



CM20 series

User Manual

User Program (GUI) Function

Version 202204

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In order to communicate with the controller, the user should prepare the converter to connect with the PC.

For more detailed information, please refer to "CM20 instruction manual".

The CM20 test software is composed of four parts:

- 1. Communication
- 2. Operation
- 3. Parameter
- 4. Programming

$1 \cdot \text{Communication}$

(1) After executing the GUI program(CM20.exe), the following window will be displayed.

🥂 СМ20									- 🗆	×
Communication	Operation	Parameter	Programming				Language ~	•	Driver Discor	nnected
			Port No.	COM4	~	Update				
			Baud rate	19200	~					
			ID			\Box Connect to a:	ny ID			
				Search	Stop					
			l		-					
			C	onnect						

(2) Select the COM port to connect to the device.



- * If you don't know the port number, you can do the following:
- I. Remove the communication cable and execute the CM20 software to view the communication port list.
- II. Connect the communication cable, click the "Update" button on the right side of the CM20 windows, and click the new communication port.
- (3) Select the baud rate, the default value is 19200 bits/s.

Port No.	COM4	~	Update	
Baud rate	19200	~		
ID			🗌 Conne	ct to any ID

(4) Enter the controller ID (defaulted value is 1), and connect.

Port No.	COM4	~	Update
Baud rate	19200	~	
ID	1		Connect to any ID
	Search	Stop	
	Connect	Disconne	ect

In addition, you can also click "Search" to find the controller ID automatically and connect it.

Port No.	COM4	\sim	Update
Baud rate	19200	~	
ID	23 Search	Stop	Connect to any ID
			The search time is long, please be patient!
	Connect	Disconne	ct

$2 \ \cdot \ \textbf{Operation}$

(1) View the product information.

M CM20				
Communication Ope	eration Parameter	Programming		Lan
Product Information -				
Device	CM20			
Hardware ver	2.00			ndman
Software ver	5.502	_)″ ╹		i an an
Parameters and contro	ol			
Control mode	1 : Internal pulse	~	Position	0
ORG mode	1:CCW	~	ORG Offset	0

(2) Select the command to test the motion.

М СМ20						– 🗆 X
Communication Ope	ration Parameter	Programming		Lang	guage 🗸 🔍	Driver Connected
Product Information -					Common Setting	
Device	CM20				Current(mA)	600
Hardware ver	2.00			dman	Resolution(ppr)	6400
Software ver	5.502			aman	Pulse mode	Pulse/Dir ~
Parameters and contro	bl				Status	
Control mode	1 : Internal pulse	~	Position	0	Input Voltage(V)	24.11
ORG mode	1:CCW	\sim	ORG Offset	0	Driver temperature(°C)	33.5
Position speed	1000	Spe	ed(speed mode)	1000	Cmd Pos	0
					Actual Pos	0
JOG speed	500	N	Moving Pulses	0	Motor current(A)	0.042
INC	Jog +	Inchig+	Speed	ORG	Velocity (RPS)	0.00
					Status	2:Stop
ABS	Jog -	Inchig-	stop	Clear alarm	Alarm ?	0:Normal
Input					Output	
Input 1 O 13 : Cle	ear alarm 🗸 🛛 Tri	gger Input 5 🤇	□ 11 : Home switch	~ Trigger	Output 1 🔍 102 : In	n position 🗸 🗆
Input 2 O 25 : Bit	0(program) ~ Tri	gger Input 6 🤇	○ 0:Null	~ Trigger	Output 2 101 : N	Io Alarm 🗸 🗆
Input 3 O 16:Sta	rt program 🗸 🛛 Tri	gger Input 7 🤇	20 : Servo ON/OF	F 🗸 Trigger	Output 30 104 : P	erformed 🗸 🗆
Input 4 O 6:Deco	celeration St ~ Tri	gger Analog	voltage(V) -0.529)	Output 4 0 100 : 0	eneral Output 🗸 🗆

* Use software to test motor motion control, please select "1: Internal pulse".

a) Control mode:

1) 0: External pulse

- 2) 1: Internal pulse
- 3) 4: Analog speed

Parameters and control

Control mode	1 : Internal pulse \sim
ORG mode	0 : External pulse 1 : Internal pulse 2 : Null
Position speed	3 : Null 4 : Analog speed
JOG speed	500

b) ORG method:

- 1) 0: Return to origin in CW
- 2) 1: Return to origin in CCW
- 3) 2: Return to+Limit sensor
- 4) 3: Return to -Limit sensor
- 5) 8: +Z phase return
- 6) 9: -Z phase return
- 7) 12: Return to origin in CW and Z phase
- 8) 15: Return to origin in CCW and Z phase
- 9) 16: Return to +Limit and Z phase
- 10) 17: Return to -Limit and Z phase

– Parameters and contr	ol	
Control mode	1 : Internal pulse	\sim
ORG mode	1:CCW	\sim
Position speed	0:CW <u>1:CCW</u> 2:+Limit	
JOG speed	3 : — Limit 4 : Null 5 : Null 6 : Null	
INC	7:Null 8:+Zphase	iĮ
ABS	9: - 2 phase 10: Null 11: Null 12: (4)OPG 7	.i;
Input	13:Null 14:Null	
Input 1 O 13:Cl	15 : (-)ORG,Z 16 : (+)LM.Z	Iı
Input 2 O 25 : Bi	it 17: (-)LM,Z	- 11

Parameters and con	ntrol					
Control mode	1 : Internal pulse	~		Position		0
ORG mode	1:CCW	~	✓ ORG Offset			0
Position speed	1000		Speed(speed mode)			1000
JOG speed	500		M	oving Pulses [_	0
INC	Jog +	Inchi	ig+	Speed Control][ORG
ABS	Jog -	Inch	ig-	Decelerated stop]	Clear alarm

* After triggering the origin or limit signal, it will exit the trigger point in the reverse direction, and then back at the "**ORG slow speed**".

 c) INC: Click the button, it will move to the position based on the current position add the "Moving Pulses", and the speed is the value in the "Position Speed" field (unit: 0.01 RPS).
Parameters and control

Turumotoro una com	.01			
Control mode	1 : Internal pulse	~	Position	0
ORG mode	1:CCW	~	ORG Offset	0
Position speed	1000		Speed(speed mode)	1000
JOG speed	500		Moving Pulses	0
INC	Jog +	Inchig+	Speed Control	ORG
ABS	Jog -	Inchig-	Decelerated stop	Clear alarm

d) ABS: Click the button to trigger the command, the "Cmd Pos" will be changed to the value in the "Moving Pulses" field, and the speed will be changed to the value in the "Position Speed" field (unit: 0.01 RPS).

-ra	Parameters and control							
	Control mode	1 : Internal pulse	\sim	Position	100			
	ORG mode	1:CCW	\sim	ORG Offset	0			
	Position speed	1000		Speed(speed mode)	1000			
	JOG speed	500		Moving Pulses	10000			
	INC	Jog +	Inchig+	Speed Control	ORG			
	ABS	BS Jog -		Decelerated stop	Clear alarm			

e) JOG: Press and hold the button, it will move at the "JOG speed" until the button is released (unit: 0.01 RPS). •

Parameters and cont	rol				
Control mode 1 : Internal pulse		\sim	Position	100	
ORG mode	1:CCW	~	ORG Offset	0	
Position speed	1000		Speed(speed mode)	1000	
JOG speed	500	Moving Pulses		10000	
INC	Jog +	Inchig+	Speed Control	ORG	
ABS	Jog -	Inchig-	Decelerated stop	Clear alarm	

f) Inchig: Click the trigger button, and the new target will move with the current position pluses/minuses the value in "Moving Pulses". The speed is the value in the "Position Mode Speed" field (unit: 0.01 RPS).

Par	ameters and contr	ol						
	Control mode	1 : Internal pulse	~ Position				100	
	ORG mode	1:CCW	~	(ORG Offset [0		
	Position speed	1000		Speed(speed mode)			1000	
	JOG speed	500		Moving Pulses		10000		
	INC	Jog +	Inchig+		Speed Control		ORG	
	ABS	Jog -	Inchig-		Decelerated stop		Clear alarm	

g) Speed Control: Click the button to trigger, and keep moving at the "Speed(speed mode)" until the "Decelerated stop" is clicked to stop. The sign of the value in the field changes the moving direction.

–Parameters and contr	rol						
Control mode	1 : Internal pulse	~		Position		100	
ORG mode	1:CCW	~	0	RG Offset [0		
Position speed	1000		Speed	l(speed mode) [1000		
JOG speed	500		Мо	ving Pulses	10000		
INC	Jog +	Inchig+		Speed Control		ORG	
ABS	Jog -	Inchig-		Decelerated stop		Clear alarm	

h) **Position:** The current "actual position" can be changed by setting the value in the field. The position "0" is considered as the origin.

