

Closed Loop Stepping System with Network based Motion Controller



Closed Loop Stepping System

User Manual User Program(GUI) Function

(Rev.08.05.11)



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This manual describes how to operate User Program(GUI) for Ezi-SERVO Pus-R. For more information, refer related manuals.

(1) User Manual-Text

(2) User Manual-Communication Function

(3) User Manual-Position Table Function

1. Installation and Connection of the Program

Ezi-SERVO Plus-R consists of two operation modes as follows:

- 1) Using Motion Library(DLL) provided for the program from Windows 2000/XP/VISTA.
- 2) Using Position Table(PT) and external signals input by the user.

For the operation modes above, refer to each related manual.

This chapter describes the user program used for installation and running test of the controller. Ezi-SERVO Plus-R is associated with RS-485. So, the user needs to convert RS-232C or USB for the PC into RS-485

1.1 Installation Environment of PC

Machine Type : Compatible with PC/AT RS-232C Port or USB Port Hard disk more than 10MB Screen SVGA(1024×768 or more) CPU Pentium4 2.0 GHz or more OS : Windows 2000/XP/VISTA should be normally installed.

1.2 User Program(GUI) Version

Thers are 2 kinds of program version for SERVO Plus-R.

(1) Firmware program in drive :

After connect the User Program(GUI), Version number can be check in 'Board List' Window.

E Boar	d List	
_ Control	ler List	
ptor	Information	
	Baudrate: 115200	
. JS	Ver : RS485 communication	(V06,03,043,19)

(2) User Program(GUI) in PC :	About Ezi-MOTION Plus-R GUI
	F Plus-R GUI Version : 6, 16, 2, 587 (rev, 839)
After connect the User Program(GUI),	Supported firmware version :
Version number can be check in	1) Ezi-SERVO Plus-R-ST : V06 ~
'About Dive D Oll ' menu in 'lleln' menu	2) Ezi-STEP Plus-R-ST : V06 ~
'About Plus-R GUI…' menu in 'Help' menu.	3) Ezi-SERVO Plus-R-ALL-ST : V06 ~
	4) Ezi-SERVO Plus-R-ALL-ABS 3 : V06 ~
	5) Ezi-STEP Plus-R-ALL-ST : V06 ~
	6) Ezi-MotionLink : V06 ~
	7) Ezi-STEP Plus-R-MINI : V06 ~
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The level of 2 kinds program must be same as follows.

Firmware version	compatability	User Program(GUI) version
Level 6 (V06.0x.0xx.xx)	<->	Level 6 (6.xx.x.xxx)
Level 8 (VO8.xx.Oxx.xx)	<->	Level 8 (8.xx.x.xxx)



Do not mixed the drive of different version level in one network segment.

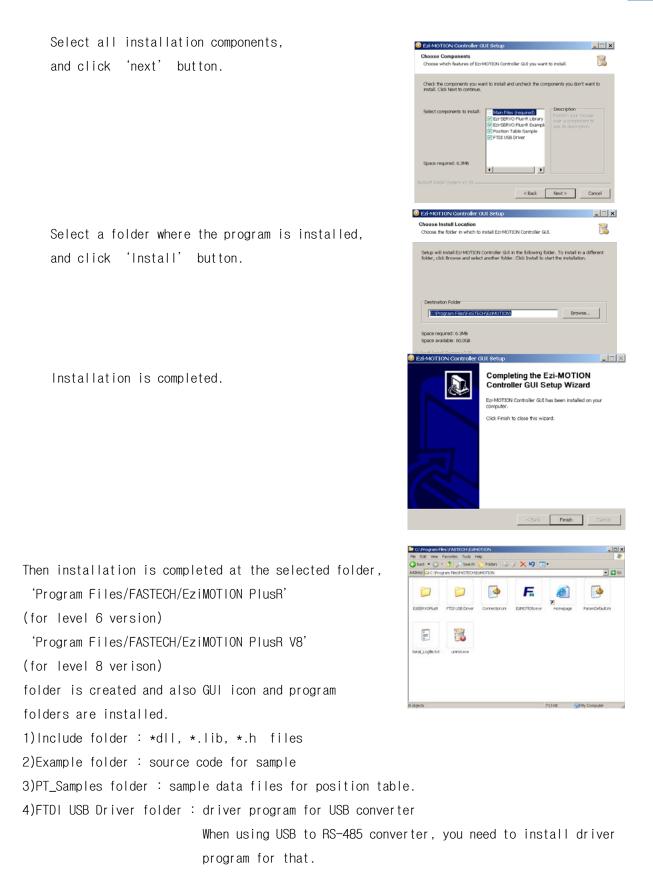
1.3 User Program(GUI) Installation Method

Click EziSERVOPlush Setup ver0[1].9.7.8 Ezi-SERVO Plush GUI Program icon at the installation program provided with the product, and perform as described at the window.

Select a language of installation screen.

Installation Start window. Click 'Next' button.





