# iMotion Software

**Operational Manual** 

1st Edition

Weihong Electronic Technology Co., Ltd.

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# Preface

## About This manual

*iMotion* software needs to be run in Windows operating system, and communication between the computer and WSDV series driver is required, which is realized by USB cable.

With *iMotion* software, driver parameter setting, monitoring control as well as trial running and the like, can be accessed. Please refer to the operational manual careful in use.

With four chapters, this manual can be divided into four parts, as follows:

- 1) Part 1: preface, briefly introducing this manual and *iMotion* software.
- 2) Part 2: introduction to software installation and initialization. Refer to chapter 1 for installing environment requirements, operations, uninstalling as well as software startup.
- 3) Part 3: introduction to each function, see chapter 2 and 3. Detailed description about each function and corresponding interfaces, operation steps are introduced in this part.
- 4) Part 4: appendix. See chapter 4. You can get the software license agreement.

## **Applicable Product Model**

This manual is applicable to WSDV series WISE servo driver. Refer to the table below for details.

Product Model	Remarks	
WISE (维智) Servo Driver	At present, there are four models: WSDV-2R8 (0.4kW), WSDV-5R0 (0.75kW), WSDV-6R8 (1.0kW) and WSDV-110(1.5kW). Abbreviated as "维智" or WISE.	
	Without further explanation, the driver referred in this manual refers to WISE (维智) servo driver.	

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## **Revision History**

You can refer to the following table for the revision records of each edition.

Date	Edition	Revision	
2016.04	R1	Released for the first time.	

## **Document Conventions**

Sign	Objects		
	1) Elements or items on the interfaces, e.g. tile name or button name. For example:		
""	<ul><li>You can set the parameter in "Value" column.</li><li>A certain operation. For example: To execute "Transfer" operation.</li></ul>		
	3) Object to be emphasized. For example: Among which, "D" refers to the software		
	version, and "F" refers to the hardware version.		
[]	The selected or the active menu item. For example: Click [Install] to start installation of		
[]	the drive application.		
	The next step in operational procedures. For example: Start <i>iMotion</i> $\rightarrow$ click [Monitor]		
$\rightarrow$	in the menu list under "Function" or on the toolbar under "Function preview".		
	Pull-down menu items. For example: Click [other]   [Encoder clear] on the toolbar		
	under "Function preview".		

## Precautions

Precautions can be divided into caution and warning according to the degree of possible loss or injury in case of negligence or omission of precautions stipulated in this manual.



: general info, mainly for informing, such as supplementary instructions and conditions to enable a function. In case of negligence or omission of this kind of precautions, you may not activate a function. Note that in some circumstances, negligence or omission of this kind of precautions could cause physical injury or machine damage.



kind of precautions, you may suffer physical injury, or even death, machine damage or other losses.

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# 1 Software Installation and Initialization

# **1.1 Software Installation and Uninstallation**

*iMotion* software is used together with WSDV series servo driver of Weihong Company, and it is not applicable to drivers of other brands, for your information.

## **1.1.1 Installation Environment Requirements**

Please firstly make sure your computer meets the following requirements before installing the software. Incorrect environment may lead to abnormal installation or usage of the software. Refer to following table for details.

Specifications			
OS	Windows XP SP3 Chinese Version (32bit)		
CPU	Pentium 41.0GHz or above		
Memory	512M or above		
Hardware	512M or above		
Communication Interface	USB2.0 or higher		
Display			
Resolution	1024*768 or above		
Color Quality	24bpp (True Color) or above		
Environment for the Software			
Installing Environment	Windows Installer 3.1 or above		
Running Environment	.Net Framework 4.0 or above		



It cannot be guaranteed that the software operates well in other installation environment than that of the above table. And note that the software cannot be applied to several displays.

# 1.1.2 Installation of *iMotion*

Following is the installation package of the software.

➡ DotNetFX40 ➡ WindowsInstaller3\_1 ➡ setup. exe ➡ Setup. msi

Fig. 1-1 Installation package

- 1) Double click on application "Setup.exe" to start installation.
- 2) The application depends on *Microsoft .Net Framework 4.0*, therefore, if *Microsoft .Net Framework 4.0* has not been installed in the computer, it will be installed before software installation starts. Please follow tips to properly install it. While if *Microsoft .Net Framework 4.0* has already been installed before, it begins from the next step.
- 3) After *Microsoft .Net Framework 4.0* has been well installed, start installation of the *iMotion* software. Click [Next] to continue, see Fig. 1-2.

岗 iMotion	- • 💌
Welcome to the iMotion Setup Wizard	
The installer will guide you through the steps required to install iMotion on your comp	uter.
WARNING: This computer program is protected by copyright law and international tr Unauthorized duplication or distribution of this program, or any portion of it, may result or criminal penalties, and will be prosecuted to the maximum extent possible under the	: in severe civil
Cancel < Back	<u>N</u> ext >

Fig. 1-2 iMotion setup wizard

4) Specify the path, and click [Next] to continue.



🗒 iMotion	- • •
Select Installation Folder	
The installer will install iMotion to the following folder.	
To install in this folder, click "Next". To install to a different folder, enter it b	elow or click "Browse".
Eolder: C:\Program Files\weihong\iMotion\	Browse Disk Cost
Install iMotion for yourself, or for anyone who uses this computer:	
Everyone	
⊘ Just <u>m</u> e	
Cancel < <u>B</u> ack	<u>N</u> ext >

Fig. 1-3 Specify the path

5) A confirmation dialog box will appear. Click [Next] to continue, see Fig. 1-4.

岗 iMotion	
Confirm Installation	
The installer is ready to install iMotion on your computer.	
Click "Next" to start the installation.	
Cancel < <u>B</u> ack	Next >

Fig. 1-4 Installation confirmation

6) During installing progress, compatible driver which is used for communication between PC and the servo driver is required to be installed, see Fig. 1-5.



Fig. 1-5 Installation of drive

7) Click [Install] to start installation of the drive application. After successful installation of this drive application, installing of *iMotion* will continue.

'' iMotion	- • •
Installation Complete	
iMotion has been successfully installed.	
Click "Close" to exit.	
Please use Windows Update to check for any critical updates to the .NET Fran	nework.
Cancel < <u>B</u> ack	Close

Fig. 1-6 Installation complete

8) As shown in Fig. 1-6, click [Close] to complete installation of *iMotion* software.

# 1.1.3 Uninstallation of *iMotion*

To uninstall the software: click on "Start"  $\rightarrow$  "All"  $\rightarrow$  "iMotion"  $\rightarrow$  "Uninstall.exe".

# 1.2 Initialization of *iMotion*

# 1.2.1 Initialization Methods

Here are two methods to start the software:



a) Double click on the icon ir

in desktop.

[4] Software Installation and Initialization

b) Click on "Start" -> "All" -> "iMotion" -> "iMotion[维宏]" 😽 iMotion[维宏]

## **1.2.2 Communication Setting**

After the software is started, communication setting with the driver is required, see Fig. 1-7.

4	Connect				23
ſ			ect driver communication	<u> </u>	OK
	🔘 Comm	unicate wi	th the driver		Cancel
	Dri	ver	WSDV		Cancer
	Dri	ver model	WSDV2R820PSB		
	Dri	ver SN	WSDV-2B67-1111-1111-000		
	Mot	or model	Unknown		
	Mot	or No.	Unknown		
	⊘ Disc	onnect wit	th the driver		

Fig. 1-7 Communication setting dialog box

### Communicate with the driver

When this item is selected, all software functions can be used normally.

### • Disconnect with the driver

When this item is selected, that is, the driver is disconnected, only few functions such as parameter viewing, loading waveform and help context can be accessed on PC. Other functions are disabled.

# **2 Accessing Software Functions**

*iMotion* software features following functions: monitoring, parameter editing, waveform collecting, gain adjusting, trial running, alarming, pin allocation, etc.

Here are two ways to access each function:

a) Start *iMotion*, click on tab [Function] to open up a function list, where you can enable corresponding function. See Fig. 2-1.