Parameters and control							
Control mode	1 : Internal pulse	\sim	Position	100			
ORG mode	1:CCW	~	ORG Offset	0			

×

(3) Status: The current status of the controller can be monitored.

	×
nming	Language 🗸 🔍 Driver Connected
	Common Setting
	Current(mA) 600
	Resolution(ppr) 6400
	Pulse mode Pulse/Dir ~
	Status
Position 100	Input Voltage(V) 24.11
ORG Offset 0	Driver temperature(°C) 35.1
Speed(speed mode) 1000	Cmd Pos 0
	Actual Pos 0
Moving Pulses 10000	Motor current(A) 0.041
ig+ Speed ORG	Velocity (RPS) 0.00
	Status 2:Stop
ig- Decelerated Clear alarm	m Alarm ? 0:Normal

(4) Input/Output: Input/output function setting and I/O trigger simulation.

Input				Output
Input 1 $^{\circ}$	13 : Clear alarm \sim	Trigger	Input 5 O 11 : Home switch ~ Trigger	Output 1 🔍 102 : In position 🗸 🗆
Input 2 $^{\circ}$	25:Bit0(program) ~	Trigger	Input 6 O : Null ~ Trigger	Output 2 101 : No Alarm 🗸 🗆
Input 3 \bigcirc	16 : Start program 🗸 🗸	Trigger	Input 7 O 20 : Servo ON/OFF ~ Trigger	Output 30 104 : Performed 🗸 🗆
Input 4 $ \bigcirc $	6 : Decceleration St $ \smallsetminus $	Trigger	Analog voltage(V) -0.531	Output 4 🗘 100 : General Output 🗸 🗆

I/O signals: a)

Input

Whether the I/O is triggered can be judged by the light. Green light means that the signal is actived.

Input		Output
Input 1 🔿 13 : Clear alarm 🗸 Trigger	Input 5 O 11 : Home switch 🗸 Trigger	Output 1 • 102 : In position 🗸 🗆
Input 2 • 25 : Bit0(program) ~ Trigger	Input 6 O : Null ~ Trigger	Output 2 101 : No Alarm 🗸 🗆
Input 3 O 16 : Start program V Trigger	Input 7 🔷 20 : Servo ON/OFF 🗸 Trigger	Output 30 104 : Performed 🛛 🗸 🗆
Input 4 O 6 : Decceleration St ~ Trigger	Analog voltage(V) -0.529	Output 4 🔿 100 : General Output 🗸 🗆

b) I/O simulation function:

Only the pins defined as "Null" or "Generic Output" can be controlled by simulate I/O. If the pins were defined as specific states, the actual state output shall prevail.



c) I/O function setting:

The I/O function can be defined. Set in the "Input" and "Output" list.

№ СМ20							- 🗆 X
Communication	n Operation Paramet	ier Program	nming		La	anguage 🧹 🔍	Driver Connected
Product Info	0:Null 1:ABS					Common Setting	
Devi	2:INC 0 3:ORG mode			1		Current(mA)	600
Hardwar	4:Jog+ 5:Jog-			Min	dmar	Resolution(ppr)	6400
Softwar	6 : Decceleration Stop 7 : Emergency Stop 8 : Set position				ama	Pulse mode	Pulse/Dir ~
Parameters a	19 : Limit + 10 : Limit -					Status	
Control	11 : Home switch 12 : ORG	• ~		Position	100	Input Voltage(V)	24.11
ORG m	13 : Clear alarm 14 : Null 15 : Null	~	0	RG Offset	0	Driver temperature(°C)	35.1
Position s	16 : Start program)	Speed	d(speed mode)	1000	Cmd Pos	0
	18 : End program					Actual Pos	0
JOG spe	20 : Servo ON/OFF		Mo	ving Pulses	10000	Motor current(A)	0.039
INC	22 : Inchig- 23 : Null	Inch	ig+	Speed Control	ORG	Velocity (RPS)	0.00
	24 : Null					Status	2:Stop
ABS	25 : BitU(program) 26 : Bit1(program) -27 : Bit2(program)	Inch	uig-	Decelerated stop	Clear alarm	Alarm ?	0:Normal
Input	28 : Bit3(program) 29 : Bit4 (program)					Output	
Input 1 O	13 : Clear alarm 🔍	Trigger	Input 5 🔿	11 : Home switch	1 ~ Trigger	Output 1 • 102 : I	n position 🗸 🖵
Input 2 O	25:Bit0(program) ~	Trigger	Input 6 🔿	0:Null	∼ Trigger	Output 2 100 : 0	General Output
Input 3 O	16 : Start program 🗸 🗸	Trigger	Input 7 🔿	20:Servo ON/O	FF ~ Trigger	Output 3 0	n position Servo OFF
Input 4 O	6 : Decceleration St \sim	Trigger	Analog vo	oltage(V) -0.52	29	Output 4 0 100 : 0	Performed General Output

The definition of "05: Input" and "06: Output" can also be set in the "Parameter" page.

