CKD

SMF－2005－A

INSTRUCTION MANUAL

ABSODEX

AX Tools for Windows®

Common for TS-Type, TH-Type, MU-Type and XS-Type Drivers

- Be sure to read this instruction manual thoroughly before using the software.
- For directions and precautions in using the product, refer to the instruction manual accompanying the product.
- If this software is used for drivers other than TS type, TH type, MU type, and XS type, certain functions are restricted.
- Among all, carefully read the descriptions related to safety.
- Keep this instruction manual in a safe place so that you can read it at any time when necessary.

6th Edition
CKD Corporation

Contents

Section 1　Introduction

1－1 Introduction

We do not guarantee the contents, accuracy and safety of the information provided with this software, or marketability or applicability of the information for special purposes.
CKD Corporation shall be exempt from any losses caused by this software.
This software is subject to change without prior notice.

1－2 Operating environment

Windows® Vista, Windows® 7, Windows® 8, Windows® 8.1
If your PC does not support Japanese fonts, characters may appear garbled.
* Simultaneous operation with other communications software is prohibited.

1－3 Precautions for use

1－3－1 Directions

1. To communicate with ABSODEX, use the special RS-232C cable (marketed).
   To prepare the RS-232C cable by yourself, refer to the instruction manual of the each driver "Example of RS-232C Interface Cable Connection Diagram."
2. Do not connect or disconnect the connector of the RS-232C cable or turn ABSODEX on or off during communication with ABSODEX.
   Otherwise ABSODEX or AxTools may malfunction.
   Close all dialog boxes or finish communication before connecting or disconnecting the connector or turning on or off the power.
3. If the communication port is closed in a communication error or other causes, click the [Connect] command of the [Set] tab to enable AxTools to communicate with the ABSODEX.
4. This AxTools is for use with the TS, TH, MU and XS type ABSODEX drivers.
   Some functions are restricted for discontinued models (GS, GH, H, C type and older types of drivers).
5. Simultaneous operation of another communication software over the RS-232C cable is not supported.
   When using this software, terminate other communication software.

1－3－2 Example of RS-232C Interface Cable Connection Diagram

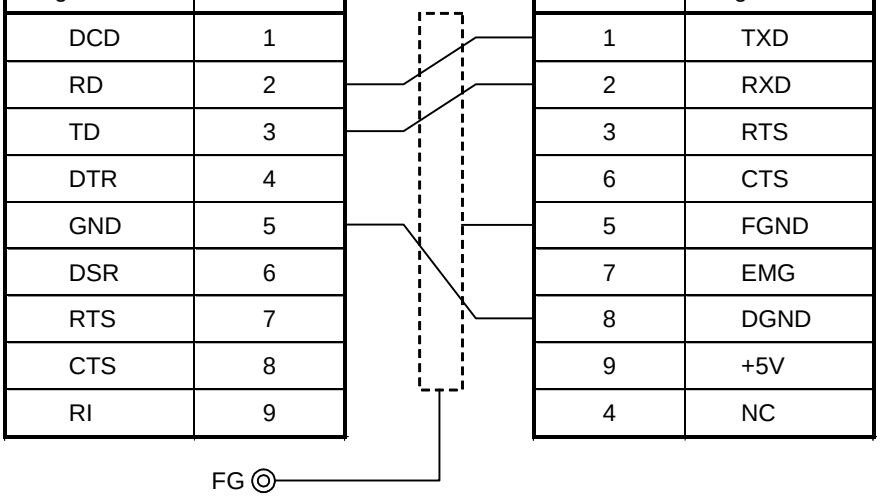
1－3－2－1 PC side Dsub 9-pin (DOS/V machine)

PC Side (DOSV machine)

Signal name	Pin No.
DCD	1
RD	2
TD	3
DTR	4
GND	5
DSR	6
RTS	7
CTS	8
RI	9

Driver Side

Pin No.	Signal name
1	TXD
2	RXD
3	RTS
6	CTS
5	FGND
7	EMG
8	DGND
9	+5V
4	NC



Connector ： Dsub 9 pin
Pulug XM2D-0901 (OMRON)
Hood XM2S-0913 (OMRON)

Connector ： Dsub 9 pin
Pulug XM2A-0901 (OMRON)
Hood XM2S-0911 (OMRON)

RS-232C Cable Connection Diagram (Dsub 9-pin)
Our product model: AX-RS232C-9P

※Pins 7 and 9 of CN1 of the driver are designed to connect Dialogue Terminal (AX0180). If another device is connected, leave pins 7 and 9 open to avoid breakage of the driver that may be caused by a possible connection error.

※For D-sub 9 pin on the PC side, the fitting screw may vary depending on the PC makers. Make sure of the screw type with the manufacturer.
The hood model numbers are different depending on the size of the screws;

M2.6 (Metric)	Hood: XM2S-□□11 (OMRON)
M3 (Metric)	Hood: XM2S-□□12 (OMRON)
#4-40UNC (Inch)	Hood: XM2S-□□13 (OMRON)
	(□□ denotes 25 or 09.)

Section 2　General outline

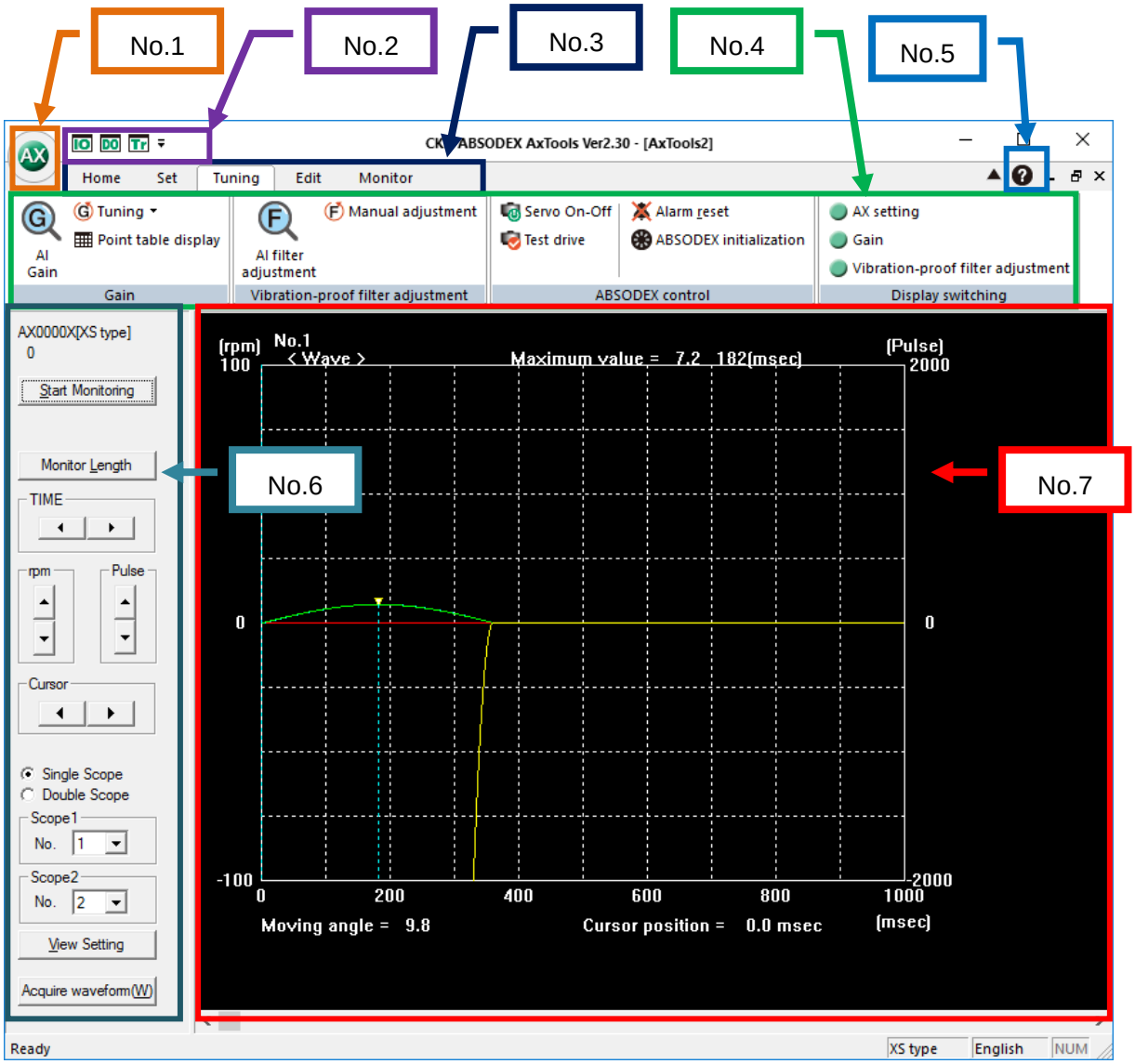
2－1 General outline

We do not guarantee the contents, accuracy and safety of the information provided with this software, or marketability or applicability of the information for special purposes.

2－2 Application configuration

2－2－1 Entire configuration

AxTools is configured by the following elements.

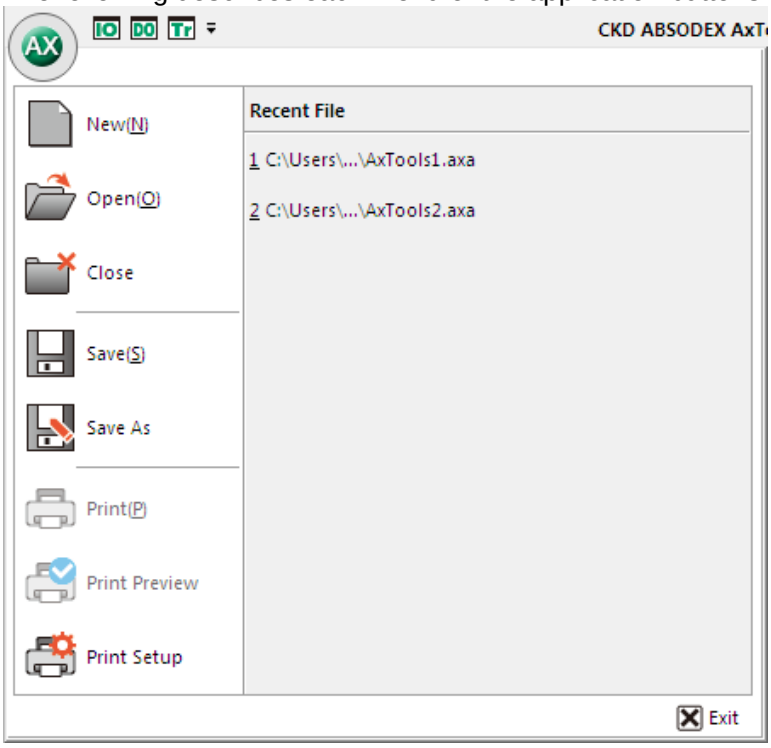


No.	Name	Description
No.1	Application button	Provides commands to execute the basic functions of the application.
No.2	Quick access toolbar	Area in which buttons for functions are arranged
No.3	Tab	Select a tab to switch the function groups of AxTools.
No.4	Ribbon menu	Area in which commands to execute a function are arranged
No.5	Help	Displays the version information.
No.6	View button	Area in which buttons to execute operation for the view are arranged
No.7	View	Displays the information of the function being executed.

2－2－2 Application button

2－2－2－1 Menus of each application button

The following describes each menu of the application buttons.



2－2－2－1－1 New

This button has the same function as that of the [New] command in the [Home] tab.
Refer to "4－3－1－1 New" of "4 Home".

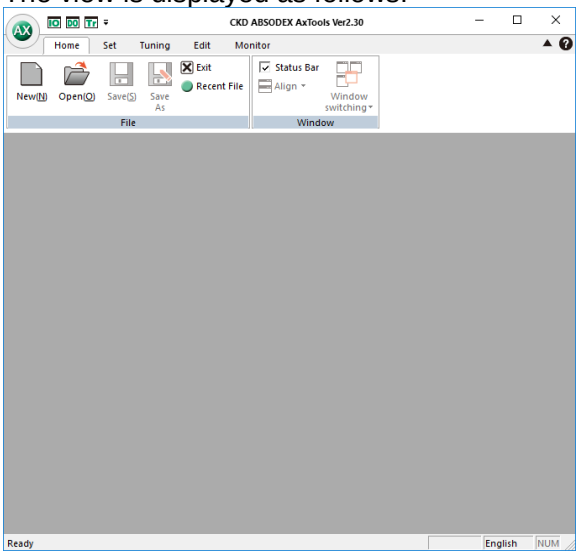
2－2－2－1－2 Open

This button has the same function as that of the [Open] command in the [Home] tab.
Refer to "4－3－1－2 Open" of "4 Home".

2－2－2－1－3 Close

Clicking this button closes the window that you are currently using.
(However, the application is not terminated.)

The view is displayed as follows.



2－2－2－1－4 Save

This button has the same function as that of the [Save] command in the [Home] tab.
Refer to "4－3－1－3 Save" of "4 Home".

2－2－2－1－5 Save As

This button has the same function as that of the [Save As] command in the [Home] tab.
Refer to "4－3－1－4 Save As" of "4 Home".

2－2－2－1－6 Print

Clicking this button prints the view currently displayed.

2－2－2－1－7 Print Preview

Clicking this button displays a print image.

2－2－2－1－8 Print Setup

Click this button to set up the printer.

2－2－2－1－9 Recent File

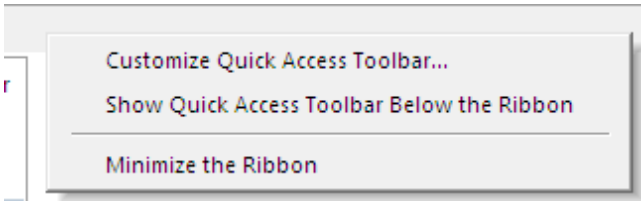
This button has the same function as that of the [Recent File] command in the [Home] tab.
Refer to "4－3－1－6 Recent File" of "4 Home".

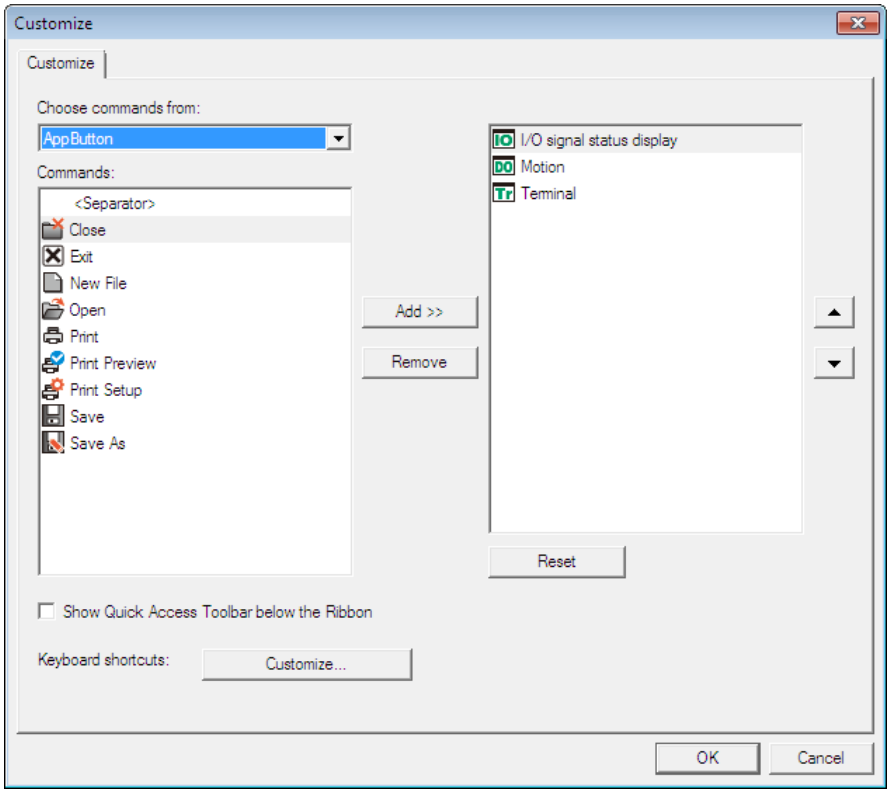
2－2－2－1－10 Exit

This button has the same function as that of the [Exit] command in the [Home] tab.
Refer to "4－3－1－5 Exit of "4 Home".

2－2－3 Quick access toolbar

Right-click a blank area of a tab or ribbon menu.
The customization menu is displayed.





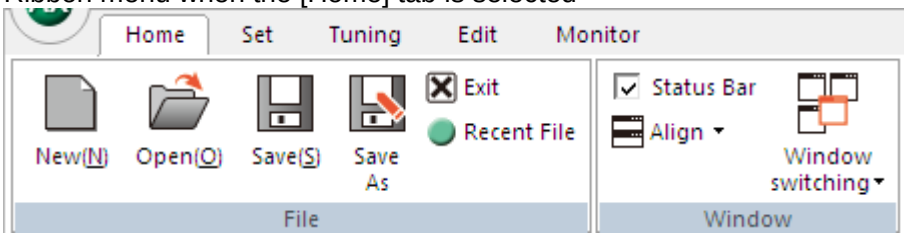
Select commands in the ribbon menu.

The commands selected from the Ribbon menu are added to the quick access toolbar.

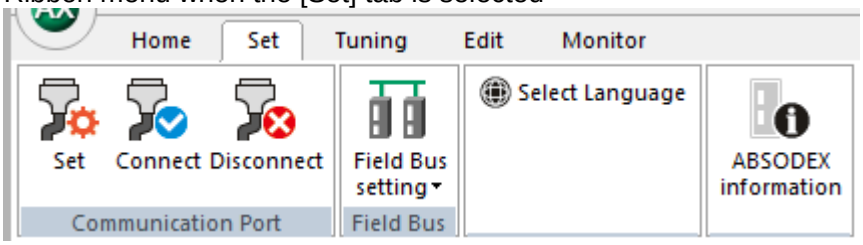
2－2－4 Tab

Switching tabs displays a different ribbon menu.

Ribbon menu when the [Home] tab is selected



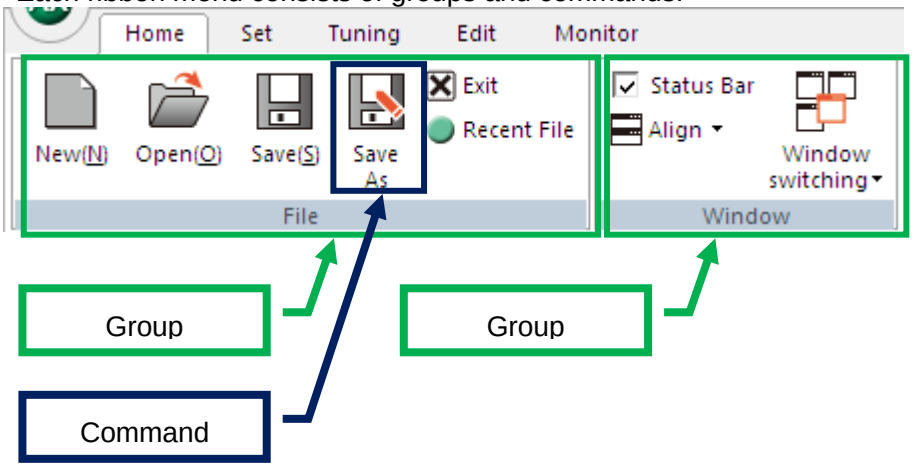
Ribbon menu when the [Set] tab is selected



2－2－5 Ribbon menu

Selecting a command in the ribbon menu executes the corresponding function.
When a command is selected, the display of the view also changes.

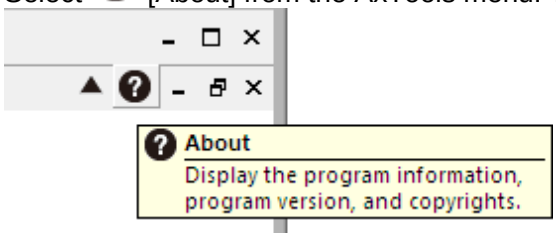
Each ribbon menu consists of groups and commands.



2－2－6 Help

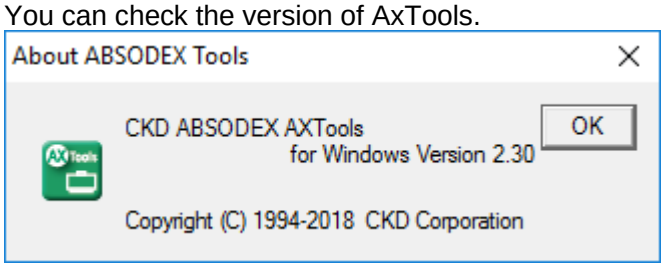
2－2－6－1 Help

Select [About] from the AxTools menu. The following is displayed.



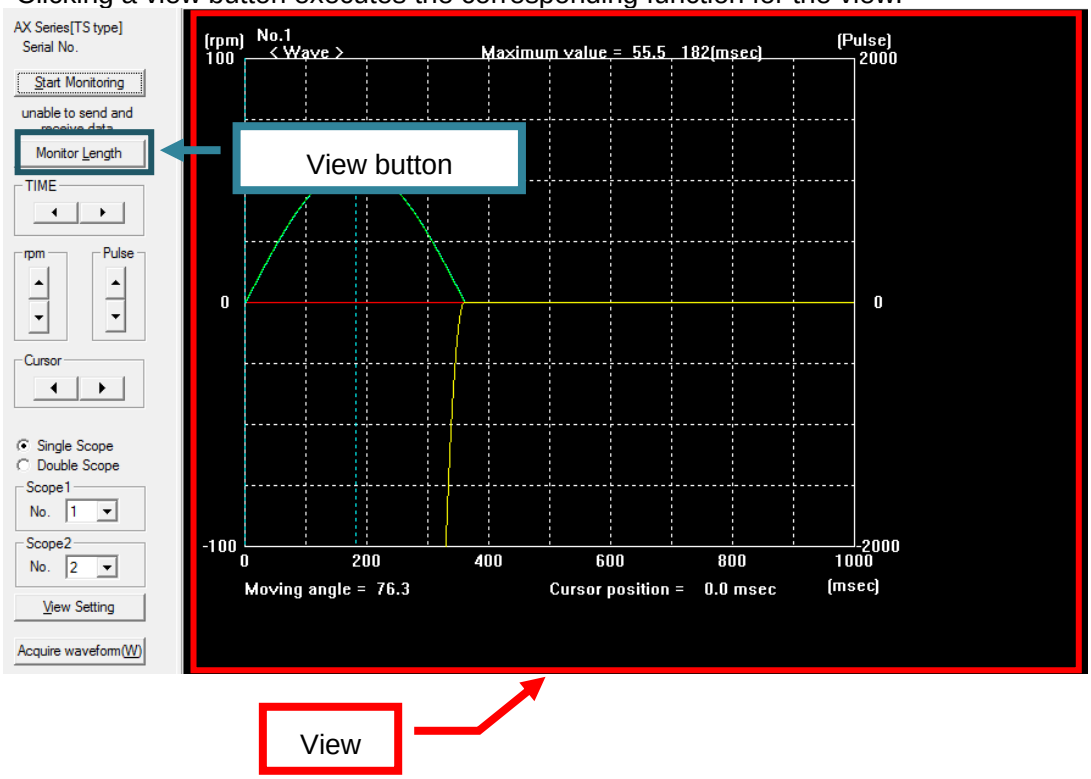
2－2－6－2 About

You can check the version of AxTools.



2－2－7 View button

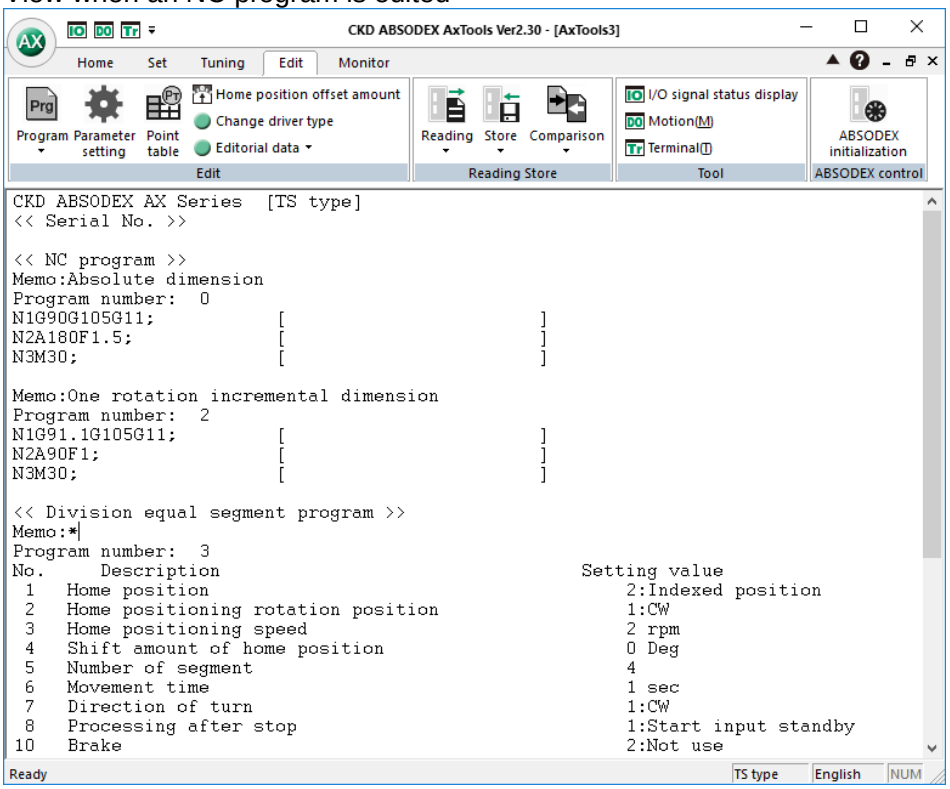
Clicking a view button executes the corresponding function for the view.



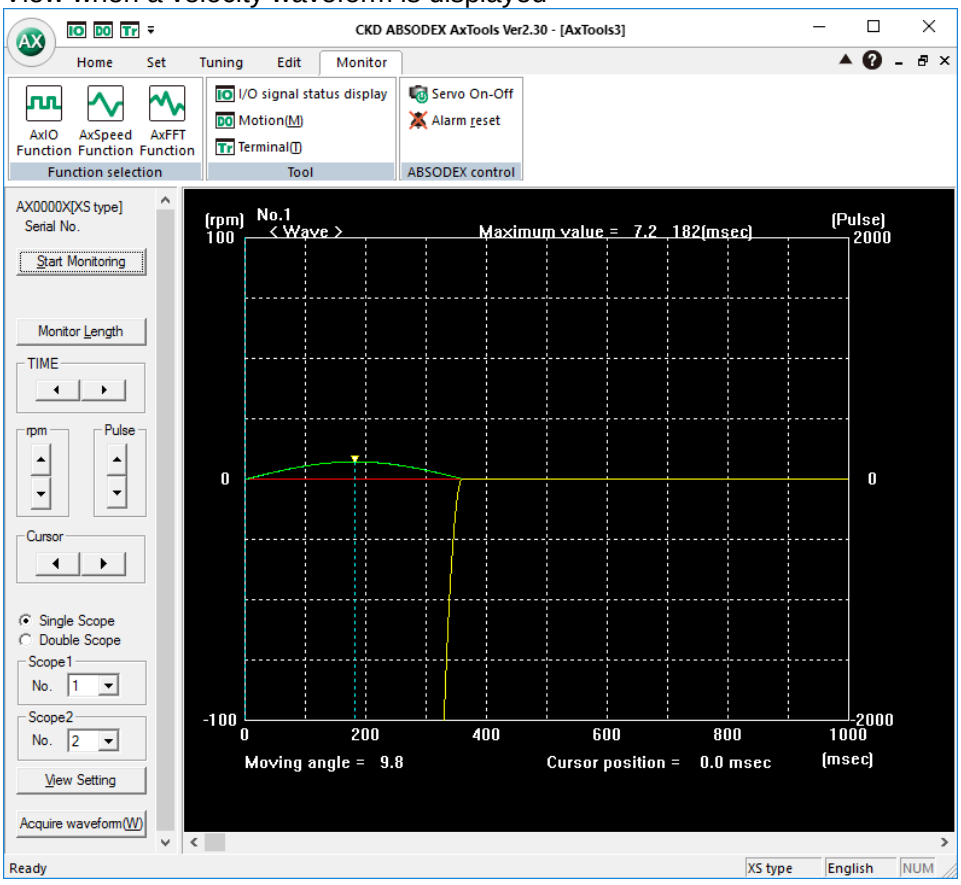
2－2－8 View

The view is refreshed according to the function being executed.

View when an NC program is edited



View when a velocity waveform is displayed

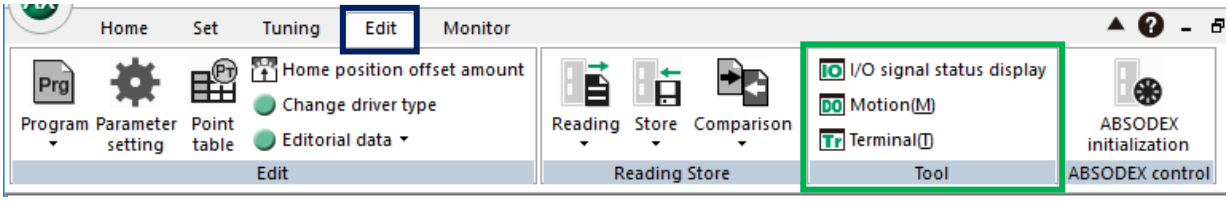


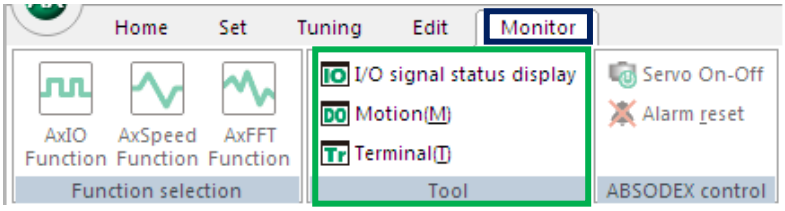
Section 3　Common function

3－1 Tool group

3－1－1 Function list

Group name	Command name	Description	Section number
Tool	I/O signal status display	Display the current status of the I/O signal.	3－1－1－1
	Operation command	Perform the basic operations for the ABSODEX.	3－1－1－2
	Terminal	Send/receive commands to/from the ABSODEX.	3－1－1－3



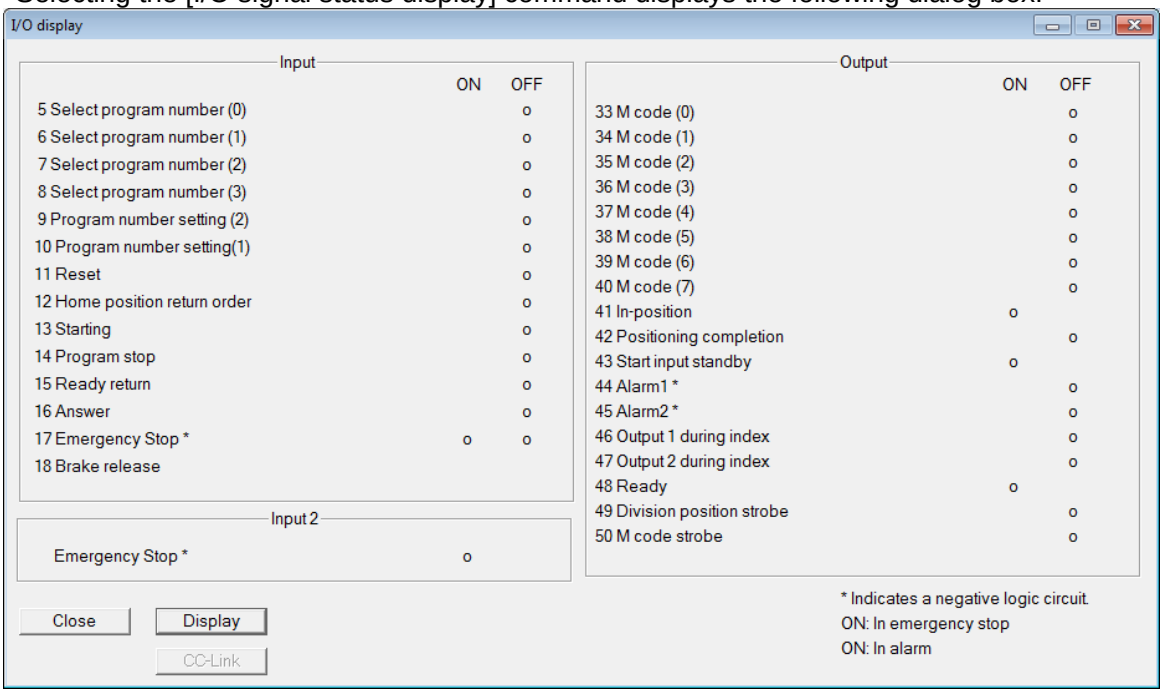


These commands can be selected in the [Edit] tab or [Monitor] tab.

3－1－1－1 I/O signal status display

Use this command to check the current I/O signal status.

Selecting the [I/O signal status display] command displays the following dialog box.



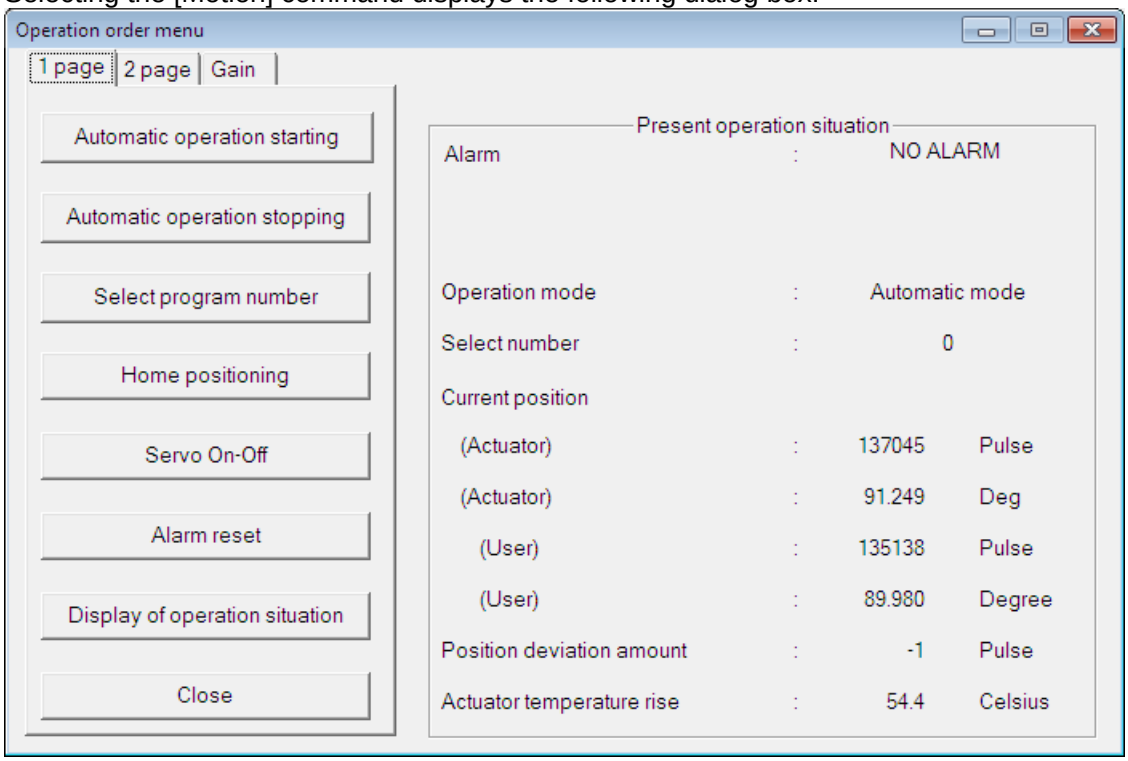
1. View
   Clicking this button displays the current I/O condition of the I/O signal CN3.
   Begin to display the real time of I/O condition.
   “Input 2” supports TB3 (Emergency Stop input) which uses serial communication interface (such as CC-Link).
2. Close
   Clicking this button closes the [I/O display] window.
   The DIALOG closes.
   ※I/O displays don't sometimes change when input/output time is too short.
3. CC-Link
   Clicking this button displays the current condition of the CC-Link communication.
   ※This is available only when communication with ABSODEX is enabled. [CC-Link] is available for selection once the ABSODEX model is identified.
   For details, refer to the driver instruction manual.

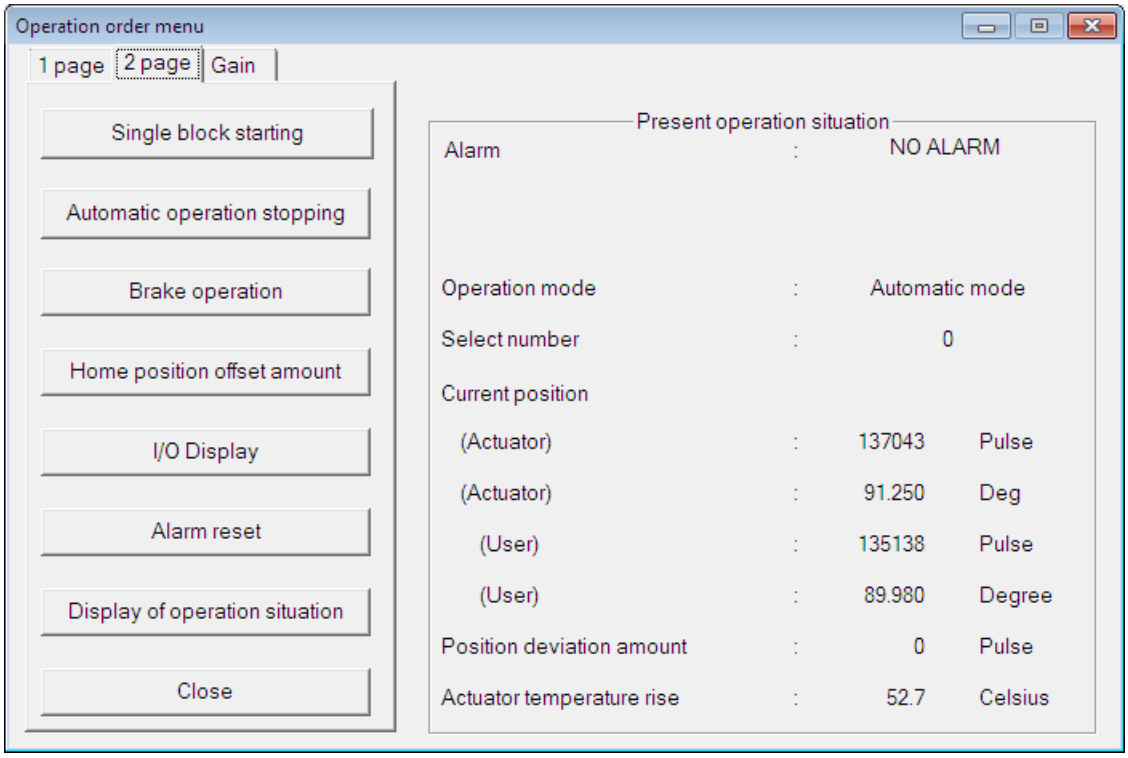
※The displayed I/O data names differ depending on the driver type and the parameter settings.

3－1－1－2 Operation command

Use this command to operate the motor.

Selecting the [Motion] command displays the following dialog box.





Displays the operating situation of present ABSODEX at real time.

※The position displays during the motor rotation may delay.

Starting, the stop, the specification of number, execution of reset, and so on, input directly without the code.

The contents with each item of operation order mode are as follows.

３－１－１－２－１ Starting program [Automatic operation starting]

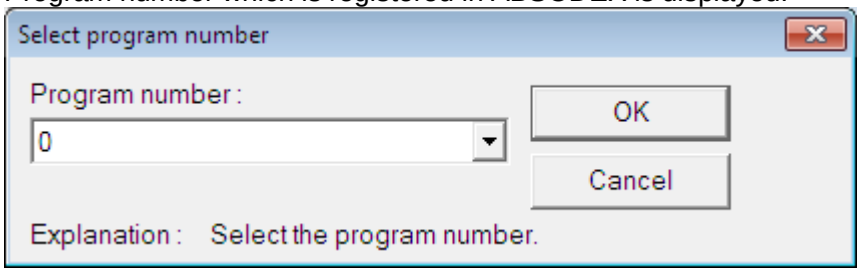
Program with number which is selected at present starts.
Change operation mode into "Automatic operation mode" automatically.
In servo off condition, it isn't possible to execute.

３－１－１－２－２ Stopping program [Automatic operation stopping]

Program in operating stops.

３－１－１－２－３ Selecting starting program number [Select program number]

The following DIALOG is displayed.
Program number which is registered in ABSODEX is displayed.



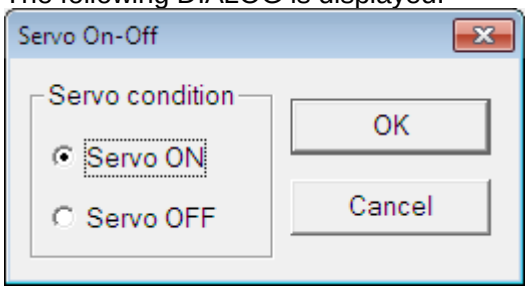
Select a number, and click the [OK] button.

３－１－１－２－４ Home positioning [Home positioning]

Return home position.
In servo off condition, it isn't possible to execute.

３－１－１－２－５ Controlling servo-on and servo-off [Servo On-Off]

The following DIALOG is displayed.



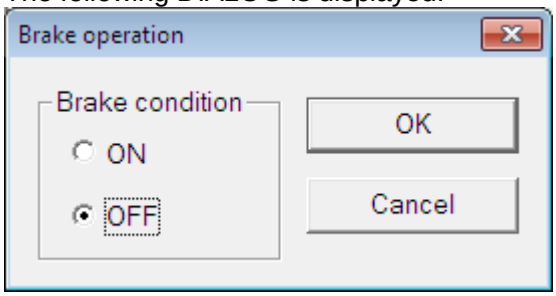
The current servo status is displayed. If the value set in parameter 52 is 1, the status can be changed by selecting ON or OFF and then by clicking the [OK] button.

３－１－１－２－６ Starting program step by step [Single block starting]

Start 1 block of programs with number which is selected at present.
Change operation mode into "Single block mode" automatically.
In servo off condition, it isn't possible to execute.

３－１－１－２－７ Controlling brake [Brake operation]

The following DIALOG is displayed.



The current brake status is displayed. To change the status, select ON or OFF and then click the [OK] button.
※For the sake of safety, the brake cannot be released in servo-off condition.

３－１－１－２－８ Setting home position offset amount [Home position offset amount]

This button has the same function as that of the [Home position offset amount] command in the [Edit] tab.

