iMotion Software

Operational Manual

1st Edition

Weihong Electronic Technology Co., Ltd.

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: You can set the parameter in "Value" column. 2) A certain operation. For example: To execute "Transfer" operation. 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 *iMotion*→ click [Monitor] 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.

⚠ CAUTION : 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.

⚠ WARNING : warning info requiring special attention. In case of negligence or omission of this kind of precautions, you may suffer physical injury, or even death, machine damage or other losses.

Contents

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

🔔 **CAUTION**

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.

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.
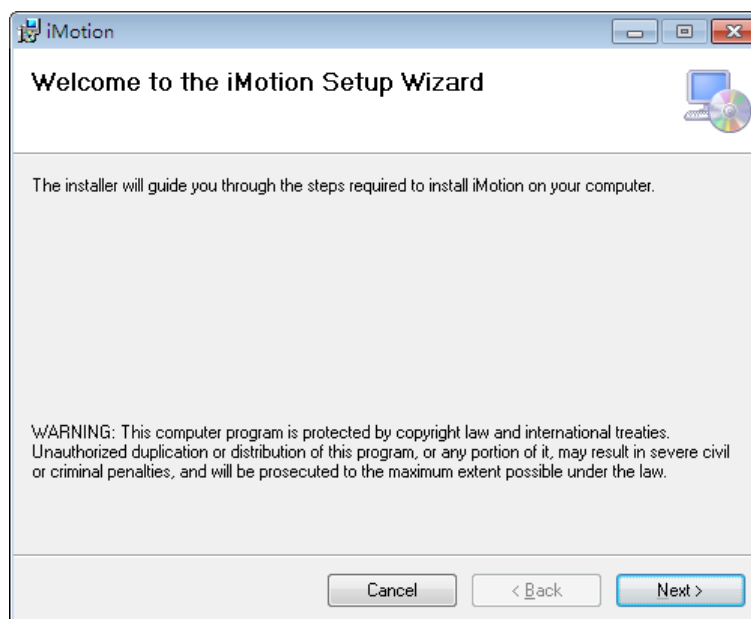

Fig. 1-2 *iMotion* setup wizard
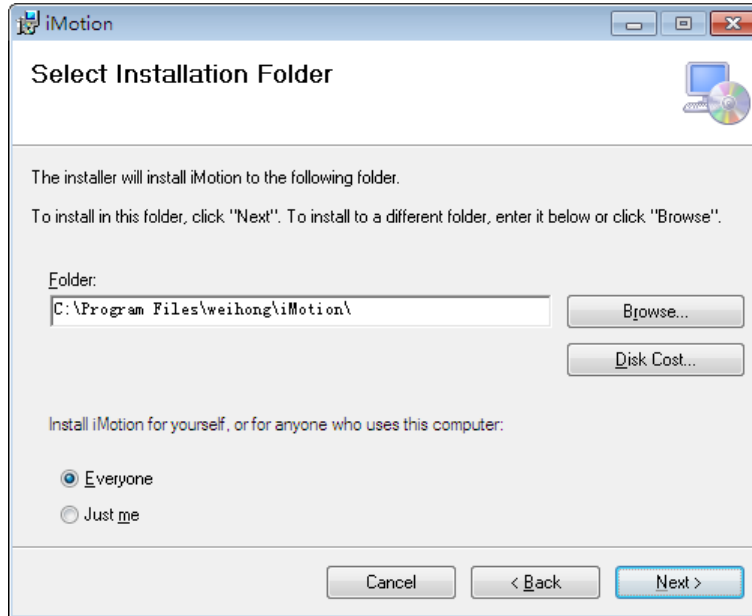
4) Specify the path, and click [Next] to continue.

Fig. 1-3 Specify the path

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

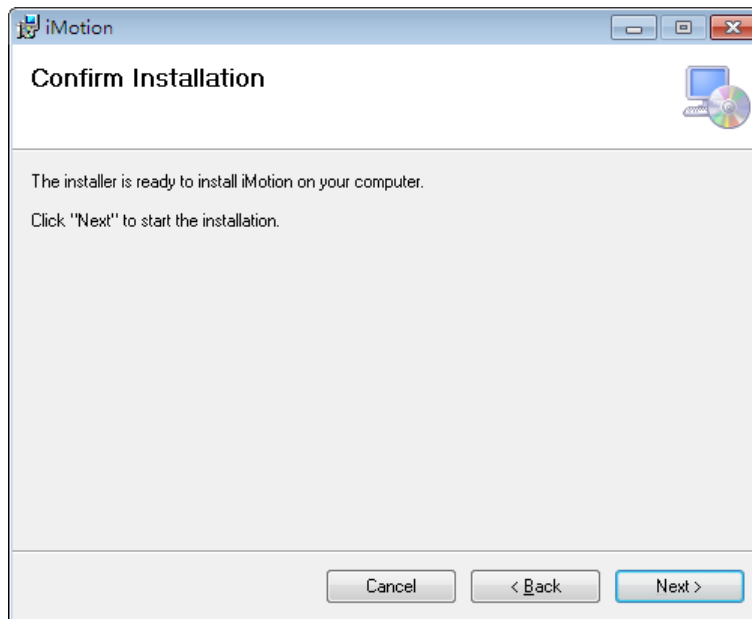

Fig. 1-4 Installation confirmation

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.

Software Installation and Initialization 「**3**」

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.
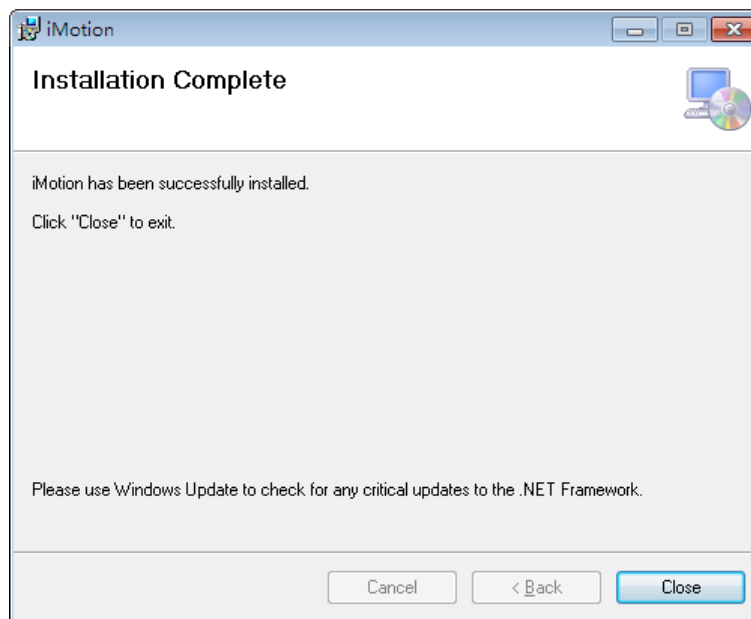

Fig. 1-6 Installation complete

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" → "All" → "iMotion" → "Uninstall.exe".

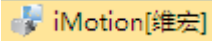# 1.2 Initialization of *iMotion*

1.2.1 Initialization Methods

Here are two methods to start the software:

a) Double click on the icon in desktop.

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.
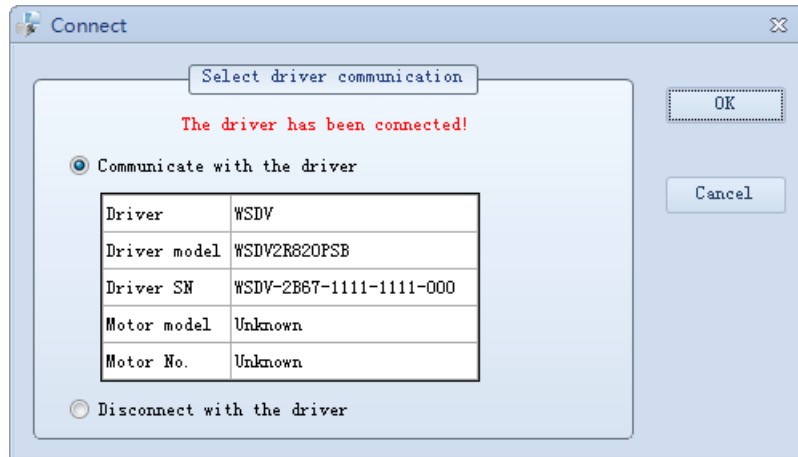

Fig. 1-7 Communication setting dialog box

◆   **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.
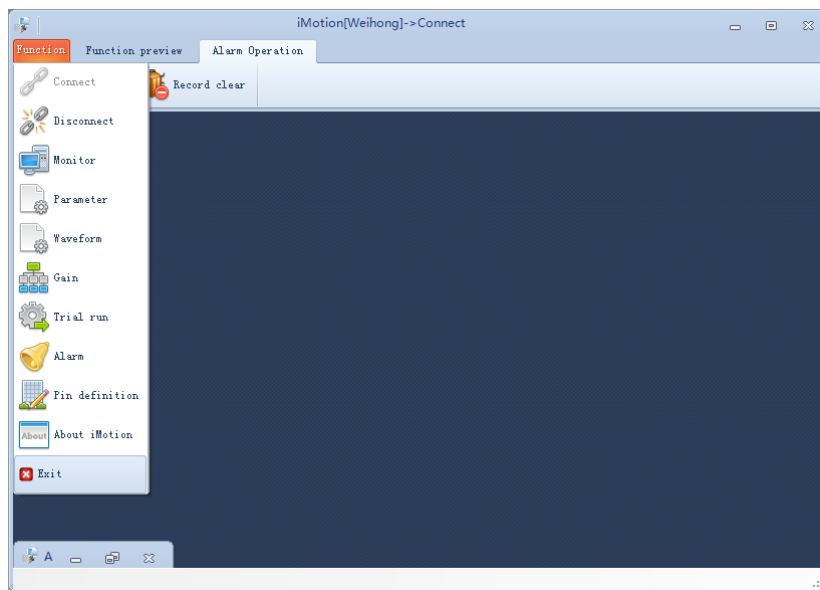

