Numerical T	echnology Co., Lto	4.
	System N	ame: DDCS-EXPER	T 5T-standard [0]			
			m-0350-949dc246	d3f51078-0000		
	Software	Ver: 2020-09-28-				
		e Ver 2020-401-0	Unlock lock successfull			
		time: Life time	IOCK SUCCESSIUIT	yı		
		SSID:	Enter			
1	Vireless IP /	Addr: Disconnect	Enter			
۱ ا	Vireless IP /	Addr: Disconnect	Enter			
1	Vireless IP / Cable IP /	Addr: Disconnect	Enter			
'	Vireless IP / Cable IP /	Addr: Disconnect	Enter			
,	Vireless IP / Cable IP /	Addr: Disconnect	Enter			
	Vireless IP / Cable IP /	Addr: Disconnect Addr: Disconnect Addr:	Enter System Update	System Set	System BackUp	

Figure 8-7 System Registrate the working time Successfully

If the left working time is less then 48 hours, when restart the controller, the controller will send a hint;

When the working time updated successfully, system will delete the fkey automatically;

If the updating is not successful, please check the series no. and the super admin password is right or not.

Very Important:

The working time and date caculation, is powered by a lithium battery. Because of the Air delivery control, the products with Battery always in limit. We will take off the battery if delivery by air. So please contact the factory for the information to buy the right battery and install it to the controller.

8.2 Password Setting

The default password for Opeartor : 666666

The default password for Admin: 777777

The default password for Super Admin: 888888

Here in the Password Page, we can reset the passwords.

CONT	READY	/local/2mmnew	.tap	System Info	2020/01/30 00:36:02	Guest	
	Digital Dream-Shenzhen Digital Dream Numerical Technology Co., Ltd.						
System Name: DDCS-EXPERT 5T-standard [0] Series No: Digital Dream-0350-949dc246d3f51078-0000 Software Ver: 2020-09-28-00 Hardware Ver: 2020-401-0							
	Remaining	time: Life time					
		Addr: Disconnect					
	Host IP.	Addm	_				
		Operator					
		Admin					
		Super					
Re	gistration	Password Set	System Update	System Set	System BackUp		

Figure 8-8 Password Reset Page

Press Enter it will ask you to enter the higher rights password. Input the default passwod, and write in the new password two times, the new password is active now.

CONT	READY	/local/2mmnew.	.tap	System Info	2020/01/30 00:	36:22	Admin	
	C	igital Dream-She	nzhen Digital Dre	am Numerical T	echnology Co., Lt	d.		
	Serie Software Hardwar	e Ver 2020-40:	m-0350-949dc246	d3f51078-0000	×			
	Wireless IP /	time: Life time SSID: Addr: Disconne Addr: Disconnect	Esc	Enter				
A Re	gistration	Password Set	System Update	System Set	System BackUp			

Figure 8-9 Input the new password one time

co	NT READY	/local/2mmnew.	tap	System Info	2020/01/30 00:	36:59	Super	
	C	Digital Dream-She	nzhen Digital Dre	am Numerical T	echnology Co., Lt	td.		
	Series Software Hardware Remaining I Wireless IP A	e Ver 2020-40: time: Life time SSID: Addr: Disconn€ Addr: Disconnect	n-0350-949dc24	5d3f51078-0000				
	Registration	Password Set	System Update	System Set	System BackUp			

Figure 8-10 Input the new password again

Very Important:

Please be very careful to reset the password of the Super Admin. If the users resest the Super Admin and lost the new password, only send back to the factory, only in factory we can reset the Super admin again.

8.3 System Update (System Software Update)

According to the customer feedback, we will endeavour to update the software for DDCS-Expert to enhance the performance, fix the bugs or add new features always. In order for customer to download the latest firmware, please visit our website :

www.ddcnc.com

or our Facebook Forum:

https://www.facebook.com/groups/1724999967517167/?ref=group_header

or join our forum

http://bbs.ddcnc.com/forum.php

There you can find the latest version software for DDCS-Expert .

In the Main Page of the "System Info", we can check here the Software version.

col	NT	READY	/local/2mmnew	.tap	System Info	2020/01/30 00:35:4	B Guest	
\square		C	igital Dream-She	nzhen Digital Dre	am Numerical T	echnology Co., Ltd.		
		System N	ame: DDCS-EXPER	T 5T-standard [0]				
		Serie	No: Digital Dream	m-0350-949dc246	d3f51078-0000			
		Software	Ver: 2020-09-28-	00				
		Hardwar	e Ver 2020-401-0					
	1	Remaining	time: Life time					
		Vireless IP /	ddr: Disconnect					
		Cable IP /	ddr: Disconnect					
		Host IP /	lddr:					
	Reg	istration	Password Set	System Update	System Set	System BackUp		
_								

Figure 8-11 Software Version

Download the firmware upgrade file to your computer and prepare a totally empty USB key. Best is to quickly reformat the USB key to MS-DOS FAT32 (right click on the USB key icon and choose Format. Follow the prompts)

After downloading the firmware file check the file name, if download from www.ddcnc.com,it may look like this:

install(2020-09-28-00).rar (example)

If download from the facebook team (https://www.face-book.com/groups/1724999967517167/?ref=group_header), it may look like this or similar:

```
install(2020-09-28-00)-rar (example)
```

This is done to allow the download. Files called ". RAR" are sometimes blocked.

Change the file name to

install(2020-09-28-00).rar (example)

Now your zip program can recognise the file as a compressed file and you can decompress it to the USB key.Please note the upgraded file should be in the Root-directory in the USB Stick and the file name must be" install":

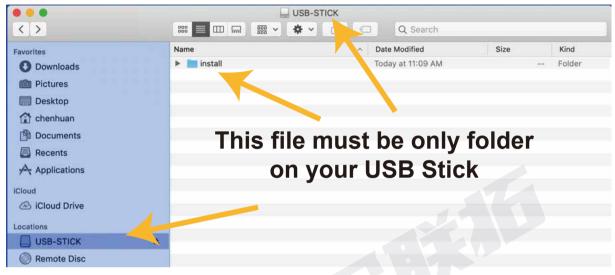


Figure 8-12 Position of Software file

Important:

Because we already delete the setting file from the Install software, When upgrading, the entire configuration will be not replaced. Then you can keep your personal Setting file.

But if you need the Default setting file, you can contact factory ask for it.

