

PCL6125 Evaluation Board

PCL6125-EB

User's Manual

Application Software

PCL6125 Evaluation Board ✕

File (F) Tool (T) Other (O)

X-axis

MSTSW	0000 h	SSTSW	0010 h
RMV	2304	PRMV	2304
RFL	400	PRFL	400
RFH	1500	PRFH	1500
RUR	8926	PRUR	8926
RDR	0	PRDR	0
RMG	1199	PRMG	1199
RDP	0	PRDP	0
RMD	00000041 h	PRMD	00000041 h
RIP	0	PRIP	0
RUS	0	PRUS	0
RDS	0	PRDS	0
RENV1	00000002 h	RIRQ	00000000 h
RENV2	80000055 h	RLTC1	0
RENV3	0000B002 h	RLTC2	0
RENV4	00000000 h	RLTC3	0
RCUN1	0	RLTC4	0
RCUN2	0	RSTS	00001800 h
RCMP1	0	REST	00000000 h
RCMP2	0	RIST	00000000 h
RCMP3	0	RPLS	0
RCMP4	0	RSPD	0
		RSDC	0

Y-axis

MSTSW	0000 h	SSTSW	0010 h
RMV	2304	PRMV	2304
RFL	400	PRFL	400
RFH	1500	PRFH	1500
RUR	8926	PRUR	8926
RDR	0	PRDR	0
RMG	1199	PRMG	1199
RDP	0	PRDP	0
RMD	00000041 h	PRMD	00000041 h
RIP	0	PRIP	0
RUS	0	PRUS	0
RDS	0	PRDS	0
RENV1	00000002 h	RIRQ	00000000 h
RENV2	80000055 h	RLTC1	0
RENV3	0000B002 h	RLTC2	0
RENV4	00000000 h	RLTC3	0
RCUN1	0	RLTC4	0
RCUN2	0	RSTS	00001800 h
RCMP1	0	REST	00000000 h
RCMP2	0	RIST	00000000 h
RCMP3	0	RPLS	0
RCMP4	0	RSPD	0
		RSDC	0

SEL	COM	DATx				
<input type="text" value="00"/>	<input type="text" value="00"/> h	<input type="text" value="FFFFFFF"/> h	X-axis	<input type="checkbox"/>	Write	<input type="text" value="RGPD"/> <input type="text" value="FFFF"/> h
		<input type="text" value="FFFFFFF"/> h	Y-axis	<input type="checkbox"/>	Detail setting	

Index

1. Introduction.....	1
1.1 How to use this manual.....	1
1.1.1 Symbol description.....	1
1.2 Production warranty.....	3
1.2.1 Warranty period.....	3
1.2.2 Warranty scope.....	3
1.3 Notice.....	3
1.4 Confirmation.....	3
2. Information.....	4
2.1 Operating environment.....	4
3. Install the device driver.....	5
3.1 Folder structure.....	5
3.2 Installation.....	5
4. Basic operation of the software.....	6
4.1 Start-up software.....	6
4.1.1 Change the radix of register.....	7
4.1.2 Write data to register.....	7
4.1.3 Axis selection (SEL) settings.....	8
4.1.4 Command (COM) setting.....	9
4.1.5 Detail setting of register data.....	10
4.2 “File (F)” menu.....	11
4.2.1 “Load (L)” menu.....	12
4.2.2 “Save (S)” menu.....	12
4.2.3 “End (E)” menu.....	12
4.3 “Tool (T)” menu.....	13
4.3.1 “Status (A)” menu.....	13
4.3.2 “RSTS (Extension status) (B)” menu.....	14
4.3.3 “REST (Error interrupt factor) (C)” menu.....	14
4.3.4 “RIST (Event interrupt factor) (D)” menu.....	15
4.3.5 “RSPD (EZ counter value and current speed) (E)” menu.....	15
4.3.6 “PRMD (Operation mode) (F)” menu.....	16
4.3.7 “RENV1 (Environment setting 1) (G)” menu.....	17
4.3.8 “RENV2 (Environment setting 2) (H)” menu.....	18
4.3.9 “RENV3 (Environment setting 3) (I)” menu.....	19
4.3.10 “RENV4 (Environment setting 4) (J)” menu.....	20
4.3.11 “RIRQ (Specifies event interrupt factor) (K)” menu.....	21
4.3.12 “PRMG (Speed magnification rate) (L)” menu.....	21
4.3.13 “Simple control (M)” menu.....	22
4.3.14 “Linear interpolation control (N)” menu.....	27

4.3.15 “Reset (O)” menu	31
4.4 “Other (O)” menus	32
4.4.1 “Language (L)” menu	32
4.4.2 “Version (V)” menu.....	32

1. Introduction

Thank you for considering our PCL6125-EB Evaluation Board Application software (PCL6125-EB.exe).

This manual describes specifications, functions of our PCL6125-EB Evaluation Board Application software (PCL6125- EB.exe) and how to connect and use it.

Be sure to read this manual thoroughly and keep it handy in order to use the product appropriately.

1.1 How to use this manual

1. Reproduction of this manual in whole or in part without permission is prohibited by the Copyright Act.
2. The contents of this manual are subject to change without the prior notice along with the improvement of performance and quality.
3. Although this manual is produced with the utmost care, if there are any questions, errors or omissions, please contact our sales representative.

1.1.1 Symbol description

1.1.1.1 Physical damage level

In this manual, the physical damage level is defined as follows.

- Serious injury

Those that might cause aftereffects such as loss of sight, wound, burn, electric shock, fracture, poisoning, or those requiring hospitalization or long-term outpatient treatment.

- Minor injury

Those not requiring hospitalization or long-term outpatient treatment. (Other than "serious injury" above)

1.1.1.2 Hazardous level

The product is designed with the top priority for the safety of operators. However, due to the nature of the product, there are risks that cannot be eliminated. In this manual, the seriousness and level of these risks are divided into three categories: "Danger," "Warning," and "Caution." Be sure to read and understand the symbols descriptions thoroughly before operating or performing maintenance work on the product.

"Danger", "Warning", and "Caution" are indicated in the order of severity of hazard: (danger > warning > caution), and the meanings are described underneath.


 D a n g e r
"Danger" indicates that it might cause an imminent risk that could result in the death or serious injury of the operator during operations of this product.

 W a r n i n g
"Warning" indicates that it may result in the death or serious injury of the operator during operations of this product.

⚠ C a u t i o n

"Caution" indicates that it may result in minor injury of the operator during operations of this product.

C a u t i o n

"Caution" without warning symbol  indicates that the operator is not likely to be injured, but it can cause damage or result in a malfunction to this product, your equipment, or your instruments.

In addition to the hazardous level classifications described above, the following notations are also used.

I m p o r t a n c e

"Importance" indicates the information and contents that must be known particularly in operations and maintenance works of this product.

R e m a r k s

"Remarks" initiates the useful information or contents for operations and maintenance works of this product.

1.1.1.3 Warning symbol

In this manual, the following symbols are added along with the notations "Danger," "Warning," "Caution," and "Importance" to indicate the warning contents in an easy-to-understand manner.



Indicates that a high voltage may be applied.
Failure to confirm safety or mishandling of this product might cause a risk of electric shock, burn, or death.



Indicates that some parts have a high surface temperature, and the mishandling can cause a risk of burns.



Indicates that mishandling may cause a fire.



Indicates "prohibited" actions that must not be performed in the operation and the maintenance work of this product.



Indicates "mandatory" actions that must be performed in the operation and the maintenance work of this product.

1.2 Production warranty

1.2.1 Warranty period

The warranty period is one year from the data of the delivery to an assigned place.

1.2.2 Warranty scope

If defects are found in the product during the warranty period under normal use defined used only in method set forth in this manual, NPM will repair the product without charge or replace it with a new one at the direction of NPM.

The following cases are not covered by the warranty even during warranty period.

1. The products are modified or repaired by anyone other than NPM or a person authorized by NPM.
2. The defect results from dropping of the product after delivery or mishandling in transit.
3. Wearing of components, natural deterioration or fatigue
4. Causes arising from usage other than those described in this document
5. The product has been subjected to natural disaster or force majeure such as fire, earthquake, lightning strike, wind, flood, salt, electrical surges, etc.
6. The defects or damage results from a cause that is not the fault of NPM.

When the product is purchased from a supplier other than NPM, please contact that supplier regarding the product warranty. NPM will not provide on-site repair. If the product is defective, the product must be returned to the specified location for repair.

The warranty period of the repaired product is the same as the warranty period before the repair.

This warranty does not cover damages caused by product malfunction or damage to the product itself.

1.3 Notice

This document aims to describe the details of functions of the product. It does not warrant fitness for a particular purpose of the customer. The examples of applications and circuit diagrams in this manual are included only for your reference. Please confirm the features and the safeties of devices or equipment before use.

1.4 Confirmation

Please do not use this product in the following conditions. If you need to use in the following conditions, please contact our sales representatives:

1. Any equipment that may require a high reliability or a safety, such as nuclear facilities, electricity or gas supply systems, transportation facilities, vehicles, various safety systems, medical equipment, etc.
2. Any equipment that may directly affect human survivals or properties.
3. Usages under conditions or circumstances that are not specified in the catalog, manual, etc.

For applications that may cause serious damages to a human life or property due to failure of this product, ensure high reliability and safety by redundant design.

2. Information

This is the operation manual of an application software to operate the control board.

By using this software and PCL6125 Evaluation Board (PCL6125-EB), you can learn motor control functions using pulse control LSI, PCL6125.

Please refer to the following manuals along with this manual.

(x: revision)

	Manual name [Outline]	Document file name	Software file name	Document no.
Hardware Manual	PCL6125 Evaluation Board (PCL6125-EB) User's Manual (Hardware)	PCL6125-EB_Hardware Manual_VerxE.pdf	—	TA600038-ENx/x
Application Software Manual	PCL6125 Evaluation Board (PCL6125-EB) User's Manual (Application Software) [Setting accel / decel pattern and register indication]	PCL6125-EB_APP_Application Manual_VerxE.pdf	PCL6125-EB_Application_VxxxJE.zip	TA600039-ENx/x (This document)
Motion Pattern Builder Manual	PCL6125 Evaluation Board (PCL6125-EB) User's Manual (Motion Pattern Builder Application Software) [It visually describes the functions to perform an axis control with a flowchart]	PCL6125-EB_Motion Builder Manual_VerxE.pdf	PCL6125-EB_MotionBuilder_VxxxJE.zip	TA600040-ENx/x
Reference material	PCL6115/6125/6145 User's Manual	—	—	DA70152-0/xE

Please download the application software and related materials from NPM website.

2.1 Operating environment

We have checked this software operation with Windows 7 and Windows10 (both 32-bit and 64-bit).

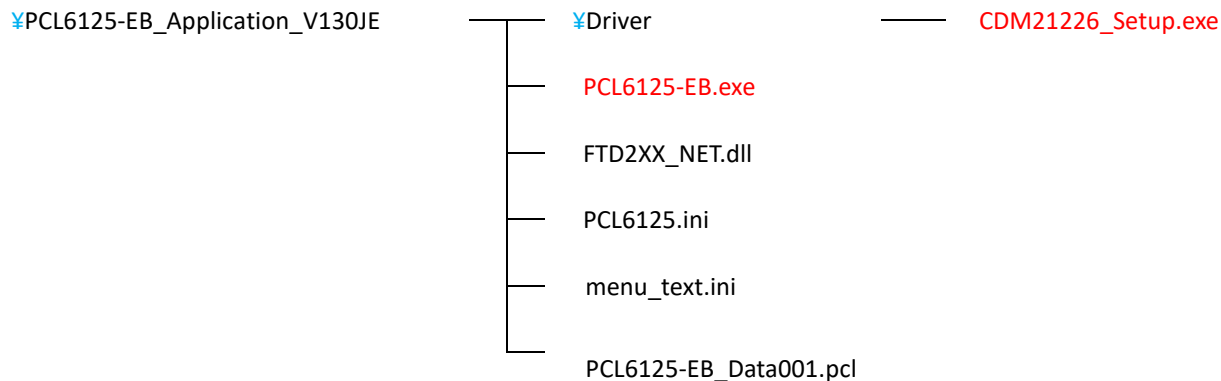
(We have never checked it with OS other than the above.)

Please change power saving setting so as not to operate "sleep mode" during an operation.

3. Install the device driver

3.1 Folder structure

When you unzip the compressed file ([PCL6125-EB_Application_V130JE.zip](#)), the following folders are created.



"**PCL6125-EB.exe**" is an executable file of the software and "**CDM21226_Setup.exe**" is the device driver installer.

"PCL6125.ini" and "menu_text.ini" are text files for PCL6125-EB.

"PCL6125-EB_Data001.pcl" is a setting data file for PCL6125-EB.

3.2 Installation

Double-click "**CDM21226_Setup.exe**" to launch the installer and follow the instructions on screen to complete the installation.

If you have already installed it, you do not need to install it again.



