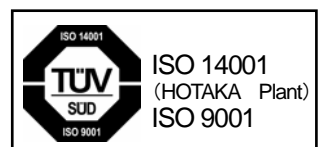


Monitor software for HA-655/675

## **PSF-650 Ver. 1.22 Manual**

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- Product specifications are subject to change without notice for improvement purposes.
  - Keep this manual in a convenient location and refer to it whenever necessary in operating or maintaining the units.
  - The end user of the driver should have a copy of this manual.
- 



## Introduction

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- i 486 and Pentium are trademarks or registered trademarks of Intel Corporation.
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- HA-655 and HA-675 are trademarks or registered trademarks of Harmonic Drive Systems.
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### Set up

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| <b>2</b> | <b>Pre-installation check</b>               |
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### Operating Program

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## Setup

Download PSF-650 from our homepage (Product information technical document list Driver HA-655/HA-675 monitor software <Ver. 1.22>).

If you do not have Internet access, please contact our branch office.

PSF-650 is downloaded in compressed form. Decompress it and install it on the hard disk of your computer.

This chapter describes the procedure as a setup operation, from installation to startup confirmation.

## Required environment

You must have the following environment in order to properly operate PDF-650.

You should use the software in the following environment; otherwise the system may not function properly.

## Operating environment

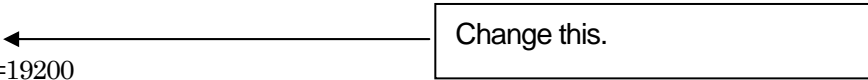
Computer	PC equipped with CPU [Pentium or better recommended] on which Windows OS (98 or later) is installed and a built-in RS-232C communication port (com1 used) * 1
OS	Windows 98/ME, Windows NT/2000 and Windows XP (Not operable on Windows 3.1 and 95)
Memory	More memory space than is required by the respective OS
Hard disk	3MB or more available space (Additional space is required to save parameters.)
Display	256 or more colors
	Microsoft Mouse, Microsoft IntelliMouse or compatible pointing device A printer that can operate under the specified OS to print the created data

\* 1 com1 is used by default.

If com1 is not available on a notebook PC, you should install the software according to the installation procedure, then open the system.INI file in the installed directory with an editor and change the port number after "port=" in the second line.

```
[Comm]
Port=1
BaudRate=19200
ByteSize=8
ParityBits=None
StopBits=1
[Js_Us]
Type=JPN
[ROM]
Size=1024
```

\* Do not change any other items.



## Setup

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Install PSF-650 onto the hard disk of your PC.

---

### Pre-installation check

#### Start Windows.

You need to start Windows to start the installation program. If you have started your PC with another OS, restart with Windows.

#### To set up the software on Windows NT/2000/XP

You need to log in with a user name belonging to the administrators' group.  
Check the detail with the system administrator who controls the network.

Exit from all active applications.

The setup may not successfully complete if there is an active application during the PSF-650 setup.

---

#### **(CAUTION !)**

When you install the software on Windows 98, ME and NT, you may be unable to successfully install it by executing SETUP.EXE, due to the older versions of the Windows installer.  
Please contact our branch office.

## Setup

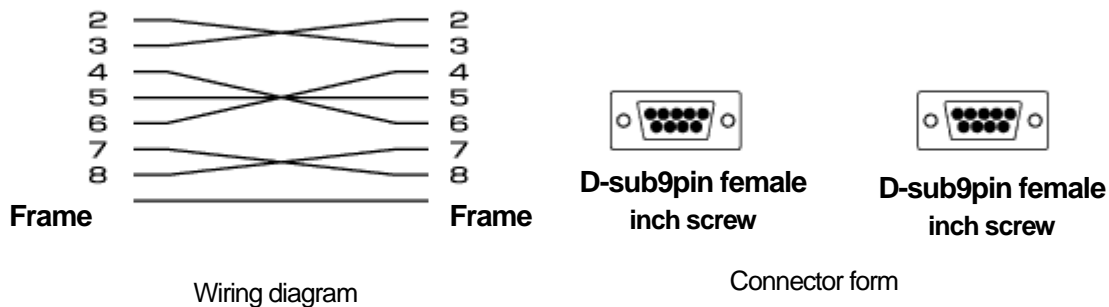
### When you have installed the software

When you have installed the software, you should use an RS-232C cross cable (\* 1) to connect the HA-655 or HA-675 to your PC, start/stop PSF-650 and check whether the software has been successfully installed.