Refer to "７－３－１－４ Home position offset amount" of "7 Edit".

３－１－１－２－９ Resetting alarm [Alarm reset]

Reset alarm which occurs at present.

Resetting an alarm may turn ON the servo.

Always ensure the safety before performing the operation.

３－１－１－２－１０ Displaying present operation situation [Displays of operation situation]

Begin to display the real time the operation situation of ABSODEX.

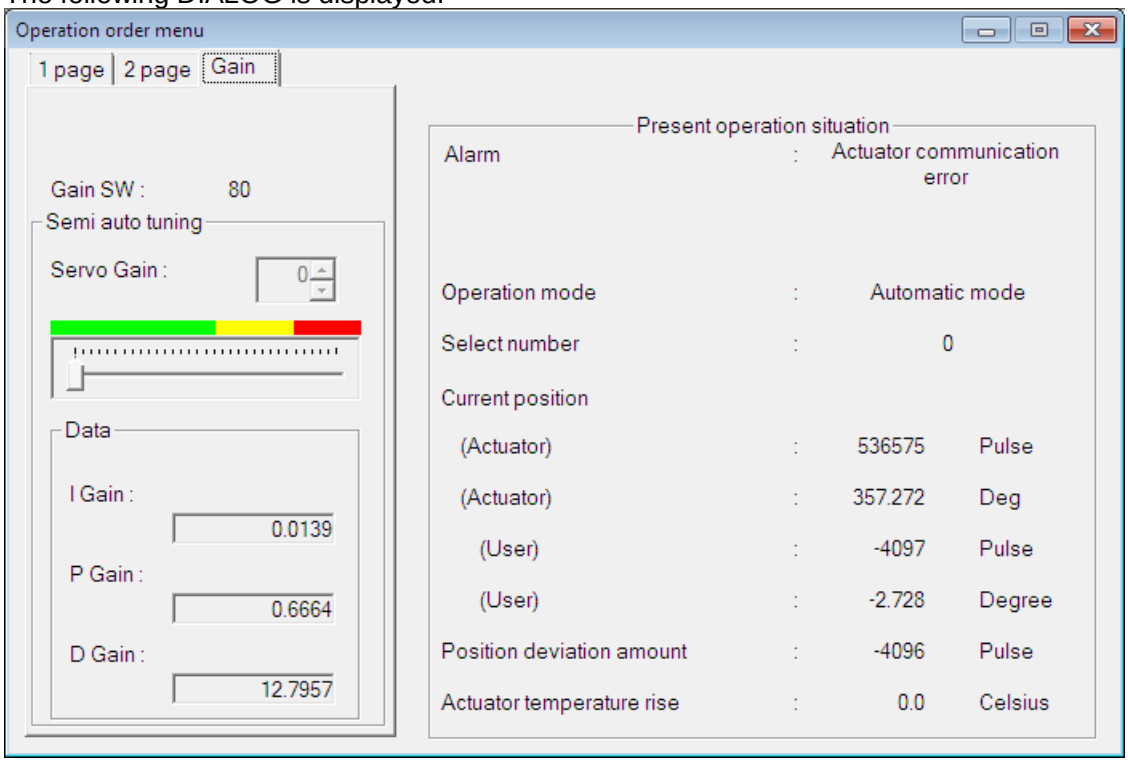
３－１－１－２－１１ Displaying I/O condition of the present input/output signal [I/O display]

This button has the same function as that of the [I/O signal status display] command.

Refer to the common function.

３－１－１－２－１２ Semi-auto tuning［Gain］

The following DIALOG is displayed.



1. Gain SW

   Displays the Gain setting

   Displays the setting of DIP switches, G1 and G2 on the front panel.

   ※Parameters 101 (Gain 1) and 102 (Gain 2) apply to MU type drivers.

2. Servo Gain

   Gain Adjustment

   Fine adjustments to Servo Gain can be made after executing Auto tuning.

   ※Data is valid when Gain SW is 00.

   ※The Servo Gain cannot be set until the tasks in "2-4 Tuning" have been carried out.

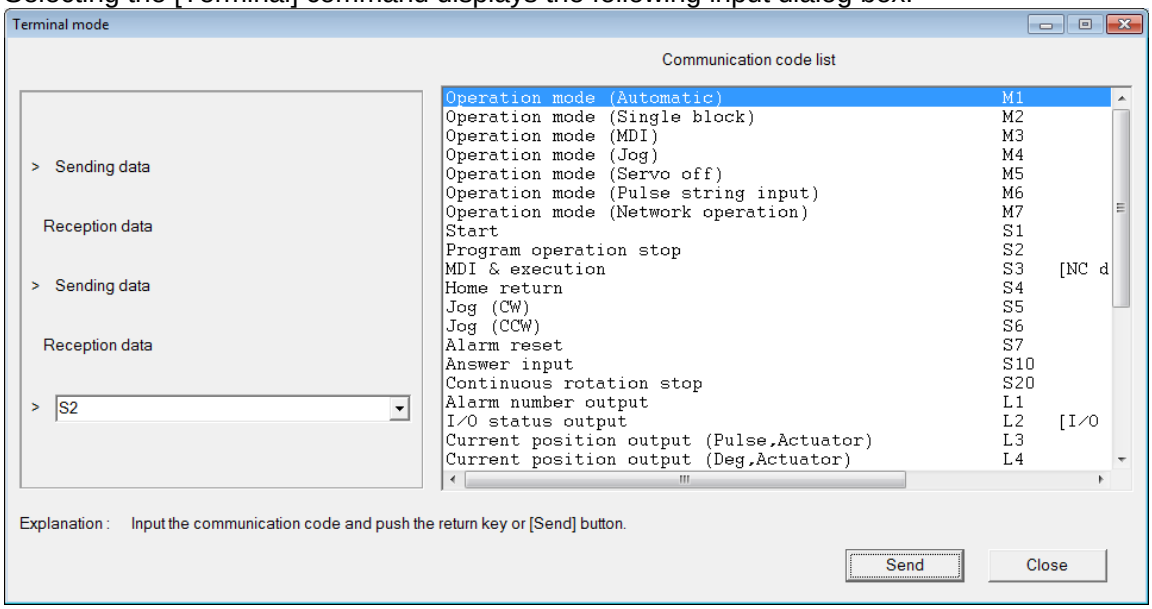
※Semi-auto tuning function is not available for TH type.

※The Semi auto tuning function is not displayed for GS, S, GH or H type drivers.

3－1－1－3 Terminal

Use this command to send or receive commands to or from the ABSODEX.

Selecting the [Terminal] command displays the following input dialog box.



1. Operation

(1) Enter a communication code in the position where the cursor blinks, and press the Return key. Or click the [Send] button.

(2) Sending data is displayed after ">" and reception data is displayed in line under it.

At the normal time,"0" is displayed and at time of error, “＊” is displayed.

2. When inputting from communication code list

(1) Move the cursor to the communication code list and move the cell to the communication code to be entered, and press the Return key. Or double click the mouse button.

(2) If necessary, enter data next to the communication code, and press the Return key. Or click the [Send] button.

(3) Reception data is displayed.

3.When sending using the communication code which was inputted before

(1) Select communication code as the record of sending and receiving is displayed when pushing ↑ key.

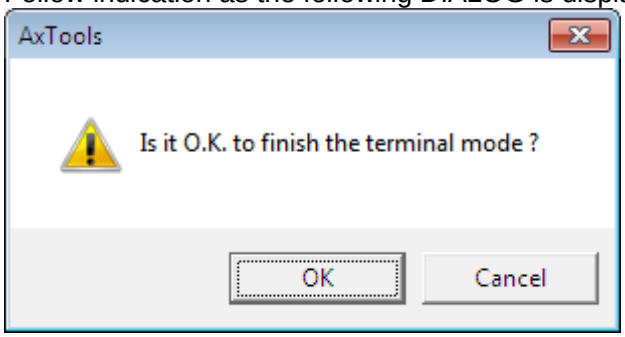
(2) To change data, edit the data directly and press the Return key. Or click the [Send] button.

(3) Sending data and new reception data are registered on record as the latest data. (To 100)

4. Ending terminal mode

Click the [Close] button.

Follow indication as the following DIALOG is displayed.



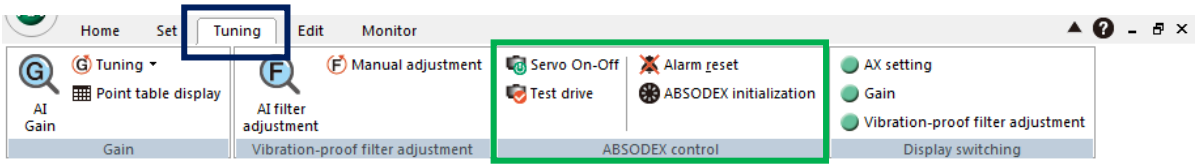
Clicking the [OK] button ends the terminal mode.

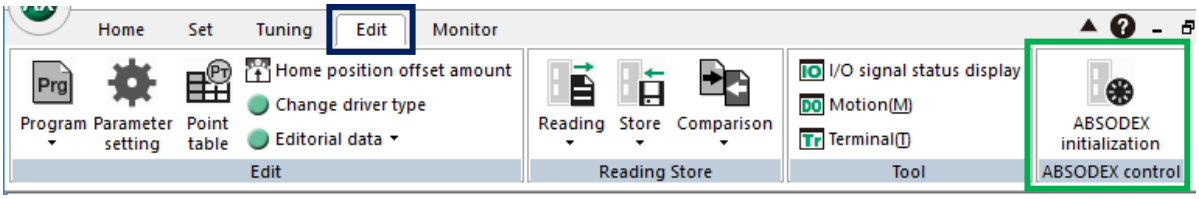
All records are erased.

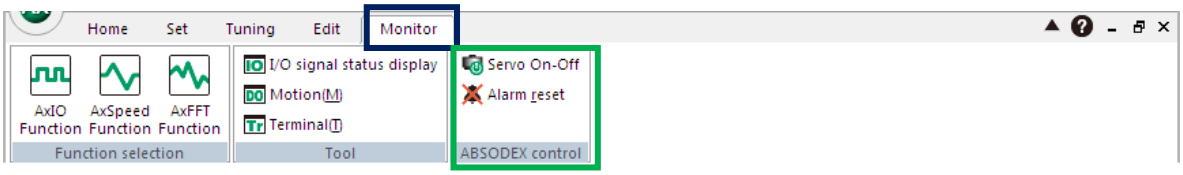
3－2 ABSODEX control group

3－2－1 Function list

Group name	Command name	Description	Section number
ABSODEX control	Servo On-Off	Switch the servo On-Off status.	3－2－1－1
	Test drive	Set the test drive setting.	3－2－1－2
	Alarm reset	Reset alarms.	3－2－1－3
	ABSODEX initialization	Initialize the ABSODEX.	3－2－1－4





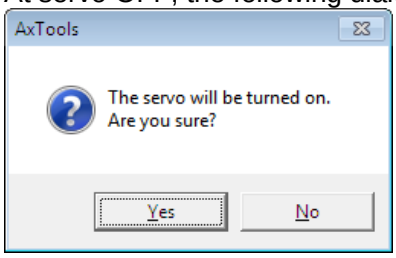


These commands can be selected in the [Tuning] tab, [Edit] tab, or [Monitor] tab.

3－2－1－1 Servo On-Off

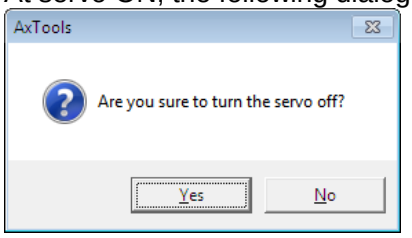
Use this command to switch the servo On-Off status.

At servo OFF, the following dialog box is displayed.



Click the [Yes] button to turn ON the servo.

At servo ON, the following dialog box is displayed.

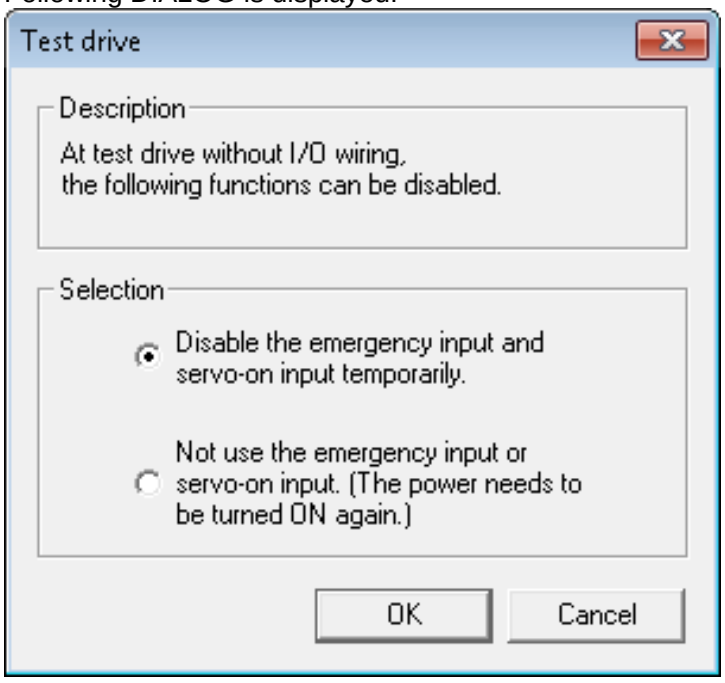


Click the [Yes] button to turn ON the servo.

3－2－1－2 Test drive

Use this command to set the setting for test drive without the I/O wiring.

Following DIALOG is displayed.



1. Disable the emergency input and servo-on input temporarily.
   Select this item to perform test drive without the I/O wiring.

2. Not use the emergency input or servo-on input.
   Select this item when not using the emergency input or servo-on input.

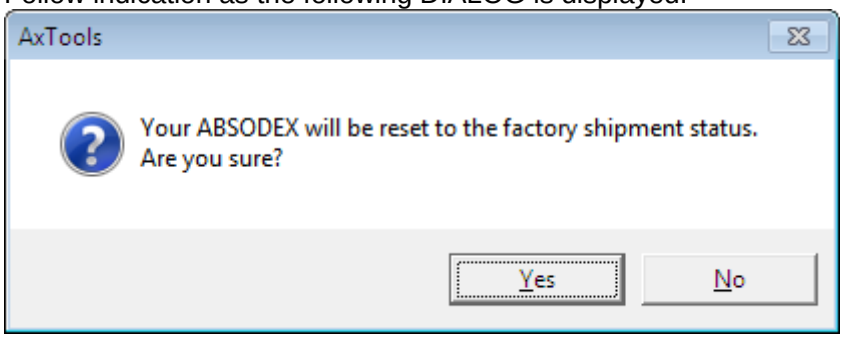
   The setting will be effective after the power is cycled.
   Cycle the power of the ABSODEX after selecting an item.

3－2－1－3 Alarm reset

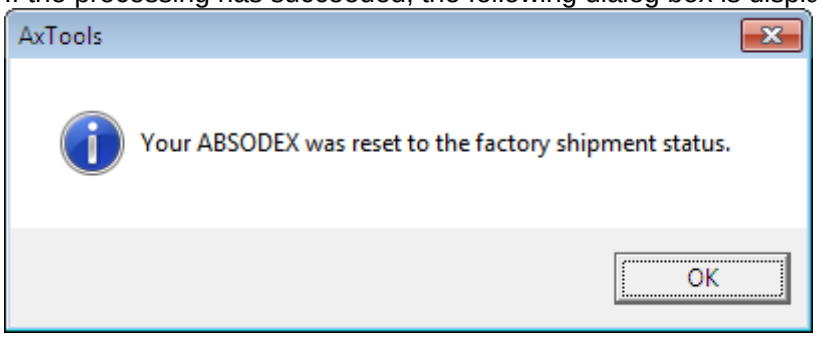
Reset alarm which occurs at present.
Resetting an alarm may turn ON the servo.
Always ensure the safety before performing the operation.

3－2－1－4 ABSODEX initialization

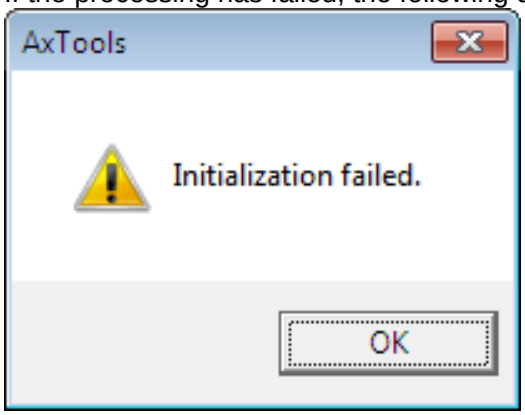
Use this command to reset the ABSODEX to the factory shipment status.
Follow indication as the following DIALOG is displayed.



Click the [OK] button to reset the ABSODEX to the factory shipment status.
If the processing has succeeded, the following dialog box is displayed.



If the processing has failed, the following dialog box is displayed.



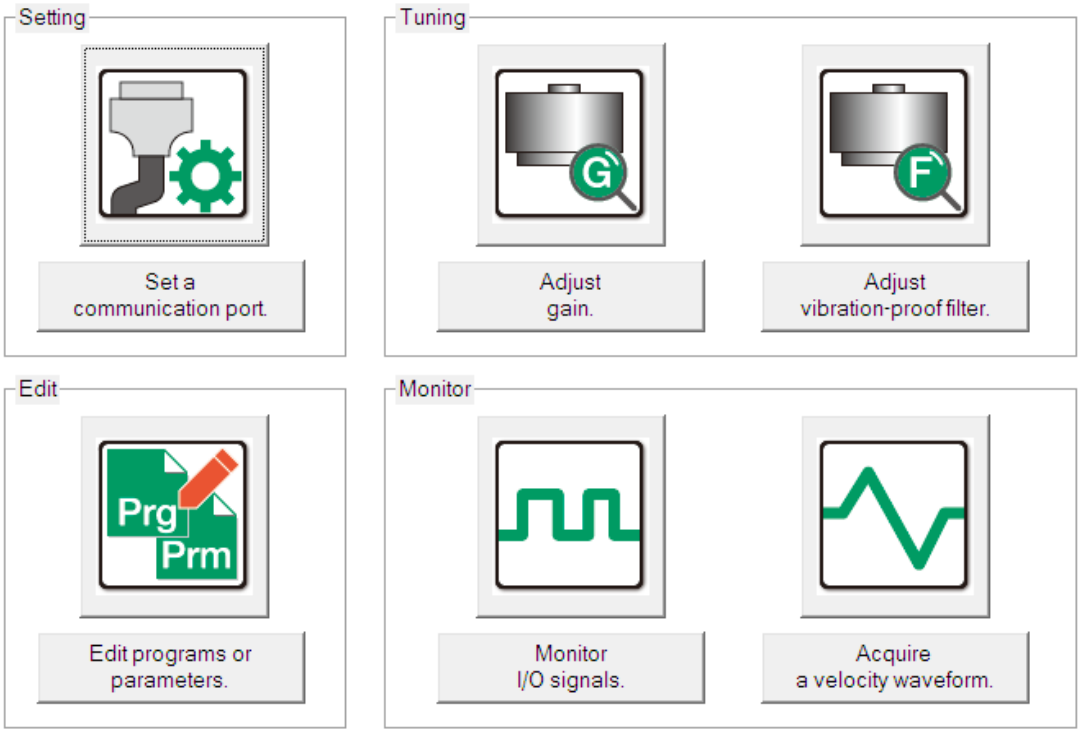
Section 4　Home

4－1 Overview of the [Home] tab

In this tab, you can perform the file operations or switch the windows.

4－2 View of the [Home] tab

Selecting the [Home] tab displays the following view.



4－2－1 Set a communication port

Clicking the [Set a communication port.] icon or button displays the view of the [Set] tab.

4－2－2 Adjust gain

Clicking the [Adjust gain] icon or button displays the gain adjustment view of the [Tuning] tab.

4－2－3 Adjust vibration-proof filter

Clicking the [Adjust vibration-proof filter] icon or button displays the vibration-proof filter adjustment view of the [Tuning] tab.

4－2－4 Edit programs or parameters

Clicking the [Edit programs or parameters] icon or button displays the view of the [Edit] tab.

4－2－5 Monitor I/O signals

Clicking the [Monitor I/O signals] icon or button displays the AxIO view of the [Monitor] tab.

4－2－6 Acquire a velocity waveform

Clicking the [Acquire a velocity waveform] icon or button displays the AxSpeed view of the [Monitor] tab.

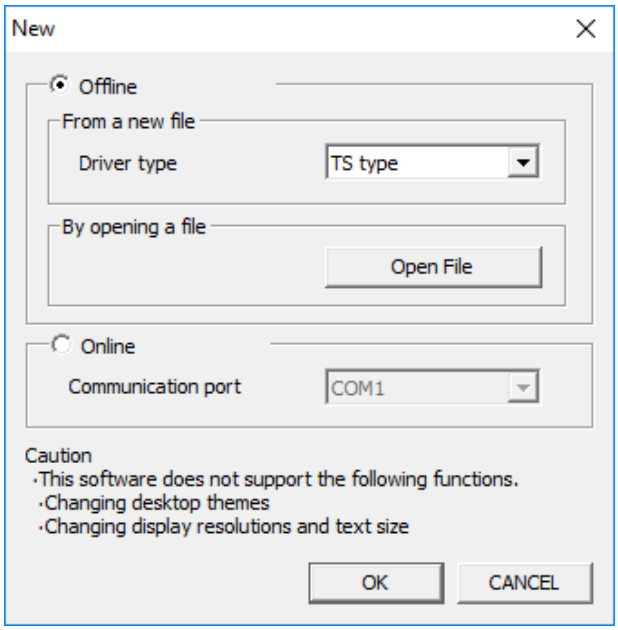
4－3 List of functions in the [Home] tab

Group name	Command name	Description	Section number
File	New	Make a new file.	4－3－1－1
	Open	Open the saved file.	4－3－1－2
	Save	Save file to be editing in address.	4－3－1－3
	Save As	Put name to file to be editing and save it.	4－3－1－4
	Exit	End AxTools.	4－3－1－5
	Recent File	Display recently-used files.	4－3－1－6
Window	Status bar	Show or /hide the status bar.	4－3－2－1
	Align	Rearrange the windows.	4－3－2－2

4－3－1 File group

4－3－1－1 New

Make a new file.



1. Offline

Select this item to start AxTools without the ABSODEX connected.

(1) From a new file

Select the desired driver type.

The selectable driver types are [TS type], [TH type], [MU type] , [XS type] and [Other type].

To use [S type] driver, select [Other type].

(2) By opening a file

Open the specified file and start AxTools.

2. Online

Select this item to start AxTools with the ABSODEX connected. The driver type is recognized automatically.

[Communication port selection] lists COM port numbers that can be specified.

The selected COM port number is used for the connection.

※To use automatic recognition, select [Online].

4－3－1－2 Open

Open the saved file.
Only files with the [.axa] [.axw] [.axs] [.axf] [.axi] [txt] extension can be opened.

※About the file extension

The standard file format for AxTools is [.axa] for Ver. 2.00 or later.
The file format [.axa] is different from the former version. Files are not divided by functions, and the functions are integrated into one file. The [.axa] format files cannot be opened with AxTools of Ver. 1.51 or earlier.

When a former-format file, which is [.axw], [.axs], [.axf], or [.axi], is opened with Ver. 2.00 or later, each initial value is applied to information in files that correspond to the specified functions.

※About the extension [.txt]

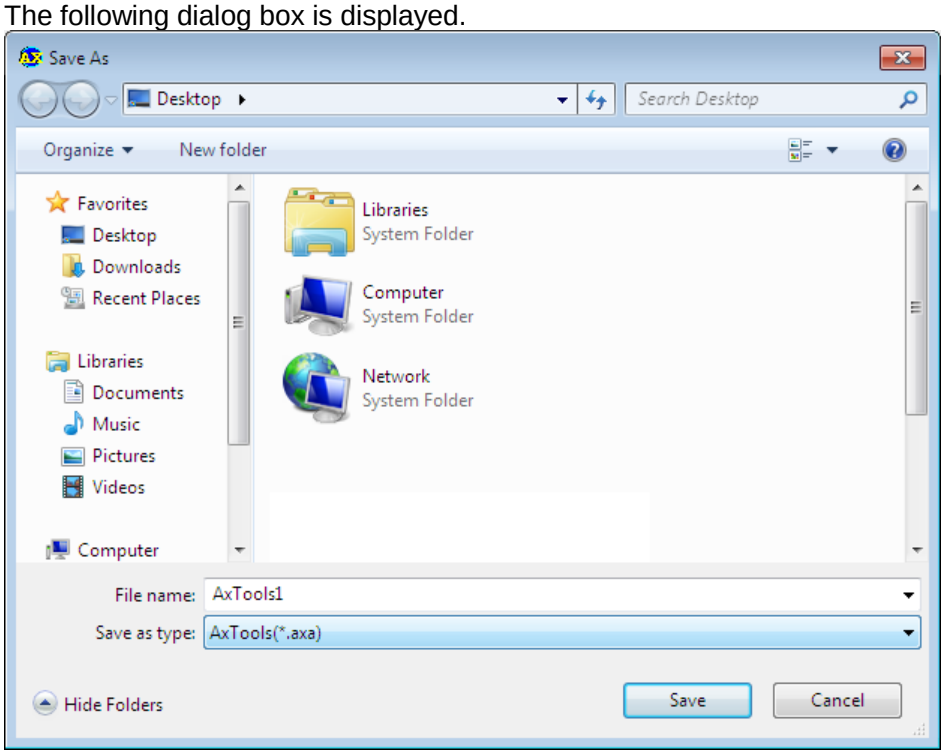
This is the file format of the file that the information of the NC program data is saved.
This file format is supported in Ver. 2.10 or later.
The character code form is ANSI (Shift_JIS).

4－3－1－3 Save

Save file to be editing in address.
For a newly created file, the [Save as] dialog box is displayed.

4－3－1－4 Save As

Save a file that is being edited with a name. The default extension is [.axa].
The following dialog box is displayed.



Enter the file name, and click the [Save] button.
You can select the following extensions: [.axa], [.axw], [.axs], [.axf], [.axi], and [txt].

※About the file extension

The standard extension is [.axa].
A file in the [.axa] format contains the information of all the AxTools functions.

A file in the [.axw], [.axs], [.axf], or [.axi] format contains information of the function corresponding to the selected extension only.

※About the extension [.txt]

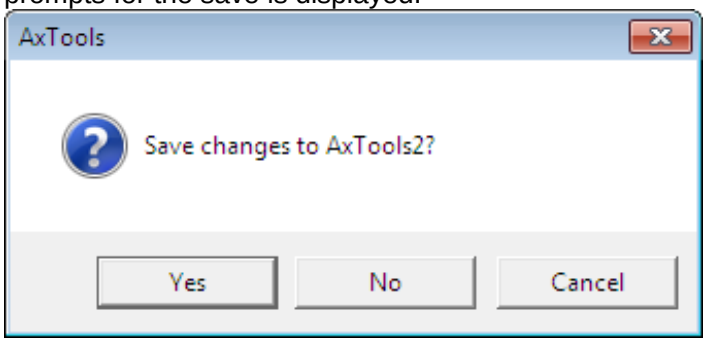
Use this extension to save the NC program data.
The extension [.txt] can be specified only on the [Edit] tab.
The NC program data is saved only if it is saved on the [Edit] tab.

※If the NC program data is saved using the extension [.axa] after AI Gain adjustment, the information that the AI Gain adjustment result is incorporated id saved.

4－3－1－5 Exit

End AxTools.

When save of file to be editing isn't done, follow the indication as the DIALOG which prompts for the save is displayed.



When the [Yes] button is selected, AxTools is exited after the file is saved.

When the [No] button is selected, AxTools is exited without saving the file.

4－3－1－6 Recent File

Display recently-used files.

4－3－2 Window group

4－3－2－1 Status bar

The status bar can be shown or hidden by selecting or deselecting the [Status Bar] check box.

4－3－2－2 Align

This is a standard function of Windows®.

Use this command to rearrange the windows.

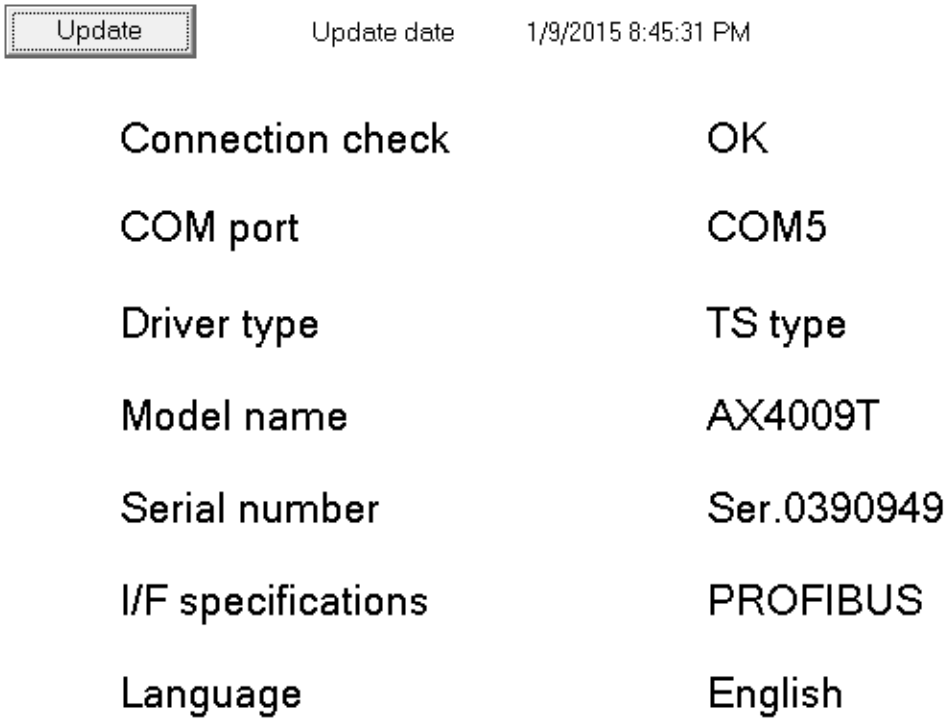
Section 5　Setting

5－1 Overview of the [Set] tab

In this tab, you can set the basic setting of AxTools.

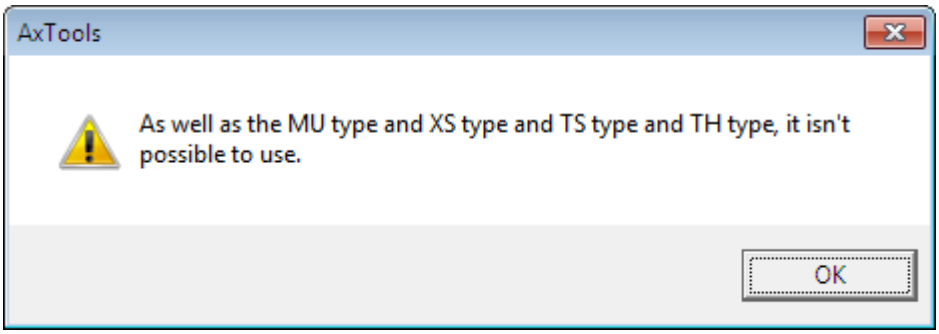
5－2 View of the [Set] tab

Selecting the [Set] tab displays the following view.
Click the [Update] button to update the information.



5－2－1 Update

Click the [Update] button to update the items in the following sections.
However, when the TS, TH, MU, or XS type is connected, the setting values of the items other than [Language] are updated.
Also, when a type other than the TS, TH, MU, or XS type is connected, the following dialog box is displayed and [-] is displayed for [I/F specifications]. The other items are not updated.



5－2－1－1 Update date

The update date when the information is updated is displayed.

5－2－1－2 Connection check

The connection condition with the ABSODEX is displayed. When the connection is established, [OK] is displayed. When the connection is not established, [-] is displayed.

5－2－1－3 COM ports

The COM port being connected is displayed. When the ABSODEX is not connected, [-] is displayed.

5－2－1－4 Driver types

The driver type of the ABSODEX being connected is displayed. When the ABSODEX is not connected, [-] is displayed.

5－2－1－5 Model name

The model name of the ABSODEX being connected is displayed. When the ABSODEX is not connected, [-] is displayed.

5－2－1－6 Serial number

The serial number of the ABSODEX being connected is displayed. When the ABSODEX is not connected, [-] is displayed.

5－2－1－7 I/F specifications

The I/F specifications of the ABSODEX being connected is displayed.

Any of the following items is displayed based on the communication interface specifications.

Parallel I/O (NPN)
Parallel I/O (PNP)
CC-Link
PROFIBUS
DeviceNet
EtherCAT
EtherNet/IP

For the interface other than the above, [N/A] is displayed. When the ABSODEX is not connected, [-] is displayed.

5－2－1－8 Language

The language selected in the [Select Language] dialog box is displayed.

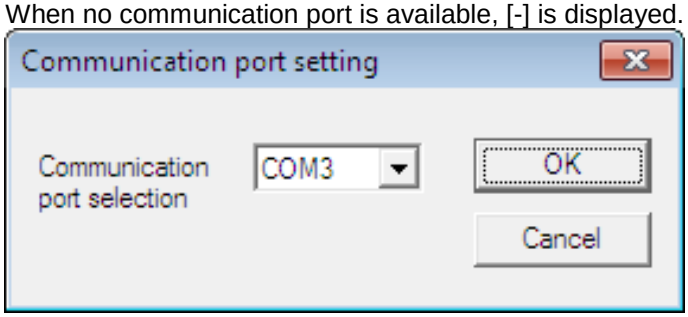
5－3 List of functions in the [Set] tab

Group name	Command name	Description	Section number
communications port	Setting	Set the communication port.	5－3－1－1
	Connect	Open the communication port.	5－3－1－2
	Disconnect	Close the communication port.	5－3－1－3
Field Bus	Field Bus setting	Configure the Field Bus setting.	5－3－2－1
	Select language	Select the language used in AxTools.	5－3－3
	ABSODEX information	Displays the information of ABSODEX.	5－3－4

5－3－1 Communication port group

5－3－1－1 Setting

Use this command to set the communication port. As the communication port, the COM port defined in the system can be specified.
When no communication port is available, [-] is displayed. The following dialog box is displayed.



Select a communication port, and click the [OK] button.
The selected communication port needs to be opened.

5－3－1－2 Connect

Use this command to open the communication port to enable the communication with the ABSODEX.
If the communication port is not opened, the communication with the ABSODEX is disabled.

5－3－1－3 Disconnect

Use this command to close the communication port to disconnect the communication with the ABSODEX.
If the communication port is closed, the communication with the ABSODEX is disabled.

5－3－2 Field bus group

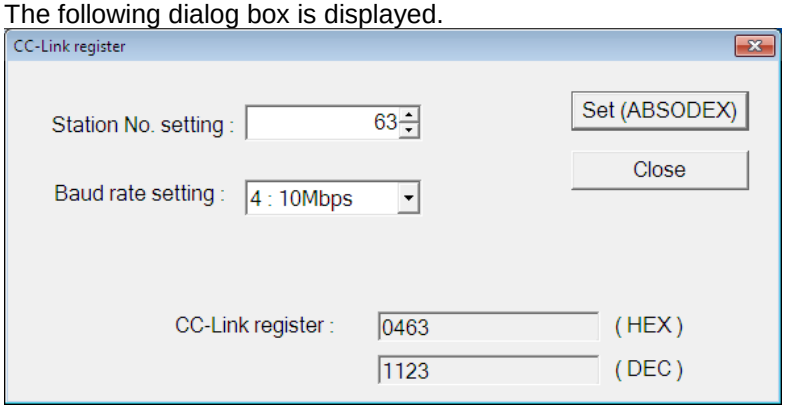
5－3－2－1 Field Bus setting

This is available only when communication with ABSODEX is enabled.
The corresponding serial communication setting is available for selection once the ABSODEX model is identified.
For details, refer to the driver instruction manual, as appropriate.

5－3－2－1－1 CC-Link setting

Use this command to set the station number of the serial communication CC-Link setting and other related settings.

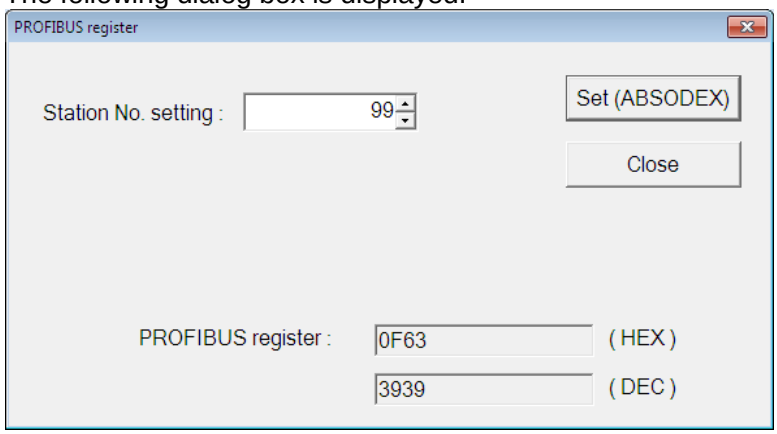
The following dialog box is displayed.



5－3－2－1－2 PROFIBUS_DP setting

Use this command to set the station number of the serial communication PROFIBUS_DP setting and other related settings.

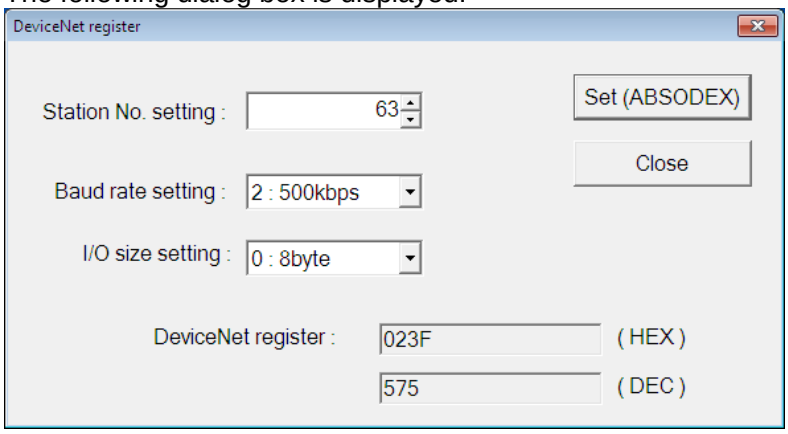
The following dialog box is displayed.



5－3－2－1－3 DeviceNet setting

Use this command to set the station number of the serial communication DeviceNet setting and other related settings.

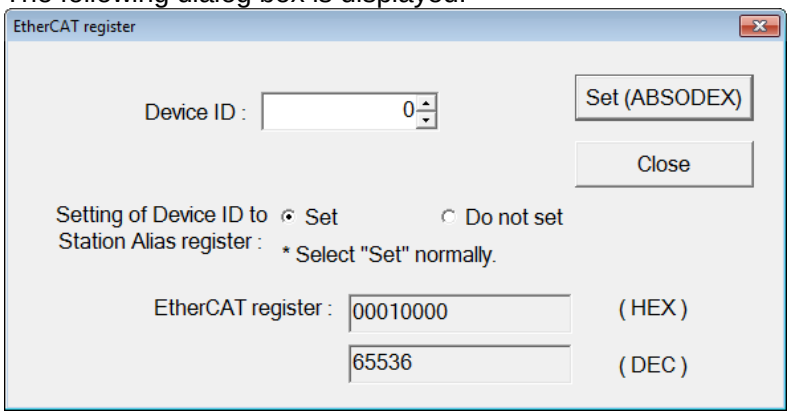
The following dialog box is displayed.



5－3－2－1－4 EtherCAT setting

Use this command to set the Device ID of the serial communication EtherCAT setting and other related settings.

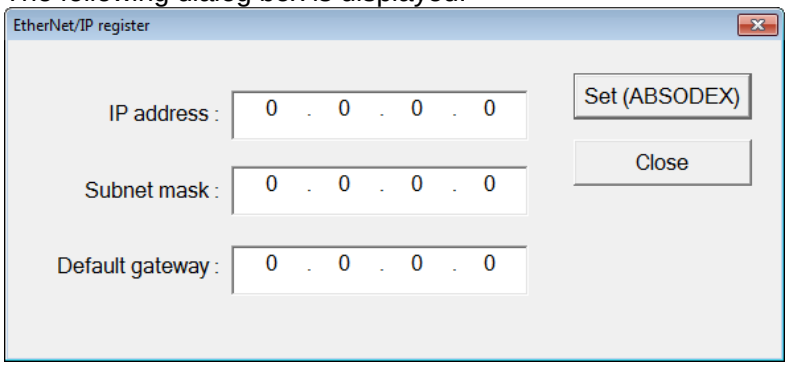
The following dialog box is displayed.



5－3－2－1－5 EtherNet/IP setting

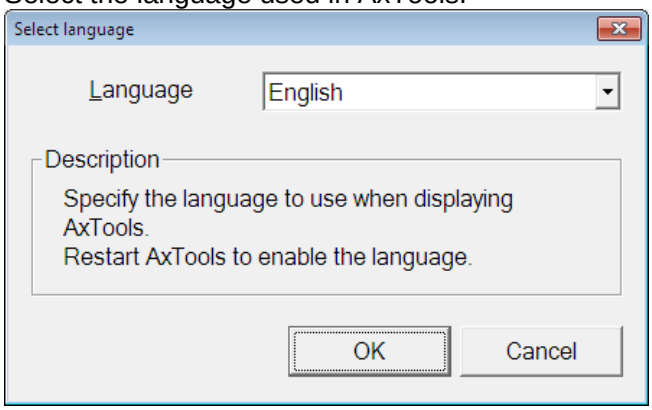
Use this command to set the IP address of the serial communication EtherNet/IP setting and other related settings.

The following dialog box is displayed.



5－3－3 Select language

Select the language used in AxTools.



Select the language to be used from the [LANGUAGE] list.

Clicking the [OK] button sets the language selected in the [Language] list.