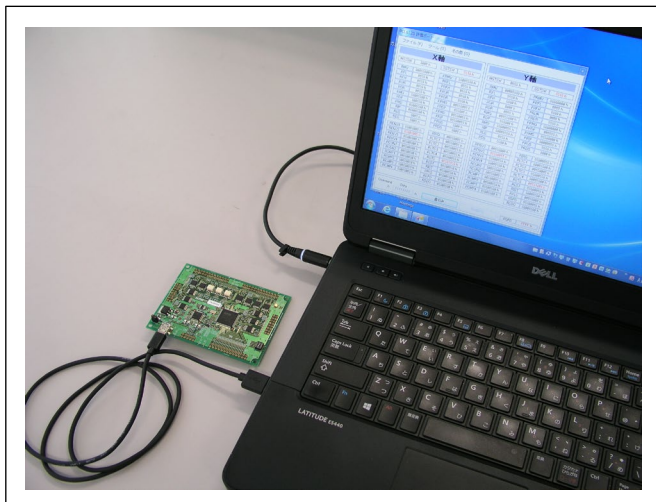
Note: Please download and use the latest version of the device driver on FTDI's website

(<http://www.ftdichip.com/Drivers/D2XX.htm>).

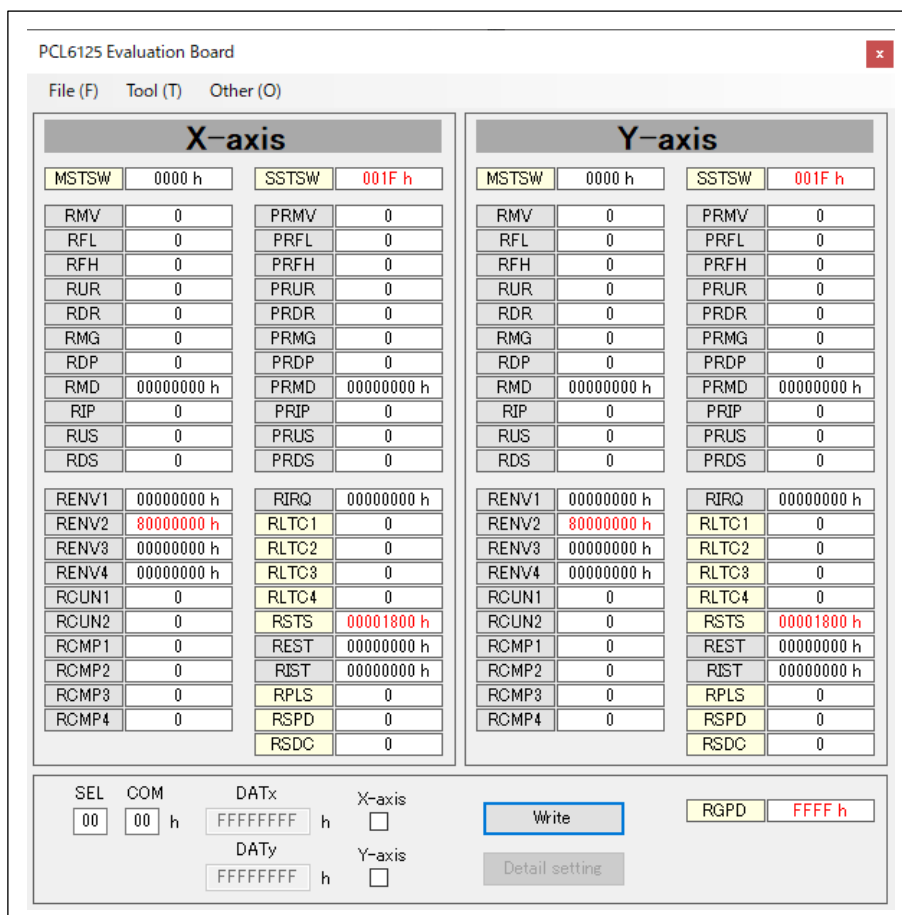
4. Basic operation of the software

4.1 Start-up software

Please make sure that the PCL6125-EB is properly connected to your PC.



Double-click the executable file, “PCL6125-EB.exe” to open the “Main Screen” as follows.



This screen shows the register values that are read regularly from PCL6125. The values are displayed in black when they are zero; the values other than zero are displayed in red.

PCL6125 can control two axes; X and Y-axis and the screen shows all of the registers that you can set.

4.1.1 Change the radix of register

Right-click the register values to switch the notation between decimal and hexadecimal. The radix can be changed individually for each register.

However, registers having specific meanings in bit units (such as RENV1) are fixed to hexadecimal and cannot be changed.

4.1.2 Write data to register

If you double-click the part where the value of the register of the X axis is displayed, the data part will be highlighted in yellow, the cursor will move to the data input part "DATx" of the X axis, and the check mark of the X axis will be checked. In addition, the register write command is set in the "COM" part, and the axis selection code (0x01) is added to the "SEL" part.

PCL6125 Evaluation Board

File (F) Tool (T) Other (O)

X-axis				Y-axis			
MSTSW	0000 h	SSTSW	0010 h	MSTSW	0000 h	SSTSW	0010 h
RMV	2304	PRMV	2304	RMV	2304	PRMV	2304
RFL	400	PRFL	400	RFL	400	PRFL	400
RFH	1500	PRFH	1500	RFH	1500	PRFH	1500

SEL: 01 COM: 80 h DATx: 2304 d X-axis: Write RGPD: FFFF h

DATy: FFFFFFFF h Y-axis: Detail setting

If you double-click the part where the value of the register of the Y axis is displayed, the data part will be highlighted in yellow, the cursor will move to the data input part "DATy" of the Y axis, and the check mark of the Y axis will be checked. In addition, the register write command is set in the "COM" part, and the axis selection code (0x02) is added to the "SEL" part.

PCL6125 Evaluation Board

File (F) Tool (T) Other (O)

X-axis				Y-axis			
MSTSW	0000 h	SSTSW	0010 h	MSTSW	0000 h	SSTSW	0010 h
RMV	2304	PRMV	2304	RMV	2304	PRMV	2304
RFL	400	PRFL	400	RFL	400	PRFL	400
RFH	1500	PRFH	1500	RFH	1500	PRFH	1500

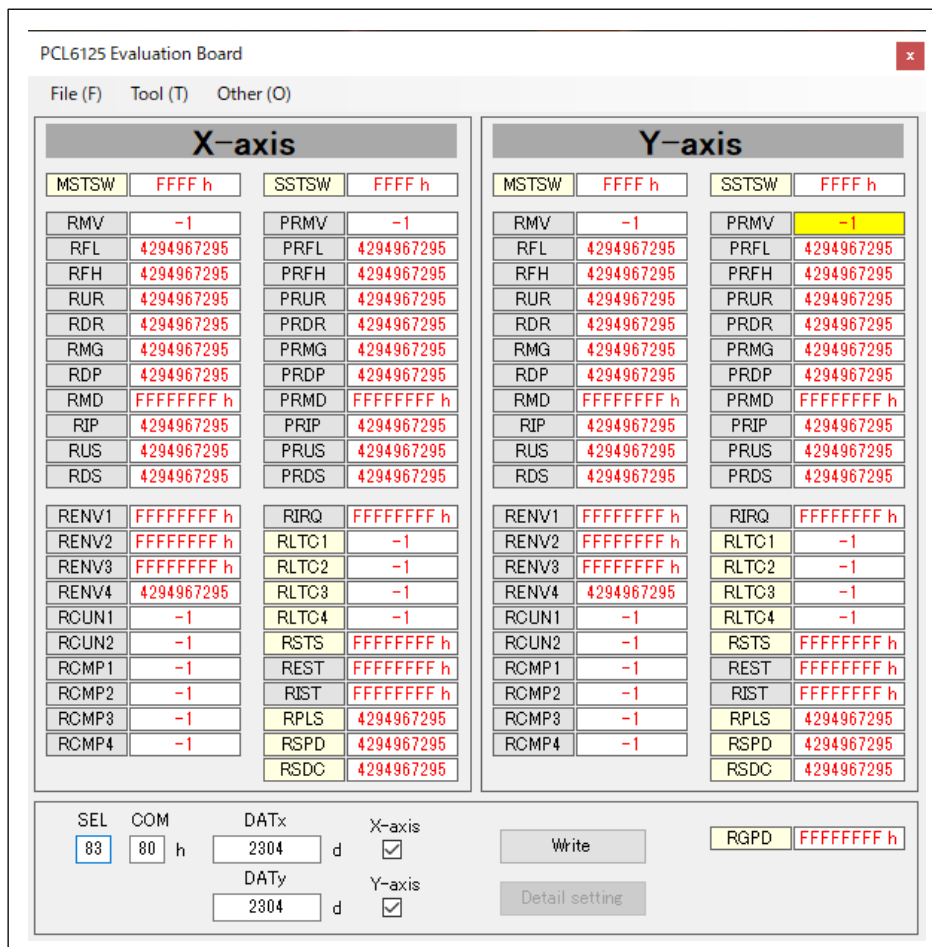
SEL: 03 COM: 80 h DATx: 2304 d X-axis: Write RGPD: FFFF h

DATy: 2304 d Y-axis: Detail setting

Enter the data that you want in write "DATx" and "DATy", and click "Write" button. The radix of the data to write is the same as the setting in "4.1.1 Change the radix of register". Please note that "Read-only register" cannot be written. Negative values can be entered for RMV, PRMV, RCUN1, RCUN2, RCMP1, RCMP2, RCMP3, RCMP4. You can enter a negative value for RDP when RMD.MSDP = 0 and for PRDP when PRMD.MSDP = 0

4.1.3 Axis selection (SEL) settings

It consists of "Axis selection code", "Type selection code" and "Device selection code". "Device selection code" can communicate when the value of the upper 2 bits (SEL.S7, SEL.S6) matches the device number setting switch (SW1-3, SW1-4) on the PCL6125 evaluation board. I can do it. If the device number is different, double-click the executable file of "PCL6125-EB.exe" to display the main screen as shown below.



"Device selection code" is normal by matching the values of the upper 2 bits (SEL.S7, SEL.S6) or the values of the device number setting switches (SW1-3, SW1-4) on the PCL6125 evaluation board. It becomes the main screen.

You can select from four types of communication formats with the bit (SEL.S5, SEL.S4) value of the "Type selection code".

Type selection code		Communication format
SEL.S5	SEL.S4	
0	0	Write commands (including register writing and reading) [Normal setting]
0	1	Read main status
1	0	Write general-purpose output port
1	1	Read sub status and general-purpose input/output port

For the "axis selection code", the axis for which "1" is set in the lower 4 bits (SEL.S3, SEL.S2, SEL.S1, SEL.S0) is the target of command writing. If you set "1" for multiple axes, you can write the same command to multiple selected axes. If you set "0" for all axes, it is considered that only the X axis is selected.

By clicking the X-axis check box and the Y-axis check box, you can select the axis by adding or removing the check mark. You can write directly to "SEL".

The screenshot shows a control panel with the following fields and controls:

- SEL:** 03 (circled in red)
- COM:** 9C h
- DATx:** 0000F002 h
- DATy:** 0000F002 h
- X-axis:**
- Y-axis:**
- Buttons:** Write, Detail setting (highlighted with a blue box)

Click the cursor on "SEL" to display the contents of "Axis selection (SEL)". After checking the contents, click the "OK" button or press the close mark on the upper right to turn off the display screen.

The "Axis selection(SEL)" dialog box displays the following bit definitions:

```

S0: X axis select
S1: Y axis select
S2: Z axis select
S3: U axis select

S5  S4
0  0 : Write commands
0  1 : Read main status
1  0 : Write general-purpose output port
1  1 : Read sub status and general-purpose input/output port

S7  S6 : DS1 terminal DS0 terminal
0  0 : L(0)      L(0)
0  1 : L(0)      H(1)
1  0 : H(1)      L(0)
1  1 : H(1)      H(1)

```

An "OK" button is located at the bottom right of the dialog.

The "Error" dialog box contains the following text:

```

Error

Axis Select Error
Check the axis checkbox!

OK

```

4.1.4 Command (COM) setting

Please write the operation command, general-purpose output bit control command, or control command of PCL6125 in the column "COM" directly.

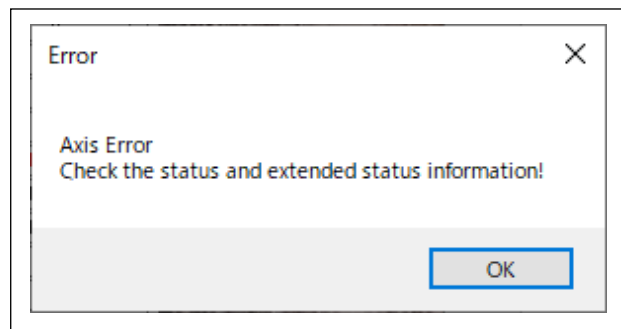
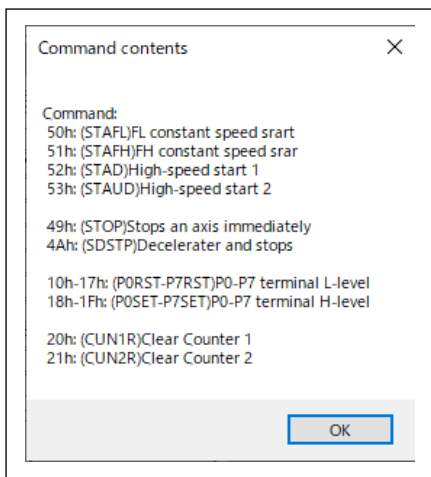
The screenshot shows the control panel with the following fields and controls:

- SEL:** 03
- COM:** 5B (circled in red)
- DATx:** 0000F002 h
- DATy:** 0000F002 h
- X-axis:**
- Y-axis:**
- Buttons:** Write

Do not use a register read-out command.

