

## Instruction Manual

For brushless motor/brushless inverter/brushless amplifier

# PC Communication Software

## PANATERM for BL

(For Windows® 7/ Windows® 10)

## GU, GV, B1, B2, B3, and B4 Series Option

- Thank you very much for using our PC Communication Software for brushless motor and brushless inverter ,brushless amplifier PANATERM for BL.
- Read this instruction manual carefully for proper use.  
**Especially, be sure to read "Safety precautions"(2-4page) before use in order to ensure safety.** Keep this manual and refer to it as necessary when you have read it through.

Be sure to give this manual to an end user.


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# Safety precautions



Important

See the following precautions in order to avoid damage to property and injury for operators and other personnel during operation.

- The following symbols are used to indicate the level of danger and damage which may occur when you fail to observe the safety precautions.

	<b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor injury or physical damage.
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- The following symbols indicate operation status.


	This Indication shows “prohibition”.
	This Indication shows “imposition” to be done.

# Safety precautions


Important

## CAUTION


When connecting the PC connection cable, turn off power supplies for both PC and brushless motor/brushless inverter/brushless amplifier.

 It may cause injury breakdown or damage.

Do not reconnect the PC connection cable with software activated.

 It may cause injury breakdown or damage.

On modifying parameters of brushless motor/brushless inverter/brushless amplifier please do it after reading the manual of them.

 Failure to comply could result in injury.

# 1. Introduction

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## Note in use

1. Use this product on a single computer.
2. It is prohibited to use this product for any lease business without the authorization of right holder.
3. It is prohibited by law to copy the content of this product onto hard disk, CD-R, MO, DVD, or another medium without permission by the author or right holder.
4. The manufacturer Panasonic Corporation and its right holder are not responsible at all for any situation resulting from use of this software.
5. It is strictly prohibited to copy or reproduce the description in this manual without permission by Panasonic Corporation.
6. It is strictly prohibited to perform reverse engineering, reverse compiling, or reverse assembling of this product.

# 1. Introduction

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## Overview of PANATERM

This software operates on Windows® for communication between PC and brushless motor/brushless inverter/brushless amplifier. Brushless motor/brushless inverter/brushless amplifier has a function to perform serial communication with commercial PC via RS-232 by use of connection cable (sold separately). Parameter of connected brushless motor/ brushless inverter/brushless amplifier can be set and control status can be monitored on PC screen, mouse, and keyboard. In use, read the instruction manual of brushless motor/brushless inverter/brushless amplifier as well.

- ◆ Microsoft®, Windows® is a registered trademark of US Microsoft Corporation in the USA and various countries.
- ◆ Any other company name and product name described in the text are the trademark and registered trademark of respective company.

## 2. System configuration

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### Check of applicable brushless motor/brushless inverter/brushless amplifier

This software is designed for our brushless amplifier MINAS-BL GU GV GP KV series, circuit-integral brushless motor B1 and B3 series, and brushless inverter B2 and B4 series. Do not use it for another product.

Product number of corresponding model:

GU Series	: MBEU□□□AAV
GV Series	: MBEG□□□□□V
GP Series	: MBEG□□□□□P
KV Series	: MBEK□□□□□V
B1-G Series	: MBMC□□□□□B (Production ended)
B1-S Series	: MBMA□□□□□E (Production ended)
B2-G Series	: MBDE□□□□□W□ (Production ended)
B3-G Series	: MBMP□□□□□C (Production ended)
B4-G Series	: MBDP□□□□□C□ (Production ended)

(□ depends on a model of brushless motor/brushless inverter/brushless amplifier.)

Note) Check whether this software is compatible with your brushless motor/brushless inverter/brushless amplifier with the delivery agent where you bought the unit.

## 2. System configuration

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### Hardware configuration

The equipment shown below is required for using this software. See the instruction manual attached to the equipment in configuring a system. If operation environment is different from recommended specification, this software may not operate.

☐ Personal computer (PC)

DOS/V PC

- CPU: Pentium 200MHz or above
- Memory: 64MB or above (128MB is recommended)
- Hard disk capacity: Free area 50MB or above
- OS: Windows® 7 ,Windows® 10  
(English version respectively)
- Serial communication function:  
COM (RS-232) port communication rate  
9600bps

☐ Display

- Resolution: 640 x 480 (VGA) or above  
(1024 x 768 recommended)
- Number of colors: 256 colors or above

#### ■ Information

- PANATERM cannot be used in the following cases even though terminal such as COM1 and COM2 exist.
  - When communication port is already occupied by incorporated modem, etc. (Check it by the instruction manual of PC.)
  - When the driver software of port is not set properly.  
(See the PC instruction manual for detail.)
- When you use some hardware other than recommended one, check the operation by yourself.

## 2. System configuration

### Software configuration

The OS shown below is required for using this software. This software may not operate if specification is different.

☐ Windows® 7, Windows® 10 (English version respectively)

#### ■ Request

- Windows is needed to be prepared by customers.
- To use different OS from ones above, customers need to check operations.
- PANATERM should be used in condition that initial setting of Windows is renewed into the newest one.  
With Windows®7, the window display of PANATERM may be abnormal. In that case, please apply “Windows classic” theme with the property of the screen.
- Using with other applications, operation of PANATERM may become unstable. Please use PANATERM solely.

#### ■ Information

- Operation is not guaranteed for another OS.
- PANATERM may not operate depending on an application installed at the same time.
- The check of operation is carried out by Windows® 7 and Windows® 10. Operation may be different on any other version.

### PC connection cable

We have a cable for connecting the control signal connector of brushless motor and RS-232 connector of PC available for an option.

DVOP4140 (For DOS/V: D-SUB9 Pin) (Cable length: 1500 [mm])

- Note 1) In connecting with brushless inverter/brushless amplifier, combine with digital keypad B connection cable [DVOP383□□] in use.
- Note 2) PC connecting cable cannot be used for other equipment.
- Note 3) In connecting with B1-S series, combine with digital keypad B connection cable [DVOP358□□] in use.  
e.g.) DVOP35810 : In case of 10, cable length is 1m

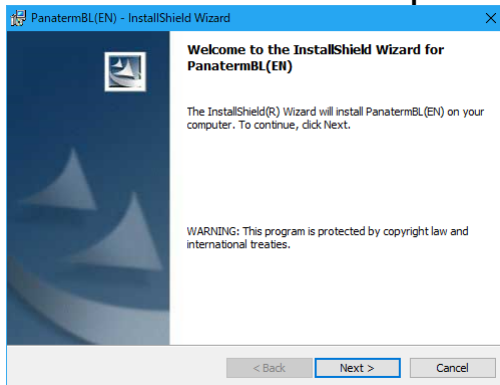


# 3. Setup

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Install PANATERM on the hard disk of PC by use of PANATERM installer. It cannot be installed on network drive. It cannot be installed or set up by any other procedure such as copying.

1. Turn on the personal computer, and start Windows<sup>®</sup>. (Exit the activated software if any.)
2. Copy PANATERM installer(Setup.exe) into an arbitrary folder.
3. Double-click the Setup.exe .



Click "Next (N)>".

4. Follow the guidance of setup program in operation.
5. Click "Install", and installation of PANATERM is started. When you click "Cancel", PANATERM is not installed.  
If necessary, click "Change" in specifying a folder of installation destination and specify a folder and drive of installation destination. (If nothing is specified, PANATERM is installed in the folder C:\PANATERM\PanatermBL (EN)).

# 3. Setup

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6. When the message "InstallShield Wizard Completed" is displayed, click "Finish". Setup is completed here.
7. Close all applications and start Windows® again.

\* When any error occurs during setup, an error message is displayed. See "Setup is impossible" (page 47)" and eliminate the cause of error.

## 4. Basic operation

### Notation of key

This manual uses general key notation independent of keyboard model, and notation may be different. Refer to the table below in reading the notation.

Notation	Description
[↑][←] [↓][→]	Indicates the cursor key Right/Left and Up/Down. When this key is entered, the selected item on the menu is moved. Selected item is highlighted.
Numerical (0 – 9)	Indicates the numerical key. Enter a corresponding figure.
[ESC]	Indicates the escape key marked by [Esc] or [ESC] on the keyboard. Use this key in resetting an entered value.
[ENTER]	Indicates the Enter key marked by [Enter] [ENTER] or [RETURN] on the keyboard. Use this key in the end when selecting and executing each menu or when completing the input of numerical value.
[BS]	Indicates the backspace key marked by [BS] or [Back space] on the keyboard. Use this key when deleting a character in the input of filename or numerical value.

### Selecting procedure of menu

Place the mouse pointer upon a desired menu item or operation button and left-click the mouse for executing each item.

You can also highlight a desired menu with any key of [↑][→][↓][←] and press [ENTER] key for executing any item.


You can also select an item with [TAB] key or [SHIFT] + [TAB] key.

Menu operation and window operation are the same as general operation of Windows®. See the reference manual attached to Windows® for such operation.

## 4. Basic operation

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### How to exit a menu

When "Exit" is found in menu items, left-click "Exit" with the mouse for exiting the menu. You can also exit the menu by clicking  at the right top of the window.

### Entry of numerical value

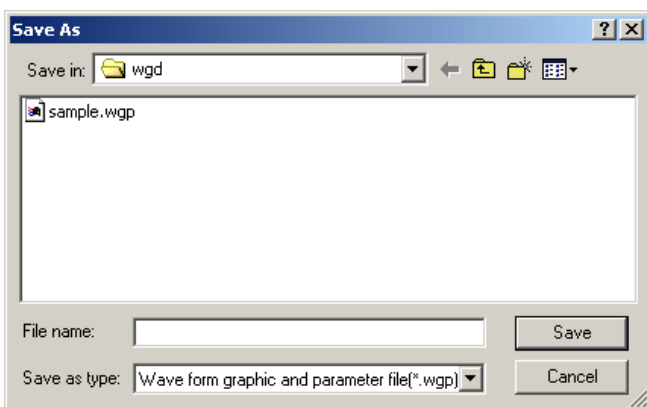
Use the numerical key on the keyboard. When retrying entry, delete the entered value with [BS] key. When [ESC] key is pressed, the original value is recovered.