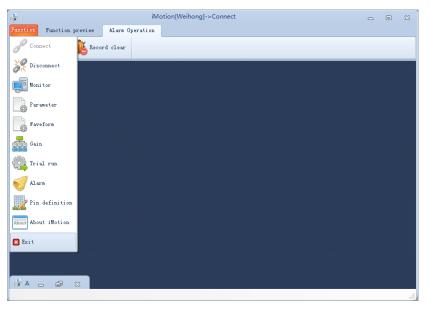


Fig. 2-1 Function list

b) Start *iMotion*, and directly select the function on the toolbar under [Function preview], see Fig. 2-2.

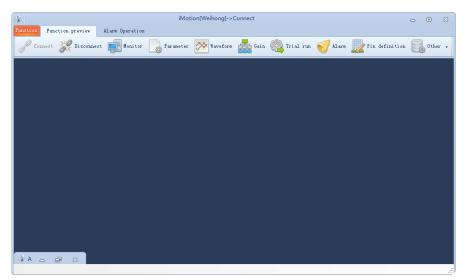


Fig. 2-2 Function preview

# **3 Introduction to Function Windows**

This chapter focuses on introductions to each function window of [Function preview].

# 3.1 Monitor Interface

In this window, the user can obtain and check information such as running state of the driver or the motor, I/O signals as well as internal status, etc.

To access the monitor interface: in the software, click [Monitor] in menu list under [Function] or [Monitor] on toolbar under "Function preview". See Fig. 3-1 for the window.

🖗 Monitor									- 0	83
Physical input La	gic input	-		Driver				ogi c output		-
Input signal	Pin	Token	Internal	Value	Unit	-	Logic signal	No.	Token	
Invalid	44	INVALID	status Position				Invalid	1	INVALID	
Invalid	46	INVALID	command	0	Command unit		Servo alarm output	2	ALM	
Invalid	45	INVALID	deviation				Servo ready output	3	S-RDY	
Negative direction			Actual speed	0	r/min		External brake	4	BRK-OFF	
overtravel inhibition input	43	NOT	Torque command	0	%		release signal	-		_
Positive direction			Overload rate	0	%		Positioning complete		INP	
overtravel inhibition	42	POT	Over-regenerativ	'n	*		At-speed output	6	AT-SPEED	
input Command pulse			rate			-	Torque in-limit signal output	7	TLC	
inhibition input	41	INH	•			•	Zero-speed clamp			
Servo-ON input	40	SRV-ON	Pulse sum	Value	Unit		detection signal	8	ZSP	
Deviation counter clear input	14	CL	Command pul sum	0	Command unit		Velocity coincidence output	9	V-COIN	
ciear input			Encoder pul sum	vito and and O Resident mit		Alarm output 1	10	WARN1		
			Status	No.	Description		Alarm output 2	11	WARN2	
			Error	15.0	Overheat protection	-	Position command ON/OFF output	12	P-CMD	
			•			•	Positioning complete	13	INP2	
Pin No.		High/Low count	<b>→</b> 45 (INVA	LID)						
45 (INVALID)	•	0	•••••	••••			••••			
Please select	-	0								
Please select	-	0		8	16		24	32		

Fig. 3-1 Monitor window

# 3.1.1 About Monitor Interface

	1S 🔶	🕨 Start 🔰 Stop		Functi	onal bar					
Monitor									. 0	83
Physical input	Logic input	•		Dri	iver		Physical output I	.ogicoutput		-
Input signal	Pin	Token	Internal	Value	Unit		Logic signal	No.	Token	-
nvalid	44	INVALID	status Position	, and	0.1110		Invalid	1	INVALID	
nvalid	46	INVALID	command	0	Command unit		Servo alarm output	2	ALM	
nvalid	45	INVALID	deviation				Servo ready output	3	S-RDY	
legative direction vertravel inhibit		NOT		° <b>3</b>	r/min %	- 1	External brake release signal	4	BRK-OFF	
nput	1			0	*	_	Positioning complete	5	INP	
ositive direction vertravel inhibit		POT	Over-regenerativ	-		- 1	At-speed output		AT-SPEED	
nput Command pulse			rate	0	%	-	Torque in-limit	7 <b>Z</b>	TLC	
ommana puise nhibition input	41	INH	<b>A</b>			•	signal output Zero-speed clamp	-		
ervo-ON input	40	SRV-ON	Pulse sum	Value	Unit		detection signal	-	ZSP	
eviation counter lear input	14	CL	-	۰ 🚹	Command unit		Velocity coincidence output	9	V-COIN	
			Encoder pul sum	0 -	Encoder unit		Alarm output 1	10	WARN1	
)isplay <u>a</u> rea	i of moni	tored items	Status	No.	Description		Alarm output 2	11	WARN2	
				15.0	Overheat protection		Position command ON/OFF output	12	P-CMD	
			4		protection		Positioning complete	13	TNP2	-
						r		15	INFZ	
/		,,								
Pin N	».	High/Low count	🗕 45 (INVAL	ID)						
Fin No.	o. ▼		45 (INVAL	ID)						
		High/Low count	45 (INVAL	ID)	•••••	•••				
		0	45 (INVAL	ID)	•••••6•	••	••••		••••	•••
45 (INVALID)	······································		45 (INVAL	ID)	•••••6•	•••	••••			•••
45 (INVALID)	······································	0	45 (INVAL	ID)	•••••6•	•••			••••	•••
45 (INVALID) Please select	······································	0	45 (INVAL	ID) 226	234	•••	242	250		2

Area 1: Input signal status monitor Area 2: Output signal status monitor Area 3: Internal status monitor

Area 4: Pulse sum monitor Area 5: Error/Alarm monitor Area 6: Electrical level monitor

Fig. 3-2 Monitor interface

### Functional Bar

On functional bar, you can do following operations:

Sampling interval :	1S	Ŧ
🕨 Start 🚺 Stop		

To set the sampling interval, namely, the time period for current data refreshing. Options available: 1s, 5s and 10s.

To start or stop monitor sampling.

### Display Area of Monitored Items

Monitor information will be displayed in this area. Refer to following table for details:

Monitor Type	Remarks
Input signal status	It shows status of input signals, switching between "Physical input" and "Logic input".
monitor	1 Physical input: Signals passed to the driver.
	A red background means it is connected to COM; while a pink background

Monitor Type	Remarks						
	means it is Open.						
	② Logic input: The internal signals of the driver.						
	A red background means it is Active; while a pink background means it is Inactive.						
	It shows status of output signals, switching between "Physical output" and "Logic output".						
	1 Physical output: Signals fed out from the driver.						
Output signal status monitor	A red background means the output transistor is ON; while a pink background means the output transistor is OFF.						
	② Logic output: The internal signals of the driver.						
	A red background means it is Active; while a pink background means it is Inactive.						
	It shows internal status of the driver.						
	① Position command deviation: It refers to the positional deviation of specified position and feedback position (command unit).						
	② Actual speed: It refers to actual speed of the motor.						
	③ Torque command: It refers to the currently active torque command.						
Internal status monitor	④ Overload rate: It refers to actual overload factor of the motor (the value must NOT exceed 100% when adjusting the motor).						
	⑤ Over-regenerative rate: It refers to the level rate when over-regenerative protection alarm occurs. Note that at this time, over-regenerative rate shown on the monitor is not equal to the regenerative energy.						
	6 Power voltage: It refers to the voltage across P-N of the driver.						
	0 Encoder position deviation: It refers to the positional deviation of specified position and feedback position (encoder unit).						
Pulse sum monitor	It shows the sum of command pulse received by the encoder and the encoder pulse sum.						
Error/Alarm monitor	It shows error/alarm information of the encoder.						
Electrical level monitor	It shows change times of the three selected physical input/output signals. On most occasions, electrical level of the signal is displayed.						

## • Forced Output

Click
 Force output
 and the front panel will be fixed to I/O signals status monitor. Selecting the input or output signals to be forced output by checking the check box.

2) If it requires to exit I/O signals status monitor, click

Force cancelled

or restart the driver.



- 1) Because the driver and PC is communicated via a USB, there may be slightly difference or delay between the displaying value on the interface and that on the front panel.
- 2) The monitor doesn't equal to a measuring unit, therefore, displaying value on the monitor interface only serves as estimation reference.

