

User Guide
Version:
V2.0



Commissioning Manual of CNC controller

Applicable Product
M6200i Five-axis CNC controller

■ Please read this Manual carefully before use

1. Wiring

Refer to the appendix, define the wiring according to each port

Caution:

Pin 1 of I/O input port is COM port:

Connect 0V for PNP; input signal at high level: active;

Connect 24V for NPN; input signal at low level: active;

All output signals of the controller are at low level;

2. Parameter setting

1. Controller parameter setting

- CNC controller model: this parameter has been configured before leaving the factory. Do not modify it at will;

Pulse series: Fill in 0 for M5 controller; Fill in 1 for M5 Plus vertical controller; Fill in 2 for M5 Plus horizontal controller; Fill in 3 for M5 II;

Bus series: Fill in 4 for X6 controller; Fill in 5 for X6 Plus vertical controller; Fill in 6 for X6 Plus horizontal controller;

PARA INDEX	NO.	NAME	VALUE	AUT	ACT
ALL	0000000	SYSTEM MOD 0:Kaiyuan-M5	6	P	RBT
SYS CFG	0000005	SYSTEM NAM 1:Kaiyuan-M5Plus-V	CNC	M	NOW
I/O	0000006	CPU CORE N 2:Kaiyuan-M5Plus-H	2	P	RBT
HAND WHEEL	0000009	POWER MODU 3:Kaiyuan-M5II	0	P	RST
COMMU	0000010	CONTROL PE 4:Master-X6	3000	S	RBT
SHARE DISK	0000011	INTERPOLAT 5:Master-X6Plus-V	4000	S	RBT
DISPLAY	0000020	GUI UPDATE 6:Master-X6Plus-H	100	S	RST
USR PARA	0000021	MONITOR EXTEND PROG?	1	M	NOW
	0000022	ALLOW TO MODIFY EXTEND PROG?	1	M	NOW
	0000025	MAX RECORD COUNT IN ALARM LOG	100	S	NOW
	0000026	GOTO ALM-WND WHILE ALM OCCUR?	1	M	NOW
	0000027	PLC EDGE-SIGNAL BUF SIZE	2000	M	RBT
	0000028	ENABLE EDGE SIGNAL OF D-REG	1	M	RST
	0000029	PLC FILE NAME (WITHOUT EXT)	machtool	M	RBT

SYSTEM-PARA					
			HOME	STOP	EMG-STOP
SYS PARA	CHAN PARA	AXES PARA	SPDL PARA	DATA TABLE	FIND
					HEAD TAIL

- IO input type (NPN/PNP):

Fill in 0: the COM port of the common terminal is connected to 24V; IO input signal is active at low level;

Fill in 1: the COM port of the common terminal is connected to 0V; IO input signal is active at high level

0000035	IO-INPUT TYPE(NPN/0:NPN(COM24V)	0	M	RBT
0000036	REMOTE IO ADDRESS:1:PNP(COM0V)		M	RBT

- Serial port (serial port 1 or serial port 4) communication baud rate: baud rate parameter setting for 485 communication between the controller and the driver

Fill in 9600 for Maxsine drive;

Fill in 19200 for AUCTECH drive or Yaskawa drive;

0000073	SERIAL MODBUS BAUDRATE	9600	M	RST
0000074	SERIAL MODBUS DATA BITS	8	M	RST
0000075	SERIAL MODBUS STOP BITS	1	M	RST
0000076	SERIAL MODBUS PARITY	0	M	RST
0000080	BAUDRATE OF SERIAL 4	19200	M	RST

- Serial port (serial port 1 or serial port 4) communication verification type:

Fill in 2 for Maxsine drive or Yaskawa drives;

Fill in 1 for AUCTECH drive;

2. Channel parameter setting

- Channel configuration parameters: fill in the corresponding channel spindle from 0 according to the actually used number of feed spindle