1.4 USB to RS-485 Converter Installation Method

In case of using RS-232 to RS-485 converter, there's no need to install for converter. But when you connecting USB to RS-485 converter to PC, you can see the Installation Start window.

After select ① click 'Next' button. When internet is connected to PC, it is possible to use 'automatically' installation

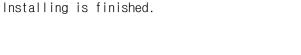


After	select t	he '	FTDI	USB	Drive	er'f	older	
(that	is insta	lled	toget	her	with	User	Program(GUI),
click	'Next'	butt	on.					

nai uware opuace mizaru
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM)
✓ Include this location in the search:
D:\Program Files\FASTECH\EziMOTION\FTDI USB 🗸 Browse
O Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back Next > Cancel

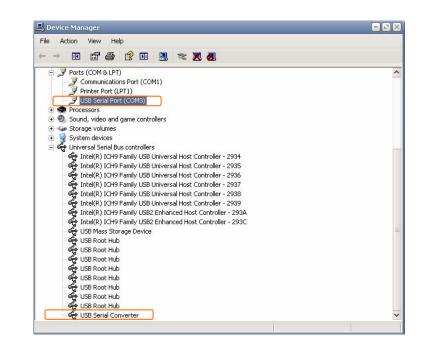
Now installing.





Hardware Update Wizard					
Completing the Hardware Update Wizard					
	The wizard has finished installing the software for:				
	USB Serial Converter				
	Click Finish to close the wizard.				
	K Back Finish Cancel				

After installation finished, converter can be checked in Device Manager window.



For Windows 2k, XP File Ver, 8, 0, 0, 554

Connect

1.5 Connecting PC with Drive Module

(1) To communicate with controller module, the user should prepare communication converter and cable and connect them with the PC. For more information, refer to ^{[User} Manual-Text].

Execu and	ute the	Ezi-MOTION (Ezi-SERVO Plus-R)	which is User Program(GUI), click following window will be displayed.		button,
		Connect to Ez	ri-MOTION PlusR	1	
		Fast,	A S T E C H Accurate, Smooth Motion Control zi-MOTION Plus-R GUI		

ltem	Description		
Port No.	To assign the port number of RS-232 or USB which is connected with drive module at the PC		
Baudrate	To measure the communication speed that connects the drive to RS-485 communication. This should correspond to the switch(SW2) which sets the controller communication speed. (Drive : adjusted to 115200[bps] at the factory).		

•

-

Communication Port

Baudrate

COM1

115200

After setting, click 'Connect' button, and the controller module will try to connect 16 drives from 0 to 15 (firmware of same level version) at the setting speed through a pertinent communication port.

A Caution	1. The communication speed of drive modules connected with one
	segment must be set to the same value.2. When they are not connected, the user needs to check the port or
	the baudrate.

If the drive which is non-suitable for version 8 is connected, next message box is Displayed to inform.

Error	\mathbf{X}	
Ezi-MOTION Plu	JS-R	
SlaveNo : O	Not supported firmware version [V6, 3, 43, 4]	\triangleright
	ок	

At this time, using another User Program(GUI) for Firmware version 6.

(2) When drive modules are normally connected, the user can check detailed information of controller list including the communication speed, motor type and Firmware program version at the following window.

F.	Boa	rd List		
Г	Contr	oller List—		
	Devi	ce List	Туре	Motor
	🖃 P	ort 76		
		Slave O	Ezi-SERVO Plus-R-ST	42L
		Slave 3	Ezi-SERVO Plus-R-ST	56M

F.	Board List		
	Controller List—		
	Device List	Туре	Motor
	🖃 Port 3		
	Slave 1	Ezi-SERVO Plus-R-Mini	42L DI

2. Main Window

Ezi-MOTION GUI - Motion Test		
<u>F</u> ile <u>V</u> iew <u>H</u> elp		
	Axis 1/O III I/O Pos Cmd aram Setting Setting	
🖪 Board List	🗿 Motion Test	
Controller List Type Information Baudrate : 115200 Ezi-SERVO-Plus-R-ST RS485 communication (* Parameter	Single Move Cmd Pos 10000 [pulse] Start Speed 1000 [pps] Move Speed 100000 [pps] Accel Time 100 [msec] Decel Time 1000 [msec] Abs Move Clear Position DEC Move INC Move	Slave No 0 Image: Constraint of the state of the s
Parameter List	Jog Move Origin Max Speed 50000 [pps] High Speed 50000 [pps]	Err Servo Alarm Origin Sensor Err Over Current Z Pulse Err Over Speed Org Ret OK Err Speed Motion DIR Err Over load Motioning
VO VO Nonitor VO Setting	Accel/Decel 100 [msec] -Jog +Jog Mode Origin - -Limit +Limit Origin	Err Over heat Motion Pause Err Rev Power Motion Accel Err Motor Power Motion Decel Err Inposition Motion Constant
Motion Test		Status Value (HEX) 0x00580000
Repeat Test Position Table	STOP E-STOP	Close
* FAS_MoveVelocity(22, 0, 50000, 0); Retur FAS_SetCommandPos(22, 0, 0); Return : 0 FAS_SetCommandPos(22, 0, 0); Return : 0 FAS_SetActualPos(22, 0, 0); Return : 0 FAS_MoveSingleAxisIncPos(22, 0, 10000, 1) BHI		

This is the basic window to operate the program. Each window is displayed in this window. The user can open each window with a toolbar.