# 3.2 Parameter Editing Interface

On parameter editing interface, the user can read, show, and write the driver parameters, as well as save, import parameter files, etc.

# 

Some parameters will greatly affect the driver, therefore, please read operational manual of the driver thoroughly before making parameter changes.

To access the parameter editing interface: in the software, click [Parameter] in the menu list under [Function] or on the toolbar under [Function preview]  $\rightarrow$  decide how parameter is to be loaded  $\rightarrow$  click [OK]. The parameter editing window will pop up, see Fig. 3-3.

0.Basic Setting 1.Gain Adjustment 2.Damping Control		No.	Name	Range	Value	Unit	
2. Damping Control	0	0	Rotational direction setup	$0 \sim 1$	1		
	0	1	Control mode setup	0~3	1		
3. Velocity/Torque Co	0	2	Real-time auto-gain tuning setup	0~6	0		
4.I/F Monitor Settir 5.Enhancing Setting	▶ 0	3	Selection of machine stiffness at re	0~31	13		
6.Special Setting	0	4	Inertia ratio	0 ~ 10000	250	%	
	0	6	Command pulse rotational direction s	0~1	0		
	0	7	Command pulse input mode setup	0~3	3		
	0	8	Command pulse counts per one motor r	0 ~ 1048576	10000	Pluse after	
	0	9	1st numerator of electronic gear	$0 \sim 1073741824$	0		
	0	10	Denominator of electronic gear	$1 \sim 1073741824$	10000		
	0	11	Output pulse counts per one motor re	1 ~ 262144	2500	Pulse prior	
	0	12	Reversal of pulse output logic	0~1	0		
	0	13	1st torque limit	0 ~ 500	300	8	
	0	14	Position deviation excess setup	0~134217728	100000	Unit dependent	
	0	15	Absolute encoder setup	0~2	1		
	0	16	External regenerative resistor setup	0~3	3		
	0	17	Load factor of external regenerative	0~4	0		
	1	0	1st gain of position loop	0 ~ 30000	480	0.1/s	
	1	1	1st gain of velocity loop	1 ~ 32767	270	0.1Hz	
	1	2	1st time constant of velocity loop i	1 ~ 10000	210	0.1ms	
	1	3	1st filter of sneed detection	0 ~ 10000	0	0.01ms	

Fig. 3-3 Parameter editing window

### Decide How Parameter Loaded

Decide how parameter loaded 🛛 🕅							
Decide how parameter setting loaded							
O Load from the driver	OK						
🔘 Load from file	Cancel						
Coad factory setting							

Fig. 3-4 Parameter loading method dialog box

There are three ways available to load parameters, as shown in Fig. 3-4.

Load from the driver

It refers to reading driver parameters. With this method selected, modifications or changes to parameters will be passed to the driver.

Load from file

It refers to loading parameter settings in file. With this method selected, once command "Send to the driver" is not executed, modifications or changes to parameters will not be passed to the driver.

Load factory setting

If the driver has not been connected, it loads standard driver parameter settings when the software is installed; while if the driver has been connected, it loads parameter settings in initialization area.

With this method selected, once command "Send to the driver" is not executed, modifications or changes will not be passed to the driver.



- Driver parameter saved in initialization area refers to the parameter settings after "Restore to factory setting" is executed. For different drivers, some parameter setting may be varied. Please refer to driver's manual for details.
- 2) If the driver software version is too low, when "Load factory setting" is checked, parameter setting in initialization area cannot be loaded; instead, factory setting will be loaded when *iMotion* software is installed.

# 3.2.1 About Parameter Editing Interface

				iMotion[Weihong]->Connect					
	Function Function preview	Operation par		Invotion[weinong]->connect					
Tool bar •	Import Export	Receive	Transfer	Parameter comparison 🚫 Ver	sion conversion 🕻	Restore to	factory setting 🧭	EEP	
Title bar	Parameter editing (Value r	read from the d	river)D-1 59.0	I F2 21 3 1			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
	-Overviev	Class	No.	Name	Range	Value	Unit		
	- O.Basic Setting	▶ 0	0	Rotational direction setup	0~1	1			
Parameter	<ul> <li>1.Gain Adjustment</li> <li>2.Damping Control</li> </ul>	0	1	Control mode setup	0~3	1		-	
	3. Velocity/Torque Co	0	2	Real-time auto-gain tuning setup	0~6	0			
overview	<ul> <li>4. I/F Monitor Settir</li> <li>5. Enhancing Setting</li> </ul>	0	3	Selection of machine stiffness at re	. 0 ~ 31	13			
	6. Special Setting	0	4	Inertia ratio	0 ~ 10000	250	8		
		0	6	Command pulse rotational direction s	. 0 ~ 1	0			Parameter
		0	7	Command pulse input mode setup	0~3	3			setting area
		0	8	Command pulse counts per one motor r	. 0 ~ 1048576	10000	Pluse after		- · · · J · · · ·
		0	9	1st numerator of electronic gear	0 ~ 1073741824	0			
		0	10	Denominator of electronic gear	1 ~ 1073741824	10000		-	
		0	11	Output pulse counts per one motor re	. 1 ~ 262144	2500	Pulse prior		
		0	12	Reversal of pulse output logic	0~1	0			
		0	13	1st torque limit	0 ~ 500	300	8		
		0	14	Position deviation excess setup	0~134217728	100000	Unit dependent		
		0	15	Absolute encoder setup	0~2	1		+	
						-	Show description	of setting value	
		Nama · Rota	tional direct	tion setup Range : 0~1	Tre	edistely	Reboot	· ·	Parameter
		Value: 1	cronar uneco	Effective: Reboot			Mebbolt		attribute
		Value: 1 Parameter descr	intion '	Effective: Aeboot	Kea	d-only			
		Setup the relat	ionship betw	een the direction of command and directi					Parameter
				se to positive direction command (CW whe					description
		1: Motor turns	uum in respo:	nse to positive direction command (CCW w	nen viewed from Lo	ad side shaft er	a)		description
		_	_			_		•	
	U Contraction of the second se								1

Fig. 3-5 Parameter editing interface

## Import Reading parameters from the file (\*.pm). Export Exporting parameters to the file (\*.pm). Receive Receiving parameters from the driver. Transfer Sending current parameters to the driver. Parameter comparison Comparing the difference of two groups of loaded parameters. ersion conversion Changing incompatible parameter file to compatible one. 'arameter comparison Restoring parameter settings to factory settings. EEF Writing parameters to EEPROM of the driver.

### Title Bar

Toolbar

In this area, source information of parameters will be shown, together with the software version No. and hardware version No. ("D" refers to software version No., and "F" refers to hardware version No.) When "Load from file" is selected for parameter loading, software version No. and hardware No. at file saving will be displayed.

### • Parameter Overview

With Classification in this area selected, parameters under this classification will be shown in parameter setting area.

### • Parameter Setting Area

Detailed parameter information will be shown in this area, including class, number, range, setting value, unit and description.

Clicking on "Value" column can change parameter setting. Select the parameter first, type in concrete value, click Enter to validate the change or click Esc to cancel the change and restore it to previous value.

### • Parameter Attribute

In this area, varied background colors represent different parameter attributes.

1) General parameters, whose modification will be effective immediately. Note that if you want to save the parameter, write it into EEPROM.

2) Parameters whose modification takes effect after restart, namely, write it to EEPROM and

re-power on the driver.

3) Parameters which are read-only.

4) Show description of setting value: With this checked, possible pull-down information box will appear when certain parameters are selected.

### Parameter Description

In this area, detailed description will be shown once a parameter is selected.

# 3.2.2 Parameter Editing Operation

### • Reading Parameter from File

Operation steps: click [Import] on the toolbar $\rightarrow$  select parameter file $\rightarrow$  click [Open].



For a parameter file not saved by current software, it may generate a unmatched parameter file because of incompatible software versions. If this situation occurs, you can execute "Version conversion" function before "Transfer" parameters.