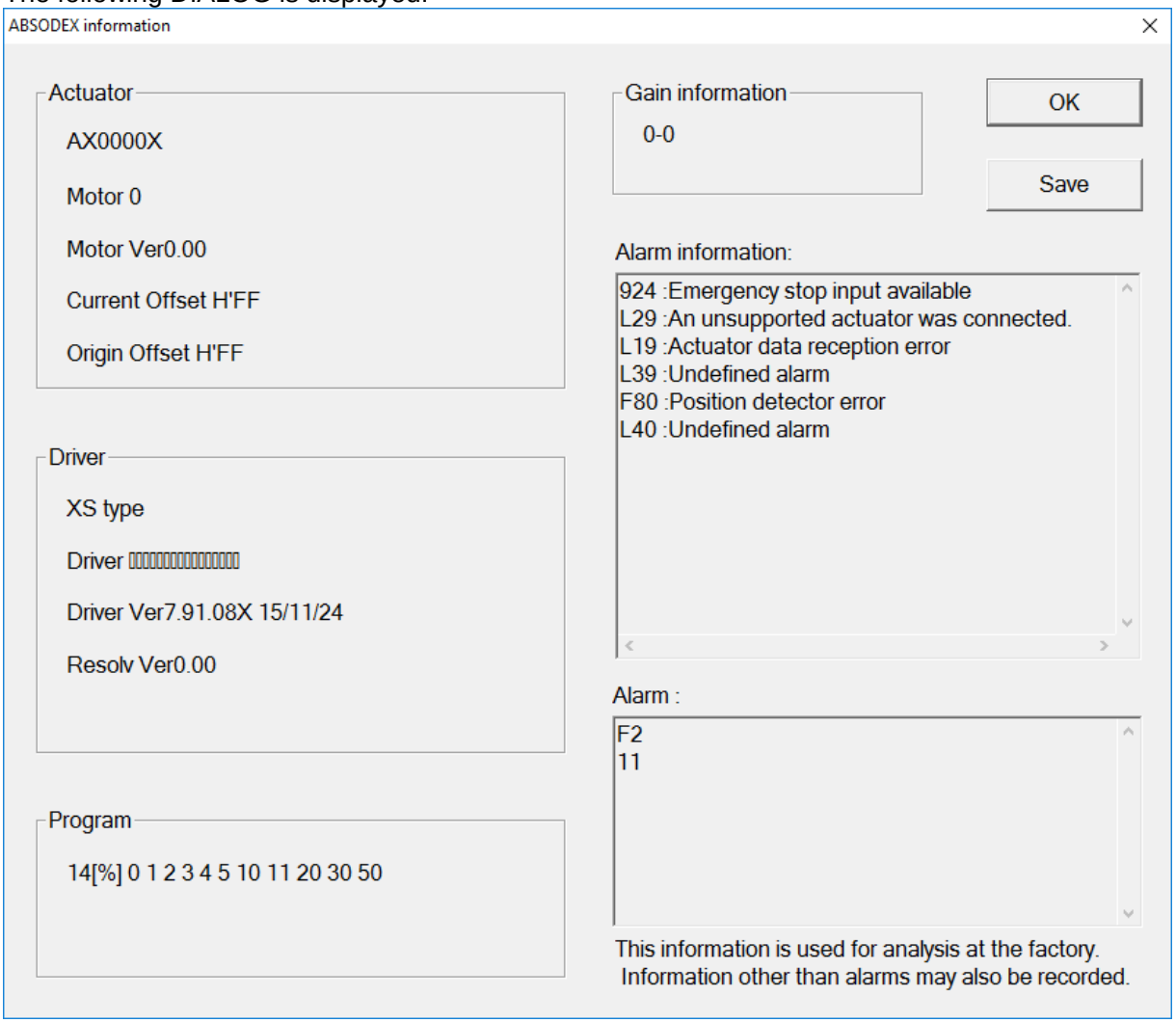
The selected language is enabled after you restart AxTools.

Click the [Cancel] button to cancel the language change.

5－3－4 ABSODEX information

Displays the information of ABSODEX.

The following DIALOG is displayed.



The contents with each items of ABSODEX are as follows.

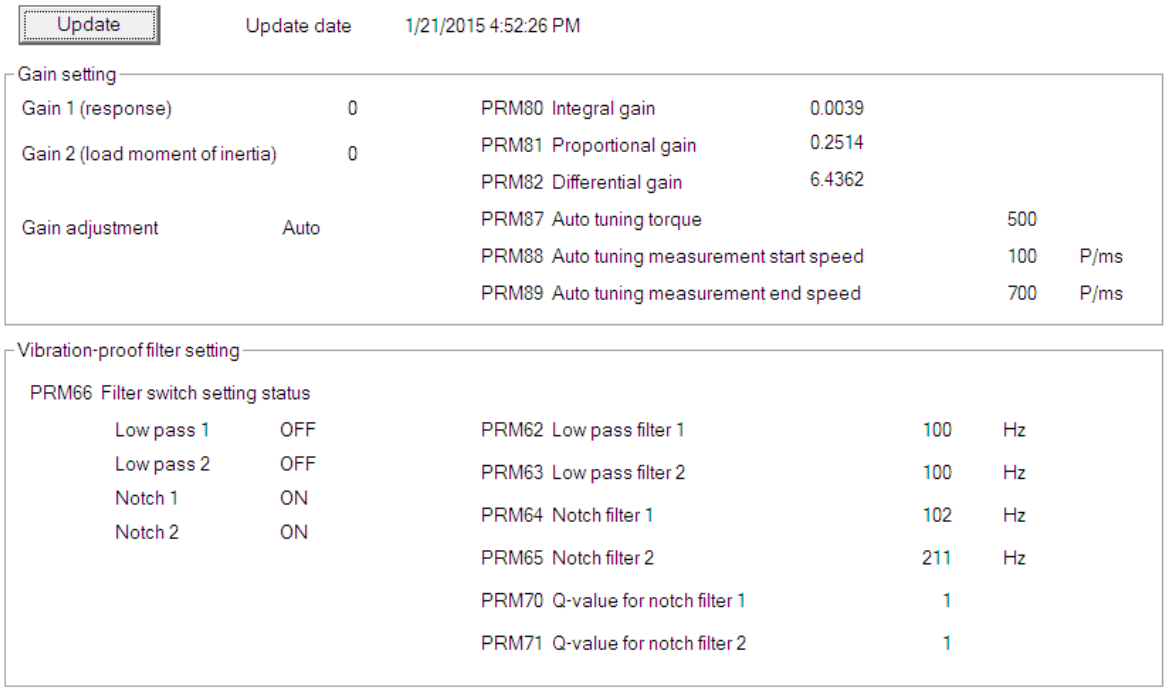
1. Actuator
   Displays the serial number and model of Actuator.
2. Driver
   Displays the serial number and type of Driver.
3. Program
   Displays the program number which is registered in ABSODEX.
4. Gain information
   Displays the Gain 1 and Gain 2 settings for the actuator.
5. Alarm information
   Displays the current alarm status.
6. Alarm
   Displays the history of important alarms that occurred in the past.
7. Save
   Saves ABSODEX information in a file.
   The information can be checked using a text editor or the like since it is saved as plain text.

Section 6　Tuning

6－1 Overview of the [Tuning] tab

In this tab, you can adjust the gain and vibration-proof filter of the ABSODEX.

6－2 Default view display of the [Tuning] tab



The settings related to the gain and vibration-proof filter of the ABSODEX are displayed.
Click the [Update] button to display the setting of the ABSODEX being connected.

(1) Gain setting

Gain adjustment

When all the values of PRM80 to 82 are 0

[Gain adjustment　Unadjusted] is displayed.

When the gain switch is set to a value other than "00" or "80"

[Gain adjustment　Manual] is displayed.

When the gain switch is set to "00" and at least one of PRM80 to 82 is set to a value other than "0"

[Gain adjustment　Auto] is displayed.

(2) Vibration-proof filter setting

Vibration-proof filter

When PRM62 to 65, PRM70, and 71 are set to the default values

[Vibration-proof filter　Unadjusted] is displayed.

When any of PRM62 to 65, PRM70, and 71 is not set to the default value

[Vibration-proof filter] is not displayed.

※Default value

PRM62

200 (100 for large models)

PRM63、PRM64、PRM65

500

PRM70、71

1

6－3 List of functions in the [Tuning] tab

Group name	Command name	Description	Section number
Gain Adjustment	AI Gain	Adjust the servo gain.	6－3－1－1
	Point table display	Display the result of the AI gain adjustment.	6－3－1－2
	Tuning	Execute tuning.	6－3－1－3
Vibration-proof filter adjustment	AI filter adjustment	Apply the digital filter automatically.	6－3－2－1
	Manual adjustment	Apply the digital filter manually.	6－3－2－2
ABSODEX control	Servo On-Off	Switch the servo On-Off status.	6－3－3－1
	Test drive	Set the test drive setting.	6－3－3－2
	Alarm reset	Reset alarm.	6－3－3－3
	ABSODEX initialization	Initialize the ABSODEX.	6－3－3－4
Display switching	AX setting	Switch the view to the default.	6－3－4－1
	Gain	Switch the view to the velocity waveform view.	6－3－4－2
	Vibration-proof filter adjustment	Switch the view to the frequency waveform view.	6－3－4－3

6－3－1 Gain group

With this group, you can adjust the servo gain of the ABSODEX.

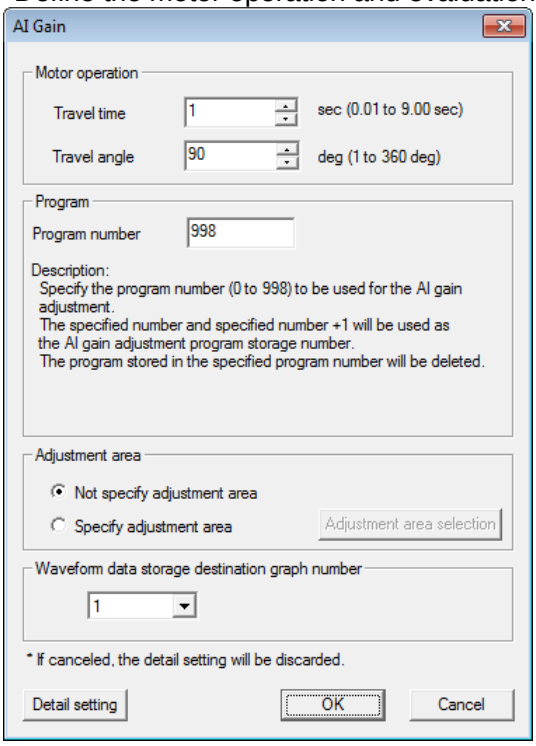
6－3－1－1 AI Gain

Use this command to adjust the servo gain automatically.
The motor is operated, and the proper PID parameter is set based on the operation result.
This command can be used with the TS, TH, MU, and XS type drivers.
Select the [AI Gain] command from the ribbon menu.

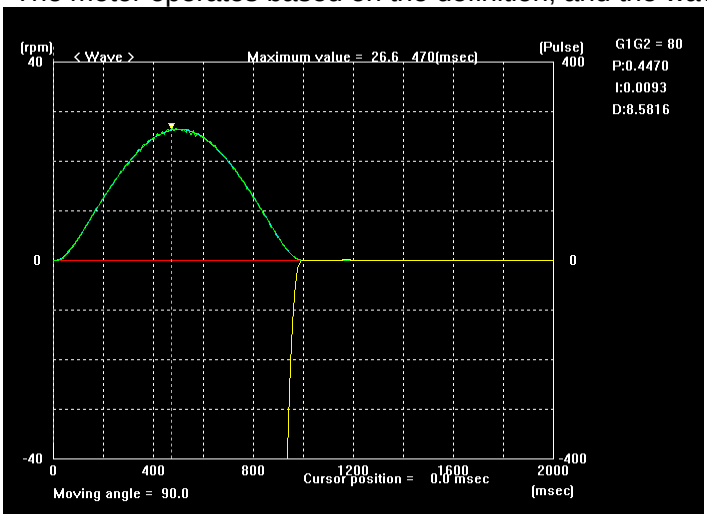
6－3－1－1－1 Overview of the AI gain adjustment

The motor is operated while G1 and G2 are changed, and the waveform acquired is evaluated. Based on the multiple waveforms acquired, the proper setting value of the PID gain parameter is determined.

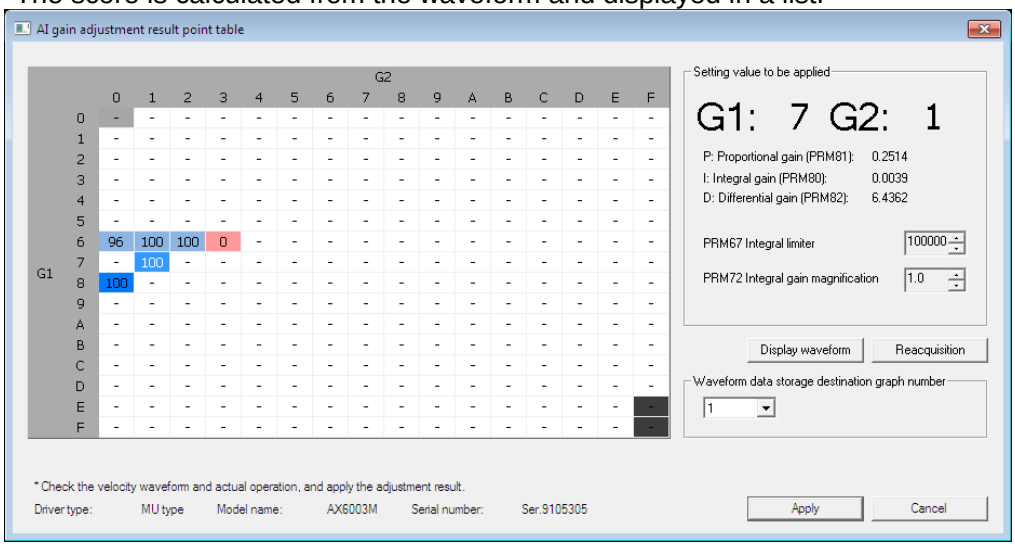
(1) Define the motor operation and evaluation method in the following dialog box.



(2) The motor operates based on the definition, and the waveform is acquired.



(3) The score is calculated from the waveform and displayed in a list.



You can select any result from the list.
Selecting a high-scored result applies the proper PID parameter setting to the ABSODEX.

CAUTION

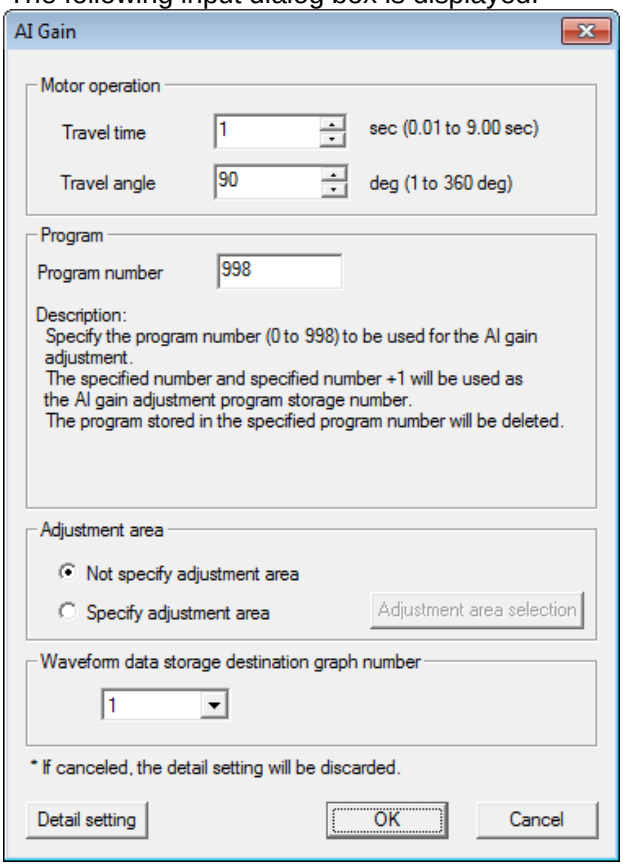
During the AI gain adjustment, the parameters are rewritten.
For an abnormal end or an end with an error message, cycle the power of the ABSODEX.

For a normal end, cycle the power of the ABSODEX to apply the parameter setting.

If the AI gain adjustment is performed, the result of the auto tuning is deleted.

6－3－1－1－2 [AI Gain] dialog box

The following input dialog box is displayed.



1. Motor operation
   Set the motor travel time and travel angle at the AI gain adjustment.
   An NC program for the AI gain adjustment with the specified travel time and travel angle is created automatically.

2. Program number
   Specify the storage-destination program number of the NC program created with the travel time and travel angle specified in [Motor operation].
   For the AI gain adjustment, two program numbers are used: the specified program number and the specified number + 1.
   Example)
   When [998] is specified in [Program number], [998] and [999] are used.

   If an NC program is already stored in the specified number, the NC program is overwritten with the NC program for the AI gain adjustment.
   After the AI gain adjustment is completed, the stored NC program for the AI gain adjustment is deleted.

3. Adjustment area
   Select [Specify adjustment area] or [Not specify adjustment area] while AI Gain adjustment is running.
   • When [Not specify adjustment area] is selected,
   the adjustment area range is not specified.
   AI Gain adjustment is executed with the execution mode specified in the [Detail setting] dialog box.

• When [Specify adjustment area] is selected,
click the [Select adjustment area] button to specify the adjustment area range.
AI Gain adjustment is executed only for the adjustment area specified in the [AI Gain adjustment area selection] dialog box.
For the details of the [AI Gain adjustment area selection] dialog box. refer to "6－3－1－1－6 AI Gain adjustment area selection dialog box".

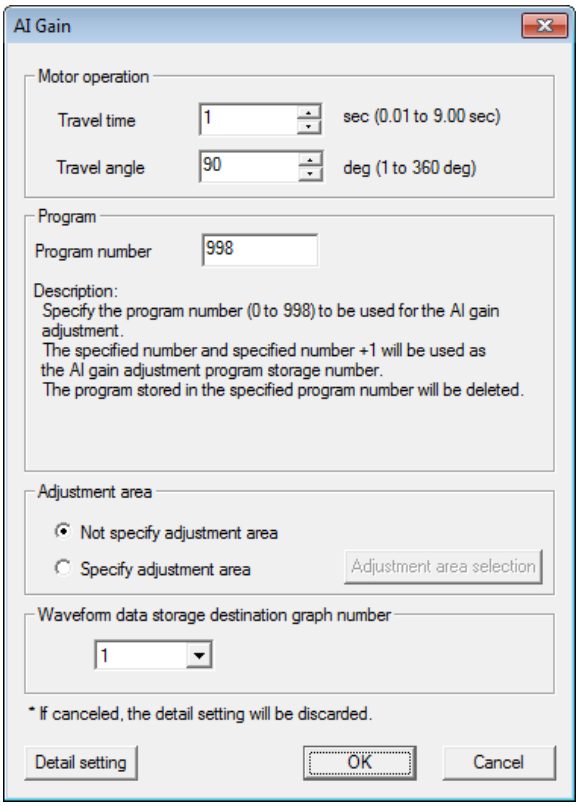
4. Waveform data storage destination graph number
Specify the graph-storage destination number after the AI filter adjustment completion.

5. Detail setting
Clicking this button displays the [Detail setting] dialog box for the AI gain adjustment.

6. OK
Clicking this button starts the AI gain adjustment.
※Confirm that the CN3 connector is not connected.

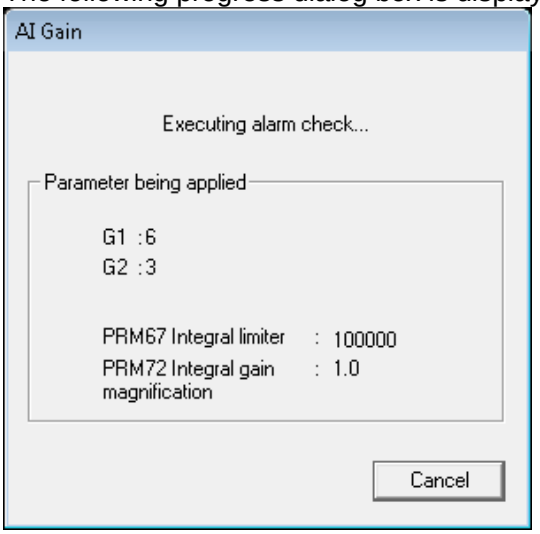
7. Cancel
Clicking this button cancels the execution of the AI gain adjustment.

6－3－1－1－3 Executing the AI gain adjustment



Click the [OK] button to display the dialog box for the execution confirmation. Click again the [OK] button, and the AI gain adjustment is started.

The following progress dialog box is displayed during the AI gain adjustment.



1. Parameter being applied

   The currently applied setting values of the parameters are displayed.

   (1) G1: The currently applied G1 value is displayed.

   (2) G2: The currently applied G2 value is displayed.

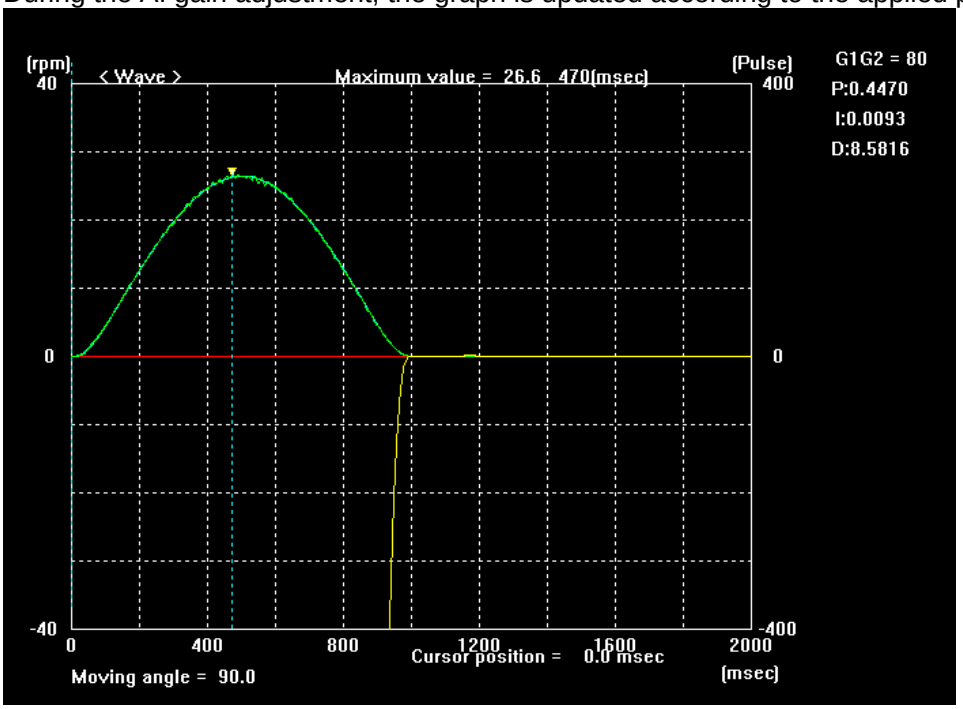
   (3) PRM67 Integral limiter: The currently applied setting value of PRM67 is displayed.

   (4) PRM72 Integral gain: The currently applied setting value of PRM72 is displayed.

   (5) Cancel

   Clicking this button cancels the execution of the AI gain adjustment. The settings are discarded and the status before the adjustment is restored.

During the AI gain adjustment, the graph is updated according to the applied parameters.



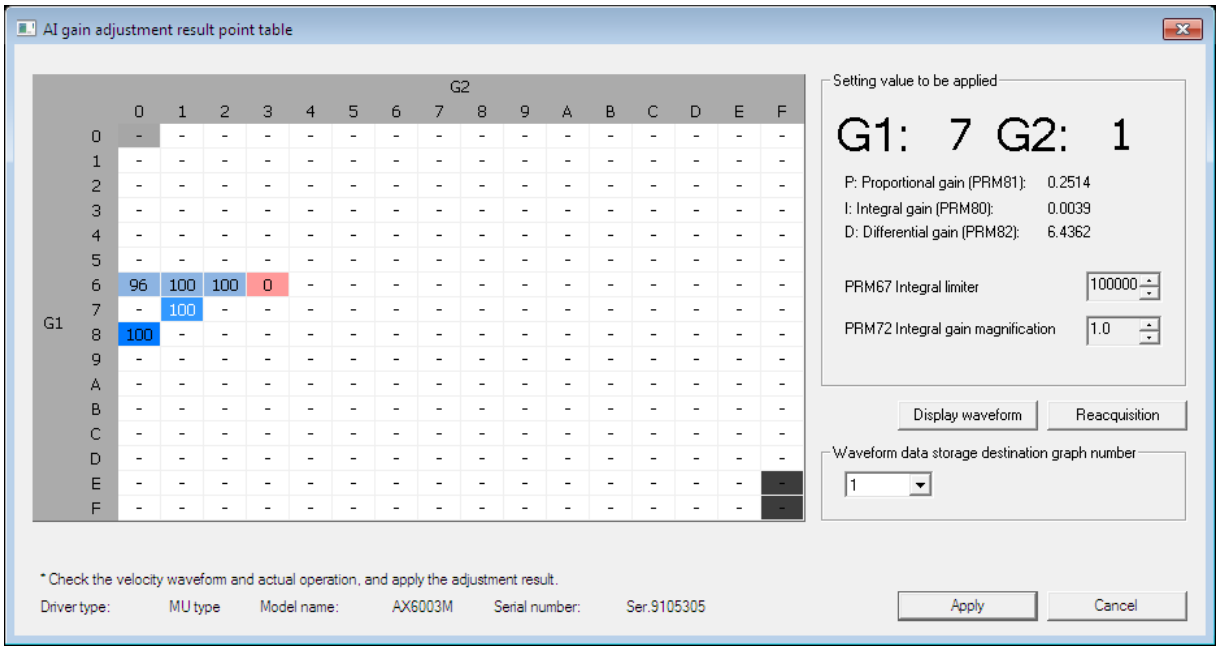
The displayed graph displays the G1 value, G2 value, and PID gain parameter value applied.

6－3－1－1－4 Ending the AI gain adjustment

When the AI gain adjustment is completed, the [AI gain adjustment result point table] dialog box is displayed and this dialog box indicates the adjustment result.

Select the PID gain parameter to be applied to the ABSODEX based on the displayed result.

You can also acquire waveforms on undefined spots and acquire again waveforms on the defined spots.



Click the [Apply] button to apply the setting displayed in [Setting value to be applied] to the ABSODEX.

For details of the [AI gain adjustment result point table] dialog box, refer to "6－3－1－2 Point table display".

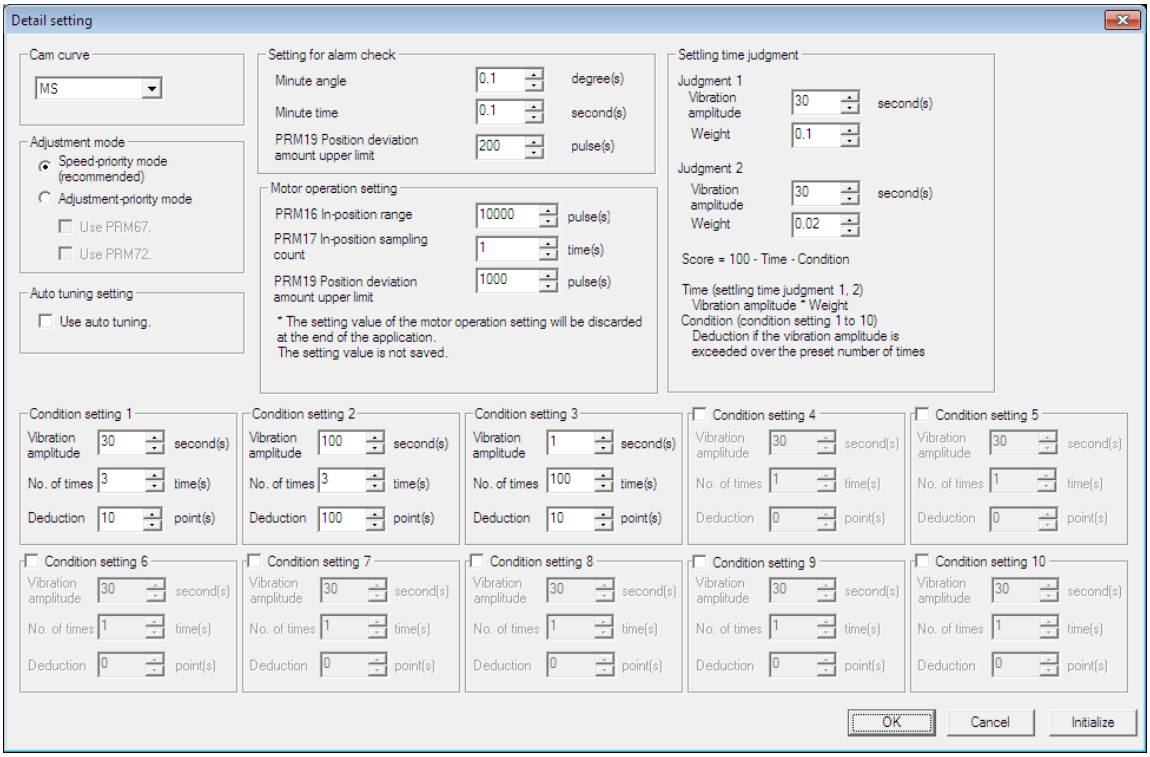
CAUTION

The PID gain parameter corresponding to the G1 value and G2 value of the manual gain setting is applied.
PRM80 to PRM81 are enabled only when the gain switch is 00.
The applied parameter is enabled after the power of the ABSODEX is cycled.

6－3－1－1－5 [Detail setting] dialog box

Use this dialog box only to change the adjustment mode or judgment condition.

Clicking the [Detail setting] button in the [AI Gain] dialog box displays the following input dialog box.



1. Cam curve

Select a cum curve to be applied during the AI gain adjustment.

MS, MT, and TR can be selected.

After the AI gain adjustment is completed, the setting value of the applied cum curve is discarded and the setting value of the ABSODEX before the adjustment is restored.

The setting in the [Detail setting] window is saved. The previous setting is displayed at the next application start.

2. Adjustment mode

Select an execution mode of the AI gain adjustment.

The setting in the [Detail setting] window is saved. The previous setting is displayed at the next application start.

(1) Speed-priority mode (recommended)

The speed of the adjustment time is prioritized, and the AI gain adjustment is executed.

The time required for the adjustment is reduced.

(2) Adjustment-priority mode

The number of searching times is increased, and the AI gain adjustment is executed.

The time required for the adjustment is increased.

(2-1) Use PRM67.

When this item is selected, the value of PRM67 Integral limiter is changed during the adjustment.

(2-2) Use PRM72.

When this item is selected, the value of PRM72 Integral gain magnification is changed during the adjustment.

(2-3) When neither of them is selected

When neither [Use PRM67.] nor [Use PRM72.] is selected, the adjustment is executed with the preset fixed values of PRM67 and 72.

3. Auto tuning setting

When [Use auto tuning.] is selected, the auto tuning is executed before the adjustment. Based on the result of the auto tuning, the G1 value and G2 value with which the AI gain adjustment is started are determined.
The setting in the [Detail setting] window is saved. The previous setting is displayed at the next application start.

The auto tuning function can be used with the TS, MU, and XS type drivers.
The function cannot be used with the TH type driver.

4. Setting for alarm check

Set a setting for the alarm check during the AI gain adjustment.
An NC program for the alarm check with the specified minute time and minute angle is created automatically.
If PRM19 Position deviation amount upper limit is exceeded while the above NC program is executed, waveforms are not acquired.

After the AI gain adjustment is completed, the NC program created is deleted.
After the AI gain adjustment is completed, the setting value of applied PRM19 is discarded and the setting value of the ABSODEX before the adjustment is restored.
The setting in the [Detail setting] window will be discarded at the end of the application. The default value is displayed at the next application start.

5. Motor operation setting

Specify the parameter setting value to be used for the AI gain adjustment.
The specified setting value is stored in the ABSODEX and used during the AI gain adjustment.
After the AI gain adjustment is completed, the setting value of each parameter is discarded and the setting value of the ABSODEX before the adjustment is restored.
The setting in the [Detail setting] window will be discarded at the end of the application. The default value is displayed at the next application start.

6. Settling time judgment

Specify the score reduction method for the settling time, which is the time required for the settlement.
Specify two judgment conditions: [Judgment 1] and [Judgment 2].
The setting in the [Detail setting] window is saved. The previous setting is displayed at the next application start.

(1) Vibration amplitude

Settling time until the vibration falls within the specified vibration amplitude.

(2) Weight

Coefficient multiplied with the settling time specified in (1)

Example)

When the settling time is 100 msec and the weight is 0.1

[10 = 100 ∗ 0.1]

Ten points are deducted.

7. Condition setting 1 to 10

Specify the score reduction method of the score calculation method.

The setting in the [Detail setting] window is saved. The previous setting is displayed at the next application start.

(1) Vibration amplitude and No. of times

Specify the vibration amplitude and number of times that are regarded as vibration. If the set vibration amplitude and the set number of times are exceeded, the score is reduced.

(2) Deduction

Specify the deduction point applied when the condition specified in (1) is satisfied.

Calculation method of the score

The score is calculated based on the point deduction system from 100.

[Score = 100 - Deduction point calculated from settling time judgment - Deduction point calculated from condition setting]

8. OK

Clicking this button confirms the setting and returns the screen to the [AI Gain] dialog box.

9. Cancel

Clicking this button discards the setting and returns the screen to the [AI Gain] dialog box.

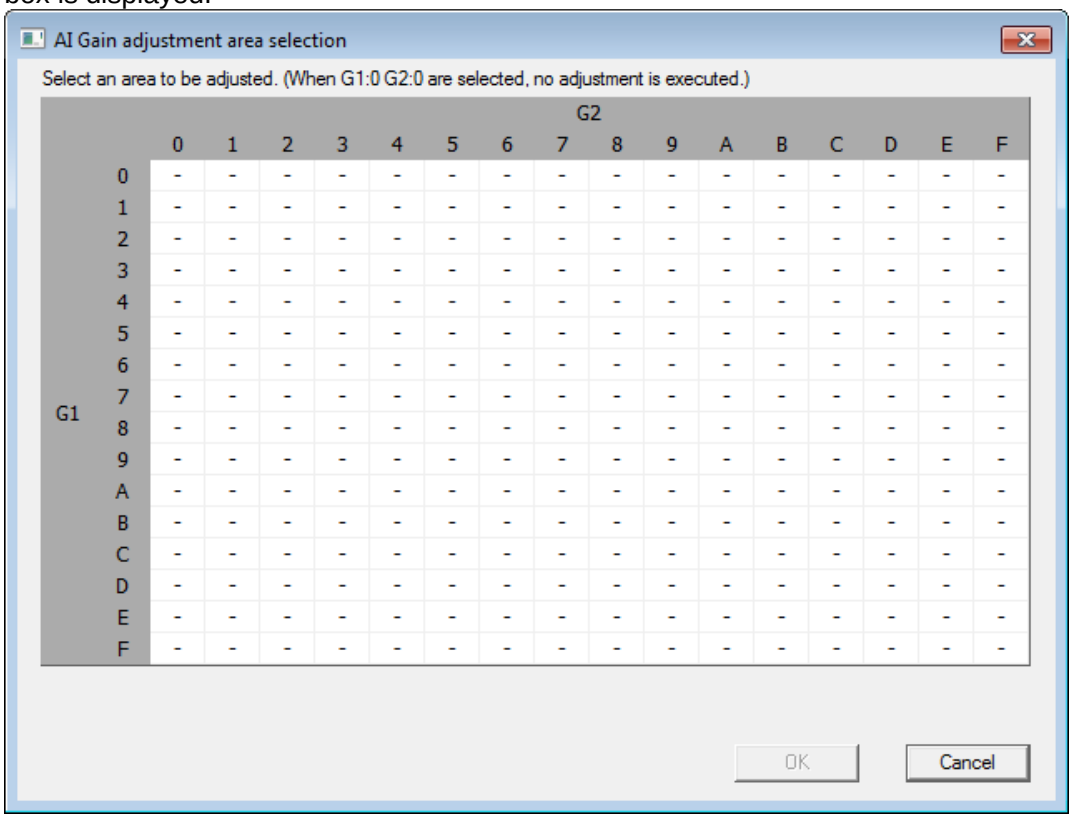
10. Initialize

Clicking this button restores the default values of the [Detail setting] dialog box.

6－3－1－1－6 AI Gain adjustment area selection dialog box

Use this dialog box only to specify the adjustment area.

Click the [Select adjustment area] button in the [AI Gain adjustment] dialog box. The following dialog box is displayed.



1. Adjustment area selection table

   Select the area to adjust the AI Gain with the mouse or keyboard.

   ※ G1G2=00 can be selected but this area is excluded from the adjustment target at AI Gain adjustment.

   (1) Selection with the mouse

   Select the area to be adjusted by clicking the left mouse button.
   Multiple areas can be selected by the drag & drop operation of the mouse.
   With the [Ctrl] key, a separated area can be selected or cancelled.

   (2) Selection with the keyboard

   With the keyboard, only the adjustment area specification can be executed.
   Press the [Tab] key and move the focus to the adjustment area selection table.
   Select the area to be adjusted with the arrow keys.
   Multiple areas can be selected with the [Shift] key + the arrow keys.

2. OK

   Reserve the selected areas and return to the [AI Gain adjustment] dialog box.

   ※ This command is valid only when one or more areas other than G1G2=0 are selected in the adjustment area selection table.

   ※ The period reserving the selected areas is valid only while the application is activated. When the application is ended, the information of selected areas is discarded.

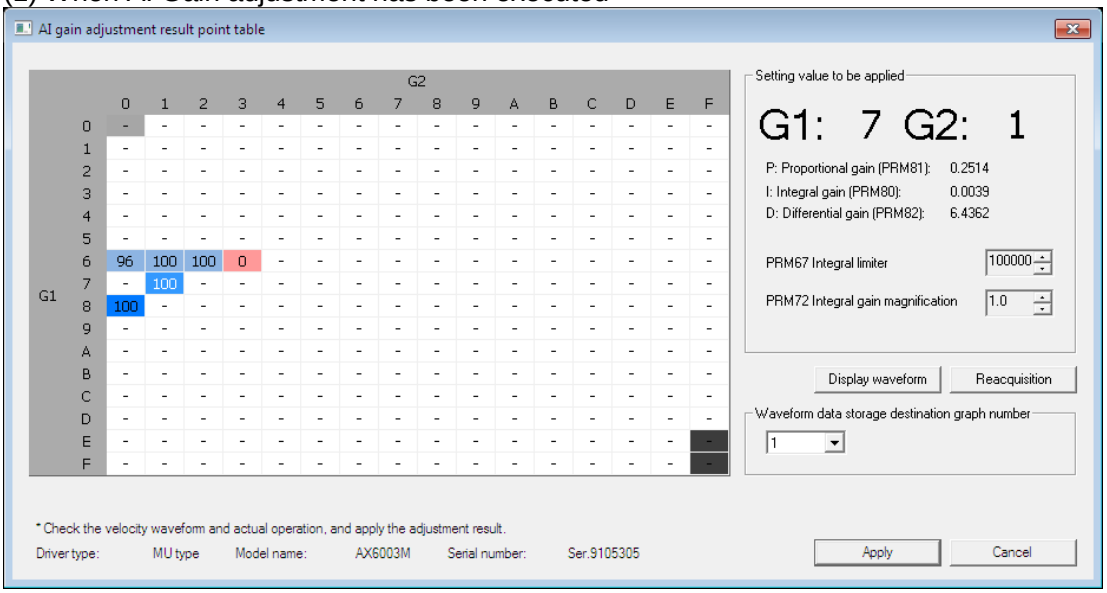
3. Cancel

   Return the selected area to the state before the dialog box is displayed and return to the [AI Gain adjustment] dialog box.

6－3－1－2 Point table display

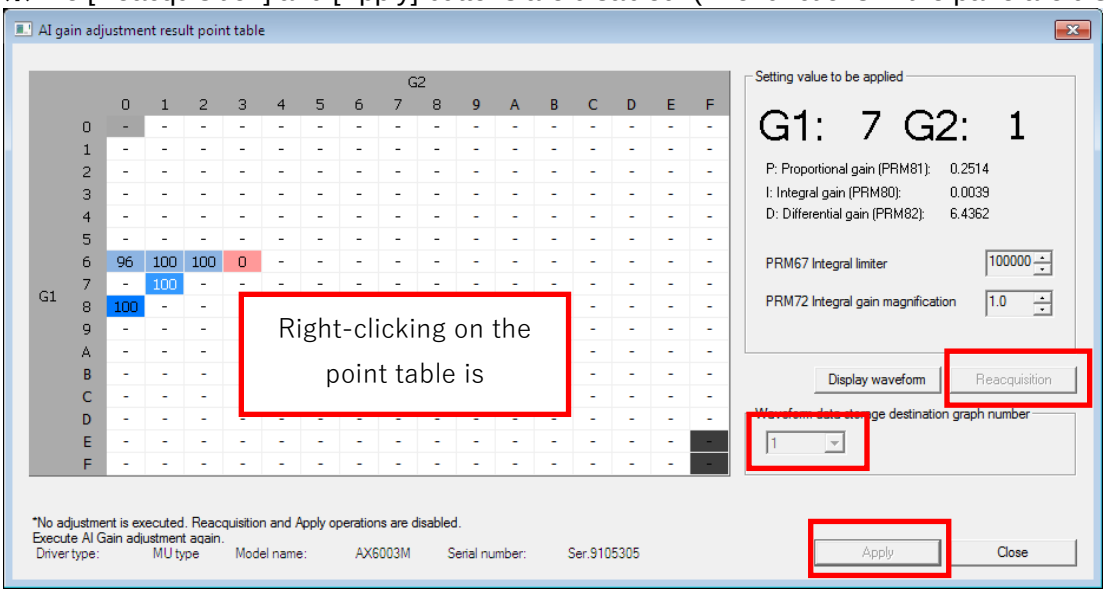
A dialog box with available different function is displayed in accordance with the execution status of AI Gain adjustment as follows:

(1) When AI Gain adjustment has been executed

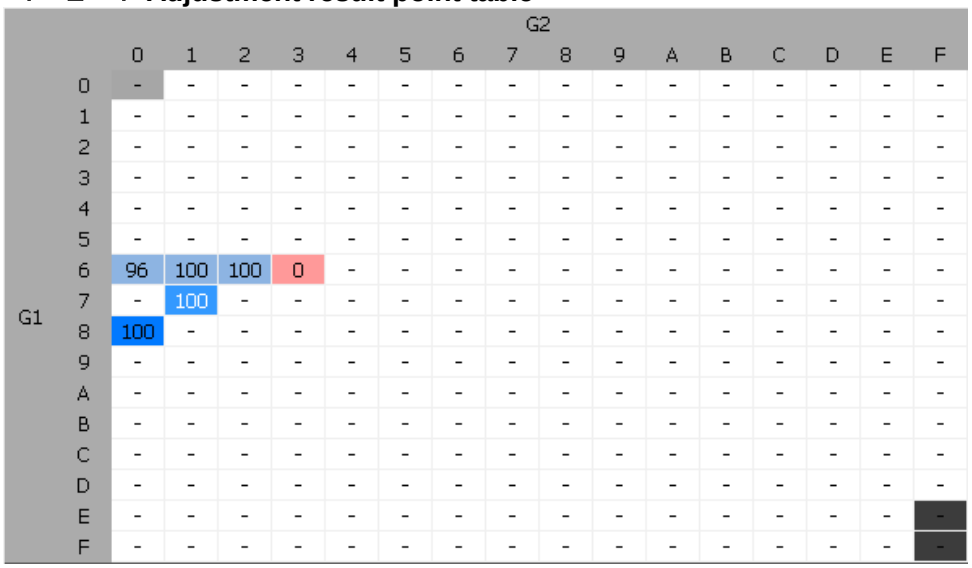


(2) When the file saving the AI Gain adjustment execution result (extension [.axa]) is opened

※The [Reacquisition] and [Apply] buttons are disabled. (The functions in the pane are disabled.)