ALL	1000010	(CHAX0)LOGIC AXIS-NO OF X	0	M	RST
CHAN CFG	1000011	(CHAX1)LOGIC AXIS-NO OF Y	1	M	RST
AXIS CFG	1000012	(CHAX2)LOGIC AXIS-NO OF Z	2	M	RST
SPDL CFG	1000013	(CHAX3)LOGIC AXIS-NO OF A	-1	M	RST
PROG AXIS	1000014	(CHAX4)LOGIC AXIS-NO OF B	-1	M	RST
SPEED	1000015	(CHAX5)LOGIC AXIS-NO OF C	-1	M	RST

parameter 1000013 to 3, and correspondingly set B0.14 to 1 in "Diagnosis" - "Register Bit" - "[B]", as shown in the following figure

B0.14	4TH AXIS IS A-AXIS[0-NO;1-YES]	4TH IS A-A	ON	R W M
B0.15	4TH AXIS IS B-AXIS[0-NO;1-YES]	4TH IS B-A	OFF	R W M
B0.16	4TH AXIS IS C-AXIS[0-NO;1-YES]	4TH IS C-A	OFF	R W M
B0.17	5TH AXIS IS B-AXIS[0-NO;1-YES]	5TH IS B-A	OFF	R W M
B0.18	5TH AXIS IS C-AXIS[0-NO;1-YES]	5TH IS C-A	OFF	R W M

- Speed configuration parameter: set the maximum feed speed of the channel, only limit G01 and there is thing to do with the fast-moving speed G00;

1000130	MAX FEED SPEED(mm/min)	15000.0	M	RST
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3. axis parameter setting

- Servo drive brand: fill in based on the brand of drive of actually used absolute value;

PARAMETER NO.	PARAMETER NAME	PARAMETER VALUE	UNIT	PARAMETER TYPE	PARAMETER SETTING
2000004	SERVO BRAND	-1:OTHER	1	P	RBT
2000006	COMMU SERIAL PORT	0:MAXSINE	4	M	RBT
2000010	PITCH LENGTH(mm)	1:DO	10.0	M	RBT
2000021	PULSE TYPE(0-PULSE+DIR ; 1-AB ; 2-	2:YASKAKWA	0	M	RBT

- Serial port No. for communication: fill in 1 for network port; fill in 4 for 3-core 485 communication port
- Screw pitch: fill in according to the screw pitch of machine tool screw rod;
- Numerator and denominator of command electronic gear ratio: fill in according to the actual reduction ratio, and distinguish the motor end and shaft end;
- Encoder type: incremental type and absolute type;
- Number of frequency division output pulses per revolution of encoder: this parameter refers to the number of frequency division pulses per revolution fed back to the controller by the drive. In general, it needs to be multiplied by 4; In the bus controller, it is directly set as the number of pulses per revolution of the encoder;
- Number of pulses per revolution of encoder: fill in according to the actual encoder bits (encoder resolution); For example, fill 131072 for 17-bit encoder and fill in 16777216 for 24-bit encoder;
- Numerator and denominator of feedback electronic gear ratio: fill in according to the reduction ratio, distinguish the motor end and shaft end;
- Encoder position offset: this parameter is used to set the machine tool mechanical zero point for the absolute value motor for the first time. Move the feed spindle to the place where it needs to be set as the mechanical zero point. At this time, the coordinate value of the machine tool displayed in the controller interface is a. then enter the value of a into this parameter;

2000010	PITCH LENGTH(mm)	10.0	M	RBT
2000021	PULSE TYPE(0-PULSE+DIR ; 1-AB ; 2-	0	M	RBT
2000022	INSTRUCT DIR REVERSE	0	M	RBT
2000025	INSTRUCTION E-GEAR RATIO NUMERA	1	M	RBT
2000026	INSTRUCTION E-GEAR RATIO DENOMIN	1	M	RBT
2000030	ENABLE FEEDBACK?	1	M	RST
2000031	ENCODER TYPE(0-INC ; 1-ABS)	1	M	RBT
2000032	ENCODER DIVISION PULSE COUNT	23	M	RBT
2000033	ENCODER PULSE COUNT	23	M	RBT

2000034	ENCODER OFFSET(mm)	0.0	M	RBT
2000035	ABS ENCODER RESET	0	M	RBT
2000036	ABS ENCODER OVERFLOW COUNT	0	M	RBT
2000040	FEEDBACK DIR REVERSE?	0	M	RBT
2000041	FEEDBACK E-GEAR RATIO NUMERATOR	1	M	RBT
2000042	FEEDBACK E-GEAR RATIO DENOMINATOR	1	M	RBT