Fig. 2-1 Function list

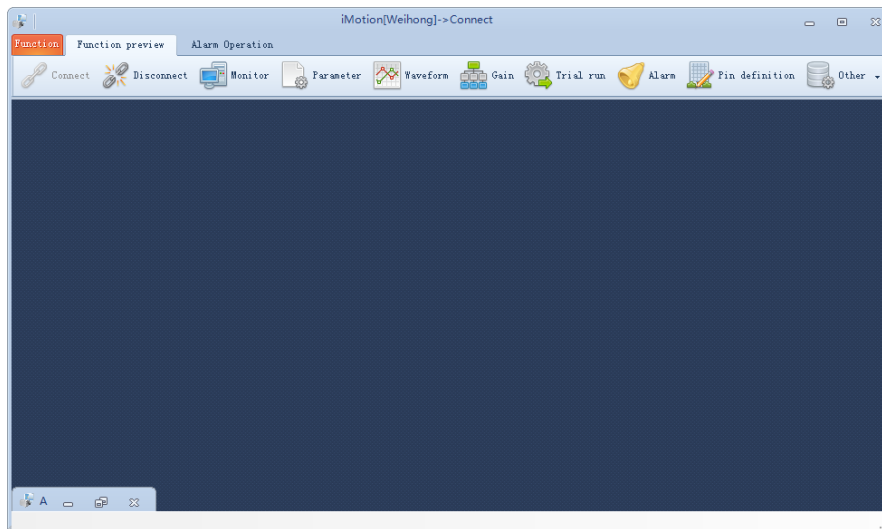b) Start *iMotion*, and directly select the function on the toolbar under [Function preview], see Fig. 2-2.

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.
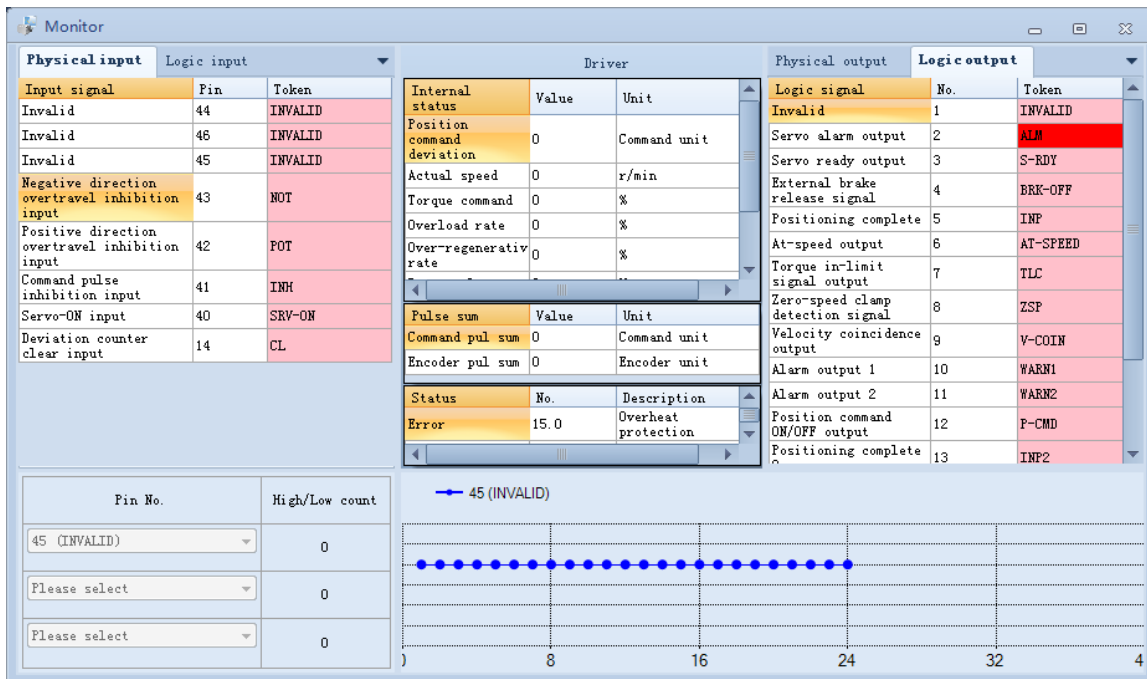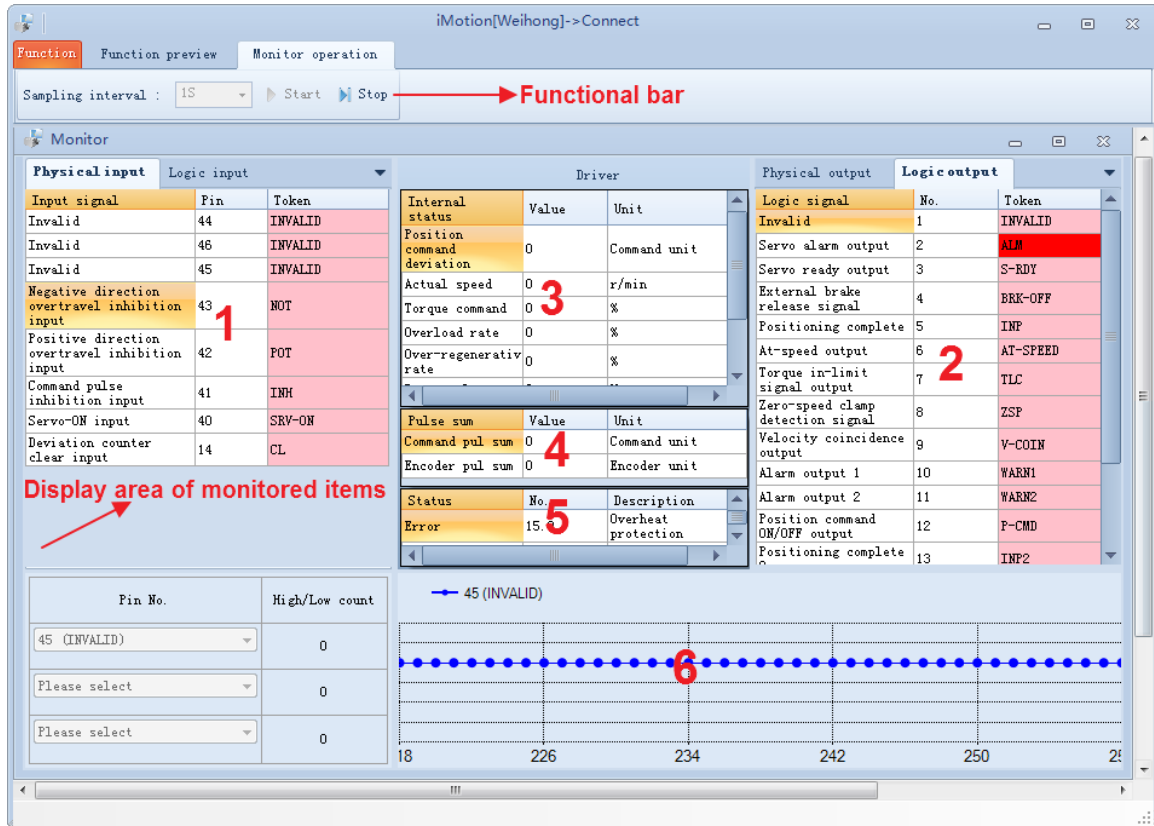
Fig. 3-1 Monitor window

3.1.1   About Monitor Interface

Fig. 3-2 Monitor interface

◆   **Functional Bar**

On functional bar, you can do following operations:

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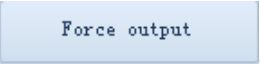
 To start or stop monitor sampling.

◆   **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 monitor	It shows status of input signals, switching between "Physical input" and "Logic input". 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.
Output signal status monitor	It shows status of output signals, switching between "Physical output" and "Logic output". ① Physical output: Signals fed out from the driver. 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.
Internal status monitor	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. 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. ⑦ 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**

1) 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.

⚠ **CAUTION**

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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.

⚠ **CAUTION**

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] → decide how parameter is to be loaded → click [OK]. The parameter editing window will pop up, see Fig. 3-3.
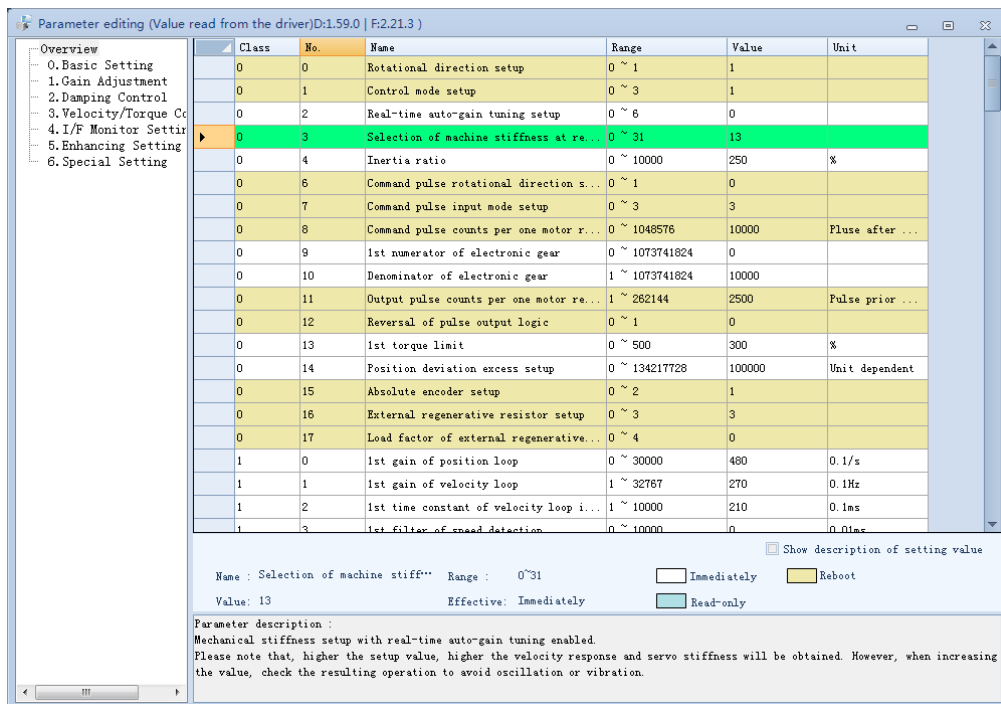