Please note the upgraded file should be in the Root-directory in the USB Stick and the file name must be "install".

Now your USB key is ready for action.

DDCS-Expert Controller has two way to update the software:

A: Update the software when Power On.

1) Shut down your DDCSE controller for 10 seconds. Insert the USB key into the USB port of your DDCSE controller .

2) Start your DDCSE controller. The controller will read the INSTALL folder on the USB key and upgrade automatically. The screen will be blocked for about 30 seconds, then the controller will start with the new software.

On the Main Screen lower right you can see the firmware version the controller is using.

After upgrading successfully, don't forget to remove the Intsall folder from the USB key. If you do not remove the INSTALL folder the controller will update again next time you start the controller.

B: Update the software in the System update page.

1) Go to Main Page of "System Log" as the figure 8-1; And press F3 key of "System update";

2) The controller will ask "Does the U disk have the [install] folder", Press Enter key;

3) The controller will read the INSTALL folder on the USB key and upgrade automatically. The screen will be blocked for about 30 seconds, then the controller will restart with the new software.

< >				
Favorites	Name	Date Modified	Size	Kind
O Downloads	ALL_T.nc	Aug 21, 2018 at 9:50 M	16 bytes	Document
Pictures	E CAM	Yesterday at 8:31 PM		Folder
	🔳 chs	Sep 27, 2020 at 5:30 PM	72 KB	Unix executable
Desktop	cmdstr	Sep 17, 2020 at 7:38 PM	45 bytes	Unix executable
Chenhuan	eng	Sep 27, 2020 at 10:07 AM	64 KB	Unix executable
and the second s	error.nc	Nov 23, 2017 at 7:20 AM	4 bytes	Document
Documents	ext_button.nc	May 12, 2020 at 9:10 AM	16 bytes	Document
Recents	fndA.nc	Jan 8, 2020 at 4:52 PM	19 bytes	Document
Applications	fndB.nc	Jan 8, 2020 at 4:51 PM	19 bytes	Document
	fndX.nc	Jan 8, 2020 at 4:52 PM	11 bytes	Document
Cloud	fndY.nc	Jan 8, 2020 at 4:52 PM	15 bytes	Document
ICloud Drive	fndZ.nc	Jan 8, 2020 at 4:52 PM	19 bytes	Document
	fndzerc	Jan 8, 2020 at 4:51 PM	59 bytes	Document
Locations	gotozero.nc	Sep 27, 2020 at 10:15 AM	45 bytes	Document
USB-STICK -	key-1.nc	Aug 11, 2018 at 9:42 AM	53 bytes	Document
Remote Disc	logo.bmp	May 27, 2020 at 1:37 PM	1.8 MB	WindoP image
0	M3.nc	Dec 29, 2017 at 6:18 AM	7 bytes	Document
Tags	M4.nc	Dec 29, 2017 at 6:18 AM	7 bytes	Document
● 红色	M5.nc	Dec 29, 2017 at 6:18 AM	2 bytes	Document
● 橙色	M8.nc	Dec 29, 2017 at 6:19 AM	4 bytes	Document
- 1 <u>2</u> E	M9.nc	Dec 29, 2017 at 6:19 AM	4 bytes	Document
😑 黄色	M10.nc	Dec 29, 2017 at 6:19 AM	5 bytes	Document
● 绿色	M11.nc	Dec 29, 2017 at 6:19 AM	5 bytes	Document
	M19.nc	Dec 29, 2017 at 6:30 AM	5 bytes	Document
◎ 蓝色	msg	Sep 24, 2020 at 6:00 PM	17 KB	Unix executable
● 紫色	msg1	Sep 24, 2020 at 6:02 PM	17 KB	Unix executable
All Tags	mulprobe.nc	May 16, 2019 at 8:21 PM	311 bytes	Document
and the second second	network.conf	Jun 19, 2020 at 11:23 AM	14 bytes	Document
	parse.out	Sep 28, 2020 at 5:38 PM	1.7 MB	Document
	pause.nc	Sep 27, 2020 at 10:33 AM	10 bytes	Document
	pidMonitor.out	Dec 4, 2018 at 4:03 PM	601 KB	Document
	probe.nc	Dec 23, 2017 at 6:17 AM	9 bytes	Document
	processing1	Jul 21, 2018 at 6:17 AM	4 bytes	Unix executable
	rcS	Aug 28, 2020 at 11:28 AM	558 bytes	Unix executable
	read me.txt	Mar 19, 2020 at 10:41 AM	80 bytes	Plain Text
	slib-g.nc	Jul 20, 2020 at 1:17 PM	15 KB	Document
	slib-m.nc	Sep 27, 2020 at 10:39 AM	22 KB	Document
	slibuser.nc	Feb 4, 2018 at 5:20 AM	15 bytes	Document
	smb.conf	Mar 27, 2020 at 1:20 PM	311 bytes	Document
	sysstart.nc	Apr 10, 2019 at 10:48 AM	6 bytes	Document
	T.nc	Aug 14, 2018 at 5:34 PM	16 bytes	Document

Figure 8-13 The files a INSTALL folder included

8.4 System Set

IN the System Set Page, we can set the system time, build the the network by Ethernet, and build the wireless network.

cor	NT	READY	/local/ball1.nc			System Info	2020/10/14	13:59:05	Guest
	Digital Dream-Shenzhen Digit					am Numerical T	echnology Co	., Ltd.	
	System Name: DDCS-EXPERT 5T-standard [0] Series No: Digital Dream-0350-949dc246d3f51078-0001 Software Ver: 2020-09-28-00 Hardware Ver: 2020-401-0 Bemaining time: Life time								
			SSID:			System time			
			ddr: Disconnect			Set IP Addr			
		Cable IP / Host IP /	lddr: Disconnect			SSID List 📶			
					L	oad WPA Config	2		
					E	xport WPA Confi	g		
					sγ	rstem inf to U dis	sk 🛛		
	Regi	stration	Password Set	System Up	date	System Set	System Back	Up	
					_				

Figure 8-14 System Setting Page

8.4.1 System Time Setting

The system Time setting format is YYYY. MM. dd. HH. mm. ss:

YYYY: 4 digits to show the Year, such as 2020, 2021 ect;

MM: 2 digits to show the month, such as 01, means the January, 12 means the December;

dd: 2 digits to show the date, such as 02, means 2nd of the moth; 30 means the 30th of the month;

HH: 2 digits to show the hour;

mm: 2 digits to show the munits;

ss: 2 digits to show the seconds.