Click "Command" to display the command contents. After confirming the content, press "OK" button or press the close mark at the upper right corner to end the screen.

All of the commands are not displayed in the screen. So please refer to PCL6115/ 6125/ 6145 User's Manuals.



4.1.5 Detail setting of register data

Registers that have the specific meanings in bit unit (such as RENV1) can be set in detail. When you select to write in such registers, "Detail setting" button is enabled.

Click the "Detail setting" button to display the detailed setting screen. Refer to the sections from "1.1.14 "PRMD (Operation mode) (F)" menu" to "1.1.20 "PRMG (Speed magnification rate) (L)" menu" regarding this "Detail setting".

PCL6125 Evaluation Board

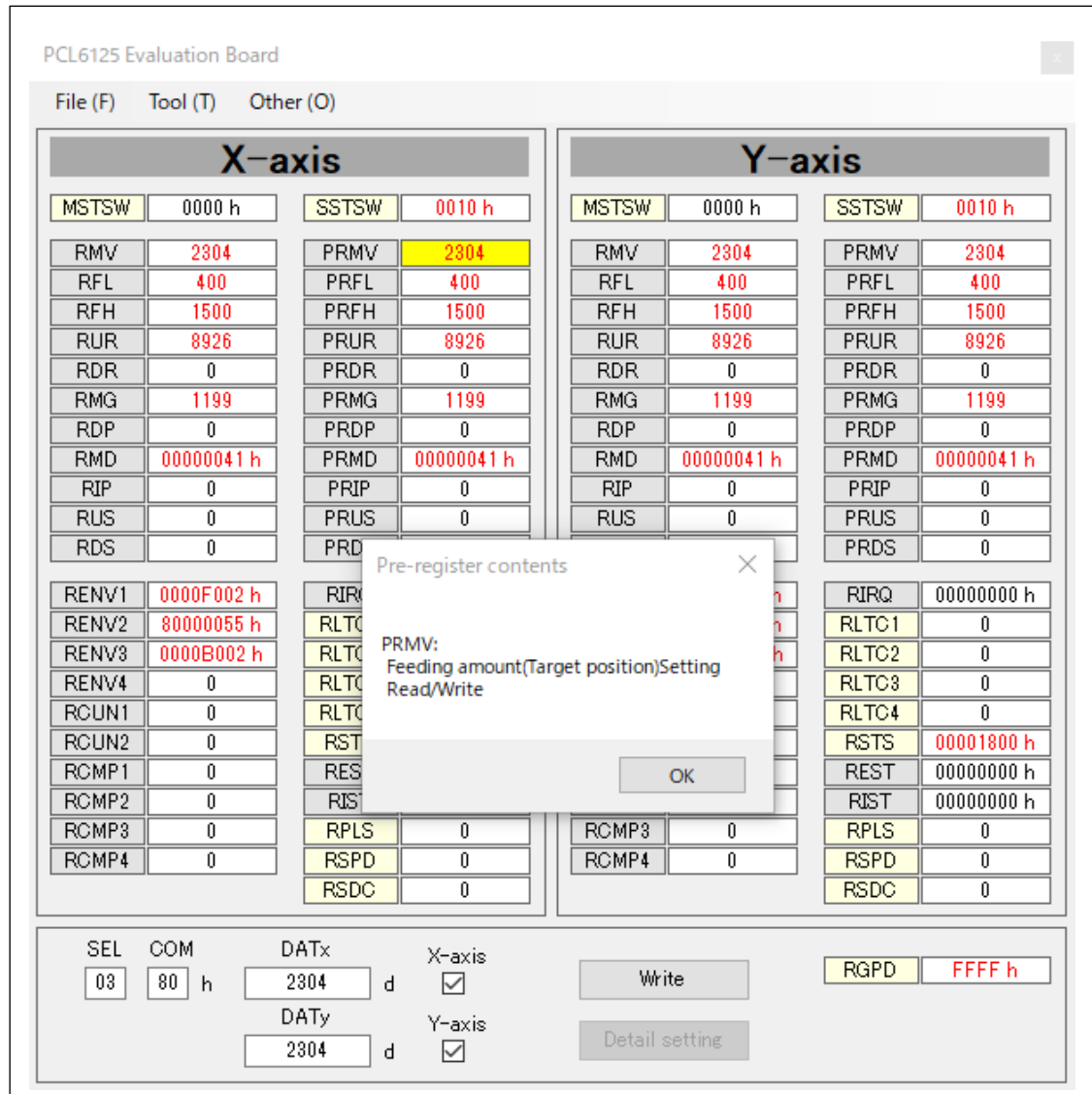
File (F) Tool (T) Other (O)

X-axis				Y-axis			
MSTSW	0000 h	SSTSW	0010 h	MSTSW	0000 h	SSTSW	0010 h
RMV	2304	PRMV	2304	RMV	2304	PRMV	2304
RFL	400	PRFL	400	RFL	400	PRFL	400
RFH	1500	PRFH	1500	RFH	1500	PRFH	1500
RUR	8926	PRUR	8926	RUR	8926	PRUR	8926
RDR	0	PRDR	0	RDR	0	PRDR	0
RMG	1199	PRMG	1199	RMG	1199	PRMG	1199
RDP	0	PRDP	0	RDP	0	PRDP	0
RMD	00000041 h	PRMD	00000041 h	RMD	00000041 h	PRMD	00000041 h
RIP	0	PRIP	0	RIP	0	PRIP	0
RUS	0	PRUS	0	RUS	0	PRUS	0
RDS	0	PRDS	0	RDS	0	PRDS	0
RENV1	0000F002 h	RIRQ	00000000 h	RENV1	0000F002 h	RIRQ	00000000 h
RENV2	80000055 h	RLTC1	0	RENV2	80000055 h	RLTC1	0
RENV3	0000B002 h	RLTC2	0	RENV3	0000B002 h	RLTC2	0
RENV4	0	RLTC3	0	RENV4	0	RLTC3	0
RCUN1	0	RLTC4	0	RCUN1	0	RLTC4	0
RCUN2	0	RSTS	00001800 h	RCUN2	0	RSTS	00001800 h
RCMP1	0	REST	00000000 h	RCMP1	0	REST	00000000 h
RCMP2	0	RIST	00000000 h	RCMP2	0	RIST	00000000 h
RCMP3	0	RPLS	0	RCMP3	0	RPLS	0
RCMP4	0	RSPD	0	RCMP4	0	RSPD	0
		RSDC	0			RSDC	0

SEL: 03 COM: 9C h DATx: 0000F002 h X-axis: Write RGPD: FFFF h

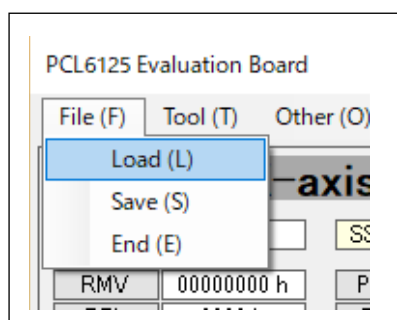
DATy: 0000F002 h Y-axis: Detail setting

Right-click the register name to display the register contents. After confirming the contents, press "OK" button or press "close mark" at the upper right corner to end this display screen.



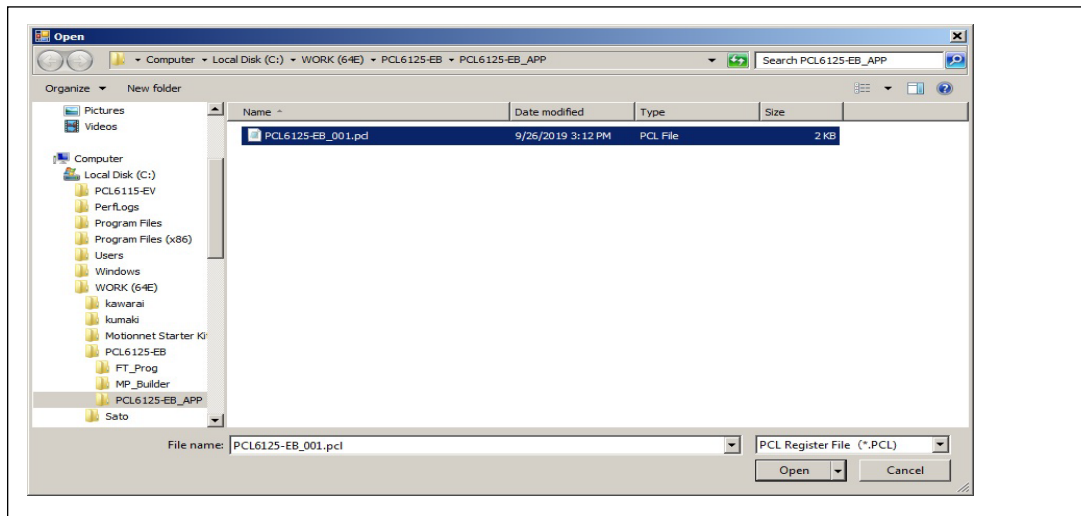
4.2 "File (F)" menu

Click "File" to display the file menu.



4.2.1 “Load (L)” menu

Register status saved by “Save” menu (refer to 0 “Save (S)” menu) can be written to PCL6125”.

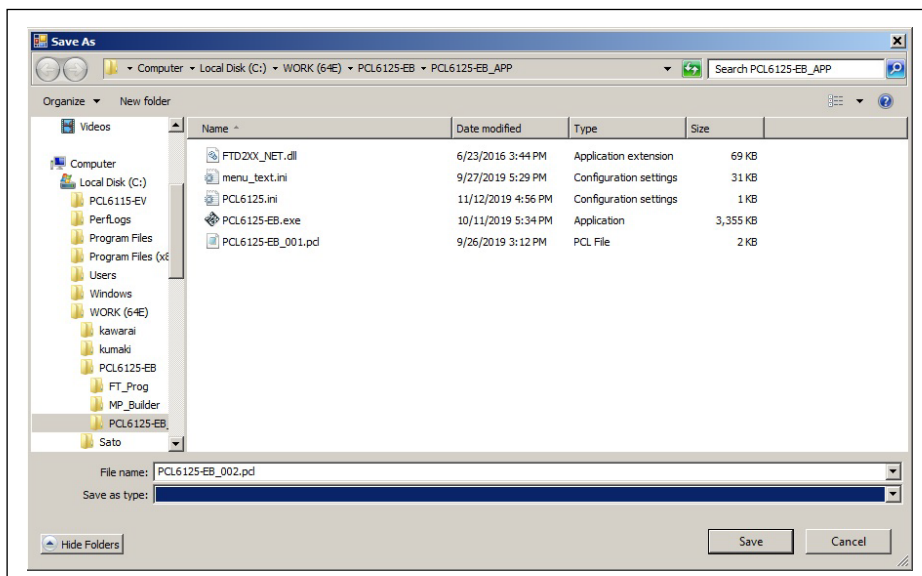


Please select the saved file name and click "Open" button. Please note that the registers you can write to PCL6125 are as follows.

PRMV, PRFL, PRFH, PRUR, PRDR, PRMG, PRDP, PRMD, PRIP, PRUS, PRDS, RENV1, RENV2, RENV3, RENV4, RCUN1, RCUN2, RCMP1, RCMP2, RCMP3, RCMP4, RIRQ

4.2.2 “Save (S)” menu

You can save the values (including status values) of registers displayed on the main screen by a text file.