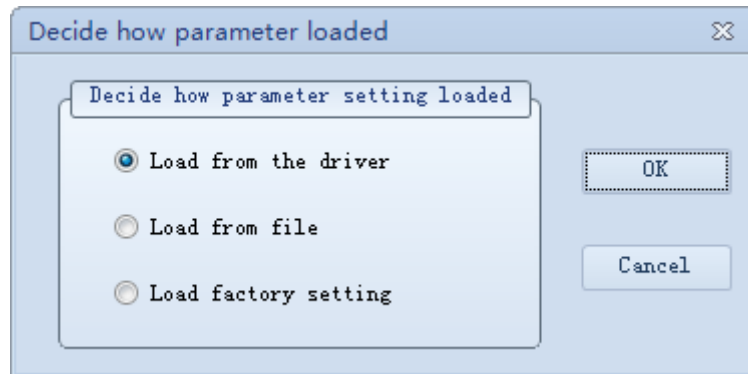Fig. 3-3 Parameter editing window

◆ **Decide How Parameter Loaded**

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.

⚠ **CAUTION**

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1) 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.

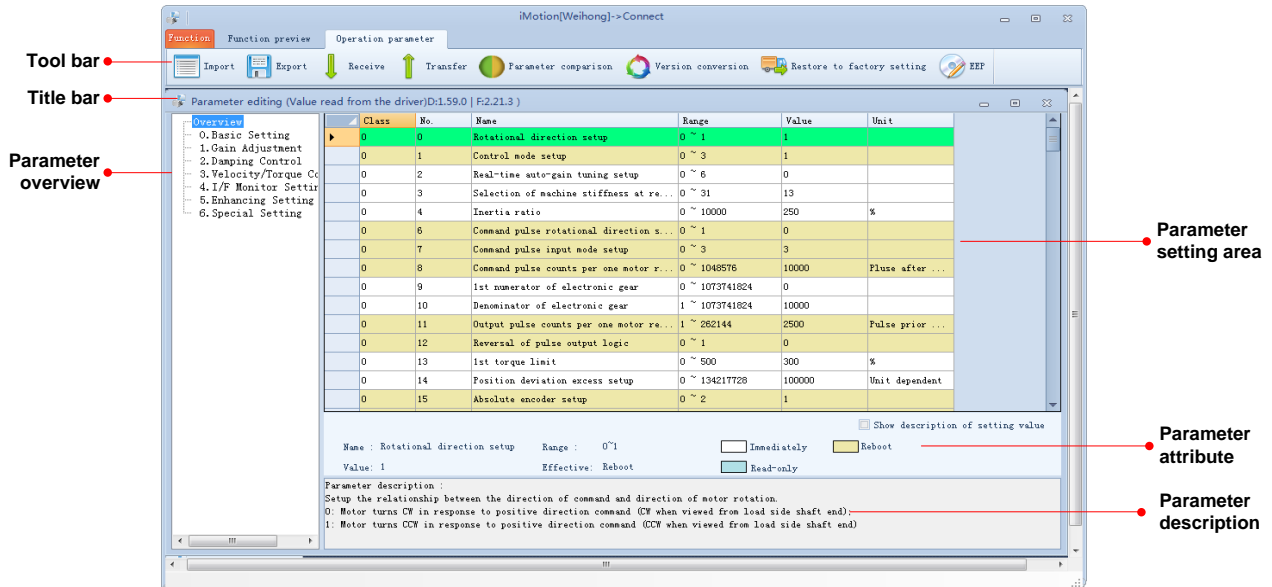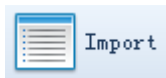# 3.2.1 About Parameter Editing Interface

Fig. 3-5 Parameter editing interface

◆ **Toolbar**

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.
Version conversion	Changing incompatible parameter file to compatible one.
Parameter comparison	Restoring parameter settings to factory settings.
EEP	Writing parameters to EEPROM of the driver.
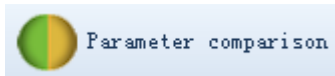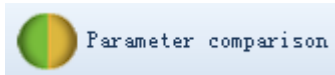
◆ **Title Bar**

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→ select parameter file→ click [Open].

CAUTION

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→ type in paramter file name→ 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.

🔔 **CAUTION**

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→ type in desired value→ 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) → select loading method for parameter group 1/2→ click [OK] to show comparison results (see Fig. 3-7).
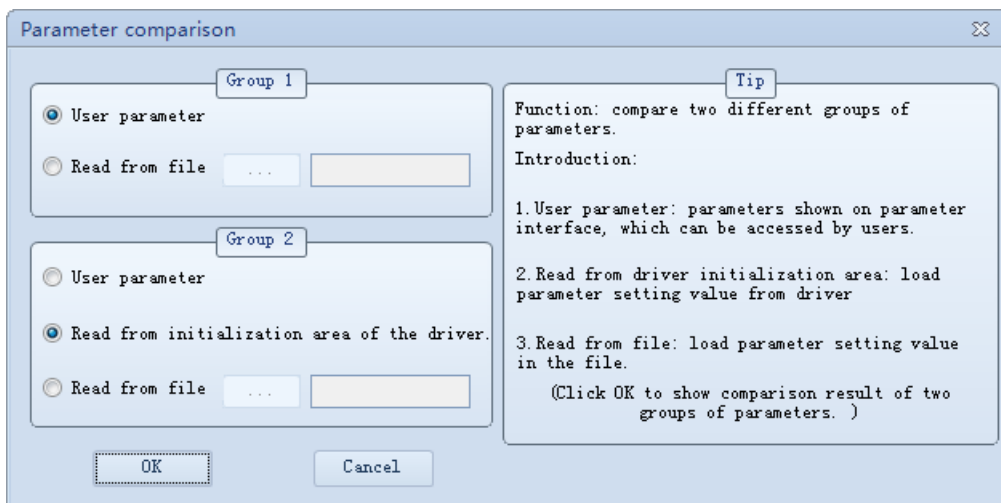

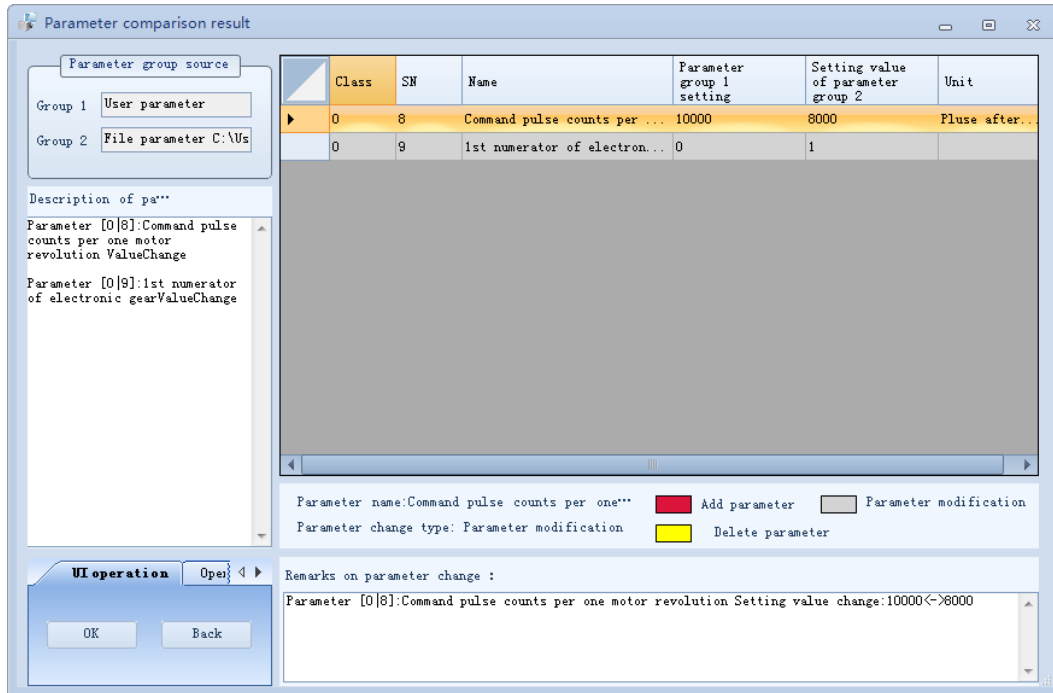Fig. 3-6 Parameter comparison dialog box

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.

