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Parameter setting tool for Low Voltage Brushless DC Gearmotor Driver
ACD-PSTool

Instruction Manual
<Read this Manual before the use of the product.>

Brother International Corporation

Introduction

We take this opportunity to sincerely thank you for your purchase this time of our product,
Brother Brushless DC series.

Safety precautions

● Be sure to carefully read the contents described in this Instruction Manual and to master how to use the product correctly before using it.

● Extents of hazard/damage expected to occur in the case of mishandling are basically classified and indicated into ranks of "Danger", "Warning" and "Caution" in this Instruction Manual. The definitions and indications are as follows:

⚠ Danger	Cases where mishandling possibly causes a dangerous situation to occur, which may lead to death or serious injury. The degree of danger is assumed to be extremely high.
⚠ Warning	Cases where mishandling possibly causes a dangerous situation to occur, which may lead to death or serious injury.
⚠ Caution	Cases where mishandling possibly causes a dangerous situation to occur, which may lead to a medium degree of injury or minor one.

Even the items described in "Caution" may lead to a serious result depending on situations. Be sure to observe all the instructions because all of them are describing important points.

⚡	: △ mark indicates "items that require caution." (Left example indicates electric shock hazard.)
🚫	: ○ mark indicates "items that are prohibited." The illustration inside the circle indicates the detail of prohibition. (Left example indicates no disassembling.)

⚠ Caution		
⚠	🚫	Never reconnect the cable during the operation of ACD-PSTool, otherwise it may malfunction. When reconnecting the cable, please end ACD-PSTool before doing so.
⚠	🚫	When turning ON/OFF the power of the driver, please end ACD-PSTool before doing so; otherwise it may malfunction.
⚠	🚫	Do not load files other than parameter files created by ACD-PSTool, otherwise it may malfunction.

Notice
We shall assume no responsibility or liability for any troubles caused by usage against the cautions above.
The contents of this Manual may be changed without notice in future.
We have made every possible effort to make the contents of this Manual precise. If there is any point not understandable, error or finding, however, your comment will be appreciated.

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Software License Agreement
July 31, 2017

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(4) Uploading the software on a publicly accessible media for downloads by random individuals.

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We shall be able to terminate the Agreement without prior notice if the customer breaches the conditions stipulated in the Agreement.

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This Agreement shall be governed by and construed in accordance with the laws of Japan. All disputes related to or arising from the Agreement shall be submitted to the exclusive jurisdiction of Nagoya District Court in the first instance.

Introduction

ACD-PSTool is a Windows application that has the following functions for the purposes of setting parameters, saving set data and the like of the driver for driving our Low Voltage Brushless DC Gearmotors.

- Parameter setting via application
- Writing of set parameters into the driver
- Loading of parameters set in the driver
- Comparing the set values on the application to the parameters set in the driver
- Alarm history display (Can record up to 10)
- Comment description
- Saving parameter files (See 4.7.) on personal computer
- Reading and displaying the information from constants files on application

Please use the software correctly by referring to the Instruction Manual of the driver unit along with this Instruction Manual.
Images shown on the Instruction Manual are all under development.
Note that descriptions may differ.

Models to be connected

Types of drivers that are compatible with ACD-PSTool are as follows:
- A-BLCD005L1   - A-BLCD020L2
- A-BLCD005L2   - A-BLCD020L4
- A-BLCD010L1   - A-BLCD040L2
- A-BLCD010L2   - A-BLCD040L4
- A-BLCD010L4

OS and registered trademark

- Windows7, Windows8, Windows8.1 and Windows10 are the registered trademarks of Microsoft Corporation, USA.
- No ® mark is indicated for trademark or registered trademark in this Manual.

How to use software

This is an application that does not require installation.
Download ACD-PSTool from our website, and unzip the zip file to your desired location.

In addition, this application operates on .NET Framework3.5 or later.
See the website of Microsoft for installation method and the like of .NET Framework.

Configuration of folders

- ACD-PSTool.exe: Tool main unit
- ADC_PSTool.ini: Language selection setting file
- en-US: Library for English description
- ja-JP: Library for Japanese description
- ko-KR: Library for Korean description
- zh-CN: Library for Chinese description

Operation check OS

The operation of ACD-PSTool is confirmed on the following OS:

List of OS on which operation is confirmed

	Japanese version	English version	Chinese version	Korean version
Windows7	○	○	○	○
Windows8	○	○		
Windows8.1	○	○		
Windows10	○	○	○	○

1. Startup of ACD-PSTool
   Double-click "ACD-PSTool.exe." in the unzipped folder.

2. Language selection of ACD-PSTool
   You will now be seting the language on ACD-PSTool.
   Select the language you would like to use, and press "OK" button.
   *If the check box for saving the language setting is checked on the main screen, this selection screen will be skipped.

   Refer to "3-3-8. Save Language settings" for details.
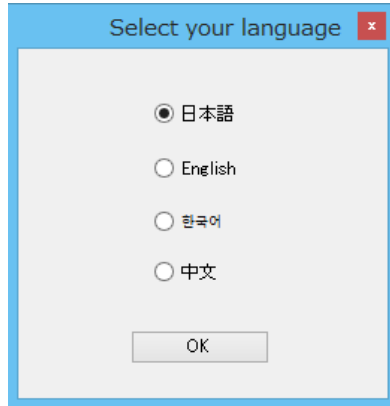
Select your language screen