Speed configuration:

Maximum speed limit: active for both G00 and G01;

G00 fast moving speed: only active for G00;

ALL	2000100	MAX SPEED LIMIT(mm/min)	15000.0	M	RST
AXIS CFG	2000101	MAX ACCELERATION LIMIT(mm/sec^2)	5000.0	M	RST
E-GEAR	2000110	SPEED OF G00(mm/min)	15000.0	M	RST
ABS POS	2000111	SPEED TIME OF G00(ms)	8.0	M	RST
HOME	2000112	ACCELERATION TIME OF G00(ms)	8.0	M	RST
REF POS	2000115	BRAKE ACCELERATION	2000.0	M	RST
SPEED	2000120	MANUAL ACCELERATION(mm/sec^2)	1000.0	M	NOW
LIMIT	2000125	THE 1ST SPEED(mm/min)	2000.0	M	NOW
BACKLASH	2000126	THE 2ND SPEED(mm/min)	8000.0	M	NOW
PITCH ERR	2000127	THE 3RD SPEED(mm/min)	3000.0	M	NOW
LINEAR COMP	2000128	THE 4TH SPEED(mm/min)	4000.0	M	NOW
SYNC AXIS	2000140	SMOOTH COEF	0	M	RST
SERVO PARA					

Limit configuration: first set the positive and negative soft limit enable, and then set the corresponding positive and negative soft limits; Reset for active;

PARA INDEX	NO.	NAME	VALUE	AUT	ACT
ALL	2000150	ENABLE POS SOFTWARE LIMIT?	1	M	RST
AXIS CFG	2000151	ENABLE NEG SOFTWARE LIMIT?	1	M	RST
E-GEAR	2000152	POS SOFTWARE LIMIT(mm)	99999.0	M	RST
ABS POS	2000153	NEG SOFTWARE LIMIT(mm)	-99999.0	M	RST
HOME	2000154	SAFE DIS FOR SOFTWARE LIMIT(mm)	15.0	M	RST
REF POS	2000155	ENABLE THE 2ND POS SOFTWARE LIM	0	M	RST
SPEED	2000156	ENABLE THE 2ND NEG SOFTWARE LIM	0	M	RST
LIMIT	2000157	THE 2ND POS SOFTWARE LIMIT(mm)	0.0	M	RST
BACKLASH	2000158	THE 2ND NEG SOFTWARE LIMIT(mm)	0.0	M	RST
PITCH ERR	2000159	SAFE DIS FOR THE 2ND SOFTWARE L	15.0	M	RST
LINEAR COMP					
SYNC AXIS					
SERVO PARA					

4. Spindle parameter setting

A. Analog quantity control

- Maximum speed of spindle motor: the speed value filled for this parameter corresponds to 10V voltage
- Control mode of spindle rotation direction: 0 refers to analog quantity control, which is applicable to the case without forward rotation and reverse rotation signal control

1 refers to IO control, i.e. PLC is required to control forward rotation and reverse rotation signals

NO.	NAME	VALUE	AUT	ACT
3000000	INSTALL ENABLE	1	M	RST
3000001	SPINDLE NAME	S	M	RST
3000002	SLAVE NO	6	M	RST
3000003	LOGIC POS AXIS NO	6	M	RST
3000010	MAX ROTARY SPEED OF MOTOR(rpm)	8000	M	RST
3000011	MAX ROTARY SPEED OF SPINDLE(rpm)	8000	M	RST
3000015	ENABLE FEEDBACK?	1	M	RST
3000016	ENCODER PULSE COUNT	10000	M	RST
3000017	FEEDBACK PORT	6	M	RST
3000018	REVERSE FEEDBACK DIR?	0	M	RST
3000019	FEEDBACK ENCODER TYPE	0	M	RST
3000030	DA OUT PORT	0	M	RST
3000031	DA ADJUST COEF	1.0	M	RST
3000035	ROTARY DIR MODE	1	M	RST

B. Position control

- Physical spindle no. of channel U spindle: set to 6

1000016	(CHAX6)LOGIC AXIS-NO OF U	6	M	RST
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- . Configure the parameters of spindle 6, as shown in the following figure:

PARA INDEX	NO.	NAME	VALUE	AUT	ACT
ALL	2000000	INSTALL ENABLE	1	M	RST
AXIS CFG	2000001	AXIS NAME	X	M	RST
E-GEAR	2000002	AXIS TYPE(0-LINEAR;1-ROTARY;2-POS	0	M	RST
ABS POS	2000003	SLAVE NO	1	M	RBT
HOME	2000004	SERVO BRAND	1	P	RBT
REF POS	2000006	COMM SERIAL PORT	4	M	RBT
SPEED	2000010	PITCH LENGTH(mm)	10.0	M	RBT
LIMIT	2000021	PULSE TYPE(0-PULSE+DIR ; 1-AB ; 2-	0	M	RBT
BACKLASH	2000022	INSTRUCT DIR REVERSE	0	M	RBT
PITCH ERR	2000025	INSTRUCTION E-GEAR RATIO NUMERA	1	M	RBT
LINEAR COMP	2000026	INSTRUCTION E-GEAR RATIO DENOMIN	1	M	RBT
SYNC AXIS	2000030	ENABLE FEEDBACK?	1	M	RST
SERVO PARA	2000031	ENCODER TYPE(0-INC ; 1-ABS)	1	M	RBT
	2000032	ENCODER DIVISION PULSE COUNT	23	M	RBT

- M code control

M50: switch the spindle from speed control mode to position control mode

M51: switch the spindle from position control mode to speed control mode

5. User parameter settings

- PLC parameters ("Diagnosis" - "Register Bit" - "[B]")

Setting for register B: use the Enter key to change the corresponding register **[Status]** value

ADDR	NOTES	KEYWORD	STATE	ATTR
B0.0	FEED AXIS RETURN HOME MODE[0-AB;HOME MODE		OFF	R W M
B0.1			OFF	R W M
B0.2	G00 RATE TRIM TRACK G01[0-NO;1-YG00 RATE T		OFF	R W M
B0.3			OFF	R W M
B0.4	SPDL HAS SPEED ARRIVAL SIGNAL?[0-NO;1-YES] SPDL ARR		OFF	R W M
B0.5			ON	R W M
B0.6			OFF	R W M
B0.7			ON	R W M
B0.8	IS DRILLING CENTER?[0-NO;1-YES]	DRILL CENT	OFF	R W M
B0.9	IS HAT STYLE CNC?[0-NO;1-YES]	HAT MACH C	OFF	R W M
B0.10	IS MACHINE HAND CNC[0-NO;1-YES]	M-HAND MAC	ON	R W M
B0.11	MANUAL DEBUG TOOL MAGAZINE[0-NO;1-YES]	MANU DEBUG	OFF	R W M
B0.12	SINGLE DOUBLE VALVES FOR MAGAZITL MAGZ SI		OFF	R W M
B0.13			OFF	R W M

ADDR	NOTES	KEYWORD	STATE	ATTR
B0.14	4TH AXIS IS A-AXIS[0-NO;1-YES]	4TH IS A-A	ON	R W M
B0.15	4TH AXIS IS B-AXIS[0-NO;1-YES]	4TH IS B-A	OFF	R W M
B0.16	4TH AXIS IS C-AXIS[0-NO;1-YES]	4TH IS C-A	OFF	R W M
B0.17	5TH AXIS IS B-AXIS[0-NO;1-YES]	5TH IS B-A	OFF	R W M
B0.18	5TH AXIS IS C-AXIS[0-NO;1-YES]	5TH IS C-A	OFF	R W M
B0.19			OFF	R W M
B0.20			OFF	R W M
B0.21			OFF	R W M
B0.22			OFF	R W M
B0.23			OFF	R W M
B0.24			OFF	R W M
B0.25			OFF	R W M
B0.26			OFF	R W M
B0.27			OFF	R W M

B REGISTER

B0.0: set the zeroing mode for the feed spindle. If B0.0 is set to 0, it means that the feed spindle is configured with an absolute motor. When the feed spindle returns to zero, PLC controls the feed spindle to move to the set mechanical zero position; If B0.0 is set to 1, it means that that the feed spindle is configured with an incremental motor. Before the feed spindle returns to zero, it is necessary to set the zeroing stop signal of each spindle in the PLC.