⚠ **CAUTION**

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
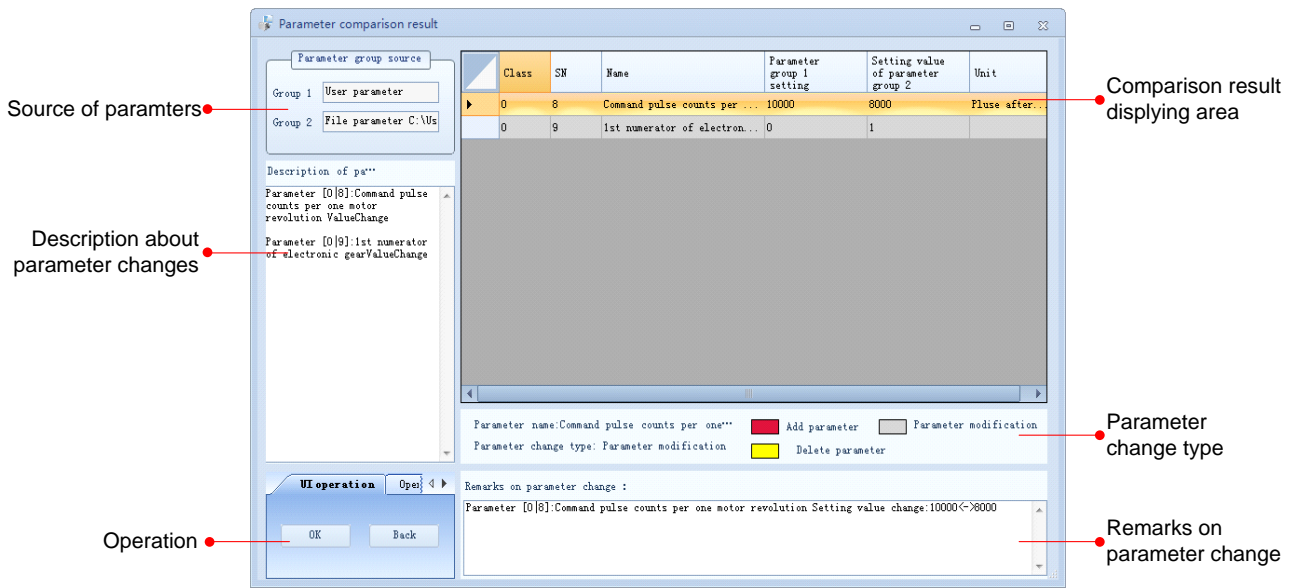
Fig. 3-8 Parameter comparison result interface

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.

Icon	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.
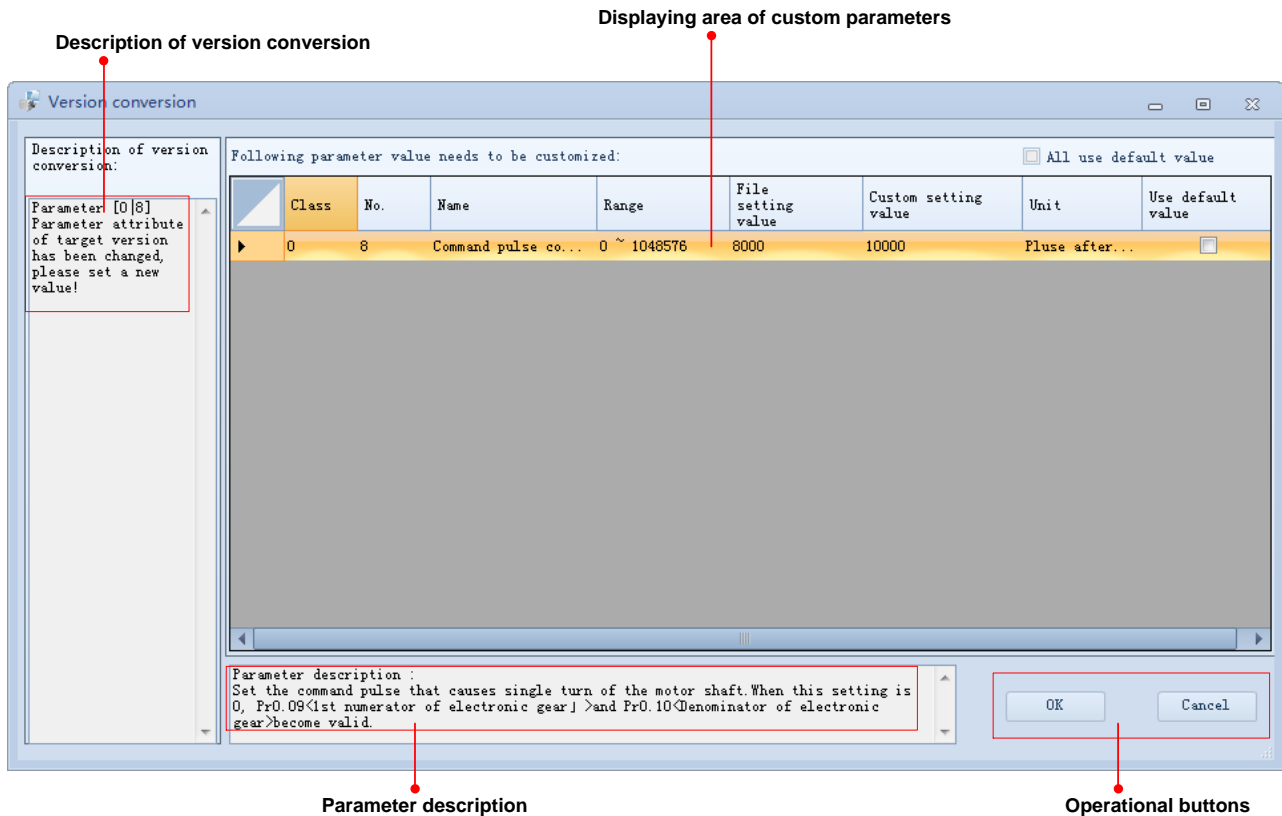
Fig. 3-9 Version conversion window

➢ 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 [EEP icon] to send setting value to the driver→ check the confirmation information (see Fig. 3-10) → click [OK]. The parameter change will be written to EEP. Click [Cancel] to cancel the operation.

	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...
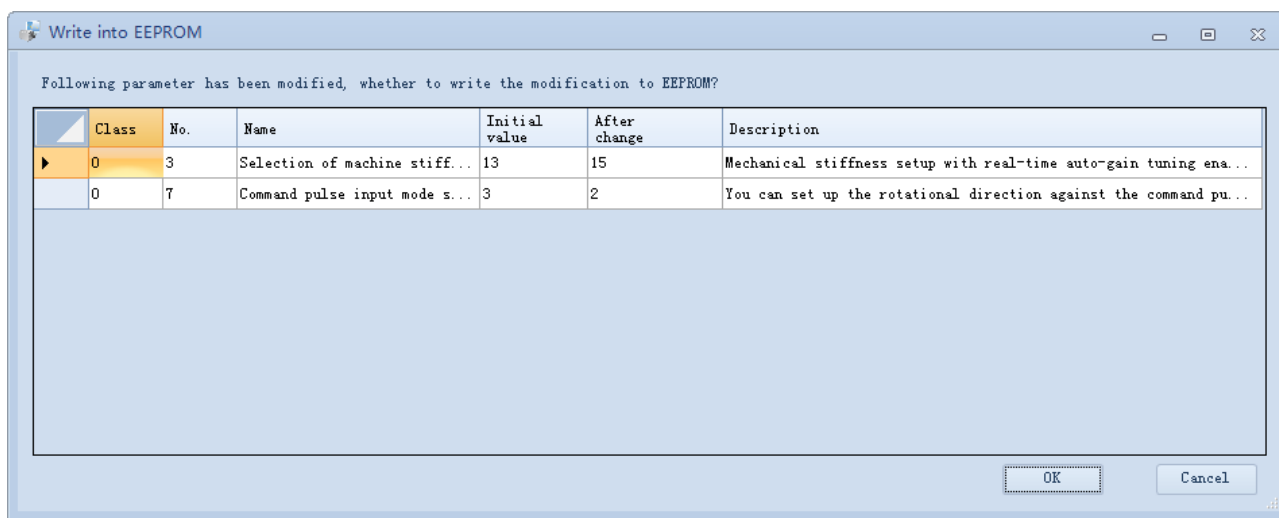
Fig. 3-10 Parameter modification confirmation dialog box

🔔 **CAUTION**

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.

2) 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.

⚠ **CAUTION**

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.
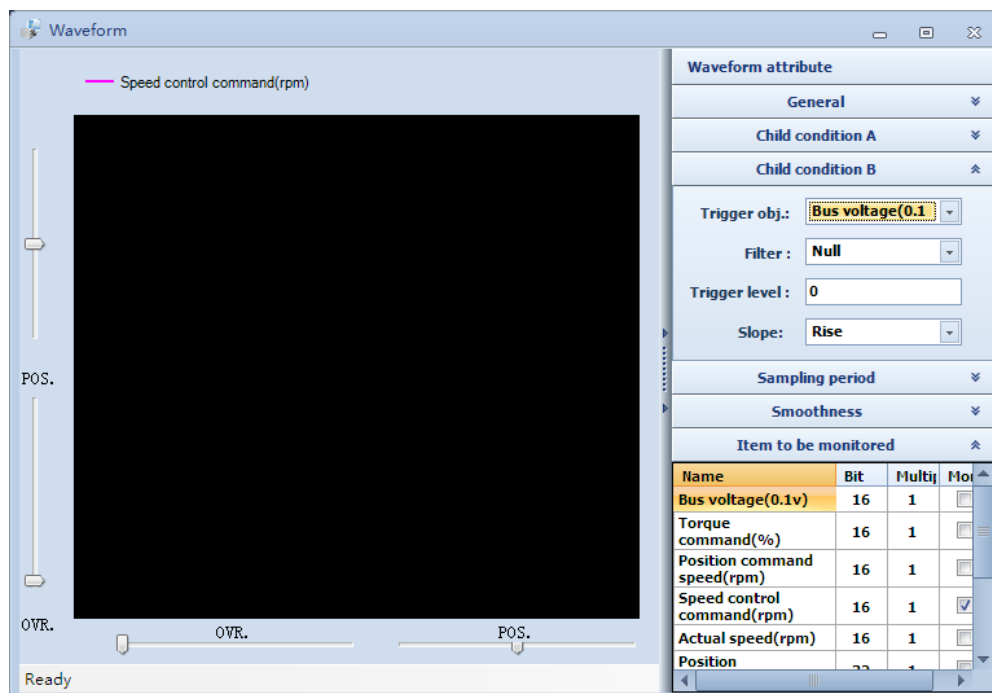
Fig. 3-11 Waveform window