### • Saving Parameter to File

Operation steps: click [Export] on the toolbar $\rightarrow$  type in paramter file name $\rightarrow$  click [Save].

### • Reading Paramter from the Driver

Operation steps: click [Receive] on the toolbar→ read paramter setting value from the driver.

### • Sending Parameter to the Driver

Operation steps: click [Transfer] on the toolbar→ sending paramter setting to the driver.



When reading paramters from file, paramter settings has not been transferred to the driver, and it will be changed in the driver only after [Transfer] is clicked.

### • Parameter Value Setting

Operation steps: select in column "Value" in parameter setting area $\rightarrow$  type in desired value $\rightarrow$  click Enter to validate the modification or Esc to cancel it.

# **CAUTION**

- 1) After paramter modification, those paramters with "Immediately" attribute take effect immediately, as the name implies; while those with "Reboot" attribute take effect after restarting the software.
- 2) If power interruption occurs during EEP execution, modification to the paramter will lose even though after restart, and previous value will be used.

### Parameter Comparison

Operation steps: click [Parameter Comparison] on the toolbar to open paramter comparison diglog box (see Fig. 3-6)  $\rightarrow$  select loading method for parameter group 1/2 $\rightarrow$  click [OK] to show comparison results (see Fig. 3-7).

Parameter comparison	8
Group 1 © User parameter	Tip Function: compare two different groups of parameters.
🔿 Read from file	- Introduction:
Group 2	<ol> <li>User parameter: parameters shown on parameter interface, which can be accessed by users.</li> </ol>
🔘 User parameter	2.Read from driver initialization area: load parameter setting value from driver
Read from initialization area of the driver.	3.Read from file: load parameter setting value in the file.
🔘 Read from file	(Click OK to show comparison result of two groups of parameters. )
OK Cancel	()

Fig. 3-6 Parameter comparison dialog box

🖗 Parameter comparison result								83
Parameter group source		Class	SN	Name	Parameter group 1 setting	Setting value of parameter group 2	Unit	
	•	0	8	Command pulse counts per	10000	8000	Pluse a:	fter
Group 2 File parameter C:\Us		0	9	1st numerator of electron	0	1		
Description of pa***								
Parameter [0 8]:Command pulse counts per one motor revolution ValueChange								
Parameter [0 9]:1st numerator of electronic gearValueChange								
		_	_	III				
				pulse counts per one	Add parameter	Parameter	modifics	tion
~	Para	ameter cha	nge type:	Parameter modification	Delete param	eter		
UI operation Open 4 >	Remar	ks on pars	ameter cha	nge :				
	Param	eter [0 8]	]:Command	pulse counts per one motor re	volution Setting v	alue change:10000<-	>8000	*
OK Back								
								×

Fig. 3-7 Parameter comparison results

As shown in Fig. 3-6, when [User parameter] is selected, parameters shown on parameter interface which can be edited by the user will be loaded; when [Read from file] is selected, parameter setting value saved in file will be loaded; when [Read from initialization area of the driver] is selected, parameter setting values saved in driver's initialization area (namely, driver parameter settings after "Restore to factory setting" execution) will be loaded.



If software version of the driver is too low, it will be unable to read from the driver's initialization area, that is, "Read from initialization area of the driver" is invalid. Refer to section 3.2 for detailed information.

## > About parameter comparison result interface

	😽 Parameter comparison result						- © %	
	Parameter group source Group 1 User parameter	Class	SN	Иале	Parameter group 1 setting	Setting value of parameter group 2	Unit	Comparison result
Source of paramters		• 0	8	• •		8000	Pluse after	displying area
Description about	Group 2 [File parameter C:VUs] Description of parts Parameter [0][8]:Command pulse counts per one motor revolution ValueChange Parameter [0][9]:ist numerator of electronic gearWalusChange	D	9	1st numerator of electron	0	1		
		Parameter nam	e:Command	l pulse counts per one…	Add parameter	Parameter	modification	Parameter
	Ŧ	Parameter cha	nge type:	Parameter modification	Delete param	neter		change type
Operation •	UI operation Oper} 4 > OK Back	Remarks on pars Parameter [0 8]		nge : pulse counts per one motor re	volution Setting v	ralue change:10000<-	8000	Remarks on
		L					, ii	

Fig. 3-8 Parameter comparison result interface

- 1) Parameter group source: it displays the loading sources of parameter group 1&2.
- 2) Comparison result displaying area: it displays parameter information such as "Class" "No." "Name". Column "Parameter group 1/2 setting" shows parameters which have been changed.
- 3) Description about parameter changes: it describes parameter information which has been changed.
- 4) Parameter change type: different backgrounds color represent different change types.

lcon	Meaning	Remarks
	Parameter adding	Compared with parameter group 2, the newly added parameters in group 1 (Possibly because of software version update).
	Parameter deleting	Compared with parameter group 2, the newly deleted parameters in group 1 (Possibly because of software version update).
	Parameter modifying	Compared with parameter group 2, parameters in group 1 whose attributes have been changed.

- 5) Remarks on parameter change: it makes comments on the change information of selected parameter.
- 6) Operation: in this area, click [OK] to exit the interface; click [Back] to return to previous interface; and switch to tab [Operation result] to import or export the comparison result.

## Version Conversion

If the imported parameter file is unmatched with current version of driver software, you can make a compatible version by using "Version conversion" function. Note that parameters after conversion will only reflect on operational interface, but not saved into the file. If you want to save to the file, you can execute "Export" function. Click [Version conversion] in the toolbar to open "Version conversion" window. See Fig. 3-9.

Description of version conversion



	31011 0	Unversio	511						
😺 Version conversion									- • ×
Description of version	Follow	ing param	eter valu	1e needs to be customi	zed:			🔲 All use def	ault value
Parameter [0 8] Parameter attribute		Class	No.	Name	Range	File setting value	Custom setting value	Unit	Use default value
of target version has been changed,	۱.	0	8	Command pulse co	0~1048576	8000	10000	Pluse after	
	Set th	ter descr e command 0941et r	l pulse tl	hat causes single turn of electronic gearj >	of the motor :	Minimited for the state of the	etting is	0%	Cancel
-	gear>b	ecome val	.id.				<b>_</b>		
		Pa	ameter	description				Operati	onal buttons

Displaying area of custom parameters

Fig. 3-9 Version conversion window

- Introduction to Version Conversion Window
- 1) Description of version conversion

In this area, parameter information in version conversion process is displayed.

2) Displaying area of custom parameters

In this area, detailed information of each parameter, such as classification, No., name, etc. are displayed. Note that "Name" and "Range" refers to name and setting range of parameter after conversion; and "Unit" is the unit in target version; "File setting value" refers to parameter value before conversion (in target version, default setting value of newly-added parameter is fixed to 0); "Custom setting value" refers to setting value self-defined by the user, and it will be the preset value in target version. If checkbox in column [Use default value] is checked, preset value will be used and it is unable to be modified. Check in the checkbox of [All use default value] at the upper-right part, all parameters will use preset settings.

3) Parameter description

In this area, function or purpose of the selected parameters is displayed.

### 4) Operation button

Click [OK] to execute version conversion function, after which, "Transfer" function can be enabled. Click [Cancel] to give up the operation.

- Comments on Version Conversion
- 1) When there is new parameter in target version, it will be added directly, with preset value as parameter setting value. In addition, this value will be prompted.

- 2) When the parameter is absent in target version, it will be deleted directly.
- 3) After conversion, if setting range of target version changes and the value in original file exceeds the range specified in target version, a prompt will appear asking the user to set new value for it.
- 4) If you don't want to enter parameter value one by one, you can check in the checkbox of [All use default value]. In this way, those which need to be self-defined will use preset values in target version.

## • Writing Parameter to EEPROM

Operation steps: click  $\checkmark$  to send setting value to the driver $\rightarrow$  check the confirmation information (see Fig. 3-10)  $\rightarrow$  click [OK]. The parameter change will be written to EEP. Click [Cancel] to cancel the operation.