Numerical data for changing parameter is displayed in decimal numeration, while it can be entered in binary and hexadecimal numeration as well by use parameter>Binary/hexadecimal input menu. You can use whichever of capital letter or small letter for alphabetic character in entry in hexadecimal numeration.

You can cancel the entry of numerical value with [ESC] key.

### File operation

When a file has to be specified such as "Read" and "Save" of parameter, the common dialogue of file is displayed.



- "Location of file" Specify the location of file (drive and folder).  
When you click ▼, the list of folders is displayed.  
Then select a corresponding folder out of them.
- "File name" Specify a file name.
- "Save as type" Type of file is displayed.

## 4. Basic operation

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Note 1) File to be used by PANATERM is provided with an extension for identifying respective type. Do not change an extension. A file with extension changed may be disabled for use by program.

- Parameter file → File name.prm
- Waveform graphic measuring condition file → File name.wgc
- Waveform graphic measuring result file → File name.wgd
- Parameter and waveform graphic measuring result file → File name.wgp

Note 2) Do not delete any file relating to PANATERM.

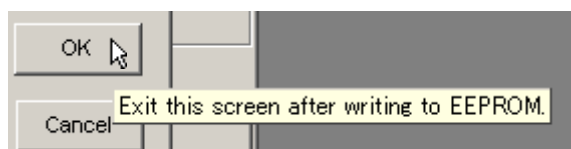
Incompliance may disable PANATERM.

(PANATERM is installed in C: ¥PANATERM¥PanatermBL (EN) unless specified otherwise. Do not delete any file in this folder.

Especially, C:¥PANATERM¥PanatermBL (EN)¥ini folder contains an important file to control the operation of PANATERM. Be careful.)

### Tool tip text

When you place the mouse pointer on a display item, explanation about corresponding item is displayed.



# 5. Start and exit

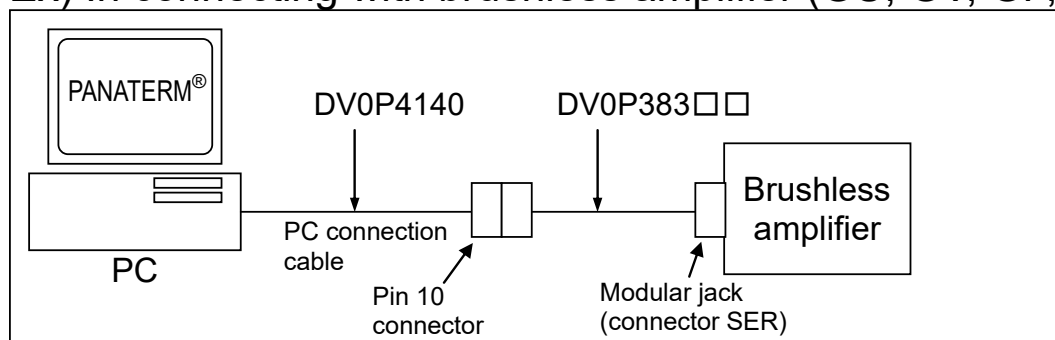
## Connection procedure

### **Connection of PC connection cable (DVOP4140)**

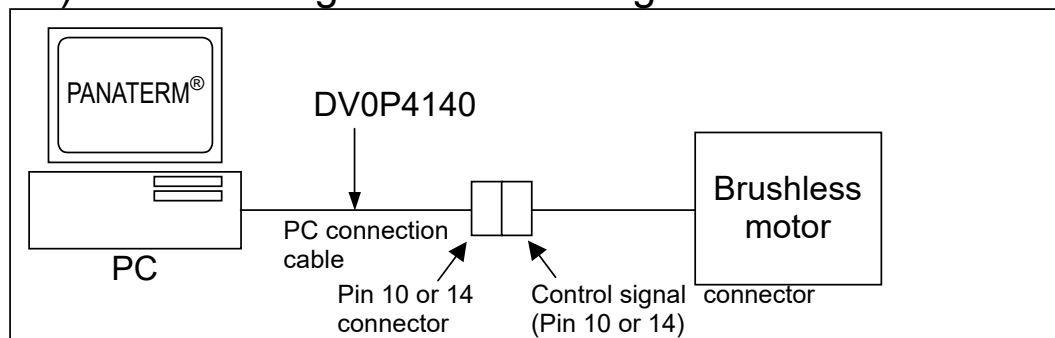
Check that the power supply for brushless motor/brushless inverter/brushless amplifier and power supply for PC are all cut off. Insert securely the PC connection cable to the control signal connector of brushless motor/brushless inverter/brushless amplifier, and the plug on pin 9 side to COM port of RS-232 connector of PC. When there is no RS-232 connector in PC, prepare a USB/RS-232 converter.

In connecting, see the instruction manual of brushless motor/brushless inverter/brushless amplifier.

Ex) In connecting with brushless amplifier (GU, GV, GP, KV)



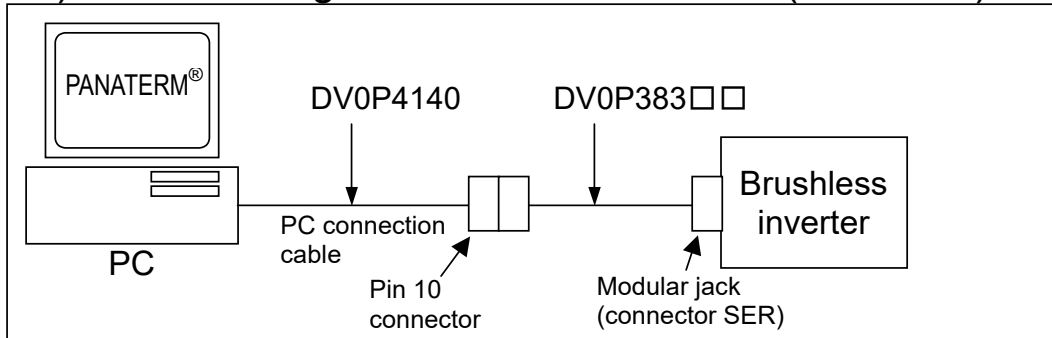
Ex) In connecting with circuit-integrated brushless motor (B1, B3-G)



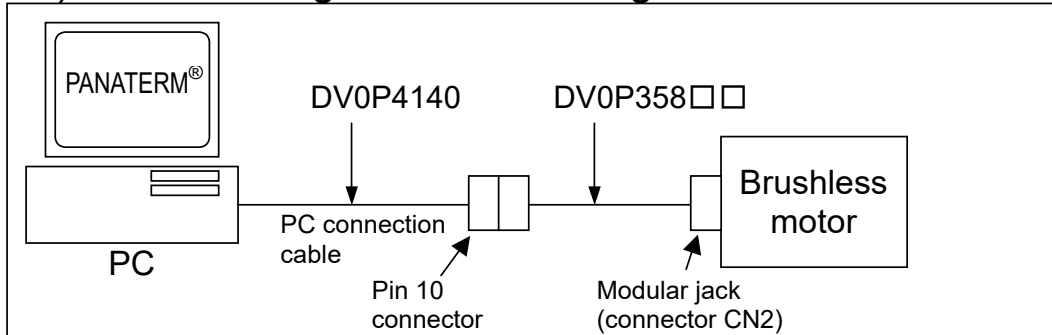
## 5. Start and exit

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Ex) In connecting with brushless inverter (B2, B4-G)



Ex) In connecting with circuit-integrated brushless motor (B1-S)




## 5. Start and exit

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### Start

1. Turn on power supply for PC and start Windows®.
2. Turn on power supply for brushless motor/brushless inverter/brushless amplifier.
3. Click [Start] of Windows®.  
(See the manual of Windows® for [Start].)
4. Select the group "PanatermBL (EN)" in "Program", and click "PanatermBL (EN)" therein.
5. PANATERM screen is displayed.

### Exit

1. When exiting PANATERM, click "File/Exiting Panaterm" on PANATERM screen.  
(You can also click  on the right end of title bar on PANATERM screen instead of "Exit").
2. Message for confirming exit from PANATERM is displayed.  
When exiting, click "Yes"; When not exiting, click "No".

Note 1) If you exit the program without saving set information and acquired data, all information is lost. Be careful.



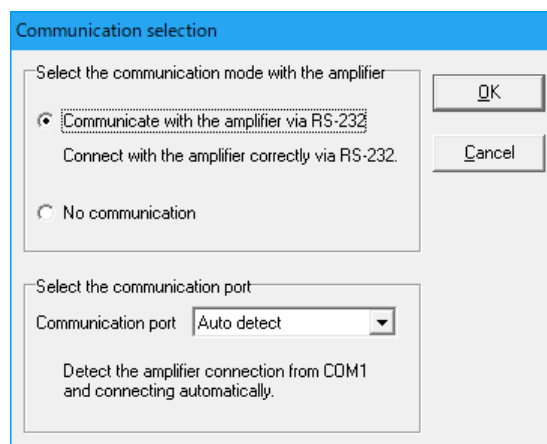
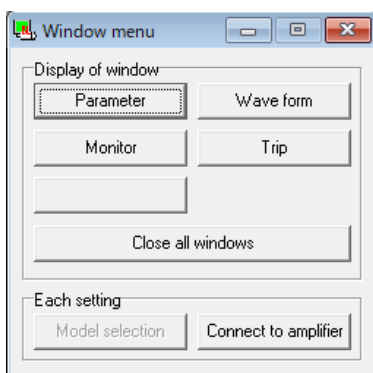
# 6. Operation

## Select communication with brushless motor/brushless inverter/brushless amplifier

Note) brushless motor/brushless inverter/brushless amplifier is displayed by "Amplifier" on PANATERM.

When PANATERM is activated, dialogue is displayed for choosing whether to communicate with brushless motor/brushless inverter/brushless amplifier.

The dialogue is also displayed when you select "File / Settings / Connect with the amplifier" on PANATERM main window, and when you click "Connect to amplifier" on window menu.



### **Select the communication mode with amplifier**

#### ☐ "Connect to amplifier"

Communicating with brushless motor/brushless inverter/brushless amplifier connected by RS-232. When parameter received from brushless motor/brushless inverter/brushless amplifier is edited and set, the changed value is reflected immediately. Model of connected brushless motor/brushless inverter/brushless amplifier is automatically identified.