B0.2: set G00 magnification adjustment following mode. B0.2 is set to 0, which means that G00 magnification adjustment is independently controlled by panel keys and does not follow G01 magnification for change; B0.2 is set to 1, which means that G00 magnification adjustment follows G01 magnification for change.

B0.4: set whether the spindle has speed arrival signal or not. B0.4 is set to 0, which means that the machine tool has a speed arrival signal, and the spindle speed arrival signal is given by the speed arrival signal of the machine tool; B0.4 is set to 1, which means that the machine tool has no speed arrival signal, the speed arrival signal of the spindle is given by the delay time. After the spindle rotates, it is delayed for a period of time (T0012 and T0014 settings in the register group), and the PLC will automatically give the speed arrival signal of the spindle. B0.4 setting determines the mode of spindle speed arrival signal: whether the spindle speed arrival signal is given by signal or by time delay. B0.4 is necessary to be set according to the actual situation of the machine tool.

According to the type of machine tool, the set values of B0.8, B0.9 and B0.10 are shown in the following table:

Machine tool type	B0.8	B0.9	B0.10
Ordinary milling machine	0	0	0
Drilling and tapping center	1	0	0
Rain hat type machining center	0	1	0
Manipulator machining center	0	0	1

If B0.8, B0.9 and B0.10 are all set to 0, the PLC module of ordinary milling machine is selected.

If B0.8 is set to 1, the PLC module of drilling and tapping center is selected.

If B0.9 is set to 1, the PLC module of the hat type machining center is selected.

If B0.10 is set to 1, the PLC module of the manipulator machining center is selected.

Note: 1. Only one of B0.8, B0.9 and B0.10 can be set as 1, otherwise, PLC will alarm "machine type selected in register B is wrong"; 2. If B0.8, B0.9 and B0.10 are modified, the controller must be restarted.

B0.11: set whether to manually debug the manipulator tool arm. B0.11 is set to 0, which means it is not set to manual commissioning mode; B0.11 is set to 1, which means that the manipulator arm can be manually commissioned.

B0.12: set the control mode of the cutter head advance and retreat signal of the hat type machining center. B0.12 is set to 0, which means that the cutter head advance and retreat are controlled by double valves; B0.11 is set to 1, which means that the cutter head advance and retreat are controlled by a single valve.

B0.14~B0.18 are the configuration options when configuring multiple spindles. The configuration is shown in the following table:

Machine tool axis configuration	B0.14	B0.15	B0.16	B0.17	B0.18
Only for axis XYZ	0	0	0	0	0

XYZ axis +axis A	1	0	0	0	0
axis XYZ +axis B	0	1	0	0	0
axis XYZ +axis C	0	0	1	0	0
axis XYZ +axis AB	1	0	0	1	0
axis XYZ +axis AC	1	0	0	0	1
axis XYZ +axis BC	0	1	0	0	1

Note: any modification in one of B0.14~B0.18 requires controller restart, and the modification takes effect after controller restart.

- PLC parameters ("Diagnosis" - "Register Group" - "[T]")

T0000: set "preset value of servo reset timer (MS)", which is 1000 by default;

T0002: set "preset value of servo heavy current timer (MS)", which is 500 by default;

T0004: set "preset value of servo enable timer (MS)", which is 500 by default;

T0006: set "preset value of holding brake timer (MS)", which is 1000 by default;

T0008: set "preset value of lubrication interval timer (MS)", which is 1800000 by default;

T0010: set "preset value of lubrication timer (MS)", which is 30000 by default;

T0012: set "preset value of spindle forward rotation and reverse rotation delay timer (MS)", which is 3000 by default;

T0014: set "preset value of spindle stop delay timer (MS)", which is 3000 by default;

T0016: set "preset value of timer for spindle speed that does not reaching alarm threshold (MS)", which is 8000 by default;

T0018: set "preset value of timer for tool change failure alarm threshold (MS)", which is 5000 by default;

T0020: set "preset value of command reset timer (MS)", which is 10 by default;