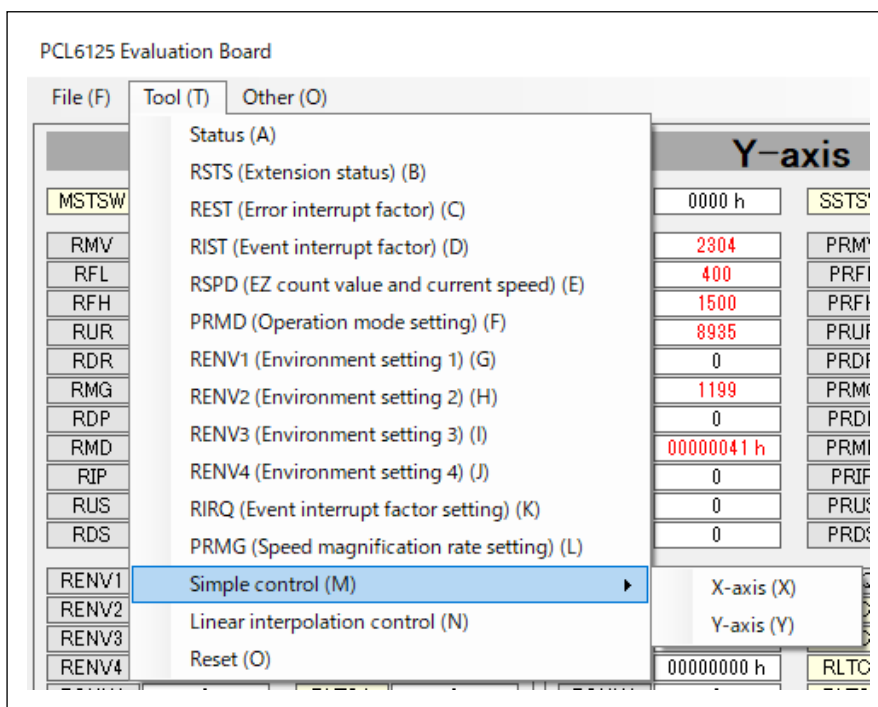
Please write a file name and click "Save" button.

4.2.3 “End (E)” menu

Close the application software.

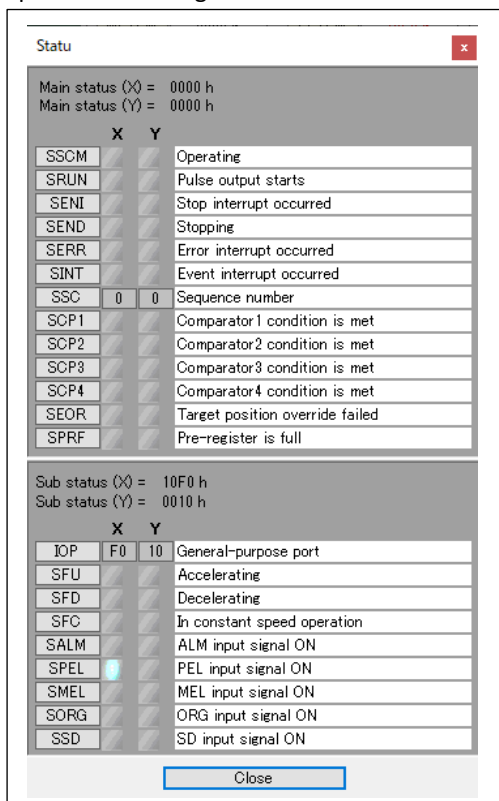
4.3 “Tool (T)” menu

Click "Tool" to display the tool menu.



4.3.1 “Status (A)” menu

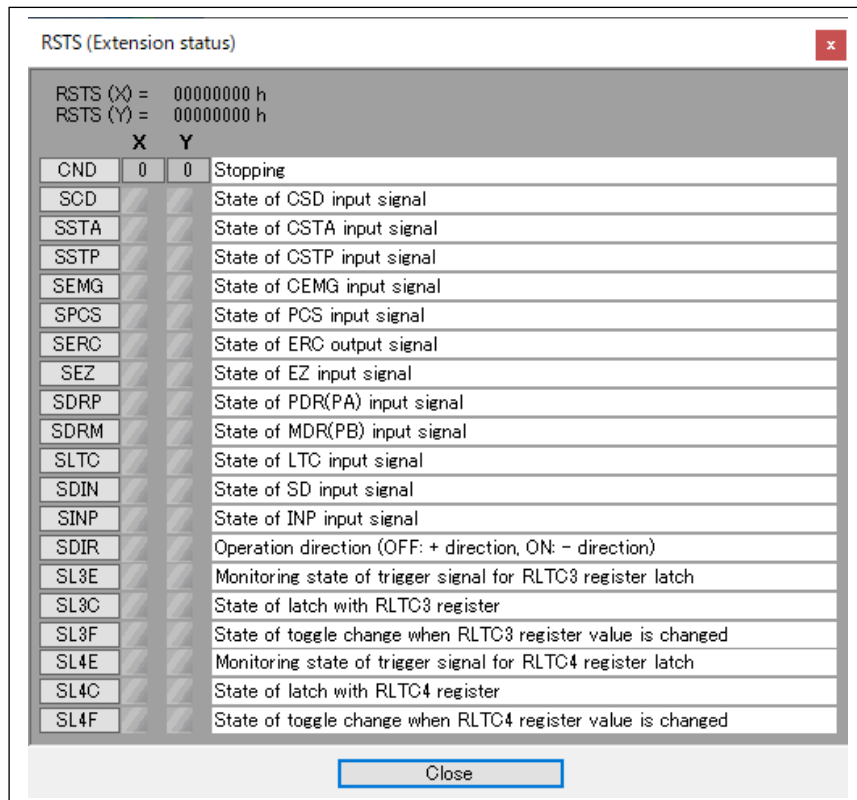
Click “Status”, to open the following screen. You can check the details of each status and sub-status bits.



Bit items that are set to “1” in registers are displayed in blue. Close “Status” menu screen by pressing “Close” button or close mark at the upper right corner.

4.3.2 “RSTS (Extension status) (B)” menu

Click “RSTS” menu to open the following screen. You can check the details in each bit of RSTS register.

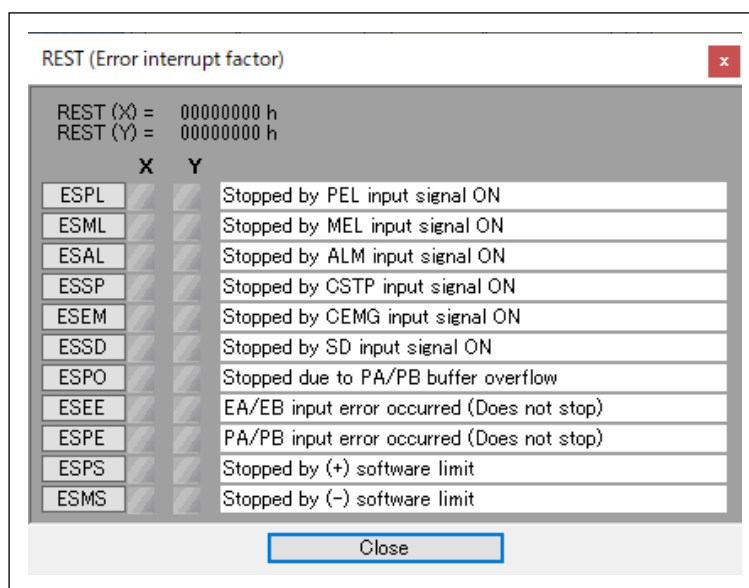


Bit items set to "1" in RSTS register are displayed in blue.

Close “RSTS (Extension status)” menu screen by pressing the “Close” button or close mark at the upper right corner.

4.3.3 “REST (Error interrupt factor) (C)” menu

Click “REST” menu to open the following screen. You can check the details in each bit of REST register.



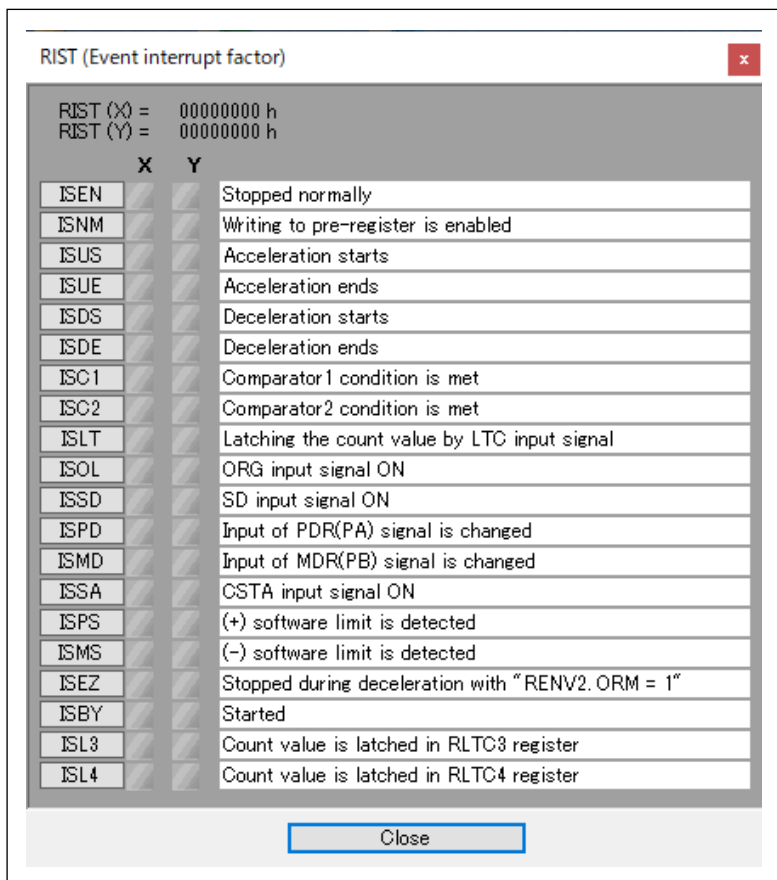
Bit items set to "1" in REST register are displayed in red.

Close "REST (Error interrupt factor)" menu screen by pressing the "Close" button or close mark at the upper right corner.

Since PCL6125-EB is serial-bus-interface base, write in the main screen to clear the bit showing "1".

4.3.4 “RIST (Event interrupt factor) (D)” menu

Click this “RIST” menu to open the following screen. You can check the details in each bit of RIST register.



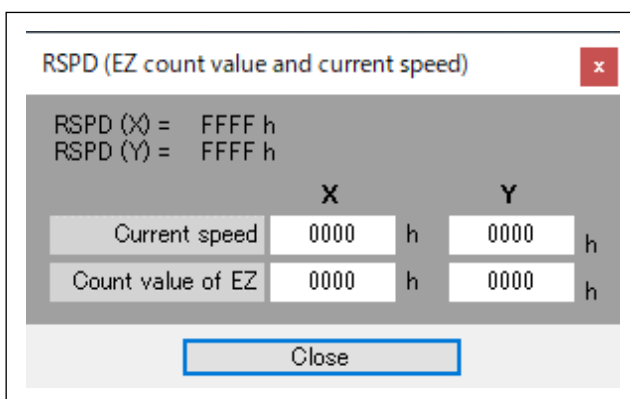
Bit items set to "1" in RIST register are displayed in red.

Close "RIST (Event interrupt factor)" menu screen by pressing the "Close" button.

Since PCL6125-EB is serial-bus-interface base, write in the main screen to clear the bit showing "1".

4.3.5 “RSPD (EZ counter value and current speed) (E)” menu

Click this “RSPD” menu to open the following screen. You can check the details in each bit of RSPD register.



Press the "Close" button to close "RSPD (EZ counter value and current speed)" menu screen.

4.3.6 “PRMD (Operation mode setting) (F)” menu

Click this “PRMD” menu to open the following screen. You can set the details in each bit of PRMD register and write the data.

PRMD (Operation mode setting)

PRMD = 00000041 h Operation target X-axis Y-axis

MOD6-0 Selection of operating mode
Positioning operation (Sets the target incremental position) ▼

MSDE Decelerates (deceleration stop) by SD input ON

MINP Operation completed by INP input ON

MSMD Selects acceleration/deceleration operation
Linear acceleration/deceleration ▼

MCCE Stop counting of COUNTER1 and COUNTER2 by output pulses

METM Selects the operation complete timing
Cycle completion ▼

MSDP Select the slow-down point
Automatic setting ▼

MPCS Starts control the number of pulses after PCS input ON

MSN1-0 Sequence number of the operation (No effect on operation)
0 ▼

MSY1-0 Select the start command function
Start immediately ▼

MAX3-0 Specify the axis to confirm stops
 X axis Y axis Z axis U axis

MSPE Deceleration stop or immediate stop by CSTP input signal

MSPO Outputs CSTP signal due to abnormal stops

MADJ FH correction function is not used

MCDE Decelerates when CSD pin is Low level

MCDO Outputs Low level from CSD pin when decelerating or running at FL

Write Close

Select a desired setting under the pull-down menus and check the menus and click "Write" and "Close" buttons.

Write to PRMD (or RMD) register, and close "PRMD (Operation mode)" menu screen.

You can also display this screen by clicking the "Detail setting" button in the main screen when writing PRMD (or RMD) register.

PRMD (Operation mode setting)

PRMD = 00000041 h Operation target X-axis Y-axis

MOD6-0 Selection of operating mode
Positioning operation (Sets the target incremental position) ▼

Continuous (+) rotation by command control
Continuous (-) rotation by command control
Continuous movement by (PA/PB) input
Continuous movement by external (PDR/MDR) input
(+) direction origin return operation
(-) direction origin return operation
Positioning operation (Sets the target incremental position)
Timer operation
Positioning operation by (PA/PB) input
Positioning operation by (PDR/MDR) input
Continuous linear interpolation
Linear interpolation
Cycle completion

MSDP Select the slow-down point

Click the pull-down mark on the right side of the combo box to display the option items and click the item you need.

Close "PRMD (Operation mode)" menu screen by clicking the "Close" button or close mark at the upper right corner.