3. Main screen of ACD-PSTool
   The main screen of ACD-PSTool is made up of "Title bar", "Main menu", "Main window" and "Status bar."
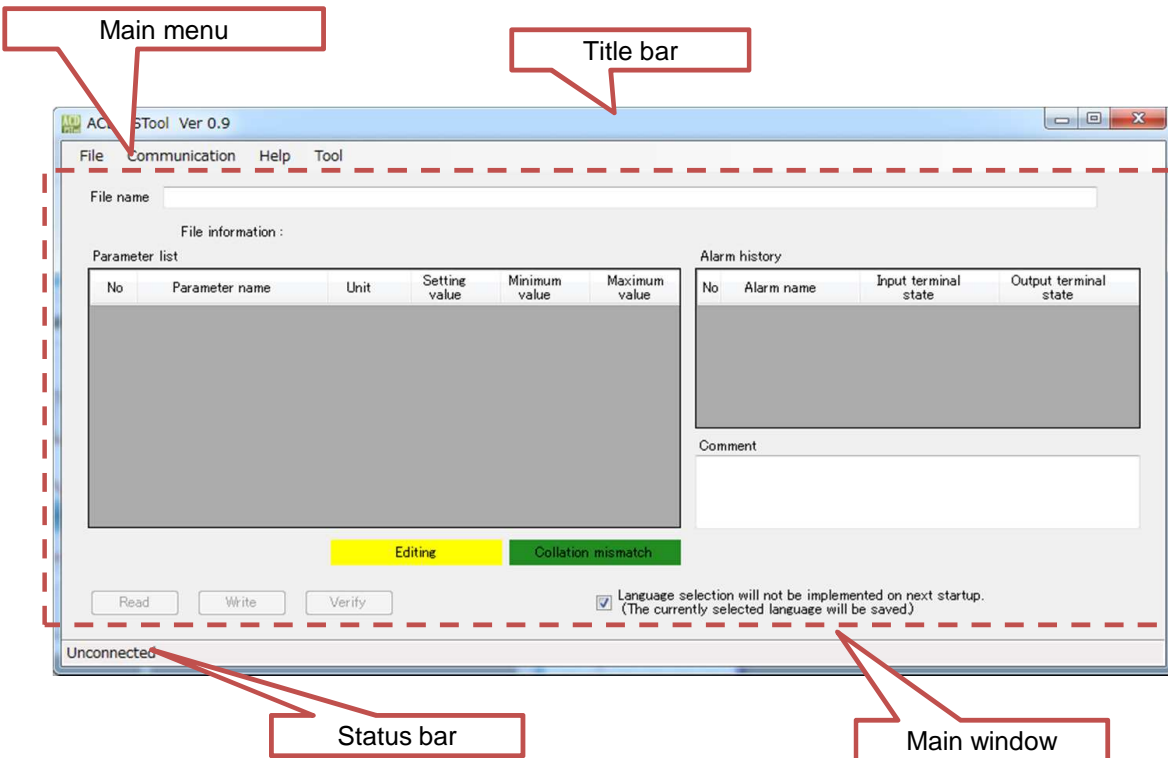
Main screen of ACD-PSTool

3-1. Title bar

Displays the icon of the application, application name and version.

3-2. Main menu

Main menu of ACD-PSTool is structured as follows:

Main menu list

Menu	Contents
File	Loads and saves parameter files and ends application.
Communication	Connects/disconnects communication with the driver.
Help	Display information concerning the application.
Tool	Do not use this menu.

Sub-menus for each main menu are as follows:

File menu details

Sub-menu	Contents
Open file	Opens parameter files.
Save file	Saves information displayed on the current window into parameter files.
End	Ends ACD-PSTool.

Communication menu details

Sub-menu	Contents
Port	Selects COM port that communicates with the driver.
Communication connected	Connects/disconnects communication with the driver.
Communication disconnected	Displays "Communication disconnected" when communication is connected, and "Communication connected" when unconnected.

Help menu details

Sub-menu	Contents
About ACD-PSTool	Displays version of ACD-PSTool and copyright information.

Tool menu details

Sub-menu	Contents
For management	Do not use this menu.

3-3. Main window
    Main window is made up of "File name display bar", "File information", "Parameter list", "Alarm history",
    "Read button", "Write button", "Verify button", "Language setting save" and "Comment."

Parameter list

File name display bar

File information

Alarm history
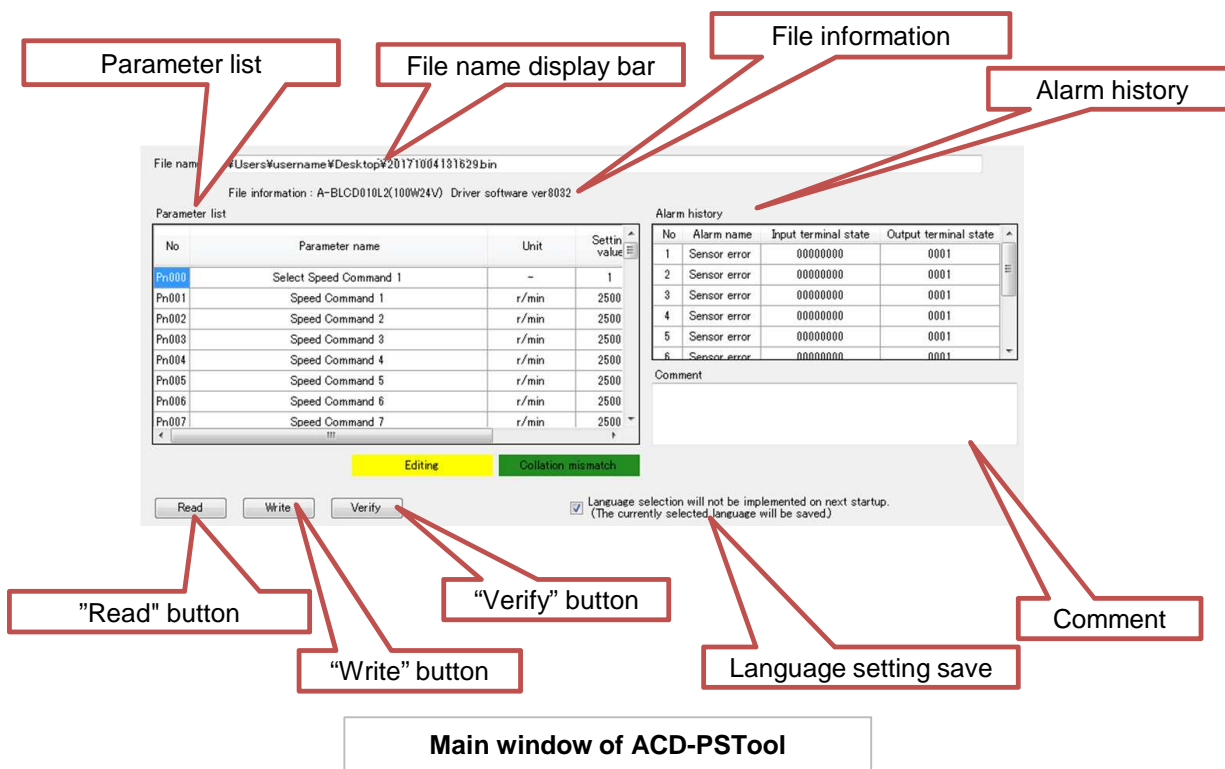
Main window of ACD-PSTool

"Read" button

"Write" button

"Verify" button

Language setting save

Comment

3-3-1. File name display bar
        Displays the parameter file opened by "Open file" by the absolute path.