Paramter :	Adr.	Parameters	Range
01: Common	400	IN1	0~29
02: Motor	401	IN2	0~29
03: Closed loop	402	IN3	0~29
04· Control	403	IN4	0~29
06: Output	404	IN5	0~29
oo. output	405	ING	0~29
	406	IN7	0~29
LOad KUM	429	Input logic	0~127
Save to ROM Set to Default Save to File Load File			

3 · Parameter

(1) Load ROM: When starting the software, it is necessary to read parameters from the drive.

M CM20					– 🗆 X
Communication Operation Para	imeter Pro	gramming	Language ~] • Di	river Connected
Paramter :	Adr.	Parameters	Range	Default	Value
01: Common	201	Motor direction	0~3	2	2
02: Motor	0 nication Operation Parameter Prograte ter : Adr. 201 M for 1000000000000000000000000000000000000	+/- Pulse rising edge	0~1	0	0
03: Closed loop	241	Motor current (mA)	100~4500	600	600
04: Control	242	Micro-Step resolution	$200 \sim 102400$	6400	6400
06: Output	244	Pulse mode	1~2	1	1
Joo. Output	245	Current reduction time	1~30000	200	200
Lectron	213	Current reduction ratio	10~100	50	50
LOad KUM	224	Micro-step emulation	0~700	50	Value 2 0 600 6400 1 200 50 50 50 4 1 1 1 9200
	234	Digital Filter	1~15	4	4
Save to ROM	296	Control mode	0~4	1	1
	298	Device ID	1~250	1	1
Set to Default	299	Baud 4800~115200 19		19200	19200
Save to File Load File Definition :					
To determine motor direction and en Bit0 = 0 : direction is same Bit1 = 0 : encoder direction is same It will be available after the power re	icorder direc 1 : direction N Bit1 = 1 : Istart !	tion : n changed ; encoder direction changed.			~

(2) Save to ROM: After modifying the parameters, please save the parameters to the drive. Load the parameters and verify that the parameters are modified successfully.



* After some parameters are modified, the driver must be restarted.

1 CM20				-	-	<	
ommunication Operation Pa	rameter Programm	ling	Language 🗸	•	Driver Connected		
Paramter :	Adr.	Parameters	Range	Default	Value '	•	
01: Common	301 Star	t speed	1~1000	100	100		
02: Motor	302 Stop	speed	$1 \sim 1000$	100	100		
3: Closed loop	303 Acce	leration	5~10000	50	50		
4: Control	M 另存新檔				-		
06: Output	Cation Operation Parameter Frogramming Language Driver Connected 1: Adr. Parameters Range Default Value 00 Start speed 1~1000 100 100 00 Start speed 1~1000 100 100 01 Start speed 1~1000 100 100 0302 Stop speed 1~10000 50 50 1001 100 100 100 100 1001 100 100 100 100 1001 100 100 100 100 1001 100 100 100 100 1101 Magratic Solution Solution Solution 1101 Solution Solution Solution Solution 1101 Solution Solution Solution Solution Solution 1101 Solution Solution Solution Solution Solution Solution						
Load ROM	組合管理 ▼ 3	新増資料夾					8== -
	_ 電動缸	▲ 名稱	^ 修改日期		類型	大小	
Save to ROM	OneDrive - F	Perso BM-20M-0.par	2022/2/	9 上午 11:06	Solid Edge Part	1 KB	
		BM-20M-A.par	2022/2/2	24 下午 01:51	Solid Edge Part	1 KB	
Cat to Default	₩ 💻 本機	BM-25-28M.par	2022/2/	9 上午 11:06	Solid Edge Part	1 KB	
Ser to Default	🔰 3D 物件	EM-25-28M-B.p	ar 2022/2/2	24 下午 01:55	Solid Edge Part	1 KB	
	📃 Desktop	늘 BM-42M-C.par	2022/2/	9 上午 11:06	Solid Edge Part	1 KB	
Save to File Load File	🚽 🕂 🖶	🐚 BM-42M-D.par	2022/2/2	24 下午 01:54	Solid Edge Part	1 KB	
finition :	会 文件	📮 BM-56L-C.par	2022/2/	9 上午 11:06	Solid Edge Part	1 KB	
rting enced. It is only valid und	ar 力 音樂	💺 BM-56L-D.par	2022/2/2	24 下午 01:53	Solid Edge Part	1 KB	
Paramitet Portunet Portunet Portunet Portunet Portunet Portunet 01: Common 02: Motor 03: Closed loop 05: Input 06: Output Adr. Parameters Range Default Value 00 100 01: Common 02: Motor 05: Input 06: Output Start speed 1~1000 100 100 100 M Spring East 00: Common 05: Input 06: Output P ### bM-20K P ### bM-20K O P ### bM-20K Load ROM Save to ROM Save to ROM Save to ROM Solid Edge Part 1 K8 Save to Rile Load File Save to Real Solid Edge Part 1 K8 Definition : Save to File Load File Solid Edge Part 1 K8 Definition : Save to File Solid Edge Part 1 K8 Starting speed , It is only valid under T## Save to Cloper 2022//24 T*# 0153 Solid Edge Part 1 K8 Starting speed , It is only valid under T## Save to Cloper 2022//24 T*# 0153 Solid Edge Part 1 K8 Save to File Coal / Loger T## Save to Cloper 2022//24 T*# 0153 Solid Edge Part 1 K8 <							
	L 05 (C)						
		20					
	檔案名稱(N): BM-25-28M-B.par					
	存備類型(T): par文件 (*.par)					
	12 Internet	hand they					
	▲ 隔藏管利本					有	写檔(S) 取消