	READY	/local/2mmnew.	.tap	System Info	2020/01/30 00:37	:26 Super
	D	igital Dream-She	nzhen Digital Dre	am Numerical Te	echnology Co., Ltd.	
Re	Series Software Hardware emaining t S ireless IP A	s No: Digital Dreat Ver: 2020-09- Por Ver 2020-40: time: Life time SSID: Addr: Disconne	tT 5T-standard [0] m-0350-949dc246 t matxyyyy.MN.dd.HF Esc	d3f51078-0000		
▲ Regis	stration	Password Set	System Update	System Set	System BackUp	
▲ Regis	stration			System Set	, , ,	
	stration READY		re 8-15 Setti		, , ,	:54 Super
	READY	Figu /local/2mmnew.	re 8-15 Setti	ng the system System Info	time	:54 Super
	READY	Figu /local/2mmnew. ligital Dream-She	re 8-15 Setti	ng the system System Info am Numerical Te	time	:54 Super

Figure 8-16 Input the settings

Password Set System Update

System Set System BackUp

Very Important:

Registration

The working time and date caculation, is powered by a lithium battery. Because of the Air delivery control, the products with Battery always in limit. We will take off the battery if delivery by air. So please contact the factory for the information to buy the right battery and install it to the controller.

8.4.2 Set IP Address manually by Ethernet Cable

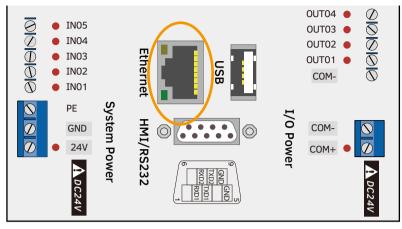


Figure 8-17 Build the Network by Ethernet

Firstly we need a Ethernet cable to connect with the DDCS-Expert and the computer.

If the Network building properly, the Net LED turns red.



Figure 8-18 Network LED shows the status

1) Computer (Host) Configuration

Step 1: Use an Ethernet Cable to connect the DDCSE controller and the computer;

Step 2: Go to Setting -> Network and Internet -> Network Connections in computer.

Network Connections					
\leftarrow \rightarrow \checkmark \bigstar \bigstar Network and Internet \Rightarrow Network C	onnections	~	Ō	9	Search Ne
Organize 🔻					
Ethernet0 Network Intel(R) 82574L Gigabit Network C		C	0	1	

Figure 8-19 Find the Network Connections in Computer

Step 3: Right click and hit "Properties" and it popup the windows and double click "Internet Protocol Version 4 (TCP/IPv4)" as the Figure 8-21:

Network Connections		
← → · ↑ 🖳 « Ne	etwork and Internet > Network Connections	✓ Č > S
Organize 🔻 Disable th	is network device Diagnose this connection	Rename this connection
Ethernet0 Network		
Intel(R) 82574L G	💎 Disable	
	Status	
	Diagnose	
	Bridge Connections	
	Create Shortcut	
	💎 Delete	
	💎 Rename	
	💎 Properties	

Figure 8-20 Properties

Ethernet0 Properties	×
Networking	
Connect using:	
Intel(R) 82574L Gigabit Network Connection	
Configure	÷
This connection uses the following items:	
Client for Microsoft Networks	~
🗹 🕎 File and Printer Sharing for Microsoft Networks	
QoS Packet Scheduler	
Internet Protocol Version 4 (TCP/IPv4)	
Microsoft Network Adapter Multiplexor Protocol	
 Microsoft LLDP Protocol Driver Internet Protocol Version 6 (TCP/IPv6) 	
	×
Install Uninstall Properties	3
Description	
Transmission Control Protocol/Internet Protocol. The defau	t
wide area network protocol that provides communication across diverse interconnected networks	
across diverse interconnected networks.	
OK Ca	ancel

Figure 8-21

Step 4: Set the IP address and Subnet mask as Figure 8-22:

Internet Protocol Version 4 (TCP/IPv	4) Properties ×
General	
You can get IP settings assigned aut this capability. Otherwise, you need for the appropriate IP settings.	
○ Obtain an IP address automatic	Range from "0-25
Ouse the following IP address:	,
IP address:	192.168.0.100
Subnet mask:	255.255.255.0
Default gateway:	· · ·
Obtain DNS server address aut	tomatically
Use the following DNS server a	ddresses:
Preferred DNS server:	· · ·
Alternate DNS server:	· · ·
Validate settings upon exit	Advanced
	OK Cancel

Step 5: Turn Off the FIrewall & network protection:

Go to Setting -> Update & Security -> Windows Security -> Firewall & network protection, and turn off the firewall:

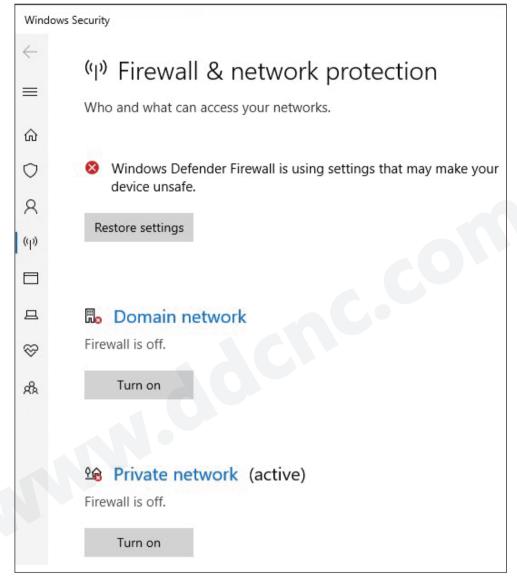


Figure 8-23 Turn off the Firewall of the computer

Step 6: Create a "Share" folder:

Go to Settings -> Network and Internet -> Network and sharing center -> change advanced sharing settings, "Turn on network discovery" and "turn on file and pinter sharing", as Figure 8-24 and 8-25 shows;

Then in your computer, you can create a forder name it as "share".

Network and Sharing Center	
← → × ↑ 🔽 > Control Pan	nel > Network and Internet > Network and Sharing Center v 👌 🔎 Search Control Panel
Control Panel Home	View your basic network information and set up connections
Change adapter settings	View your active networks
Change advanced sharing settings	Network Access type: Internet Public network Connections: <u> Ethernet0 </u>
Media streaming options	
	Change your networking settings
	Set up a new connection or network Set up a broadband, dial-up, or VPN connection; or set up a router or access point.
	Troubleshoot problems Diagnose and repair network problems, or get troubleshooting information.