File name   d:¥Users¥username¥Desktop¥20171004131629.bin

File name display bar

3-3-2. File information
        Displays the following information of the driver saved in the parameter file opened by "Open file."
          - Type (driver capacity/input voltage) at the time of parameter file save and the driver software version

File information : A-BLCD010L2(100W24V) Driver software ver8032
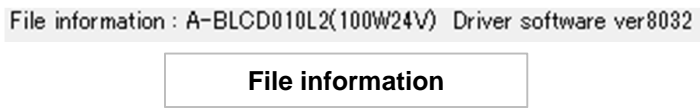
File information

3-3-3. Parameter list

Parameter list immediately after startup of the main screen displays only item name.
When the parameter files are opened or the connection with the driver is made for
communication, information of each item will be displayed as the picture "Parameter list after
opening parameter files" shows below.

Parameter list

No	Parameter name	Unit	Setting value	Minimum value	Maximum value

Parameter list immediately after main menu startup

⇩

Parameter list

No	Parameter name	Unit	Setting value	Minimum value	Maximum value
Pn000	Select Speed Command 1	–	1	1	5
Pn001	Speed Command 1	r/min	2500	100	3000
Pn002	Speed Command 2	r/min	2500	100	3000
Pn003	Speed Command 3	r/min	2500	100	3000
Pn004	Speed Command 4	r/min	2500	100	3000
Pn005	Speed Command 5	r/min	2500	100	3000
Pn006	Speed Command 6	r/min	2500	100	3000
Pn007	Speed Command 7	r/min	2500	100	3000
Pn008	Speed Command 8	r/min	2500	100	3000

Parameter list after opening parameter files

Details of each item name are as follows:

Item name	Details
No	Displays parameter number.
Parameter name	Displays parameter name.
Unit	Displays parameter unit.
Setting value	Loads and writes parameter values of the driver and displays values to be compared.
Minimum value	Displays minimum value of parameters.
Maximum value	Displays maximum value of parameters.

3-3-4. Alarm history

Displays alarms that occurred in the driver and status of input/output terminals at each time for the past 10 cases when communication with the driver is connected.

No	Alarm name	Input terminal state	Output terminal state
1	Sensor error	00000000	0001
2	———	00000000	0000
3	———	00000000	0000
4	———	00000000	0000
5	———	00000000	0000
6	———	00000000	0000
7	———	00000000	0000
8	———	00000000	0000
9	———	00000000	0000
10	———	00000000	0000

Item name	Details
No	Shows alarm history number. The most recent alarm has the smallest number.
Alarm name	Displays the name of occurring alarm.
Input terminal state	Displays the state of input terminal on occurrence of alarm.
Output terminal state	Displays the state of output terminal on occurrence of alarm.

- Details of input terminal state

The state of each input terminal is displayed in order of I1 to I8 from the right: 1 for ON and 0 for OFF.

ex. The following (01000010) shows the case where an alarm occurred with I2 and I7 ON and other input terminals OFF.

I8	I7	I6	I5	I4	I3	I2	I1
0	1	0	0	0	0	1	0

- Details of output terminal state

The state of each output terminal is displayed in order of C1-E1 to C4-E4 from the right: 1 for ON and 0 for OFF.

ex. The following (0110) shows the case where an alarm occurred with C2-E2 and C3-E3 ON and other output terminals OFF.

C4-E4	C3-E3	C2-E2	C1-E1
0	1	1	0

3-3-5. "Read" button

Loads parameters in a batch from the driver and displays them under the Setting value of Parameter list.
This button can be used only when communication with the driver is connected.

3-3-6. "Write" button

Writes the setting values of Parameter list into the driver in a batch.
This button can be used only when communication with the driver is connected and values are displayed in Parameter list.

3-3-7. "Verify" button

Compares the setting values of Parameter list with values set in the driver.
This button can be used only when communication with the driver is connected and values are displayed in Parameter list.

3-3-8. Language setting save

Select whether to save the language setting to be displayed on ACD-PSTool.
When check box is set to ON, the Select your language screen will be skipped at the next startup of the software.
When it is set to OFF, the Select your language screen starts, so that language you use can be selected.
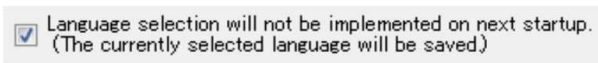
Language setting save

3-3-9. Comment

This is a text box in which any characters and numerical values can be inputted.
Contents input here are saved in the parameter files.

3-4. Status bar

Displays connection status with the driver and information of the connected driver.
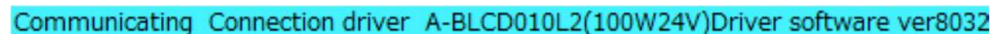
3-4-1. When not connected to driver

It is displayed as "Unconnected."

Status bar when unconnected

3-4-2. During connection with driver

"Being connected", type of communicating driver and software version are displayed.

Status bar when being connected

4. Usage method

4-1. Setting parameter values of driver

(1) to (4) below describe procedures for setting parameter values of the driver.

(1) Connect driver for communication.

Connect the driver for communication.

When positioning the mouse pointer at "Communication" → "Port", you will find available COM ports on your personal computer.(Items displayed may differ depending on the personal computer used.)

Select the port connected to the driver.
After selecting the port, click "Communication" → "Communication connected."
On successful connection, information of the driver appears in the Parameter list and Alarm history as shown in the screen "After communication is connected" below.
The display of status bar also changes. Refer to "3-4. Status bar" about the display of the status bar.
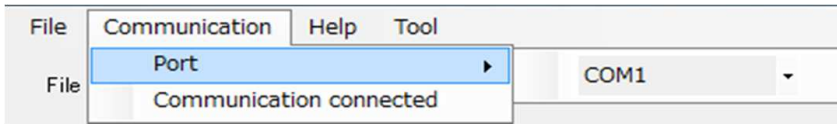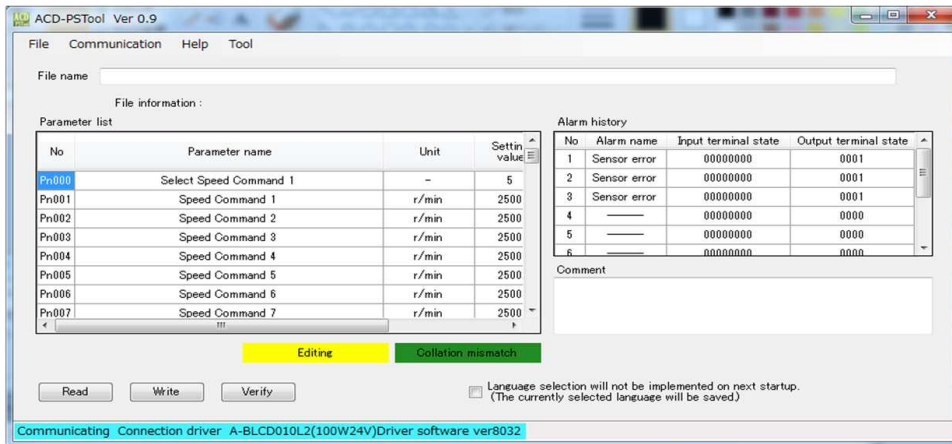
Main menu: Communication