T0022: set "preset value of holding brake delay off enable timer (MS)", which is 100 by default;

T0024: set "preset value of command reset start timer (MS)", the default value is 100 by default;

T0026: set "preset value of command reset canceling timer (MS)", which is 100 by default;

- PLC parameters ("Diagnostics" - "Register Group" - "[D]")

D1000: set the tool magazine capacity and fill it in according to the actual tool magazine capacity;

D1004: the position of the second reference point of spindle Z, which is applicable to hat type or manipulator tool magazine type. Fill in according to the actual position of the second reference point when changing the tool of spindle Z, and the unit is micron, with the plus sign or minus sign;

6. Compensation parameter setting

- Fill in compensation parameters of each feed spindle

PARA INDEX	NO.	NAME	VALUE	AUT	ACT
ALL	2000400	ENABLE BACKLASH COMPEN?	0	M	RST
AXIS CFG	2000401	FEED BACKLASH(um)	0.0	M	RST
E-GEAR	2000402	RAPID BACKLASH(um)	0.0	M	RST
ABS POS	2000403	BACKLASH COMPEN STEP(um)	10.0	M	RST
HOME	2000405	ENABLE QUADRANT JUMP COMPEN?	0	M	RST
REF POS	2000406	QUADRANT JUMP COMPEN VALUE(um)	0.0	M	RST
SPEED	2000407	QUADRANT JUMP COMPEN TIME(ms)	0	M	RST
LIMIT	2000408	QUADRANT JUMP COMPEN DELAY(ms)	0	M	RST
BACKLASH					
PITCH ERR					
LINEAR COMP					
SYNC AXIS					
SERVO PARA					

AXES-PARA->AXIS0[X]

HOME STOP EMG-STOP

SYS PARA CHAN PARA AXES PARA SPDL PARA DATA TABLE FIND HEAD TAIL RESET ZERO AXIS << AXIS >>

- Fill in compensation data of each feed axis

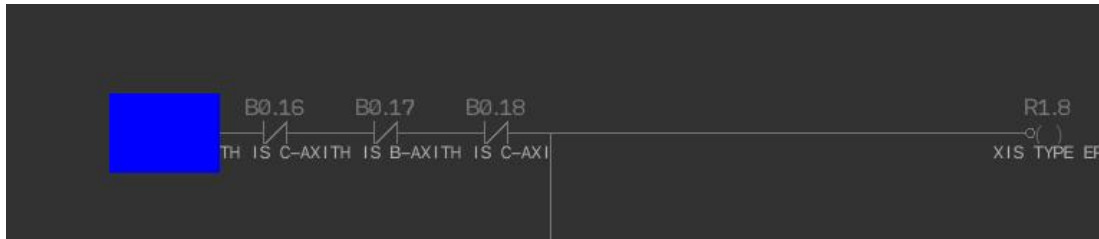
PARA INDEX	NO.	NAME	VALUE	AUT	ACT
ALL	4000000	AXIS0/DIR1/PITCH COMPEN[0](um)	0.0	M	HOM
AX0 PITCH	4000001	AXIS0/DIR1/PITCH COMPEN[1](um)	0.0	M	HOM
AX1 PITCH	4000002	AXIS0/DIR1/PITCH COMPEN[2](um)	0.0	M	HOM
AX2 PITCH	4000003	AXIS0/DIR1/PITCH COMPEN[3](um)	0.0	M	HOM
AX3 PITCH	4000004	AXIS0/DIR1/PITCH COMPEN[4](um)	0.0	M	HOM
AX4 PITCH	4000005	AXIS0/DIR1/PITCH COMPEN[5](um)	0.0	M	HOM
AX5 PITCH	4000006	AXIS0/DIR1/PITCH COMPEN[6](um)	0.0	M	HOM
AX6 PITCH	4000007	AXIS0/DIR1/PITCH COMPEN[7](um)	0.0	M	HOM
AX7 PITCH	4000008	AXIS0/DIR1/PITCH COMPEN[8](um)	0.0	M	HOM
AX8 PITCH	4000009	AXIS0/DIR1/PITCH COMPEN[9](um)	0.0	M	HOM
AX9 PITCH	4000010	AXIS0/DIR1/PITCH COMPEN[10](um)	0.0	M	HOM
AX10 PITCH	4000011	AXIS0/DIR1/PITCH COMPEN[11](um)	0.0	M	HOM
AX11 PITCH	4000012	AXIS0/DIR1/PITCH COMPEN[12](um)	0.0	M	HOM
	4000013	AXIS0/DIR1/PITCH COMPEN[13](um)	0.0	M	HOM