(3) Save to File: Package the parameters as files and save in the computer.

(4) Load File: Optionally load parameter files in the computer. After importing the parameters, write the parameters to the controller, and then restart the drive. It should be noted that different motors have different specifications.

М СМ20							- 🗆	×				
Communication Operation Para	meter Pro	gramming		La	nguage ~	•	Driver Connected	1				
Paramter :	Adr.	Par	ameters	Rang	e	Defau	ult Value	^				
01: Common	301	Start speed		$1 \sim 1000$		100	100					
02: Motor	302	Stop speed		$1 \sim 1000$		100	100					
03: Closed loop	303	Acceleratio	n	$5 \sim 10000$		50	50					
04: Control 05: Input	<u>州</u> 打開文件	ŧ										×
06: Output	$\leftarrow \rightarrow$	* 个 🔜 > 本機	> 本機磁碟(D:) > □	Test → BM-DB			~	Ö	P	搜尋 BM-DB		
Load ROM	組合管理	▼ 新增資料夾								8==	•	?
	🔜 📑 Mir	ndman ^ 😤	稱 ^		修改日期		類型					
Save to ROM	展示	「精参敷	BM-20M-0.par		2022/2/9 上午	= 11:06	Solid Edge Part					
	電動缸)紅	BM-20M-A.par		2022/2/24下的	午 01:51	Solid Edge Part					
Set to Default	Onel	Drive - Pe	BM-25-28M.par		2022/2/9 上午	= 11:06	Solid Edge Part					
Der to Deruur		ų.	BM-25-28M-B.par		2022/2/24下的	午 01:55	Solid Edge Part					
Consta Ella	📃 本機	Q.	BM-42M-C.par		2022/2/9 上午	11:06	Solid Edge Part					
Save to File Load File	🔋 3D	物件 🖣	BM-42M-D.par		2022/2/24下4	午 01:54	Solid Edge Part					
Definition :	E Des	sktop	BM-56L-C.par		2022/2/9 上午	= 11:06	Solid Edge Part					
Starting speed , It is only valid under	- 🦊 T#	tt 🤤	BM-56L-D.par		2022/2/24 14	∓ 01:53	Solid Edge Part					
	🗎 文作	ŧ										
	♪ 音算	Ę										
	■ 国月	4										
		4										
	骗 os	(C:)										
	本様	樂磁碼 (D:) ↓ <					>					
		檔案名種	単(N): BM-20M-A.pa	r				~	par	文件 (*.par)		~
									I	開啟(O)	取满	

* For more information, please refer to the " CM20 instruction manual ", please pay attention to the rated current to avoid damage to the motor.

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4 · Programming

(1) Editor:

- ① Up to 64 commands can be written.
- ② "Segment No." will automatically increase by 1 when the paragraph command ends.
- ③ Select needed motion in "Command" field.
- ④ According to each "Command", set the required parameters .
- (2) Motor Control: Perform simple position control of the motor.
- (3) Program Control: You can specify the section to be executed, start, pause, and stop the programs.
- (4) Program Management:
 - ① Programs can be stored as files.
 - ② Load the saved file.
 - ③ Read the driver.
 - ④ Write the program to drive.