*Concerning COM port ...   When a COM port is available, the usable COM port is selected from the startup as shown in "Main menu: Communication" above.
When no COM port is available, the list of port menu is blank as shown in "Main menu: Communication (when no COM port is available)" below.
In addition, "Communication connected" is grayed out and unusable.
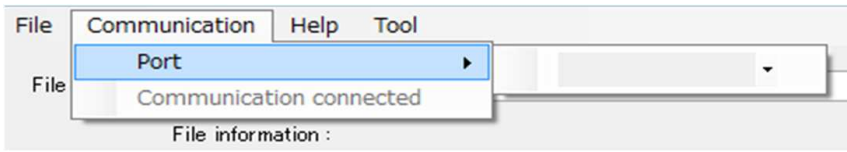
Main menu: Communication (when no COM port is available)

After communication is connected

- Communication error
If the connection fails, communication error dialog appears.
Clicking "OK" or the X button on the dialog returns the screen to the main screen.

Communication error dialog

If communication error occurs although the driver is connected, communication may be unsuccessful. Check if:

- the driver is powered ON.
- communication harness is not loosened.
- port is selected correctly.

-About ACD-PSTool Version Error 2
This error occurs if ACD-PSTool is connected to the driver of software version not supported by it.

Update ACD-PSTool to the latest version.
Click of "OK" or X button on the dialog returns the screen to the main screen.

ACD-PSTool Version Error 2 dialog

- About Software Version Error 2

This error occurs when the version of the driver is different from the version set in the parameter file. (Refer to 4-2.).

Please make sure the version of the driver matches the version set in the parameter file. .

Click of "OK" or X button on the dialog returns the screen to the main screen.


Software Version Error 2 dialog

(2) Load parameter values of driver into setting values.

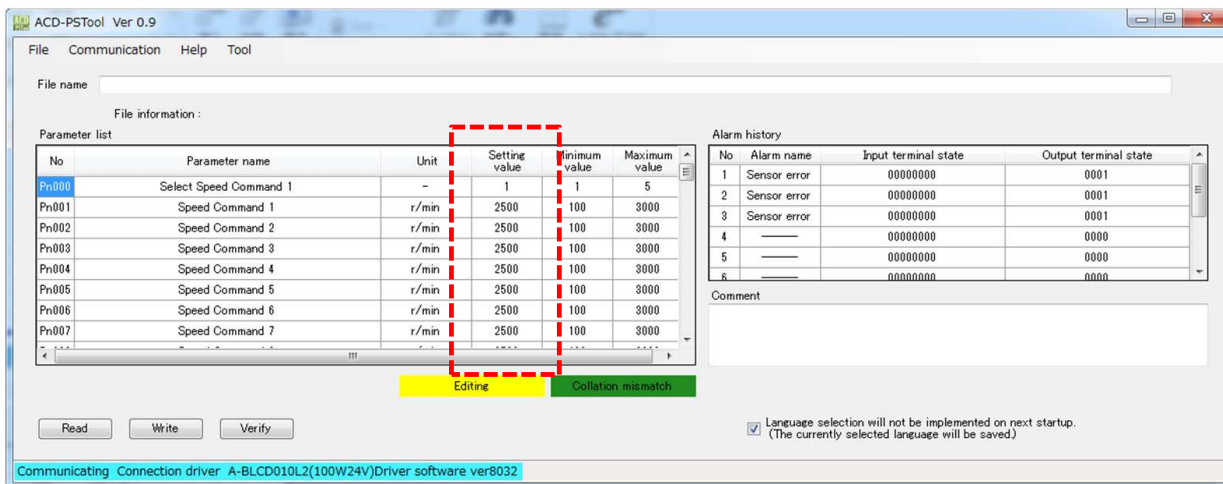Load the parameter values of the driver into ACD-PSTool.

Clicking the "Read" button on the main window enables loading of parameter values from the driver.

After the completion of loading, the "Loading completed dialog" appears.

Clicking "OK" or X button returns the screen to the main screen and shows the parameter values of the driver under the Setting value.
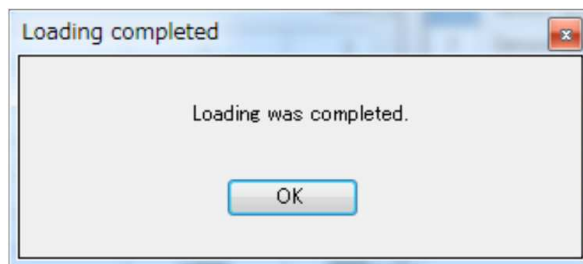
Loading completed dialog

Completion of loading the parameter values of the driver

(3) Edit the setting values.

For this specific example, we will Edit Pn000 and Pn005.

The cells for the setting values become active upon clicking on them, which allows you to change the values.

Edited cells will be indicated by the color yellow. (As shown below)