2.1 Menu



There are 'View' menu to display other windows simply and 'File' menu which the user can connect and disconnect communication.

2.2 Toolbar

Connect Description of the second sec	Connect	Board Paramet	r Axis Param	● I/O ● Monitor	Setting	➡➡ Motion	Pos Table	Cmd Bar
--	---------	---------------	-----------------	--------------------	---------	-----------	--------------	------------

There are various buttons to go to the next window.

Click each button, and the following functions will be executed.

Button	Description
Connect	To connect or disconnect with the drive
Board List	To display connected module information and communication status

Parameter list	To set parameter values related to operation control like a position command		
Axis Param To sort parameters that the user can change them easily			
I/O Monitor To monitor digital I/O signals of CN1 connector			
I/O Setting To set digital I/O signal assignment of CN1 connector			
Mation Toot	To execute motion commands such as Jog operation, Position operation, Origin		
Motion Test	return operation		
Pos Table	To input and execute position table data		
Cmd Bar	To display DLL function corresponding to the command being executed		

2.3 Cmd(Command) Bar

```
× FAS_SetParameter(22, 0, 3, 988); Return : 0
FAS_SetParameter(22, 0, 3, 9887); Return : 0
FAS_SetParameter(22, 0, 3, 1); Return : 0
FAS_SetParameter(22, 0, 3, 10); Return : 0
FAS_SetParameter(22, 0, 3, 100); Return : 0
FAS_SetParameter(22, 0, 3, 100); Return : 0
FAS_MoveSingleAxisIncPos(22, 0, 10000, 50000, 0); Return : 0
FAS_SetCommandPos(22, 0, 0); Return : 0
FAS_SetActualPos(22, 0, 0); Return : 0
FAS_MoveSingleAxisIncPos(22, 0, 10000, 50000, 0); Return : 0
FAS_MoveSingleAxisIncPos(22, 0, 10000, 50000, 0); Return : 0
FAS_MoveStop(22, 0, 0); Return : 0
FAS_MoveStop(22, 0, 0); Return : 0
FAS_MoveStop(22, 0, 0); Return : 0
```

Click 'Cmd Bar' at the toolbar or check 'Menu -View - Command Bar', and the above window will be displayed. This window includes commands used for the controller. The user can check that which function is used, how parameter values are inputted, and how they are normally processed.

The above window displays functions which the user inputs or functions used when he clicks. For more information of commands, refer to ^[User Manual-Communication Function].

2.4 Board List

To check the drive list connected with communication. The user can check information of each drive. There are buttons to go to windows for function setting or testing.

Informations :

- 1) Slave ID number and type of drive.
- 2) Motor type.
- 3) Communication speed
- 4) Firmware version number of drive.

F.	Board List				
_	Controller List—				
	Device List	Туре			Informati
	😑 Port 22				Baudrate
	Slave O	Ezi-SEF	RVO-PI	us-R-ST	RS485 cc
	<)	>
Г	Parameter —				
	Parameter	liet		Axis Parar	notor
	1 arameter				lieter
	1/0				
	,				
	I/O Monit	or		I/O Setti	ng
_					
Г	Motion ———				
		Moti	on Tes	.+	1
		MOU	011 163		
	Papart T			Position T	abla
	Repeat Te	st		Position I	able
Ľ					

2.4.1 Parameter Area

Button	Function
Parameter List	To display the window that the user can check, edit, and manage drive parameters
Axis Parameter	To display parameters edited when the machine is set up

2.4.2 I/O Area

Button	Function
I/O Monitor	To monitor digital I/O signals of CN1 connector
I/O Setting	To set digital I/O signal assignment of CN1 connector.

2.4.3 Motion Area

Button	Function
Motion Test	To execute motion commands such as Jog operation, Position
Motion lest	operation, Origin return operation
Repeat Test	To test fixed motioning for 1 axis repeatedly
Position Table	To input and execute position table data

2.5 Repeat Test

① The repeat test is possible for up to 3 absolute position values.

② Delay time and repeat count can be set every repeat.

- * Delay Time : Stand-by time until each motion is ended and then next motion is started. The unit is [msec].
- * Repeat : To define the motion loop count. If this is set to '0', the test is endlessly repeated.

Repeat Test		
Position Data		
Position 1		
Position 2 100	100 [pulse] 🔀	
Position 3 200	000 [pulse] Status	
Move Speed 100	000 [pps] Cmd Pos	0 [pulse]
	Actual Pos	0 [pulse]
Move Pos1 Move Pos2	Move Pos3 Actual Vel	0 [pps]
	Pos Error	0 (pulse
Repeat Data 2	Cycle Time	4479 [msec]
Delay Time	0 [msec] Repeat Count	2
Repeat		Clear Status
	Stop Repe	at Close

③ Operation status and repeat count are displayed.