#### ☐ "No communication"

Parameter saved in a file can be edited with no restriction irrespective of connection of brushless motor/brushless inverter/brushless amplifier.

Select a corresponding model from the menu.

# 6. Operation

## Communication port

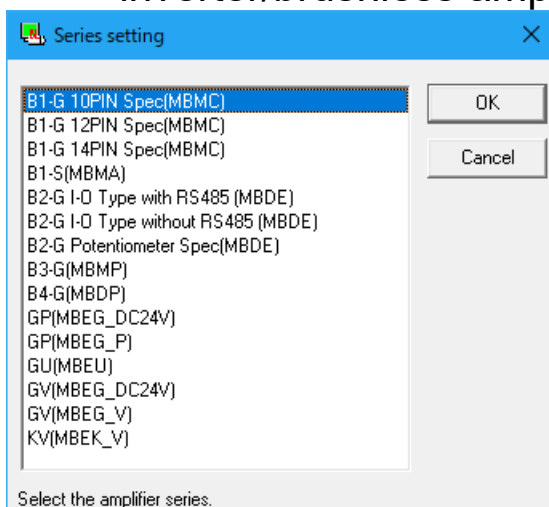
Select a communication port

- Auto detect: Connected port is automatically identified.
- COM1 - 16: Specified port is used.

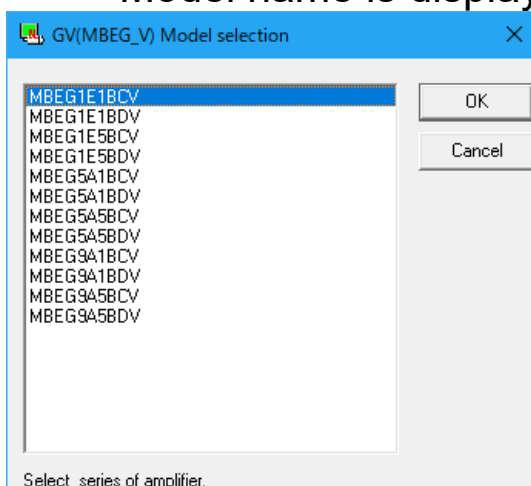
## Model Selection

Select a series and model of brushless motor/brushless inverter/brushless amplifier.

1. Select a series of brushless motor/brushless inverter/brushless amplifier from the list.



2. Select a model of brushless motor/brushless inverter/brushless amplifier from the list.  
Model name is displayed up to the 8th digit.



"OK"

Selected description is determined.

"Cancel"

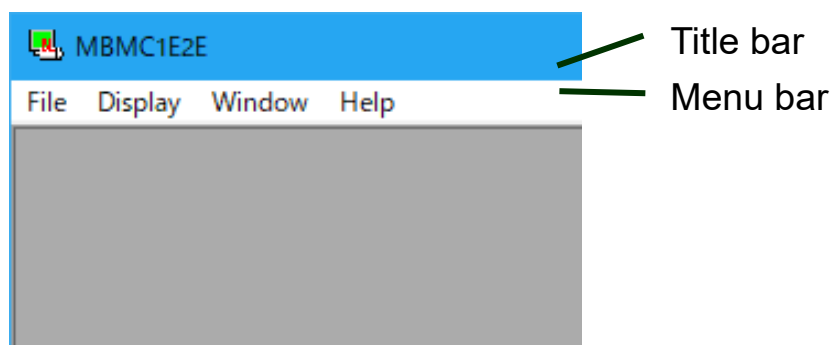
Selected description is made invalid.

# 6. Operation

## PANATERM screen

When PANATERM is activated, this PANATERM screen (main window) is displayed. Various functions of PANATERM can be utilized by opening each function window on this main window. More than one function window can be opened at a time. Call each function or specify another command on PANATERM screen.

(1) PANATERM screen (main window)

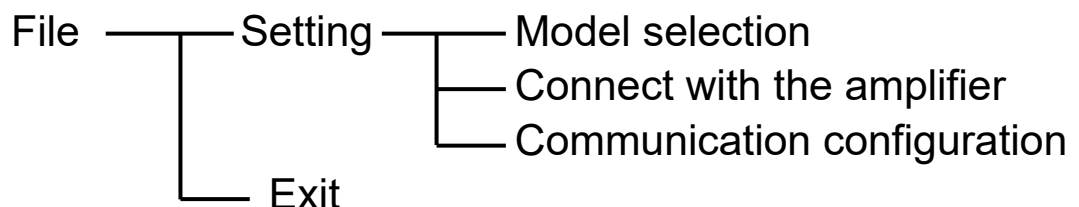


### Title bar

Model code is displayed. (Up to the 8th digit)

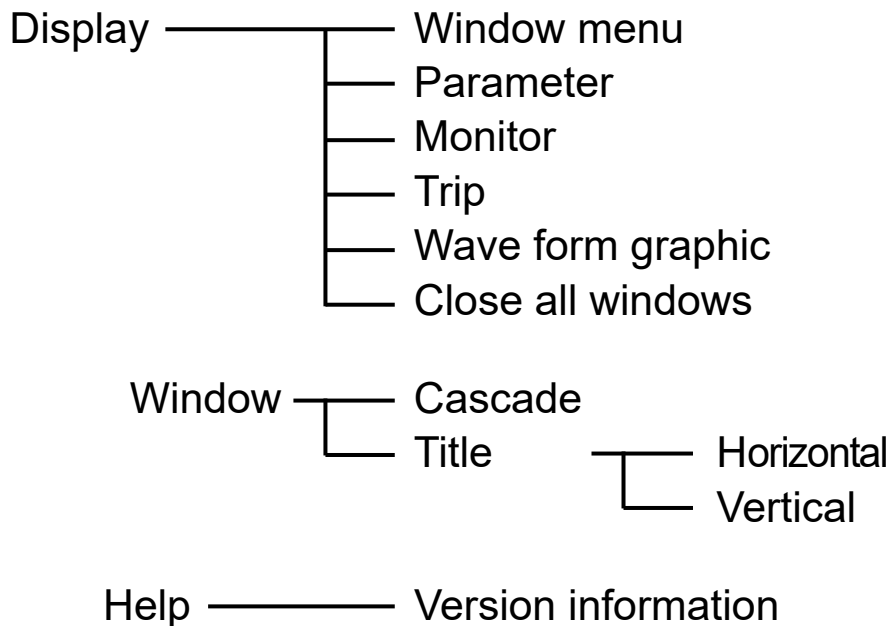
### Menu bar

Normally four types of command are displayed i.e. "File" "Display" "Window" and "Help". When using a command, click the name of command with the mouse. Functions may be further classified depending on the type of command.



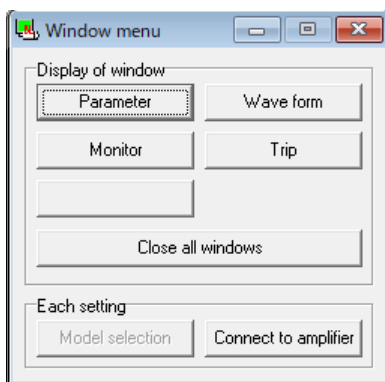
# 6. Operation

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## (2) Window menu

Call various function windows of PANATERM. You can also call function windows from the menu bar of main window.



## Display of window

Call each function window. Click a corresponding item with the mouse.

## Each setting

- Connect to amplifier:

Can be used when communicating with brushless motor/brushless inverter/brushless amplifier.

- Model selection:

Can be used when not communicating with brushless motor/brushless inverter/brushless amplifier.

# 6. Operation

## Parameter

On the parameter window, you can operate parameters such as checking the parameter of brushless motor/brushless inverter/brushless amplifier, rewriting the parameters, and saving the parameter data.

You can also select only parameters used often, and edit and set them.

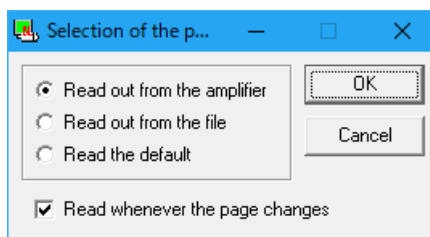
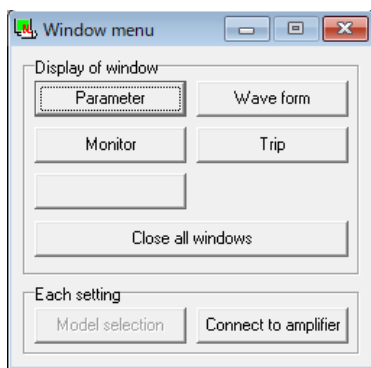
Name and setting value of parameter are displayed in the parameter setting window.

You can set any setting value of parameter as long as it is within the range.

Note) Some of parameters have a great effect upon the operation of brushless motor/brushless inverter/brushless amplifier. Be careful sufficiently when changing parameters.

### Open the window of parameter

1. Start PANATERM.  
(See "Start" (page 16) for detail.)
2. Window menu is displayed in PANATERM screen.
3. Click "Parameter" of window menu.
4. Selection window is displayed for parameter to be read.



# 6. Operation

5. Select the source for reading parameter and click.

"Read out from the amplifier".

Communicates with connected brushless motor/brushless inverter/brushless amplifier, and reads set parameters. When this mode is selected, the value of parameter is reflected as soon as it is changed.

"Read out from the file".

Refers to a parameter file (.prm) edited before. When a parameter is read out from the file, changed parameter is not reflected on connected brushless motor/brushless inverter/brushless amplifier unless "Trans (Transmit to the amplifier)" is executed.

"Read the default".

Changed parameter is not reflected on connected brushless motor/brushless inverter/brushless amplifier unless "Trans (Transmit to the amplifier)" is executed, which is the same as reading out of file.