6－3－1－2－1 Adjustment result point table



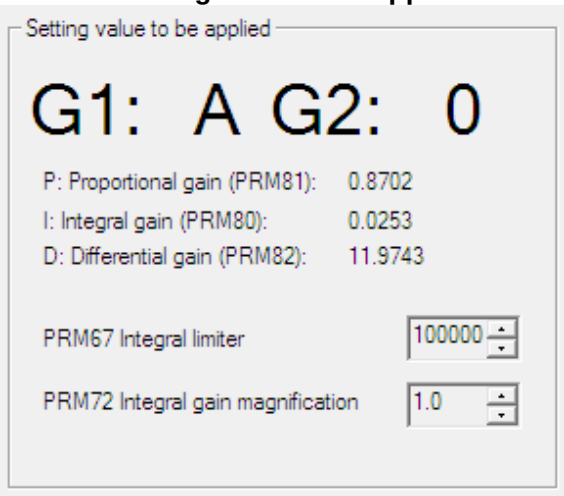
G1 \ G2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	96	100	100	0	-	-	-	-	-	-	-	-	-	-	-	-
7	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. Score of the AI gain adjustment result
   The score is calculated based on the motor operation with the applied parameter and the acquired waveform.
   The maximum score is 100.

   • The spot of the recommended best score is indicated in rich blue.
   • The spot for which no waveform is acquired is indicated with [-].
   • The spot outside the AI gain adjustment is indicated in dark gray.

2. Selecting cells in a table
   • The waveform graph is updated based on the result of execution with the selected G1 and G2 settings.
   • [Setting value to be applied], which is located on the right side of the window, is updated based on the selected G1 and G2 position.

6－3－1－2－2 Setting value to be applied



1. G1、G2
   The G1 value and G2 value currently selected are displayed.
   (The displayed values correspond to the G1 value and G2 value of the manual gain setting.)
2. PID parameter
   The PID parameters of G1 and G2 on the currently selected position are displayed.

3. PRM67 Integral limiter
   The setting value of PRM67 Integral limiter applied to the currently displayed adjustment result point table is displayed.
   Changing the setting value with an arrow key switches the display of the adjustment result point table.

4. PRM72 Integral gain magnification
   The setting value of PRM72 Integral gain magnification applied to the currently displayed adjustment result point table is displayed.
   Changing the setting value with an arrow key switches the display of the adjustment result point table.

6－3－1－2－3 Waveform data storage destination graph number

Clicking the [Apply] button saves the currently selected G1 and G2 graph in the specified graph storage destination number.

6－3－1－2－4 Driver type, Model name, and Serial number

The driver type, model name, and serial number at the AI gain adjustment are displayed.

6－3－1－2－5 Display waveform

Clicking this button displays the waveform display window.
(Double-clicking a cell in the table also displays the waveform display window.)

6－3－1－2－6 Reacquisition

After selecting the reacquisition-target G1 and G2, click the [Reacquisition] button.
When the [Reacquisition] button is clicked, the motor operation is executed with [Setting value to be applied] of the selected G1 and G2 and the setting at the AI gain adjustment and a waveform is acquired.
(You can also execute reacquisition by selecting a cell in the table and selecting [Reacquisition] from the right-click menu.)

6－3－1－2－7 Apply

Clicking this button applies the setting displayed in [Setting value to be applied] to the ABSODEX.

6－3－1－2－8 Cancel

Reserving the gain adjustment result, end the AI Gain adjustment function.
Clicking this button discards the gain adjustment result and ends the AI gain adjustment.
The setting displayed in [Setting value to be applied] is not applied to the ABSODEX.
※ (2) When the file saving the AI Gain adjustment execution result (extension [.axa]) is opened, the function is changed to the [Close] button.

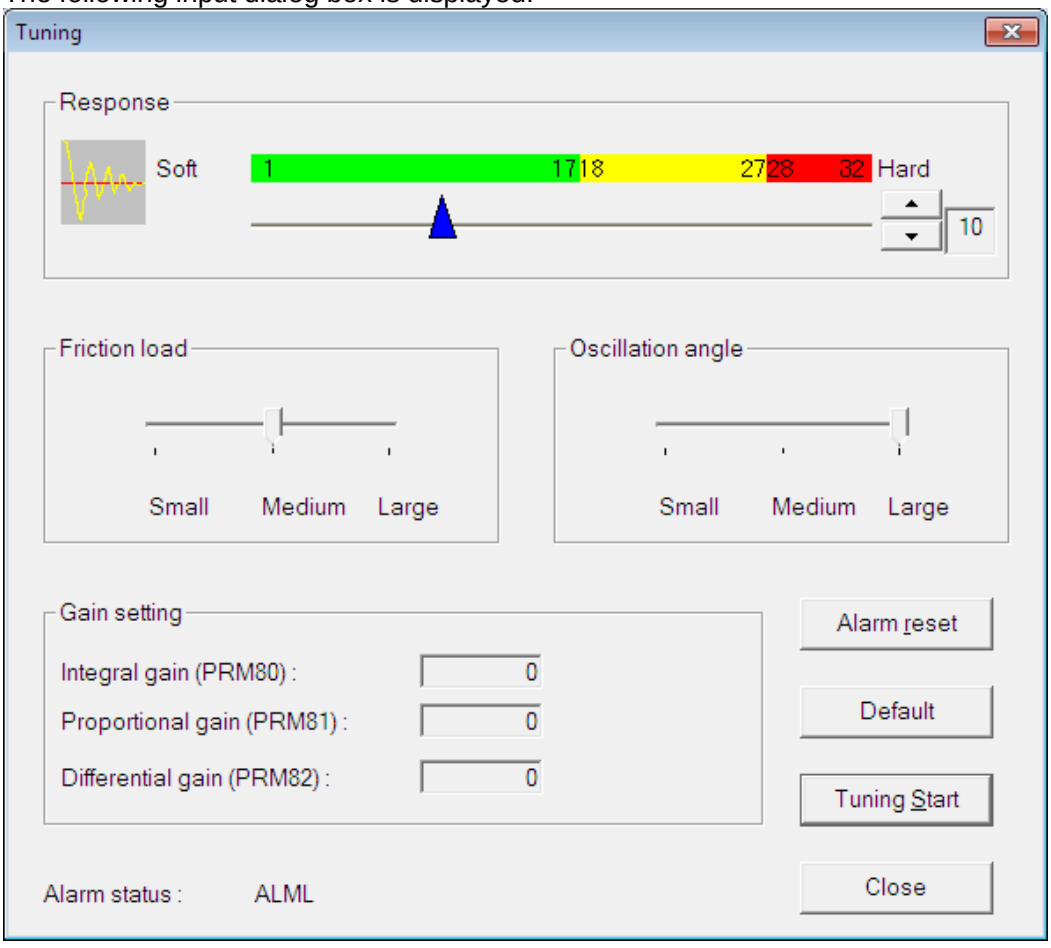
6－3－1－3 Tuning

6－3－1－3－1 Tuning

The tuning function can be used with the TS, MU, and XS type drivers.
The function cannot be used with the TH type driver.
Display a dialog box for tuning operation.
The dialog box displayed differs depending on the driver type.

(a) Dialog box for the TS and XS types

The following input dialog box is displayed.



(a)－1 Setting

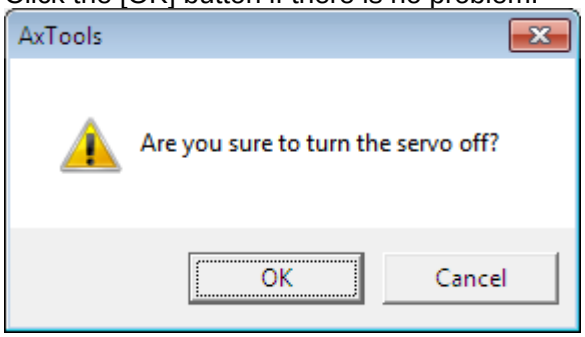
1. Response
   Adjusts the responsiveness.
   Raising the value increases the convergence when movement ends and the holding force when the actuator is stopped.
   The responsiveness value is indicated by the slider range (1-32).

The slider arrow displayed below the value range indicates the current responsiveness setting.
You can move the arrow using the up and down arrow buttons at the right end of the slider.
The value to the right of the up and down arrow buttons shows the current responsiveness setting.

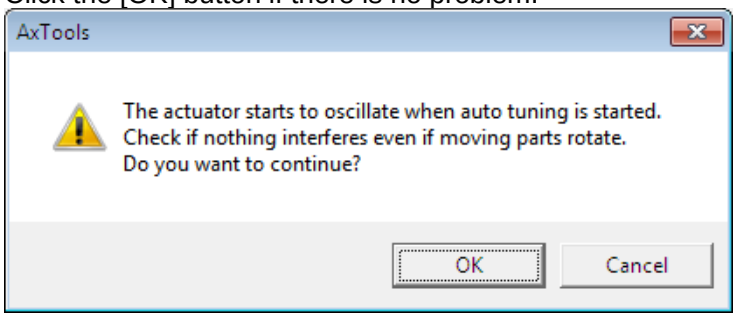
2. Friction load
   Increase this setting if the friction load is high.
3. Oscillation angle
   Adjusts the angle of oscillation.
4. Gain setting
   Displays the gain set by the Auto tuning function.
5. Alarm status
   Displays the alarm setting.

(a)－2 Execute

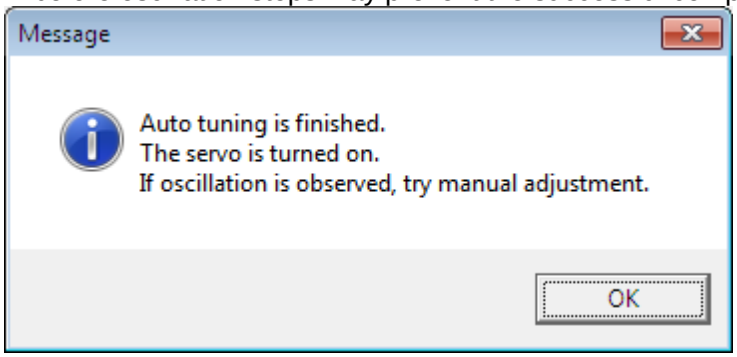
Auto tuning will start when the [Tuning Start] button is clicked.
Servo off will be confirmed.
Click the [OK] button if there is no problem.



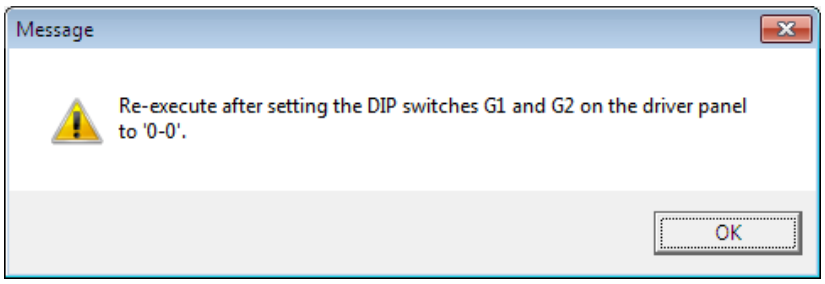
There is a confirmation before it starts oscillations.
Click the [OK] button if there is no problem.



When the oscillation of actuator stops, auto tuning is considered completed.
(It may take a few to ten plus seconds depending on the load.)
※Check that oscillation has stopped before clicking the [OK] button. Clicking the [OK] button before oscillation stops may prevent the successful completion of tuning.



※If the gain adjustment DIP switches G1 and G2 on the driver panel are not ‘0 - 0’ the dialog box shown below is displayed.



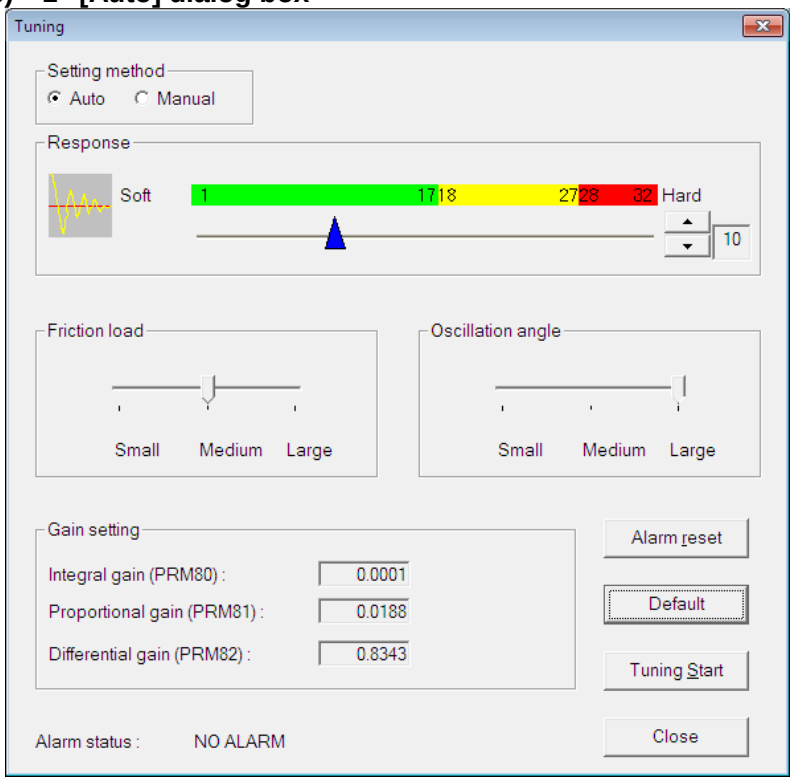
Adjust the DIP switches to "0 - 0", and click the [OK] button.
Click the [Tuning Start] button in the auto tuning dialog box again to execute tuning.

(b) Dialog box for MU type drivers

The dialog box displayed differs depending on the [Gain 1] and [Gain 2] settings in ABSODEX.

If the [Gain 1/2] setting is '0 - 0': [Auto] dialog box is displayed.
If the [Gain 1/2] setting is not '0 - 0': [Manual] dialog box is displayed.

(b)－1 [Auto] dialog box



(b)－1－1 Setting

1. Setting method
   You can switch between the [Auto] dialog box and the [Manual] dialog box.
2. Response
   Adjusts the responsiveness.
   Raising the value increases the convergence when movement ends and the holding force when the actuator is stopped.
   The responsiveness value is indicated by the slider range (1-32).
   The slider arrow displayed below the value range indicates the current responsiveness setting.
   You can move the arrow using the up and down arrow buttons at the right end of the slider.
   The value to the right of the up and down arrow buttons shows the current responsiveness setting.
3. Friction load
   Increase this setting if the friction load is high.
4. Oscillation angle

Adjusts the angle of oscillation.

5. Gain setting

Displays the gain set by the Auto tuning function.

6. Alarm status

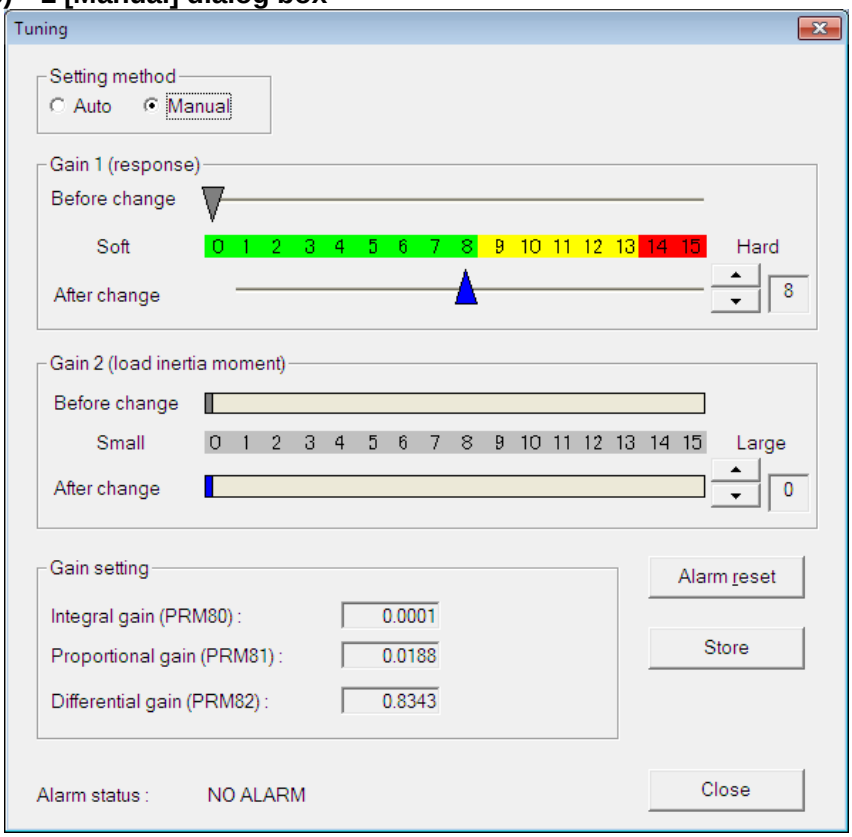
Displays the alarm setting.

(b)－1－2 Tuning Start

The dialog box for TS type drivers is the same.

Refer to "6－3－1－3－1(a)－2 **Execute**".

(b)－2 [Manual] dialog box



(b)－2－1 Setting

1. Setting method

You can switch between the [Auto] dialog box and the [Manual] dialog box.

2. Gain 1 (Response)

[Before change] (top): Current ABSODEX setting for Gain 1

[After change] (bottom): Gain 1 setting after the change (made using the up and down arrow buttons on the right)

To the right of the up and down arrow buttons: Gain 1 settings after the change

3. Gain 2 (load inertia moment)

[Before change] (top): Current ABSODEX setting for Gain 2

[After change] (bottom): Gain 2 setting after the change (made using the up and down arrow buttons on the right)

To the right of the up and down arrow buttons: Gain 2 settings after the change

4. Gain setting

Displays the gain set by the Auto tuning function.

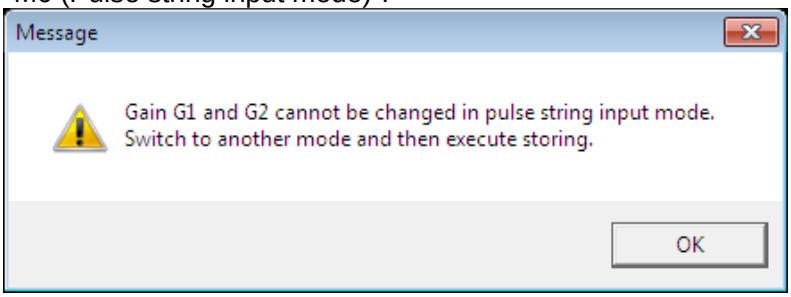
5. Alarm status

Displays the alarm setting.

(b)－2－2 Storing the settings

The settings specified in [After change] in the dialog box are applied to [Gain 1] and [Gain 2] in ABSODEX.

When the [Store] button is clicked, the dialog box shown below appears if the operation mode is "M6 (Pulse string input mode)".



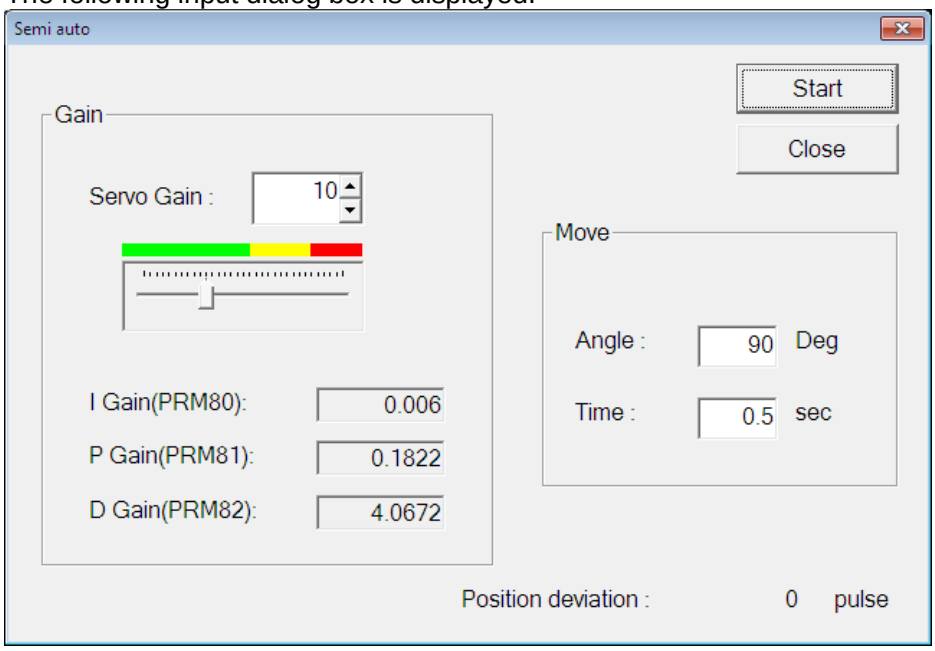
Change the mode as indicated in the dialog box.

CAUTION

If the auto tuning is performed, the result of the AI gain adjustment is deleted.

6－3－1－3－2 Semi-auto tuning

The following input dialog box is displayed.



(a)－1 Setting

1. Servo Gain
   Specify the servo gain value.
   Raising the value increases the convergence when movement ends and the holding force when the actuator is stopped.

2. Integral gain, Proportional gain, Differential gain
   Displays the gain set by the Auto tuning function.

3. Oscillation angle
   Adjusts the angle of oscillation.

4. Time
   Specify the movement time per block.

5. Position deviation amount
   Displays the amount of positional deviation.

(a)－2 Start

When you click the [Start] button, the velocity waveform is acquired.
Make fine adjustments while observing the results in the velocity waveform displayed.

(a)－3 Restrictions

The [Semi auto] dialog box can only be used after Auto tuning.
Be sure to carry out Auto tuning before running [Semi auto] tuning.

Note also that the [Semi auto] dialog box can only be used for TS , MU and XS type drivers.

6－3－2 Vibration-proof filter adjustment group

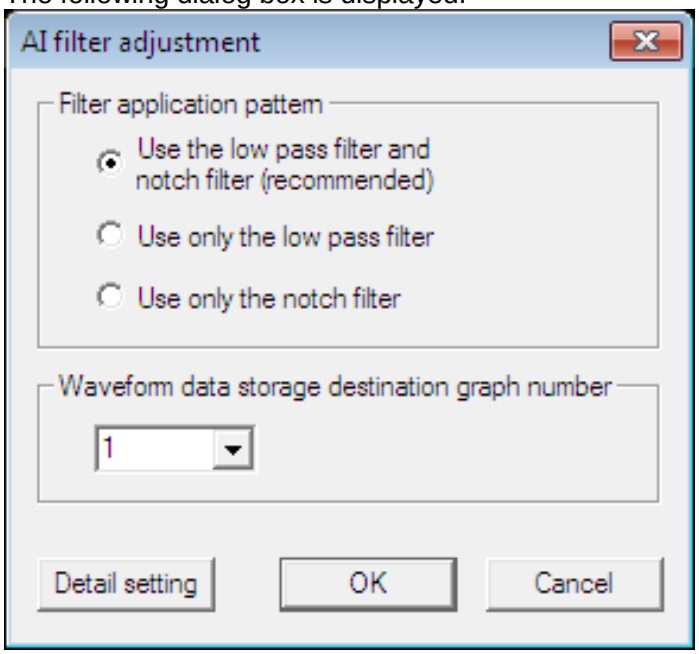
With this group, you can set the ABSODEX digital filter automatically or manually.

6－3－2－1 AI filter adjustment

Use this command to set the ABSODEX digital filter automatically.
This command can be used with the TS, MU, and XS type drivers.
Select the [AI filter adjustment] command from the ribbon menu.

6－3－2－1－1 [AI filter adjustment] dialog box

The following dialog box is displayed.



1. Filter application pattern

(1) Use the low pass filter and notch filter
Select this item to set both the low pass filter and notch filter.

(2) Use only the low pass filter
Select this item to set only the low pass filter.

(3) Use only the notch filter
Select this item to set only the notch filter.

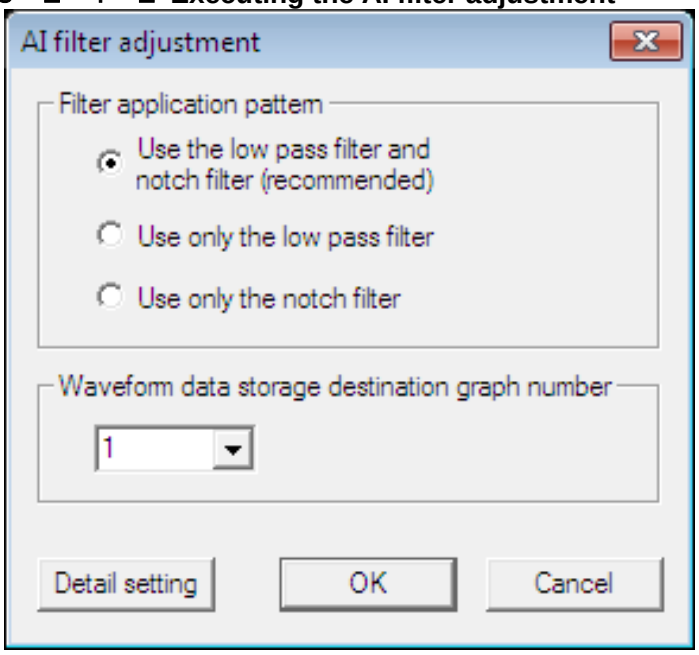
2. Waveform data storage destination graph number
Specify the graph-storage destination number after the AI filter adjustment completion.

3. Detail setting
Clicking this button displays the [Detail setting] dialog box for the AI filter adjustment.

4. OK
Clicking this button starts the AI filter adjustment.

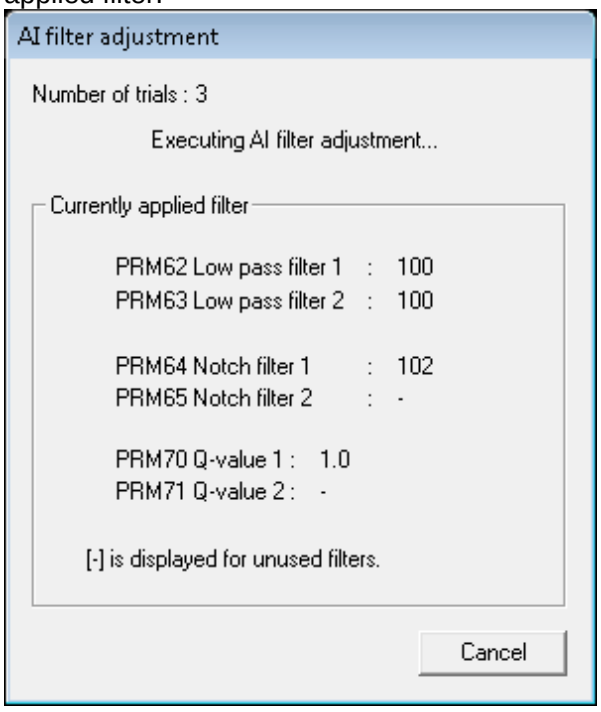
5. Cancel
Clicking this button cancels the execution of the AI filter adjustment.

6－3－2－1－2 Executing the AI filter adjustment



Click the [OK] button to start the AI filter adjustment.

The following progress dialog box is displayed, and the graph is updated with the currently applied filter.



1. Number of trials
   The current number of tries of the AI filter adjustment is displayed.

2. Currently applied filter
   (1) PRM62 Low pass filter 1
      The setting value of the low pass filter 1 is displayed.
   (2) PRM63 Low pass filter 2
      The setting value of the low pass filter 2 is displayed.

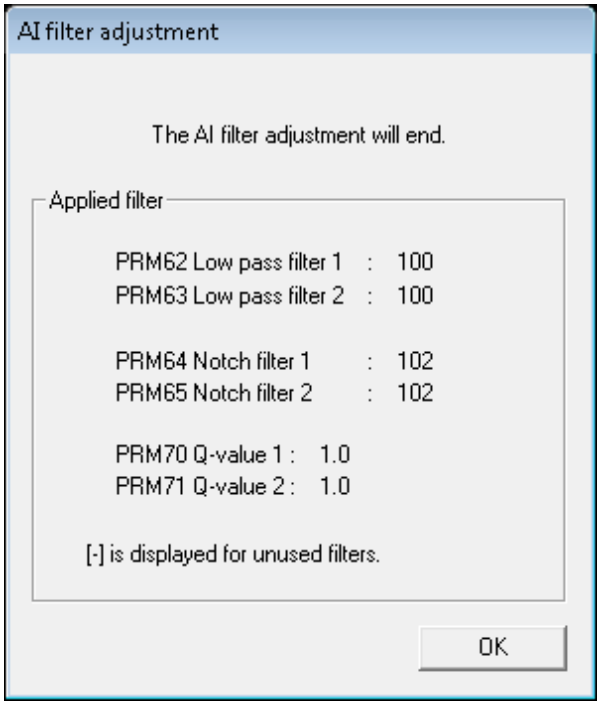
(3) PRM64 Notch filter 1
The setting value of the notch filter 1 is displayed.
(4) PRM65 Notch filter 2
The setting value of the notch filter 2 is displayed.
(5) PRM70 Q-value 1:
The value set as the Q-value of the notch filter 1 is displayed.
(6) PRM71 Q-value 2:
The value set as the Q-value of the notch filter 2 is displayed.

※The unused digital filter is indicated as [-].

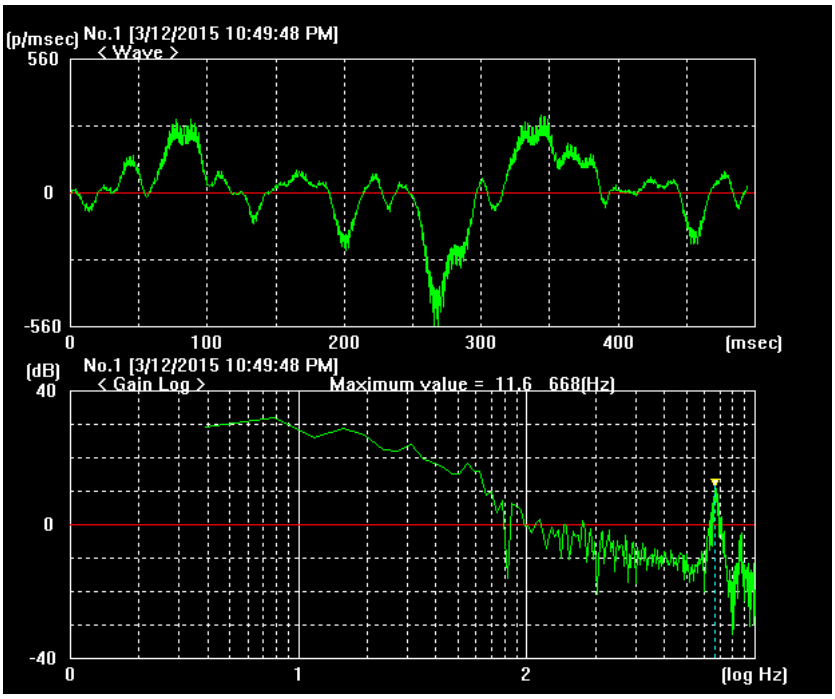
3. Cancel
Clicking this button cancels the execution of the AI filter adjustment.
The setting of the applied filter displayed in the progress dialog box is discarded.
The digital filter setting before the adjustment is restored.

6－3－2－1－3 Ending the AI filter adjustment

When the AI filter adjustment is completed, the progress dialog box indicates [The AI filter adjustment will end.].



As the AI filter adjustment result, the set digital filter setting is displayed.
[-] is displayed for the digital filter for which no setting is made.



The graph is updated with the applied digital filter.

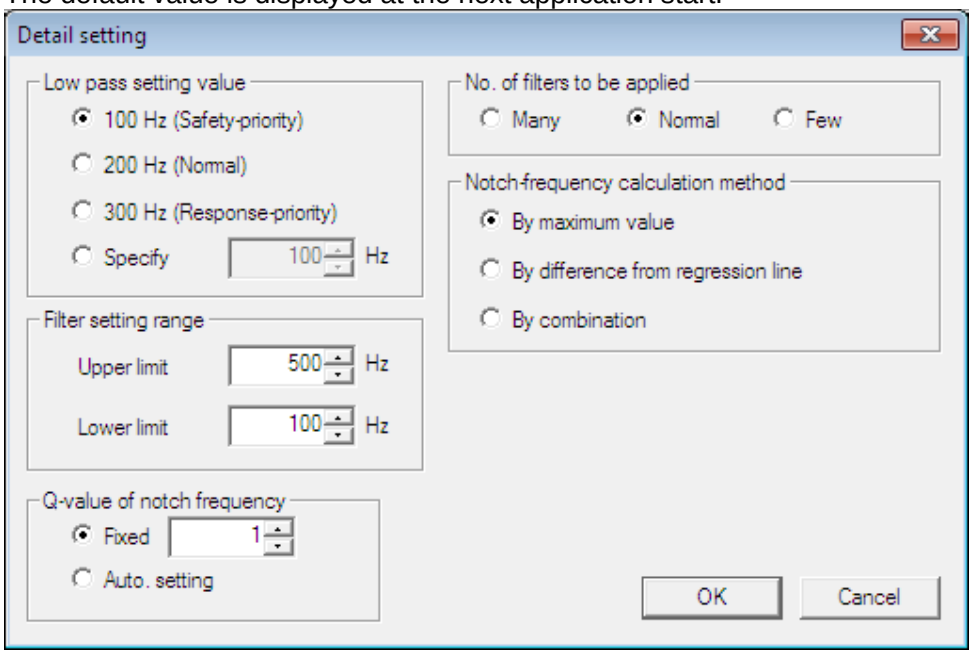
Click the [OK] button of the progress dialog box to end the AI filter adjustment.

6－3－2－1－4 [Detail setting] dialog box of the AI filter adjustment

The following input dialog box is displayed.

The setting in the [Detail setting] window will be discarded at the end of the application.

The default value is displayed at the next application start.



1. Low pass setting value

Specify the setting value of the low pass filter.

(1) 100 Hz (Safety-priority)

Select this item to set the low pass filter to 100 Hz.

Because the range for which the low pass filter is set is wide, the response will be degraded but the stability will be improved.

(2) 200 Hz (Normal)
Select this item to set the low pass filter to 200 Hz.
(3) 300 Hz (Response-priority)
Select this item to set the low pass filter to 300 Hz.
Because the range for which the low pass filter is set is narrow, the response will be improved but the stability will be degraded.
(4) Specification
Specify any setting value of the low pass filter.

2. Filter setting range
Specify the setting range of the notch filter.
(1) Upper limit
Specify the upper limit of the frequency area for which the notch filter is set.
The notch filter is not set for the frequency area exceeding the specified setting value.
(2) Lower limit
Specify the lower limit of the frequency area for which the notch filter is set.
The notch filter is not set for the frequency area falling below the specified setting value.

3. Q-value of notch frequency
Specify the setting method of the band width Q-value for the notch filter.
(1) Fixed
The Q-value is set at the specified setting value.
(2) Auto. setting
The Q-value calculated from a resonance position and resonance range is set.

4. No. of filters to be applied
Specify the number of applied digital filters.
Changing the condition judged as the resonance varies the number of applied digital filters.
(1) Many
Select this item to set strict conditions judged as resonance.
The number of the applied digital filters will be increased due to the strict conditions.
(2) Normal
Select this item to set moderate conditions judged as resonance.
The number of the applied digital filters will be normal.
(3) Few
Select this item to set mild conditions judged as resonance.
The number of the applied digital filters will be decreased due to the mild conditions.

5. Notch-frequency calculation method
Specify the calculation method for the setting value of the notch filter.
(1) By maximum value
Select this item to set the position at which the dB value is the maximum as the setting value of the notch filter.
(2) By difference from regression line
Select this item to set the position that is farthest from the regression line as the setting value of the notch filter
(3) By combination
Select this item to combine the maximum value and the difference from regression line.
When the dB value is less than 0 dB, the difference from the regression line is used.
When the dB value is 0 dB or more, the maximum value is used.

6. OK

Clicking this button confirms the setting and returns the screen to the [AI filter adjustment] dialog box.

7. Cancel

Clicking this button discards the setting and returns the screen to the [AI filter adjustment] dialog box.

6－3－2－2 Manual adjustment

Refer to "8－2－1－3－2(a)－1 Filter setting [Set filter]" for the [Monitor] tab.

6－3－3 ABSODEX control group

6－3－3－1 Servo On-Off

Refer to the common function.

6－3－3－2 Test drive

Refer to the common function.

6－3－3－3 Alarm reset

Refer to the common function.

6－3－3－4 ABSODEX initialization

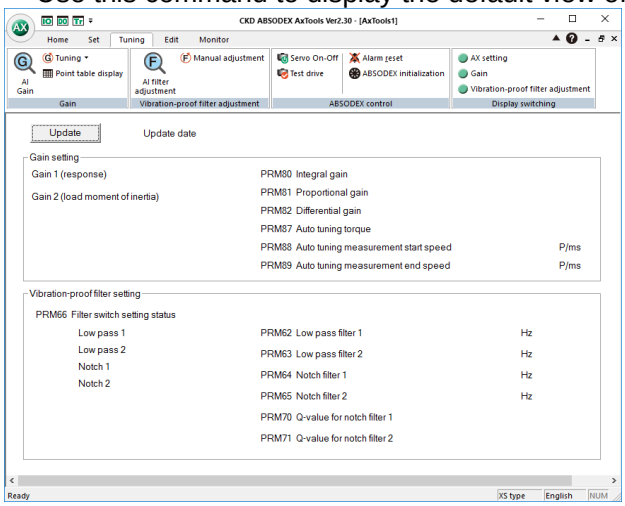
Refer to the common function.

6－3－4 Display switching group

With this group, you can switch the view of the [Tuning] tab.

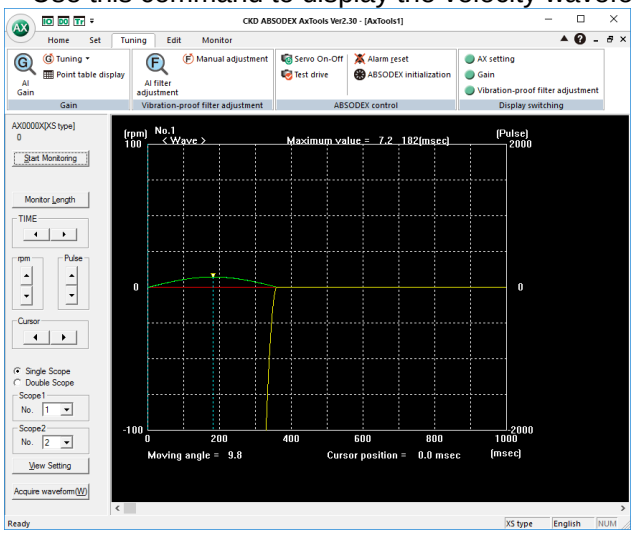
6－3－4－1 AX setting

Use this command to display the default view of the [Tuning] tab.



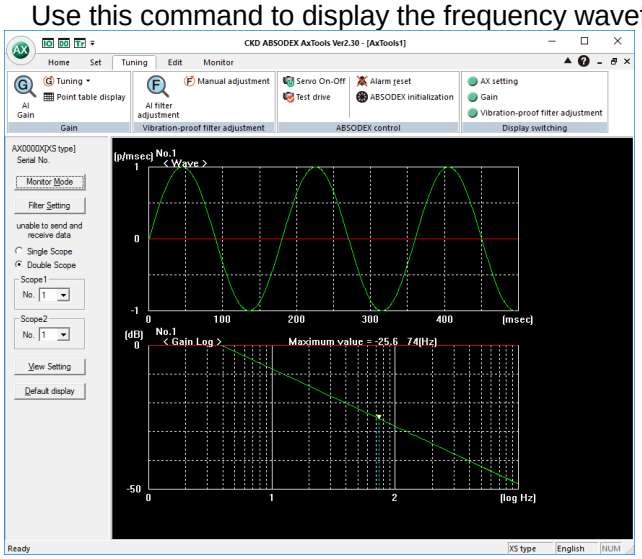
6－3－4－2 Gain

Use this command to display the velocity waveform view.



6－3－4－3 Vibration-proof filter adjustment

Use this command to display the frequency waveform view.



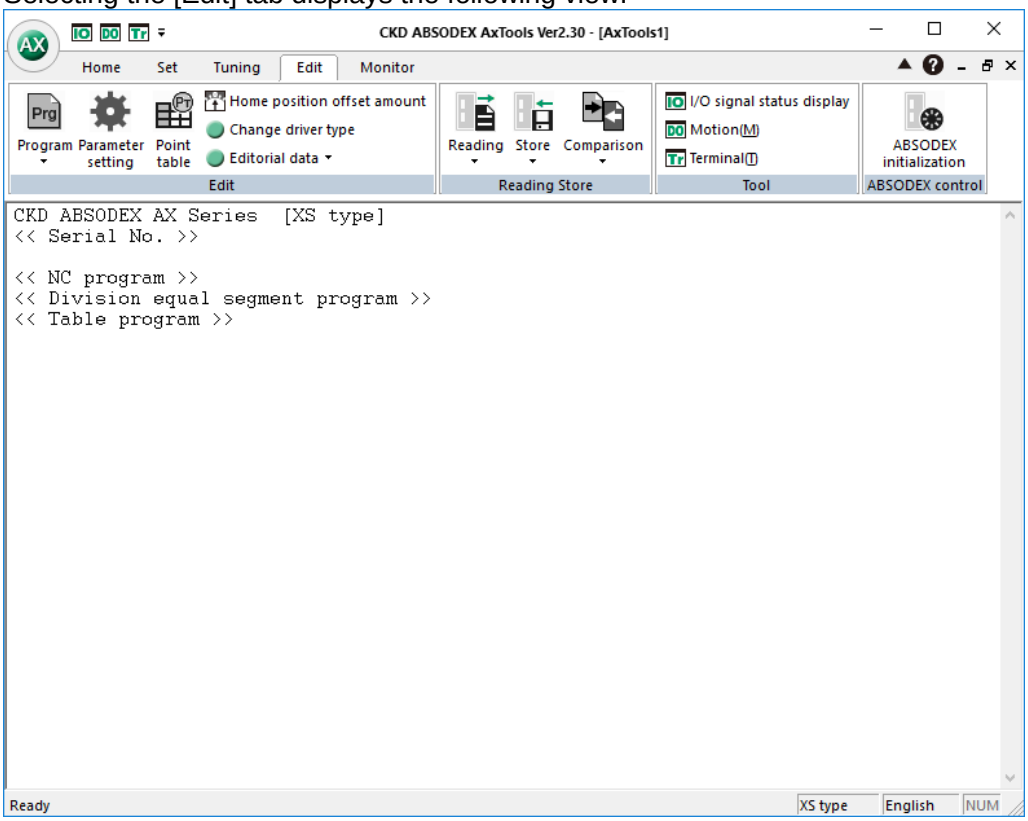
Section 7　Edit

7－1 Overview of the [Edit] tab

In this tab, you can read, store, and edit programs.