- * Cycle Time : displays the time until repeat test is completely finished.
- * Repeat Count : increases whenever one motion loop is finished.

(4) When the user clicks 'Repeat' button while the machine is operating, the cycle in service ends and the machine stops operating. Click 'Stop' or 'E-Stop' button, and the machine will stop regardless of the cycle.

3. Parameter List

			Slave	eNo 0	
arame	eters				
No.	Name	Unit	Field	Default	Valuer
0	Pulse Per Resolution		0~9	9	9
1	Axis Max Speed	[pps]	1~500000	500000	500000
2	Axis Start Speed	[pps]	1~500000	100	100
	Axis Acc Time	[msec]	1~9999	100	100
	Axis Dec Time	[msec]	1~9999	100	100
	Speed Override	[%]	1~500	100	100
	Jog Speed	[pps]	1~500000	5000	50000
	Jog Start Speed	[pps]	1~500000	100	100
	Jog Acc Dec Time	[msec]	1~9999	100	50
	Servo Alram Logic		0~1	0	0
	Servo On Logic		0~1	0	0
	Servo Alarm Reset Logic		0~1	0	0
	S/W Limit Plus Value	[pulse]	±134217727	134217727	134217727
	S/W Limit Minus Value	(pulse)	±134217727	-134217727	-134217727
	S/W Limit Stop Method		0~1	1	1
	H/W Limit Stop Method		0~1	1	1
	Limit Sensor Logic		0~1	0	0
	Org Speed	[pps]	1~1000000	5000	5000
	Search Speed	[pps]	1~1000000	1000	100
	Org Acc Dec Time	[msec]	1~9999	50	100
	Org Method		0~2	0	0
	Org Dir		0~1	0	0
	Org OffSet	[pulse]	±134217727	0	0
23	Org Position Set	[pulse]	±134217727	0	0 🚽
~ •				~	

The user can set and save parameter values related to motion control by each drive module. 'Value' column displays the value applied to current motion control and can be edited.

3.1 Slave No

Slave No 0	
------------	--

To display drive number for the current parameter list window. By using right/left arrow key, the user can select other drive.

Buttons at the bottom bar including 'SAVE to ROM' is available only for the current drive. To control several drive parameters, the user should execute related each one of slave independantly.

3.2 Parameter Input

No,	Name	Unit	Field	Default	Value
0	Pulse Per Revolution		0~9	9	9
1	Axis Max Speed	[pps]	1~500000	500000	500000
2	Axis Start Speed	[pps]	1~500000	1	1
3	Axis Acc Time	[msec]	1~9999	100	250
4	Axis Dec Time	[msec]	1~9999	100	100
5	Speed Override	[%]	1~500	100	100
	1				

Select parameters as shown at the table, and the input box will be displayed and then the user can edit parameter values. When the user inputs the parameter value, it is saved to RAM area of the drive. The machine operates as the parameter is edited. However, when the drive is powered off, the value is deleted. To continuously operate the machine as the parameter value is set, the user must click 'SAVE to ROM' button and save the edited value to ROM.

When the input value is out of right range, it is displayed in red color. The value cannot be inputted in RAM of the drive.

3.3 Parameter List Window Buttons

Click each button, and the following functions will be executed.

Button	Description
SET to DEFAULT	Converts all parameter values into 'Default Value'.
LOAD ROM	Converts 'Value' items into values saved to the ROM area.
SAVE to ROM	Saves 'Value' items to the ROM area. (Even though the drive is powered off, they are not deleted.)
LOAD FILE	Sets 'Value' items to the values saved to an external file.
SAVE to FILE	Saves the current values to an external file. (The user defines folder position and file name. The extension is *.fpt.)

For more information of parameter types and their functions, refer to ^{[User Manual-Text,} 13. Parameters].

3.4 Save/Load to a File

Ezi-SERVO PlusR can save parameters, Input/output and position table data to an external file folder and can read them if necessary.

Save As				<u>? ×</u>
Save in:	🔁 External files	•	+ 🗈 💣 🎟 -	
History Desktop Wy Computer	2 axis_param.fpt sample_param.fpt	: Parameter File(*,fpt)	¥	Save
	ourous gpc. II	arametor nie(tipi)		

The user can edit a name of file, click 'Save' button, and save data. Then can select a file, click 'Open' button and read data.

File extension for parameter is *.fpt and for Input/output is *.fit. File extension for position table data is *.txt.

4. Axis Parameter

Axis Parameter	
	Slave No 0
Motor Direction	Inposition INP Value [pulse]
Origin — Origin Direction —	H/W Limit Stop Mode
Origin Offset	
0	S/W +Limit Value 134217727 [pulse]
Origin Position Set	S/W -Limit Value -13421772 [pulse] Pos Tracking Limit 1000 [pulse]
Speed Override	Pos Tracking Limit 1000 [pulse]
Max Speed Ratio 100 %	Close

The above window is to enable the user to easily operate some important items of '3. Parameter List' items according to each function.

