

Closed Loop Stepping System with Network based Motion Controller



Closed Loop Stepping System

User Manual User Program(GUI) Function

(Rev.08.06.13)



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This manual describes how to operate User Program(GUI) for Ezi-SERVO Plus-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	СС	onnect	the	Usei	r Progi	ram((GUI),	
Versio	on	numbe	r car	n be	check	in	'Board	List
Windov	۷.							

Boa	rd List	
Contr	oller List	
otor	Information	
	Baudrate : 115200	
JS	Ver : RS485 communication	(V06,03,043,19)

(2) User Program(GUI) in PC :	About Ezi-MOTION Plus-R GUI
	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 ~
	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 : V06 ~
	5) Ezi-STEP Plus-R-ALL-ST : V06 ~
	6) Ezi-MotionLink : V06 ~
	7) Ezi-STEP Plus-R-MINI : V06 ~
	Copyright (C) 2008 FASTECH Co., Ltd,

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



	- 3
After select the 'FTDI USB Driver' folder	
(that is installed together with User Program(GUI) ,	
click 'Next' button.	

Please ch	noose your search and installation options.
⊙ Sea	arch for the best driver in these locations.
Use pati	the check boxes below to limit or expand the default search, which includes local is 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
ODor	n't search. I will choose the driver to install.
Cho	use this option to select the device driver from a list. Windows does not guarantee the driver you choose will be the best match for your bardware
u iç	anna yas araasa milaa ina aas masarrat yaa halamata
	Kack (Next>) Cancel

Now installing.



Please wa	it while the wizard inst	alls the software		ENT.
¢	USB Serial Converter			
	\geq	1	B	
	FTLang.dl To D:\WINDOWS\a	system32	_	



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].

Execute		EziMOTION Ezi-MOTION (Ezi-SERVO Plus-R)	which is User Program(GUI), click	'Connect'	button,
and	the		following window will be displayed	Ι.	
		Connect to E	zi-MOTION PlusR	3	
		F	ASTECH		
		Fast,	Accurate, Smooth Motion Control		

Ezi-MOTION Plus-R GUI

Communication Port

Baudrate

COM1

115200

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).

-

-

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.
	 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	
Ezi-MOTION PI	us-R
SlaveNo : 0	Not supported firmware version [V6,3,43,4]
	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.

ontroller List-	6	alic.
Device List	Туре	Motor
- Port 76		
Slave O	Ezi-SERVO Plus-R-ST	42L
Slave 3	Ezi-SERVO Plus-R-ST	56M

ontroller List –		
Device List	Туре	Motor
🖃 Port 3		
Slave 1	Ezi-SERVO Plus-R-Mini	42L DI

2. Main Window

📕 Ezi-MOTION GUI – Motion Test			
Elle View Help			
Connect Board Parameter A	ram	Action Test Table Cmd Bar	
🖪 Board List 💦 📑 💌	Motion Test		
Controller List Type Information Baudrate : 115200 Baudrate : 115200 Ezi-SERVO-Plus-R-ST RS485 communication (\) Parameter	Single Move [pulse] Cmd Pos 10000] [pulse] Start Speed 100 [pps] Move Speed 100000 [pps] Accel Time 100 [msec] Decel Time 100 [msec] Abs Move DEC Move INC Move	Position Status Cmd Pos 10000 [pulse] Actual Pos 10000 [pulse] Actual Vel 0 [pps] Pos Error 0 [pulse] Clear Position	Slave No 0 Image: Constraint of the second seco
Parameter List	Jog Move Max Speed 50000 [pps] Accel/Decel 100 [msec] Jog +Jog	Origin Low Speed 1000 [pps] High Speed 5000 [pps] Accel/Decel 500 [msec] Mode Origin •	Err Over Current Z Pulse Err Over Speed Org Ret OK Err Speed Motion DIR Err Over load Motion Pause Err Over heat Motion Accel Err Motor Power Motion Decel Err Inposition Motion Constant
Motion Test Motion Test Repeat Test Position Table	SX SERVO OFF ALARIM RESET	STOP E-STOP!	Status Value (HEX) 0x00580000
★ FA5_MoveVeLocity(22, 0, 50000, 0); Retur FA5_MoveStop(22, 0, 0); Return: 0 FA5_StorCommandPos(22, 0, 0); Return: 0 FA5_SetActualPos(22, 0, 0); Return: 0 FA5_MoveSingle&xiSIncPos(22, 0, 10000, 1 ÆH	n : 0 00000, 0); Return : 0		

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	Board List	Parameter List	Axis Param	Monitor	C 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
MOLION 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 use r 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 \lceil User Manual-Communication Function \rfloor .

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.