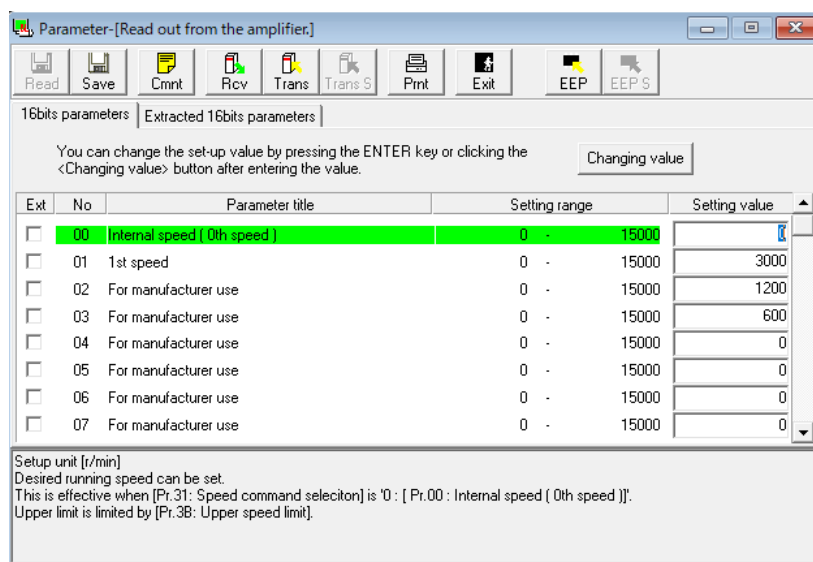
- \* When "Read out from the amplifier" is selected, you can select operation to read parameter automatically. When "Read out from the file" or "Read the default" is selected, parameter cannot be read automatically.

6. Specify timing for reading parameter.

"Read whenever the page changes".

Whenever the parameter editing page is changed, parameter is read out from brushless motor/brushless inverter/brushless amplifier. When check column is clicked, reading can be turned ON or OFF.

7. When you click "OK", parameter window opens.




Ext	No	Parameter title	Setting range	Setting value
<input type="checkbox"/>	00	Internal speed ( 0th speed )	0 - 15000	15000
<input type="checkbox"/>	01	1st speed	0 - 15000	3000
<input type="checkbox"/>	02	For manufacturer use	0 - 15000	1200
<input type="checkbox"/>	03	For manufacturer use	0 - 15000	600
<input type="checkbox"/>	04	For manufacturer use	0 - 15000	0
<input type="checkbox"/>	05	For manufacturer use	0 - 15000	0
<input type="checkbox"/>	06	For manufacturer use	0 - 15000	0
<input type="checkbox"/>	07	For manufacturer use	0 - 15000	0

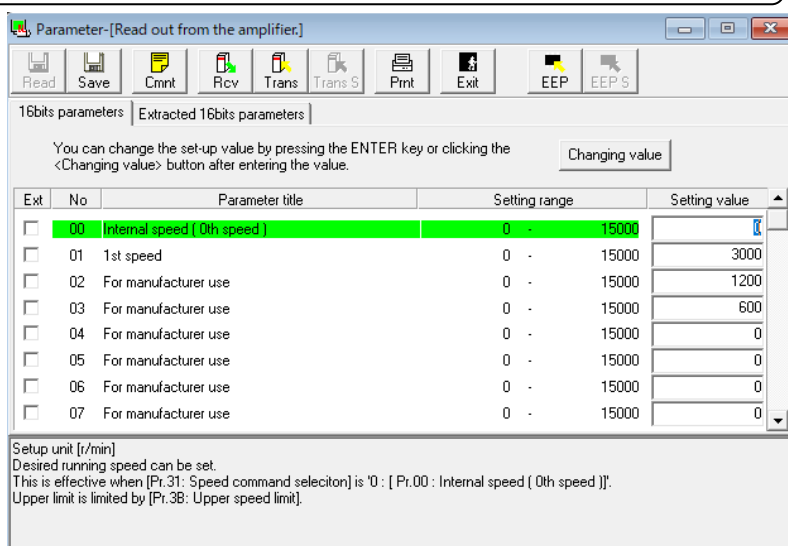
Setup unit [r/min]  
 Desired running speed can be set.  
 This is effective when [Pr.31: Speed command selection] is '0': [ Pr.00: Internal speed ( 0th speed ) ].  
 Upper limit is limited by [Pr.38: Upper speed limit].

# 6. Operation

## Close parameter window.

Click  (Exit) of the tool bar.

## Configuration of parameter screen



(1) Title bar

(2) Tool bar

(3) Tab

(4) Parameter setting field

(5) Text display box

(1) Title bar:

Displays the reference source of parameter. Use the following buttons for operation of window.



Zooms a window to full screen.



Closes a window.

(2) Tool bar:

Basic operation commands for parameter are arranged such as saving and reading.



(Read)

Read into parameter from a file (.prm).



(Save)

Writes a parameter to a file (.prm).



(Comment)

Prepares a comment to be attached to parameter file.



(Receive)

Receives a parameter from brushless motor/brushless inverter/brushless amplifier.



(Transmit)

Transmits a parameter to brushless motor/brushless inverter/brushless amplifier.



(Print)

Prints a parameter.



(Exit)

Closes a parameter window.



(EEP)

Writes a parameter to EEPROM of brushless motor/brushless inverter/brushless amplifier.

# 6. Operation

(3) Tab:

"16bits parameters"

"Extracted 16bits parameters"

Changes a parameter setting field.

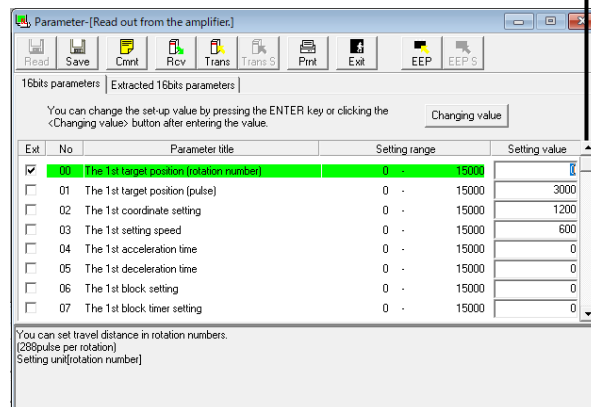
You can edit and set all 16bits parameters.

You can edit and set only parameters extracted out of all 16bits parameters.

(4) Parameter setting field

You can edit and set parameters.

When you click ▲▼, the screen changes.



"Extract"

"Setting value"

Set whether to extract a parameter or not.

This is a parameter value. You can change the value.

Enter a value with the numerical key for editing.

When setting a value, press "ENTER" key or click

Changing value

(Changing value).

When [ESC] key is pressed, the original value is recovered.

(5) Text display box

This is the description of selected parameter.



# 6. Operation

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## ■ Request

- See the instruction manual of brushless motor/brushless inverter/brushless amplifier for detail of individual parameter function.
- Do not turn off power supply for brushless motor/brushless inverter/brushless amplifier and PC while writing to EEPROM. If power supply is cut off during writing, the content of data is not guaranteed.

## ■ Information

- Even when parameter is transmitted to brushless motor/brushless inverter/brushless amplifier, if power supply is turned off for brushless motor/brushless inverter/brushless amplifier without writing to EEPROM, parameter is reset to the value before change. List of changed parameters is displayed in writing to EEPROM. Check the detail of change well enough.
- Some of parameters, after they are changed to new data, are not valid until they are written to EEPROM and power supply is reset. (Message is displayed to that effect in inputting. Check with the instruction manual of brushless motor/brushless inverter/brushless amplifier to find corresponding parameters.)
- Some of parameters are tripped when data is changed for safety (Trip No. 11: Setting change warning). When these parameters are changed, brushless motor / brushless inverter/brushless amplifier can be operated only after the present trip is canceled on the trip screen (see P.34). (Check with the instruction manual of brushless motor/brushless inverter/brushless amplifier to find corresponding parameters.)

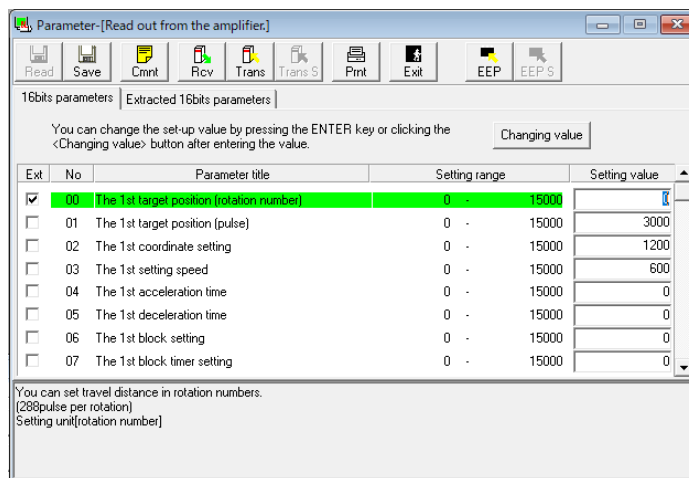
# 6. Operation

## Setting/Editing of extracted parameter

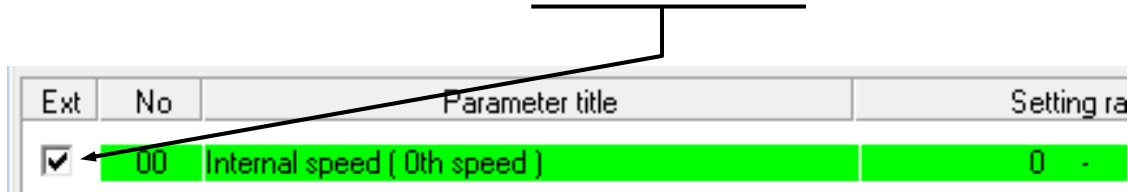
You can specify frequently-used parameters in advance out of all parameters.

### Extraction of parameter

1. Set the display to "16bits parameters".



2. Click the extraction box of desired parameter directly to turn on/off the checkmark in extraction box.



# 6. Operation

## Editing of extracted parameter

Click "Extracted 16bits parameters" tab.

The procedure for editing and setting a value is the same as "Setting and editing of parameter".