011	te into EE		as been modified, whether to wri	te the modi	fication to EEI	- • •
	Class	No.	Name	Initial value	After change	Description
	0	3	Selection of machine stiff	13	15	Mechanical stiffness setup with real-time auto-gain tuning ena
	0	7	Command pulse input mode s	3	2	You can set up the rotational direction against the command pu

Fig. 3-10 Parameter modification confirmation dialog box



- 1) On condition that parameter value has been modified while not written into EEPROM, confirmation dialog box will appear when parameter editing window is being closed.
- Reading or loading parameters from file, or loading factory settings cannot make parameter setting send to the driver. Only after [Transfer] is executed, parameter settings in the driver will be changed. At this time, if "EEP" is executed, correct parameter change will be shown.
- 3) During writing to EEPROM, please DO NOT power off the driver. If power interruption occurs, writing operation failed.
- Restoring to Factory Setting

Clicking Restore to factory setting on the toolbar makes all driver's parameters restore to default leaving-factory settings.

# 

- 1) For detailed information of some parameters, please refer to manual of the driver.
- 2) If "Transfer" has been executed, parameters are only sent to the driver; and after "EEP" is executed, the parameters are written to EEPROM of the driver.
- 3) When writing parameters to EEPROM, please check the changes in EEPROM confirmation dialog box.
- 4) During writing parameters to EEPROM, please DO NOT shut down the power. If power interruption occurs, writing operation failed.
- 5) After modification and writing to EEPROM, those parameters with "Reboot" attribute will be validated after re-power on the driver.
- 6) When parameters need to be modified in other windows (such as "Trial run", "Pin allocation", "Gain adjustment" etc.), parameter values in parameter editing window may not be the same as that of actual value in the driver. At this time, click [Transfer] to read updated value from the driver.

# 3.3 Waveform Collection

Or called waveform acquisition. Waveform representing motor actions is shown in "Waveform" window. The user can save waveform result to a file or read waveform data from a file.

To access waveform interface: in the software, click [Waveform] in the menu list under "Function" or on the toolbar under "Function preview". The waveform window is as shown in Fig. 3-11.

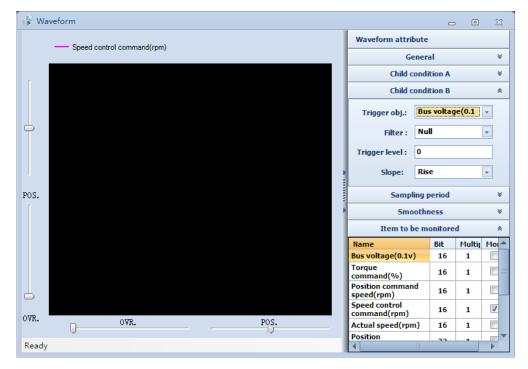


Fig. 3-11 Waveform window

# 3.3.1 About Waveform Interface

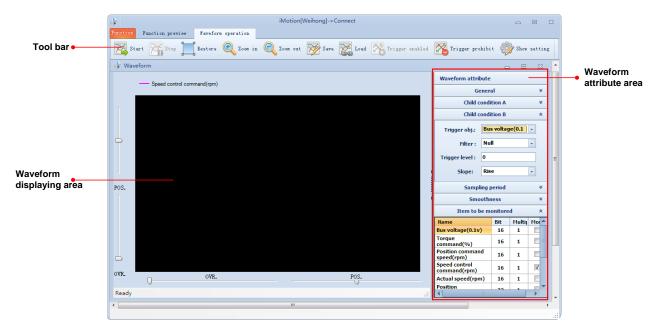


Fig. 3-12 Waveform interface

### ♦ Toolbar

Start Start	To start waveform collection.	Save	To save waveform to a file.
Stop Stop	To stop waveform collection.	Load	To load waveform from a file.
Restore	To restore waveform curve to original view.	Trigger enabled	To set triggering condition for waveform collection.
🔍 Zoom in	To magnify waveform curve.	Trigger prohibit	To set prohibition condition for waveform collection.
Q Zoom out	To shrink waveform curve.	🎲 Show setting	To set colors for waveform curves.

## • Waveform Displaying Area

In this area, waveform curve which has been collected will be shown.

### Waveform Attribute Area

General	Set general triggering condition or information when "Trigger enabled".
Child condition A	Set child condition A for waveform collection. Available when "Trigger enabled".
Child condition B	Set child condition B for waveform collection. Available when "Trigger enabled".

Sampling period	It specifies the time interval of two adjacent points in waveform collection.
Smoothness	It specified the smoothness of waveform curve.
Item to be monitored	Select the waveform to be monitored.

#### **Waveform Collection Operation** 3.3.2

#### Setting Collecting Condition •

Firstly, select the item to be monitored. Note that simultaneous collection of 64bit data at most can be achieved, see Fig. 3-13.

Name	Bit	Multip	Monit
Bus voltage(0.1v)	16	1	
Torque command(%)	16	1	
Position command speed(rpm)	16	1	
Speed control command(rpm)	16	1	<b>V</b>
Actual speed(rpm)	16	1	
Position command(pulse)	32	1	<b>V</b>
Position feedback(pulse)	32	1	
Encoder position error(pulse)	32	1	
Command position error(pulse)	32	1	

Fig. 3-13 Items to be monitored

Secondly, define the sampling interval. As shown in Fig. 3-14, drag the slide to set the sampling period.

Sampling period *
0.0625 ms ⊕⊕
Fig. 3-14 Sampling period slide
Thirdly, click Start on the toolbar to start waveform collection, or to stop collection.
Setting Triggering Condition
If Trigger prohibit is activated, the driver will ignore the possible triggering condition, namely, the
moment start is clicked, collection starts; and the moment is clicked, collection stops,
regardless of the possible triggering condition.
If Trigger enabled is activated, the driver will make judgement of the triggering condition, and only the
condition is met, waveform will be displayed the moment Start is clicked. When triggering condition

achieved, collection stops automatically.

Here are dialog boxes where you can set different triggering conditions.

General	*
Trigger pos.: 2/8(=1/4)	-
Single trigger : OFF	-
Condition : Null	-

- Trigger position: it refers to the horizontal coordinate (X-axis) of the point when triggering condition is met.
- Single trigger: ON refers to only one triggering; OFF refers to multiple repeated triggering.
- Condition: Child condition A/B can be selected, or logic combination of both A and B.

If child condition A/B or logic combination of both A and B are selected, you need to further set child condition A/B.

Child condition A setting dialog box, as shown left. The setting dialog box of child condition B is similar to the left.

- 1) Trigger object: Select one waveform in waveform items as the object.
- 2) Trigger level: It specifies the triggering level.
- 3) Slope: It refers to the method of triggering object judging triggering level.

Child	condition A		*
Trigger obj.:	Bus voltage(0.1	-	
Filter :	Null	-	
Trigger level :	0		
Slope:	Rise	-	

# 3.3.3 Waveform Operation

### • Waveform Zoom in/out

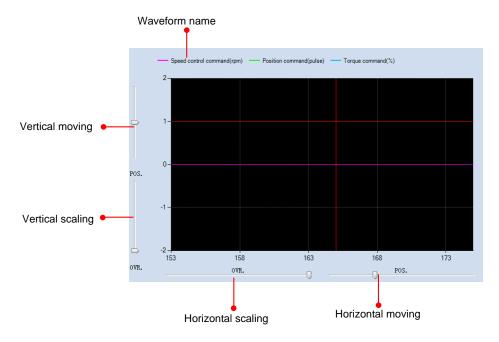


Fig. 3-15 Operation on waveform

As shown in Fig. 3-15, you can operate on the waveform by dragging position/override slide. Or you can adjust the waveform by following methods:

- 1) With left-mouse clicked, select a part of the waveform to magnify the selected part.
- 2) Double click on the waveform to restore it to original view.
- Waveform Smoothness



Fig. 3-16 Smoothness slide

By taking advantage of smoothness adjustment, the waveform can be smoother. However, please note that the adjustment can only make waveform looks like smoother with no change to actual waveform data collected.

## Waveform Color Setting

Waveform settir		r setting	
Background:		Grid:	
1st legend:		2nd legend:	
3rd legend:		4th legend:	
	OK	Cancel	

Fig. 3-17 Waveform color setting dialog box

As shown in Fig. 3-17, you can custom the color for waveform displaying. Click directly on the color box, make your own decision and click [OK] to save the setting.