7－2 View of the [Edit] tab

Selecting the [Edit] tab displays the following view.



※Before the program editing

When editing the program or the parameter, except for the case to make data newly, all the data is read from the editorial origin (ABSODEX or file) to editorial work.

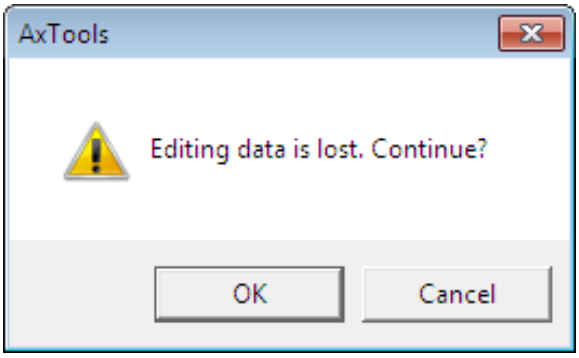
After editing, store it to ABSODEX or save to file.

(The data of editorial work is completely erased when reading again or ending the system.)

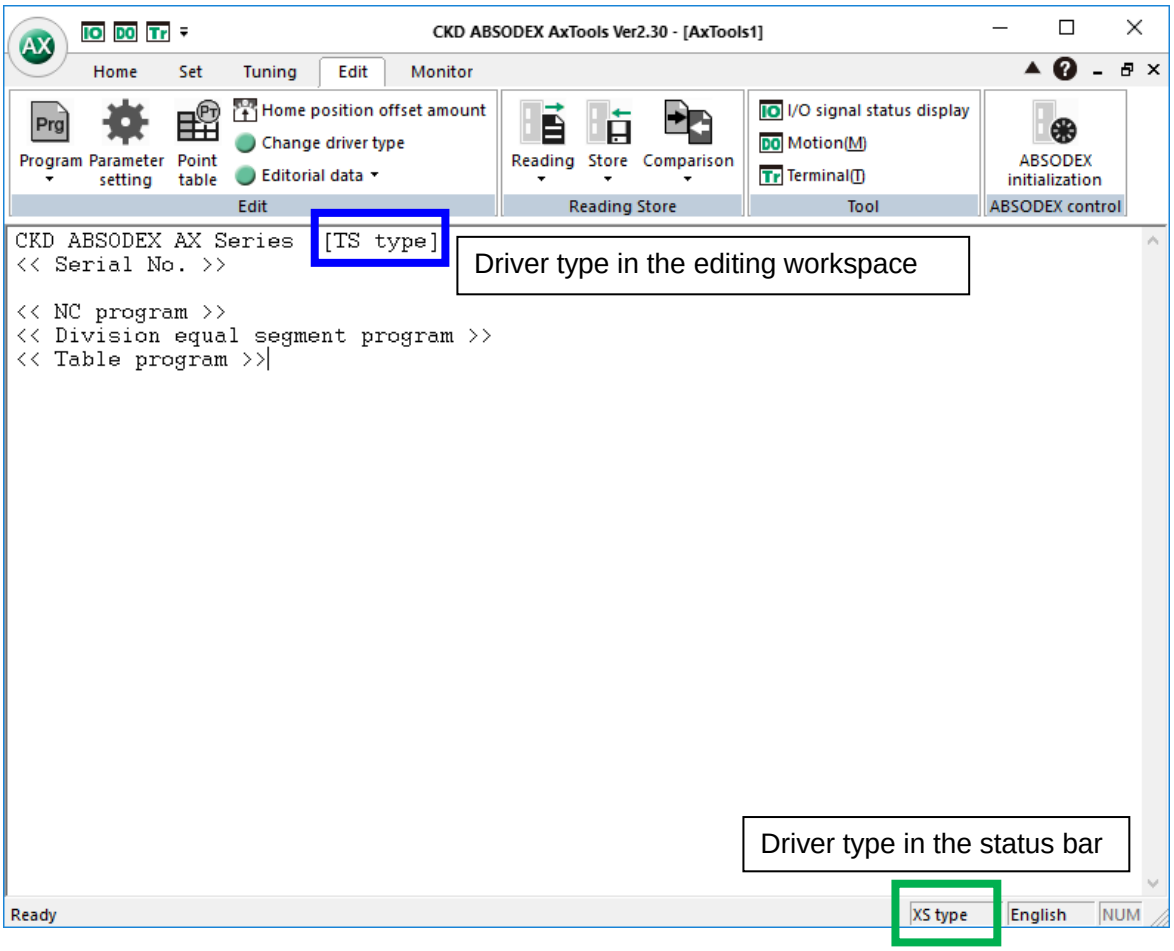
The newly or changed data in editorial work cannot be executed when not storing it into ABSODEX.

※When the data exists already in editorial work

Follow the indication as the DIALOG to confirm is displayed.



7－2－1 Displaying the driver type



The current driver type is displayed in the status bar.
When the driver communicates with ABSODEX, the status bar shows the ABSODEX driver type with which a connection has been established.
Prior to communication, the status bar shows the driver type when a new file was created or when the file was saved.

The driver type displayed in the editing workspace indicates the driver type for which parameters are being edited.
* If AxTools is connected with the ABSODEX with the [Reading] or [Store] command or if the [Change driver type] command is executed, the driver type displayed in editing workspace changes.

7－3 List of functions in the [Edit] tab

Group name	Command name	Description	Section number
Edit	Program	Edits program.	7－3－1－1
	Parameter setting	Set and edit the parameter.	7－3－1－2
	Point table	Sets and edits the point table.	7－3－1－3
	Home position offset amount	Set amount of home position offset.	7－3－1－4
	Change driver type	Changing the driver type	7－3－1－5
	Editorial data	Confirms the editorial data.	7－3－1－6
Reading/storage	Reading	Read target data from the ABSODEX to the editing workspace.	7－3－2－1
	Storage	Store the editorial data to the ABSODEX.	7－3－2－2
	Comparison	Compare the editorial data with the driver data.	7－3－2－3
Tool	I/O signal status display	Display the current status of the I/O signal.	7－3－3－1
	Operation command	Perform the basic operations for the ABSODEX.	7－3－3－2
	Terminal	Send/receive commands to/from the ABSODEX.	7－3－3－3
ABSODEX control	ABSODEX initialization	Initialize the ABSODEX.	7－3－4－1

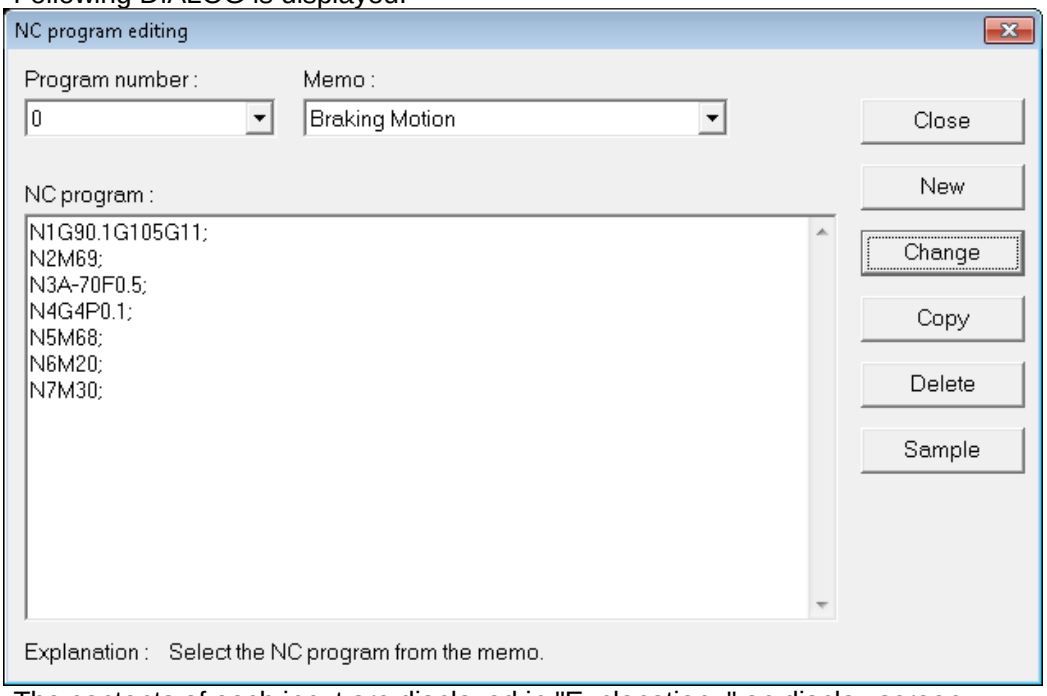
7－3－1 Edit group

7－3－1－1 Program

7－3－1－1－1 NC program

Editing is made with NC code.

Following DIALOG is displayed.



The contents of each input are displayed in "Explanation :" on display screen.

1. Select program

(1) Program Number

Select NC program to edit in program number.

(2) Memo

Select NC program to edit in “memo”.

" ＊ " is displayed in program which was edited by the equal segment program editing.

2. Editing of the NC program

Input the letter from the keyboard and edits NC program. (Maximum of 2000 letters.)
For the details, refer to "7－4－1 NC code".

3. Making of new program

Save program to be editing into editorial work and makes new program.

Click the [New] button.

Follow the indication as the DIALOG is displayed.

4. Change of editorial program number

Change number of program to be editing into new number.

Click the [Change] button.

Follow the indication as the DIALOG is displayed.

5. Copying of editorial program

Copy and register the program to be editing on another number.

Click the [Copy] button.

Follow the indication as the DIALOG is displayed.

6. Deleting of editorial program

Delete program to be editing from editorial work.

If you delete program once, it doesn't return to origin.

Click the [Delete] button.

Follow the indication as the DIALOG is displayed.

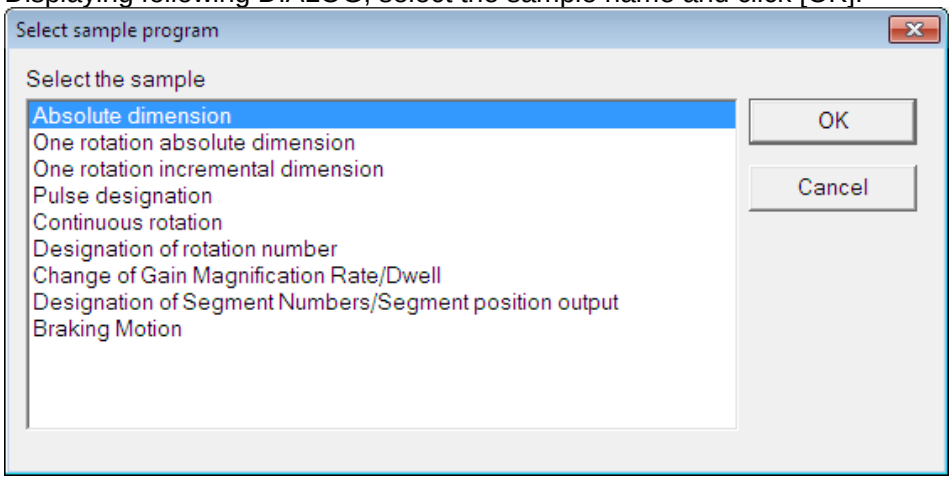
7. Displaying of sample program

Displays NC sample program in editorial window.

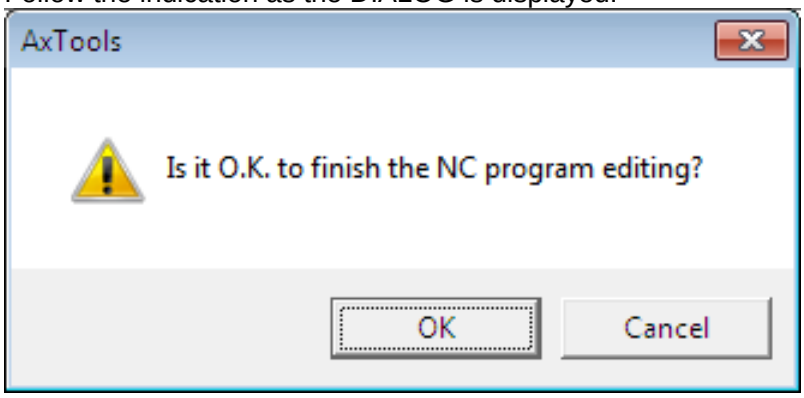
Program to be editing is erased.

Click the [Sample] button.

Displaying following DIALOG, select the sample name and click [OK].



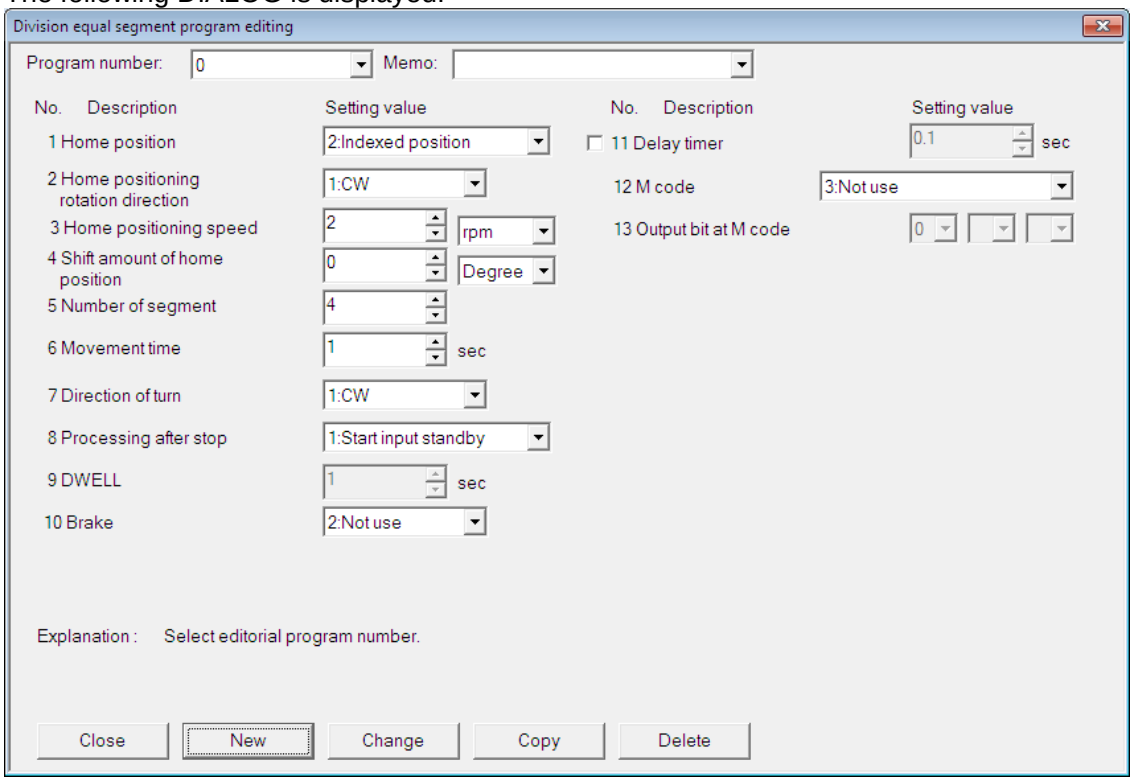
8. Ending editing.
Click the [Close] button.
Follow the indication as the DIALOG is displayed.



Clicking the [OK] button closes the editorial dialog box.
The program is saved into editorial work.

7－3－1－1－2 Division equal segment program

Use this procedure to edit division equal segment programs.
(For other programs, use NC program editing or table program editing.）
The following DIALOG is displayed.



The contents of each input are displayed in "Explanation :" on the display screen.

1. Select program

(1) Program number

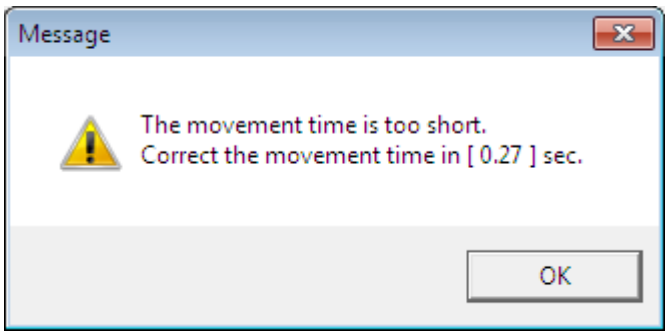
Select equal segment program to edit from “Program number”.

(2) Memo

Select equal segment program to edit from “Memo”.

2. Input setting value
(1) Home position
Select home position before starting from following two and input the number.
1 : Home position, 2 : Indexed position
(2) Home positioning rotation direction
Select home positioning rotation direction from following three and input the number.
1 : CW, 2 : CCW, 3 : Near Head
(NOTE) When selecting home position, "Near Head" cannot be selected.
(3) Home positioning speed
Input home positioning speed.
When selecting home position in (1)
Input movement speed to home position from current position.
Setting range: 1~100 rpm
(When check box is OFF, the value of parameter becomes effective.)
When selecting indexed position in (1)
Input movement time or movement speed to indexed position from current position.
Setting range: 0.01~100 sec or 1~100 rpm
(Select unit to use.)
(4) Shift amount of home position
When selecting indexed position in (1),input shift amount of home position.
Setting range: -360~360 Degree or -540672~540671 Pulse
※The setting range differs depending on the driver type.
(5) Number of segment
Input number of segment.
Setting range: 1~255
(6) Movement time
Input movement time with 1 index part.
Setting range: 0.01~100 sec

The timing is checked when input of the number of segments and time has been completed.
When movement time is too short, following DIALOG is displayed and the movement time is automatically corrected.



(7) Direction of turn
Select direction of motor rotation from following two and input the number.
1:CW, 2:CCW
(8) Processing after stop
Select stop processing after positioning from following two and input the number.
1:Start input standby, 2:DWELL
(9) DWELL
Input time only when selecting DWELL in (8).
Setting range: 0.01~99.99 sec
(10) Brake
Input the number whether or not to use a brake.
1:Use, 2:Not use
(11) Delay timer
Input time only when selecting brake use in (10).
(When not using the delay timer, make the check box OFF.)
※The delay timer indicates the time from completion of positioning to brake application. Use the delay timer to apply the brake at a higher accuracy even in a system which has a smaller rigidity and therefore takes time until settling.
The delay timer is inserted in NC programs as a dwell command.
※Specify the time from brake release to rotation command issuance in response to a travel command, in parameter 27 (delay after brake output).
If the time is not specified, rotation is commanded in a braking state when a motor rotation command is issued immediately after the brake is released, causing vibration and/or oscillation.

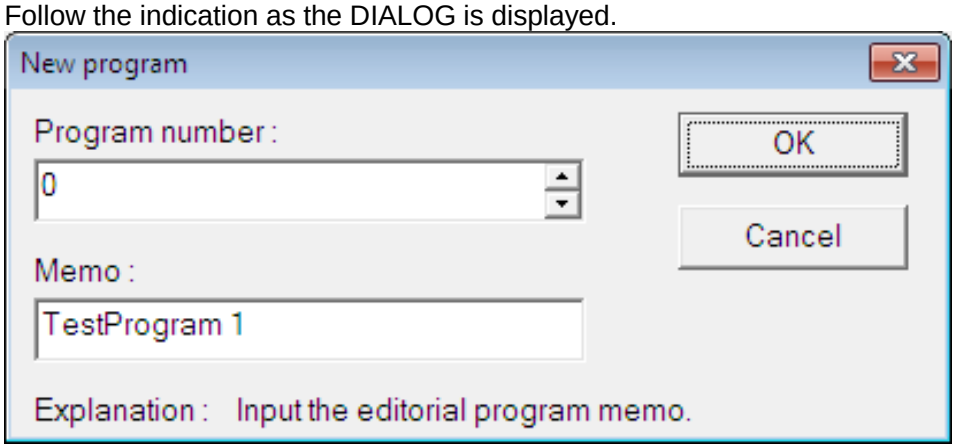
(12) M code
Select M code processing from the following three and input the number.
1:M code, 2:Division position output, 3:Not use
(13) Output bit at M code
Input only when selecting M code in (12).
Input numerical value which corresponds to the bit of M code to output.
Setting range: 0~7

3. Making of new program

Save program to be editing into editorial work and Make new program.

Click the [New] button.

Follow the indication as the DIALOG is displayed.



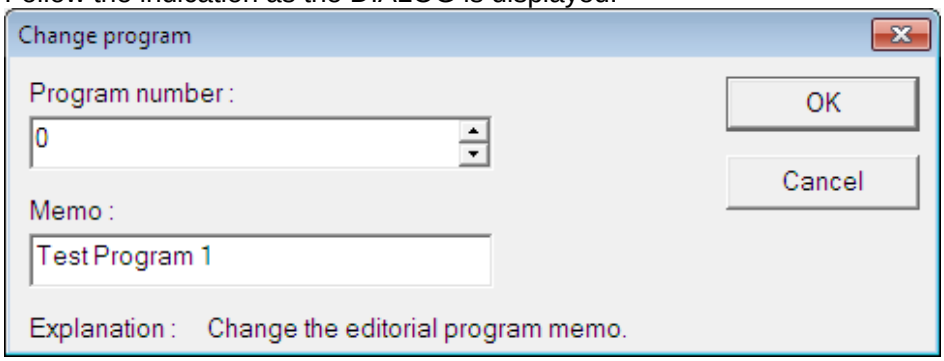
4. Changing of editorial program number

Change number of program to be editing into new number.

(It is possible to change memo, too.)

Click the [Change] button.

Follow the indication as the DIALOG is displayed.

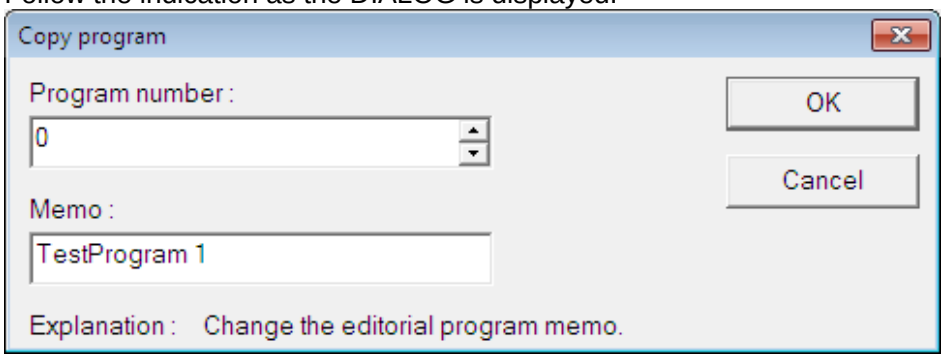


5. Copying of editorial program

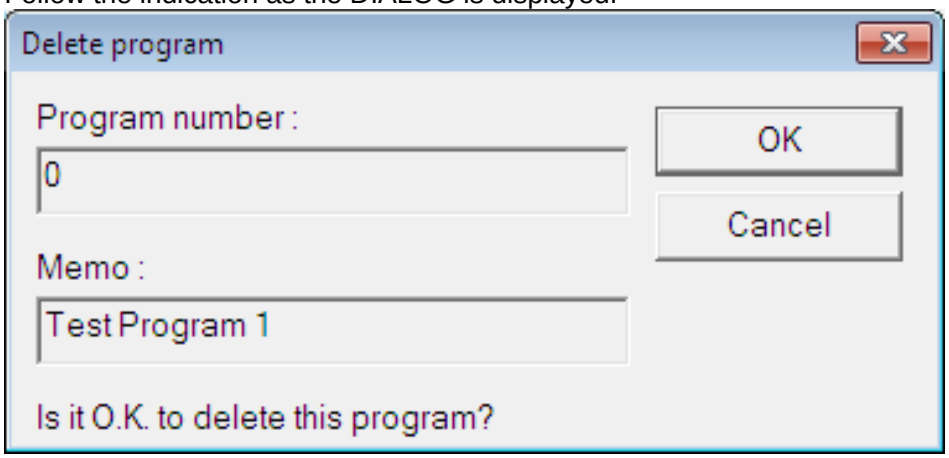
Copy and Register program to be editing on another number.

Click the [Copy] button.

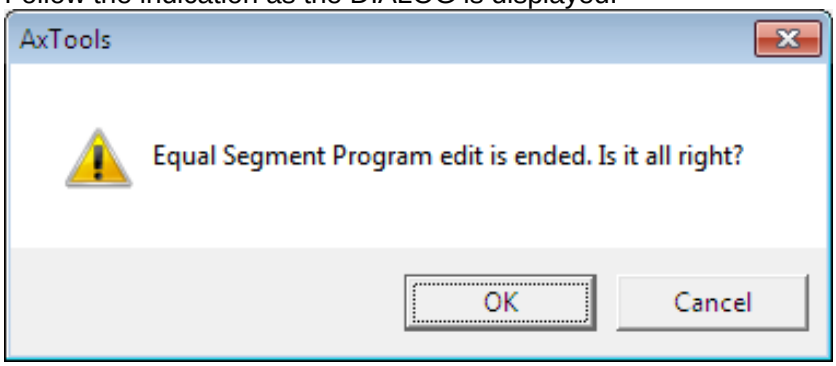
Follow the indication as the DIALOG is displayed.



6. Deleting of editorial program.
Delete program to be editing from editorial work.
If you delete program once it doesn't return to Origin.
Click the [Delete] button.
Follow the indication as the DIALOG is displayed.



7. Ending editing.
Click the [Close] button.
Follow the indication as the DIALOG is displayed.

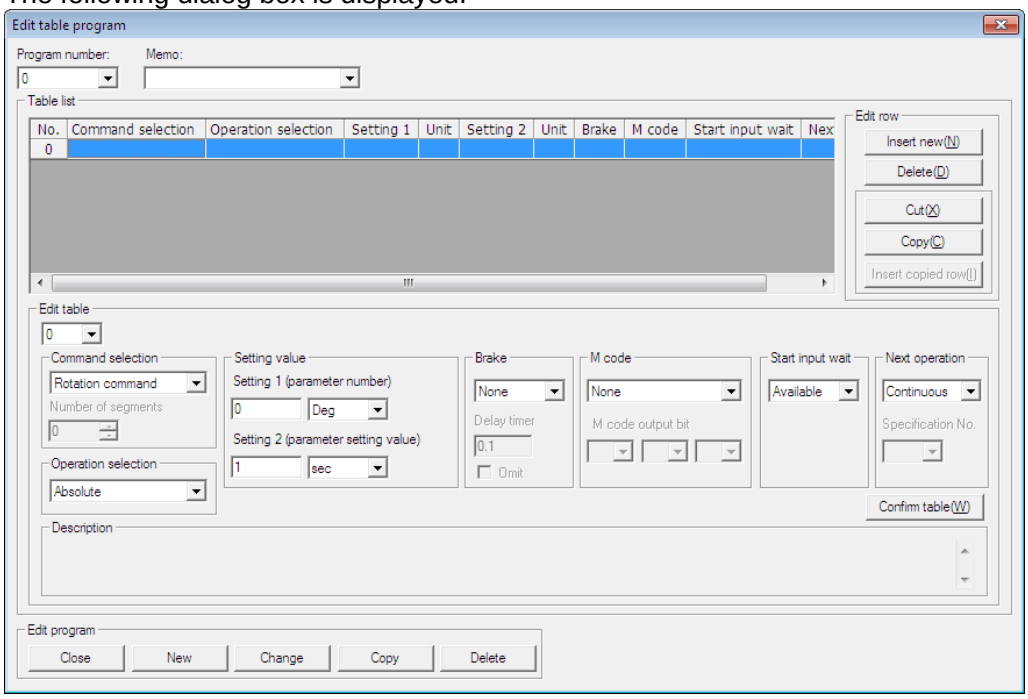


Clicking the [OK] button closes the editorial dialog box.
Program is saved into editorial work.

7－3－1－1－3 Table program

Use this procedure to edit programs with the table method.

The following dialog box is displayed.



The description entered is displayed in "Description" on the screen.

1. Select the program

(1) Program number

Select the table program to be edited from its number.

(2) Memo

Select the table program to be edited from a memo.

2. Edit the table program.

Select and enter items in the table editing pane.

Select [Select command], [Select operation] and [Setting value] in order, and enter a value. Then use [Confirm table].

Edit the table program by repeating the above steps.

3. Creating a new program

To create a new program, simply save the program being edited in the editing workspace.

Click the [New] button.

When the dialog box appears, follow the on-screen instructions.

4. Renumbering an edited program

Assign a new number to the program being edited.

Click the [Change] button.

When the dialog box appears, follow the on-screen instructions.

5. Copying an edited program

Copy the program being edited and register it under a different number.

Click the [Copy] button.

When the dialog box appears, follow the on-screen instructions.

6. Deleting an edited program

Delete the program being edited from the editing workspace.

Note that deleted programs cannot be recovered.

Click the [Delete] button.

When the dialog box appears, follow the on-screen instructions.

The functions used in table program editing are summarized below.

(a) Program number, Memo

1. Select the program.

(1) Program number

Select the program to be edited by its number.

(2) Memo

Select the table program to from a Memo.

(b) Table list

Displays the description set during table editing.

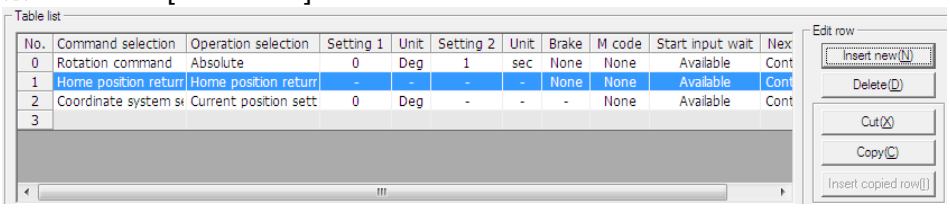
(c) Editing the table list [Edit row]

Adding, deleting, copying and cutting table list entries

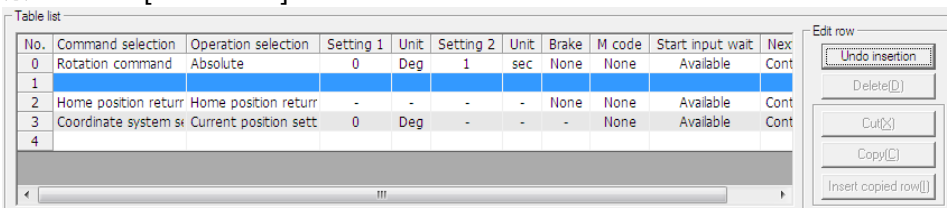
(c)-1 Inserting a new row [Insert new]

When you click the [Insert new] button, a new row is added to the table list. (After a new row is inserted, the [Insert new] button changes to the [Undo insertion] button.）

※Before the [Insert new] button is clicked

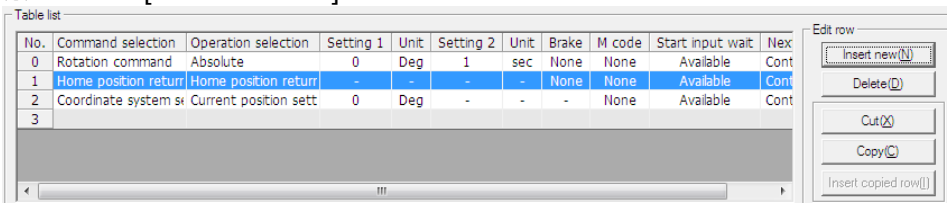


※After the [Insert new] button is clicked



Clicking [Undo insertion] after a new row has been inserted deletes the inserted row.

※After the [Undo insertion] button is clicked



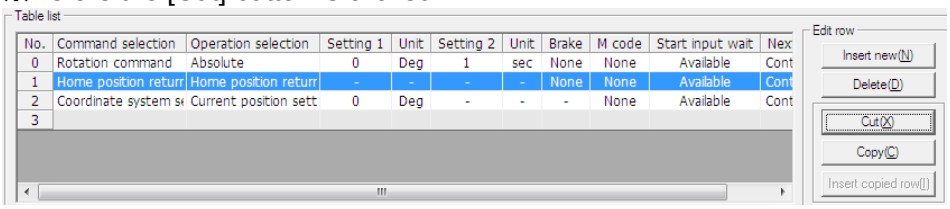
(c)-2 Deleting rows [Delete]

Clicking the [Delete] button deletes the currently selected row.

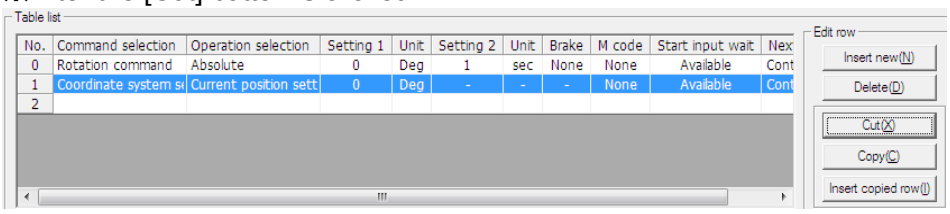
(c)-3 Cutting rows [Cut]

Clicking the [Cut] button deletes the currently selected row and enables the [Insert copied row] button.

※Before the [Cut] button is clicked



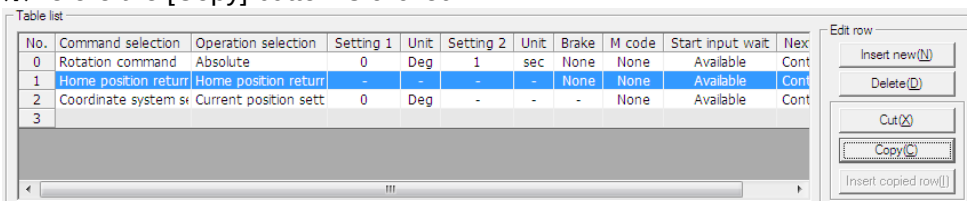
※After the [Cut] button is clicked



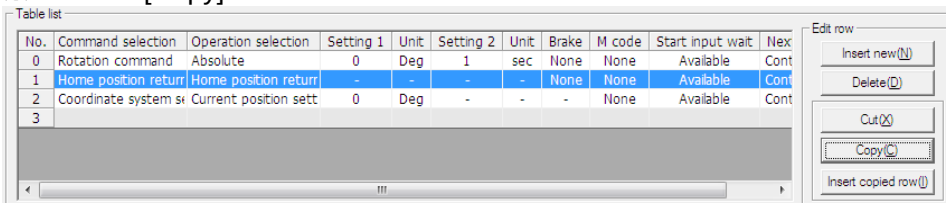
(c)-4 Copying rows [Copy]

Clicking the [Copy] button enables the [Insert copied row] button.

※Before the [Copy] button is clicked



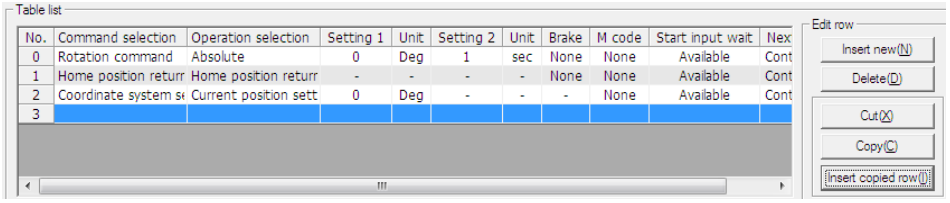
※After the [Copy] button is clicked



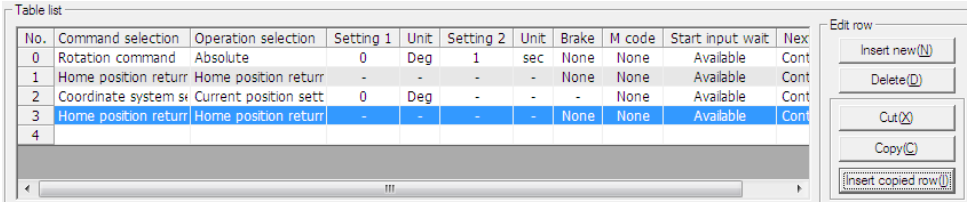
(c)-5 Inserting a copied row [Insert copied row]

Clicking the [Insert copied row] button inserts a cut or copied row in the row selected as the destination.

※Before the [Insert copied row] button is clicked

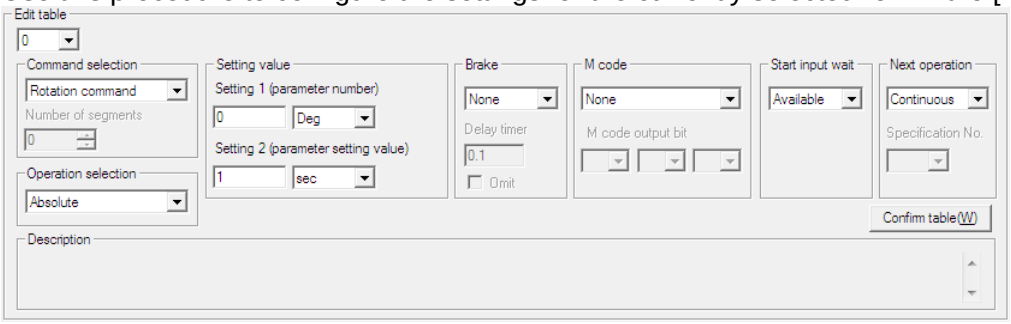


※After the [Insert copied row] button is clicked



(d) Editing tables

Use this procedure to configure the settings for the currently selected row in the [Table list].



[Table No.]
The currently selected [Table list] number is displayed.
Changing the list number selects the table list number with the new number.
[Select command]
Select the command to be set.
[Select operation]
Select the operation for the command selected in [Select command].
[Setting]
Enter the setting for the operation.
[Brake]
Set a brake operation.
[M code]
Set the M code processing.
[Start input wait]
Specify whether there is a start input wait.
[Next operation]
Set the table number to be processed next.
You can specify the table number with [Continuous] or with the [Specification No.] list.
When [Continuous] is specified, the table number in the next row is processed.
When [Specification No.] is specified, the specified number is processed.
[Confirm table] button
Confirms the description set in [Edit table].
When you click the [Confirm table] button, the [Edit table] description is applied to the [Table list].
[Description]
Displays the description for the item selected in [Edit table].

(e)-1 Details of the table editing settings

The tables below show the values that can be set in table editing.

(1) Available settings when [Rotation command] is selected in [Select command]

Command selection [Rotation command]				
Operation selection	Setting 1	Unit	Setting 2	Unit
Absolute	Enter a setting.	[Degree] [Pulse]	Enter a setting.	[Sec.] [rpm]
Absolute (shortest route)				
Absolute (CW)				
Absolute (CCW)				
Incremental				
Incremental (1 rotation)				
Continuous rotation	Enter a rotation speed.	[rpm]	Enter an acceleration / deceleration time.	[Sec.]

Command selection [Rotation command]				
Operation selection	Brake	M code	Start input wait	Next operation
Absolute	[None] [Operation] * [Delay timer] can be used when [Operation] is selected.	[None] [M code] * [M code output bit] can be used when [M code] is selected.	[Available] [None]	[Continuous] [No. specification] * [Specification No.] can be used when [No. specification] is selected.
Absolute (shortest route)				
Absolute (CW)				
Absolute (CCW)				
Incremental				
Incremental (1 rotation)				
Continuous rotation				

(2) Available settings when [Number of segments command] is selected in [Select command] list

Command selection [Number of segments command]				
Operation selection	Setting 1	Unit	Setting 2	Unit
Absolute	Enter a setting.	[Number of segments]	Enter a setting.	[Sec.] [rpm]
Absolute (shortest route)				
Absolute (CW)				
Absolute (CCW)				
Incremental				
Incremental (1 rotation)				
Continuous rotation	Enter a rotation speed.	[rpm]	Enter an acceleration / deceleration time.	[Sec.]

Command selection [Number of segments command]				
Operation selection	Brake	M code	Start input wait	Next operation
Absolute	[None] [Operation] * [Delay timer] can be used when [Operation] is selected.	[None] [Division position output] [M code] * [M code output bit] can be used when [M code] is selected.	[Available] [None]	[Continuous] [No. specification] * [Specification No.] can be used when [No. specification] is selected.
Absolute (shortest route)				
Absolute (CW)				
Absolute (CCW)				
Incremental				
Incremental (1 rotation)				
Continuous rotation				

(3) Available settings when [Home position return command] is selected in [Select command] list

Command selection [Home position return command]				
Operation selection	Setting 1	Unit	Setting 2	Unit
Home position return (shortest route)	Enter a rotation speed.	[rpm]	Enter an acceleration / deceleration time.	[Sec.]
Home position return (CW)				
Home position return (CCW)				

Command selection [Home position return command]				
Operation selection	Brake	M code	Start input wait	Next operation
Home position return (shortest route)	[None] [Operation] * [Delay timer] can be used when [Operation] is selected.	[None] [M code] * [M code output bit] can be used when [M code] is selected.	[Available] [None]	[Continuous] [No. specification] * [Specification No.] can be used when [No. specification] is selected.
Home position return (CW)				
Home position return (CCW)				

(4) Available settings when [Coordinate system setting] is selected in [Select command] list

Command selection [Coordinate system setting]				
Operation selection	Setting 1	Unit	Setting 2	Unit
Current position setting	Enter a setting.	[Degree] [Pulse]	No setting required	No setting required
Home position shift				

Command selection [Coordinate system setting]				
Operation selection	Brake	M code	Start input wait	Next operation
Current position setting	No setting required	[None] [M code] * [M code output bit] can be used when [M code] is selected.	[Available] [None]	[Continuous] [No. specification] * [Specification No.] can be used when [No. specification] is selected.
Home position shift				

(5) Available settings when [Other command] is selected in [Select command] list

Command selection [Other command]				
Operation selection	Setting 1	Unit	Setting 2	Unit
Pulse string input	No setting required	No setting required	No setting required	No setting required
Change gain magnification	Enter a setting.	[%]		
Change parameter	Enter a parameter number.	No setting required	Enter a setting.	
Dwell	Enter a setting.	[Sec.]	No setting required	
Brake operation only	No setting required	No setting required		
Brake release only				
M code output only				
Division position output only				

Command selection [Other command]				
Operation selection	Brake	M code	Start input wait	Next operation
Pulse string input	[None] [Operation] * [Delay timer] can be used when [Operation] is selected.	[None] [M code] * [M code output bit] can be used when [M code] is selected	[Available] [None]	[Continuous] [No. specification] * [Specification No.] can be used when [No. specification] is selected.
Change gain magnification	No setting required			
Change parameter				
Dwell				
Brake operation only				
Brake release only				
M code output only		[M code]		
Division position output only		[Division position output]		

(e)-2 Range of the table editing settings

Command selection	Operation selection	Unit	Minimum	Maximum
Rotation command	Absolute	Degree	-6658.380	6658.380
	Absolute (shortest route)		-360.000	360.000
	Absolute (CW)		-360.000	360.000
	Absolute (CCW)		-360.000	360.000
	Incremental		-6658.380	6658.380
	Incremental (1 rotation)		-6658.380	6658.380
	Absolute	Pulse	-9999999	9999999
	Absolute (shortest route)		-540672	540672
	Absolute (CW)		-540672	540672
	Absolute (CCW)		-540672	540672
	Incremental		-9999999	9999999
	Incremental (1 rotation)		-9999999	9999999
	Absolute	Sec.	0.01	100.00
	Absolute (shortest route)		0.01	100.00
	Absolute (CW)		0.01	100.00
	Absolute (CCW)		0.01	100.00
	Incremental		0.01	100.00
	Incremental (1 rotation)		0.01	100.00
	Absolute	rpm	0.11	300.00
	Absolute (shortest route)		0.11	300.00
	Absolute (CW)		0.11	300.00
	Absolute (CCW)		0.11	300.00
	Incremental		0.11	300.00
	Incremental (1 rotation)		0.11	300.00
	Continuous rotation	rpm	-80.00 or 0.11	-0.11 or 80.00
	Continuous rotation	Sec.	0.01	50.00

※The setting range differs depending on the driver type.