Figure 8-24

Advanced sharing settings	— D X
🗧 🚽 🔹 🛧 Network and Sharing Center > Advanced sharing settings 🔷 👌 🔎 Search C	strol Panel
Change sharing options for different network profile Windows creates a separate network profile for each network you use. You can choose specific option Private Guest or Public (current profile) Network discovery When network discovery is on, this computer can see other network computers and device Image: Image	and is
19 fave changes	ancel

Figure 8-25

↓ ↓ ↓ Download File Home Share					- 🗆	× ~ (
← → ~ ↑ 🕇 > Th	is PC → Downloads ~	Ō		ds		
📌 Quick access	Name ✓ Today (1)		Date modified	Туре	Size	
Downloads *			7/2/2020 7:52 PM	File folder		
 OneDrive This PC 						
💣 Network						

Figure 8-26

Step 7: Set the folder as "share" folder:

1) Right click the folder and click "Properties",the "Properties" window popup as figure 8-28 shows;

2) click "Share button", and "Network access" windows popup as figure 8-29 shows;

3) choose "Everyone", and add it to the list;

4) Change the **Pernission level of "Everyone" to "Read/Write", and confirm it.**

🖊 🔄 📙 🗢 Downloads		– 🗆 X
File Home Share View		~ 😮
\leftrightarrow \rightarrow \checkmark \uparrow \blacklozenge > This PC > Downloads	→ Č 🔎 Search Download	ds
A Quick access Name ✓ Today (1)	Date modified	Type Size
 Documents Dictures OneDrive This PC Network 	Open Open in new window Pin to Quick access Scan with Windows Defender Give access to Snagit Restore previous versions Include in library Pin to Start Send to Cut Copy Create shortcut Delete Rename	File folder
1 item 1 item selected		> [::: 🖻

Figure 8-27

	General Sharing Security Previous Versions Customize
	Network File and Folder Sharing
	Share Not Shared
	Network Path:
	Not Shared
	Share
	Advanced Sharing
	Set custom permissions, create multiple shares, and set other advanced sharing options.
	Advanced Sharing
	Password Protection
	People must have a user account and password for this computer to access shared folders.
	To change this setting, use the <u>Network and Sharing Center</u> .
	OK Cancel Apply
	Figure 8-28
	×
Network access	
2 Network acces	
	5
Choose people	s e to share with
Choose people	5
Choose people	s e to share with
Choose people Type a name and t	s e to share with
Choose people Type a name and t Jessy Chen	e to share with then click Add, or click the arrow to find someone.
Choose people Type a name and t Jessy Chen Everyone	s e to share with hen click Add, or click the arrow to find someone.
Choose people	s e to share with hen click Add, or click the arrow to find someone. Add Level
Choose people Type a name and t Jessy Chen Everyone Create a new user	s e to share with hen click Add, or click the arrow to find someone.
Choose people Type a name and t Jessy Chen Everyone Create a new user	s e to share with hen click Add, or click the arrow to find someone.
Choose people Type a name and t Jessy Chen Everyone Create a new user	s e to share with hen click Add, or click the arrow to find someone.
Choose people Type a name and t Jessy Chen Everyone Create a new user	s e to share with hen click Add, or click the arrow to find someone.
Choose people Type a name and t Jessy Chen Everyone Create a new user & Jessy Chen	e to share with then click Add, or click the arrow to find someone.
Choose people Type a name and t Jessy Chen Everyone Create a new user	e to share with then click Add, or click the arrow to find someone.

Figure 8-29

8 Network access	
Choose people to share with	
ype a name and then click Add, or click th	e arrow to find someone.
Everyone	Add
Name	Permission Level
Name 3 Jessy Chen	Owner
'm having trouble sharing	

Figure 8-30 Chose "Everyone" and add it to the list

Choose people to share with	
Type a name and then click Add, or click the arro	w to find someone.
	✓ Add
Name	Permission Level
Le Everyone	Read 🔫
🔏 Jessy Chen	Owner
I'm having trouble sharing	

Figure 8-30 Change the Pernission level of "Everyone"

Network access	
Choose people to share with	
ype a name and then click Add, or click the an	row to find someone.
	✓ Add
Name	Permission Level
😤 Everyone	Read/Write 🗸
🙎 Jessy Chen	Owner
m having trouble sharing	



2) Controller DDCSE Configuration

Step 1: Change the "Network Boot Mode" to "manu-IP", it means the users can setup the IP settings manually in this mode.

- 1) Figure 8-32 shows the main page. This is Main Page, Press F3 to Parameter Page;
- 2) Find Para #284 "Network Boot Mode", press "Enter";
- 3) Password window pop up, please input the Admin password to choose "manu-IP".

CONT READY /udisk-sda1,	/ball1.nc	Monitor	2000/	11/12 07:4	0:23	Su	ıper
G54 N	/lach	Abs		FRO			100%
	750	42.750		SRO			100%
	000	0.000		SJR	L	.ow	100%
Y 0, Z 62, A 3,	650	62.650		Feed Rate		0	
A 3.	416	3.416	,	AnalogS		0	14000
B 0.	.000	0.000		Cur Tool			T1
0:G40 G17 G49 G80 G90 G54				Total No.			0
1:G00 X3. Y0.0 S24000 M03				Cur No.			0
2:Z10.				Cycle Tim	es		0
3:G01 Z3.1 F1000.				Work Tim	e	00	:00:00
4:G01 X2.996 Z2.948 F3000. M0	08			G49 H 0			
Monitor Program	Param	10	Syste	em Log	Syste	m Inf	fo
	Figure 8-32 C	Go to Param Page					