3.3.1 About Waveform Interface
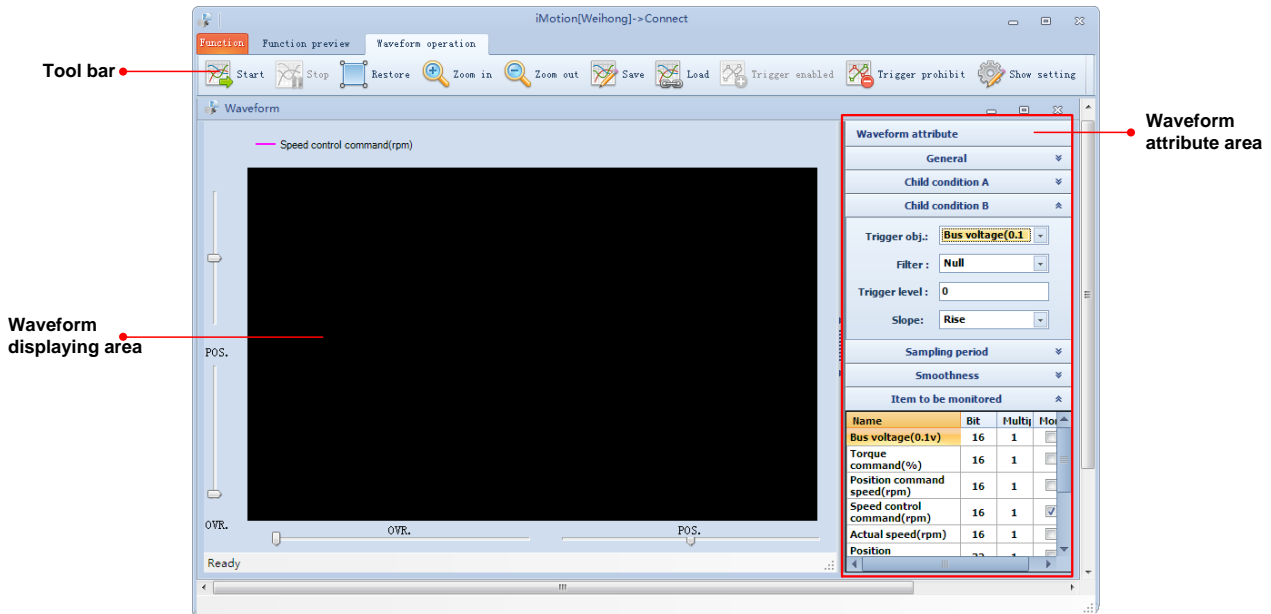
Fig. 3-12 Waveform interface

◆ **Toolbar**

Start	To start waveform collection.	**Save** — To save waveform to a file.
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.
Zoom out	To shrink waveform curve.	**Show setting** — To set colors for waveform curves.
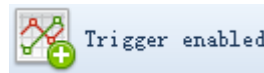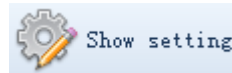
◆ **Waveform Displaying Area**

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.

3.3.2 Waveform Collection Operation

◆ **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.

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.
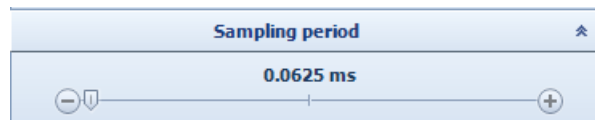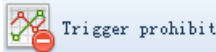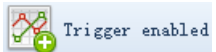
Fig. 3-14 Sampling period slide

Thirdly, click ![Start] on the toolbar to start waveform collection, or ![Stop] 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 ![Stop] 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.
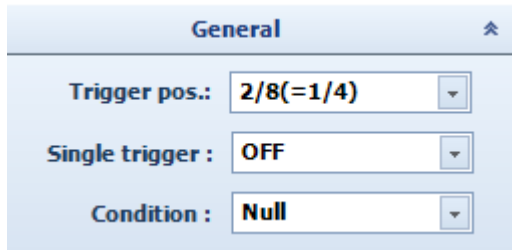
General condition setting dialog box, as shown left.

1) Trigger position: it refers to the horizontal coordinate (X-axis) of the point when triggering condition is met.

2) Single trigger: ON refers to only one triggering; OFF refers to multiple repeated triggering.

3) Condition: Child condition A/B can be selected, or logic combination of both A and B.
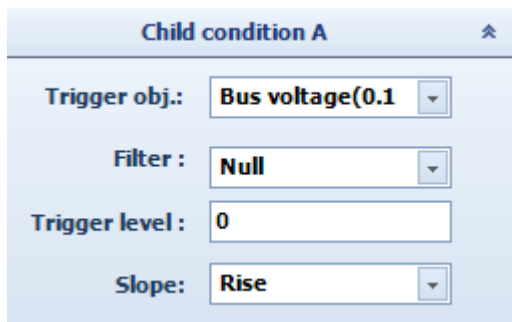
If child condition A/B or logic combination of both A and B are selected, you need to further set child condition A/B.

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.

3.3.3 Waveform Operation

◆ **Waveform Zoom in/out**
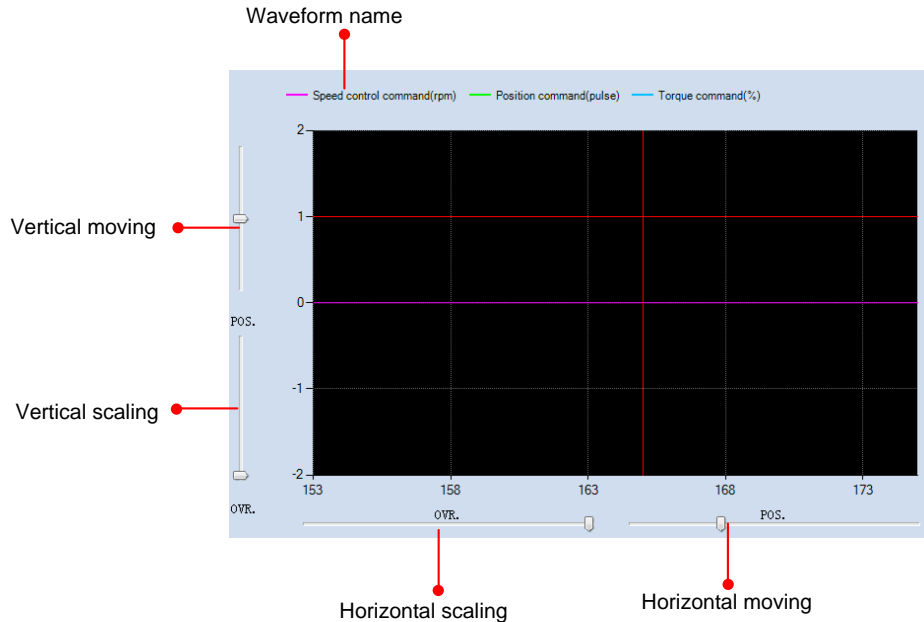
Fig. 3-15 Operation on waveform

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.
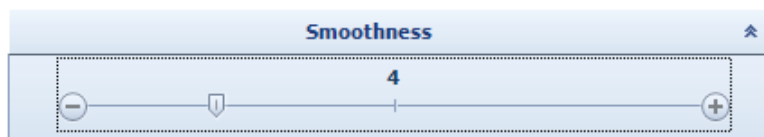
◆ **Waveform Smoothness**

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**
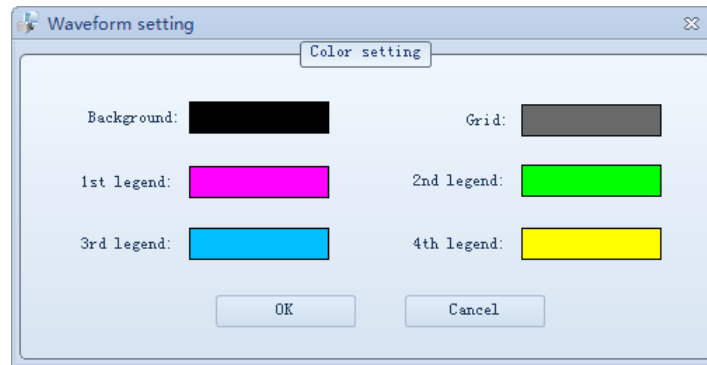
Fig. 3-17 Waveform color setting dialog box

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 [Load], 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.
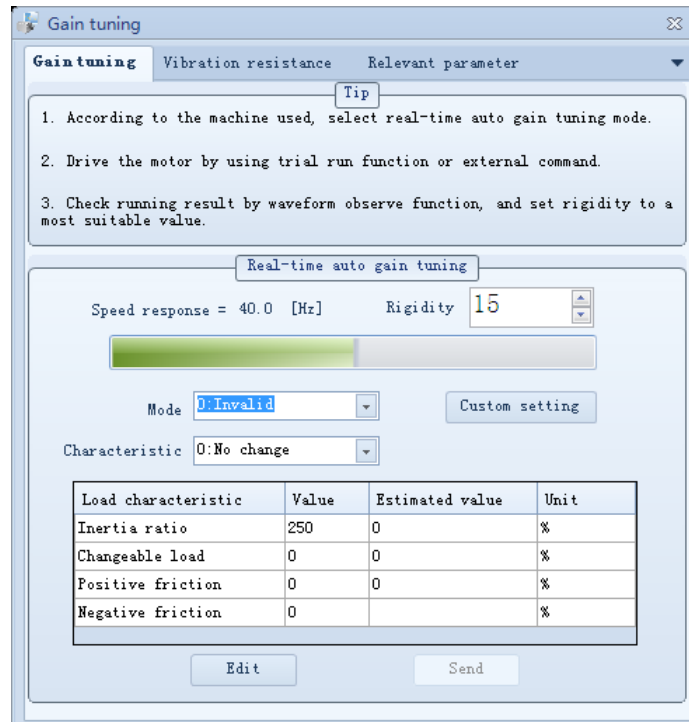
Fig. 3-18 Gain tuning window