DATA-TABLE

3. I/O signal and PLC commissioning

1. Fill I/O signal into PLC

Select "program index" in PLC, select "I/O-XY" and "I/O -ATC" with keyboard, and fill in corresponding X and Y signals: fill in the left blank with X signal; fill in the right blank with Y signal; do not change or delete the R signal at will.



2. M code and user alarm setting

- ."Setting" - "M code":

MCODE	COMMENTS	GRP	OUTR	OUTV	WAITR	WAITV	DLY(ms)	PROG
M0		-	-	-	-	-	0	-
M1		-	-	-	-	-	0	-
M2	STOP	-	R40.15	1	-	-	0	-
M3	S-REV	0	R45.15	1	R1.24	1	100	-
M4	S-FWD	0	R45.16	1	R1.24	1	100	-
【 M5 】	S-STOP	0	R40.2	1	R1.25	1	100	-
M6	CHANG TOOL	-	-	-	-	-	300	9999
M7	BLOW	-	R40.5	1	-	-	100	-
M8	COOL	1	R40.6	1	-	-	100	-
【 M9 】	CLOSE CODE ar	1	R40.7	1	-	-	100	-
M10	4Axis CLAMP	-	R41.31	1	X2.17	1	100	-
M11	4Axis open	-	R41.31	0	X2.16	1	100	-
M12		-	-	-	-	-	0	-
M13	TOOL Loading	-	-	-	-	-	300	9997

(CHAN0)M-CODE DEFINE

HOME STOP EMG-STOP

SETAS DEF FIND DEL DEL ITEM

NO.	ADDR	CH_MASK	RANK	ALARM CONTENT	KEYWORD
001	A60.0	ffffH	2	PRESSURE ALARM	PRESSURE A
002	A60.1	ffffH	3	SPINDLE DRIVE ALARM	SPDL ALM
003	A60.2	ffffH	3	SERVO DRIVE ALARM	SERVO ALM
004	A60.3	ffffH	2	CUTTING FLUID OVERLOAD	CUT FLUID
005	A60.4	ffffH	1	BACK FLUSHING OVERLOAD	BACK FLUSH
006	A60.5	ffffH	1	OIL-WATER SEPARATION OVERLOAD	OIL-WATER
007	A60.6	ffffH	1	LUBRICATION LEVEL ALARM	LUBR LEVEL
008	A60.7	ffffH	1	LUBRICATION PRESSURE ALARM	LUBR PRESS
009	A60.8	ffffH	2	OIL COOLER ALARM	OIL COOLER
010	A60.9	ffffH	2	SPDL CURRENT MODE FORBIDS LOO	NO LOOSEN
011	A60.10	ffffH	3	CHOOSING MAGAZINE TYPE ERROR	MAGZ ERR A
012	A60.11	ffffH	3	SELECTING AXIS TYPE ERROR ALA	AXS TYPE E
013	A60.12	ffffH	3	SYSTEM NEEDS RESTART	SYS NEED R

USER ALARM

HOME STOP EMG-STOP

SETUP M-CODE USR ALARM PLC MSG MAG TABLE LOGIN SYS INFO

4. Tool magazine commissioning

- In register B, B0.8-B0.12 are set according to the tool magazine type of the machine tool:

B0.8	IS DRILLING CENTER?[0-NO;1-YES]	DRILL CENT	OFF	R W M
B0.9	IS HAT STYLE CNC?[0-NO;1-YES]	HAT MACH C	OFF	R W M
B0.10	IS MACHINE HAND CNC[0-NO;1-YES]	M-HAND MAC	ON	R W M
B0.11	MANUAL DEBUG TOOL MAGAZINE[0-NO;1-YES]	MANU DEBUG	OFF	R W M
B0.12	SINGLE DOUBLE VALVES FOR MAGAZITL	MAGZ SI	OFF	R W M