The cell color returns to original color upon writing of new setting values into the driver or upon loading of the values from the driver.
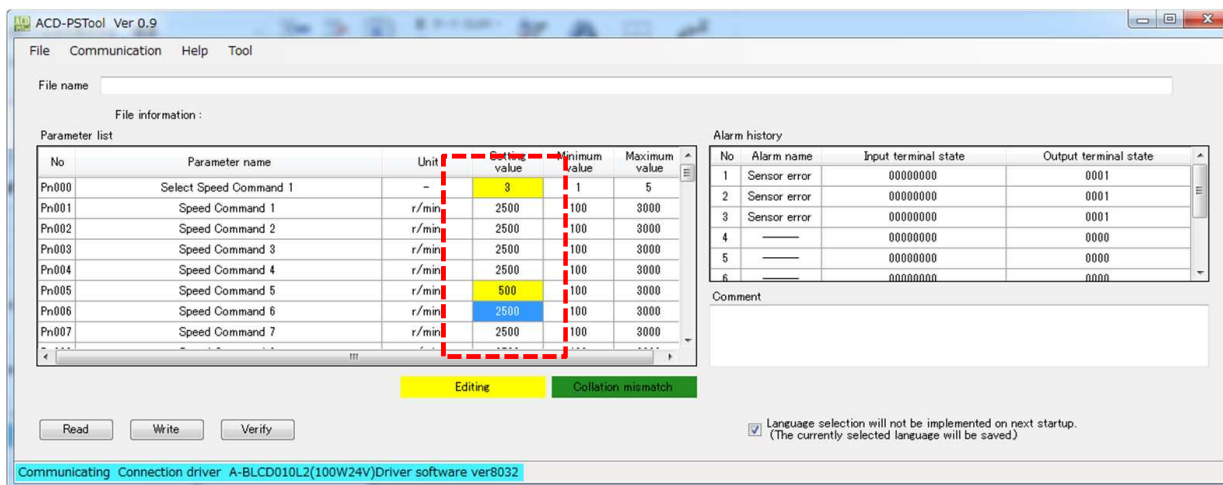
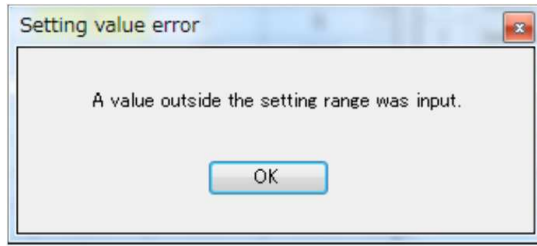**Editing the setting values**

The setting values can only be set within the rated maximum and minimum values.

If a value outside the rated range is inputted, the setting value error dialog appears and the value returns back to the original value
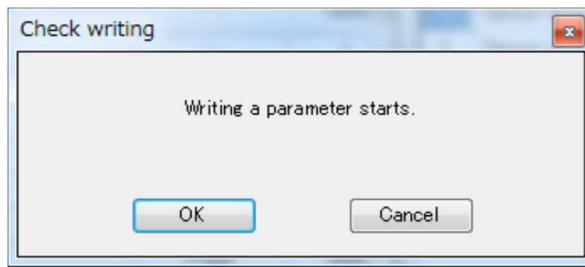
Setting value error dialog

(4) Write the setting values into driver.
Clicking the "Write" button makes "Check writing start dialog" appear.
Clicking "OK" button starts writing.
If the X button or "Cancel" button is clicked, the process is cancelled and you will be brought back to the main screen.

Check writing dialog

After the completion of writing, the cell color returns to the original color as described above.

This completes the parameter setting process of the driver.

4-2. Saving parameter files
 (1) Regarding parameter files
Parameter files are defined as files that contains the below information.

- Parameter information (Number, parameter name, unit, setting value, minimum value and maximum value)
- Alarm history (of only CSV files)
- Comment
- Type of driver, capacity, voltage and software version

The information can be saved in either bin or csv format.
Contents in the bin format cannot be viewed but can be opened by "Open file" described later.
Contents in the csv format can be viewed but cannot be opened by "Open file."

		Parameter	Unit	Setting value	Minimum value	Maximum value
1	ACD-PSTool					
2						
3	Parameter list					
4	No	Parameter	Unit	Setting value	Minimum value	Maximum value
5	Pn000	Select Spe	–	3	1	5
6	Pn001	Speed Con	r/min	2500	100	3000
7	Pn002	Speed Con	r/min	2500	100	3000
8	Pn003	Speed Con	r/min	2500	100	3000
9	Pn004	Speed Con	r/min	2500	100	3000
10	Pn005	Speed Con	r/min	500	100	3000
11	Pn006	Speed Con	r/min	2500	100	3000
12	Pn007	Speed Con	r/min	2500	100	3000
13	Pn008	Speed Con	r/min	2500	100	3000
14	Pn020	Select Acc	–	1	1	2
15	Pn021	Acceleratic	s	0.1	0	5
16	Pn022	Deceleratic	s	0.1	0	5
17	Pn023	Acceleratic	s	0.1	0	5
18	Pn024	Deceleratic	s	0.1	0	5
19	Pn025	Acceleratic	r/min	2500	1000	5000
20	Pn030	Select Tor	–	2	1	3
21	Pn031	Torque Lin	%	150	0	200
22	Pn032	Torque Lin	%	150	0	200
23	Pn033	Torque Lin	%	150	0	200
24	Pn034	Torque Lin	%	150	0	200
25	Pn040	Built-in Tri	r/min	3000	100	5000
26	Pn041	Set freque	×10Hz	2500	1	9999
27	Pn042	Reference	r/min	2500	1	5000
28	Pn050	External ar	–	2	1	2
29	Pn051	Analog inpu	r/min(or %	0.6	-9.99	9.99
30	Pn052	Analog inpu	r/min(or %	0	0	9999
31	Pn060	Select ana	–	1	1	3
32	Pn061	Analog out	V/(r/min(o	1	-9.99	9.99
33	Pn062	Analog out	V	0	0	5
34	Pn100	Select I1 n	–	1	1	12
35	Pn101	Select I2 n	–	2	1	12
36	Pn102	Select I3 n	–	3	1	12

Parameter files of csv format (a part)

(2) How to save the parameter files

Clicking "File" → "Save file" starts the save file dialog.
Select a save format (csv or bin), and save the file at an optional place.
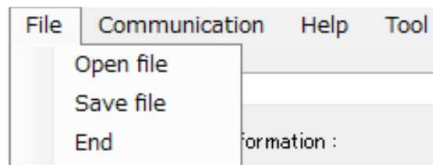
Main menu: File

Setting files can only be save if there are setting values assigned and displayed.
This includes:

- When parameter values of the driver is loaded after the driver is connected for communication
- When the parameter file is opened

Unless either one of the above conditions are met, the "Save file" button will be grayed out and will not be available.

4-3. Opening parameter files
(1) How to open the parameter files
This section describes how to open the saved parameter files.

Click "File" → "Open file."
The "open file dialog" starts up. Select and open your saved the parameter bin file.

File	Communication	Help	Tool
Open file			
Save file			
End		formation :	

Main menu: File

Settings of the parameters, comments and other information saved in the parameter files are displayed on ACD-PSTool.
The displayed setting values can be written into the driver.

- Regarding parameter file error
The error occurs when files other than the parameter files are opened.
Please open parameter files created and saved via "Save file" of ACD-PSTool.
Clicking "OK" or the X button on the dialog returns the screen to the main screen.

Parameter file error

The file to be loaded is not one prepared with ACD-PSTool.