CAUTION

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.
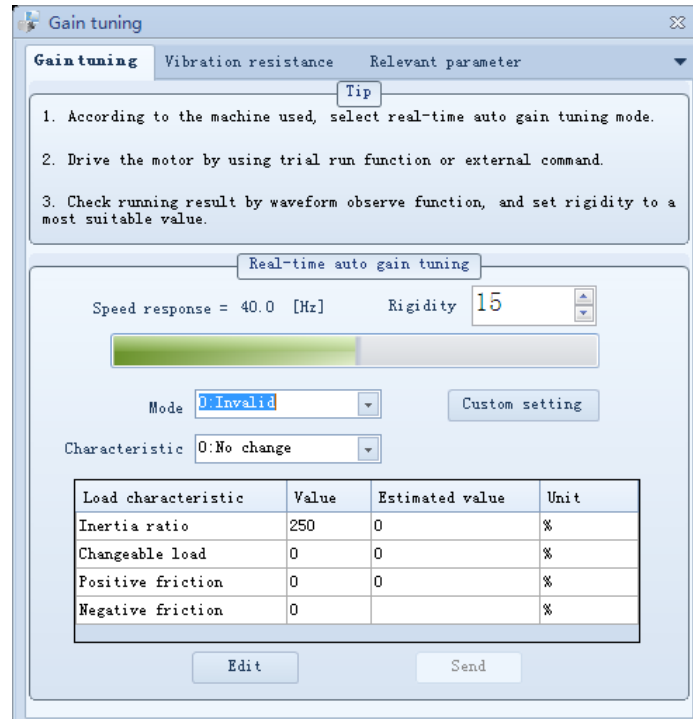
3.4.1 Real-time Auto Gain Tuning

Fig. 3-19 Gain tuning window

1) 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.
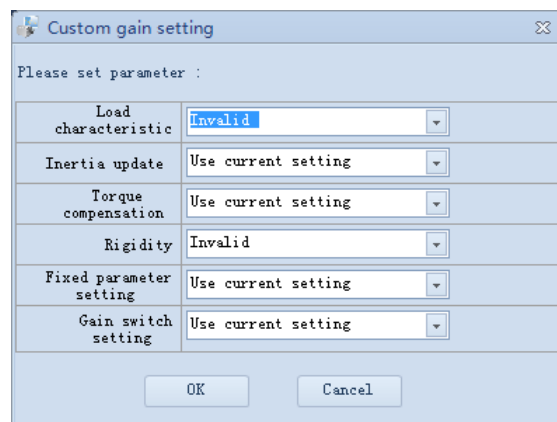
Fig. 3-20 Custom gain setting dialog box

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
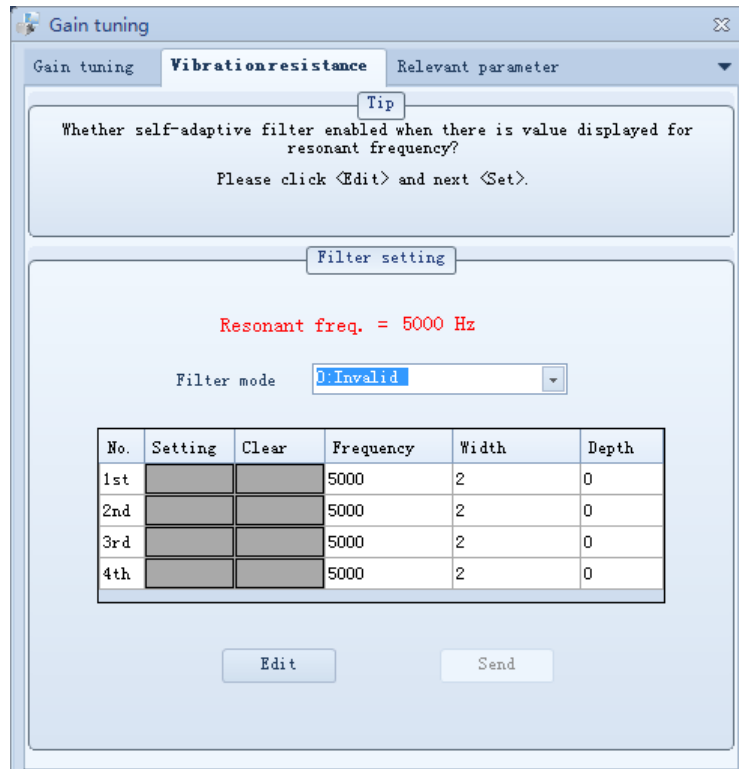
◆   **Self-adaptive Filter Setting**

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 3rd filter can be automatically set; while the 4th 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 "1st~4th". A confirmation dialog box will appear, as shown below.
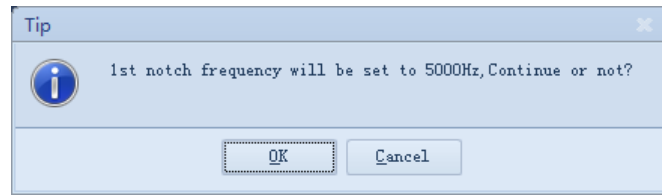
Fig. 3-22 Set notch filter

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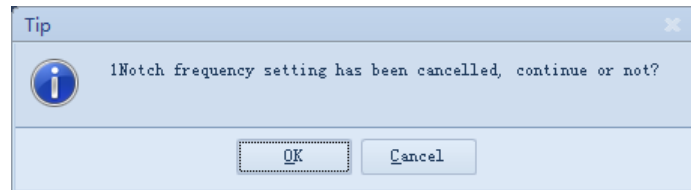

Fig. 3-23 Clear notch frequency

◆ **Direct Setting of Self-adaptive Filter**

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

Fig. 3-24 FFT analysis

2) 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.
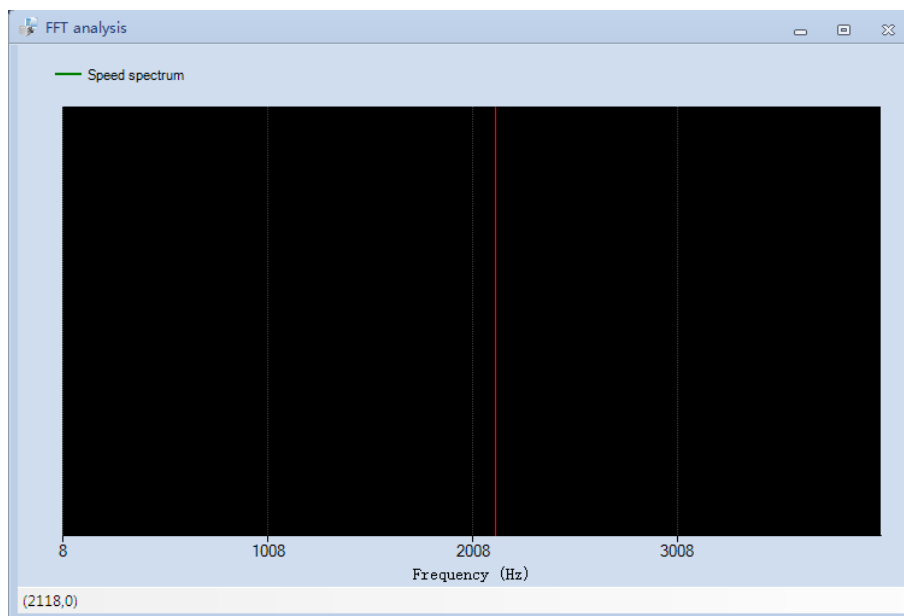
Fig. 3-25 Motor speed spectrum

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.

⚠ **CAUTION**

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**
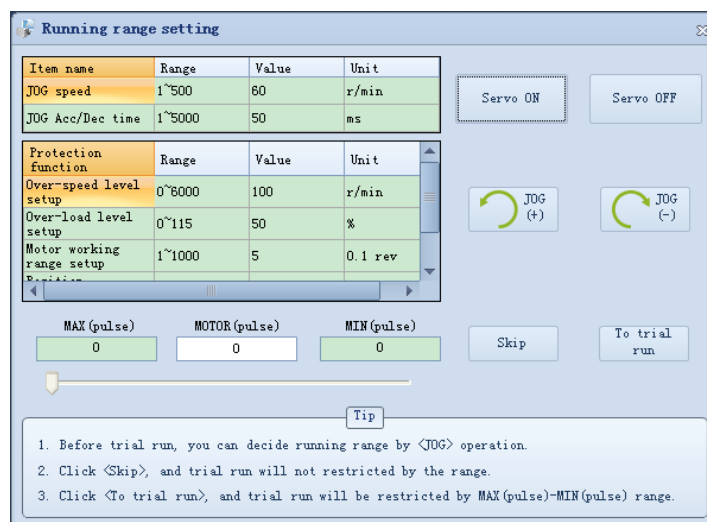
① MAX (pulse): the maximum position when the motor rotates to the left;
② MIN (pulse): the maximum position when the motor rotates to the right;
③ MOTOR (pulse): the current position of the motor;
④ JOG(+): with the button clicked, the motor rotates in positive direction;
⑤ JOG(-): with the button clicked, the motor rotates in negative direction.

Fig. 3-26 Trial run window-initial

As shown in Fig. 3-26, in initial window, you need to click [Start] 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]. Clicking on [Servo OFF] will turn the servo off and shutdown trial run function.

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

With [To trial run] 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.