No	Parameter title	Setting range	Setting value
00	Internal speed ( 0th speed )	0 - 15000	10
10	1st acceleration time	1 - 30000	30
11	2nd acceleration time	1 - 30000	30
12	1st deceleration time	1 - 30000	30
13	2nd deceleration time	1 - 30000	30
14	Acceleration mode selection	0 - 2	0
20	For manufacturer use	0 - 0	0

Setup unit [r/min]  
Desired running speed can be set.  
This is effective when [Pr.31: Speed command selection] is '0' : [ Pr.00 : Internal speed ( 0th speed ) ].  
Upper limit is limited by [Pr.3B: Upper speed limit].


# 6. Operation

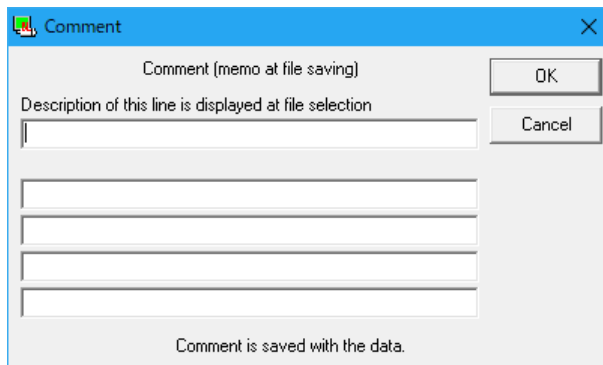
---

## Comment

When saving the setting parameter in a file, you can save a comment together. This comment does not affect the operation of brushless motor/brushless inverter/brushless amplifier. You cannot use comma "," and double quotation mark " in the comment. The comment is saved together with parameter and waveform graphic data.

### Preparation of comment

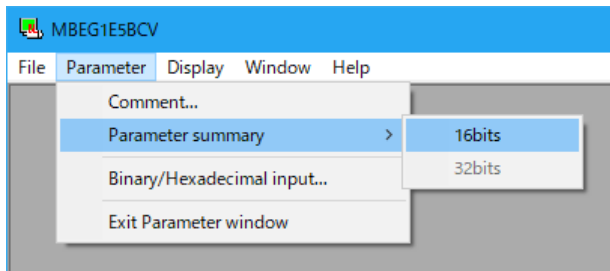
1. Click  (Comment) of the tool bar to open the command window.
2. Click the comment box and enter a comment.
3. When entry of comment is completed, click "OK".



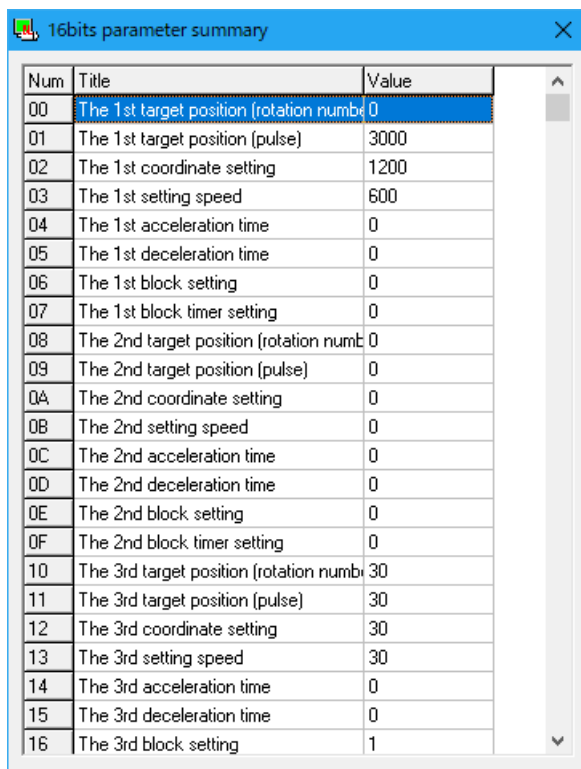
# 6. Operation

## Parameter summary

Parameter summary can be displayed when "Parameter/ Parameter summary/ 16bits" on PANATERM menu bar is selected while the parameter window is displayed.



The number, name, and setting value of parameter are displayed on the summary.



Num	Title	Value
00	The 1st target position (rotation number)	0
01	The 1st target position (pulse)	3000
02	The 1st coordinate setting	1200
03	The 1st setting speed	600
04	The 1st acceleration time	0
05	The 1st deceleration time	0
06	The 1st block setting	0
07	The 1st block timer setting	0
08	The 2nd target position (rotation number)	0
09	The 2nd target position (pulse)	0
0A	The 2nd coordinate setting	0
0B	The 2nd setting speed	0
0C	The 2nd acceleration time	0
0D	The 2nd deceleration time	0
0E	The 2nd block setting	0
0F	The 2nd block timer setting	0
10	The 3rd target position (rotation number)	30
11	The 3rd target position (pulse)	30
12	The 3rd coordinate setting	30
13	The 3rd setting speed	30
14	The 3rd acceleration time	0
15	The 3rd deceleration time	0
16	The 3rd block setting	1

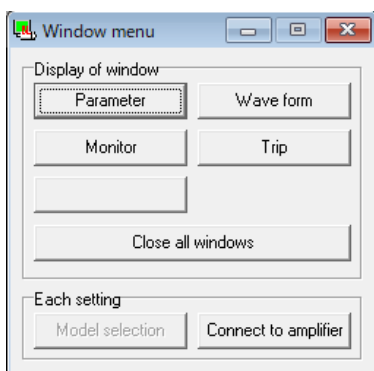
# 6. Operation

## Monitor

PANATERM is capable of monitoring and displaying input/output of signal, operation status, and speed of brushless motor/brushless inverter/brushless amplifier.

### Open the monitor window.

1. Start PANATERM.  
(See "Start" (page 16) for detail.)
2. Window menu is displayed in PANATERM window.
3. Click "Monitor" of window menu.
4. Monitor window is displayed.

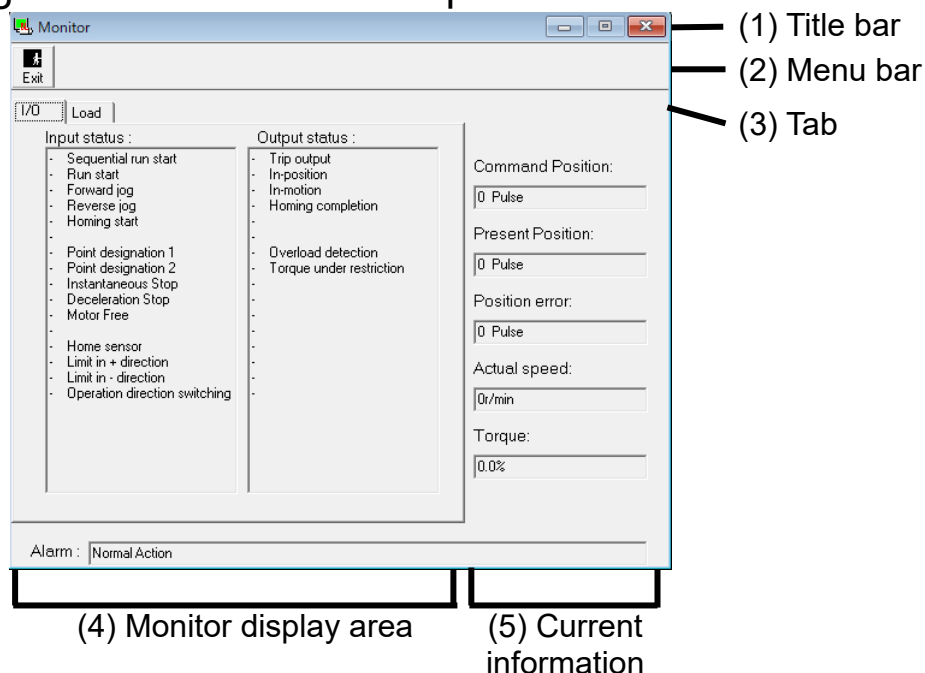


### Close the monitor window.

Click  (Exit) of tool bar.


### Configuration of monitor screen

Display of signal name or the like depends on model.



# 6. Operation

---

- (1) Title bar: Used for operating the window.
- (2) Tool bar  
 (Exit) Closes the parameter window.
- (3) Tab: Changes the monitor.  
"I/O" The status of input signal and output signal can be monitored.  
"Load" Information relating to the load can be monitored.
- (4) Monitor display area: Display depends on the monitor changed by the tab.
- (5) Current information: Current status is always monitored.  
"Command position" Displays the command position given by operation command. Unit is [pulse].  
"Present position" Displays the present position of motor detected by CS sensor. Unit is [pulse].  
"Position error" Displays the number of accumulated pulses of present error count. Unit is [pulse].  
"Actual speed" Displays the present actual speed. Unit is [r/min].  
▪ Polarity (+): Rotation CCW with a view of motor axis  
▪ Polarity (-): Rotation CW with a view of motor axis  
"Torque" Displays the present torque. It is displayed in the rate against rated torque. Unit is [%].  
"Alarm" Displays the present alarm status.

Note 1) Exchange (communication) between brushless motor/brushless inverter/brushless amplifier and PC is carried out by serial communication by RS-232. Value on the screen is displayed a little later than the actual value because of this restriction of communication rate.

Note 2) When the polarity is (+), the symbol (+) is not displayed.

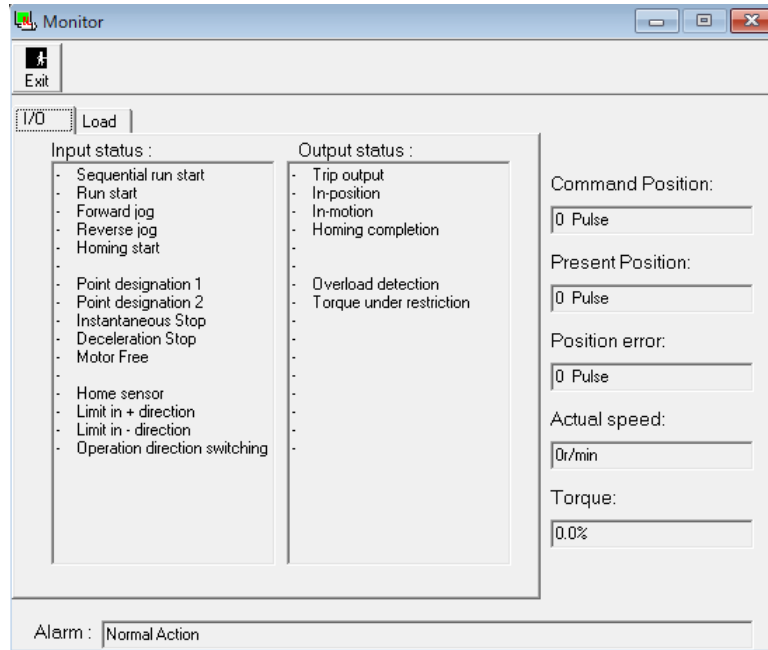
Note 3) The monitor is not a measuring instrument. Use the monitor display of speed and torque just for rough standard.