## Import/Export of Waveform

Click Save and type in the waveform name to save it to the file; click Click and select a waveform file to show it in *iMotion* software.

# 3.4 Gain Tuning

Through gain tuning, auto adjustment of the driver can be realized.

To access gain tuning interface: in the software, click [Gain] in the menu list under "Function" or on the toolbar under "Function preview". The "Gain tuning" window is shown as Fig. 3-18.

aintuning	Vibration res	istance	Relevant par	rameter		
		Tij	P			
1. According	to the machine	used, sele	ct real-time	auto ga	in tunin	g mode.
2. Drive the	motor by using	trial run :	function or (	external	command	
3. Check runn most suitable	ing result by w value.	aveform ob	serve functio	on, and	set rigi	dity to
	Real	l-time auto	) gain tuning	:]		
Speed r	esponse = 40.0	[Hz]	Rigidity	15	<u>*</u>	
	-					
	-					
	Mode D:Invalid		-	Custom s	etting	
	dode D:Invalid		-	Custom s	etting	
			• (	Custom s	etting	
Characteris	Node D:Invalid		▼ (C ▼ Estimated v		etting Unit	_
Characteris	Mode D:Invalid stic D:No chan racteristic	ge [	•			_
Characteris	Node D:Invalid stic D:No chan racteristic ratio	ge Value	• Estimated v		Unit	
Characteris Load char Inertia r	Node D:Invalid stic D:No chan racteristic ratio e load	ge Value 250	• Estimated v O		Unit %	
Characteris Load chan Inertia r Changeabl	Node D:Invalid stic D:No cham racteristic ratio .e load friction	ge Value 250 0	Estimated v		Unit % %	
Characteris Load char Inertia r Changeabl Positive	Node D:Invalid stic D:No cham racteristic ratio .e load friction	ge Value 250 0	Estimated v		Unit % % %	

Fig. 3-18 Gain tuning window



- 1) Please refer to the manual for applicable range or cautions before make gain adjustment in this window.
- 2) All parameters in "Gain tuning" window are parameters in the driver, and *iMotion* cannot save the values. Therefore, please save the results to EEPROM after tuning.
- 3) "Gain tuning" window, "Parameter editing" window and "Pin allocation" window cannot be opened at the same time.

# 3.4.1 Real-time Auto Gain Tuning

Gaintuning	Vibration res	istance	Relevant parameter		
		T:	ip		
1. According	to the machine	used, sel	ect real-time auto g	ain tuning mo	de.
2. Drive the	motor by using	trial run	function or external	l command.	
3. Check runn most suitable		waveform ol	bserve function, and	set rigidity	r to s
	Rea	l−time aut	o gain tuning		
Speed r	response = 40.0	[Hz]	Rigidity 15	<b></b>	
	Mode D:Invalid	1	- Custom s	setting	
	Mode D:Invalid stic D:No chan		• Custom :	setting	
Characteri	mode			setting Unit	]
Characteri	stic O:No chan racteristic	ıge	•		
Characteri Load cha	stic D:No chan racteristic ratio	uge Value	• Estimated value	Unit	
Characteri Load cha Inertia n Changeab	stic D:No chan racteristic ratio	value 250	Estimated value 0	Unit %	
Characteri Load cha Inertia i Changeab Positive	stic D:No cham racteristic ratio le load	ge Value 250 0	<ul> <li>Estimated value</li> <li>0</li> <li>0</li> </ul>	Unit % %	
Characteri Load cha Inertia i Changeab Positive	stic O:No chan macteristic ratio le load friction	Value 250 0	<ul> <li>Estimated value</li> <li>0</li> <li>0</li> </ul>	Unit % % %	

Fig. 3-19 Gain tuning window

- As shown in Fig. 3-19, set mode and characteristic according to the machine. When "Mode" is set to "6: User define", special functional rules can be customized.
- 2) If parameters related to "Load characteristic" need to be changed, click [Edit] and modify the value in the input box. After modifying, click [Send] to send all parameters to the driver. In order not to update the parameter in this window, please click [Monitor] which is [Edit] previously to cancel the update.
- 3) Click [Custom setting] to open "Custom gain setting" dialog box, where you can set conditions, as shown below.

😽 Custom gain set	ting	23
Please set parameter	r :	
Load characteristic	Invalid 🗸	
Inertia update	Use current setting 🔽	
Torque compensation	Use current setting	
Rigidity	Invalid	
Fixed parameter setting	Use current setting 🖵	
Gain switch setting	Use current setting 🚽	
	OK Cancel	

Fig. 3-20 Custom gain setting dialog box

4) "Trial run" function or external command can be used to run the motor, and during motor running, estimated value of load characteristic can be shown.

5) Waveform can be used to confirm the motor action, further adjust setting of rigidity.

## 3.4.2 Vibration Resistance

### • Self-adaptive Filter Setting

🍹 Gain tunin	9					83		
Gain tuning	Vibrat	ionresi	stance Rel	evant paramet	er	-		
Whether s	Tip Whether self-adaptive filter enabled when there is value displayed for resonant frequency? Please click (Edit> and next (Set>.							
			Filter setti:	ng				
	R	esonant	freq. = 500	00 Hz				
	Filter	mode	0:Invalid		•			
No.	Setting	Clear	Frequency	Width	Depth			
1st			5000	2	0			
2nd			5000	2	0			
3r d			5000	2	0			
4th			5000	2	0			
	[	Edit		Send				

Fig. 3-21 Vibration resistance window

In "Gain tuning" window, switch to [Vibration resistance] tab, see Fig. 3-21.

When self-adaptive filter is enabled, please set the "Filter mode" to "1 valid" or "2 valid". When there is motor speed fluctuation, values corresponding to resonance frequency≤5000Hz can be shown. The 3<sup>rd</sup> filter can be automatically set; while the 4<sup>th</sup> filter needs manual input on basis of "FFT analysis". If self-adaptive result needs to be cleared, set "Filter mode" to "Applicable result clear".

### • Resonance Frequency Testing

If self-adaptive filter is not used, and resonance frequency needs to be measured, please set "Filter mode" to "3: Resonance frequency test mode".

When there is motor speed fluctuation, values corresponding to resonance frequency≤5000Hz can be shown.

If notch filter needs to be set at 5000Hz, click [Edit] first, and click setting box at the right side of "1<sup>st</sup>~4<sup>th</sup>". A confirmation dialog box will appear, as shown below.



Fig. 3-22 Set notch filter

If the resonance frequency set needs to be cleared, click corresponding clear box at the right side. See Fig. 3-23.



Fig. 3-23 Clear notch frequency

## Direct Setting of Self-adaptive Filter

1) Click [Other]  $\rightarrow$  [FFT analysis] under "Function preview", as shown in Fig. 3-24.

i 🖓				iMotion[Weił	hong]->Conr	nect				_	23
Function Function	n preview	Alarm Operation									
P Connect	Disconnec	t 🗾 Monitor	Parameter	浴 Waveform	Gain	🖏 Trial run	📢 Alarm	Pin definition	Other -		
									🍿 FFT ana	lysis	

Fig. 3-24 FFT analysis

 Set "Filter mode" to "1 valid" "2 valid" or "Resonance frequency test mode". With external control, use "Trial run" function to make the motor run. Click [Start] button on the toolbar of "FFT analysis" window to display motor speed spectrum, as shown in Fig. 3-25.

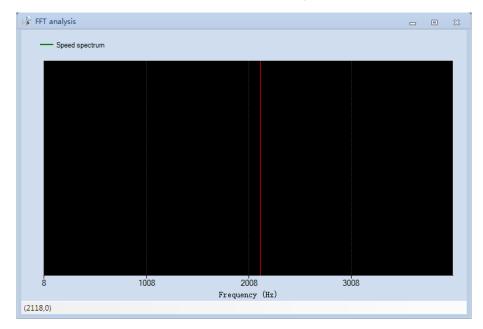


Fig. 3-25 Motor speed spectrum

3) Resonance frequency can be read according to the motor speed spectrum, and can be set in

self-adaptive filter.