For more information of parameter types and their functions, refer to 「User Manual-Text, 13. Parameters」.

5. I/O Monitoring

The user can set and check control I/O signals related to operation control through CN1 connecter. The next window is the sample setting of I/O Monitoring status.

	D	I/O Mo	nitoring						×
						Slave No	0		
	[INPUT-						$ \rightarrow $	
		LMT+	Limit +	IN 5	PT A4	Alarm Reset		JPT IN 0	
1)		LMT-	Limit -	IN 6	PT A5	Servo Op	2	JPT IN 1	
ע		ORG	Origin	IN 7	PT A6	Pause 🗳 🍯		JPT IN 2	
			Clear Pos	IN 8	PT A7	Origin Search		JPT Start	
		IN 1	PT A0	IN 9	PT Start	Teaching		User IN 0	
		IN 2	PT A1		Stop	+ Stop		User IN 1	
		IN 3	PT A2		Jog +	 - Stop		User IN 2	
		IN 4	PT A3		Jog -	E-Stop		User IN 3	
	[
	1	OUTPUT-							
	(COMP	Compare Out	OUT 8	Org Search Ol	User OUT 1			
		OUT 1	InPosition	OUT 9	Servo Ready	User OUT 2			
3)		OUT 2	Alarm		+ Stop OUT	 User OUT 3			
		OUT 3	Moving		- Stop OUT	User OUT 4			
		OUT 4	Acc/Dec		PT OUT 0	User OUT 5			Ľ,
		OUT 5	ACK		PT OUT 1	User OUT 6	170	D Logic Setting	
		OUT 6	END		PT OUT 2	User OUT 7		S Logic Dealing	
		OUT 7	AlarmBlink		User OUT 0	User OUT 8			1
								Close	

I/O Monitoring of Version 6 level GUI

	I	/0 Mc	onitoring	of Ve	ersion 8	evel	GUI					
		р і∕о м	lonitoring									
1									Slave N	No O		
1		INPUT LMT+ LMT- ORG IN 1 IN 2	Limit + Limit - Origin Clear Pos PT A0 PT A1	IN 3 IN 4	PT A4 PT A5 PT A6 PT A7 PT Start Stop	IN 5	Alarm Reset 2 Servo On Pause Origin Search Teaching E-Stop	IN 8 IN 9	JPT IN 2 JPT Start User IN 0 User IN 1 User IN 2 User IN 3		User IN 6 User IN 7 User IN 8	
			PT A2 PT A3		Jog + Jog -	IN 6 IN 7	JPT IN 0 JPT IN 1		User IN 4 User IN 5			
3		OUT 1 OUT 2 OUT 3 OUT 4 OUT 5	Compare Out Inposition Alarm Moving Acc/Dec PT ACK PT End AlarmBlink	OUT 6 OUT 7 OUT 9	Org Search Ok Servo Ready Reserved Brake PT OUT 0 PT OUT 1 PT OUT 2 User OUT 0		User OUT 1 User OUT 2 User OUT 3 User OUT 4 User OUT 5 User OUT 6 User OUT 7 User OUT 8				/O Logic Set	

1) Input Signal : ①

There are 32 definable input signals. However, just 12 signals of them can be connected with CN1 connecter physically at one time.

The first three signals are fixed to '*LIMIT+*', '*LIMIT-*' and '*ORIGIN*' sensors. Therefore other signals cannot be connected and used with these pins. The user can set up to 9 signals(*1) to Input 9 pins(*1) at one time. '*IN1*' ~ '*IN9*' indicators are displayed to current setting signals.

When each signal is [ON] through CN1 connecter, icon is changed into 'green'. When the signal is [OFF], it returns to 'white' to the original state.

2) Virtual Input Function : 2)

Even though the input pin is not assigned to 'IN1' ~ 'IN9' at all, the user can click each button and virtually change the signal into [ON]/[OFF]. For instance, click 'Pause' button, and the stop function will be operated temporarily. But only 'PT Start' signal is exceptional.

3) Output Signal : ③

There are 24 definable output signals. However, just 10 signals of them can be connected with CN1 connecter physically at one time

The first signal 'COMP' is used to specific purpose only. Therefore other signals cannot be connected and used with this pin. The user can set up to 9 signals(*2) to Output 9 pins(*2) at one time. 'OUT1' ~ 'OUT9' indicators are displayed to current setting signals.

When each signal is [ON] through CN1 connecter, icon is changed into 'green'. When the signal is [OFF], it returns to 'white' to the original state.

4) Virtual Output Function:

After assigning the 'User OUT O' ~ 'User OUT 8' signals to OUT1' ~ 'OUT9', when click that button the signal changed [ON]/[OFF] through that pin.