Turn on the control circuit power of HA-655 or HA-675 and start the program.

\* 1 Wiring the cross cable

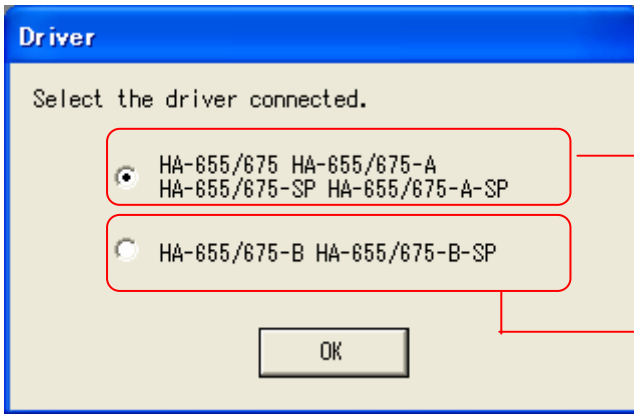
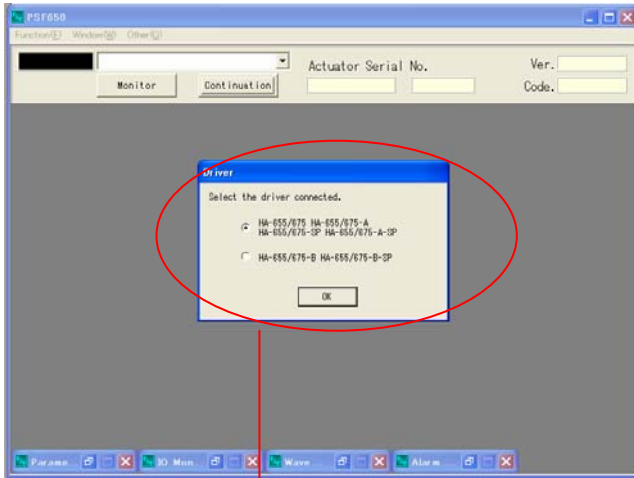
PSF-650 supports the commercial RS-232C cross cable. Use the cross cable wired as shown below. **Do not use a cross cable whose 7<sup>th</sup> and 8<sup>th</sup> pins are short-circuited and connected to the 1<sup>st</sup> pin.**



Commercial item : KRS-L09-2K (2m) or KRS-L09-4K (4m) (Made by Sanwa Supply)

## Starting PSF-650

Clicking the [PSF-650] icon displays the following window:

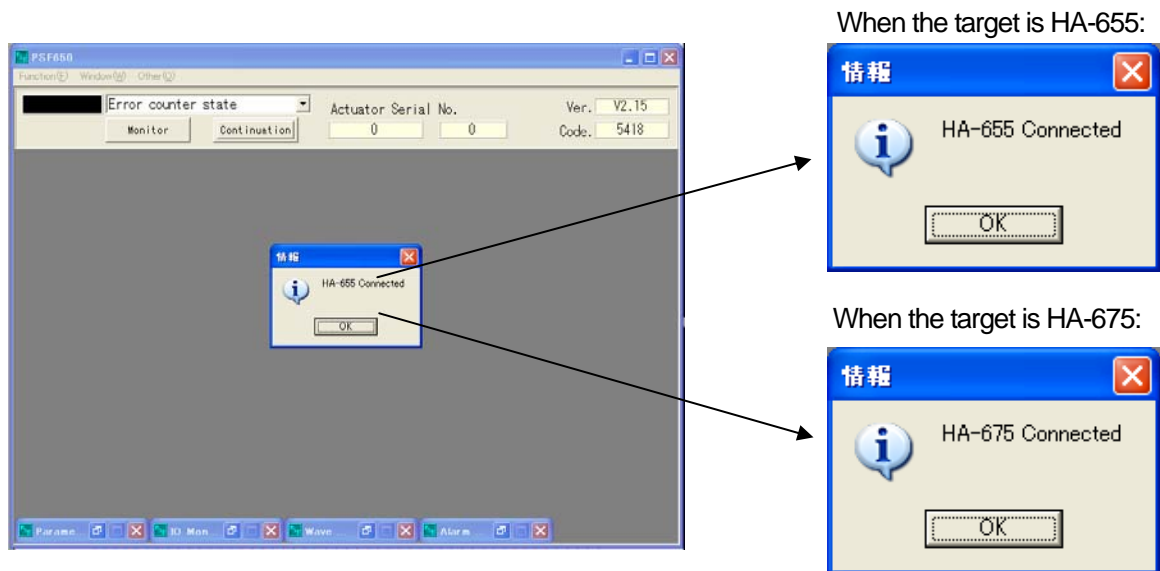


Select this to combine the following drivers:  
HA-655-\*, HA-675-\*, HA-655-\*A, HA-675-\*A,  
HA-655-\*-SP, HA-675-\*-SP, HA-655-\*A-SP,  
HA-675-\*A-SP

Select this to combine the following drivers:  
HA-655-\*B, HA-675-\*B, HA-655-\*B-SP,  
HA-675-\*B-SP

### Recognizing the connected driver

When PSF-650 has checked the version, it recognizes the connected driver.



If you can't start the program, you should delete the program (see the section on deleting the program) and reinstall it.



## Setup

### Terminating PDF-650

Click the check mark (X) on the top right corner of the start screen to terminate the program.

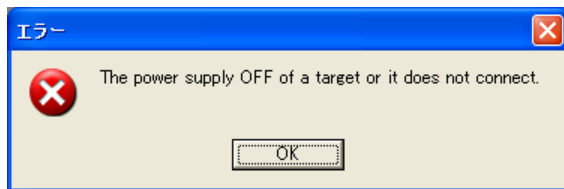
If the program does not terminate, press the [Ctrl], [Alt] and [Delete] keys on the keyboard simultaneously to forcibly terminate PSF-650, delete the program (see the section on deleting the program) and re-install it.

If you can successfully start and terminate the program after installation, you have set it up.

### Notes on starting PSF-650

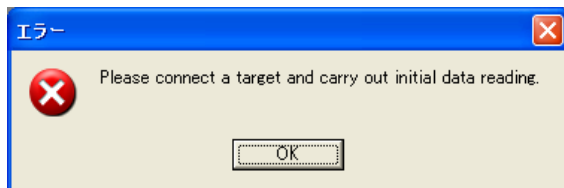
The following alerts will be displayed when your PC is not connected to HA-655 or HA-675 via the communication cable to start PSF-650, or when your PC is connected and the control circuit of HA-655/675 is not powered on.

(1)



Connect HA-655 or HA-675, turn on the power of the control circuit and click [OK] to retry connection.

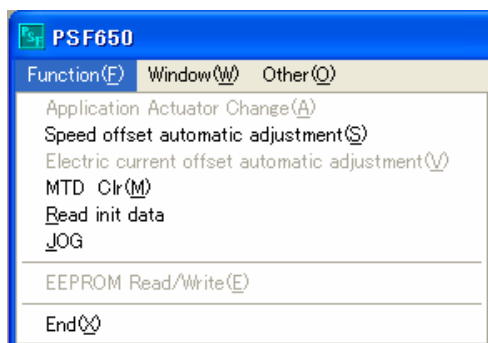
(2)



When communication with the target is completed, the start screen shown on the previous page appears. When communication fails, the message shown on the left is displayed.

Operations not associated with communication, (such as printing), are available, even in this situation.