◆ **Trial Run Window-Running**

Fig. 3-27 Trial run window-running

1) At servo OFF, clicking [Servo ON/STOP] 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 [Servo OFF] button invalidates the trial running range setting.

3) When executing ZERO (returning to the origin), JOG, STEP, clicking [PAUSE] 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.

5) With or clicked, the motor rotates in positive direction or negative direction 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 motor keeps running. If 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.

6) With or clicked, the motor rotates in positive direction or negative direction respectively. If is checked, once [STEP+] or [STEP-] is clicked, the motor moves forward and backward repeatedly with the current position as datum; while if 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
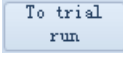
◆ **Check at Initiation**

In initial trial run window (see Fig. 3-26), click and then . If 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 or 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.

3.6 Alarm

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".

3.6.1 Introduction to Alarm Interface

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

◆ **Current Alarm/Warning**

As shown in Fig. 3-28, click ![Alarm clear] to remove current alarm and click ![Record clear] to 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.

Fig. 3-28 Alarm window

◆ **Alarm History**

Fig. 3-29 Alarm history

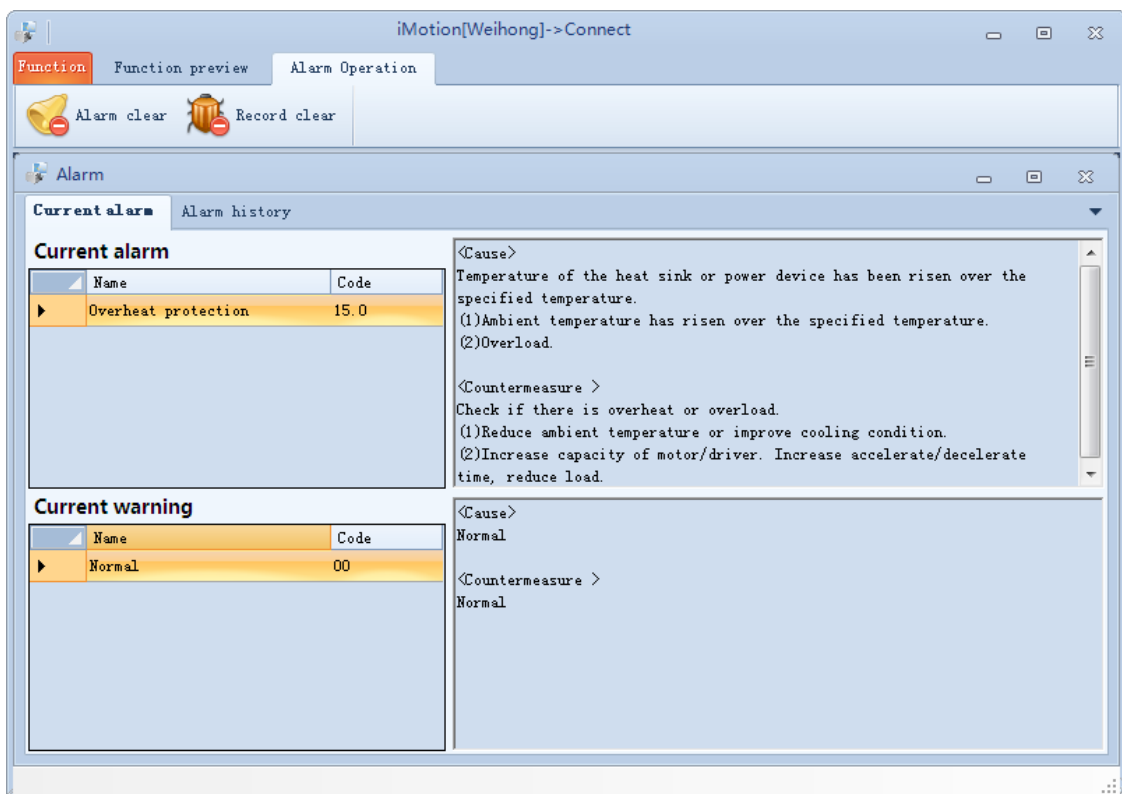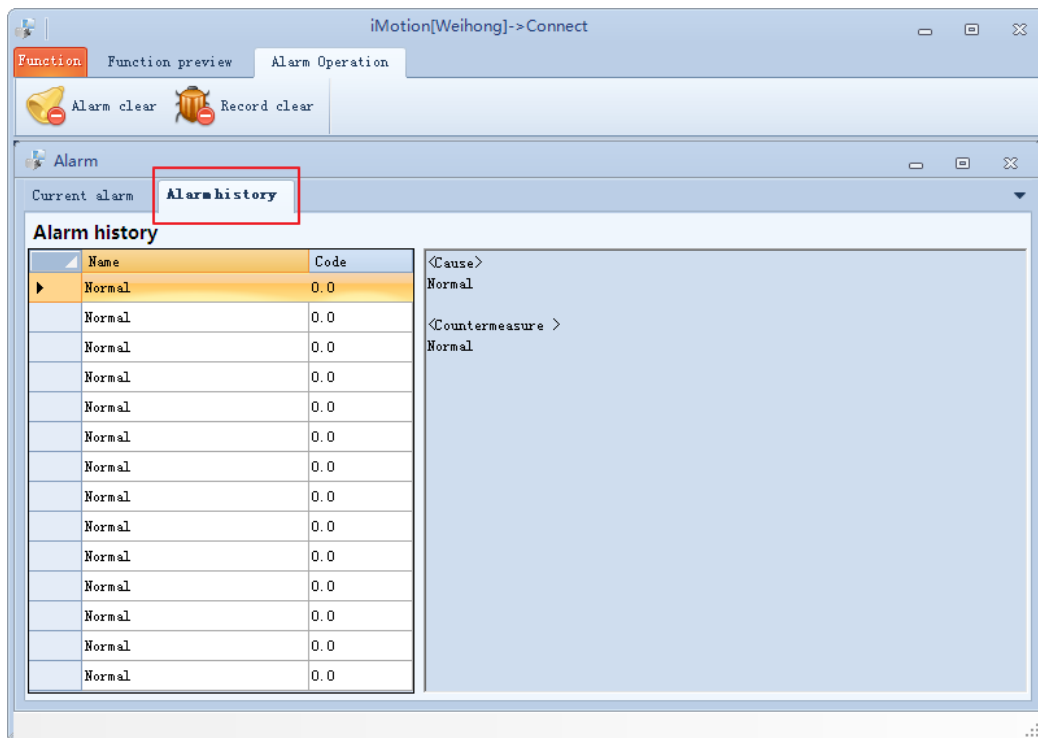As shown in Fig. 3-29, switch to tab "Alarm history" to view information, possible causes and countermeasures of history alarms.

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 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 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

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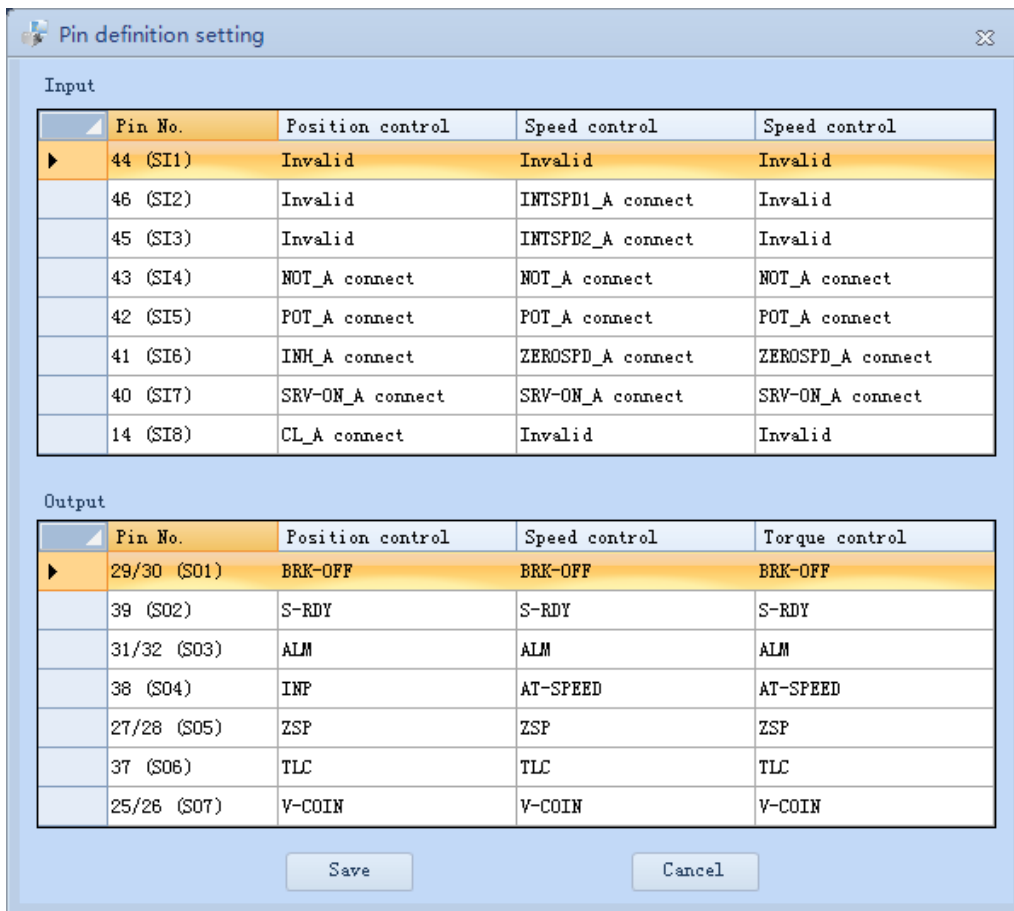
Fig. 3-30 Pin definition setting window

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.

2) "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.