4.3.7 “RENV1 (Environment setting 1) (G)” menu

Click this “RENV1” menu to open the following screen. You can set the details in each bit of RENV1 register and write the data.

RENV1 (Environment setting 1)

RENV1 = 0000F002 h Operation target X-axis Y-axis

PMD2-0 Sets the output pulse specification
(+) (-)

ELM Sets the process when PEL or MEL input signal turns ON

SDM Sets the process when SD input signal turns ON

SDLT Latch SD input signal

SDL SD input signal is in positive logic (Negative logic when not checked)

ORGL ORG input signal is in positive logic (Negative logic when not checked)

ALMM Sets the process when ALM input signal turns ON

ALML ALM input signal is in positive logic (Negative logic when not checked)

EROE Outputs ERC signal when stopped immediately by EL,ALM,CEMG input signals

EROR Outputs ERC signal when origin return is completed

EPW2-0 Sets the output pulse width of ERC signal

ERCL ERC output signal is in positive logic (Negative logic when not checked)

ETW1-0 Sets the ERC output signal OFF timer time

STAM CSTA signal input specification is Edge trigger (Level trigger when not checked)

STPM Sets the stop method by CSTOP input signal

FTM1-0 Selects the noise-filter characteristics of PEL, MEL, SD, ORG, ALM, INP input

INPL INP input signal is in positive logic (Negative logic when not checked)

LTCL LTC input signal is at rising edge trigger (Falling edge trigger when not checked)

PCSL PCS input signal is in positive logic (Negative logic when not checked)

DRL DR input signal is in positive logic (Negative logic when not checked)

FLTR Insert the filter set in FTM1-0 to PEL, MEL, SD, ORG, ALM, INP input signals

DRF Insert noise-filters in PDR, MDR, PE input signals

DTMF Turn off the direction change timer (0.2ms)

INTM Mask the INT signal output

PCSM Set PCS input signal to CSTA signal for own axis only

PMSK Mask the output pulses

Select a desired setting in the pull-down menus and check the menus. Then click “Write” and “Close” buttons.

Write to RENV1 register and close “RENV1 (Environment setting 1)” menu screen.

You can also display this screen by clicking the "Detail setting" button in the main screen when writing RENV1 register.

RENV1 (Environment setting 1)

RENV1 = 00000000 h Operation target X-axis Y-axis

PMD2-0 Specifies OUT output pulse details
(+) (-)

ELM turned ON

SDM ed ON

SDLT the no chec

SDL the no chec

ORGL the no ch

ALMM ned ON

ALML the no che

EROE by EL, ALM,

EROR Outputs the ERC signal when origin return is completed

Click the pull-down mark on the right side of the combo box to display the option items and click the item you need.

Close "RENV1 (Environment setting 1)" menu screen by clicking the "Close" button or close mark at the upper right corner.

4.3.8 “RENV2 (Environment setting 2) (H)” menu

Click this “RENV2” menu to open the following screen. You can set the details in each bit of RENV2 register and write the data.

Select the desired setting state in the pull-down menus and check the menus. Then, click “Write” and “Close” button.

Write to RENV2 register, and close “RENV2 (Environment setting 2)” menu screen.

You can also display this screen by clicking the “Detail setting” button in the main screen when writing RENV2 register.

Click the pull-down mark on the right side of the combo box to display the option items and click the item you need.

Close “RENV2 (Environment setting 2)” menu screen by clicking the “Close” button or close mark at the upper right corner.

Since PCL6125-EB is serial-bus-interface base, the RENV2.MRST bit is fixed to 1.

In the PCL6125-EB evaluation kit, the P3 and P4 terminals are used for the excitation mode output circuit, and the P5, P6 and P7 terminals are used for the operation mode output circuit.

4.3.9 “RENV3 (Environment setting 3) (I)” menu

Click this “RENV3” menu to open the following screen. You can set the details in each bit of RENV3 register and write the data.

RENV3 (Environment setting 3)

RENV3 = 0000B000 h Operation target X-axis Y-axis

CIS1	Selects the input counted by COUNTER1	Output pulse	C1S1-0	Selects the comparison method of Comparator 1	RCMP1 data < Comparison counter 1
CIS2	Selects the input counted by COUNTER2	EA/EB inputs	C2S1-0	Selects the comparison method of Comparator 2	RCMP2 data > Comparison counter 2
CU1H	<input type="checkbox"/> Stops counting in COUNTER1		SY03-0	Selects the output timing of internal synchronous signals	Internal synchronous signal output OFF
CU2H	<input type="checkbox"/> Stops counting in COUNTER2		SY11-0	Selects the input for start with an internal synchronous signal	Internal synchronous signal output by X axis
CU1L	<input type="checkbox"/> Resets COUNTER1 when COUNTER1 is latched		SLM1-0	Controls the software limit	Stops the software limit
LOF1	<input type="checkbox"/> Latching COUNTER1 by LTC signal input is disabled		SLCU	Selects the counter to control software limit	COUNTER1
CU1R	<input type="checkbox"/> Latches COUNTER1 when the origin return operation is completed				
C1RM	<input type="checkbox"/> Uses Comparator 1 to set COUNTER1 for ring counter operation				
CU2L	<input type="checkbox"/> Resets COUNTER2 when COUNTER2 is latched				
LOF2	<input type="checkbox"/> Latching COUNTER2 by LTC input signal is disabled				
CU2R	<input type="checkbox"/> Latches COUNTER2 when the origin return operation is completed				
C2RM	<input type="checkbox"/> Uses Comparator 2 to set COUNTER2 for ring counter operation				

Write Close

Select a desired setting state in the pull-down menus and check the menus. Then, click “Write” and “Close” button.

Write to RENV3 register and close “RENV3 (Environment setting 3)” menu screen.

You can also display this screen by clicking the “Detail setting” button in the main screen when writing RENV3 register.

RENV3 (Environment setting 3)

RENV3 = 0000B000 h Operation target X-axis Y-axis

CIS1	Selects the input counted by COUNTER1	Output pulse			
CIS2	Selects the input counted by COUNTER2	EA/EB inputs			
		EA/EB inputs			
CU1H	<input type="checkbox"/> Stops counting in COUNTER1				
CU2H	<input type="checkbox"/> Stops counting in COUNTER2				
CU1L	<input type="checkbox"/> Resets COUNTER1 when COUNTER1 is latched				
LOF1	<input type="checkbox"/> Latching COUNTER1 by LTC signal input is disabled				
CU1R	<input type="checkbox"/> Latches COUNTER1 when the origin return operation is completed				
C1RM	<input type="checkbox"/> Uses Comparator 1 to set COUNTER1 for ring counter operation				
CU2L	<input type="checkbox"/> Resets COUNTER2 when COUNTER2 is latched				
LOF2	<input type="checkbox"/> Latching COUNTER2 by LTC input signal is disabled				

Click the pull-down mark on the right side of the combo box to display the option items and click the item you need.

Close “RENV3 (Environment setting 3)” menu screen by clicking the “Close” button or close mark at the upper right corner.

4.3.10 “RENV4 (Environment setting 4) (J)” menu

Click this “RENV4” menu to open the following screen. You can set the details in each bit of RENV4 register and write the data.

Select a desired setting state from the pull-down menu, check the menus. Then click the “Write” and “Close” button. Write to RENV4 register and close “RENV4 (Environment setting 4)” menu screen.

You can also display this screen by clicking the "Detail setting" button in the main screen when writing to RENV4 register.

Click the pull-down mark on the right side of the combo box to display the option items and click the item you need.

Close "RENV4 (Environment setting 4)" menu screen by clicking the "Close" button or close mark at the upper right corner.

4.3.11 “RIRQ (Specifies event interrupt factor) (K)” menu

Click this “RIRQ” menu to open the following screen. You can set the details in each bit of RIRQ register and write the data.

Select the desired setting state from the pull-down menu, check menu, and click the “Write” and “Close” button.

Write to RIRQ register and close “RIRQ (Event interrupt factor setting)” menu screen.

You can also display this screen by clicking the “Detail setting” button in the main screen when writing RIRQ register.

Click “Close” button to end “RIRQ (event interrupt factor)” menu screen.

Close “RIRQ (event interrupt factor)” menu screen by clicking the "Close" button or close mark at the upper right corner.

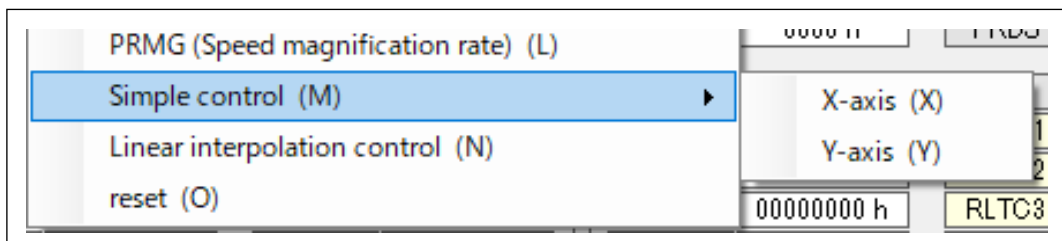
4.3.12 “PRMG (Speed magnification rate) (L)” menu

Click this “PRMG” menu to open the following screen. You can set PRMG register by entering speed magnification rate you want to set.

Please enter the magnification you want in decimal number (you can set a value after the decimal point). The value of PRMG is calculated and displayed so that the magnification is realized based on the input. In addition, an actual magnification with this value is recalculated and displayed. You can write the value by clicking the “Write” and “Close” buttons. Write to PRMG register and close “PRMG (Speed magnification rate)” menu screen. You can also display this screen by clicking the “Detail setting” button when writing to PRMG register.

Close “PRMG (Speed magnification rate)” menu screen by clicking the "Close" button or close mark at the upper right corner.

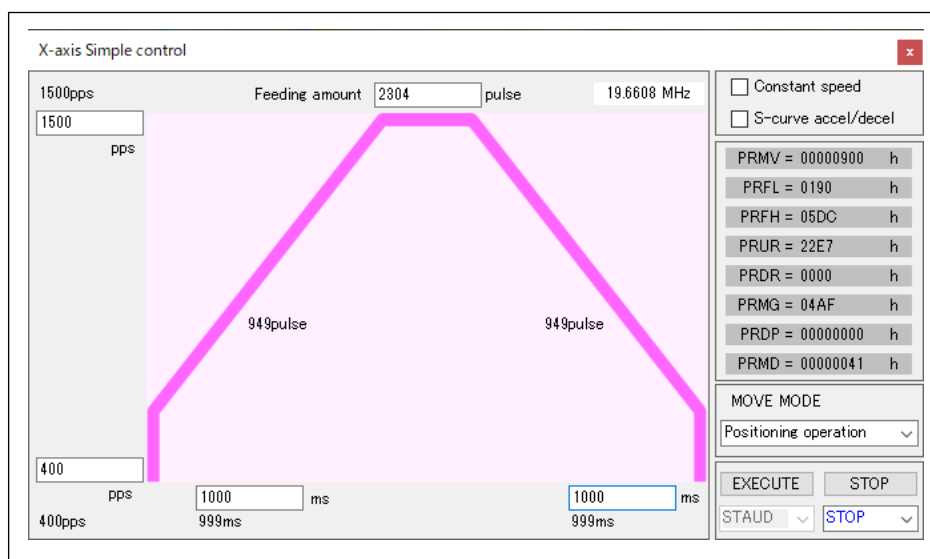
4.3.13 “Simple control (M)” menu



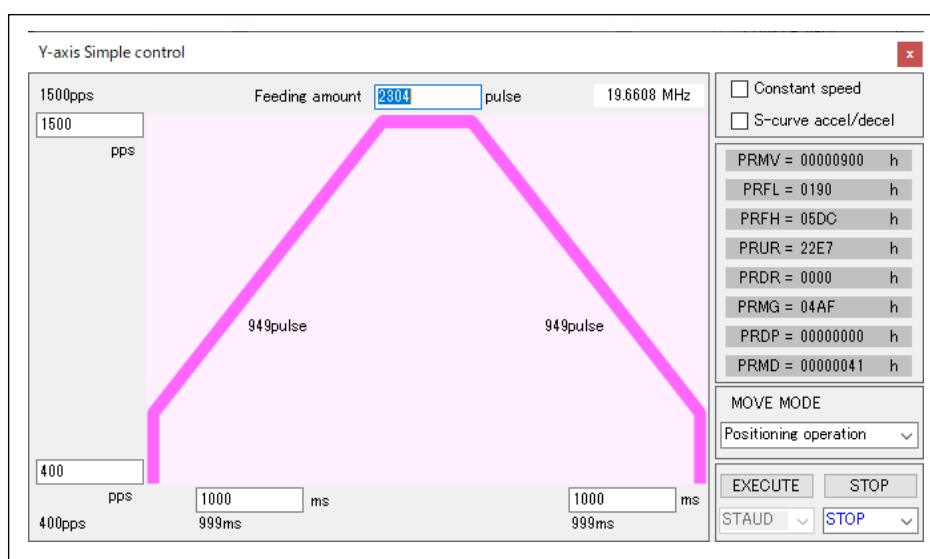
Click the “Simple control” menu to display X and Y axes in the following screen. You can set an operation pattern to perform a simple motion control.