Controller List -			
Device List	Туре		Informati
⊟ Port 22 Slave 0	Ezi-SERV	Ezi-SERVO-Plus-R-ST	
<	-HIC		2
Parameter			
·			
Parameter	List	Axis Para	imeter
Parameter	List	Axis Para	imeter
Parameter	List	Axis Para	imeter
Parameter I/O I/O Monit Motion	List	Axis Para	imeter
Parameter I/O I/O Monit Motion	List tor Motior	Axis Para	ting

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 1/0 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			
	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

The repeat test is possible for up to
 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.

Position Data		3	A Slave No. I	1 24	al mb.
Position 1	0	[pulse]			
Position 2	10000	[pulse]	Y		
Position 3	20000	[pulse]	Status		
Maua Speed	10000	Innel	Cmd Pos 📁	0	[pulse]
nove opeed 1	10000	rbhe1	Actual Pos	0	[pulse]
Move Pos1 Mo	ve Pos2	love Pos3	Actual Vel	0	[pps]
			Pos Error	0	[pulse
Repeat Data	C		Cycle Time	4479	[msec]
Delay Time 🛛 🗍	0	[msec]	Repeat Count	2	
Repeat [Ō	4		Clear Stat	us
	1		2 -		

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 O	(
irame	ters				
o.	Name	Unit	Field	Default	Value .
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
3	Axis Acc Time	[msec]	1~9999	100	100
4	Axis Dec Time	[msec]	1~9999	100	100
5	Speed Override	[%]	1~500	100	100
6	Jog Speed	[pps]	1~500000	5000	50000
7	Jog Start Speed	[pps]	1~500000	100	100
8	Jog Acc Dec Time	[msec]	1~9999	100	50
9	Servo Alram Logic		0~1	0	0
10	Servo On Logic		0~1	0	0
11	Servo Alarm Reset Logic		0~1	0	0
12	S/W Limit Plus Value	[pulse]	±134217727	134217727	134217727
13	S/W Limit Minus Value	[pulse]	±134217727	-134217727	-134217727
14	S/W Limit Stop Method		0~1	1	1
15	H/W Limit Stop Method		0~1	1	1
16	Limit Sensor Logic		0~1	0	0
17	Org Speed	[pps]	1~1000000	5000	5000
18	Search Speed	[pps]	1~1000000	1000	100
19	Org Acc Dec Time	[msec]	1~9999	50	100
20	Org Method		0~2	0	0
21	Org Dir		0~1	0	0
22	Org OffSet	[puise]	±134217727	U	U
23	Org Position Set	[puise]	±134217727	U	0
10.00	1.47 S. 12 S.			1010	

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 🛛 🛑 🔿
Slave No 0 🛛 🗰 🔿

To display drive number for the current parameter list window. By us ing 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
-	· _ ·	r 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 file	\$	•	+ 🗈 💣 🖽	•
History Desktop My Computer	■ 2 axis_param ■ sample_param	ı.fpt m.fpt			
My Network P	l File name: Save as type:	Parameter File(*,fpt)		× ×	Save Cancel

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

	Slave No 0 🗰 🔿
Motor Direction	Inposition INP Value 1 [pulse]
Origin	
Origin Direction	H/W Limit Stop Mode
	C Stop G E-Stop
Origin Offset	
0	S/W +Limit Value 134217727 [pulse]
Origin Position Set	S/W -Limit Value -13421772 [pulse]
Ū	Pos Tracking Limit 1000 [pulse]
Speed Override	Los nacina cinica 1000 [pulse
Max Speed Ratio 100	% Close

The above window is to enable the user to easily operate so me 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.

				Slave No 0	(
INPUT					
LMT	+ Limit +	IN 5	PT A4	Alarm Reset	JPTINO
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
ОШТРИ	T P Compare Out	OUT 8	Org Search OI	User OUT 1	
OUT	in ostaon	No.			
	2 Alarm		+ Ston UIII	I liser OUT 3	
OUT OUT	2 Alarm 3 Moving		- Stop OUT	User OUT 3 User OUT 4	
OUT OUT OUT OUT	2 Alarm 3 Moving 4 Acc/Dec		+ Stop OUT	User OUT 3 User OUT 4 User OUT 5	
TUO TUO OUT OUT OUT	2 Alarm 3 Moving 4 Acc/Dec 5 ACK		+ Stop OUT - Stop OUT PT OUT 0 PT OUT 1	User OUT 3 User OUT 4 User OUT 5 User OUT 6	O Logic Cotting
OUT OUT OUT OUT OUT	2 Alarm 3 Moving 4 Acc/Dec 5 ACK 6 END		+ Stop OUT - Stop OUT PT OUT 0 PT OUT 1 PT OUT 2	User OUT 3 User OUT 4 User OUT 5 User OUT 5 User OUT 6 User OUT 7	O Logic Setting