(3)

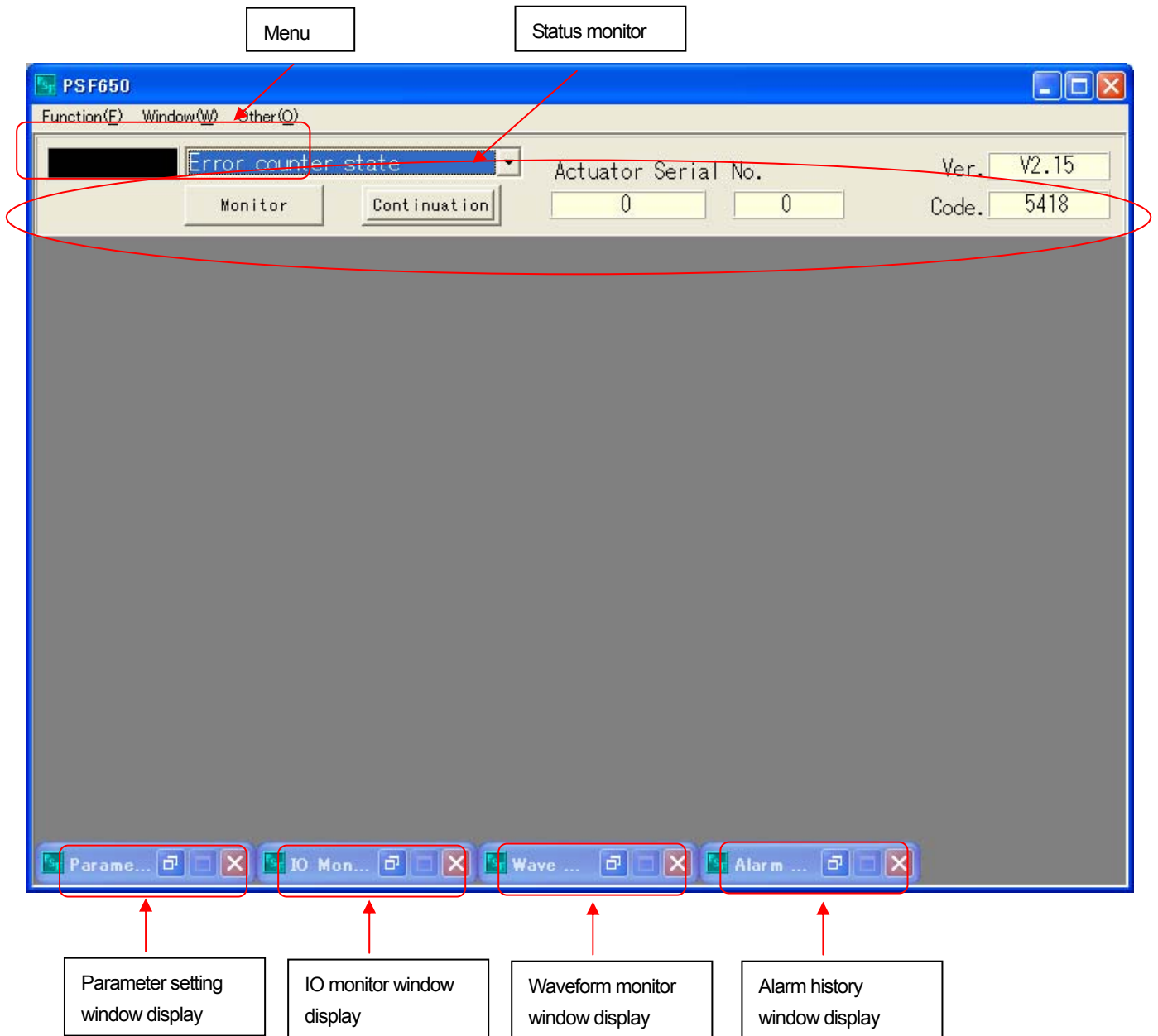


Even in the status above (2), all functions of PSF-650 will be available by connecting HA-655 or HA-675, turning on the power of the control circuit and reading the initial data on the function menu.