<u>M</u> см20 Communi	Edito		riogramming			Language	Motor C	
No.	Segment No.	Command	Parameter 1	Parameter2	Parameter3	Remark	Motor Control	
▶ 0	0	Acc	100				Actual Pos	0
1	0	Dec	100				Morring Pulses	0
2	0	Start speed	100				MOVINg Fulses	
3	0	Output	0				Jog -	Jog +
4	0	ORG	1					
5	0	End section					ABS	INC
6	1	Acc	200					
7	1	Dec	200				Decelerated	OPG
8	1	Start speed	100					URIT
9	1	Position speed	4000				Progr	am Contro
10	1	ABS	80000					
11	1	Wait jump	2000	-1	0		Program control	
12	1	Position speed	2000					
13	1	INC	-20000				Run No.	0
14	1	Wait jump	1000	-1	0		I/O Segment No.	0
15	1	Position speed	2000				A nation and	
16	1	INC	-20000				Segment No.	0
17	1	Wait jump	1000	-1	0			
18	1	Position speed	4000				Start	Pause
19	1	INC	-30000					
20	1	Wait jump	500	-1	0			Stop
21	1	Position speed	200					
22	1	ABS	0				Load	Save
23	1	Wait jump	2000	6	0		Dout	, and
24	1	End section				~~	UnLoad	Download

Program Management

5 · Motor Specification Parameter Setting

The controller can be applied to different motors by setting parameters. The following is the setting example of \Box 42 motor.

Step 1: The controller is disconnected to the motor, turn on the controller and start the software.

mmunication Operation	Parameter Pr	ogramming	Language	~ D	river Connecte
aramter :	Adr.	Parameters	Range	Default	Value
1: Common	201	Motor direction	0~3	2	2
2: Motor	202	+/- Pulse rising edge	0~1	0	0
3: Closed loop	241	Motor current (mA)	100~4500	600	600
4: Control	242	Micro-Step resolution	200~102400	6400	6400
5: Input	244	Pulse mode	1~2	1	1
o. Output	245	Current reduction time	1~30000	200	200
	213	Current reduction ratio	10~100	50	50
Load ROM	224	Micro-step emulation	0~700	50	50
	234	Digital Filter	1~15	4	4
Save to ROM	296	Control mode	0~4	1	1
	298	Device ID	1~250	1	1
Set to Default	299	Baud	4800~115200	19200	19200
Save to File Load File					
o determine motor direction and t0 = 0 : direction is same \ Bi t1 = 0 : encoder direction is sa will be available after the powe	d encorder direction t0 = 1 : direction me 、 Bit1 = 1 er restart !	ction: n changed; :encoder direction changed.			

Step 2: " Load File" on the "Parameter" page.





ramter :	Adr.	Parameters	Range	Default	Value
· Common	201	Motor direction	0~3	2	2
2: Motor	202	+/- Pulse rising edge	0~1	0	0
3: Closed loop	241	Motor current (mA)	100~4500	600	2000
l: Control	242	Micro-Step resolution	200~102400	6400	16000
o: Input	244	Pulse mode	1~2	1	1
. Output	245	Current reduction time	1~30000	200	200
1. 1.5.017	213	Current reduction ratio	10~100	50	50
Load ROM	224	Micro-step emulation	0~700	50	50
	234	Digital Filter	1~15	4	4
Save to ROM	296	Control mode	0~4	1	1
	298	Device ID	1~250	1	1
Set to Default	299	Baud	4800~115200	19200	19200
finition :					
determine motor direction and 0 = 0 : direction is same × Bi 1 = 0 : encoder direction is sa vill be available after the powe	d encorder direc t0 = 1 : direction me 、 Bit1 = 1 er restart !	ction: n changed; :encoder direction changed.			

Step 4: Click "Save to ROM" and restart the controller to complete the motor specification setting.

Specification of Motor

Size		□20	□25	□28	□35	□42	□56
Series	-			В	М		
Drive Method	-			Bi-P	olar		
Number of Phases	_			2	2		
Current per Phase	А	0.6	1	1	1.5	2	3
Holding Torque	N.m	0.036	0.085	0.085	0.28	0.51	1.53
Rotor Inertia	g∙cm [∠]	2.9	8	8	40	75	490
Weight	g	70	120	120	300	400	1150
Insulation Resistence	Mohm			100 MIN.(á	at 500VAC)		
Insulation Class	-			Clas	ss B		
Operating Temperature	°C			0~	50		
Incremental Optical Encoder Resolution	PPR	6,400	9,600	9,600	12,800	16,000	16,000

Warning: If you want to change the parameter setting of the motor specification, please be sure to complete the parameter setting before connect to the motor.