Figure 8-32 Go to Param Page

CONT READY	/udisk-sd	a1/ball1.nc	Param	2000/11/12 0	7:39:50	Super
Param List:	No.	Note			Value	-
Machine	0241	Enable buzzer feedback			Yes	
Manual	0244	Enable realtime toolpat	th		Yes	_
-	0245	Toolpath mode			Statue	2
Process	0247	Interpolation period			0.005	_
Spindle	0248	LOGO display time			0.100	_
IO	0261	X-axis rotation angle in			0.000	_
	0262	Y-axis rotation angle in			0.000	_
Home	0263	Z-axis rotation angle in	3D toolpath mo	de	0.000	_
Probe	0266	Serial 1 baud rate			B2400	
Hard Limit	0267	Serial 1 baud rate			B2400	
	0278	USB keyboard type			keybo	ard
Software limit	0279	Barcode file location			Local	_
MPG	0283	Barcode scanning proce	essing		No	
Dashlash	0284	Network boot mode			Close	
Backlash	Panga	[0~2]	Active:	Immediately U	ser: /	\dmin
Tools	Range:	[0~2]	Acuve:	miniediately 0	sen 7	vainin
System	Details:					
Param List	Sear	rch Param Backup	Param Restore			

Figure 8-33 Find the Parameter #284

CONT. DEADY	L. Balance				0
CONT READY	-	a1/ball1.nc	Param	2000/11/12 08:00:52	Guest
Param List:	No. 0241	Note	al.	Value	
Machine	0241	Enable buzzer feedba Enable realtime tool		Yes Yes	
Manual	0245	Toolpath mode	200.01	Statue	2
Process	0247	Internalation pariod		0.005	
Spindle	0248	LC X- Pls input admi or hig	ht waar's rights.	0.100	
10	0261	Y-	ni user s rignos.	0.000	
Home	0263	Z-		0.000	
Probe	0266	Se		B2400	
Hard Limit	0267	Se Esc	Enter	B2400	
Software limit	0278	Barcode file location		keybo Local	aru
MPG	0283	Barcode scanning pro	ocessing	No	
	0284	Network boot mode		Close	
Backlash	Range:	[0~2]	Active:	Immediately User: i	Admin
Tools	Details:	(° -)			
System	Decaus:				
A Param List	Sear	rch Param Backup	Param Pastara		
Param List	269	ren Param backup	Param Restore		
	Figu	ure 8-34 Passw	ord window pop	up	
CONT READY	/udisk-sd	a1/ball1.nc	Param	2000/11/12 08:00:58	Guest
Param List:	No.	Note		Value	
Machine	0241	Enable buzzer feedba		Yes	
Manual	0244	Enable realtime tool	path	Yes	
Process	0245	Toolpath mode		Statue 0.005	2
Spindle	0248	In Edit		0.100	
10	0261	X- Pls input admi or hig	ht user's rights:	0.000	
	0262	888888		0.000	
Home	0263	Z- Se		0.000 B2400	
Probe	0267	Se Esc	Enter	B2400	
Hard Limit	0278			keybo	ard
Software limit	0279	Barcode file location		Local	
MPG	0288	Barcode scanning pro Network boot mode	ocessing	No Close	
Backlash		A COLOR DOOL MOUS			
Tools	Range:	[0~2]	Active:	Immediately User: i	Admin
System	Details:				
A Param List	Sea	rch Param Backup	Param Restore		
	Figure 8	-35 Input Admi	n Password to c	ontinue	
	r igure e	nput/turn		onundo	
CONT READY	ball1.nc		Param	2000/11/12 07:54:50	Guest
Param List:	No.	Note		Value	
Machine	0241	Enable buzzer feedba	ick	Yes	
Manual	0244	Enable realtime tool		Yes	
	0245	Toolpath mode		Statue	
Process	0247	Interpolation period LOGO display time		0.005	
Spindle	- 0248	X-axis rotation angle	in 3D toolpath mo		
10	0262	Y-axis rotation angle			
Home	0263	Z-axis rotation angle		de 0.000	
P - L	0266	Serial 1 baud rate		B2400	
Probe	0267	Serial 1 baud rate		B2400	

Barcode file location Barcode scanning processing Network boot mode Local No Software limit 0279 0283 MPG 0284 manu-IP Backlash Immediately User: [0~2]Admin Tools Param List Search Param Backup Param Restore ٠

Figure 8-36 Changed the mode to "manu-IP"

Step 2: Set the IP address

1) Go back to Main page and Press F6 To System Info, as figure 8-37 shows;

2) Press F4 and choose "Set Ip Addr" as Figure 8-38 shows;

3) Press Enter and move down to "Cable IP Addr", it shows as Figure 8-39 shows;

4) Press Enter key and input the controller IP address "192.168.0.99";

5) Press F4 again and Go to "Host IP address" as Figure 24 shows;

6) Press Enter and input Computer (Host) IP address "192.168.0.100" as Figure 8-41 shows;

7) Now,remember,now restart the controller,never forget this step,go to "System info" Page again, it just shows as the Figure 26, that means the IP setting is succesful.

CON	IT READY	/udisk-sda1/ball	1.nc	System Info	2000/11/12 07:40:45	Super
		Shenzhen (Digital Dream Nu	merical Technolo	ogy Co., Ltd.	
	Serie Softward Hardwar Remaining Wireless IP /	ame: DDCSE5 V1.: s No: Digital Dream e Ver: 2020-06-28- e Ver: 2020-401-0 time: Life time SSID: Addr: Disconnect Addr: Disconnect	m-0350-949dc21	23ff51078-0000		
	Host IP.	Addr:				
	Registration	Password Set	System Update	System Set	System BackUp	
		Figu	ure 8-37 '	'System info" P	age	