5) I/O Logic Setting button : ④

Click this icon, and the following window will be displayed. Then he can assign a pertinent signal to the physical pin of CN1 connecter and define 'Active Level' of the signal.

- *1 : Ezi-SERVO-PR : The user can set up to 9 signals for input.
 Ezi-SERVO-PR-MI : The user can set up to 7 signals for input.
- *2 : Ezi-SERVO-PR : The user can set up to 9 signals for output.
 Ezi-SERVO-PR-MI : The user can set up to 1 signals for output.

6. I/O Logic Setting

for

Click 'I/O Logic Setting' icon at the I/O Monitor window, and the following window will be displayed.

	u T			
- Assign INPO LIMIT +	Limit +	Low Active	Slave No	3 🚺
LIMIT -	Limit -	Low Active	Assign OUTPUT	
ORIGIN	Origin	Low Active	COMP Compare Out	Low Active
INPUT 1	Clear Pos	Low Active	OUTPUT 1 Inposition	Low Active
INPUT 2	PT A0	Low Active	OUTPUT 2 Alarm	Low Active
INPUT 3	PT A1	Low Active	OUTPUT 3 Moving	Low Active
INPUT 4	PT A2	Low Active	OUTPUT 4 Acc/Dec	Low Active
INPUT 5	PT A2 PT A3 PT A4	Low Active	OUTPUT 5 AlarmBlink	Low Active
INPUT 6	PT A5 PT A6	Low Active	OUTPUT 6 Servo Ready	Low Active
INPUT 7	PT A7 PT Start Stop	Low Active	OUTPUT 7 [NONE]	Low Active
INPUT 8	Jog + Jog -	Low Active	OUTPUT 8 [NONE]	Low Active
INPUT 9	Alarm Reset Servo On Pause	Low Active	OUTPUT 9 [NONE]	Low Active
L	Origin Search Teaching		3 / 4	

for Ezi-SERVO-PR-MI

Assign INP	UT		Slave No 1	
LIMIT +	Limit +	Low Active	Slave NU I	
LIMIT -	Limit –	Low Active	Assign OUTPUT	
ORIGIN	Origin	Low Active	COMPARE Compare Out 💌	Low Active
INPUT 1	PT A0	Low Active	OUTPUT 1 Inposition	Low Active
INPUT 2	PT A1	Low Active	OUTPUT 🔽	Low Active
INPUT 3	PT A2	Low Active	OUTPUT 🔽	Low Active
INPUT 4	PT Start	Low Active	OUTPUT 🔽	Low Active
INPUT 5	Stop	Low Active	OUTPUT 🔽	Low Active
INPUT 6	Alarm Reset	Low Active	OUTPUT 🔽	Low Active
INPUT 7	Origin Search	Low Active	OUTPUT 🔽	Low Active
INPUT		Low Active	OUTPUT	Low Active
INPUT		Low Active	OUTPUT 🔽	Low Active

The assignment method is same in input and output.

1) Signal Assignment : ①

To change pin assignment of CN1 connecter, click 🔽 button to the right of the corresponding signal name as showed above, and select signals will be displayed at the drop-down menu.

2) Signal Level Assignment : 2

These buttons provide the user with functions that he can select the active level of signal for the signal to be recognized to [ON]. He can click the button to the right of the signal name and set the signal.

- * Low Active : when the signal is set[ON] to 0 volt
- * High Active : when the signal is set[ON] to 24 volt

3) Save : ③

Output pin of CN1 can be set described same as input. All changed signals are temporarily saved to the RAM area. To save them to the ROM area, the user must click 'Save to ROM' button. At this time, current parameter values are saved to the ROM area as well. For more information of 'I/O Monitoring' and 'I/O Logic Setting' windows, refer to 「User Manual-Text, 8. Control Input and Output Signal」.

4) Load and Save to File : ④

Current I/O Logic setting status can be saved to external file and load from External file. Refer to $\lceil 3.4 \text{ Save/Read toa File} \rceil$.

7. Motion Test

To test the motor connected with the controller drive. The user can test motion for one axis. He can test that the motor moves to the given position, and also simply transfer the motor to one direction. The user can move the motor to the origin or the limit and then test its sensor. At the position status and the axis status, the user can check the position, speed, and status of the current axis.

7.1 Initial Movement

- 1) Click 'Motion Test' at the manin menu.
- 2) The window as shown to the right is displayed.
- 3) Click SERVOON, and the motor will be Servo ON and the icon will be changed into SN.
 At this time, the motor starts to be electrified and the motor becomes 'lock' status.

4) Jog Operation

After setting jog related parameters, click <u>-Jog</u> and press it for a while, and the motor will be operated to the setting direction.

5)	According to the motion of motor, the user	Ready 3 ALM	080	nation 2	Gmail - W.B	e na amour - 🔤 🖁 100a	etro-lb	vo 🖄 🕵	8 8 8 0 10 9 20
	can check its position and operation stat	us.	For	more	infor	mation,	refer	to	^r User
	Manual-Text, 9. Other Operation Functions								

6) Origin Return Operation.