Note 4) Display of "Command position" "Present position" and "Position error" is always 0 on B1/B2 series because position is not controlled.

# 6. Operation

## Input/Output status

Click "I/O" tab on the monitor display window.



<Items displayed in I/O >

"Input status": Displays the detail and status of input.

"Output status": Displays the detail and status of output.

+A: Active

-: Inactive

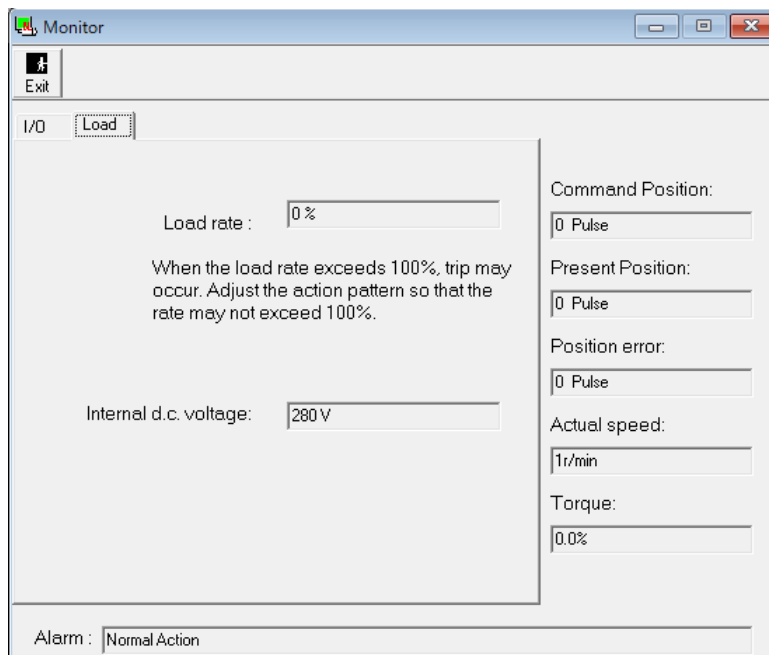


# 6. Operation

---

## Load

Click "Load" tab on the monitor window.



<Items displayed in "Load">

"Load factor": Displays the load factor.

When the load factor exceeds 100%, the motor may be tripped. In such a case, adjust the action pattern so that the rate does not exceed 100%.

"Internal d.c. voltage"

Displays the voltage of smoothing capacitor of brushless motor/brushless inverter/brushless amplifier power supply.

# 6. Operation

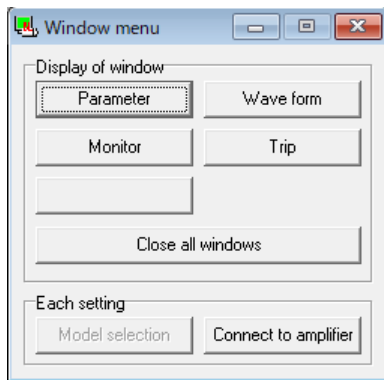
---

## Trip

You can check tripping status when the motor does not operate by use of PANATERM.

### **Open the trip window.**

1. Start PANATERM.  
(See "Start" (page 16) for detail.)
2. Window menu is displayed in PANATERM screen.



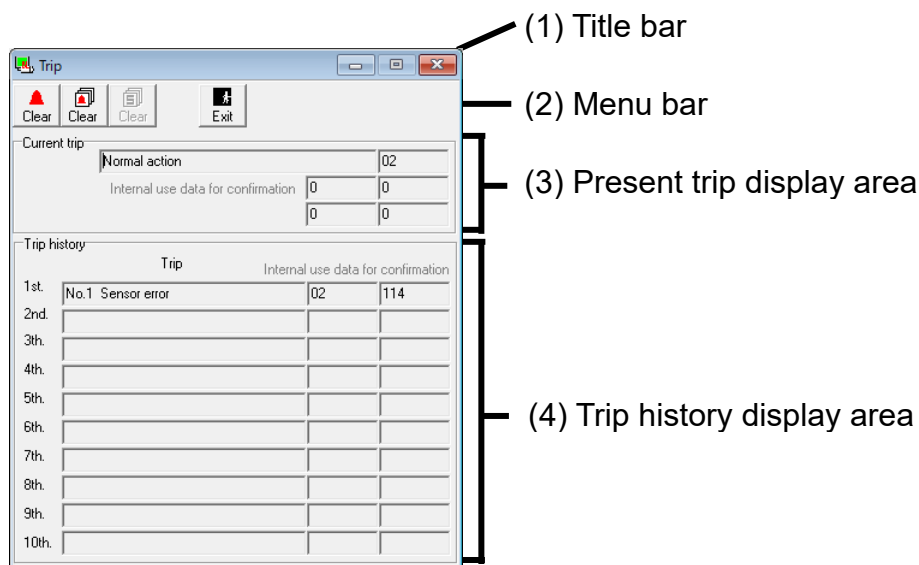
3. Click "Trip" in the window menu.
4. Trip window is displayed.

### **Close the trip window.**

Click  (Exit) of tool bar.

# 6. Operation

## Configuration of trip screen



(1) Title bar: Used for operating the window.

(2) Tool bar



(Clear)

Clears the present trip (alarm) status. When this button is clicked with the cause eliminated, present trip is cleared and normal operation is recovered. However, some of trips cannot be cleared. Turn off power supply for brushless motor/brushless inverter/brushless amplifier, eliminate the cause, and then turn on power supply again



(Clear)

Clears the trip history.



(Exit)

Closes the trip window.

(3) Present trip display area

Displays the present trip (alarm) number and name.

(4) Trip history display area

Displays the trip history sequence, trip number, and trip name.

Note 1) See the instruction manual of brushless motor/brushless inverter/brushless amplifier for detail of trip.

Note 2) Trip history is saved up to 10 times before. When trip has occurred more than 10 times, the older one in its history is cleared in time sequence.

# 6. Operation

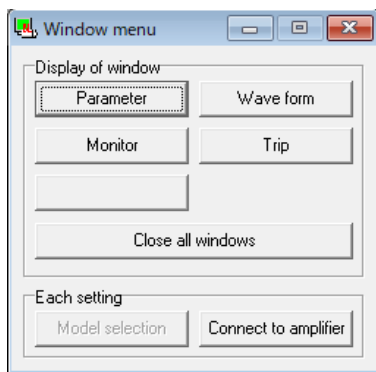
---

## Waveform graphic

PANATERM is capable of measuring the operation waveform of brushless motor and displaying the result in graphic. Condition, result, and result graph of these measurements can be saved in a file.

### Open the waveform graphic window.

1. Start PANATERM.  
(See "Start" (page 16) for detail.)
2. Window menu is displayed in PANATERM screen.



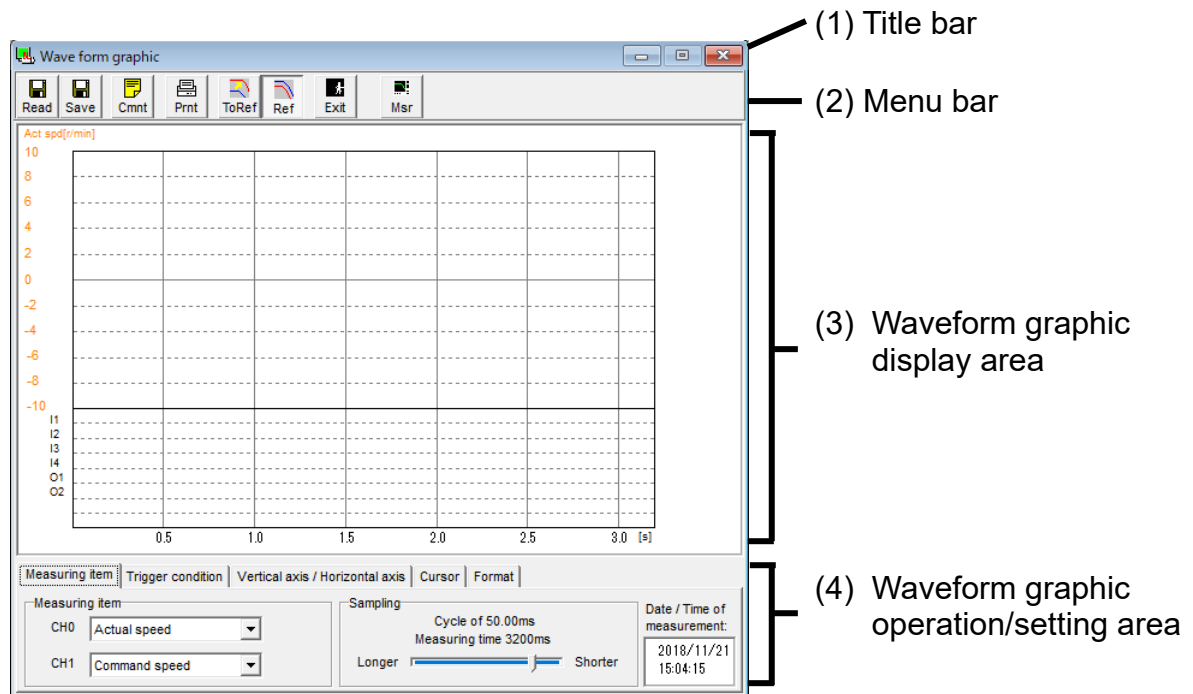
3. Click "Wave form" in the window menu.
4. Waveform graphic window is displayed.