OK
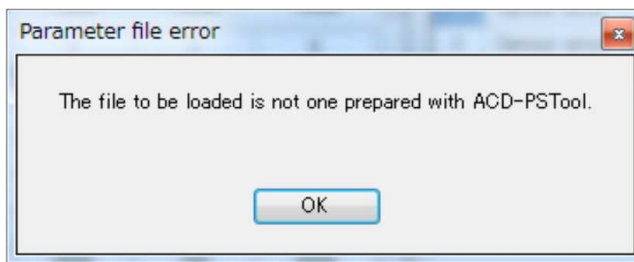
Parameter file error dialog

- Regarding ACD-PSTool Version Error 1
This error occurs when the version of the loaded parameter file isn't supported by ACD-PSTool.
Please update ACD-PSTool to the latest version.
Clicking "OK" or the X button returns the screen to the main screen.

ACD-PSTool Version Error 1

The ACD-PSTool version does not support the parameter file version.
Please obtain the latest ACD-PSTool.

OK

ACD-PSTool Version Error 1 dialog

- Regarding Software Version Error 1

This error occurs when the version of the loaded parameter file doesn't match the driver's version of the software during communication.

Make sure the software version of the driver is the same as the version of the parameter files.

Clicking "OK" or the X button on the dialog returns the screen to the main screen.
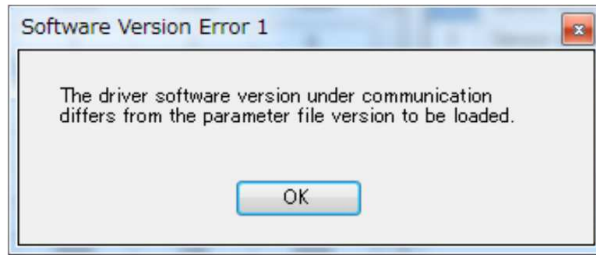
Software Version Error 1 dialog

File name d:¥Users¥username¥Desktop¥20171004131629.bin

File information : A-BLCD010L2(100W24V) Driver software ver8032

Parameter list

No	Parameter name	Unit	Setting value	Minimum value	Maximum value
Pn000	Select Speed Command 1	–	1	1	5
Pn001	Speed Command 1	r/min	2500	100	3000
Pn002	Speed Command 2	r/min	2500	100	3000
Pn003	Speed Command 3	r/min	2500	100	3000
Pn004	Speed Command 4	r/min	2500	100	3000
Pn005	Speed Command 5	r/min	2500	100	3000
Pn006	Speed Command 6	r/min	2500	100	3000
Pn007	Speed Command 7	r/min	2500	100	3000

Alarm history

| No	Alarm name	Input terminal state	Output terminal state
1	Sensor error	00000000	0001
2	Sensor error	00000000	0001
3	Sensor error	00000000	0001
4	——	00000000	0000
5	——	00000000	0000
6	——	00000000	0000

Comment

Editing   Collation mismatch

Read   Write   Verify

☑ Language selection will not be implemented on next startup.
(The currently selected language will be saved.)

Main window after opening parameter file

(2) Loading parameters after opening a parameter file

When the driver is connected and parameters are loaded after a parameter file is opened, the setting values will be changed to the driver's values. The information shown at "File Name" and "File information" is deleted.
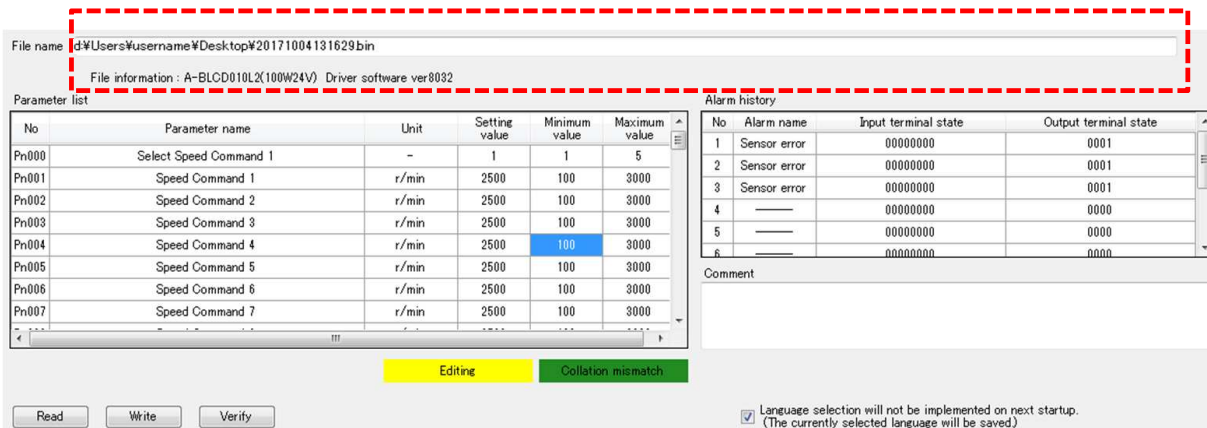

Click "Read" button
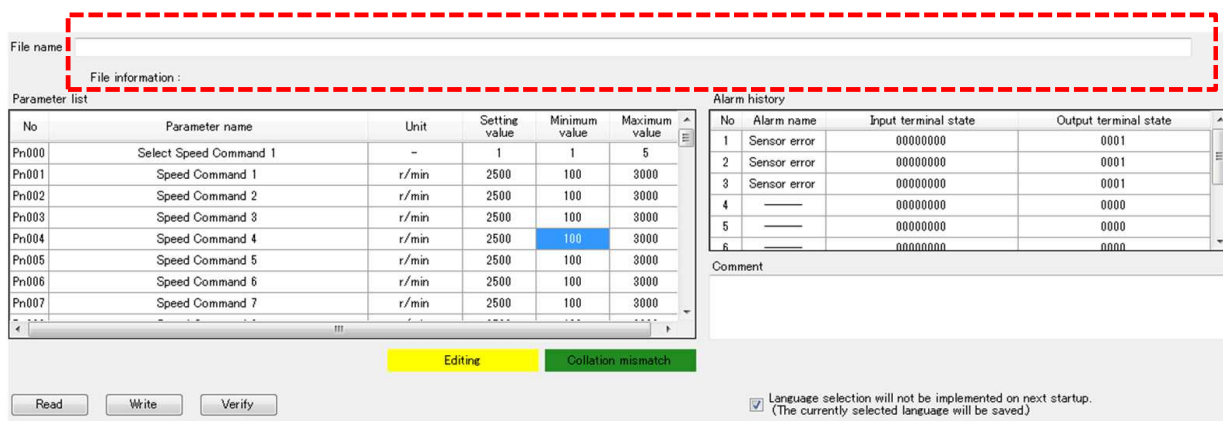
4-4. Comparing ACD-PSTool setting values and driver setting values

This section describes how to compare the parameter setting values of the driver with the parameter list.