Command selection	Operation selection	Unit	Minimum	Maximum
Number of segments command	Absolute	Number of segments	(9999999/540672 x specified number of segments) with fractions truncated x -1	(9999999/540672 x specified number of segments) with fractions truncated
	Absolute (shortest route)		-Specified number of segments	Specified number of segments
	Absolute (CW)		-Specified number of segments	Specified number of segments
	Absolute (CCW)		-Specified number of segments	Specified number of segments
	Incremental		(9999999/540672 x specified number of segments) with fractions truncated x -1	(9999999/540672 x specified number of segments) with fractions truncated
	Incremental (1 rotation)		(9999999/540672 x specified number of segments) with fractions truncated x -1	(9999999/540672 x specified number of segments) with fractions truncated
	Absolute	Sec.	0.01	100.00
	Absolute (shortest route)		0.01	100.00
	Absolute (CW)		0.01	100.00
	Absolute (CCW)		0.01	100.00
	Incremental		0.01	100.00
	Incremental (1 rotation)		0.01	100.00
	Absolute	rpm	0.11	300.00
	Absolute (shortest route)		0.11	300.00
	Absolute (CW)		0.11	300.00
	Absolute (CCW)		0.11	300.00
	Incremental		0.11	300.00
	Incremental (1 rotation)		0.11	300.00
	Continuous rotation	rpm	-80.00 or 0.11	-0.11 or 80.00
	Continuous rotation	Sec.	0.01	50.00

※The setting range differs depending on the driver type.

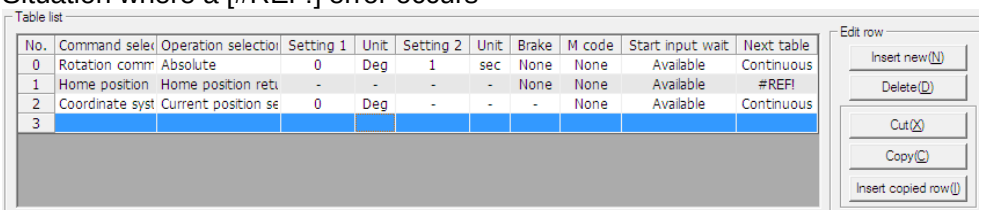
Command selection	Operation selection	Unit	Minimum	Maximum
Home position return command	Home position return (shortest route)	rpm	1.0	20.0
	Home position return (CW)		1.0	20.0
	Home position return (CCW)		1.0	20.0
	Home position return (shortest route)	Sec.	0.1	2.0
	Home position return (CW)		0.1	2.0
	Home position return (CCW)		0.1	2.0
Coordinate system setting	Current position setting	Degree	-360.000	360.000
	Home position shift		-360.000	360.000
	Current position setting	Pulse	-540672	540672
	Home position shift		-540672	540672
	Change gain magnification	%	0 or 50	200
	Change parameter	Parameter number	There is no limit for input values. The valid parameter number and setting value depend on the specifications of ABSODEX.	
		Parameter setting		
	Dwell	Sec.	0.01	99.99

※The setting range differs depending on the driver type.

(e)-3 [#REF!] errors

If a table number is specified in [No. specification] in [Next operation], and the table number referencing destination for [Next operation] no longer exists due to a deletion or similar operation, [#REF!] is displayed.

Situation where a [#REF!] error occurs



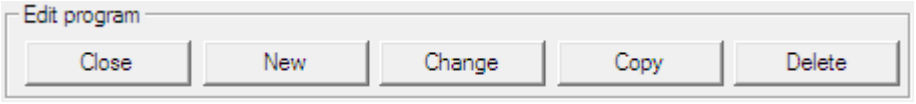
When [#REF!] is displayed, select the row on which [#REF!] appears and select the table number where the [No. specification] for [Next operation] is located.

[#REF!] occurs in the following situations:

- If a table number for a referencing destination is deleted or cut, the referencing origin encounters a #REF!.
- If a table number for a referencing origin is deleted or cut, a #REF! occurs in the row where a copied row is inserted.
- If a table number for a referencing origin is copied, the copy origin is unaffected but a #REF! occurs in the row where the copied row is inserted.

(f) Editing programs

Use the procedures below for operations such as creating or modifying table programs.



[Close] button
Ends table program editing.
The editing dialog box closes.
The program is saved in the editing workspace.
[New] button
Create a new program.
When the dialog box appears, follow the on-screen instructions.
[Change] button
Change the program number being edited.
When the dialog box appears, follow the on-screen instructions.
[Copy] button
Copy the program being edited and register it under a different number.
When the dialog box appears, follow the on-screen instructions.
[Delete] button
Delete the program being edited from the editing workspace.
Note that deleted programs cannot be recovered.
When the dialog box appears, follow the on-screen instructions.

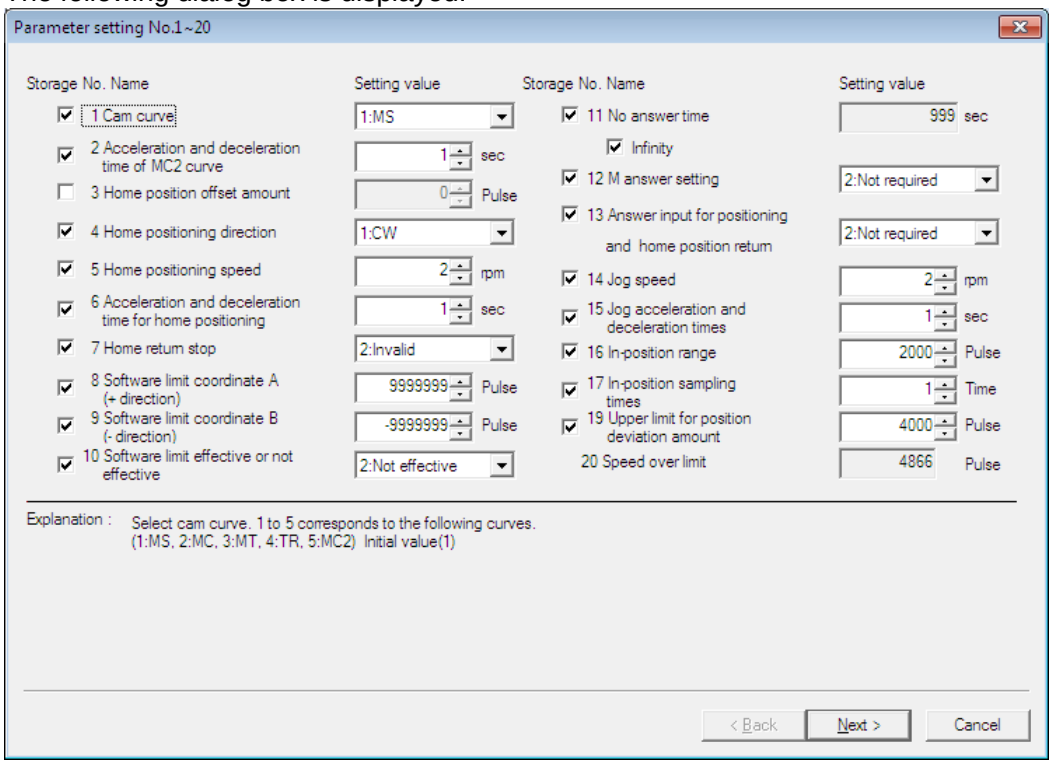
7－3－1－2 Parameter setting

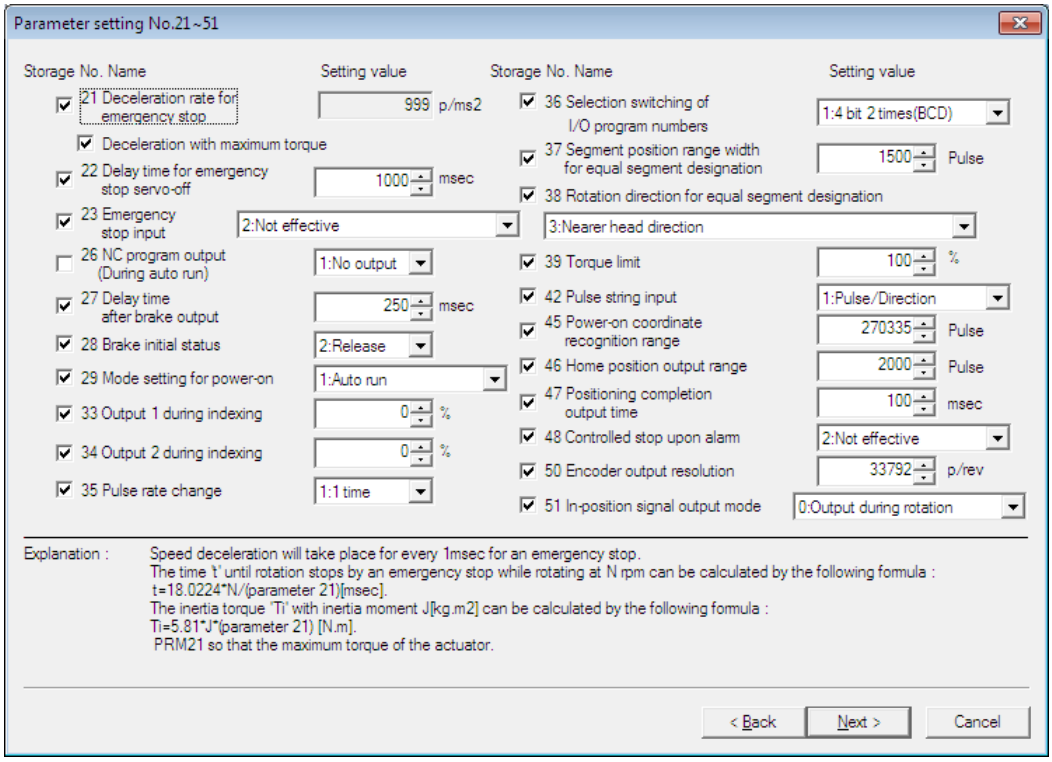
Perform editing to enter or edit parameters.

※Before executing [Parameter setting], be sure to execute [Reading] to load parameters from the driver to the editing work.

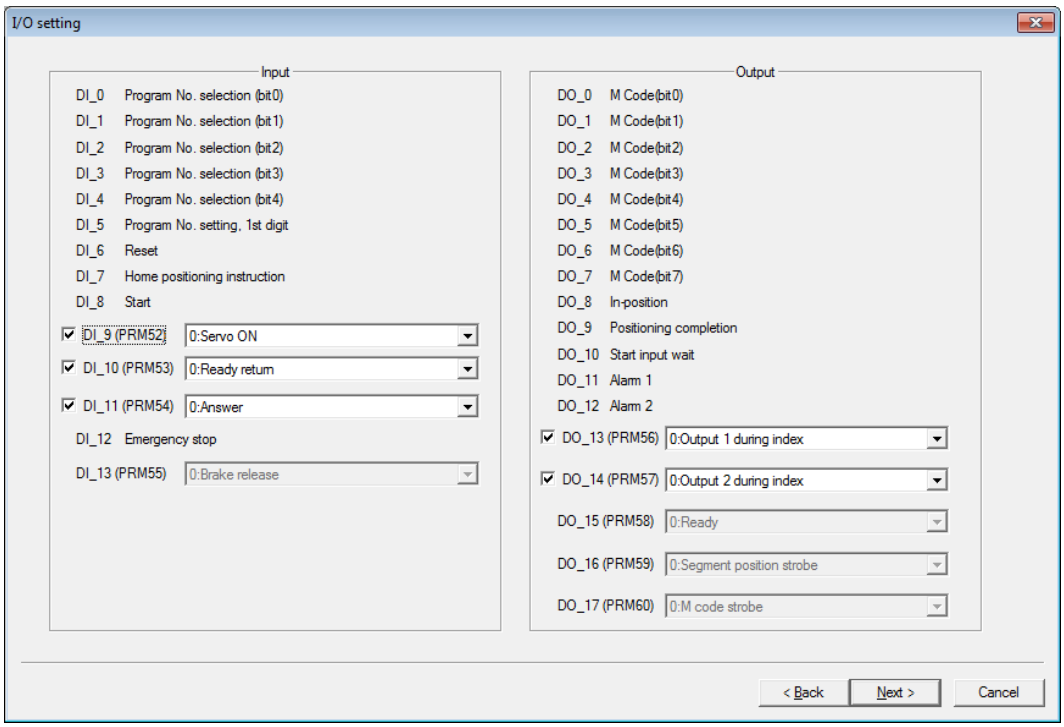
For details, refer to Section 7－3－2－1 "Reading".

The following dialog box is displayed.

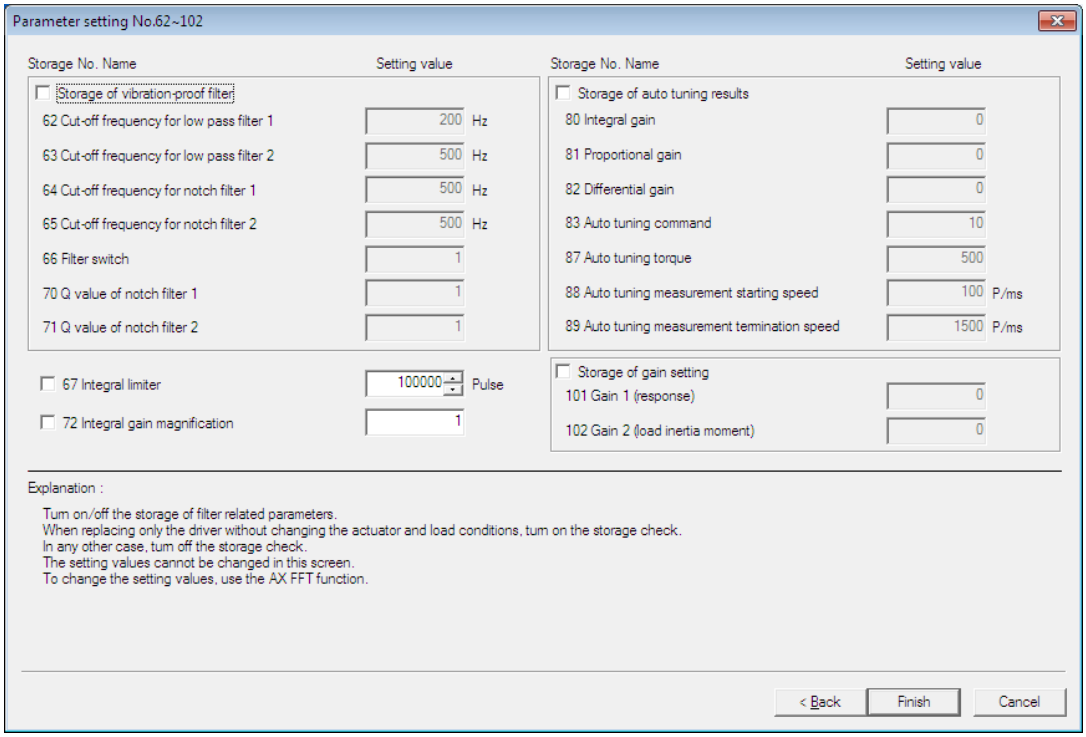




※The setting range differs depending on the driver type. In addition, some parameters may not be displayed.



※The I/O setting function can be used with TS, TH, MU and XS type drivers.
The I/O setting is not required for driver types other than the above. Click the [Next] button.

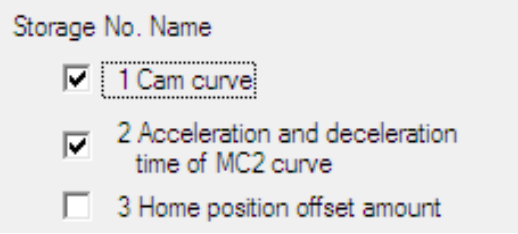


※The setting range differs depending on the driver type. In addition, some parameters may not be displayed.

The contents of parameter are displayed in "Explanation :" on display screen.
1. Edit the setting value
Move a cursor to the parameter to edit and inputs the value.
Settings for parameters 1-20
When [Parameter setting] starts, the setting screen for parameters 1-20 is displayed.
Click the [Next] button.
Settings for parameters 21-51
The setting screen for parameters 21-51 is displayed.
Click the [Next] button.
The setting of the I/O
Setting screen of I/O is displayed.
Click the [Next] button.
Settings for parameters 62-89
The setting screen for parameters 62-89 is displayed.
※For MU type drivers, the setting screen for parameters 62-102 is displayed.

Clicking the [Back] button displays the previous parameter setting window.
2. Cancel parameter setting
Click the [Cancel] button.
The setting is canceled. The parameter value is not saved in editing work.
3. Settle parameter setting
In the [Parameter setting No.62-89] window, click the [Finish] button.
The dialog box closes and the parameter values are saved in the editing workspace.

4. Store parameter

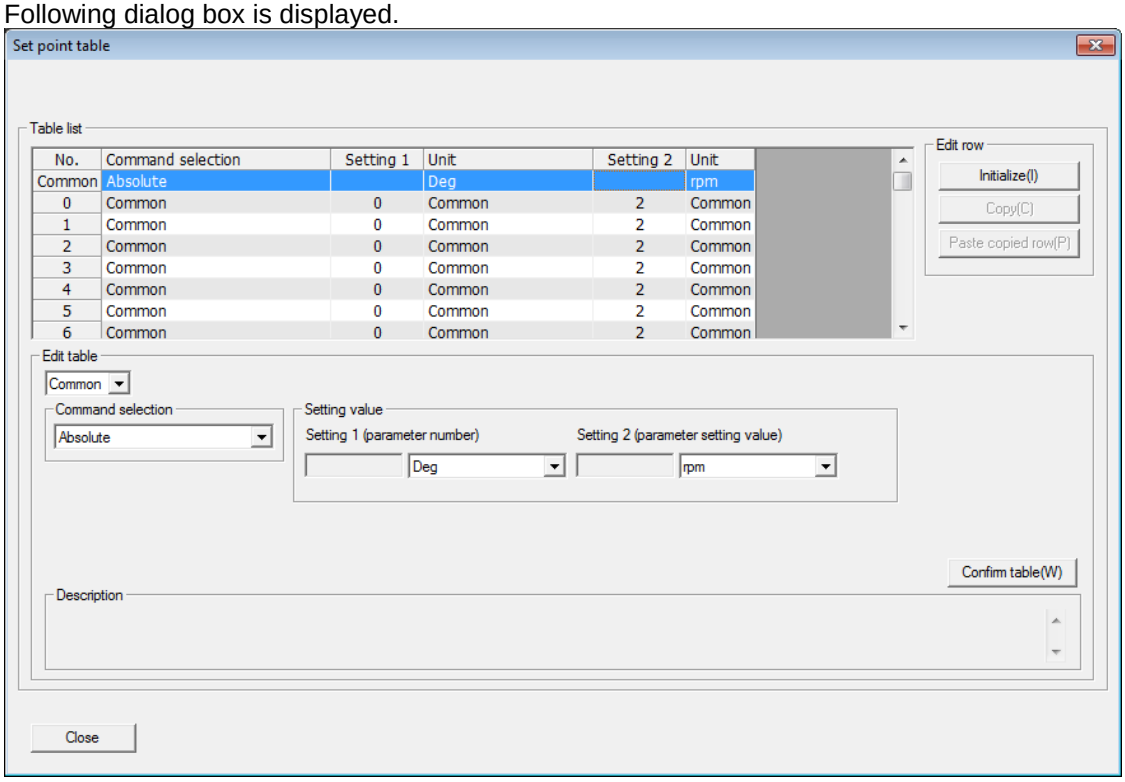


The checkboxes for each parameter determine whether the parameters are stored in ABSODEX. If the checkbox is ticked, the parameter is stored in ABSODEX. If the checkbox is left blank, the parameter is not stored in ABSODEX.
After entering or editing parameters of editing work, store parameters from the editing work to the ABSODEX driver, using [Storage].
For details, refer to Section ７－３－２－２ "Storage".

7－3－1－3 Point table

Sets and edits the point table in the editing workspace.

Following dialog box is displayed.



The contents of each input are displayed in "Explanation" on display screen.

(a) Table list

The contents set in the table is displayed.

(b) Editing of table list [Edit row]

Initialize and copy the table list.

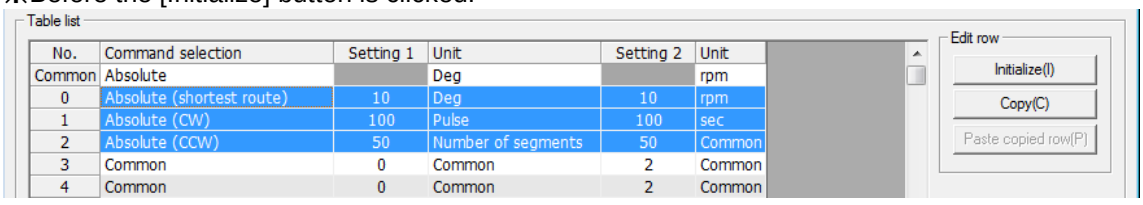
Multiple rows can be selected by the drag & drop operation of the mouse.

(b)-1 Initializing of row [Initialize]

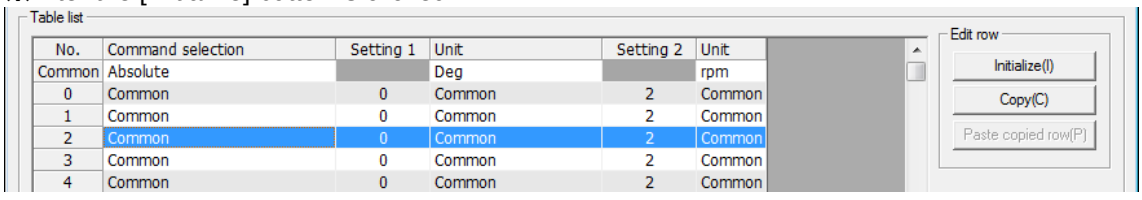
By clicking the [Initialize] button, all the settings of the selected row are initialized.

Multiple rows can be initialized.

※Before the [Initialize] button is clicked.



※After the [Initialize] button is clicked.

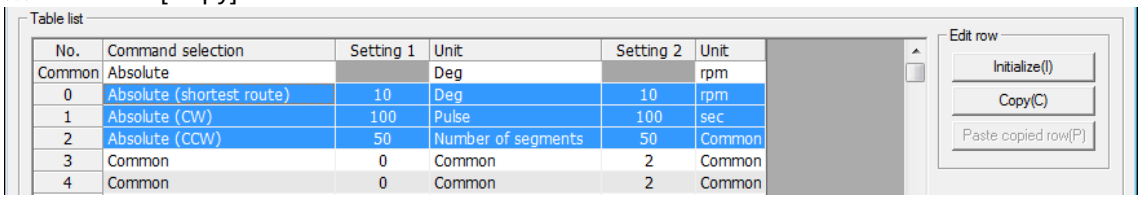


(b)-2 Copying of row [Copy]

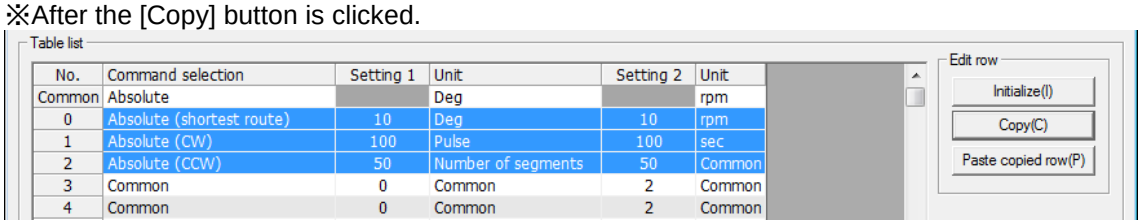
By clicking the [Copy] button, the [Paste copied row] button is valid.

Multiple rows can be copies.

※Before the [Copy] button is clicked.

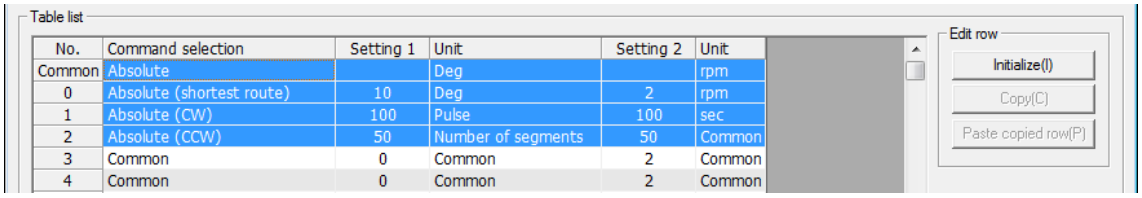


※After the [Copy] button is clicked.



When the common table row is selected, the [Copy] button is disabled.

※When the common table is selected



(b)-3 Pasting of copied row [Paste copied row]

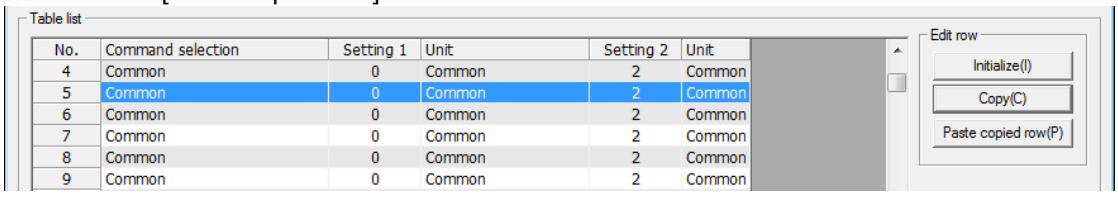
By clicking the [Paste copied row] button, the settings of the copied row is pasted on the selected row or the selected row and following rows.

※In the following explanation, refer to the row copied in (b)-2 as the copied row.

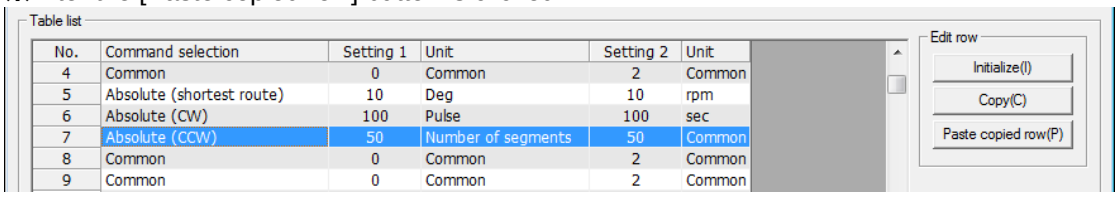
(b)-3-1 When 1 row is selected

The settings of the copied row is pasted on the selected row and following rows.

※Before the [Paste copied row] button is clicked.



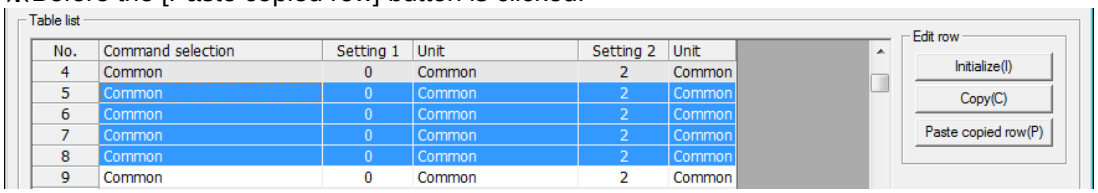
※After the [Paste copied row] button is clicked.



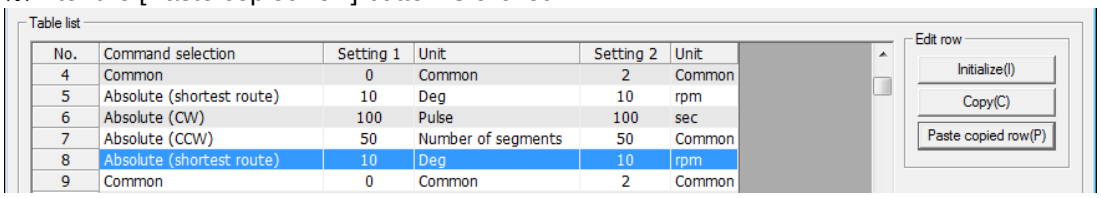
(b)-3-2 When multiple rows are selected and the number of selected rows exceeds the number of copied rows

The settings of the copied rows are pasted on the selected rows in ascending order of the copied table repeatedly.

※Before the [Paste copied row] button is clicked.



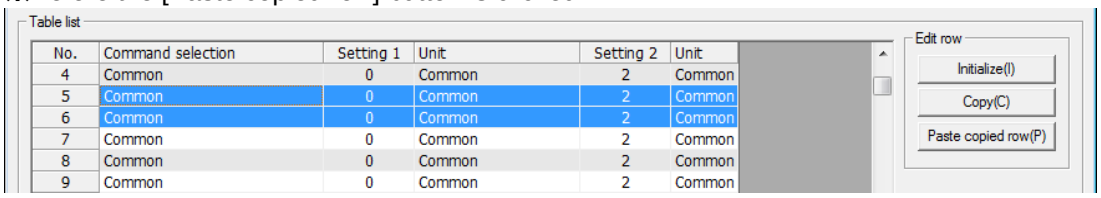
※After the [Paste copied row] button is clicked.



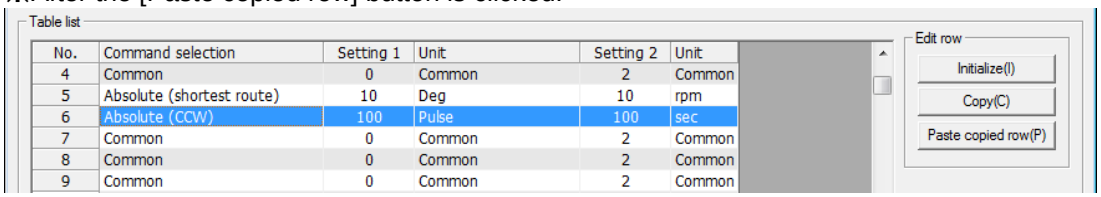
(b)-3-3 When multiple rows are selected and the number of selected rows is smaller than the number of copied rows

The settings of the copied rows are pasted on the selected rows by the same number of copied rows in ascending order of the copied table .

※Before the [Paste copied row] button is clicked.



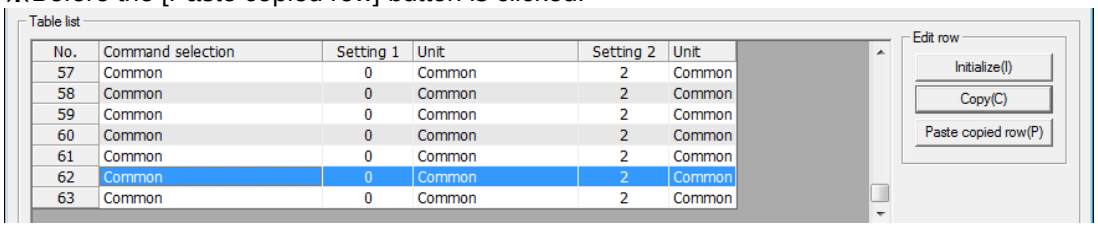
※After the [Paste copied row] button is clicked.



(b)-3-4 When multiple rows that overflows the pastable range are pasted

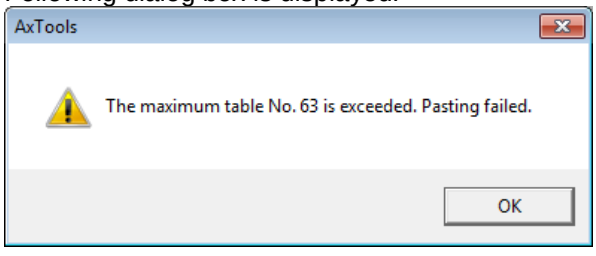
An error message is displayed.

※Before the [Paste copied row] button is clicked.



※After the [Paste copied row] button is clicked.

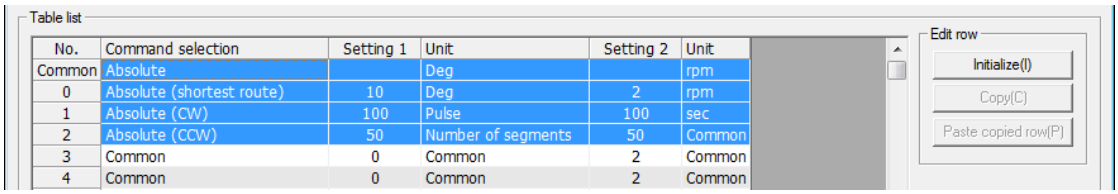
Following dialog box is displayed.



(b)-3-5 When the common table is selected

When the common table row is selected, the [Paste copied row] button is disabled.

※When the common table is selected



(c) Table editing

Set the row currently selected in [Table list].

[Table No.]

Displays the number of [Table list] currently selected.

When the number is changed in the list, a corresponding table list number status becomes selected.

[Select command]

Select a command to be set.

[Setting value]

Input a setting value for operation

[Confirm table] button

Use [Edit table] to fix the set contents.

Click the [Confirm table] button, the contents displayed in [Edit table] are reflected in [Table list].

[Description]

Displays the description of the item selected in [Edit table].

(d)-1 Setting contents in table editing

The following table shows the contents that can be set in table editing

The setting contents for Common table are different from Tables 0 to 63.

When "Common" is set in Select command of Tables 0 to 63, Unit of setting value 1, and Unit of setting value 2, the common table setting is applied.

(1) Items that can be set in Common table

Common table				
Select command	Setting value 1	Unit of setting value 1	Setting value 2	Unit of setting value 2
Absolute※	Setting disabled	[Degree]※ [Pulse] [Number of segments]	Setting disabled	[rpm]※ [Sec.]
Absolute (shortest route)				
Absolute (CW)				
Absolute (CCW)				
Incremental				
Incremental (1 rotation)				

※Initial settings of Common table

(2) Items that can be set in Tables 0 to 63

Tables 0 to 63				
Select command	Setting value 1	Unit of setting value 1	Setting value 2	Unit of setting value 2
Common※	Enter a setting.	[Common]※ [Degree] [Pulse] [Number of segments]	Enter a setting.	[Common]※ [rpm]※ [Sec.]
Absolute				
Absolute (shortest route)				
Absolute (CW)				
Absolute (CCW)				
Incremental				
Incremental (1 rotation)				
Home position return	Setting disabled	Setting disabled	Setting disabled	Setting disabled
Designate number of segments	Enter a setting.			
Change gain magnifications				
Activate brake	Setting disabled			
Release brake				

※Initial settings of Table 0 to 63

(d)-2 Range of the table editing settings

Select command	Unit	Minimum	Maximum	Initial
Common Absolute Absolute (shortest route) Absolute (CW) Absolute (CCW) Incremental Incremental (1 rotation)	Common	Value of unit selected in the common table		
	Degree	-360.000	360.000	0
	Pulse	-4194304 or -540672※	4194304 or 540672※	
	Number of segments	1	255	1
	rpm	0.11	240.00 or 300.00※	2
	Sec.	0.01	100.00	
Designate number of segments	-	1	255	1
Change gain magnifications	-		0, 50～200	0

※The setting range differs depending on the driver type.

(e) Confirm table settings [Close]

Ends the table program editing and dialog box is closed.

The point table data is saved in the editing workspace.

7－3－1－4 Home position offset amount

Set amount of home position offset.

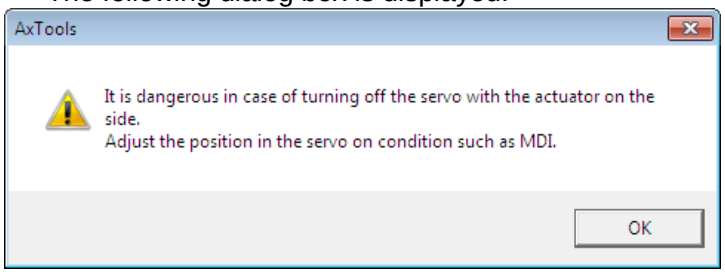
※Turning off the servo with the actuator on the sides may cause the weight of the load to rotate the output shaft to cause a danger.

Do not execute the operation according to 1. [To set the offset amount by rotating the motor manually]. After adjusting the position in the servo-on status, execute the operation according to 2. [To set the current position as the home position]

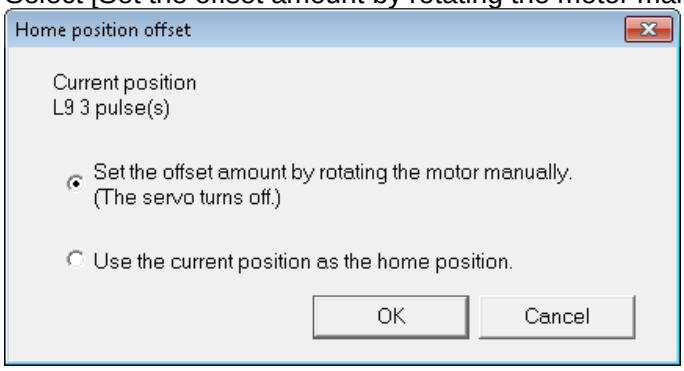
1. To set the offset amount by rotating the motor manually

<Operation>

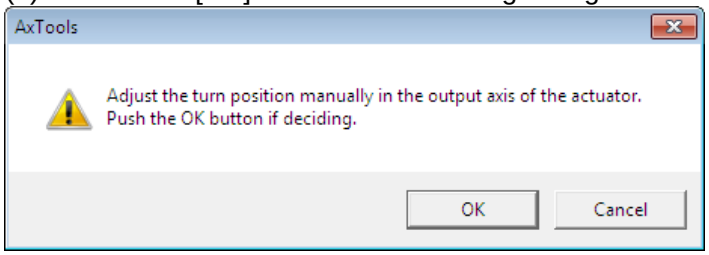
(1) Select the [Home position offset] command of the Edit tab.
The following dialog box is displayed.



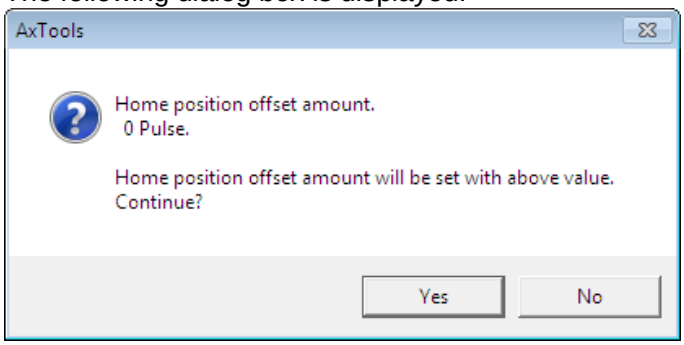
(2) Or click the [OK] button. The following dialog box is displayed.
Select [Set the offset amount by rotating the motor manually.]



(3) Or click the [OK] button. The following dialog box is displayed.

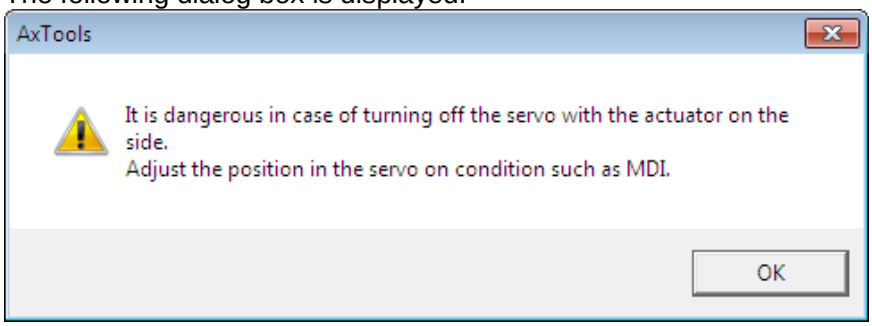


(4) Click the [OK] button after adjusting the position manually.
(Stop setting processing by [Cancel].)
The following dialog box is displayed.

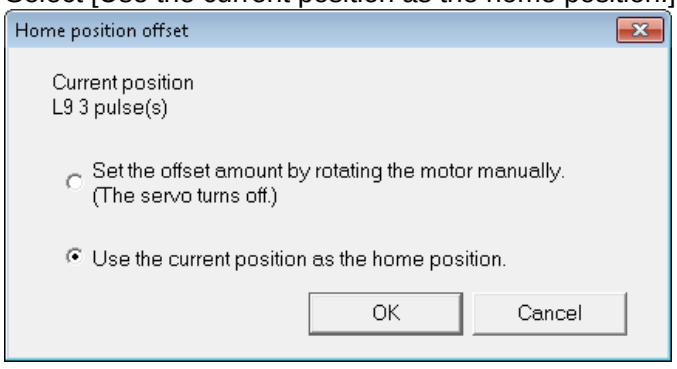


(5) Clicking the [Yes] button applies the setting.
(Clicking the [No] button returns the step back to (2).)
※The amount of home position offset to have turned on once again to or to have been set to it after returning in home position becomes effective.

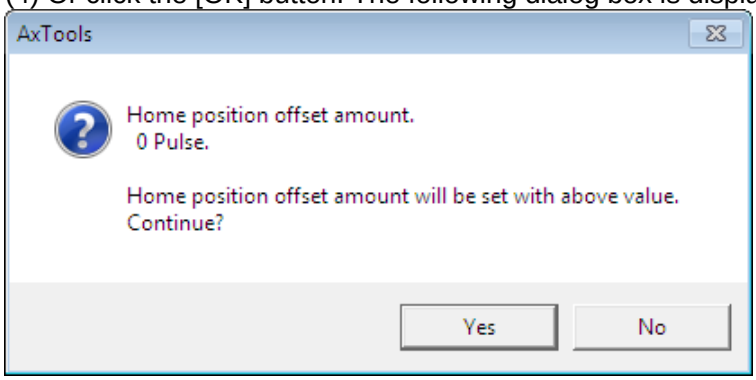
2. To set the current position as the offset amount
※After adjusting the position in the servo-on status, execute the operation.
<Operation>
(1) First, drive to the position where to be set as home position.
(2) Select the [Home position offset amount] command in the [Edit] tab.
The following dialog box is displayed.