Click 'Origin', and origin return motion will be operated. The motion type may be different subject to how origin return type(parameter) is selected.

7) When origin return is finished, the red LED is displayed to ON like Origin Search OK at the 'Axis Status' window. For more information, refer to ^[User Manual-Text, 9.] Other Operation Functions.

Motion Test		
Single Mave Crist Peet (DOD) (pulse) Mars Speet 10000 (pulse) Accel Time 70 (minec) Mars Time 70 (minec) Time 70 (minec) Docid Time 70 (minec) Time 70 (minec) Docid Time 70 (minec) Time 70 (minec) DEC More R/C More R/C More 70 (minec) 70	Peallies States Cond Pos Actual Pies Actual Viel Pes Emu B (public) Clear Peallion	Slave No 15
Jeg Move Mas Speed 5000 [pos] Acce/(Decel 3300c] -Jeg -Jeg -Linit	Otigis Law Speed 500 (pps) Migh Speed 500 (pps) Accel/Secel 50 (mec) Mode (Limi Krigin) Otigin	Piel Tacking 2 Puise Piel Court Over 2 en Hin OK Eing Dag Molon DH Eing Orag Bell Molon DH Eing Orag Molon Phase Er Sin Dia Molon Phase Er Vin O Full Molon Phase Er Vin O Full Molon Phase Er Vin O Full Molon Create Striks Velve (HED) Giblio0000
SV SERVO OFF ALADM	STOP E-STOP1	Occe

Motion Test	5	Slave No. 15 🔺 🖝
Single Move Crind Pios 10000 (pulse) Start Speed 10000 (pos) Advant Speed 100000 (pos) Accell Time To (more) Datel Time To (more) Accel Move DEC Move RVC Move	Pesities Sol Crel Pes Actual Pes Actual Vei Actual Vei B (post 0 (putre) Clear Pesition	Autore mo 13
Arg Move Max Accelerate -log -log -log -log -log -log -log -log	Origin Law Speed 500 (per) High Speed 500 (per) Accel/Decel 50 (meec) Origin 6	Par Tacking P File Par Court OF Par Cour
SV SERVO OFF ALARM	STOP E-STOP	Cera 1

7.2 Single Move Operation

The user can test straight-line move command for one axis. 'Abs Move' button finds and moves to the absolute position, and 'DEC Move' and 'INC Move' find and move to the

- relative position. * Cmd Pos : Indicates target position value. The unit is
- [pulse]. When 'Abs Move' is executed, this displays the absolute position. When 'DEC Move' or 'INC Move' is executed, this displays the relative position.
- Start Speed : To set AxisStartSpeed at the second item in parameter lists. 'Start Speed' should be smaller than 'Move Speed'.

Single Move								
Cmd Pos	10000	[pulse]						
Start Speed	1	[pps]						
Move Speed	50000	[pps]						
Accel Time	100	[msec]						
Decel Time	100	[msec]						
Abs Move								
DEC Move INC Move								

- * Move Speed : To set the moving speed when Abs Move, DEC Move, or INC Move is executed. 'Move Speed' should be larger than 'Start Speed'.
- * Accel Time, Decel Time : To set AxisAccel and AxisDecelTime in parameter lists.

7.3 Position Status

To displays the current position of axis. Click Clear Position button, and Cmd Pos value and Actual Pos value will be initialized to 'O(zero)'.

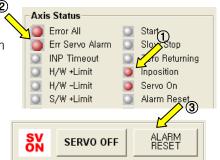
- * Cmd Pos : displays target position value while the motor is operating.
- * Actual Pos : displays current position value while the motor is operating.
- * Actual Vel : displays the actual operation speed of motor.
- * Pos Error : displays the difference between Cmd Pos value and Actual Pos value. By this value, the user can check how much the current target position is tracked correctly.

7.4 Axis Status and Alarm

To display the current axis status. Each status is displayed to On/Off. 'On' indicates in red and 'Off' indicates in white.

- When the motor stops operation and Inposition is finished, the corresponding LED at the right figure is displayed in red.
- 2) When an alarm occurs during operation, the corresponding LED is displayed in red. For more information of alarm types, refer to ^[User Manual-Text, 7.4 Output Signal].
- 3) After removing the alarm cause, click 'ALARM RESET' to check that the alarm is released. Then change the LED into Servo ON again.

-Position Status		
Cmd Pos	387652	[pulse]
Actual Pos	387508	[pulse]
Actual Vel	49986	[pps]
Pos Error	146	[pulse]
	Clear Po:	sition



7.5 Stop Operating

7.5.1 Temporary Stop

Click 'Pause' button at the I/O Monitoring window to stop the motion temporarily. When clicking the button again, the motor restarts to operate. If 'Pause' signal is set to

IN1~IN9, the actual external

LMT+	Limit +	IN 5	PT A4		Alarm Reset		JPT IN 0
LMT-	Limit -	IN 6	PT A5		Servo Op		JPT IN 1
ORG	Origin	IN 7	PT A6		Pause 🗳		JPT IN 2
	Clear Pos	IN 8	PT A7		Origin Search		JPT Start
IN 1	PT A0	IN 9	PT Start		Teaching		User IN 0
IN 2	PT A1		Stop		+ Stop		User IN 1
IN 3	PT A2		Jog +		- Stop		User IN 2
IN 4	PT A3		Jog -		E-Stop		User IN 3

signal must be supplied to [ON] status.