4) Open "Vibration resistance" window and click [Edit] to enter into monitor mode. In "Frequency" column, resonance frequency value can be set. After setting, please click [Send] to validate it.



In "Vibration resistance" window, [Edit] button will turn to [Monitor] once it is clicked. When [Edit] showing, current window is in monitoring mode; when [Monitor] showing, current window is in editing mode.

# 3.5 Trial Run

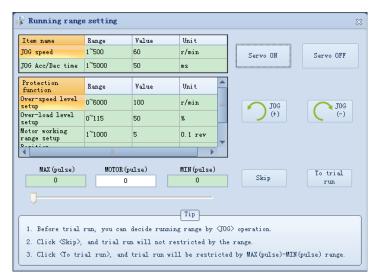
WSDV series servo driver is connected with PC via USB. "Trial run" function in *iMotion* can be used to make the motor run.

To access trial run interface: in the software, click [Trial run] in the menu list under "Function" or on the toolbar under "Function preview". Trial run windows can be opened, as shown in Fig. 3-26 and Fig. 3-27.

# 3.5.1 About Trial Run Interface

The trial run window is divided into two types which correspond to initial state and running state respectively.

## Trial Running Window-Initial



1 MAX (pulse): the maximum position when the motor rotates to the left; 2 MIN (pulse): the maximum position when the motor rotates to the right;

- ③ MOTOR (pulse): the current position of the motor;
- ④ JOG(+): with the button clicked, the motor rotates in positive direction;
- (5) JOG(-): with the button clicked, the motor rotates in negative direction.

Fig. 3-26 Trial run window-initial

Start

As shown in Fig. 3-26, in initial window, you need to click button first to enable all functions related with trial run. Otherwise, other functions are unavailable, which can be told from dimmed icons.

After trial run function is activated, the button turns to servo off and shutdown trial run function.

With clicked, it will jump to "Trial run" window. And running range of the motor isn't limited.

With clicked, it will also jump to "Trial run" window, while its running range will be restricted by MAX and MIN. To put it in other words, the maximum position when the motor rotates to the left cannot exceed that specified by MAX, and the maximum position when the motor rotates to the right cannot exceed that specified by MIN.

Item name	JO	IG	STEP		ZERO	Uni t				
Displacement			10000	6)		Command unit	Servo	ON/STOP		Servo OFF
Wait time			2000			ms				
Speed	500	0	1000		500	r/min	11	PAUSE		ZEI
Acc/Dec time	250	D	500		250	ms		TROOP		()
Protection function		Range		Valu	16	Unit		JOG	CONT.	700
Over-speed le setup	vel	0~6000		0		r/min		) (+)		Ce
Over-load lev setup	el	0~115		0		%		0000		-
Motor working range setup		1~1000		10		0.1 rev		) STEP (+)	CONT.	C STE
Prefit in						•				
MAX	(pul:	se)				MOTOR (pulse)			MIN (j	oulse)
-	0					0		1		0
-	0									

## • Trial Run Window-Running

Fig. 3-27 Trial run window-running

- 1) At servo OFF, clicking button turns servo ON. While if it is in PAUSE state when executing ZERO (returning to the origin), JOG, STEP, clicking button makes stop.
- 2) When trial run has been set, clicking

button invalidates the trial running range setting.

3) When executing ZERO (returning to the origin), JOG, STEP, clicking

button makes the

motor decelerate and stop; at this time, the button turns to **PAUSE**; further clicking **PAUSE** makes the motor continue the interrupted action.

4) Executing ZERO (returning to the origin) makes the motor rotate to the position whose coordinate is

0.

.TDG (+) clicked, the motor rotates in positive direction or negative direction 5) With or CONT. respectively. If 🔲 is checked, once [JOG+] or [JOG-] is clicked, the motor will speed up to specified speed with set time; if there is soft limit, the motor will stop at the soft limit, otherwise, the CONT. motor keeps running. If III is not checked, once [JOG+] or [JOG-] is clicked, the motor speeds up to the specified speed with set time and keeps running at the speed; releasing the button makes the motor slow down to 0 within set time. If [Servo OFF] button is clicked or trial run window is closed during running, the motor stops immediately. If [PAUSE] button is clicked during running, the motor stops within the set time, and clicking [PAUSE] button again makes the motor resume running. STEF (+)clicked, the motor rotates in positive direction or negative direction 6) With ٥r CONT respectively. If D is checked, once [STEP+] or [STEP-] is clicked, the motor moves forward and CONT.

backward repeatedly with the current position as datum; while if  $\Box$  is not checked, the motor moves to the set distance. If [SERVO OFF] button is clicked or trial run window is closed during running, the motor stops immediately. If [PAUSE] button is clicked during running, the motor slows down and stop within the set time, and clicking [PAUSE] button again makes the motor keep running to the target position and stop.

# 3.5.2 Operation Step of Trial Run

## • Check at Initiation

In initial trial run window (see Fig. 3-26), click and then and then and then and there is no alarm or error, it means the motor is power up and in servo ON state; if there is any alarm or error, please repeat the operation after troubleshooting.

## • Set parameters

In initial trial run window (see Fig. 3-26), click JOG button after parameters on the left part have been well set. Make sure that the motor is operating OK. And then, set MAX and MIN value for the motor running range.

## Trial Run

In initial trial run window (Fig. 3-26), click Skip or run to select whether to activate the soft limit, and jump to trial running window. Please operate on the motor according to descriptions in section 3.5.1.

To trial

# 3.6 Alarm

**WEIHONG** 

In alarm window, currently active alarm or alarm history as well as their possible causes and countermeasures will be shown.

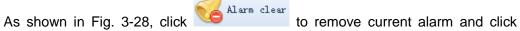
To access alarm interface: in the software, click [Alarm] in the menu list under "Function" or on the toolbar under "Function preview".

#### Introduction to Alarm Interface 3.6.1

Alarm window is divided into "Current alarm" and "Alarm history".

#### **Current Alarm/Warning** ٠







remove history alarms. You can turn to "Current alarm" or "Current warning" on the lower part to view the name or and code of the alarm or warning. If you want to know detailed information about the alarm or warning, turn to the right part for possible causes and countermeasures.

iMo	tion[Weihong]->Connect □ ⊠
unction Function preview Alarm Operation	
Currentalare Alarm history	X
Current alarm           Name         Code           Overheat protection         15.0	<pre></pre>
Current warning Name Code Normal 00	(Cause) Normal (Countermeasure ) Normal

### Fig. 3-28 Alarm window

### Alarm History

			iMoti	on[Weihong]->Connect	-	23
uncti	on Functi	on preview	Alarm Operation			
6	Alarm clear	r 孢 Recor	d clear			
💡 Al	arm					23
Curre	ent alarm	Alarnhisto	ry			-
Alar	m history	/				
	🛛 Name		Code	(Cause)		
•	Normal		0.0	Normal		
	Normal		0.0	«Countermeasure >		
	Normal		0.0	Normal		
	Normal		0.0			
	Normal		0.0			
	Normal		0.0			
	Normal		0.0			
	Normal		0.0			
	Normal		0.0			
	Normal		0.0			
	Normal		0.0			
	Normal		0.0			
	Normal		0.0			
	Normal		0.0			

Fig. 3-29 Alarm history

As shown in Fig. 3-29, switch to tab "Alarm history" to view information, possible causes and countermeasures of history alarms.

# 3.6.2 Operations Related to Alarm

- 1) Once alarm window is opened, alarm records will be displayed. Besides, when there is active alarm or warning, the window will pop up automatically.
- 2) After alarm occurrence, clicking clear clear can clear the current alarm, while it is invalid for those with unclearable attribute (refer to driver's manual for details). And for alarms which are unable to be cleared, try the possible causes and countermeasures on the right side.
- 3) Click

Record clear

to clear history alarms.

4) After alarm occurrence, you can clear the alarm as offered countermeasures; if not, the alarm will be active all the time.

# 3.7 Pin Definition Setting

You can allocate the inputs and outputs by setting pin definitions.