Clicking the "Verify" button (See "3-3-7. "Verify" button" for conditions under which the "Verify" button can be used.) opens the dialog shown below.

Clicking "OK" button starts the comparison of the parameter values.

Clicking "Cancel" or X button returns the screen to the main screen.

When completed, the comparison result is displayed in the dialog box.

When the "OK" button in the dialog is clicked and the screen returns to the main screen, the cells with differences in setting values turn green.
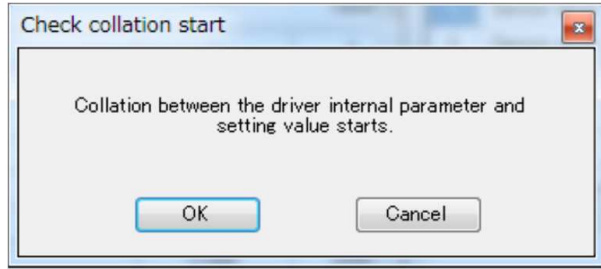
Check collation start dialog
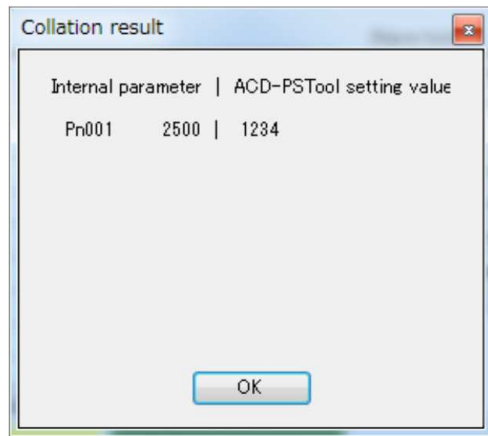
Collation result dialog (when there is a parameter having a difference)
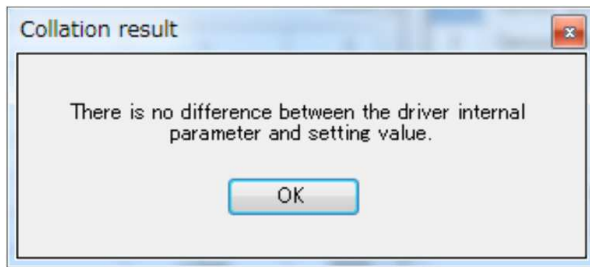
Collation result dialog (when there is no parameter having a difference)

Parameter list

| No	Parameter name	Unit	Setting value	Minimum value	Maximum value
Pn000	Select Speed Command 1	–	1	1	5
Pn001	Speed Command 1	r/min	1234	100	3000
Pn002	Speed Command 2	r/min	2500	100	3000
Pn003	Speed Command 3	r/min	2500	100	3000
Pn004	Speed Command 4	r/min	2500	100	3000
Pn005	Speed Command 5	r/min	2500	100	3000
Pn006	Speed Command 6	r/min	2500	100	3000
Pn007	Speed Command 7	r/min	2500	100	3000

Editing   Collation mismatch

Display of collation mismatch parameter

4-5. Disconnecting communication between ACD-PSTool and driver
    This section describes how to disconnect communication between ACD-PSTool and the driver.

(1) How to disconnect
Click "Communication" → "Communication disconnected" when communications is established to ACD-PSTool.

File   Communication   Help   Tool
    Port
File
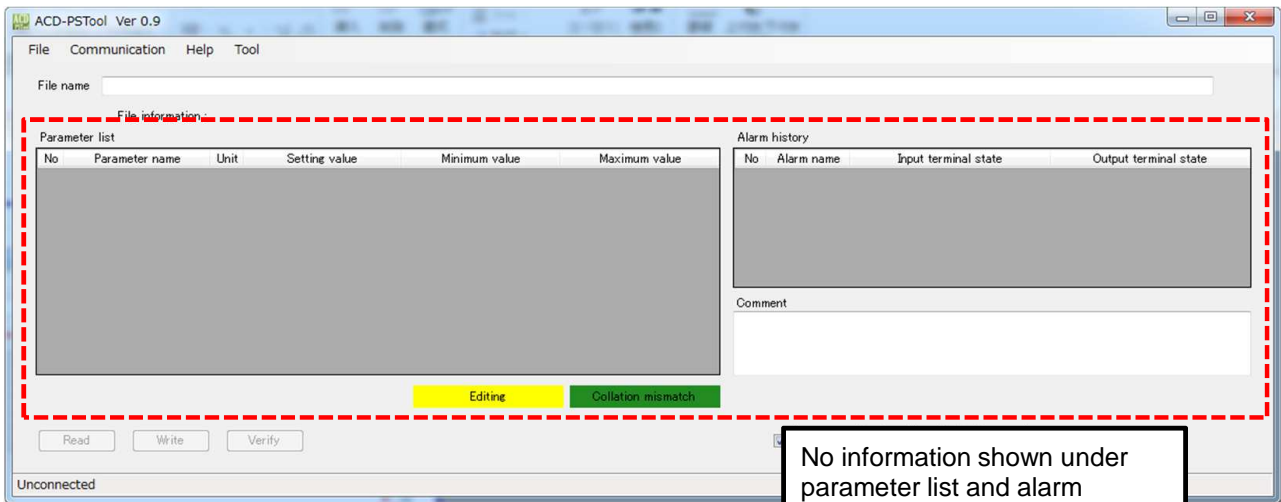   Communication disconnected

Main menu: Communication
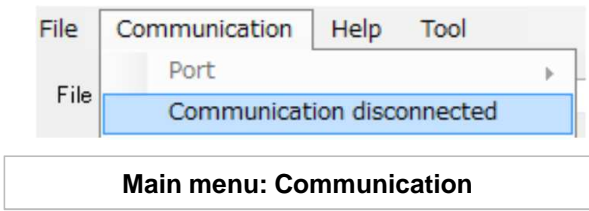
    The State of the screen after disconnection differs depending on whether or not a parameter file is loaded (whether there is information shown at the "file name" display bar and "file information" or not).