I/O Monitoring of Version 6 level GUI

1/0 M	lonitoring						
- 10% I 100							Slave No 0
LMT+ LMT- ORG IN 1 IN 2	Limit + Limit - Origin Clear Pos PT A0 PT A1 PT A2	IN 3 IN 4	PT A4 PT A5 PT A6 PT A7 PT Start Stop Jog +	IN 5	Alarm Reset 2 Servo On Pause Origin Search Teaching E-Stop JPT IN 0	IN 8 IN 9	JPT IN 2 User IN 6 JPT Start User IN 7 User IN 0 User IN 8 User IN 1 User IN 2 User IN 3 User IN 4
OUT 1 OUT 2 OUT 3 OUT 4	PT A3 Compare Out Inposition Alarm Moving Acc/Dec PT ACK PT End AlarmPlink	OUT 6 OUT 7 OUT 9	Jog - Org Search Ok Servo Ready Reserved Brake PT OUT 0 PT OUT 1 PT OUT 2		JPT IN 1 User OUT 1 User OUT 2 User OUT 3 User OUT 4 User OUT 5 User OUT 6 User OUT 7		User IN S
	NPUT	NPUT LMT+ Limit + LMT- Limit - ORG Origin Clear Pos IN 1 PT A0 IN 2 PT A1 IN 2 PT A1 IN 2 PT A3 CUTPUT CUT 1 Inposition OUT 2 Alarm OUT 3 Moving Acc/Dec UT 4 PT End OUT 4 PT End OUT 5 AlarmBlink	NPUT LMT+ Limit + LMT- Limit - ORG Origin Clear Pos IN 1 PT A0 IN 3 IN 2 PT A1 IN 4 PT A2 PT A2 PT A3 UTPUT Compare Out OUT 6 OUT 1 Inposition OUT 2 Alarm OUT 3 Moving OUT 9 Acc/Dec PT ACK OUT 4 PT End OUT 5 AlarmBlink	NPUT LMT+ Lmit + PT A4 LMT- Lmit - PT A5 ORG Origin PT A6 Clear Pos PT A7 IN 1 PT A0 IN 3 PT A1 IN 4 Stop IN 2 PT A1 IN 4 PT A2 Jog + PT A3 Jog - OUT 0 OUT 6 Org Search Ok OUT 1 Inposition OUT 7 Servo Ready OUT 2 Alarm Reserved OUT 3 Moving OUT 9 Brake Acc/Dec PT OUT 1 OUT 0 PT OUT 1 OUT 4 PT End PT OUT 2 OUT 3 OUT 5 AlarmBlink User OUT 0 D	NPUT LMT+ Lmit + LMT- Lmit - ORG Origin PT A5 ORG Origin Clear Pos PT A7 IN1 PT A0 IN2 PT A1 IN4 Stop PT A2 Jog + IN6 Jog - PT A3 Jog - VTPUT	NPUT LMT+ Lmit + PT A4 IN 5 Alarm Reset 2 LMT- Lmit - PT A5 Servo On Pause 2 ORG Origin PT A6 Pause 2 IN1 PT A0 IN3 PT Start Teaching IN2 PT A1 IN4 Stop E-Stop PT A2 Jog + IN 6 JPT IN 0 PT A3 Jog - IN 7 JPT IN 1 OUTPUT Compare Out OUT 6 Org Search Ok User OUT 1 OUT 1 Inposition OUT 7 Servo Ready User OUT 2 OUT 2 Alarm Reserved User OUT 3 OUT 4 OUT 3 Moving OUT 9 Brake User OUT 4 Acc/Dec PT OUT 0 User OUT 5 User OUT 5 PT ACK PT OUT 1 User OUT 7 OUS OUT 6 OUT 4 PT End PT OUT 2 User OUT 7 OUT 5 AlarmBlink User OUT 0 User OUT 7	NPUT LMT+ Lmit + PT A4 IN 5 Alarm Reset IN 8 LMT- Lmit - PT A5 Servo On IN 9 ORG Origin PT A6 Pause IN 9 ORG Origin PT A7 Origin Search IN 1 IN1 PT A0 IN 3 PT Start Teaching IN 1 IN2 PT A1 IN 4 Stop E-Stop IN 1 PT A2 Jog + IN 6 JPT IN 0 IN 1 PT A3 Jog - IN 7 JPT IN 1 IN 1 OUT 1 Inposition OUT 7 Servo Ready User OUT 1 OUT 2 Alarm Reserved User OUT 3 User OUT 4 Acc/Dec PT OUT 0 User OUT 5 User OUT 5 IPT ACK PT OUT 1 User OUT 6 OUT 4 PT End PT OUT 2 User OUT 7 OUS OUT 7 OUT 5 AlarmBlink User OUT 0 User OUT 7