$6 \cdot \text{Example}$

No.	Seg. No.	Command	Para.1	Para.2	Para.3	Remark
0	0	Acc	20			Unit: rps ²
1	0	Dec	20			Unit: rps ²
2	0	Start Speed	100			Unit: (1/100) rps
3	0	Output	0			All "Output" pins close
4	0	ORG	8			ORG mode: 8
5	0	End Section				When Segment No. 0(bit0 = 0) is over, increase Segment No. 1.
6	1	Acc	20			When bit0 = 1, excute Segment No. 1.
7	1	Dec	20			
8	1	Start Speed	100			
9	1	Position Speed	1000			Unit: (1/100) rps
10	1	ABS	5000			pulse
11	1	Wait Jump	2000	-1		Wait 2000 milliseconds to go to next step.*
12	1	Position Speed	20			Unit: (1/100) rps
13	1	INC	-5000			The minus represent the other side.
14	1	Wait Jump	2000	-1		Wait 2000 milliseconds to go to next step.
15	1	Loop	2	10		Go back to Segment No. 13, execute the loop 2 times
16	1	Output	9			9=1001(B) ; Out1, Out4 trigger
17	1	Position Speed	100			
18	1	Set Position	-1000			Set current position to -1000.
19	1	Wait Jump	0	-1	11	11(D)=1011(B), wait for Input3 pin to trigger*
20	1	Speed Control	-300			Reverse at 3 rps.
21	1	Wait Jump	0	-1	3	3(D)=0011(B), wait for Input3 pin to close
22	1	Dec Stop				
23	1	Wait Jump	100	9		After waiting for 100 milliseconds, jump to line 9 to execute.
24	1	End Section				

- * If "Parameter 2" of the "Wait Jump" command is set -1, the execution will start from the next step after the condition is met; if the value is 0~63, it will be executed by the corresponding "No". Take 9 as an example, it means that after the condition is met, jump to "No. 9" to execute. Note that this function cannot span program "Segment No.".
- * The "parameter 3" of the "Wait Jump" command needs to be converted from decimal to binary to determine the program command. For example, the decimal "11" is converted to binary "1011", the highest bit represents the switch state of the pin, "0" represents the Input pin "off", "1" represents the Input pin "triggered"; the other 3 bits represents the position of the pin, "001" represents "Input1", "010" represents "Input2", and "011" represents "Input3".

7 · Closed Loop Gain Adjustment Instructions

Category No.	Address	Parameters	Range	Default	Unit	Note
						bit0=0 : Motor CW
01	201	Motor Direction*	0.2	0		bit0=1 : Motor CCW
01	201	MOLOF DIrection*	0~5	0		bit1=0 : Encoder CW
						bit1=1 : Encoder CCW
01	241	Motor Current	100~8000	3000	mA	Motor Current per Phase
01	242	Micro-Step	200102400	6400	ססס	Possilution of Motor
01	242	Resolution*	200~102400	0400	PPN	Resolution of Motor
02	217	Motor Control*	02	0		0 : open-loop
05	217		0~2	0		1 : close-loop
03	246	Encoder	200-65525	6400	DDD	Possilution of Motor
05	240	Resolution*	200~05555	0400	FFN	Resolution of Motor
03	251	Velocity Loop Kp	0~30000	1000		Broportional Cain
03	255	Position Loop Kp	0~30000	800		Proportional Gain
03	258	Position Error	1~30000	1000		Maximum Tracking Error
03	264	KD Filter Factor	0~1000	50		Differential Cain
03	265	KD Gain	0~1000	50		Differential Gain

Please adjust the appropriate gain parameters in the following order:

Step 1 : The controller is disconnected to the motor, turn on the controller and start the software.

Step 2 : Complete the "motor specification parameter setting".

Step 3 : Set "217 Motor Control" to 0 for the open loop mode. Set "258 position error" according to the application.

Turn off the controller after saving the parameters.