Figure 8-38 Set IP Address

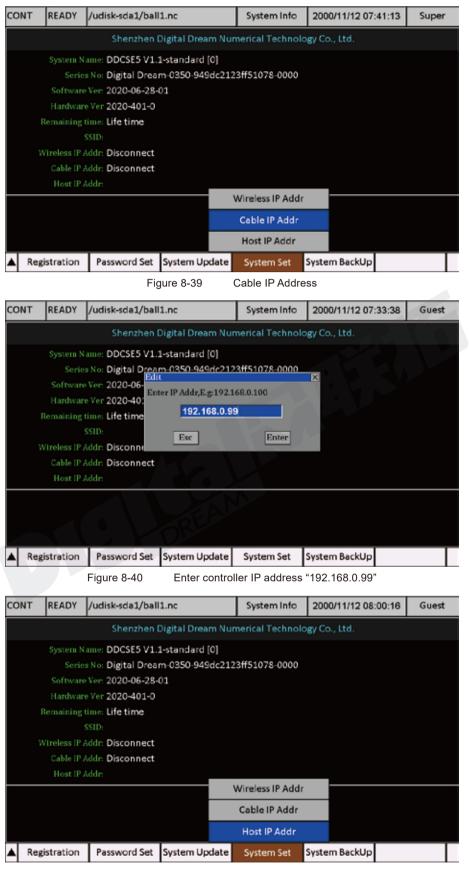


Figure 8-41 Go to Host IP address

CONT	READY	/udisk-sda1/ball	1.nc	System Info	2000/11/12 07:42:06	Super
		Shenzhen [Digital Dream Nur	merical Technolo	ogy Co., Ltd.	
	Series Software Hardware Remaining t S Wireless IP A	e Ver 2020-40: ime: Life time SSID: addr: Disconne addr: Disconnect	n-0350-949dc212	68.0.100		
▲ Re	egistration	Password Set	System Update	System Set	System BackUp	
		Figure 8-42	Input the I	Host Compute	r IP address	
CONT						
CONT	READY	ball1.nc		System Info	2000/11/14 06:25:52	Guest
CONT	READY		Digital Dream Nur			Guest
	System N. Serie: Software Hardward Remaining t S Wireless IP A Cable IP A	Shenzhen E ame: DDCSE5 V1.1 a No: Digital Drear Ver: 2020-06-28-0 e Ver: 2020-401-0 ime: Life time SSID: addr: Disconnect addr: 192.168.0.99	l-standard [0] m-0350-949dc212 01	merical Technolo		Guest
	System N. Serie: Software Hardward Remaining t S Wireless IP A Cable IP A	Shenzhen E ame: DDCSE5 V1.1 a No: Digital Drear Ver: 2020-06-28-0 a Ver: 2020-401-0 ime: Life time SSID: addr: Disconnect	l-standard [0] m-0350-949dc212 01	merical Technolo		Guest
	System N. Serie: Software Hardward Remaining t S Wireless IP A Cable IP A	Shenzhen E ame: DDCSE5 V1.1 s No: Digital Drear Ver: 2020-06-28-0 s Ver: 2020-401-0 ime: Life time SSID: addr: Disconnect addr: 192.168.0.99 addr: 192.168.0.10	l-standard [0] m-0350-949dc212 01	nerical Technok		Guest

3) Check the files from the Host (computer)

1) Copy the files you need into the folder "share" on the computer as Figure 8-44;

2) In the Page of Program, press the "Swtich disks" button(F1), switch to "Net Disk", and we can see the files as Figure 8-45;

Ì I 🛃 🚽 Share File Home Sł	hare	View			-	- □ ×
÷ → • ↑ 📙 «	Downlo	oads > Share > V	Ū			
🖈 Quick access	Ν	ame A		Date modified 7/2/2020 11:36 PM	Type File folder	Size
Desktop Downloads	* [2mmnew.tap 2mmnewG41N.tap		7/15/2018 2:12 AM 1/13/2020 9:55 PM	TAP File	1,490 KE 1 KE
Documents Pictures	* [] 2mmnewM47.tap] ball1.nc		1/13/2020 8:00 PM	TAP File NC File	1 KE 1,615 KE
📙 1 🔜 Share	* [] D12.nc] D13.nc		11/24/2019 12:15 AM 5/25/2020 2:38 AM	NC File NC File	5 KE 4 KE
VMshare	[] NEWBALL.nc] test.nc		5/23/2020 7:20 PM 5/25/2020 2:36 AM	NC File NC File	2,427 KE 4 KE
 OneDrive 						

Figure 8-44 The files in the Share folder

CONT	READY	ball1.nc		Program	2000/11/1	1 04:01:53	Gue	st
Less	Disk(O)	Name			Size	Modi	fy time	T
Local	DISK(U)				[DIR]	2000/10		
	isk(N)	2mmnew.tap			1.45 M	2018/07,		
00	isk(iv)	2mmnewG41N.ta			80 B	2020/01		
Not	Disk(G)	2mmnewM47.ta	p		879 B	2020/01		
Net	Disk(G)	ball1.nc			1.58 M	1979/12,		
		D12.nc			4.22 K	2019/11,		
		D13.nc			3.42 K	2020/05		
		NEWBALL.nc			2.37 M	2020/05,		
		test.nc			3.48 K	2020/05,	23 17.5	
Cur Pat	h: /share	Free S	Space: 185.	10 GB				
🛦 Swi	tch disks	Del	Rename	Copy To Local		Sim	ulate	

Figure 8-45 Net Disk shows the files from Computer

Please Note: U-disk and Net Disk cannot active at the same time.

8.5 System BackUp

In the System Back Up, there are 3 options:

1) BackUp: It will copy the INSTALL folder of this controller system, to the USB-stick;

- 2) Clear Cache: System clear the cache, that will make the system running quicker;
- 3) Clear Local: It will delete all the files in the Local memory.

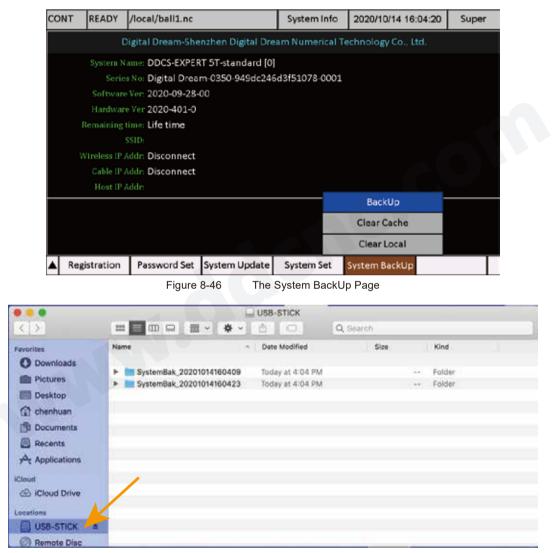


Figure 8-47 After the System BackUp, the install file is saved in the root directory in the USB-Stick