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

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

U // Settin	19						
Assign INP	UT					2	
LIMIT +	Limit +	-	Low Active	•	nave NO	5	
LIMIT -	Limit -	X	Low Active	- Assign OU	ТРИТ		
ORIGIN	Origin	2	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	-6	Low Active	OUTPUT 3	Moving	•	Low Active
INPUT 4	PT A2	T	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		Low Active	OUTPUT 7	[NONE]	•	Low Active
INPUT 8	Jog + Jog -	_	Low Active	OUTPUT 8	[NONE]		Low Active
INPUT 9	Alarm Reset Servo On Pauso	100	Low Active	OUTPUT 9	[NONE]	•	Low Active
-	Origin Search	~					

for Ezi-SERVO-PR-MI

LIMIT +	Limit +		Low Active	3	blave No	1	
LIMIT -	Limit -	·*	Low Active	- Assign OU	ТРИТ		
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		<u></u>	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		<u></u>	Low Active
INPUT		÷	Low Active	OUTPUT		<u> </u>	Low Active
INPUT	[.	Low Active	OUTPUT	-	<u>–</u>	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 SX.
 At this time, the motor starts to be electrified and the motor becomes 'lock' status.

4) Jog Operation

After setting jog related parameters, click ______ 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 can check its position and operation status. For more information, refer to ^{[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].

Connect Board Paramet	Axis VO Param VO Setting	Motion Pos Cmd Bar
lotion Test	<u> </u>	
itagle flave Cnic Pas Star Speet 10000 (ppl Accel Thm 70 (ppl Acc	Position Status Crief Pas 1000 (pd/e) Actual Pas 0000 (pd/e) Actual Pas 0 (ps) Pas Error 0 (ps) Origin Clear Position (ps) Universe 00 (ps) High Stylesed 50 (ps) Mode 100 (ps) Origin 0 Origin	Slave No. 15 State No. 15 S

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 b utton, 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

۲I'	- INPUT									
	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. $`{\tt STOP'}$

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.

oading		
Loading Po:	sition Table Data	
	30%	
	Cancel	

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.

No,	CMD	Position	Low Spd	2) Spd	Accel	D
0	3	25000		10000	100	
2 3 4 5 6	<u>E</u> d <u>C</u> l Re	it Item ear Item <u>I</u> oad Item fr	om ROM	000 000 000 000 000	100 100 100 100 100	
0 7 8 9 10	Cu Ca Pa	it Item ipy Item ste Item	Ctrl-X Ctrl-C Ctrl-V	000 000 000 000	100 100 100 100	
11 12 13	Bu	n Selected	ltem	000	100 100	

- 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.

em No. : 0003	(3)-1
Command ABS - Normal Mot	ion I
Motion	Jump
Position 0	JP Table No. 4
Low Speed	IF JPT 0 0
High Speed 50000	JPT 1 0
Accel Time 100	🔽 JPT 2 0
Decel Time 100	
Enable Continuous Action	Counting Loop
Waiting Time after command	JP Table No. at the of loop
1000	PT Output Set
🔽 Clear Loop Count	C Start Sign C End Sign
3 ^{IP} Ve No, 0	ПРТО ПРТ/3-2
2	

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	Pos	ition T	able			Δ					
	• N	ormal	← Single S	tep	Run 🖌		1)−2		<u>(4</u>)–1	Slave No	0 🕢 🔿
	Positi	on Table							\sim .		
	No.	CMD	Position	Low Spd	High Spd	Accel	Decel	Wait	Continuous .	JP Table No. JPT 0	JPT1 JPT2
	<u>n</u>	3	25000	1	10000	100	100	1000	0	1	
	1	3	0	- î	10000	100	100	1000	Ō	2	
	2	3	25000	1	50000	100	100	1000	0	3	
	3	3	0	1	50000	100	100	1000	0	4	
	4	3	2500	1	100000	100	100	100	0	5	
	5	3	5000	1	100000	100	100	100	0	6	
	6	3	/500	1	100000	100	100	100	U	6	
	6	3	10000		100000	100	100	100	U	8	
	0	3	12500		100000	100	100	100	0	10	
	10	2	17500	+	100000	100	100	100	ŭ	11	
	10	3	11300		100000	100	100	100	U.S.	18 ·	
	<								11		2
	4	11 I					11 -		0 I F1	1.151	01
	Teac	aing	Hetresh	5	ave to HUM	Loa	d from H	UM	Save to Fil	e Load File	Close
24						1/3			2		
<											>
											· · · · · · · · · · · · · · · · · · ·
	_										10

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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