# Operating program (Description of screen, Start screen)

## Start screen

This section describes the PSF-650 start screen.

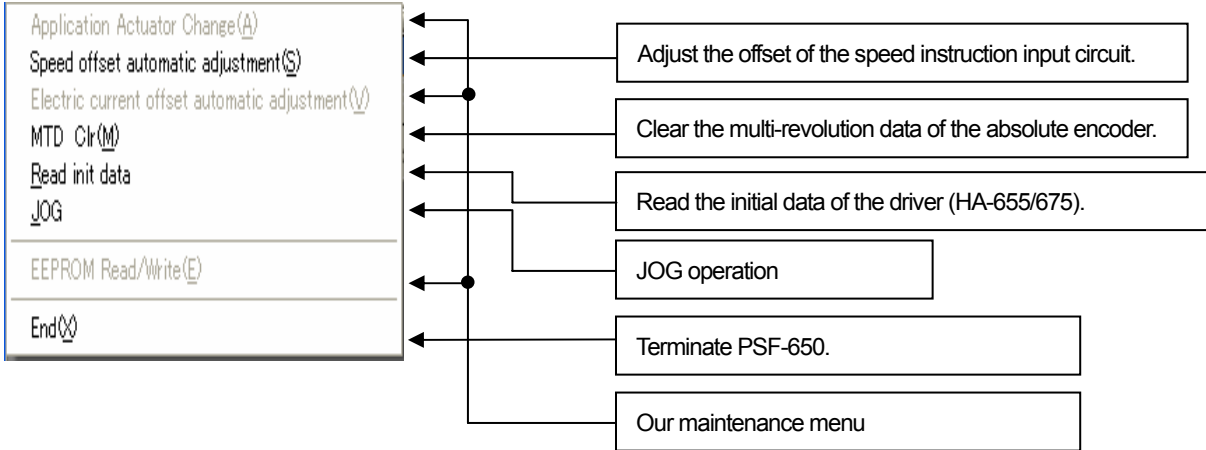


# Operating program (Description of screen, Start screen)

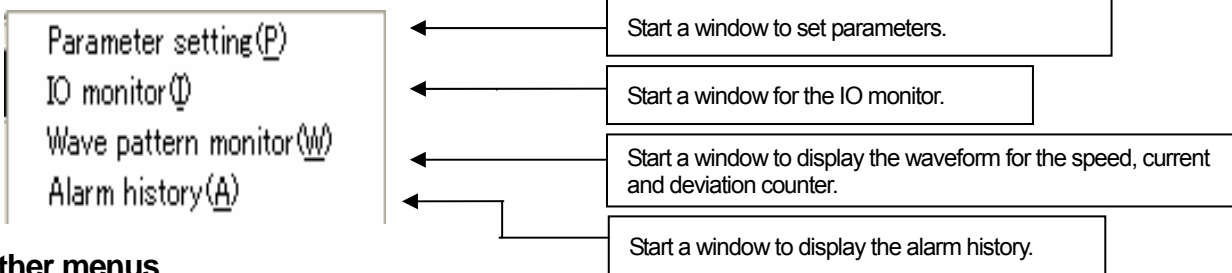
## ◆ Menu

The operation of PSF-650 is conducted from the menu, which is detailed below.

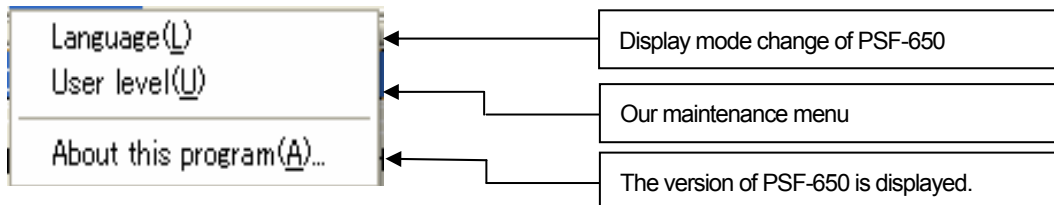
### Function (F) menu



### Window (W) menu



### Other menus



# Operating program (Description of screen, Start screen)

## ◆ Status monitor

The screenshot shows the 'Status Monitor' interface. At the top left is a dropdown menu currently set to 'Error counter state'. Below it are two buttons: 'Monitor' and 'Continuation'. To the right, the 'Actuator Serial No.' is displayed as '0 0'. Further right, the driver version is 'Ver. V2.15' and the code is 'Code. 5418'. Red arrows point from callout boxes to these elements.