7.5.2 Complete Stop

When the motor needs to stop completely during operation,

the button as shown to the right is available. 'STOP'

STOP E-STOP!

button includes deceleration function and 'E-STOP' button does not include deceleration function.

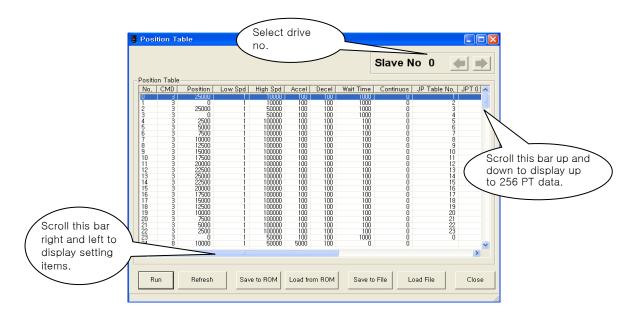
8. Position Table (PT)

For more information of position table, refer to 「User Manual-Position Table Function」. This chapter introduces its basic usage.

Loading	×
Loading Position Table Data	
30%	

1) Reading position table data

Click 'Pos Table' icon at the main menu, and data saved to the RAM area will be loaded and then the following window will be displayed.



Position table data can be changed at any time. The position table can save up to 256 step data. If the position table is used to the program area, it may be used for all point numbers without restriction. That is, it is possible to start at a random point number and jump to other point number.

2) Put the mouse on a specific PT data line, click its right button, and the pop-up menu will be displayed as shown to the right. All of the functions can be implemented. Click 'Edit ltem', and the user can edit data at the window like 3) below.

-Positio	on Table					
No,	CMD	Position	Low Spd	名 Spd 🛛	Accel	D
0	3	25000		10000	100	
1	- 41		<u> </u>	10000	100	
2	Ed	dit Item		000	100	
3		ear Item		000	100	
4				000	100	
5	Re	e <u>l</u> oad Item fr	om ROM	000	100	
6				000	100	
7	Cu	ut Item	Ctrl-X	000	100	
8	C	opy Item	Ctrl-C	000	100	
9				000	100	
10	T Pa	aste Item	Ctrl-V	000	100	
11				000	100	
12	<u> </u>	un Selected	ltem	000	100	
13	3	25000		100000	100	

- Put the mouse on a specific PT data line, double click its left key, and the right window will be displayed.
 - Input the value in order from 'Command' related items according to operation modes.
 - * When all data of the positing table is completely inputted, click 'Save' key to save data.
 - * To edit the next position table, the user should use PT select button.

Position Table Item Editer	<u> </u>
Command ABS - Normal Moti	on J
Motion Position 0 Low Speed 1 High Speed 50000 Accel Time 100	Jump JP Table No, 4 IF JPT 0 0 IF JPT 1 0 IF JPT 2 0
Decel Time 100	Counting Loop
Waiting Time after command	F PT Output Set C Start Sign C End Sign
3-3 ^P e No.	
Begin 4 🕨 End	Save Close

This data is saved to the RAM area. So, when power is off, data is deleted. Click 'Save to ROM' button, and save the data to the ROM area.

4) Set the motor to 'Servo ON' and select the mode 'Normal', click PT No to start motion, and then execute 'Run'.

8	Position	Table						
	Mode Normal	Single Step	Run 🖌	④ –2		A_1	Slave No	0
	Position Ta	able				<u>4</u> /~1		
	No. CM	1D Position Low	Spd High Spd Acce	I Decel Wa	it de C	ontinuous JP '	Table No. JPT 0	JPT1 JPT2
	0	3 25000	1 10000 10	1 100	1000	0	1	
	1	3 0 3 25000	1 10000 10 1 50000 10	D 100	1000	Ū Ū	2	
	3	3 0 3 2500	1 50000 10 1 100000 10		1000 100	0	4	
	5	3 5000	1 100000 10		100	ň	6	
	5	3 7500	1 100000 10		100	Ō	7	
	7	3 7500 3 10000	1 100000 10		100	0	8	
	8	3 12500	1 100000 10		100	0	9	
	9	3 15000	1 100000 10		100	0	10	
	10	3 17500	1 100000 10	0 100	100	0	11	×
	<							>
	Teaching	Refresh	Save to ROM	oad from ROM		Save to File	Load File	Close
<								

While PT No is operated in sequence, PT lines in service are changed in grey. Also, the user may monitor the operation status as described at '7.3 Position Status' and '7.4 Axis Status' through 'Motion Test' window,

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