9 G Code and M Code

Command	Options	Description	Example of use	Description of the example
G0, G00	ХҮZА	Moves the axes to the point X Y Z A, at the speed specified in # 80	G0 X10 Y10 Z1	Quickly moves the axes to the point X10 Y10 Z1
G1, G01	ХҮZА	Moves the axes in line to the point X Y Z A, at the speed specified in F. If F is not specified, the speed from parameter # 76 is used.	G0 X10 Y10 Z1 F100	Moves the axes to the point X10 Y10 Z1 at a speed of 100
G2, G02 (mode1)	ХҮΖІЈК	Moving along the arc, clockwise, specified the center, at the speed specified in F. I, J, K are the coordinates of the arc center (x, y, z), relative to the end point (for G91.1) or in absolute coordinates G90.1), K can be omitted. X, Y is the end point of the arc. Z - for plunging into a spiral (end infeed). The starting point of the arc is given by the preliminary movement of the axes into it.		Draws half the circle, D = 100, from 0 to 180 degrees, clockwise, at a speed of 100
G3, G03 (mode1)	ХҮΖІЈК	Moving along the arc, counterclockwise, specified the center, at the speed specified in F. I, J, K are the coordinates of the arc center (x, y, z), relative to the end point (for G91.1) or in absolute coordinates G90.1), K can be omitted. Z - for plunging into a spiral (end infeed). The starting point of the arc is given by the preliminary movement of the axes into it.		Draws half the circle, D = 100, 180 to 0 degrees, count- er-clockwise, at a speed of 100
G2, G02 (mode2)	X Y Z R	Moving along an arc, clockwise, specified the radius, at the speed specified in F. R is the radius of the arc. X, Y is the end point of the arc. Z - for plunging into a spiral (end infeed). The starting point of the arc is given by the preliminary movement of the axes into it.	G0 X0.00 Y-50.00 G2 X100.00 Y-50.00 R50 F100	Draws half the circle, D = 100, from 0 to 180 degrees, clockwise, at a speed of 100
G3, G03 (mode2)	X Y Z R	The movement along the arc, counterclockwise, specified the radius, with the speed specified in F. R is the radius of the arc. X, Y is the end point of the arc. Z - for plunging into a spiral (end infeed). The starting point of the arc is given by the preliminary movement of the axes into it.		Draws half the circle, D = 100, 180 to 0 degrees, count- er-clockwise, at a speed of 100
G4, G04	Р	Stops processing for the number of milliseconds specified after P. In this case, the machine does not stop the spindle and does not pick up the tool	G4 P10000	Stops processing for 10 seconds
G17		Selecting the working plane X-Y	G17	Select the working plane X-Y
G18		Selection of working plane Z-X	G18	Select of working plane Z-X
G19		Selection of working plane Y-Z	G19	Select of working plane Y-Z
G20		Inch system selection	G20	Inch system selection
G21		Choice of metric system	G21	Metric system selection

Command	Options	Description	Example of use	Description of the example
G28	X Y Z A	Go back to the reference point. Works only with G91. The specified axes, first move to the specified point, then to the machine 0. If 0 is specified, then immediately into the machine zero. The not specified axes do not move.	G91 G28 X10 Y0 Z0	The X axis will first move 10mm to the right, then the XYZ axes will go to the machine axis 0. Axis A does not move.
G40	NO	Cancel tool radius compensation. The function does not work yet.	G40	Cancel tool radius compen sation.
G41	D	Compensate the tool radius to the left of the path. D - is the tool number from the table.	G40	Compensates the tool radius 1, to the left of the path.
G42	D	Compensate tool length positively. H - the number of the instrument according to the table. The function does not work yet.	G42 D1	Compensates the length o tool 1 positively.
G43	Н	Compensate tool length positively. H - the number of the instrument according to the table.	G43 H1	Compensates the length o tool 1 positively.
G44	Н	Compensate for the length of the instrument is negative. H - the number of the instrument according to the table.	G44 H1	Compensates the length o tool 1 negatively.
G49	Н	Cancel tool length compensation.	G49	Cancel tool length comper sation
G53	Н	malfunctioning, working analog G153	G44 H1	Compensates the length o tool 1 negatively.
G54 - G59	ХҮZА	Selecting the coordinate system	G54	Selecting a coordinate system
G73	X Y Z R Q I K	The cycle of step drilling with the full output of the drill, with the speed F. X, Y - the coordinates of the center; Z - is the distance from R to the bottom of the hole; R - drilling depth (usually, 0); Q - is the step size; I - distance of failure to return to G0; K - is the number of repetitions. The drill is retracted and fed at a speed of G0, which can be limited by parameters # 78 and # 79.	G83 X10 Y5 Z-7 R0 Q1,4 I0 K1 F300	Drills the hole at point X Y5, from 0 to 7mm, at a speed of 300 mm / min. step size is 1.4mm, thus steps are done. After ea step, the drill is retracted 1mm.
G81	X Y Z R K	Drilling in 1 pass, with speed F. X, Y - coordinates of the center; Z is the distance from R to the bottom of the hole; R - drilling depth; K is the number of repetitions.	G81 X10 Y5 Z-7 R0 K1 F300	Drills the hole at point X10 Y5, from 0 to 7mm, at a speed of 300 mm / min.
G82	ХҮΖККР	Drilling in 1 pass with a delay at the end (for better processing of the bottom), with speed F. X, Y - coordinates of the center; Z - is the distance from R to the bottom of the hole; R - drilling depth; K - is the number of repetitions, P - is the delay in milliseconds.	G82 X10 Y5 Z-7 R0 K1 P2000 F300	Drills the hole at point X10 Y5, from 0 to 7mm, at a speed of 300 mm / min. A the bottom of the drilling, the pause is 2 seconds.
G83	X Y Z R Q I K	The cycle of step drilling with the full output of the drill, with the speed F. X, Y - the coordinates of the center; Z - is the distance from R to the bottom of the hole; R - drilling depth (usually, 0); Q - is the step size; I - distance of failure to return to G0; K - is the number of repetitions. The drill is retracted and fed at a speed of G0, which can be limited by parameters # 78 and # 79.	G83 X10 Y5 Z-7 R0 Q1,4 I0 K1 F300	Drills the hole at point X10 Y5, from 0 to 7mm, at a speed of 300 mm / min. T step size is 1.4mm, thus 5 steps are done. Failure = 0 in this way the drill is returned on fast feed to th end point of the previous step.G80