To access pin definition interface: start *iMotion* → click [Pin definition] in the menu list under "Function" or

	Pin No.	Position control	Speed control	Speed control
•	44 (SI1)	Invalid	Invalid	Invalid
	46 (SI2)	Invalid	INTSPD1_A connect	Invalid
	45 (SI3)	Invalid	INTSPD2_A connect	Invalid
	43 (SI4)	NOT_A connect	NOT_A connect	NOT_A connect
	42 (SI5)	POT_A connect	POT_A connect	POT_A connect
	41 (SI6)	INH_A connect	ZEROSPD_A connect	ZEROSPD_A connect
	40 (SI7)	SRV-ON_A connect	SRV-ON_A connect	SRV-ON_A connect
	14 (SI8)	CL_A connect	Invalid	Invalid
Outpu	t	_		
		CL_A connect Position control BRK-OFF	Invalid Speed control BRK-OFF	Invalid Torque control BRK-OFF
	t Pin No.	Position control	Speed control	Torque control
	t Pin No. 29/30 (SO1)	Position control BRK-OFF	Speed control BRK-OFF	Torque control BRK-OFF
	t 29/30 (SO1) 39 (SO2)	Position control BRK-OFF S-RDY	Speed control BRK-OFF S-RDY	Torque control BRK-OFF S-RDY
	t Pin No. 29/30 (SO1) 39 (SO2) 31/32 (SO3)	Position control BRK-OFF S-RDY ALM	Speed control BRK-OFF S-RDY ALM	Torque control BRK-OFF S-RDY ALM
Outpu	t Pin No. 29/30 (SO1) 39 (SO2) 31/32 (SO3) 38 (SO4)	Position control BRK-OFF S-RDY ALM INP	Speed control BRK-OFF S-RDY ALM AT-SPEED	Torque control BRK-OFF S-RDY ALM AT-SPEED

on the toolbar under "Function preview". See Fig. 3-30 for the window.

Fig. 3-30 Pin definition setting window

## 3.7.1 How to Set Pin Functions

Follow steps below to set pin functions:

- 1) Double click on the line of pin to be set.
- "Input pin allocation" dialog box and "Output pin allocation" dialog box will pop up. See Fig. 3-31 and Fig. 3-32 respectively.
- 3) Select pin connect way for different control modes. (Only for input pins)
- 4) Select desired functions for each pin, and click [OK]. It jumps to previous window.
- 5) Click [Save], and the parameters will be written into EEPROM; click [Cancel] to cancel writing into EEPROM.
- 6) After parameters have been written into EEPROM, "Pin allocation setting" window closes automatically.

Speed control	A connect       _A connect       _A connect       _A connect       _A connect       Invalid       POT	_B connect      _B connect      _B connect      Torque control      Invalid      POT
Torque control Position/fully closed-loop control Invalid POT NOT NOT	A connect Speed control Invalid	B connect Torque control
Position/fully closed-loop control Invalid POT NOT	Speed control Invalid	Torque control Invalid
closed-loop control Juvalid POT NOT	Invalid	Invalid
POT NOT		
NOT	POT	
		FUI
SRV-ON	NOT	NOT
	SRV-ON	SRV-ON
A-CLR	A-CLR	A-CLR
GAIN	GAIN	GAIN
CL	-	-
INH	-	-
TL-SEL	TL-SEL	TL-SEL

Fig. 3-31 Input pin allocation

	Position/fully closed-loop control	Speed control	Torque control	
•	Invalid	Invalid	Invalid	
	ALM	ALM	ALM	
	S-RDY	S-RDY	S-RDY	
	BRK-OFF	BRK-OFF	BRK-OFF	
	INP	-	-	
	-	AT-SPEED	AT-SPEED	=
	TLC	TLC	TLC	
	ZSP	ZSP	ZSP	
	V-COIN	V-COIN	V-COIN	
	WARN1	WARN1	WARN1	
	WARN2	WARN2	WARN2	
	P-CMD	-	-	
	INP2	-	-	
	-	-	V-LIMIT	
<				- 12

Fig. 3-32 Output pin allocation



- 1) Windows of "Pin allocation setting", "Parameter" and "Gain tuning" cannot be opened at the same time; otherwise, pin allocation function is unavailable.
- 2) Pin connect way needs to be set when allocating input pins. Please refer to the manual for detailed information about input signals.

- 3) For input pins, one input signal cannot be allocated to different pin No., namely, repeated setting is prohibited; while for output pins, repeated allocation is allowed.
- 4) Pin definition setting remains invalid before startup of the driver.

# 3.8 Others

In the pull-down menu list of "Other", encoder initialization, hardware update, language selection and so on can be accessed.

# 3.8.1 Absolute Encoder Initialization

Absolute encoder initialization can be executed through operating panel or *iMotion*. After initialization, revolutions of absolute encoder will be cleared to zero, and encoder alarm will be cleared.

## • Operation

 Click [Encoder clear] in the pull-down list of [Other]. A confirmation dialog box will pop up (see Fig. 3-33).

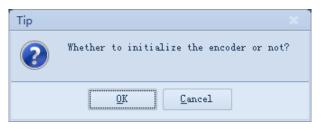


Fig. 3-33 Encoder initialization confirmation dialog box

- 2) Click [OK] to initialize the absolute encoder or click [Cancel] to cancel the operation.
- 3) Prompt dialog box showing successful operation or operation failure will pop up when initialization completes. See Fig. 3-34 and Fig. 3-35 respectively.



Fig. 3-34 Successful initialization prompt



Fig. 3-35 Initialization failure prompt



With servo ON, initialization of the absolute encoder is unavailable. Therefore, please turn servo OFF first before executing absolute encoder initialization.

# 3.8.2 Driver Registration

If registered time for the driver is overdue, alarm prompt "Driver registered time overdue" will occur, and the driver stops working. At this time, valid registration code is required to re-activate the driver.

### • How to Open Driver Registration Window

Operation steps: start *iMotion* $\rightarrow$  click [Driver registration] in the pull-down list of [Other]. Driver registration window is shown as below.

😽 Driver registratio	on	8
SN	WSDV-2B67-1111-1111-000	
Remaining time	86Hour	
Register code		
	Register	

Fig. 3-36 Driver registration window

### Register

- 1) Type in the registration code in "Register code" input box, and click [Register].
- If registration code is valid, a dialog box prompt successful registration will pop up, as shown in Fig.
   3-37. After registration, re-power on the driver.



Fig. 3-37 Registration complete prompt

# 3.8.3 Update the Hardware

Operation steps: start *iMotion* $\rightarrow$  click [Update the hardware] in the pull-down list of [Other]. The hardware updating window is as shown in Fig. 3-38.

Update the hardware application	23
Boot version : Read failed	
☑ Update DSP version	
💟 Update FFGA version	
Start to update To manual update	
Ready	

Fig. 3-38 Hardware updating window

"Update DSP version" and "Update FPGA version" are both checked by default. With [Start to update] button clicked, the system will update DSP version first and then FPGA version. And a dialog box prompt successful update will appear after updating, see Fig. 3-39. If only one of it has been checked, the system will update the selected hardware version. Restart the driver to validate the newly updated hardware applications.

Update the hardware application	x
Boot version : 0.06	
📝 Update DSP version	
👽 Update FFGA version	
Start to update To manual update	
Mardware updated successfully!	

Fig. 3-39 Successful hardware update



If hardware is to be updated, "Boot" mode should be entered first. Pressing LEFT arrow key of the driver for several seconds before power-up can access "Boot" mode.

## 3.8.4 Language Selection

Multiple languages are supported in *iMotion* software. At present, Simplified Chinese, Traditional Chinese and English are optional.

Operation steps: start *iMotion* $\rightarrow$  click [Language selction] in the pull-down list of [Other]. Language selection window is shown as below.



Fig. 3-40 Language selection

After your language decision, click [OK] and further confirm in the prompt dialog box. Target language takes effect after restarting the software.

Successful language switchover, and it takes effect after restart the software! Would you like to restart the software immediately?
OK Cancel

Fig. 3-41 Language switchover tip

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