(3) Or click the [OK] button. The following dialog box is displayed.
Select [Use the current position as the home position.].



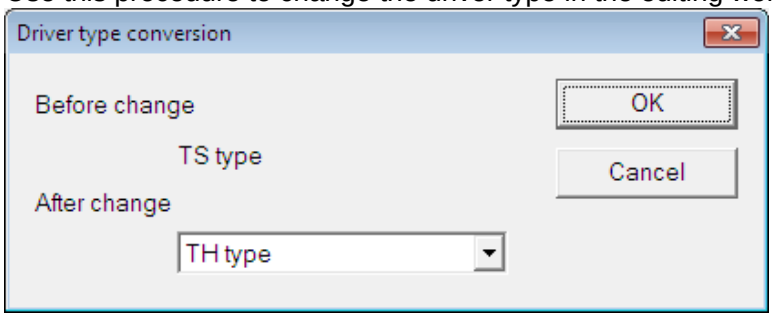
(4) Or click the [OK] button. The following dialog box is displayed.



(5) Clicking the [Yes] button applies the setting.
(Clicking the [No] button discards changes in the setting.)
※The amount of home position offset to have turned on once again to or to have been set to it after returning in home position becomes effective.

7－3－1－5 Change driver type

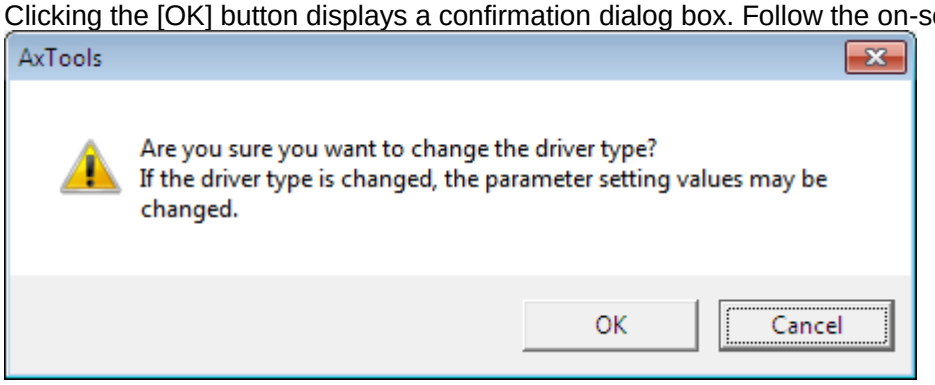
Use this procedure to change the driver type in the editing workspace



[Before change] Shows the current driver type.
[After change] Select the driver type you want to change to.

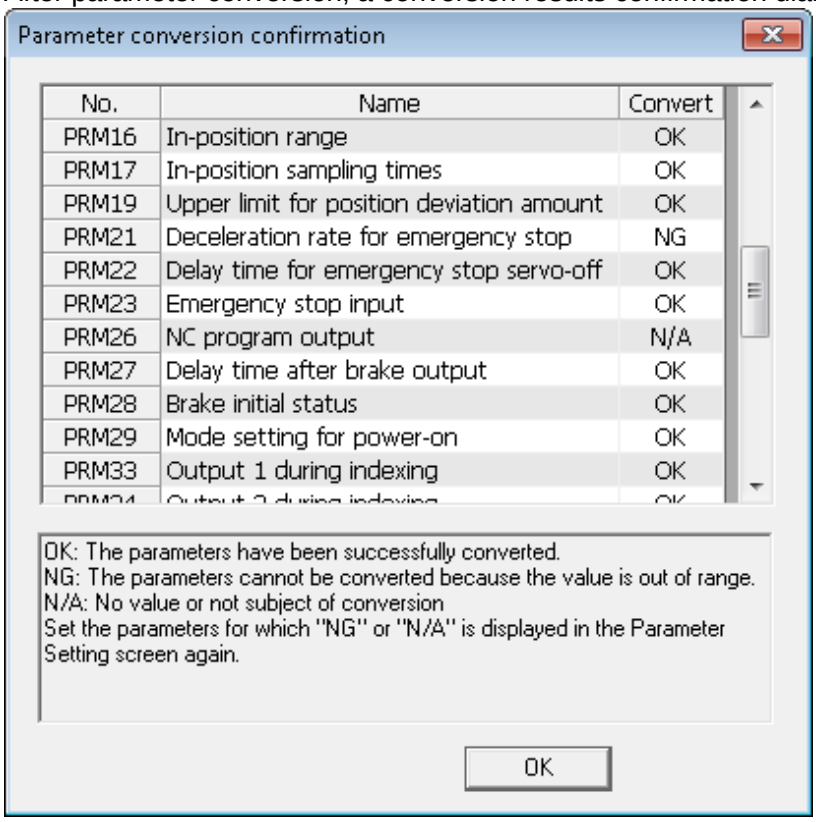
Select the new driver type, and click the [OK] button to apply the new driver type.
Click the [Cancel] button to cancel the driver type change.

Clicking the [OK] button displays a confirmation dialog box. Follow the on-screen instructions.



Drivers can be converted to the following 8 types:
TS type
TH type
MU type
XS type
GS type
S type
GH type
H type

After parameter conversion, a conversion results confirmation dialog box is displayed.



Click the [OK] button to close the dialog box.

※For parameters with NG or N/A as the conversion result, configure the settings in the Parameter setting screen.

For details, refer to "7－3－1－2 Parameter setting".

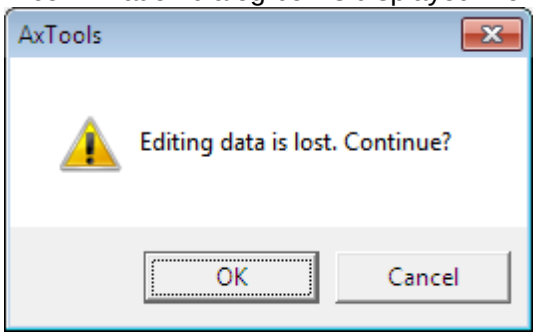
7－3－1－6 Editorial data

7－3－1－6－1 Editorial data clearance

Use this command to delete the target data from the editing workspace.

※When the data exists already in editing workspace.

A confirmation dialog box is displayed. Follow the on-screen instructions.



(a) All data

Deletes the program and parameters in the editing workspace and the data in the point table.

(b) Only parameter

Only parameter data in the editing workspace is deleted.

The program and the data in the point table are not deleted.

※When the data exists already in editorial work.

A confirmation dialog box is displayed. Follow the on-screen instructions.

(c) Only Program

It deletes only program data in editorial work.

The parameters and the data in the point table are not deleted.

※When the data exists already in editorial work.

A confirmation dialog box is displayed. Follow the on-screen instructions.

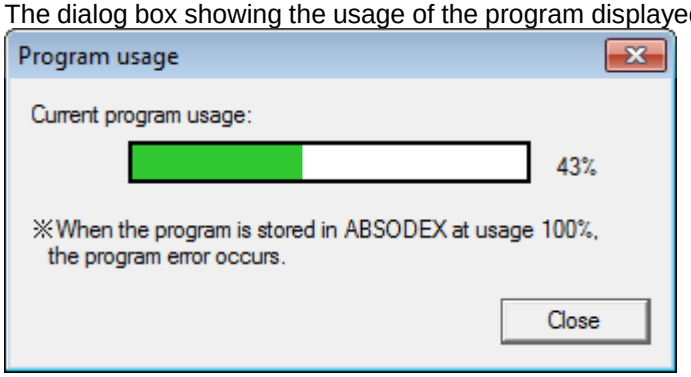
(d) Point table only

Deletes only the point tale data in the editing workspace.
The program and the data of parameters are not deleted.
※When the data already exists in the editing workspace
A message to confirm is displayed. Follow the instructions.

7－3－1－6－2 Editorial data usage

(a) Program only

The dialog box showing the usage of the program displayed on the editing workspace is displayed.

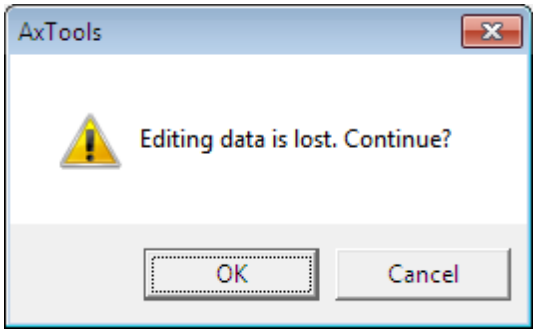


Click the [Close] button. The dialog box is closed.
※If the program already registered in ABSODEX exists, registration of the program may fail.

7－3－2 Reading/storage group

7－3－2－1 Reading

Use this command to read the target data from the ABSODEX to the editing workspace.
※When the data exists already in editorial work.
Follow the indication as the DIALOG to confirm is displayed.



7－3－2－1－1 All data

Reads all the program, values of parameters, and point table from ABSODEX to the editing workspace.

7－3－2－1－2 Only parameter

Read only the values of all the parameters from the ABSODEX.
The program and the point table data are not read.

7－3－2－1－3 Only Program

Read only all programs from ABSODEX.
The values of parameters and the point table data are not read.

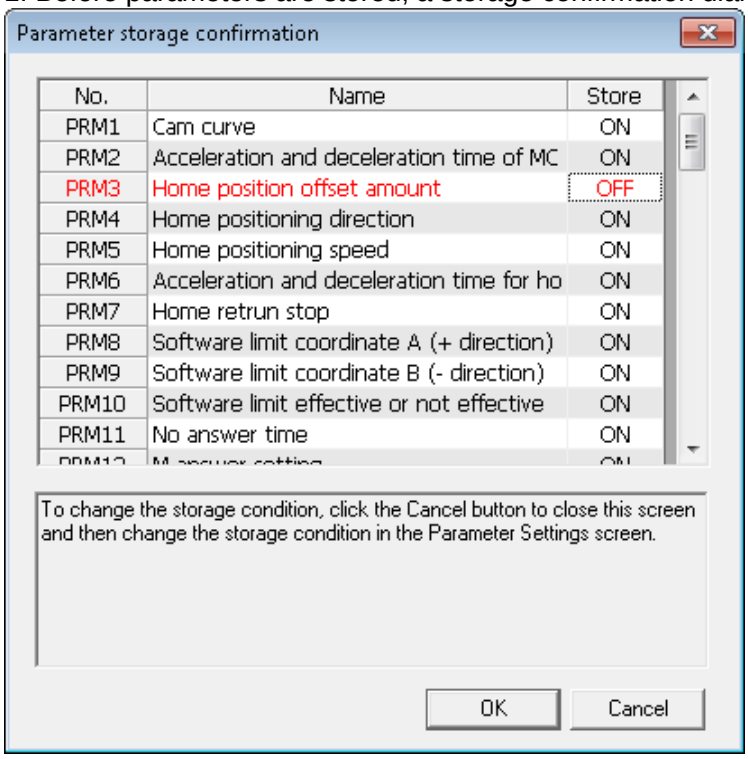
7－3－2－1－4 Point table only

Reads only all the point table data from ABSODEX.
The values of parameters and the program data are not read.

7－3－2－2 Storage

Use this command to store the target editorial data in the ABSODEX.

1. Before parameters are stored, a storage confirmation dialog box is displayed.



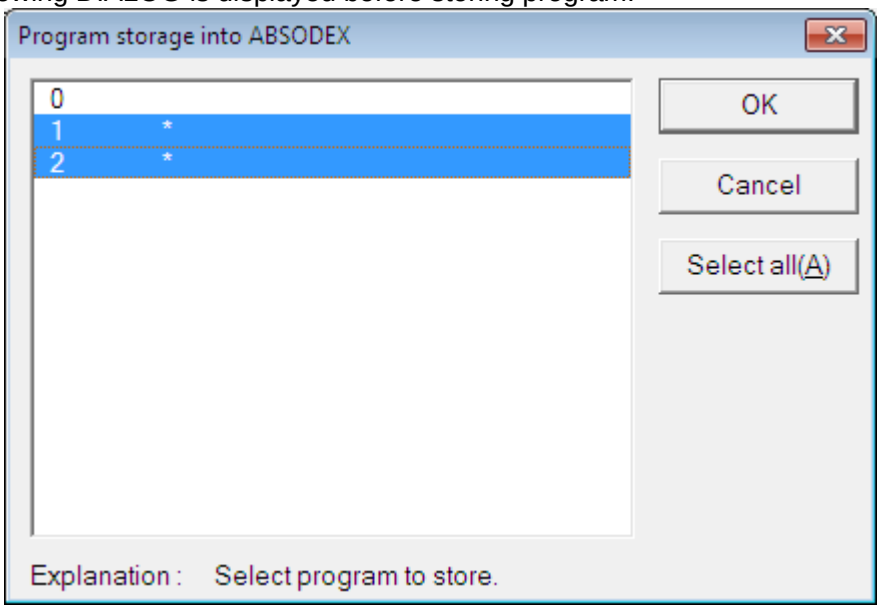
[Store]: ON The parameter is stored in ABSODEX.
[Store]: OFF The parameter is not stored in ABSODEX.

When the [OK] button is clicked
The parameters with [Store]: ON selected are stored in ABSODEX.

When the [Cancel] button is clicked
Parameter storage is cancelled (no parameters are stored).

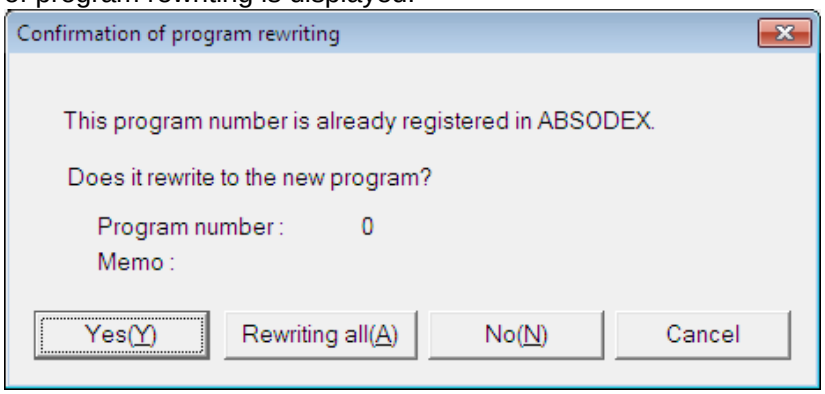
※Parameter storage ON/OFF settings can be changed in [Parameter setting].
For the details, refer to "7－3－1－2 Parameter setting".
※If the driver type in the editing workspace differs from the stored driver type, parameter storage fails. To store parameters for a different driver type, change the driver type.
For the details, refer to "7－3－1－5 Change driver type".

2. The following DIALOG is displayed before storing program.



Select the program to store (It is possible to select when clicking with the mouse or pushing the space key) and click the [OK] button.
To select all the programs, click the [Select all(A)] button.

3. When the program number to store is already used in ABSODEX, the DIALOG of confirmation of program rewriting is displayed.



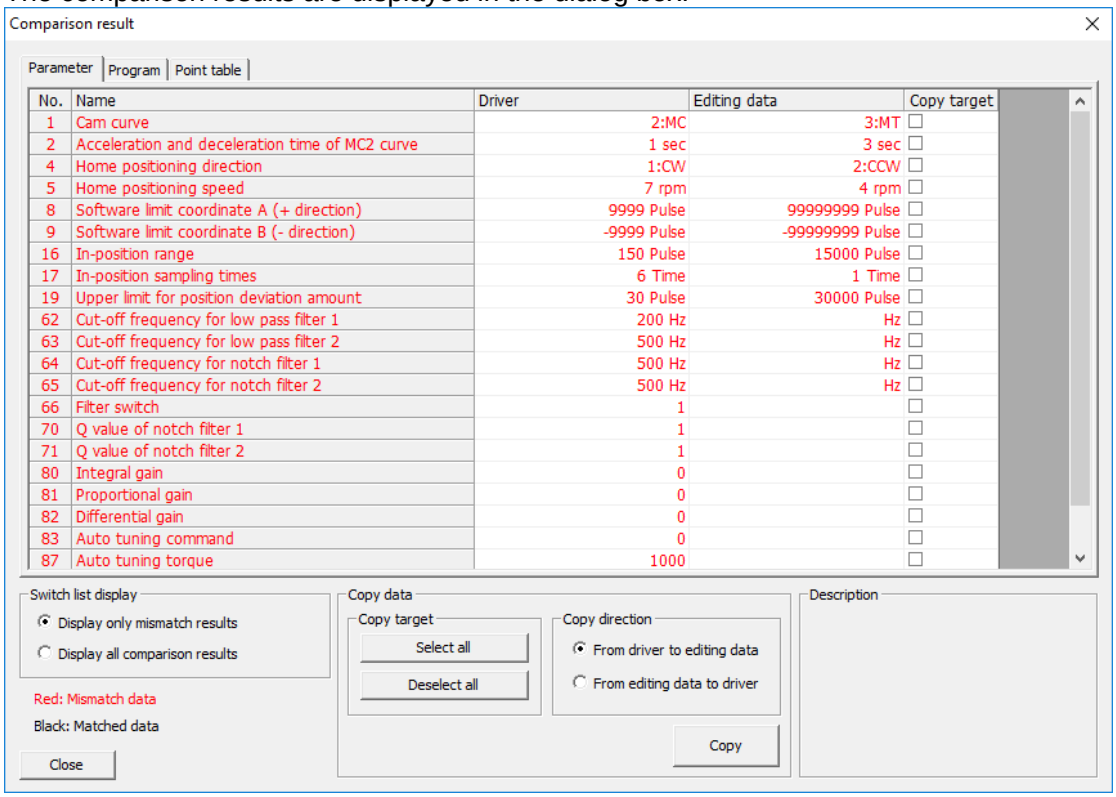
When rewriting
Select the [Yes(Y)] button. The program number displayed is rewritten.
When [Rewriting all(A)] is selected, all the selected programs are rewritten without opening this dialog box.
When not rewriting
Select the [No(N)] button. The program displayed is not rewritten.
When stopping
Selecting the [Cancel] button cancels the storage of the selected programs.
The data before canceling is stored into ABSODEX.

7－3－2－3 Comparison

Use this command to compare the editorial data with the driver data, and display the results in the dialog box.

7－3－2－3－1 All data

Compare the editorial data with the driver data in Parameter, Program, and Point table. The comparison results are displayed in the dialog box.



1. Select the tab.

(1) Parameter

Displays the comparison results of the parameter.

(2) Program

Displays the comparison results of the program.

(3) Point table

Displays the comparison results of the point table.

2. Switch list display

Switches the data displayed in the list by selecting the radio button.

(1) Display only mismatch results

Displays only mismatch data. The display color of the characters is red.

(2) Display all comparison results

Displays all compared data.

The mismatch data is displayed in red and the matched data is in black.

3. Copy data

3-1. Copy target

Switches the check statuses of the check boxes in the "Copy target" column of the comparison result list.

(1) Select all

Selects all the check boxes in the "Copy target" column.

(2) Deselect all

Deselects all the check boxes in the "Copy target" column.

3-2. Copy direction

Specifies the copy direction of data.

(1) From driver to editing data

Copies the driver data to the editorial data.

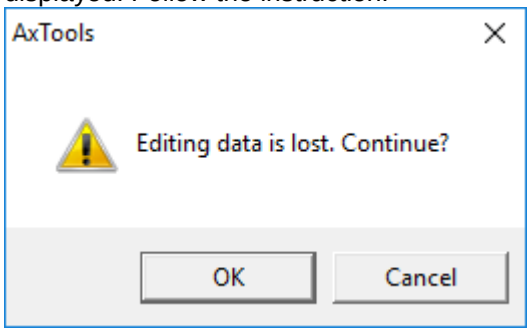
(2) From editing data to driver

Stores the editorial data in the driver data.

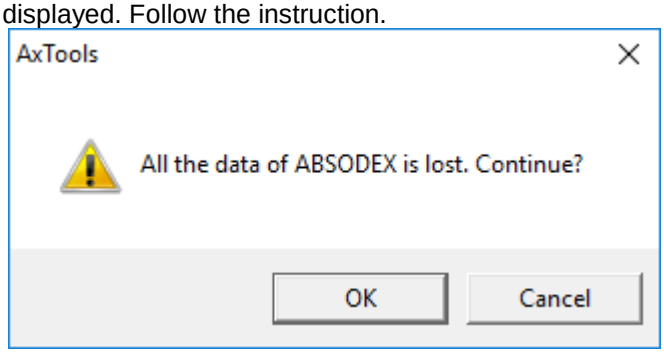
3-3. Copy

Copies the data selected in the "Copy target" column in the direction specified in Copy direction.

When "From driver to editing data" is selected in "Copy direction", the following dialog box is displayed. Follow the instruction.



When "From editing data to driver" is selected in "Copy direction", the following dialog box is displayed. Follow the instruction.



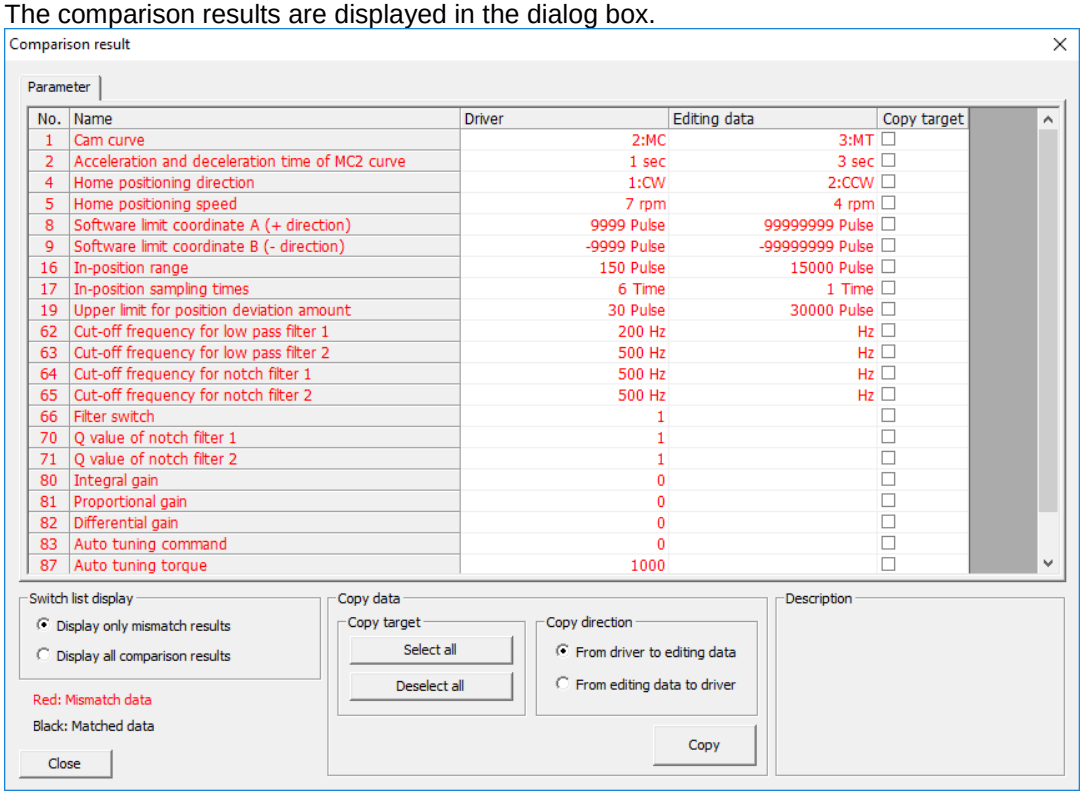
4. Close

Closes the Comparison result dialog box.

7－3－2－3－2 Only parameter

Compare the editorial data with the driver data in Parameter.

The comparison results are displayed in the dialog box.

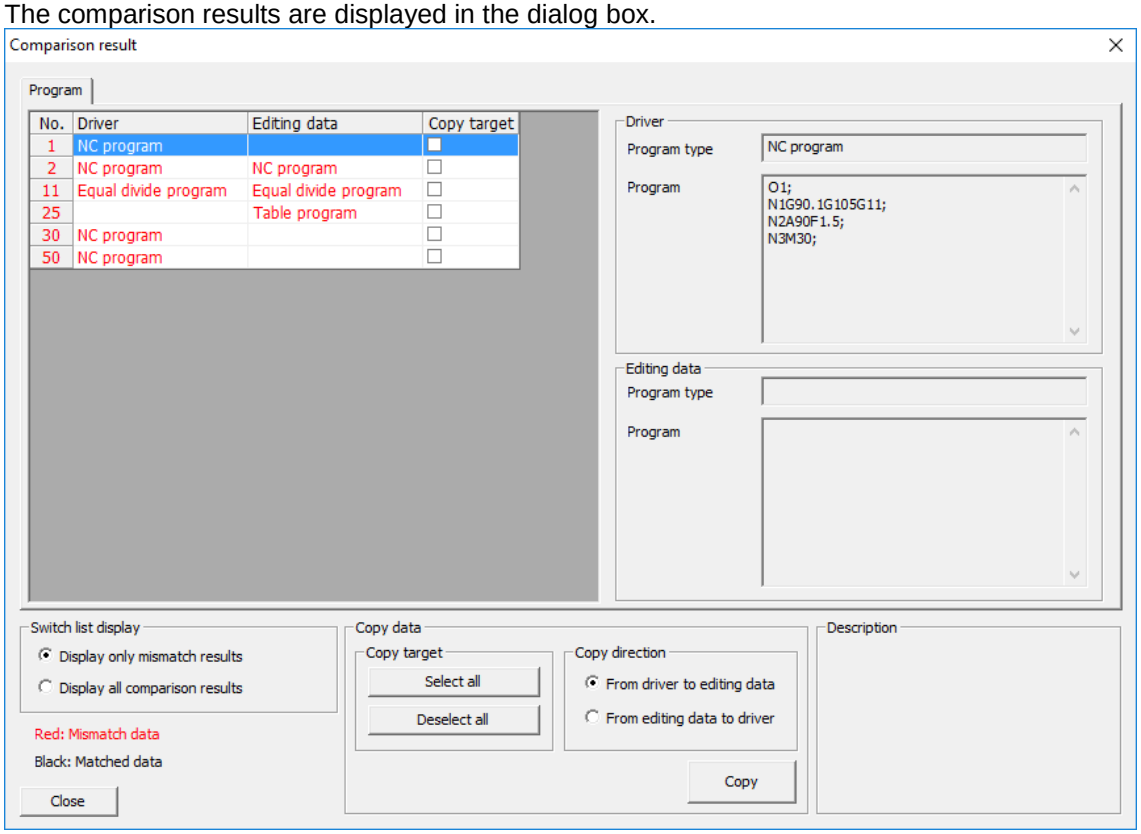


For details of the radio buttons and buttons at the bottom of the screen, refer to "7－3－2－3－1 All data".

7－3－2－3－3 Only program

Compare the editorial data with the driver data in Program.

The comparison results are displayed in the dialog box.

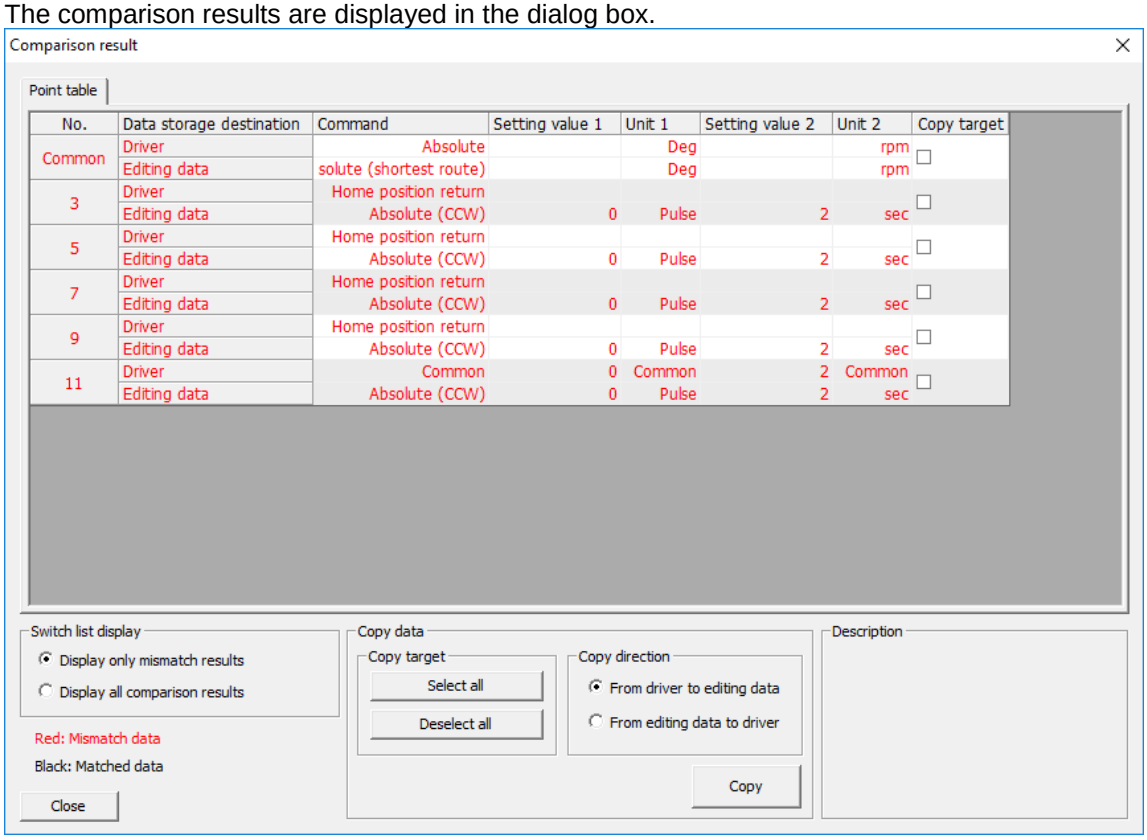


1. Display the program.
When a row is selected in the comparison result list, the program details of Driver are displayed at the upper right and that of Editing data at the lower right of the screen.

For details of the radio buttons and buttons at the bottom of the screen, refer to "7－3－2－3－1 All data".

7－3－2－3－4 Point table only

Compare the editorial data with the driver data in Point table.
The comparison results are displayed in the dialog box.



For details of the radio buttons and buttons at the bottom of the screen, refer to "7－3－2－3－1 All data".

7－3－3 Tool group

7－3－3－1 I/O signal status display

Refer to the common function.

7－3－3－2 Operation command

Refer to the common function.

7－3－3－3 Terminal

Refer to the common function.

7－3－4 ABSODEX control group

7－3－4－1 ABSODEX initialization

Refer to the common function.

7－4 Code list

7－4－1 NC code

Code	Function		Data Range	Remarks
O	Program number		0 to 999	0 to 255 can be selected from I/O. "o" is automatically added.
N	Sequence number		0 to 999	Can be omitted.
G	Preparation function		0 to 999	Refer to Section 7－4－2 "G code".
A	Instruction to move coordinate axis	G90, G91, G91.1	±9999999	Unit: pulse
			±6658.380	Unit: angle
			±4716	Unit: number of indexes
		G90.1, G90.2, G90.3	±540672	Unit: pulse
			±360.000	Unit: angle
			1 to Designated number of segments	Unit: number of indexes
	Designation of segment numbers		1 to 255	
	Continuous rotation speed		±300.00 (Note)	Unit: rpm
F	Designation of speed		0.01 to 300.00 (Note)	Unit: rpm
			0.01 to 100.00	Unit: sec
M	Auxiliary function		0 to 99	Refer to Section 7－4－3 "M code".
P	Dwell		0.01 to 99.99	Unit: sec G40P□□. □□
	Designation of sub-program number		0 to 999	Program No. M98P□□□
	Gain magnification		0, 50 to 200	Unit: % G12P□□□ 0% input will set servo-off.
	Acceleration and deceleration for continuous rotation		0.01 to 50	Unit: sec G08P□□□ G09P□□□
	Parameter data setting		Range defined by parameters	Unit: the unit defined by each parameter; G79S□□P□□□
L	Numbers of repetition		1 to 999	Repeats the block as specified.
J	Jump		0 to 999	J0 causes a return to the top of the program.
S	Parameter data setting		1 to 99	Setting parameter No.; G79S□□□P□□□

（Note）The minimum rotation speed of the actuator is 0.11rpm.
The rotation speed varies according to the model.
For details, refer to "ACTUATOR SPECIFICATIONS" in the driver instruction manual.

※The setting range differs depending on the driver type.

7－4－2 G code

Group	Code	Function	Description
A ＊	G01	Positioning	To position at A with speed F. <Input Method> G01A□□F□□; Note: A□□command can make positioning without G01.
	G07	Continuous rotation	Under continuous rotation at the speed A (rpm). <Input Method> G07 A±□□; Unit of A: rpm "+" indicates clockwise rotation, while "-" indicates counterclockwise rotation. Note: Select less than 80 rpm for G07 continuous rotation.
	G28	Home positioning	Enable home positioning
	G72	Pulse string input	Motion with accordance with the pulse string input by CN3. The program stop input or start input will terminate the execution of G72.
	G92	Setting of coordinate system	Enables setting or changing coordinate system. Like G92A0, with the code A suffixed to G code, the coordinate system is set so that the current position is the value to follow A.
	G92.1	Setting of coordinate system	To set the home position of G92 user coordinate at power-on is the value which follows A.
B	G04	Dwell	Delay to shift to the next block. <Input Method> G04 P□□. □□;
	G08	Acceleration time for continuous rotation	Acceleration takes place for the time specified by P for continuous rotation. <Input Method> G08 P0.5; acceleration time 0.5sec.
	G09	Deceleration time for continuous rotation	Deceleration takes place for the time specified by P for continuous rotation. <Input Method> G09 P0.5; deceleration time 0.5sec.
	G12	Change of Gain Magnification Rate	Displays the magnification for the gain determined by Gain 1 and Gain 2. <Input Method> G12 P100; 100% G12 P0; cause servo-off at 0%.
	G79	Parameter data setting	Substitute the parameter number with "S" for the value of P. <Input Method> G79S1P2; To substitute the parameter 1 for 2.
C	G101	Designation of Segment Numbers	One rotation is equally segmented to set A unit to index number G106. <Input Method> G101A10; ←One rotation = 10 segments G01A1; ←Unit of A is index number Note: Do not specify "G101" in the same block as the A-group.
	G104	Designation of pulses	Unit of A is pulse.
＊	G105	Designation of angles	Unit of A is angle.
	G106	Designation of index	Unit of A is numbers of index. If not set by G101, program error will occur.

The asterisk (＊) indicates the power-on setting.

Group	Code	Function	Description
D	G10	Designation of rotation number	Unit of F is rpm. Moving speed is specified by the maximum rotation number.
*	G11	Designation of time	Unit of F is second. Moving time is specified.
E *	G90	Absolute dimension	Thevalue of A to be made absolute value from the home position of coordinates.
	G90.1	One rotation absolute dimension	The actuator moves to the nearer direction with the value A as the one (1) rotation absolute value from the coordinate home position. The user coordinate after completion of positioning is adjusted within -180° to 179.999°. The specified range of A is within ±360°. Specifying 180° will cause the actuator to rotate CCW.
	G90.2	CW direction absolute dimension	The actuator moves to the CW direction with the value A as the one (1) rotation absolute value from the coordinate home position. The user coordinate after completion of positioning is adjusted within -180° to 179.999°. The specified range of A is within ±360°. (The actuator motions between 0 to 360° in the CW direction.)
	G90.3	CCW direction absolute dimension	The actuator moves to the CCW direction with the value A as the one (1) rotation absolute value from the coordinate home position. The user coordinate after completion of positioning is adjusted within -180° to 179.999°. The specified range of A is within ±360°. (The actuator motions between 0 to 360° in the CCW direction.)
	G91	Incremental dimension	The value of A to be made incremental value from the current position. Designate the direction of rotation, using the sign attached to the value following "A". A positive value (without a sign) indicates clockwise rotation, while a negative value (-) indicates counterclockwise rotation.
	G91.1	One rotation incremental dimension	The value of A is the incremental value from the current position. Designate the direction of rotation, using the sign attached to the value following "A". A positive value (without a sign) indicates clockwise rotation, while a negative value (-) indicates counterclockwise rotation. The user coordinate after completion of positioning is adjusted within -180° to 179.999°.

The asterisk (*) indicates the power-on setting.

7－4－3 M code

Group	Code	Function	Description
A	M00	Program Stop	After completion of the current block, the program stops. When the start signal is input again, program execution starts with the next block.
	M30	End of Program	The program terminates to return the head block of the program.
B	M98	Sub-program call	Executes sub-program. <Input Method> M98 P□□□ ←sub-program number Nest is feasible up to four times.
	M99	End of sub-program	Indicates the end of sub-program. After executing the block containing M99, the main program is resumed.
C	M68	Braking Motion	De-energize the valve for the brake and dose not make servo system integral control. Turn off across the BK+ and BK- terminals of the driver.
	M69	Brake Releasing	Energize the valve for the brake and makes servo system integral control. Turn on (24VDC) across the BK+ and BK- terminals of the driver.
D	M20 to M27	I/O Output	M signal in bit corresponding to the first digit is output to CN3, and M code strobe output will turn ON simultaneously. Three (3) M codes can be written in the same block, and can be output simultaneously.
E	M70	Segment position output	When "G101" is used, the M code output corresponding to the indexing position (bits 0 to 7: binary format) and the segment position strobe output are simultaneously output at CN3. The segment position for n segmentation is expressed 1 to n.

Section 8 Monitor

8－1 Overview of the [Monitor] tab

In this tab, you can set the I/O status display, display a velocity waveform, and set the vibration-proof filter for the ABSODEX.

8－2 List of functions in the [Monitor] tab

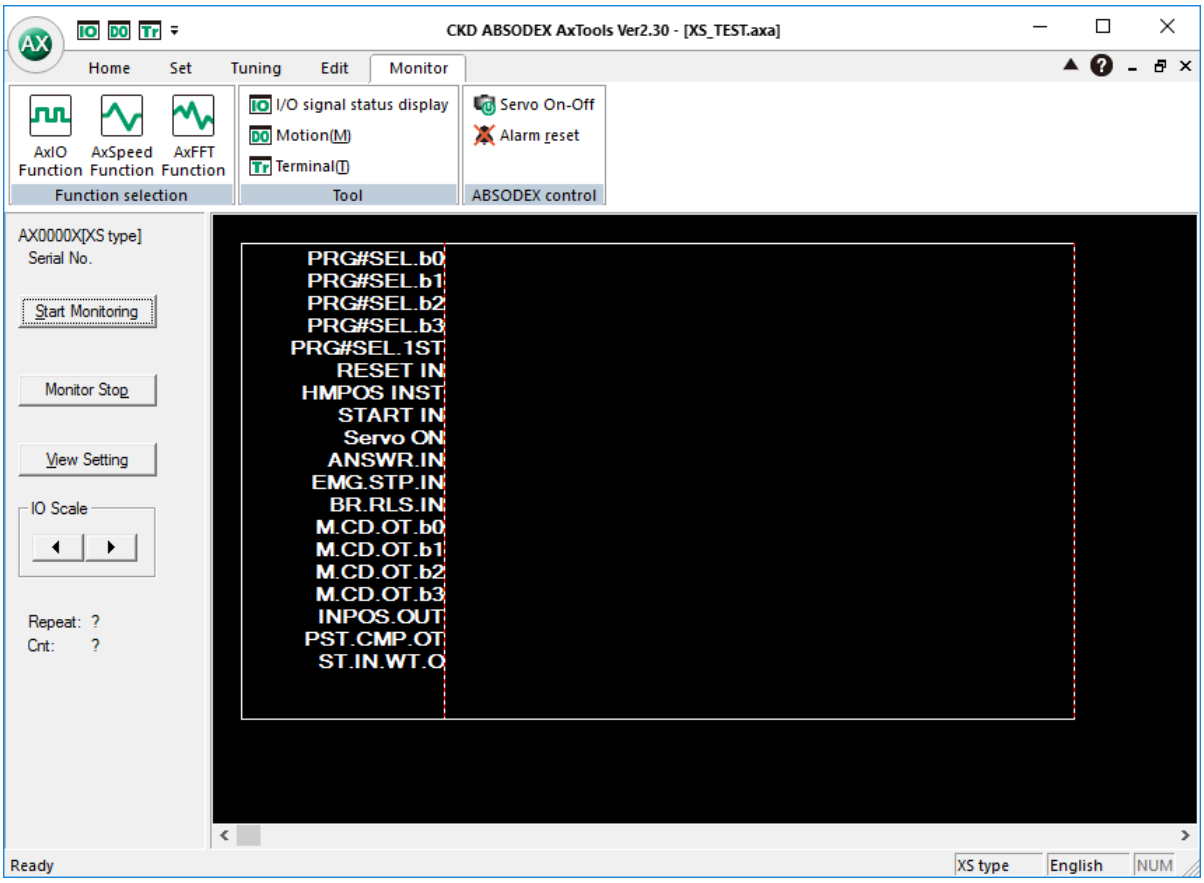
Group name	Command name	Description	Section number
Function selection	AxIO Function	Display the I/O signal waveform of the ABSODEX.	8－2－1－1
	AxSpeed Function	Display the velocity waveform of the ABSODEX.	8－2－1－2
	AxFFT Function	Set the digital filter.	8－2－1－3
Tool	I/O signal status display	Display the current status of the I/O signal.	8－2－2－1
	Operation command	Perform the basic operations for the ABSODEX.	8－2－2－2
	Terminal	Send/receive commands to/from the ABSODEX.	8－2－2－3
ABSODEX control	Servo On-Off	Switch the servo On-Off status.	8－2－3－1
	Alarm reset	Reset alarm.	8－2－3－2

8－2－1 Function selection group

8－2－1－1 AxIO Function

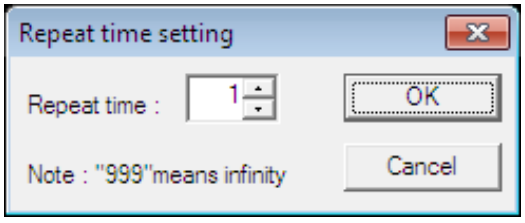
This function is to display the I/O status of the ABSODEX.

Select the [AxIO Function] command in the [Monitor] tab. The following view is displayed.



8－2－1－1－1 I/O status display mode

(a) Starting I/O display [Monitor start]



Specify the I/O switching counts. The I/O status of the ABSODEX is read and a graph is displayed.

Up to 3000 pieces of data is stored each time, while the data is reset upon each switching.