Command	Options	Description	Example of use	Description of the example	
G74	X Y Z R M	Tapping of right hand threads to be done with M3 spindle rotation.	M03 M8 (Speed & Feedrate) S400 F20	we want to tap a 1/4-20 thread 0.500" deep at 0, 0. Here's the code to do that with G84 G Code.	
G84	X Y Z R M	Tapping of right hand threads to be done with M3 spindle rotation.	(Tapping) Z1.0 G00 X0.0 Y0.0 G01 M29 G84 Z-0.5 R0.2		
G90	No	For G0/G1:Specifying absolute coordinates; For G2/G3:The main coordinates are absolute and the centers of the arcs are relative.	G90 G1 X10 Y0 G90 G2 X20 I5	(0, <u>0)</u> (10,0) (15,0) (20,0)	
G91	No	For G0/G1:Specifying relative coordinates; For G2/G3:The main coordinates are relative and the centers of the arcs are relative.	G90 G1 X10 Y0 G91 G2 X10 I5 G2 X-10 I-5	(0,0) (10.0) (15,0) (20.0)	
G90.1	No	For G0/G1:Specifying absolute coordinates; For G2/G3:The main coordinates are absolute and the centers of the arcs are absolute.	G90 G1 X10 Y0 G90.1 G2 X20 I15 G2 X10 I15		
G91.1	No	For G0/G1:Specifying relative coordinates; For G2/G3:The main coordinates are relative and the centers of the arcs are absolute.	G90 G1 X10 Y0 G90.1 G2 X20 I15 G2 X10 I15	(0, <u>0)</u> (10,0) (15,0) (20,0)	
G92	ХҮZА	Setting new current coordinates	G90G92X0Y0Z0A0	Zero all axes	
G98	No	After drilling cycles, the tool returns to the Z position, before the start of the cycle. Raises the Z axis to a safe height	G98 G1 Z1 F1000 G1 Z1 F1000 G81 X0 Y0 Z-7 R0 K1 F300	After drilling, the tool will be in position 1 to Z	
G99	No	After the drilling cycles, the tool returns to the point R (along the Z axis). Raises the Z axis to a safe height.	G99 G1 Z1 F1000 G81 X0 Y0 Z-7 R0	After drilling, the tool will be in position 0 to Z	

Command	Options	Description	Example of use	Description of the example
M0, M00	No	Stopping the program, before pressing the "START" button, is completely the same as pressing the "PAUSE" button.	MO	Stops the program, before pressing the "START" button. Raises the Z axis and sets the spindle, if it is set in the settings.
M01	No	Optional Stop: Operator Selected to Enable	M01	Stops the machine unless there is further interaction from the User.
M3, M03	S	Start spindle rotation with speed S	M3 S2000	Starts the spindle at a speed of 2000 rpm
M4, M04	S	Start spindle rotation with speed S in CCW direction	M4 S2000	Starts the spindle at a speed of 2000 rpm in CCW
M5, M05		Stop the spindle	M5	Stops the spindle
M6, M06	Т	Plays the contents of the T.nc. file Specifies the tool number for offsets. T specifies the number of the tool (it can be omitted).	M6 T5	Replaces the tool with T5
M8, M08	No	Switch on spindle cooling	M8	Switch on spindle cooling
M9, M09	No	Switch off spindle cooling	M9	Switch off spindle cooling
M10	No	Turn on the coolant pump	M10	Turn on the coolant pump
M11	No	Turn off the coolant pump	M11	Turn off the coolant pump
M30	No	End of the program, cancels all commands and loops. Do not use immediately after M6.	M110	It stops the program, before pressing the "START" button. Peep 3 times with built-in peepal
M47	No	Repeat program from first line.	M47	Restart Program Execution
M50 / M51		Output 01 Open / Close		Control the Output 01
M52 / M53		Output 02 Open / Close		Control the Output 02
M54 / M55		Output 03 Open / Close		Control the Output 03
M56 / M57		Output 04 Open / Close		Control the Output 04
M58 / M59		Output 05 Open / Close		Control the Output 05
M60 / M61		Output 06 Open / Close		Control the Output 06
M62 / M63		Output 07 Open / Close		Control the Output 07
M64 / M65		Output 08 Open / Close		Control the Output 08
M66 / M67		Output 09 Open / Close		Control the Output 09
M68 / M69		Output 10 Open / Close		Control the Output 10
M70 / M71		Output 11 Open / Close		Control the Output 11
M72 / M73		Output 12 Open / Close		Control the Output 12
M744 / M75		Output 13 Open / Close		Control the Output 13
M76 / M77		Output 14 Open / Close		Control the Output 14
M78 / M79		Output 15 Open / Close		Control the Output 15
M80 / M81		Output 16 Open / Close		Control the Output 16
		Output 17 Open / Close		Control the Output 17
N82 / N83		Output 18 Open / Close		Control the Output 18
M82 / M83 M84 / M85				
M84 / M85				
		Output 19 Open / Close Output 20 Open / Close		Control the Output 19 Control the Output 20

Command	Options	Description	Example of use	Description of the example
M98		Call a Subprogram with the reference to the separate program created and loaded on the controller.	M98 Pxxxx Ln	xxxx is the line number, nn is the number of repetitions
M99		End Sub-Program or Return or Loop	O01234 (Part program) M98 P111 (Jumps to program O00111 to run) (The M99 at the end of the sub-program will jump back here) (Finish part) M30 (End of main program)	This M-code is used to end the sub-program. If M99 is used in the main program, it will cause the program to loop back to the beginning and repeat over and over again without stopping.
F	No Application	Sets the speed of the working feed, for many commands. You can write, as at the end of the line with the command, and a separate line. If F is not specified anywhere, the speed from parameter # 76 is used.	F100 G1X10.5	Moves the X axis to, at point 10.5, at a speed of 100.
Ρ	No Application	Specifies the pause time, in milliseconds, for the G4 and G82 commands. You can write, as at the end of the line with the command, and a separate line.	P2000 	Pauses the program for 2 seconds
S	No Application	Specifies the spindle speed for the M3 command. You can write, as at the end of the line with the command, and a separate line.	S21000 M3	Starts the spindle at a speed of 21000 rpm
•	No Application	The symbol for dividing the whole and fractional parts of numbers. Comma - does not work.	G0 X10.5	Moves the X axis on fast feed, to the point 10.5. Option G0 X10.5 - will not work.
SIN	[n]	The sine of the parameter n, in degrees.	#1=SIN[30.0]	
COS	[n]	The cosine of the parameter n, in degrees.	#1=COS[60.0]	
TAN	[n]	The tangent of the parameter n, in degrees.	#1=TAN[45.0]	
SQRT	[n]	The square root of the parameter n.	#1=SQRT[2.0]	
ATAN	[n1,n2]	returns the angle between the ray to the point (n1,n2) and the positive x-axis, confined to (-180, 180].	#1=ATAN[30,10]	
ABS	[n]	returns the absolute value of that parameter n.	#1=ABS[-30.1]	