### Close the waveform graphic window.

Close  (Exit) of tool bar.

# 6. Operation

## Configuration of waveform graphic screen



- (1) Title bar: Used for operating the window.
- (2) Tool bar:
- Operation commands are arranged such as save, read, and measurement of waveform graphic.
- |   |               |   |
|---|---------------|---|
|  | (Read)        | Reads in a file where measurement data is saved.        |
|  | (Save)        | Saves measurement data in a file.                       |
|  | (Comment)     | Comment can be prepared.                                |
|  | (Print)       | Prints out the waveform graphic measurement result.     |
|  | (Copy)        | Copies the observed waveform to the reference waveform. |
|  | (Reference)   | Turns on and off the display of reference waveform.     |
|  | (Exit)        | Closes the waveform graphic window.                     |
|  | (Measurement) | Starts the measurement of waveform graphic.             |

## 6. Operation

---

### (3) Waveform graphic display area

(4) Waveform graphic is displayed according to the detail set in the waveform graphic operation and setting area.



When "Measurement item" "Trigger condition" or "Vertical axis/Horizontal axis" tab is selected, display of graph can be magnified and demagnified with the magnifier icon.



When "Cursor" tab is selected, the position of cursor 1 and cursor 2 can be specified by the cursor icon.  
(Specify the position of cursor 1 with the left button of mouse, and cursor 2 with the right button.)

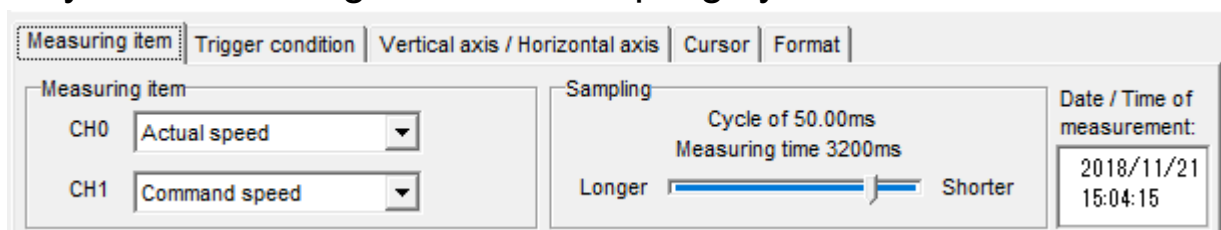
### (4) Waveform graphic operation/setting area

Specify the display condition of graphic when measuring the waveform graphic. Select a corresponding tab and set each item.

These measurement conditions can be saved in a file.  
(See "Saving and reading of waveform graphic measurement condition" (page 43).

#### <Measuring item tab>

Specify the measuring item and sampling cycle.

The screenshot shows the 'Measuring item' tab selected in a software interface. It features two dropdown menus for 'CH0' (set to 'Actual speed') and 'CH1' (set to 'Command speed'). To the right, there is a 'Sampling' section with a 'Cycle of 50.00ms' and 'Measuring time 3200ms', accompanied by a slider between 'Longer' and 'Shorter'. On the far right, a box displays the 'Date / Time of measurement' as '2018/11/21 15:04:15'.

"Measuring item" Select any desired items in combination in two channels out of "Actual speed", "Command speed", "Torque", "Position error", and "Internal DC voltage".

"Sampling" Select a sampling cycle.

## 6. Operation

<Trigger condition tab>

Specify a trigger condition.

The screenshot shows the 'Trigger condition' tab in a software interface. It has five sub-tabs: 'Measuring item', 'Trigger condition' (selected), 'Vertical axis / Horizontal axis', 'Cursor', and 'Format'. The 'Trigger condition' tab contains the following controls: a 'Trigger' dropdown menu set to 'No'; a 'Single trigger' checkbox which is checked; a 'Trigger level' input field with a +/- button and the value '10'; a 'Slope' dropdown menu set to 'Rising edge'; and a 'Trigger position' dropdown menu set to '1/4'.

- |                    |  |
|--------------------|--|
| "Trigger"          | Set a signal to be trigger condition. When trigger is not required, select "No".   |
| "Single trigger"   | When it is checked, measurement is performed only once.<br>When it is not checked, measurement is continued until "Cancel" is clicked. |
| "Trigger level"    | Set a value for triggering.  |
| "Slope"            | Click  for specifying plus or minus.<br>Set a slope for triggering. Select either "Rising edge" or "Falling edge"                      |
| "Trigger position" | Set a triggering position during measurement.  |

<Vertical axis/Horizontal axis tab>

Specify the display condition of waveform graphic.

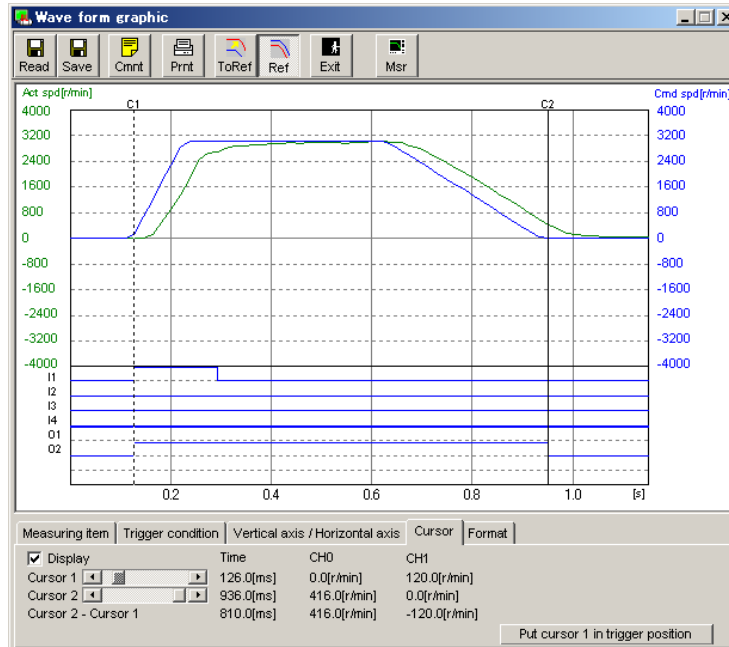
The screenshot shows the 'Vertical axis / Horizontal axis' tab in a software interface. It has five sub-tabs: 'Measuring item', 'Trigger condition', 'Vertical axis / Horizontal axis' (selected), 'Cursor', and 'Format'. The 'Vertical axis / Horizontal axis' tab is divided into two main sections. The left section is for the 'Y-axis' and includes radio buttons for 'CH0' (selected) and 'CH1', a 'Mgnf' (magnification) up/down arrow control, a 'Position' up/down arrow control, an 'Auto range' button, and an 'Initialize vertical axis.' button. The right section is for the 'X-axis(time-axis)' and includes 'Magnification' and 'Position' up/down arrow controls.

- |                            |   |
|----------------------------|---|
| "Y-axis"                   | You can specify the display magnification factor and position respectively for CH0 (channel 0) and CH1 (channel 1). |
| "Auto range"               | Automatically adjusts the display magnification factor and position at an optimum value.                            |
| "Initialize vertical axis" | You can initialize the display position.  |
| "X-axis (time axis)"       | You can specify the display magnification factor and position along the horizontal axis (time axis).                |

# 6. Operation

<Cursor tab>

Specify the cursor.



"Display"

When it is checked, the cursor of two points can be displayed.

"Cursor 1"

You can specify the position of cursor 1. You can also specify the position with the left button of the mouse. Value of "Time", CH0 (channel 0), and CH1 (channel 1) is displayed.

"Cursor 2"

You can specify the position of cursor 2. You can also specify the position with the right button of the mouse. Each value of "Time", CH0 (channel 0), and CH1 (channel 1) is displayed.

"Cursor 2 - Cursor 1"

Displays the each value of difference of "Time", "CH0 (channel 0)", and "CH1 (channel 1)" between the cursor 1 and cursor 2.

"Put cursor 1 to trigger position"

You can move the cursor 1 to a position specified by "trigger condition".

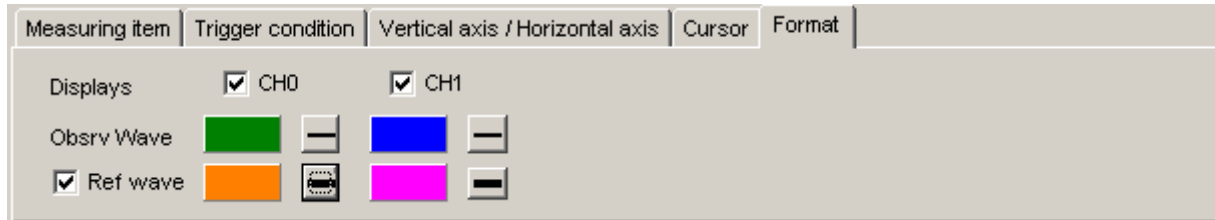


## 6. Operation

---

<Format tab>

Set a display format of graph.



"Displays"


When either one is checked, corresponding graph is displayed.

"Ref wave"



When it is checked, the reference waveform graph is displayed. Color of graph and thickness of line can be changed by clicking respectively.

### Measurement of waveform graphic

1. Specify the measurement item and condition of waveform graphic.
2. Click  (Measurement) of tool bar.  
When measurement is started, bar of transfer status changes.

## 6. Operation

---

Note 1) Measurement data of waveform graphic applies the following value:

- Actual speed : Value after speed detection filtering
- Command speed : Value of speed command
- Torque : Value after torque limiting
- Position error : Value of error counter
- Internal DC voltage : Voltage at smoothing capacitor of power supply

Speed, torque, and position error are not affected by internal coordinate system setting of brushless motor/brushless inverter/brushless amplifier.

Note 2) PANATERM is capable of varying the measurement time between 64 and 16320 ms. In addition, since the number of data stored in brushless motor/brushless inverter/brushless amplifier is limited to 64, measurement cycle is provided, where data by sampling time 1 ms per cycle is stored.

Such measurement cycle, which is displayed on the monitor, is 1 ms at the shortest measurement time 64 ms and 255 ms at the longest measurement time 16320 ms.