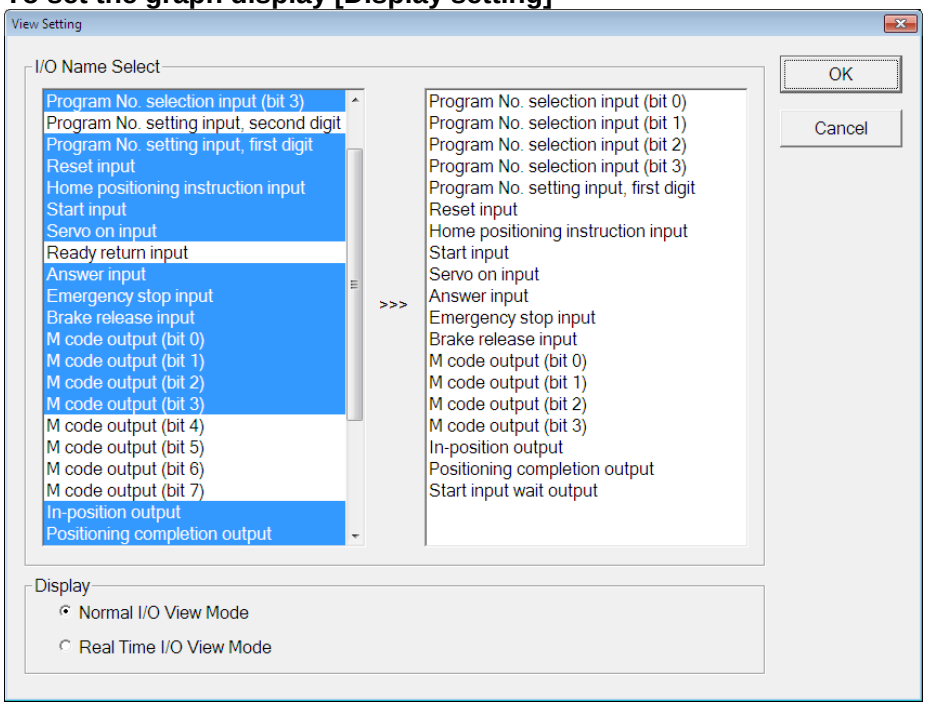
The function is automatically stopped when the designated count is reached, while you can stop it manually.

Enter "999" to cause an infinite switching. Switching continues until you stop it.

(b) Exiting from I/O display [Monitor stop]

I/O status reading of the ABSODEX is stopped and graph display is terminated.

(c) To set the graph display [Display setting]



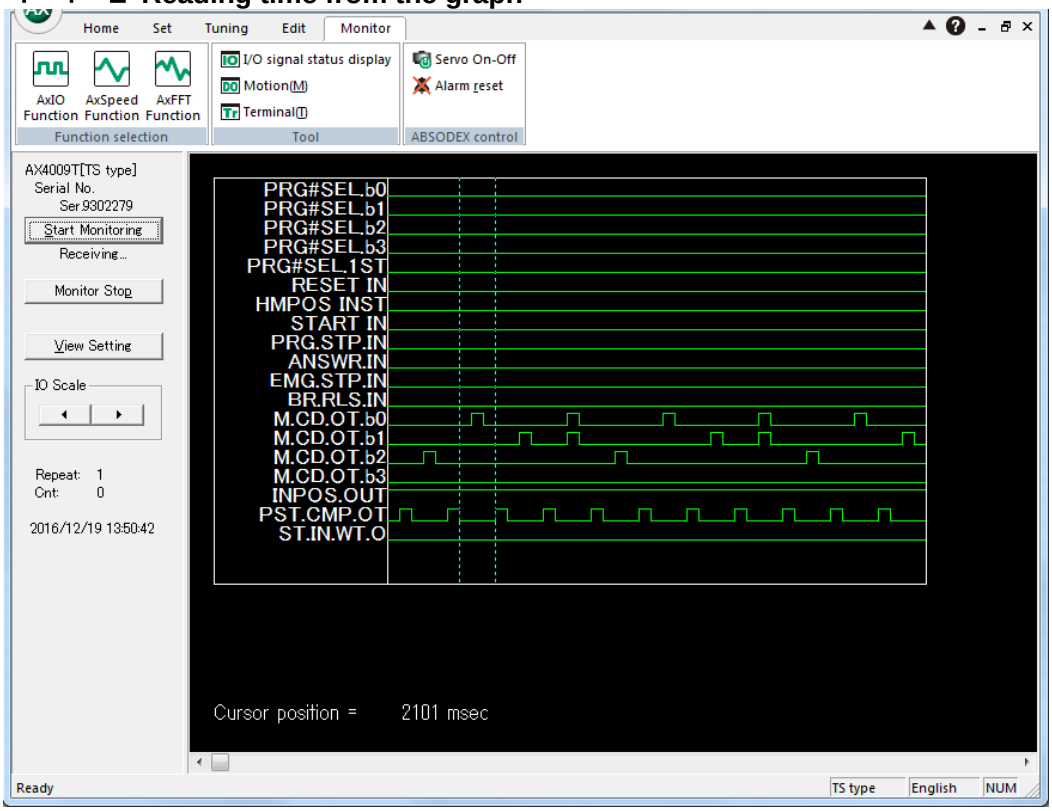
Select the I/Os displayed in the graph, from the box on the left side.
Up to 21 items can be displayed at a time.
※The I/O data names differ depending on the driver type and parameter settings.

Select the [Normal I/O view mode] to display signal switching at a certain interval without relations to the signal length.
Select [Real I/O view mode] to display according to the signal length.

(d) Changing the scale of I/O graph [I/O scale]

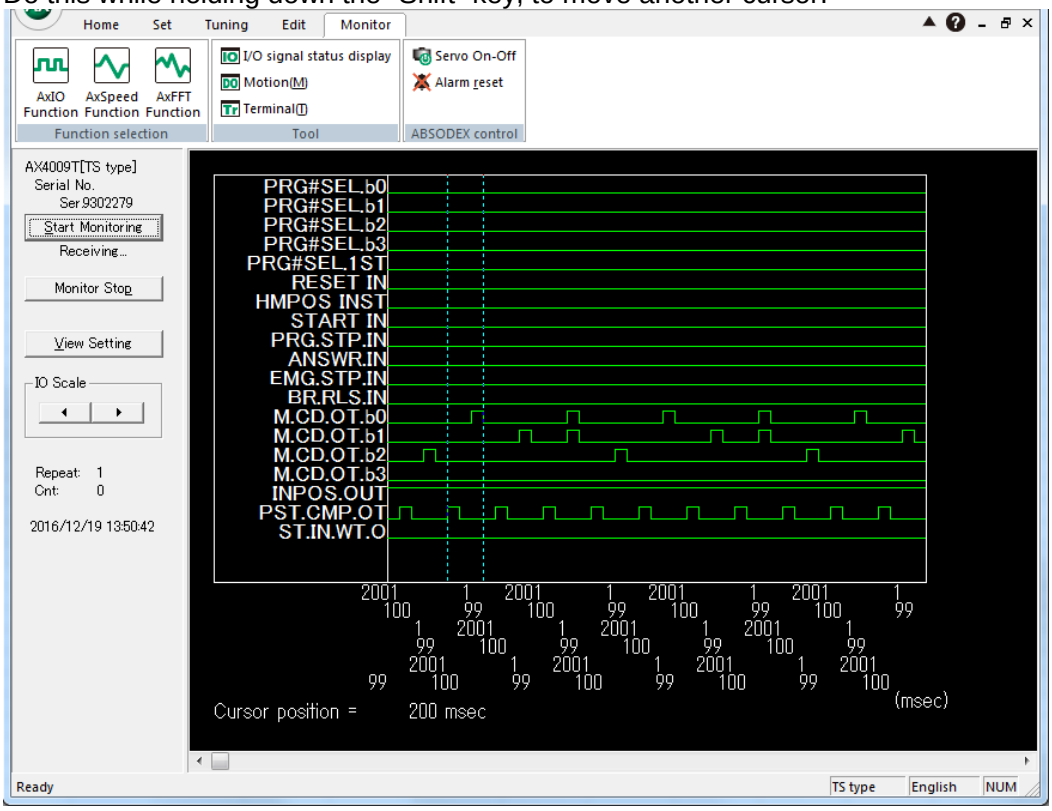
Click on the arrow button to change the scale of the axis of abscissas (I/O).

8－2－1－1－2 Reading time from the graph



If you click and drag the mouse, "Cursor position" below the graph shows the time between the cursor movement starting and ending positions.

Do this while holding down the "Shift" key, to move another cursor.



Click the right mouse button to display the interval between signals at a time.

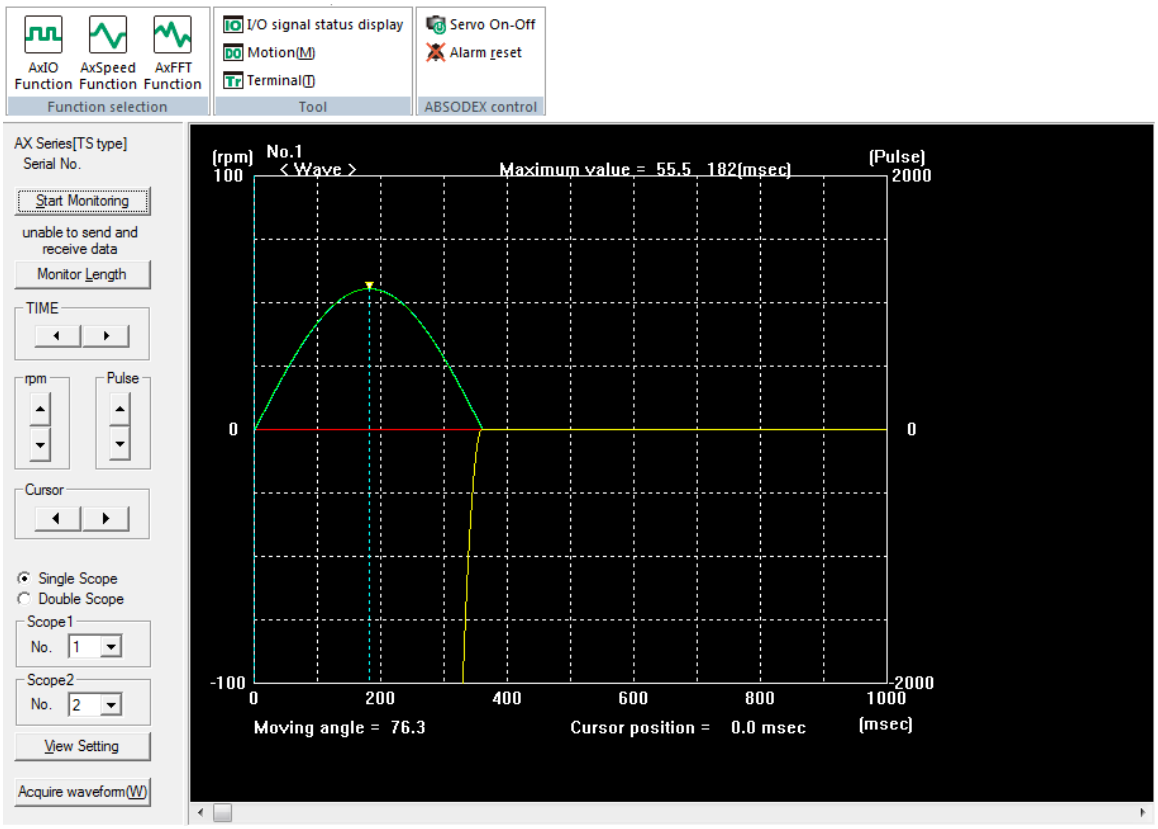
8－2－1－1－3 Scrolling the graph

Use the scroll bar at the bottom of the graph to scroll the graph.

8－2－1－2 AxSpeed Function

This is the function to acquire the latest travel command in ABSODEX and display the waveform.

Select the [AxSpeed Function] command in the [Monitor] tab. The following view is displayed.

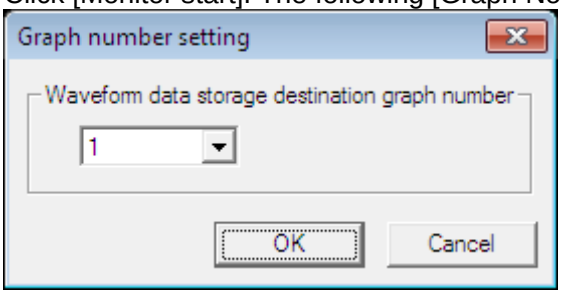


8－2－1－2－1 Operation related function

(a) Display the velocity waveform [Monitor start]

This application software read the velocity date and display the graph.

Click [Monitor start]. The following [Graph No. setting] dialog box is displayed.



Select the number of the graph in which the waveform data is stored.

The graph number can be selected from 1 to 10.

Up to 10 read graphs can be stored and their displays can be switched by specifying the number.

(b) [Acquire waveform] enabling to display the velocity waveform of the pulse string

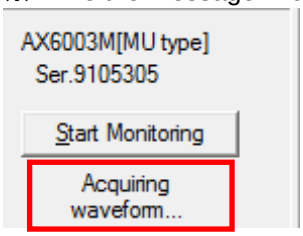
When the actuator is activated in the pulse string input mode, the velocity data is acquired and the velocity waveform view becomes enabled.

The velocity data is acquired which starts when the [Acquire waveform] button is clicked and has the data length set in [Monitor length].

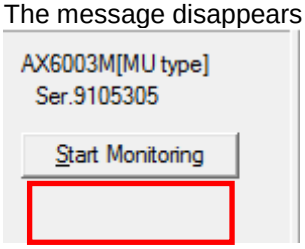
※For the data length setting method, refer to (8－2－1－2－2(a) To change the length of data to be acquired [Monitor length]).

Click [Acquire waveform]. The message "Acquiring the waveform..." is displayed under the [Monitor start] button.

※While the message "Acquiring the waveform..." is displayed, all the functions of AxTools are disabled.

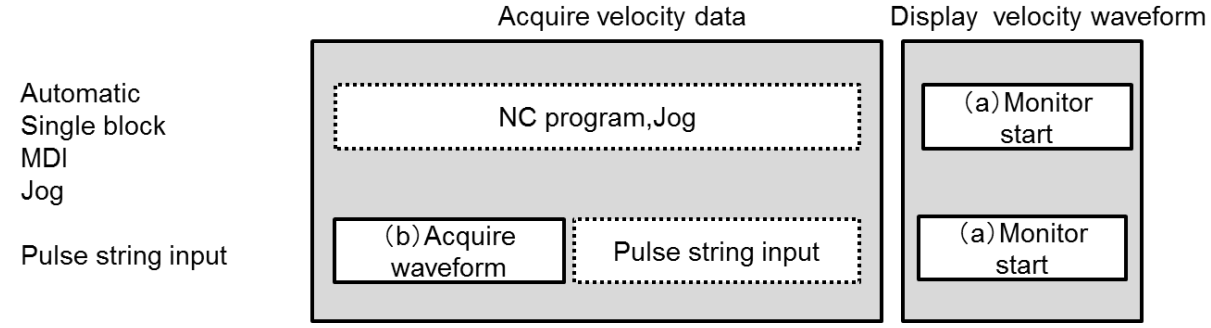


The message disappears after velocity data acquisition is completed.



Click the [Monitor start] button. The velocity waveform is displayed.

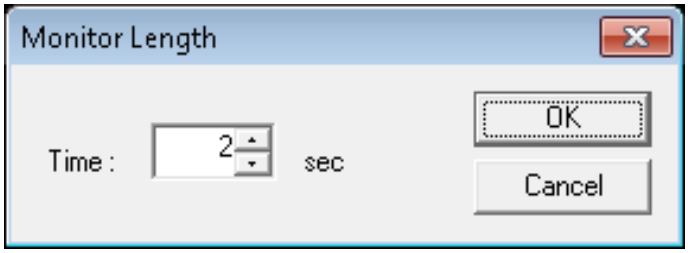
Operation related function image diagram



8－2－1－2－2 Operation related function

(a) To change the length of data to be acquired [Monitor length]

Click on the arrow buttons to change the length of data (i.e., time to acquire data).
Because the number of data items does not change, the time between data items is proportional to the data length.



(b) To change the time scale of horizontal axis [TIME]

Click the arrow button to change the time scale of horizontal axis.

(c) To change the velocity scale of vertical axis [rpm]

Click the arrow button to change the velocity scale of vertical axis.

(d) To change the displacement scale of vertical axis [Pulse]

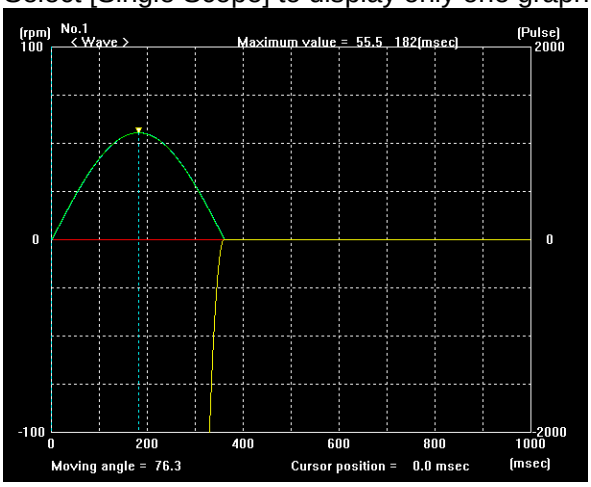
Click the arrow button to change the displacement scale of vertical axis.

(e) To read the time of graph [Cursor]

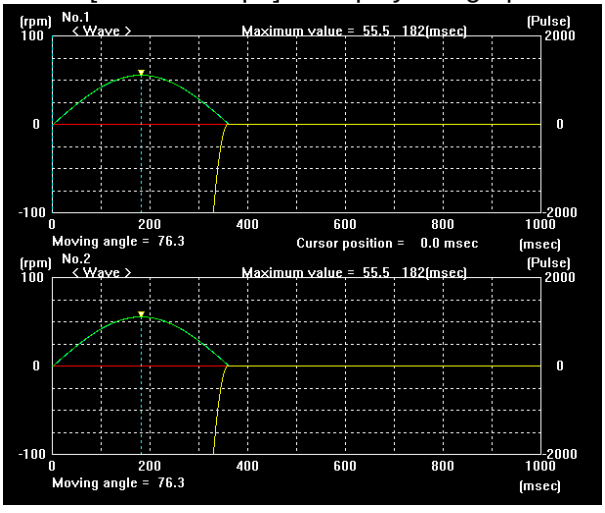
Click the arrow button to change the cursor position.
The position is indicated next to “Cursor position” below the graph.
Cursor can be also moved by handling the mouse.

(f) To set the graph division display [Single Scope, Double Scope].

Select [Single Scope] to display only one graph.



Select [Double Scope] to display two graphs simultaneously.

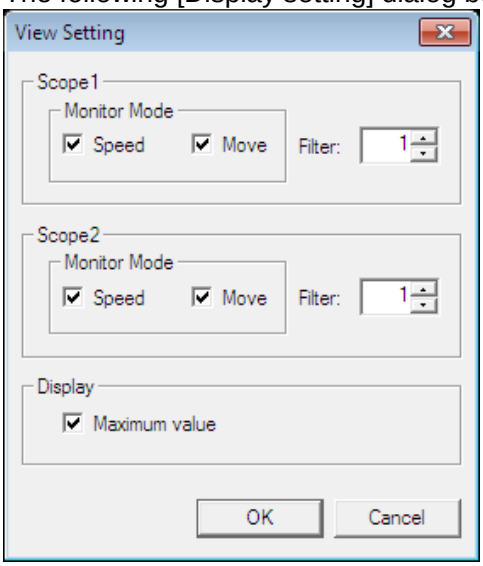


(g) To specify the graph number [No]

Specify a graph number displayed in the upper area in the list of [No.] of [Scope1].
Specify a graph number displayed in the lower area in the list of [No.] of [Scope2].
When [Single Scope] is selected, the graph number selected in [Scope1] is displayed.
When a measurement has been performed, the graph number specified for the measurement is applied as the graph number of [Scope1].

(h) To set the graph display [Display setting]

Set the display of the graph.
The following [Display setting] dialog box is displayed by clicking the [Display setting] button.



(1) Scope1
The setting is applied to the displayed graph when [Single Scope] is selected and the graph in the upper area when [Double Scope] is selected.

(2) Scope2
This area is enabled when [Double Scope] is selected.
When [Double Scope] is selected, set the setting for the graph displayed in the lower area.

(3) Monitor Mode
When selecting ［Speed］, the velocity waveform (green) will be shown, while selecting [Move], the difference (yellow) between the displacement (light blue) calculated by velocity data and the target calculated by the displacement be shown.

(4) Filter
［Filter］ converts the curve smooth by calculating the average.

(5) Maximum value
[Maximum value] shows the maximum value of waveform of velocity.

8－2－1－2－3 Scrolling the graph

Use the scroll bar at the bottom of the graph to scroll the graph.

8－2－1－3 AxFFT Function

The ABSODEX is susceptible to resonance with the load unit if the rigidity of the load unit connected with the ABSODEX is too small.
If this occurs, use a digital filter assembled in the ABSODEX driver to suppress resonance to a certain degree.
This function is to set this digital filter.

CAUTION

Before starting tuning of the ABSODEX with this software, be sure to read the instruction manual to be familiar with correct operation methods.
The actuator may show unexpected actions in the adjustment stage. Avoid mechanical interference and keep away from moving parts.

8－2－1－3－1 Digital filter of ABSODEX driver

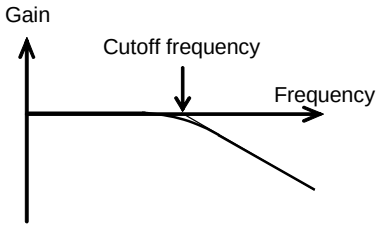
Four digital filters are assembled in the ABSODEX driver. Specify the cutoff frequency of each, using parameters.

Parameter No.	Function	Setting range	Default value	Description
62	Low pass filter 1	10 to 1000	200	Cutoff frequency (Hz)
63	Low pass filter 2	10 to 1000	500	Cutoff frequency (Hz)
64	Notch filter 1	10 to 1000	500	Notch frequency (Hz)
65	Notch filter 2	10 to 1000	500	Notch frequency (Hz)
66	Filter switch	0 to 15	1	Filter validation switch
69	Test gain	1 to 2000	500	Random number gain
70	Q value for notch 1	0.1 to 9.9	1.0	Band width setting
71	Q value for notch 2	0.1 to 9.9	1.0	Band width setting

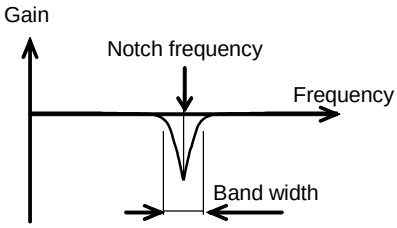
※For the filter switch setting method, refer to "8－2－1－3－1(b) Filter switch. "
※The setting range for parameters 62-65 using the procedure in "8－2－1－3－2(a)－1 Filter setting [Set filter]" is 100-500.
To set values outside that range, use Terminal mode.

(a) Characteristics of filter

The low pass filter attenuates the signal in the high frequency area. The notch filter attenuates signals at specific frequencies.



Characteristics of low pass filter

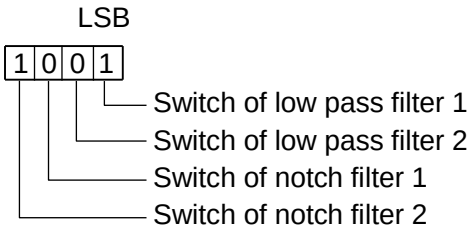


Characteristics of notch filter

(b) Filter switch

Use parameter 66 (filter switch) to designate whether or not to use four filters.

Each bit of the switch corresponds to a specific filter. "1" at the bit indicates a valid filter. "0" indicates an invalid filter.



<Switch setting example>

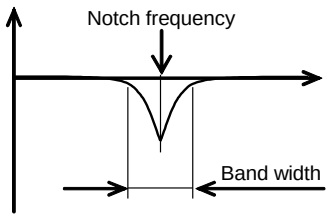
Parameter 66 = "9" (= "1001"): Use low pass filter 1 and notch filter 2.

Parameter 66 = "3" (= "0011"): Use low pass filter 1 and low pass filter 2.

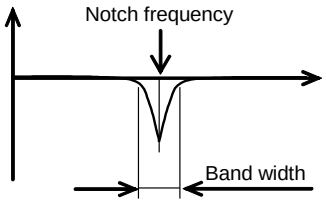
(c) Q value of notch filter

Use parameters 70 and 71 to specify the band width Q of the notch filter. A larger Q value causes a narrower band width, while a smaller value causes a wider band width. The default Q value is "1."

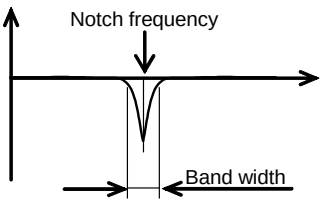
There is no need to change the Q value in most cases.



Q < 1



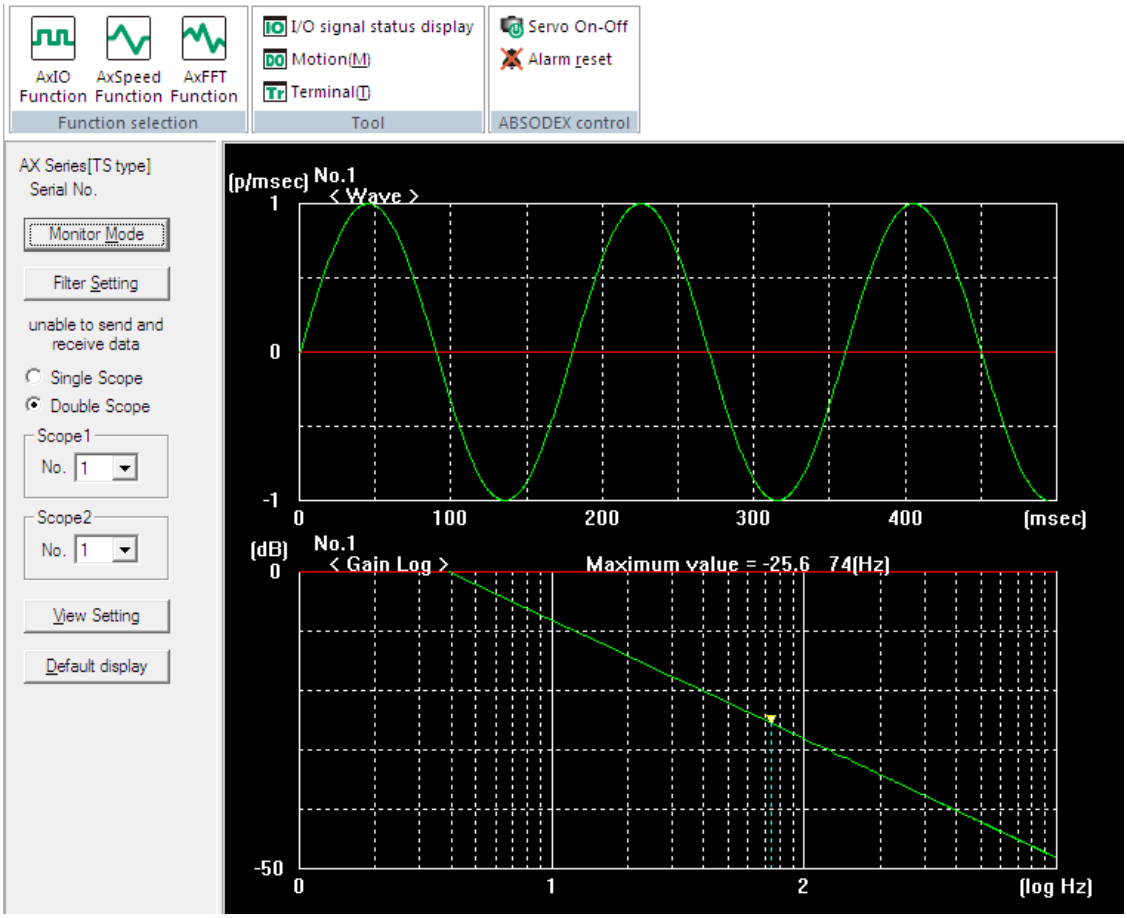
Q = 1



Q > 1

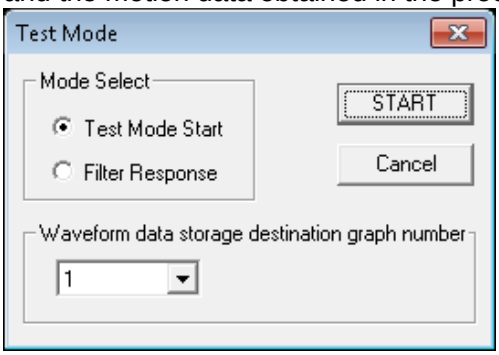
8－2－1－3－2 Damping adjustment mode

Select the [AxFFT function] command in the [Monitor] tab. The following view is displayed.



(a) Checking the response [Monitor mode]

The ABSODEX is driven with a random number generation function assembled in the driver, and the motion data obtained in the procedure is subjected to FFT calculation.



Use [Test Mode Start] to observe the response of the actuator. Use [Filter Response] to observe the response of the filter.

Select either one, and click the [START] button.

In [Waveform data storage destination graph number], select the number of the graph in which the waveform data is stored.

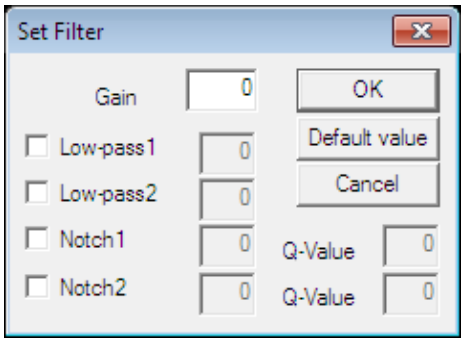
The graph number can be selected from 1 to 10.

Up to 10 read graphs can be stored and their displays can be switched by specifying the number.

(a)－1 Filter setting [Set filter]

Change the settings of the ABSODEX digital filter.

A communication error is caused if the communication cable is not connected with the driver or the driver is not turned on.



Enter the amplitude of the generated random number as a gain. Leave default value 500 unchanged in regular cases.

Place a check mark in the check box to validate the corresponding filter.

Up to three filters can be validated.

A larger Q value causes a narrower band width, while a smaller value causes a wider band width.

The default Q value is "1."

In most cases, there is no need to change the Q value.

Click the [OK] button to write data to the driver.

Click the [Default value] button to restore the default parameters of the ABSODEX in the boxes.

To write data to the driver, click the [OK] button.

(a)－2 View [Single Scope, Double Scope]

Select [Single Scope] to display only one graph.

Select [Double Scope] to display two graphs simultaneously.

(a)－3 Specifying the graph number [No.]

Specify a graph number displayed in the upper area in the list of [No.] of [Scope1].

Specify a graph number displayed in the lower area in the list of [No.] of [Scope2].

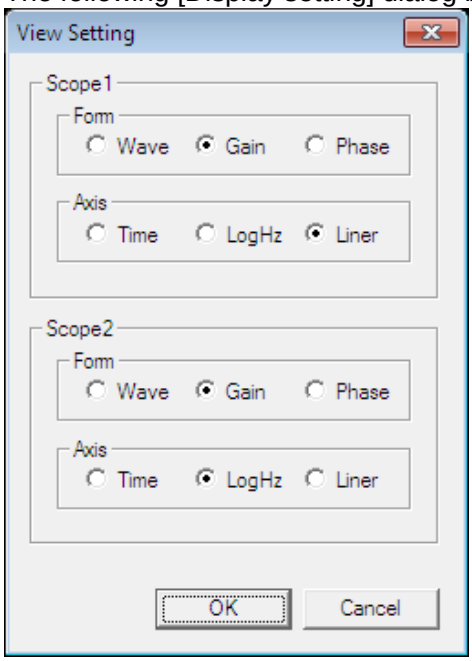
When [Single Scope] is selected, the graph number selected in [Scope1] is displayed.

When a measurement has been performed, the graph numbers specified for the measurement are applied as the graph numbers.

(a)－4 Setting the graph display [Display setting]

Set the display of the graph.

The following [Display setting] dialog box is displayed by clicking the [Display setting] button.



Select the data to display.

Items in [Scope1] are for scope 1, and [Scope2] is for scope 2.

Select the displayed waveform at [Form].

Select [Wave] to display the FFT-unprocessed waveform data. Select [Gain] or [Phase] to display the FFT-processed gain and phase.

(a)－5 Initializing the graph display setting [Default display]

Set the graph display to the default status.

Default status when the same graph number is set in [Scope1] and [Scope2]

Two graphs are displayed for one waveform.

The following is applied to each graph.

Scope1	Form	Wave
	Axis	Time
Scope2	Form	Gain
	Axis	LogHz

Default status when the different graph numbers are set in [Scope1] and [Scope2]

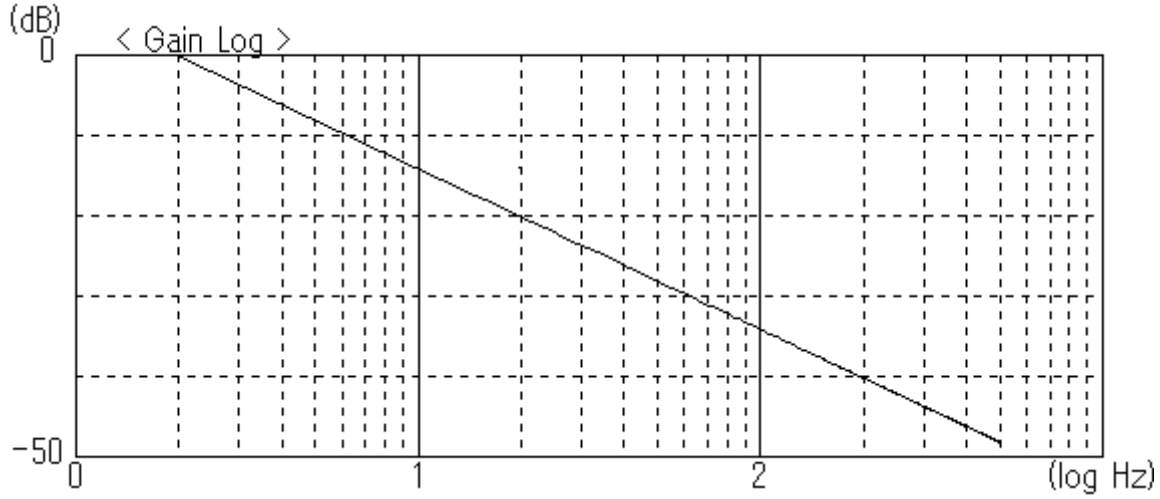
Two waveforms are displayed for comparison.

The following is applied to each graph.

Scope1	Form	Gain
	Axis	LogHz
Scope2	Form	Gain
	Axis	LogHz

(b) Damping method

The waveform of the actuator gain obtained in the monitor mode is a straight line with the right side down at an inclination of -20dB/dec as shown in the graph below, in the theoretical case.



If there is resonance, projection or swelling is observed near the resonance frequencies in this gain waveform.

It is the objective of damping adjustment to cut the projection with a filter to realize an ideal gain waveform.

However, deviation from the completely ideal waveform is frequently observed.

At the last stage, observe the actual motions and finish adjustment upon confirmation of absence of resonance.

(b)－1 Damping procedure

1. Check that the bolts of the ABSODEX and mechanical units are tight.
2. Check that the equipment is free from interference during rotation of the ABSODEX.
3. Select the monitor mode, and measure the waveform of the response from the actuator.
4. Check for projections in the gain waveform to read the resonance frequencies.
5. Provide low pass filters and notch filters to suppress the gain at the resonance point.
6. Check if resonance is suppressed. If suppression is insufficient, repeat the procedure from step 3.

If alarm 1 is caused in the monitor mode, reduce the [Gain] value of [Filter Setting]. Or increase the upper limit value of position deviation (parameter 19) to suppress the alarm.
If oscillation is likely to occur after the monitor mode is started, start the monitor mode in the servo-off state to suppress oscillation.
(After the monitor mode is finished, the original operation mode before execution of the monitor mode is restarted.)

(b)－2 Cautionary item

If resonance is caused, install a dummy inertial body, improve the rigidity or take other measures to the mechanical system in principle.

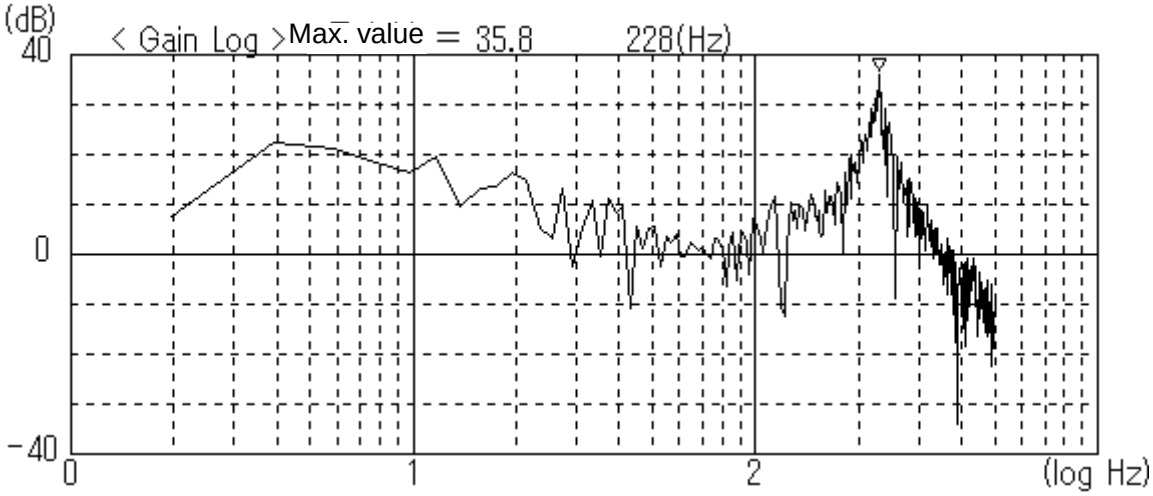
Take these measures before using the damping software.

If a low frequency is set at the low pass filter (80Hz or below), the ABSODEX may operate unstably.

Specify 80Hz or a larger frequency (100Hz or larger recommended) whenever possible.

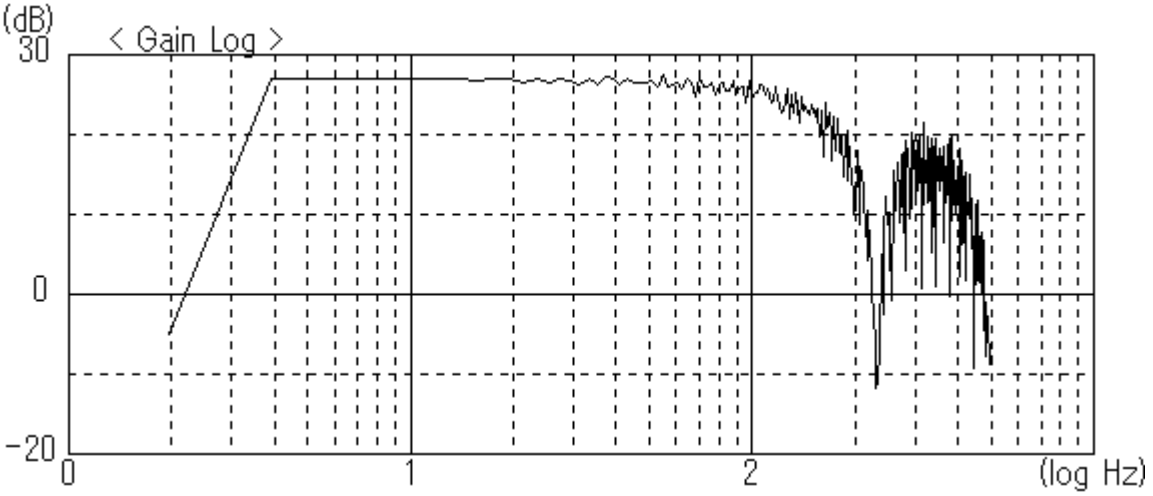
(b)－3 Examples of damping adjustment

When the waveform of the response from the actuator is measured in the monitor mode, and the graph shown below is displayed



Because resonance is observed at about 228Hz, specify "228" for notch filter 1 to reduce the gain of the resonance point.

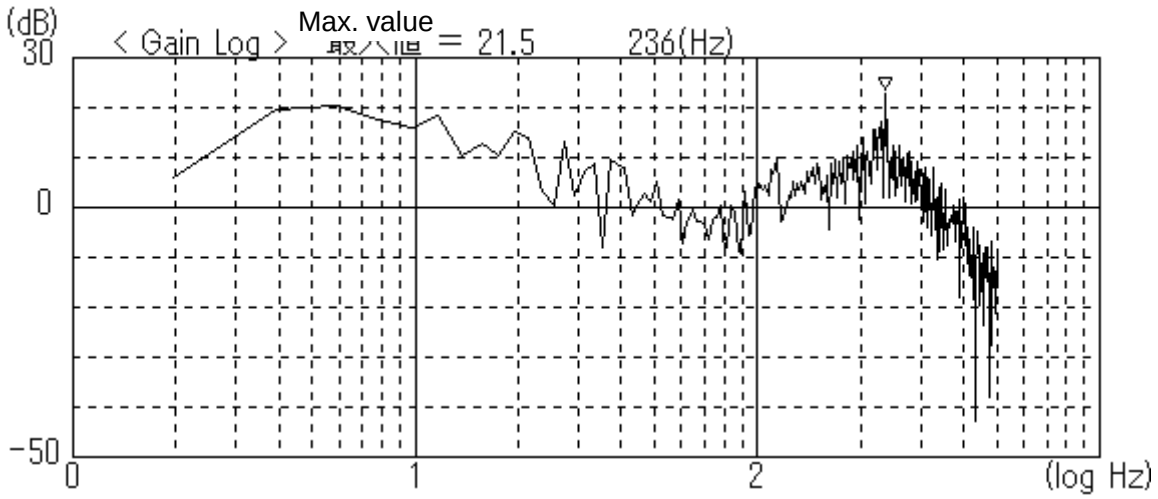
Select [Filter response] to observe the response of the filter. The graph shown below is displayed.



Because the low pass filter is set at 200Hz, the right side of the graph line declines after "200Hz."

The notch filter causes a drop at about 228Hz.

This filter causes the [Test mode] graph to change in the following way.



A gain of about 35dB at about 228Hz in the first graph is reduced to about 21dB.
Thus the filter damps the resonance point for adjustment.

８－２－２ Tool group

８－２－２－１ I/O signal status display

Refer to the common function.

８－２－２－２ Operation command

Refer to the common function.

８－２－２－３ Terminal

Refer to the common function.

８－２－３ ABSODEX control group

８－２－３－１ Servo On-Off

Refer to the common function.

８－２－３－２ Alarm reset

Refer to the common function.