- Loading process of manipulator tool magazine
 1. Reset the tool magazine table and check whether the tool number corresponds to the tool position number one by one. If the tool number of the spindle is 0, there should be no tool on the spindle at this time; it can also set the spindle tool number to 25 (in the case of 24-tool magazine);
 2. For example, if the tool to be loaded is tool 3, run the program or enter MDI: M6T3 to exchange the spindle tool with the tool position where T3 is located;
 3. Manually load the tool 3 on the spindle;
 4. Run the program or enter MDI: M6 to load the tool 3 into the tool magazine;
 5. Tool loading is completed;
- .Loading process of hat type tool magazine
 1. Reset the tool magazine table to ensure that the tool number corresponds to the tool position number one by one;
 2. Set the spindle tool number as the current tool position number;
 3. Manually load the tool 1 on the spindle;
 4. Next, to load the tool 3, run M6T3, wait for after completing the tool change, and then manually load the tool 3 on the spindle;

5. Controller upgrade, backup and recovery

1. Controller upgrade
 - A. Place the xxx.upg upgrade file into the root directory of the USB flash disk, and insert the USB flash disk into the USB flash disk port of the controller;
 - B. Enter "Setting" - "controller information" - "controller upgrade";
 - C. Select the upgrade package and press "upgrade";

✓	UPGRADE FILE NAME	FILE SIZE	MODIFY TIME

						HOME	STOP	EMG-STOP	
VER INFO	DEV INFO	UPGRAD	SYSREG	TIME SET	TECH SUPT	DATA EXPORT	SYS FILE	START LOGO	UPGRAD

2. Controller backup and recovery

After commissioning the machine tool, enter "setting" - "controller information" - "data export" or "data import", select the corresponding data type, insert the USB flash disk to export or import data:

SEL	DATA TYPE	DETAIL	AUTH
	USER PROGRAM	USER-PROG	UM
	USER DATA	COORDSYS/TOOL/VARIABLE	UM
	EXT-PROG	DRILL-CYCLE	M
✓	PARA SETUP	SYSPARA/CHANPARA/AXESPARA/COMPENPARA/DATATBL	M
	MACHINE DATA	PLC/REGISTER/M-CODE/USR-ALARM/PLC-MSG/SERVO-DI	M
	SYSTEM DATA	SYSTEM DATA	M
	LOG FILE	ALARM-LOG	M
	CUSTOM PROJEC	CUSTOM PROJECT	S

DATA EXPORT									
FILE	share export 20240123	HOME	STOP	EMG-STOP					
VER INFO	DEV INFO	UPGRAD	SYSREG	TIME SET	TECH SUPT	DATA EXPORT	SELECT	SELECT ALL	EXPORT

6. Common problems and alarm troubleshooting

- Feed spindle overspeed alarm

Check the "maximum motor speed" in the spindle parameters to ensure that the actual motor speed does not exceed this parameter value;

- "Spindle speed does not arrive" alarm

A61.4	THE SPDL SPEED HAS NOT ARRIVED
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Troubleshooting:

1. If the spindle drive provides speed arrival signal and zero speed arrival signal, fill the signal in the corresponding blank in the PLC;
 2. If the spindle drive does not provide speed arrival signal and zero speed arrival signal, set B0.4 to 1 in "Diagnosis" - "Register Bit" - "[B]";
- In the process of program machining, the machining speed suddenly slows down, and the inspection results of the parameters, program and panel magnification switch are normal

Cause: it may be that an spindle is about to approach the soft limit, and the controller automatically limits the speed

Troubleshooting: modify the program or modify the safety distance of soft limit in the parameters

- "Spindle tool number cannot be less than or equal to 0" alarm

A61.14	Spindle tool number can not be less than or equal to 0
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After loosening the tool, the spindle tool number is automatically set to 0, indicating an empty tool; At this time, if the spindle tool number is not set manually after manual tool loading, an alarm will be given 3 seconds after tool tightening;

Troubleshooting: Setting-> tool magazine table-> fill in the spindle tool number, and the alarm can be cleared;

7. Appendix: Definition of controller interface