Click “X-axis” menu to display only the X-axis and clicking “Y-axis” menu to display only the Y-axis.

When values (other than 0) are entered in RFH, RFL, RMV, RUR, (RDR) registers in the main screen, the values are displayed.



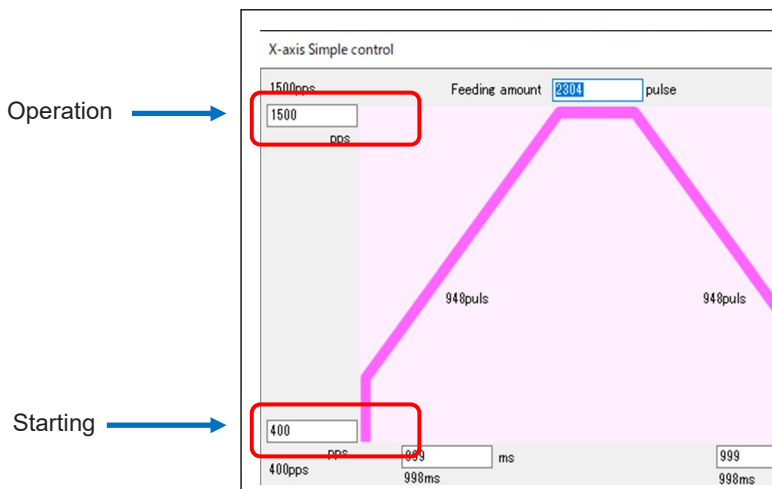
Close the “X-axis Simple control” menu screen by clicking the "Close" button or close mark at the upper right corner.



Close the “Y-axis Simple control” menu screen by clicking the "Close" button or close mark at the upper right corner.

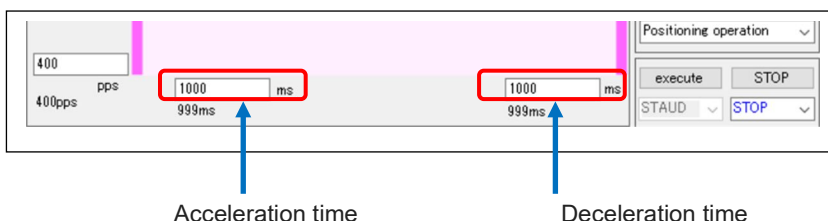
4.3.13.1 Setting the frequency

You can set the frequency of control pulses to operate a stepping motor.
Please set the starting speed and the operation speed by decimal numbers respectively.



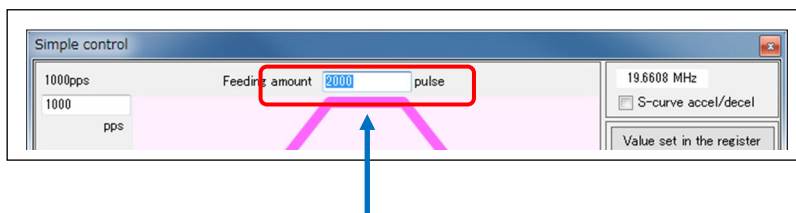
4.3.13.2 Set the acceleration/deceleration time

Acceleration time and deceleration time can be set in milliseconds and decimal number.
If acceleration time and deceleration time are the same, the selection of the slow-down point is set automatically.
If acceleration time and the deceleration time are different, the selection of the slow-down point is set manually. So, you need to calculate the slow-down point value and write it in slow-down point register (PRDP).



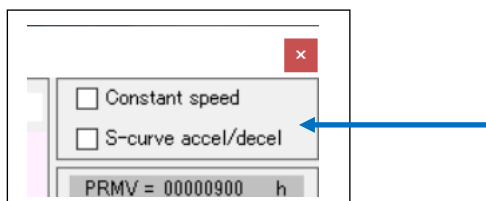
4.3.13.3 Set the feeding amount

You can set the number of control pulses to output.



4.3.13.4 Set the S-curve acceleration/deceleration

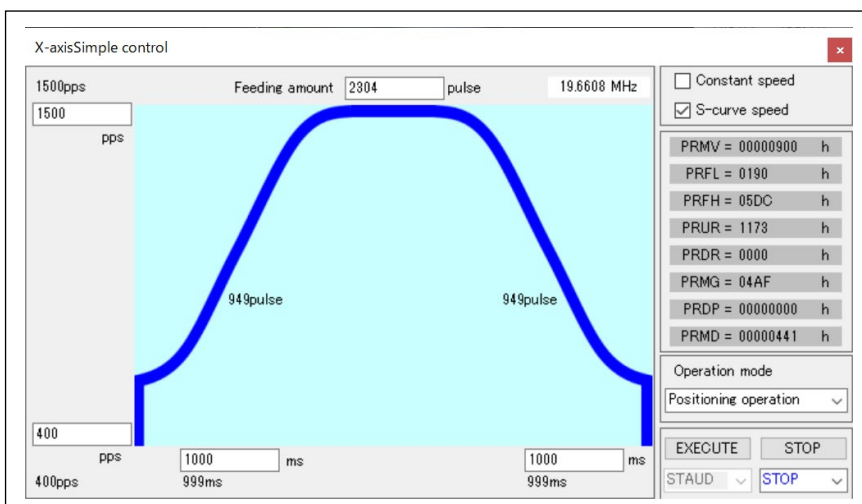
You can select either Linear control or S-curve control for the characteristics of acceleration and deceleration.



When you select constant speed control, the screen shows as follows.

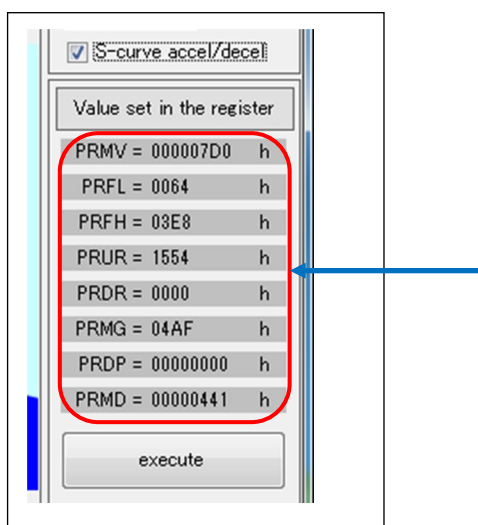


When you select S-curve control, the screen shows as follows.



4.3.13.5 Check the value set in register

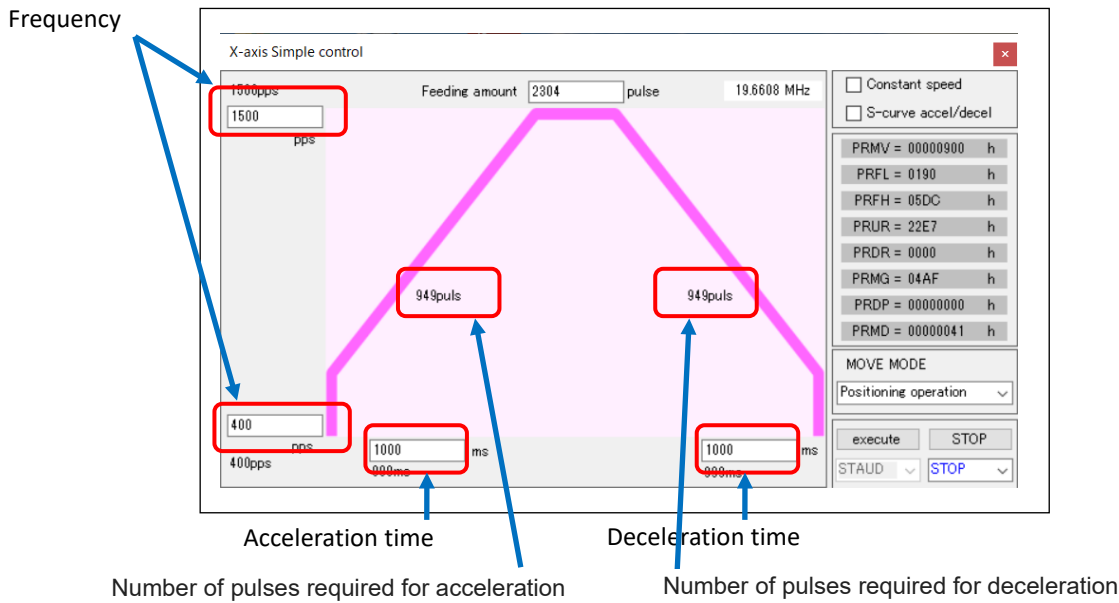
The following screen shows the values to be written in registers to realize the set values.



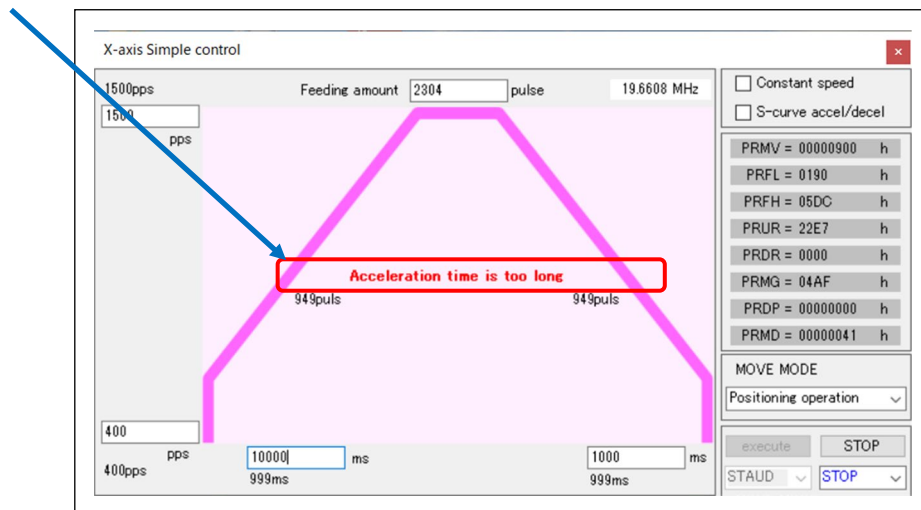
Please refer the above when you create a program to control PCL6125.

4.3.13.6 Display the recalculation of operation time with the value set to register

The result of recalculated motion profile by the values set in the register is displayed as follows.

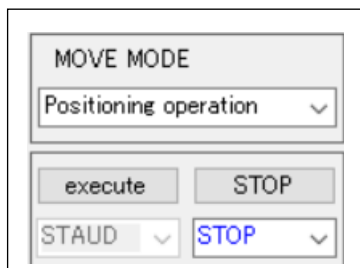


Pulses are calculated by integers, so the motion profile may be different than you have specified. Also, if you set an excessive value, an error will be occurred.



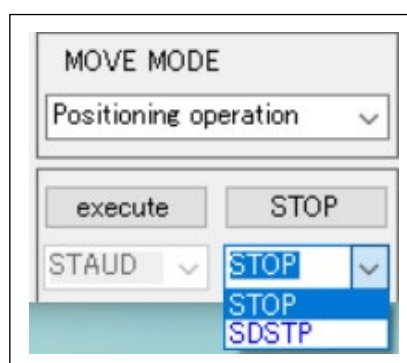
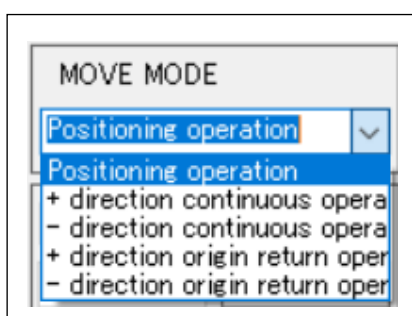
4.3.13.7 Perform a set operation

You can select the settings for "operation mode" and "stop". "Execution" is determined by 4.3.13.4 Acceleration/deceleration characteristics setting.



"Operation mode" can be selected from 5 operations "Positioning operation", "+ direction continuous operation", "- direction continuous operation", "+ direction origin return operation", and "- direction origin return operation".

"Stop" can be selected from two actions "STOP" and "SDSTP".



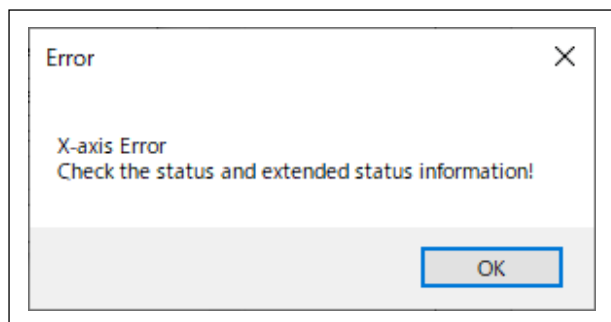
After setting the operation pattern, when you click the "EXECUTE" button, the value of each register is written to PCL6125 and the set operation is performed once.