Fig. 3-31 Input pin allocation

Fig. 3-32 Output pin allocation

⚠ **CAUTION**

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.
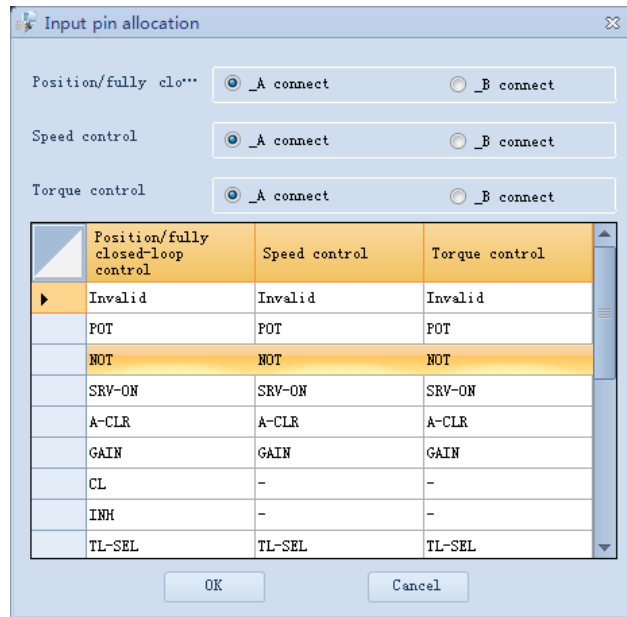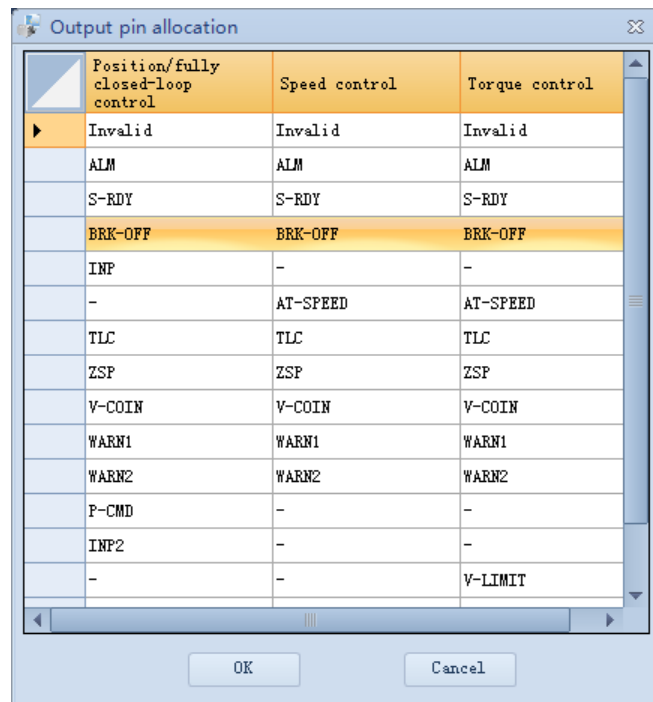
3) For input pins, one input signal cannot be allocated to different pin No., namely, repeated setting is prohibited; while for output pins, repeated allocation is allowed.

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**

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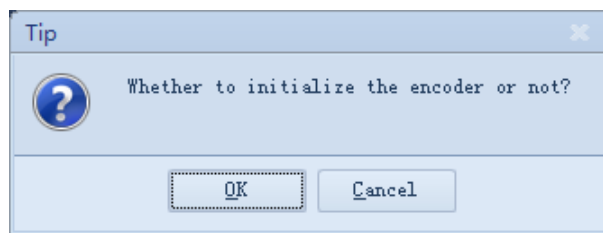
Fig. 3-33 Encoder initialization confirmation dialog box

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

⚠ CAUTION

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→* click [Driver registration] in the pull-down list of [Other]. Driver registration window is shown as below.
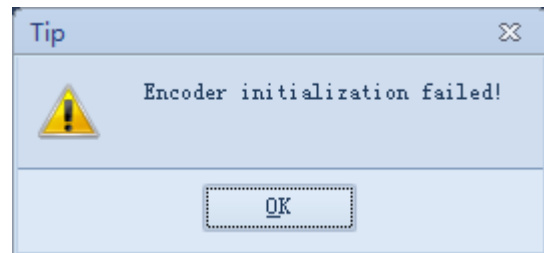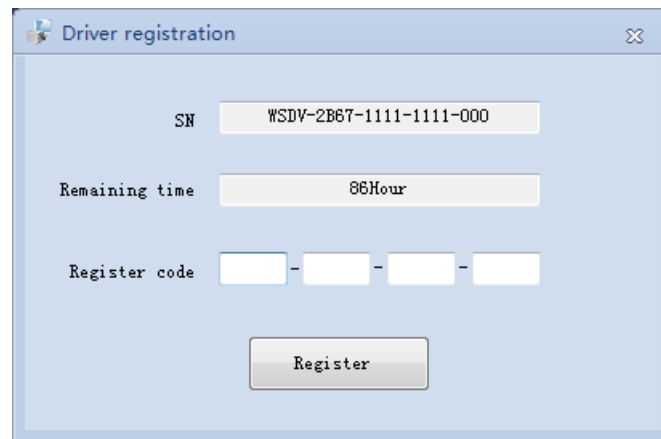

Fig. 3-36 Driver registration window

◆   **Register**

1)   Type in the registration code in "Register code" input box, and click [Register].

2)   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.
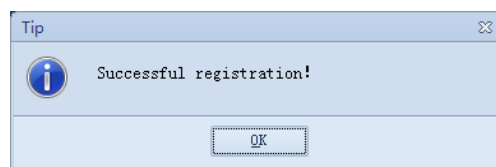
Fig. 3-37 Registration complete prompt

3.8.3   Update the Hardware

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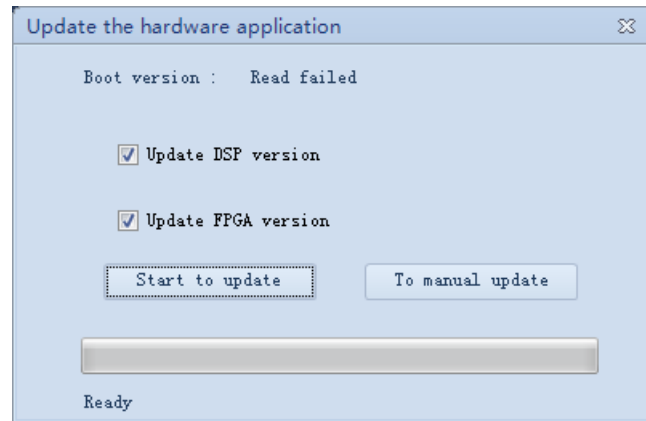
Fig. 3-38 Hardware updating window

"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.
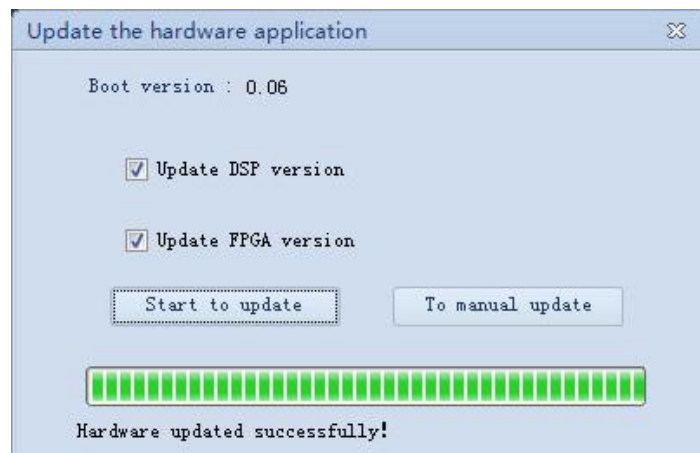
Fig. 3-39 Successful hardware update

⚠ CAUTION

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*→ 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.

Fig. 3-41 Language switchover tip

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The term "Software Product" includes all copies of the licensed software and its documentation. This license agreement is a legal agreement between You (either an individual, a legal entity or any affiliated companies or other entities) and Weihong Electronic T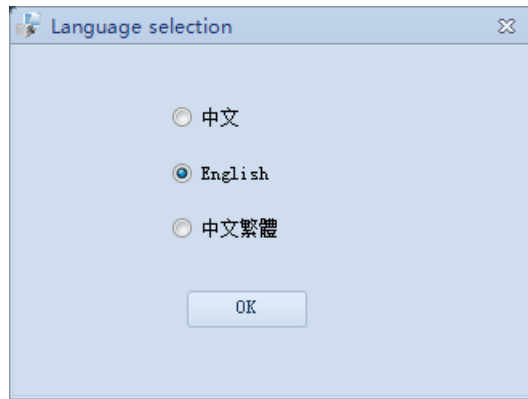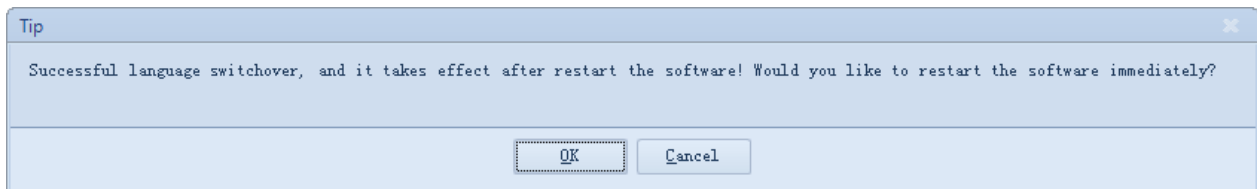echnology Co., Ltd. (hereinafter referred to as Weihong Company). By installing, copying, or otherwise using the Software Product, you agree to be bound by the terms and conditions of this license. Unless otherwise stated in this agreement, you shall not use, copy, revise, rent, or transfer the Software product or any part of the Software Product for any other purposes.

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