- When a parameter files is not loaded
If a parameter file is not loaded, there will be no information shown under parameter list and alarm history after disconnection .
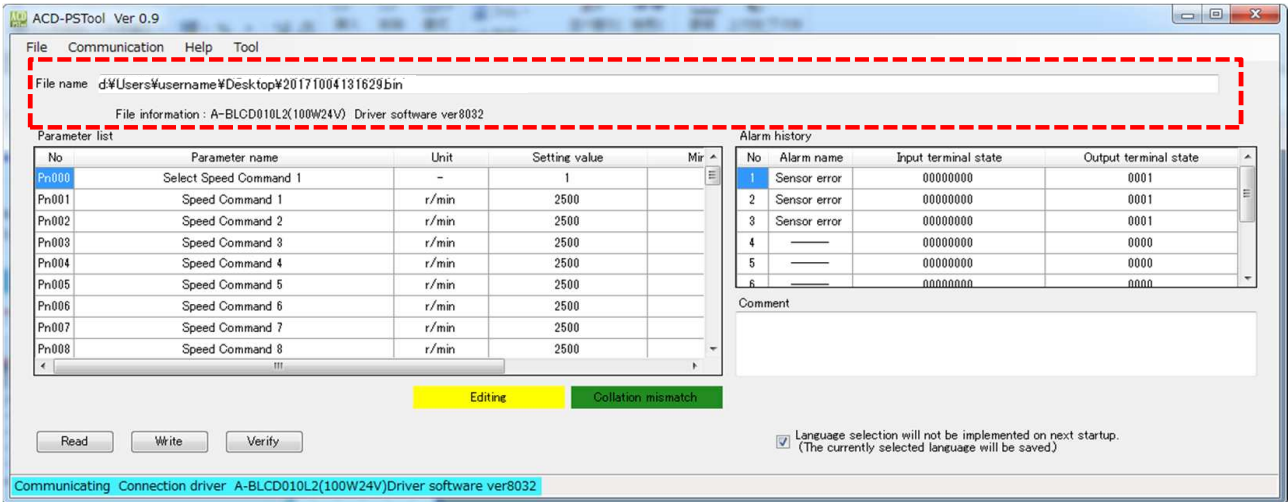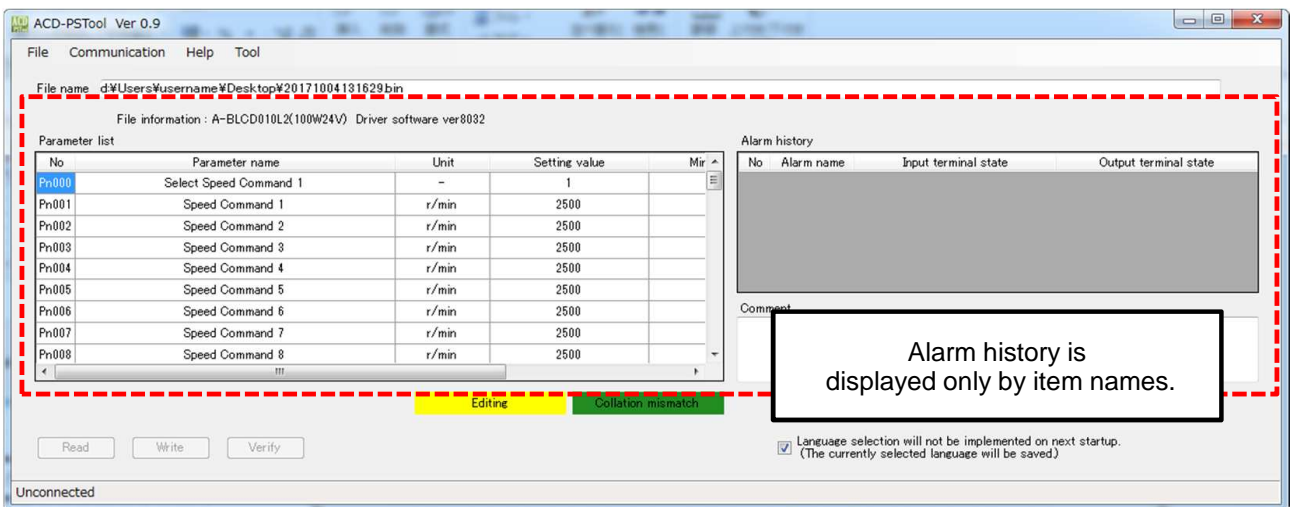

Click "Communication disconnected."

No information shown under parameter list and alarm history.
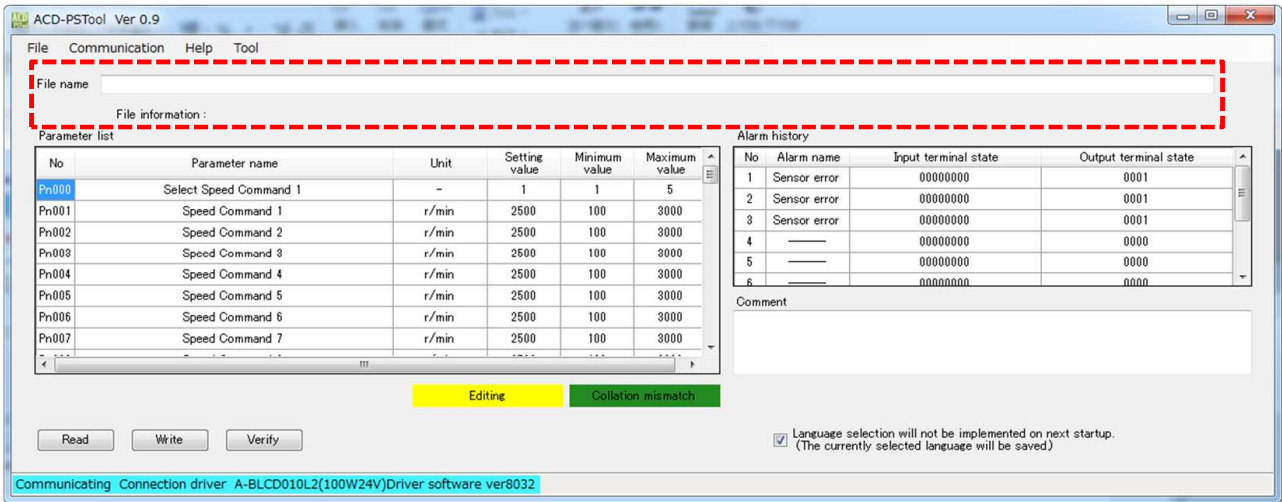
- If a parameter file is loaded

If a parameter file is loaded, there will be information under parameter list, but none under alarm history after disconnection.

Click "Communication disconnected."

Alarm history is displayed only by item names.

4-6. Ending ACD-PSTool
    Ends ACD-PSTool.
    End it by left-clicking "File" → "End" or X button at upper right part on the main screen.

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