At this time, "FH high speed start" (STAUD: 53h) is written to PCL6125 as a start command for linear control and S-curve control, and "FL constant speed start" (STAFL: 50h) is written to PCL6125 for constant speed control.

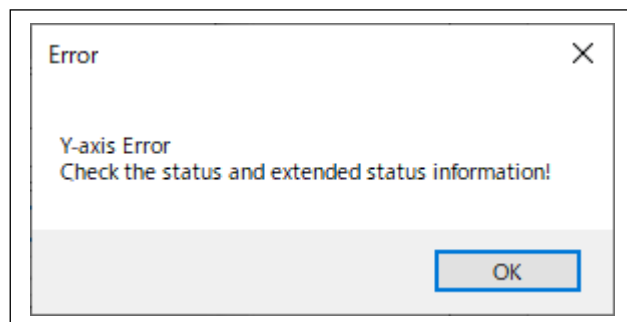
If you click the "STOP" button during operation, it will stop immediately by selecting "STOP". At this time, "immediate stop" (STOP: 49h) is written to PCL6125 as a command.

Slow down stop with "SDSTP" selection. At this time, "Slow down stop" (SDSTP: 4Ah) is written to PCL6125 as a command.

If the end limit signal and alarm signal are ON when you click the "EXECUTE" button, it will not operate and an error message will be displayed. Turn off the end limit signal and alarm signal and click again.



Error display for X-axis simple control

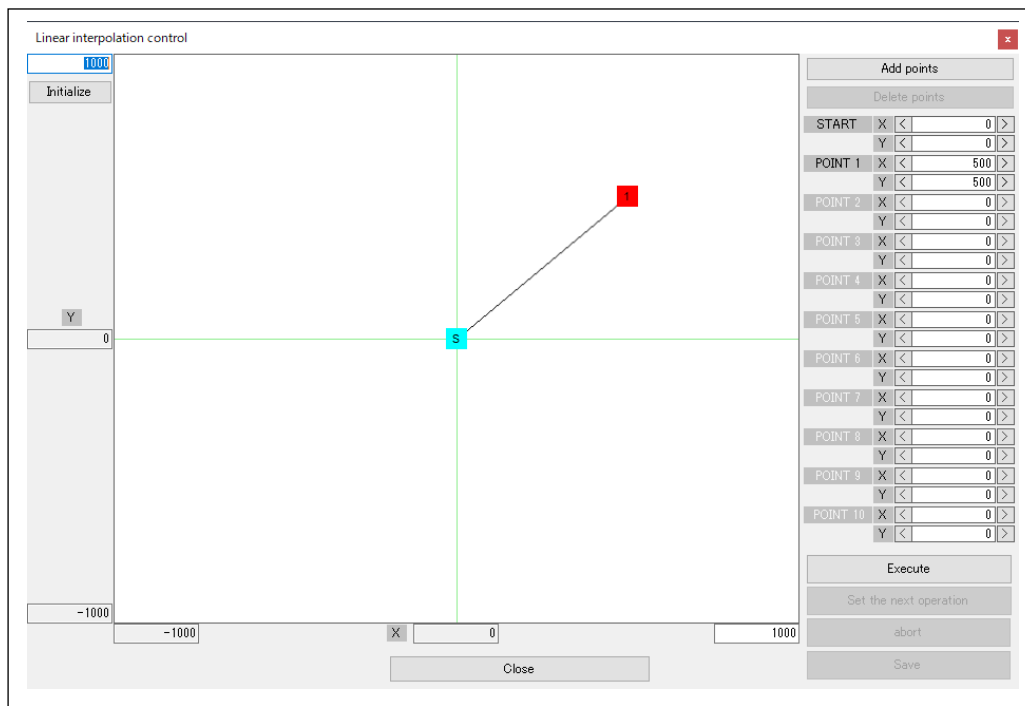


Error display for Y-axis simple control

Close the "Simple Control" menu screen by clicking the end mark on the upper right.

4.3.14 “Linear interpolation control (N)” menu

Click this menu to open the following screen. Set an operation pattern to execute a linear interpolation operation.

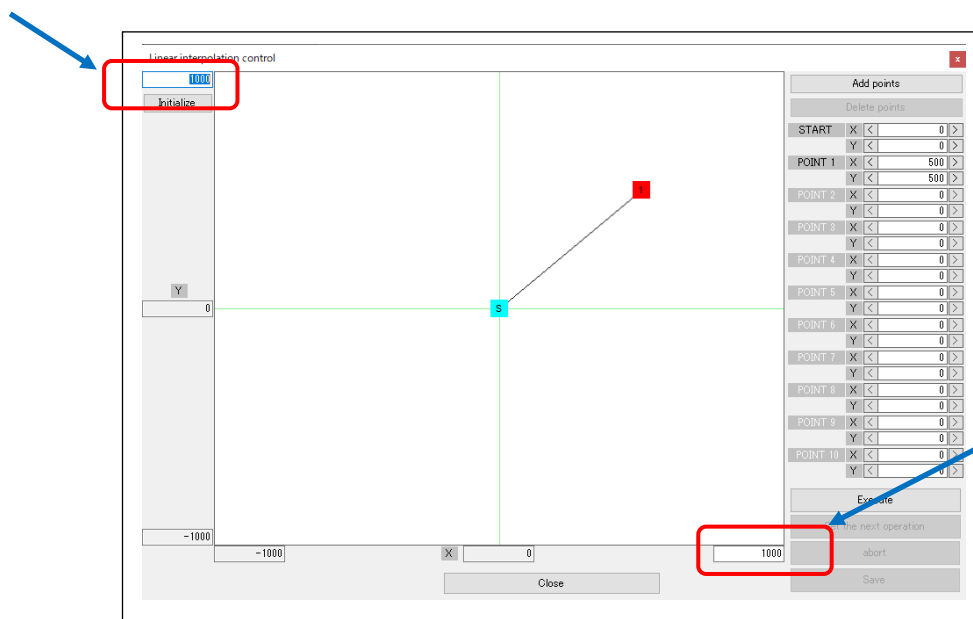


The default state is that the starting point is at cartesian coordinates (0, 0) and a linear interpolation to point 1 of coordinates (500, 500) with a feeding amount of ± 1000 can be executed.

Note: When using more than one monitor, be sure to operate the linear interpolation control in monitor 1.

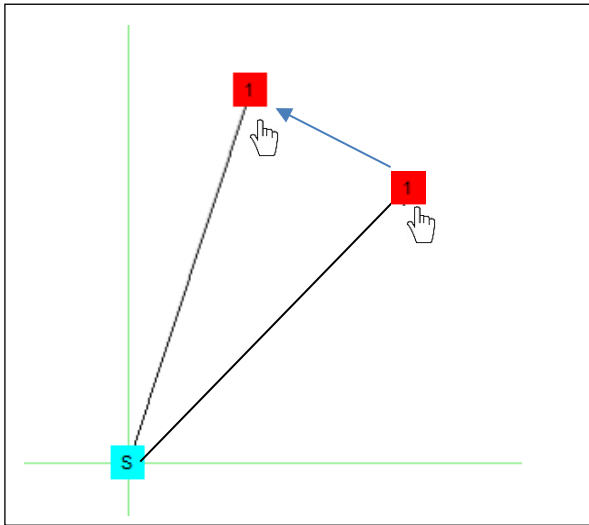
4.3.14.1 Change the feeding amount of cartesian coordinates

You can enter the feeding amount of X-axis (horizontal axis) and Y-axis (vertical axis) in cartesian coordinates in decimal numbers. Set a positive value in the columns. The negative value is fixed to the same value with a negative sign as the value specified in the input column of the positive side.



4.3.14.2 Change the point position

You can move the point to an arbitrary position. Drag the cursor to the position with left-clicking.



When the point is moved, the coordinates of the position is displayed on the right side of screen.

Add points		
Delete points		
START	X	< 0 >
	Y	< 0 >
POINT 1	X	< 221 >
	Y	< 811 >
POINT 2	X	< 0 >
	Y	< 0 >

Add points		
Delete points		
START	X	< 0 >
	Y	< 0 >
POINT 1	X	< 220 >
	Y	< 810 >
POINT 2	X	< 0 >
	Y	< 0 >

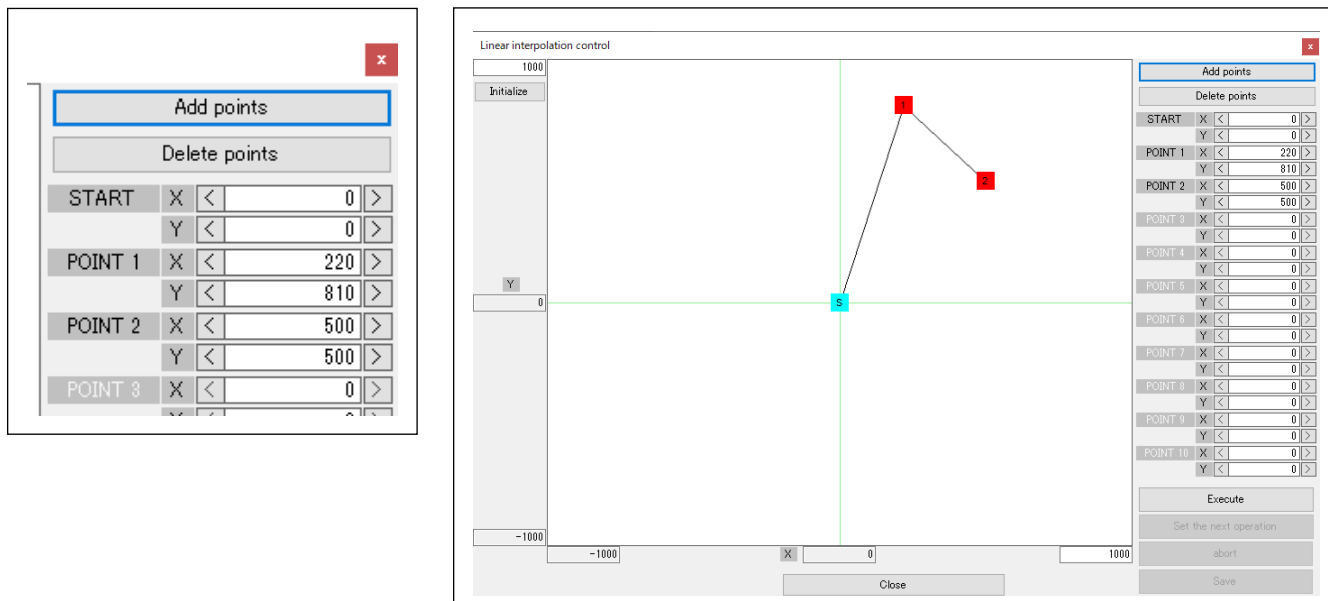
Add "1"

Subtract "1"

Click the left arrow to add 1 (+1) to X-axis (horizontal axis) and Y-axis (vertical axis) travel and click the right arrow to subtract 1 (-1).

4.3.14.3 Increase or decrease the point

Click the "Add points" button to increase a point.

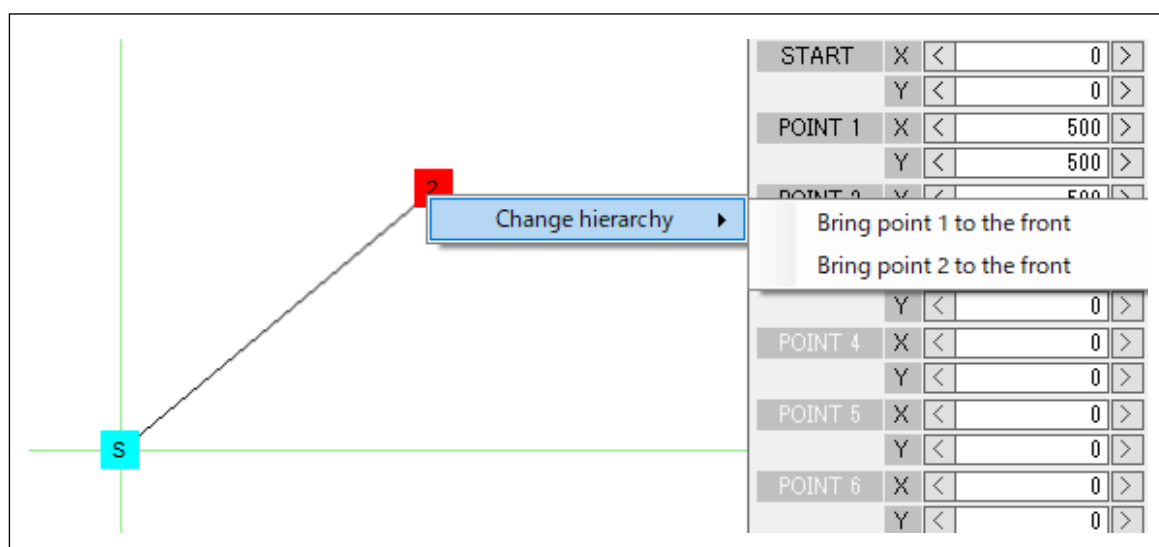


The increased point can be moved to any location using the same procedure. You can increase up to 11 points (including the start point).