Calculated value per measurement cycle is plotted on the graph, and measurement cycle is connected by a straight line with each other.

Therefore continuous measurement is enabled only at the minimum measurement time 64 ms ( $1 \text{ ms} \times 64 = 64 \text{ ms}$ ).

Note 3) Depending on specification of sampling cycle, when a waveform containing especially high frequency component (such as torque waveform) is displayed, it may seem different from actual waveform. In this case, set the shorter sampling cycle.

Note 4) When "Command speed" is displayed, if the setting of position loop gain is so low as to make position error large, command speed display may be chipped.

Note 5) When resetting is applied because power supply is turned on again for brushless motor/brushless inverter/brushless amplifier during waveform graphic measurement, once exit PANATERM.

Note 6) When waveform graphic data is printed under the environment where printer cannot be used properly, PANATERM may exit itself or make no response. Check the condition of printer well enough before printing.

Note 7) Waveform graphic is not a measuring instrument. Use the data of actual speed, torque, etc. just for a rough standard.

# 6. Operation

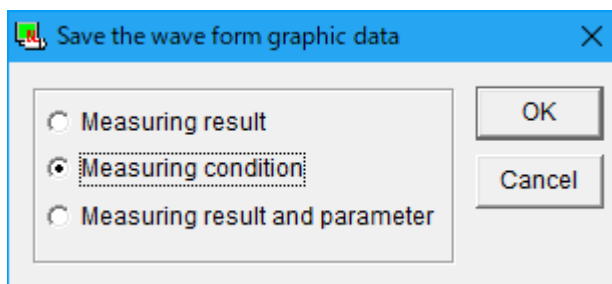
---

## Saving and reading of waveform graphic measurement condition

You can save the measuring condition specified in measurement in a file and perform measurement again under the same condition. Waveform graphic measuring condition file is (\*\*\*.wgc).

### **Saving of waveform graphic measuring condition**

1. Click "Save" on waveform graphic menu bar.



2. Set the type of file to be saved to "Measuring condition" and click "OK".
3. Enter a comment and click "OK".
4. Specify the name of file desired to be saved by file dialogue.
5. Click "Save".

### **Reading of waveform graphic measuring condition**

1. Click "Read" on waveform graphic menu bar.
2. Specify the name of file desired to be read by file dialogue.
3. Click "OK".

## 6. Operation

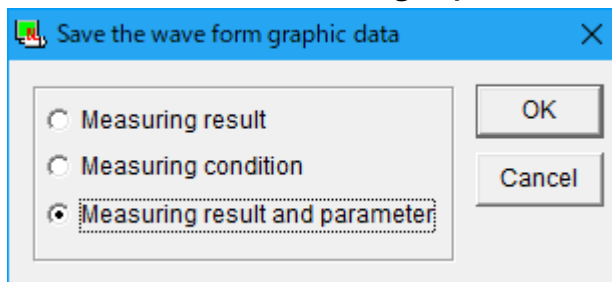
---

### Saving and reading of waveform graphic measuring result and parameter value

You can save the measuring result and corresponding parameter setting value in a file and refer to it again. Waveform graphic measuring result file is (\*\*\*.wgd) when only the waveform graphic measuring result is saved, and (\*\*\*.wgp) when parameter is saved in the same file.

#### **Saving of waveform graphic measuring result and parameter value**

1. Click "Save" on waveform graphic menu bar.



2. Specify the type of saving file to "Measuring result" when saving only the measuring result, and "Measuring result and parameter" when saving the measuring result and parameter in the same file, and click "OK".
3. Enter a comment and click "OK".
4. Specify the name of file desired to be saved by file dialogue.
5. Click "Save".

#### **Reading of waveform graphic measuring result and parameter value**

1. Click "Read" on waveform graphic menu bar.
2. Specify the name of file to be read by file dialogue.
3. Click "OK".

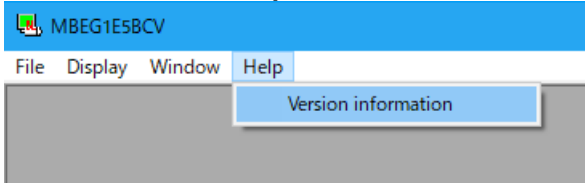
# 6. Operation

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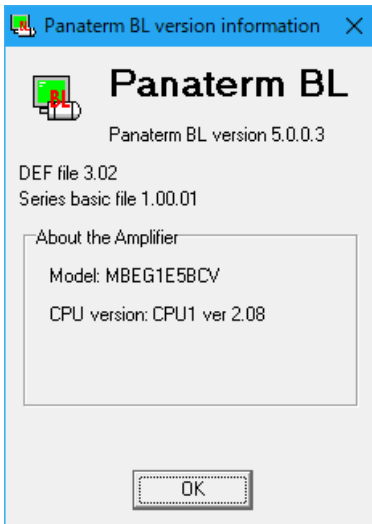
## Version

Displays the version of PANATERM and brushless motor / brushless inverter/brushless amplifier.

1. Select "Help/Version information" on PANATERM menu bar.



2. Version window is displayed.



3. When exiting the display, click "OK".

# 6. Operation

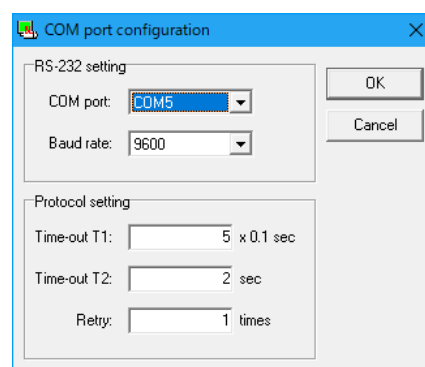
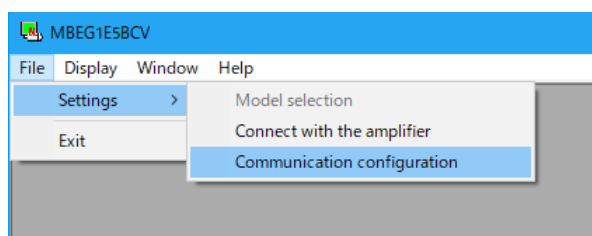
## Communication setting

Set the communication between PANATERM and brushless motor/brushless inverter/brushless amplifier. This setting is only on PC side, and is not reflected on brushless motor/brushless inverter/brushless amplifier side. Be careful.

Note) Leave the initial setting unchanged normally in use.

### Communication configuration

1. Click "File / Settings / Communication configuration" on PANATERM menu bar.



2. Communication window is displayed. Then click the entry column of desired item.
3. Enter or select a setting value.
4. When making setting valid, click "OK".

#### <RS-232 Setting>

"COM port"

Select a communication port to be used from COM1 - COM16.

"Baud rate"

Select a baud rate.  
Specify 9600 bps.

#### <Protocol setting>

"Time-out T1"

Specify timeout T1 between characters in 0.1 seconds.

"Time-out T2"

Specify timeout T2 between protocols in seconds.

"Retry"

Specify the number of communication retrials.  
Setting range is from 1 to 8 times.

# 7. Troubleshooting

---

## Setup is impossible

Setup is interrupted.

- Restart Windows®, and start the setup program again.
- Check that the corresponding hard disk has a sufficient free area.  
(Recommended free area is 50MB or above.)
- Update the OS to the latest condition by use of Windows® Update.
- The installer may have broken by miss downloading, clear cash memory of browser and download again.

PANATERM is not registered in Start Menu/Program although it is installed.

- Restart Windows® after setup.

"Already installed" is displayed and installation cannot be started.

- Uninstall (delete) PANATERM by use of Start Menu/Control Panel/Addition and Deletion of Program, and then start the setup program again.

"This installation package cannot be installed by Windows® installer service. Install Windows® service pack containing the new version of Windows® installer" is displayed, and installation is impossible.

- It is possible that Windows® installer is the former version.  
Upgrade to Windows® Installer and start the setup program again.

# 7. Troubleshooting

## PANATERM does not start

PANATERM does not start.

- It is possible that the file of PANATERM is corrupted. Uninstall PANATERM by use of Start/Setting/Control Panel/Addition and Deletion of Application, and set up again. (In this case, saved parameter file or the like may be lost. Back them up in advance.)

## Communication is impossible

After starting PANATERM, when automatic setting or COM1 - 16 is selected on model selecting screen, PANATERM fails to respond.

After starting PANATERM, when COM1 – 16 or model selecting screen is selected, "Amplifier or communication port cannot be detected" is displayed and communication is impossible.

- Driver software of COM port is not set properly. (Open the device manager, and check that the intended port is set properly. See the instruction manual of PC for detail.)
- COM port is occupied by incorporated modem, sequencer control software, PDA synchronization software, etc. (See the instruction manual of PC and introduced software.)
- Turn on power supply for brushless motor/brushless inverter/brushless amplifier.
- Check that connection of communication cable is not loosened, cable is not broken, and proper cable is used.

## Printing is impossible

Printing is impossible.

- Check that the printer is connected properly.

Not printed properly. Ruled line or the like is chipped.

- Change the setting of printer. (Change Property/Detail/Setting of Printer/Device Option/Printing Quality of the printer from draft to formal document.)



# 7. Troubleshooting

---

## Uninstalling is impossible

Uninstalling of PANATERM is impossible.

- When PANATERM folder contains files prepared by you, the folder containing such files cannot be deleted in order to protect them. Save necessary files by use of explorer, then uninstall PANATERM.

## Trouble of PANATERM

Response from PANATERM is slow. Operation is dull.

- Close the unused windows. (Communication is always on with brushless motor/brushless inverter/brushless amplifier even though it is hidden under another window on the alarm and monitor screen.)

No response from PANATERM

- Press [CTRL] + [ALT] + [DEL] and call forced termination screen of program and shut down PANATERM. And restart PANATERM.

PANATERM has suddenly shut down.

- Restart PANATERM.

Window runs off the screen and is hard to see.

- Part of window display runs off the edge on a PC using resolution below 1024 x 768.

Window cannot be opened. Trouble of display.

- Memory is insufficient. Once shut down PANATERM and terminate unused application, then restart PANATERM again.