Paramter : 01: Common 02: Motor 03: Closed loop 04: Control	Adr. 217 246	Parameters	Range	Dr Dr	iver Connected
Paramter : 01: Common 02: Motor 03: Closed loop 04: Constral	Adr. 217 246	Parameters	Range	The family	1
01: Common 02: Motor 03: Closed loop	217 246	Motor control		Derault	Value
02: Motor 03: Closed loop	246	MOTOL CONTLOL	0~2	1	0
03: Closed loop		Encoder resolution	200~65535	6400	0400
D4: Control	247	Inposition range	1~1000	10	10
05. Input	248	Weak magnetic limit	0~1000	500	500
06: Output	249	Weak magnetic coeffici	$0\!\sim\!1000$	1	1
oo. Output	250	Weak magnetic coeffici	0~1000	1	1
Ladpon	251	Velocity loop Kp	0~30000	500	500
Load RUM	252	Velocity loop Ki	0~30000	50	50
	253	Velocity loop Kd	0~30000	10	10
Save to ROM	255	Position loop Kp	0~30000	500	500
	256	Position loop Ki	0~30000	5	5
Set to Default	257	Position loop Kd	0~30000	10	10
	258	Position Error	1~30000	3000	1500
Save to File Load File	264	KD filter factor	0~1000	80	80
	265	KD Gain	0~1000	10	10
Definition :	266	Current coefficient	0~1000	35	35

- Step 4 : Connect the controller, motor and the encoder, and then turn on the controller.
- Step 5 : Use the internal pulse mode to perform the JOG test, observe the motor running direction, command position, and actual position, and modify the "201 Motor Direction" parameter to "2" or "3" according to the required motor running direction.

After the modification, set "217 Motor Control" to 1, which is closed-loop mode, and then save the parameters and restart the controller.

M CM20					– 🗆 🗙
Communication Operation Para	ameter Pro	gramming	Language 🗸 🗸] 🔹 Dr	iver Connected
Paramter :	Adr.	Parameters	Range	Default	Value
01: Common	201	Motor direction	0~3	2	3
02: Motor	202	+/- Pulse rising edge	0~1	0	U
03: Closed loop	241	Motor current (mA)	100~4500	600	600
04: Control	242	Micro-Step resolution	200~102400	6400	6400
06: Output	244	Pulse mode	1~2	1	1
100. Output	245	Current reduction time	1~30000	200	200
Lashbox	213	Current reduction ratio	$10 \sim 100$	50	50
Load ROM	224	Micro-step emulation	0~700	50	50
	234	Digital Filter	1~15	4	4
Save to ROM	296	Control mode	0~4	1	1
	298	Device ID	1~250	1	1
Set to Default	299	Baud	4800~115200	19200	19200
Save to File Load File Definition :					
To determine motor direction and et Bit0 = 0 : direction is same \ Bit0 Bit1 = 0 : encoder direction is same It will be available after the power re	corder direct = 1 : direction > Bit1 = 1 : estart !	tion: n changed: encoder direction changed.			< v

Step 6 : Observe the state of the motor or mechanism, and adjust the rigidity of the motor by theKp parameter. The larger the Kp parameter value, the stronger the rigidity.When the encoder resolution is higher, the Kp parameter should be adjusted

appropriately. Generally speaking, "251 Velocity Loop Kp" and "255 Position Loop Kp" will be adjusted at the same time.

M CM20					-	\times
Communication Operation Par	ameter Pro	ogramming	Language 🗸	🔵 Dr	iver Connecte	ed
Paramter :	Adr.	Parameters	Range	Default	Value	^
01: Common	217	Motor control	0~2	1	1	
02: Motor	246	Encoder resolution	200~65535	6400	6400	
03: Closed loop	247	Inposition range	$1\!\sim\!1000$	10	10	
04: Control	248	Weak magnetic limit	$0\!\sim\!1000$	500	500	
06: Output	249	Weak magnetic coeffici	0~1000	1	1	
joo. Output	250	Weak magnetic coeffici	0~1000	1	1	
Lood POM	251	Velocity loop Kp	0~30000	500	400	
Load ROM	252	Velocity loop Ki	0~30000	50	30	-
	253	Velocity loop Kd	0~30000	10	10	
Save to ROM	255	Position loop Kp	0~30000	500	300	
	256	Position loop Ki	0~30000	5	J	
Set to Default	257	Position loop Kd	0~30000	10	10	
	258	Position Error	1~30000	3000	3000	
Save to File Load File	264	KD filter factor	0~1000	80	80	
	265	KD Gain	0~1000	10	10	
Definition :	266	Current coefficient	0~1000	35	35	~
VEIOCITY IOOP K.P.						

It can improve overshoot and vibration problems by tuning Kd value appropriately.

If the motor still cannot run appropriately after adjusting above parameters, or the performance cannot achieve the requirements, please consult technical support.