Click "Delete points" button to reduce the points. It will delete points from the highest number in order. Point 1 and the start point cannot be deleted.

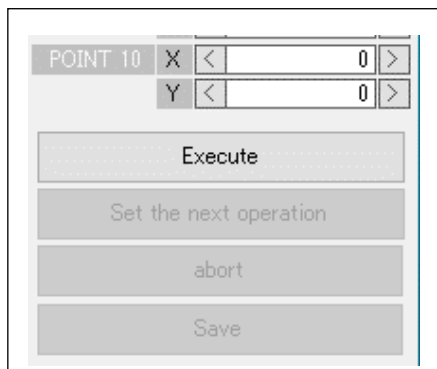
4.3.14.4 When the points are overlapped

If the coordinates of points are the same, the previously displayed point will be invisible since it is placed behind the currently displayed point. In this case, right-click the overlapping point so that you can select the point to display as follows.



4.3.14.5 Execute a linear interpolation

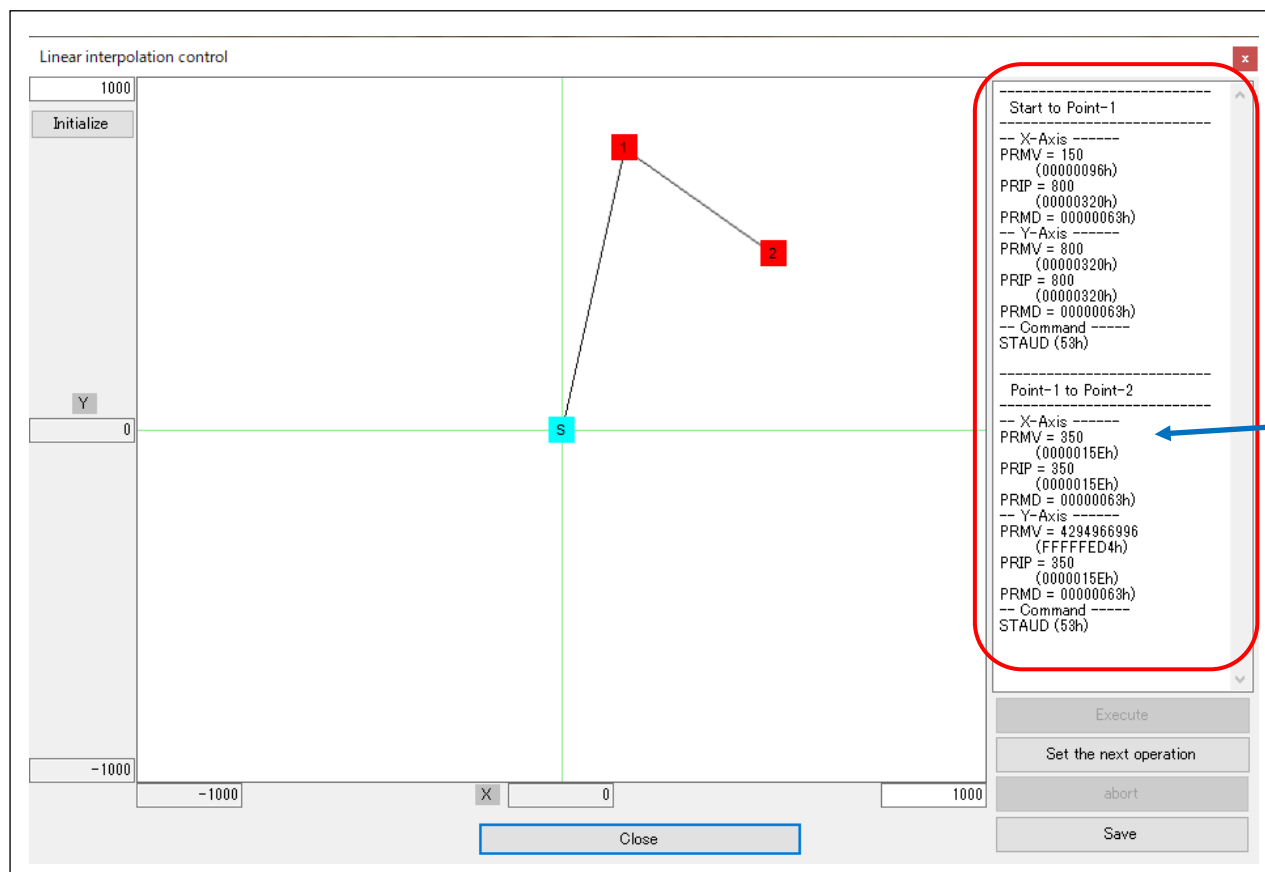
Set the point and click the “Execute” button.



Note: If the operation pattern is not set, it will not be executed.
It is necessary to write an operation pattern to PCL6125 beforehand by performing “Simple control”, etc.

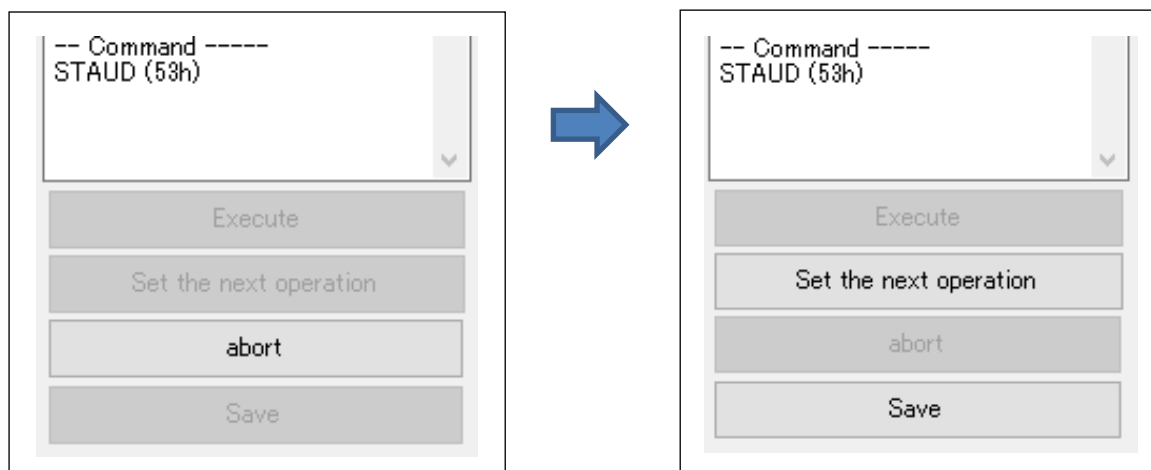
4.3.14.6 Display the register setting during an execution

During an execution, the actual values written to registers are displayed on the right side of the screen.



The set value is displayed when the value is written to PCL6125.

When the operation is completed, the state of buttons at the bottom right of the screen will change to “Set the next operation” clearly.



4.3.14.7 Save the executed register values

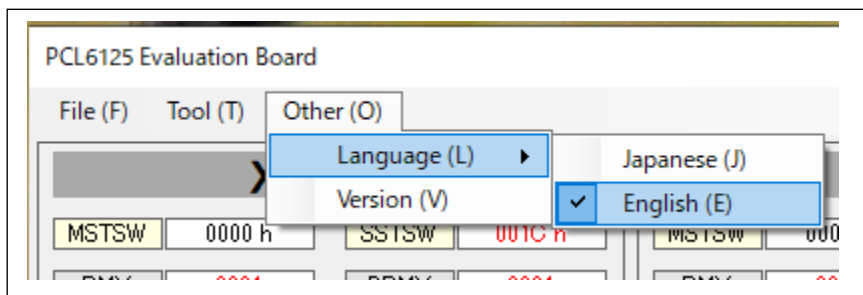
Click the "Save" button to save the actual register settings as a text file by specifying the saving destination.
The amount of cartesian coordinate feeding amount changed at this time is not initialized.

4.3.15 "Reset (O)" menu

Write the "Reset" command of the software to initialize PCL6125. .

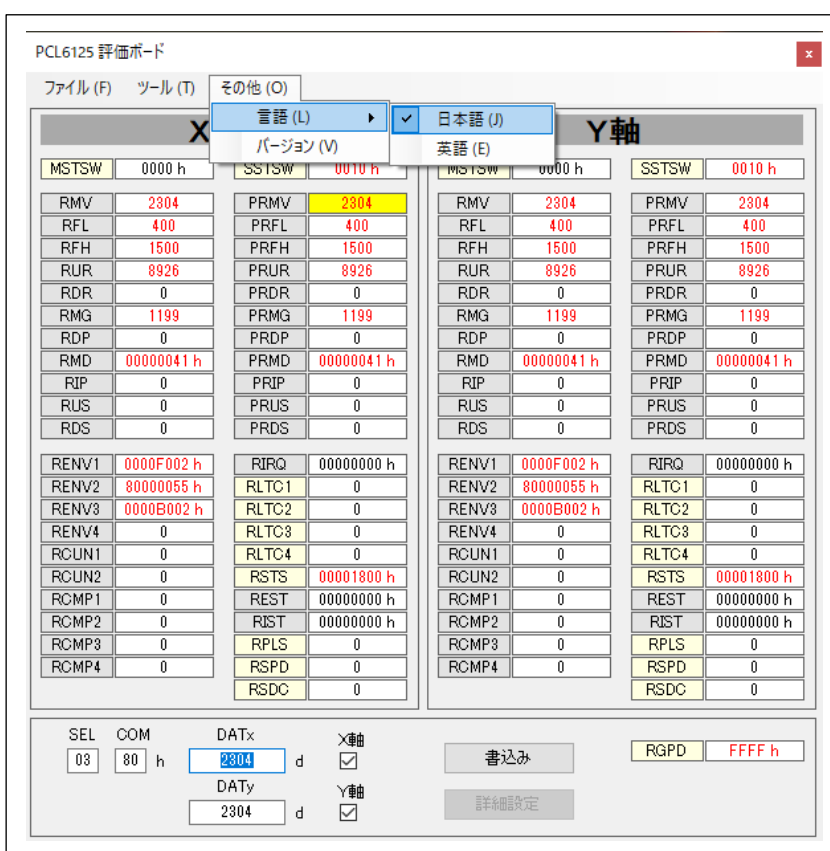
4.4 “Other (O)” menus

Click the “Other” menu to switch the language and to check the software version.



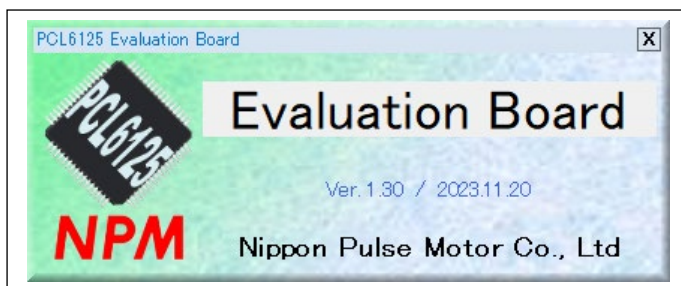
4.4.1 “Language (L)” menu

Two languages, Japanese and English, can be selected. A check mark is placed in front of the selected language.



4.4.2 “Version (V)” menu

You can check the software version.



NPM reserves all intellectual property rights, including copyrights, for the software. NPM does not transfer any rights regarding the software to customer(s). Customer(s) may use the current software only for the purpose of using the products. NPM does not provide no warranty, whether expressed or implied, including the completeness, accuracy, applicability, usefulness, or non-infringement of third-party intellectual property of our software. In addition, NPM is not responsible for any damages (including lost revenue or profits) caused by using the software. Customer(s) must comply with the export control laws and regulations of the countries in case the customer(s) use(s) the software outside the country purchased.

Revision

Revision	Date	Contents
1st	March 3, 2020	Initial Release
2nd	June 15, 2021	<p>Software version (V1.20)</p> <ol style="list-style-type: none"> 1. Added and changed "Command" to "SEL" and "COM". 2. Added and changed "Data" to "DATx" and "DATy". 3. Change the check box "Write to X-axis" to "X-axis" and the check box "Write to Y-axis" display to "Y-axis". 4. Corrected the following files by the above corrections 1, 2 and 3 Form1.cs[Design], Form1.cs, Form8.cs, Form9.cs, Form10.cs, Form11.cs, Form12.cs, Form13.cs, accessPCL.cs 5. Corrected so as to select P0-P7 setting of environments setting 2
3rd	December 13, 2023	<p>Software version (V1.30)</p> <p>Added "execute" (STAFL for constant speed control, STAUD for linear control and S-curve control) and "STOP" (STOP/SDSTP) in X-axis simple control, Y-axis simple control with constant speed control, operation mode (positioning operation, + direction continuous operation, - direction continuous operation, + direction origin return operation, - direction origin return operation) (P22-P25).</p> <ol style="list-style-type: none"> 2. Added Error display when axis checkboxes are all unchecked (P9) 3. Added Error display during X-axis simple control, Y-axis simple control operation(P26) and operation command (P10)



www.pulsemotor.com/group/

Information

www.pulsemotor.com/group/support