Callout boxes provide the following information:

- Top Left:** Display items displayed on the monitor menu.
- Top Middle:** Click [▼] to select an item to be monitored.
- Top Right:** The serial number of the actuator is displayed when it is combined with FHA-8~14C.
- Far Right:** The version of the connected driver is displayed.
- Bottom Left:** Click this to display the items displayed on the monitor menu in the display area.
- Bottom Middle:** Click this to continuously display the items displayed on the monitor menu with a 1s sampling cycle in the display area. Click this again to stop the display.
- Bottom Right:** The applicable actuator codes of HA-650/655/675 are displayed.

## ◆ Parameter setting window

The 'Parameter Setting' window is shown with a list of parameters on the left and control buttons on the right. The parameters listed are:

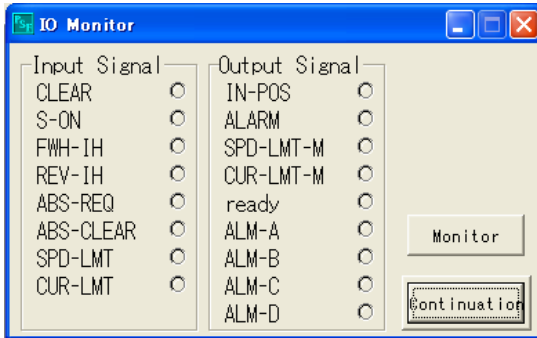
- Speed loop gain
- Speed loop integral compensation
- Position loop gain
- Feed-forward gain
- In-position range
- Attained speed
- Internal speed command
- Acceleration time constant
- Deceleration time constant
- Speed command offset

The control buttons on the right are: 'Read From File', 'Write To File', 'Read from driver', 'Write to driver', and 'Print'. A small black box is visible below the 'Print' button.

Set and change the adjusting mode and system parameters.

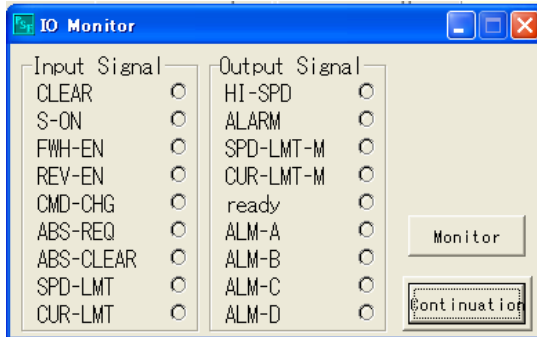
# Operating program (Description of screen, Start screen)

## ◆ IO monitor window

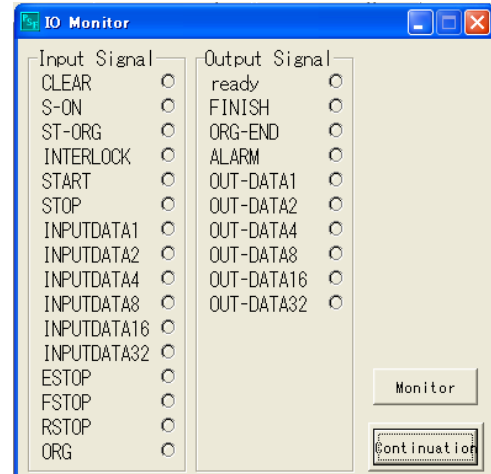


IO monitor for position control

Monitor the input and output signals of the CN2 (control IO connector) of HA-655/675.



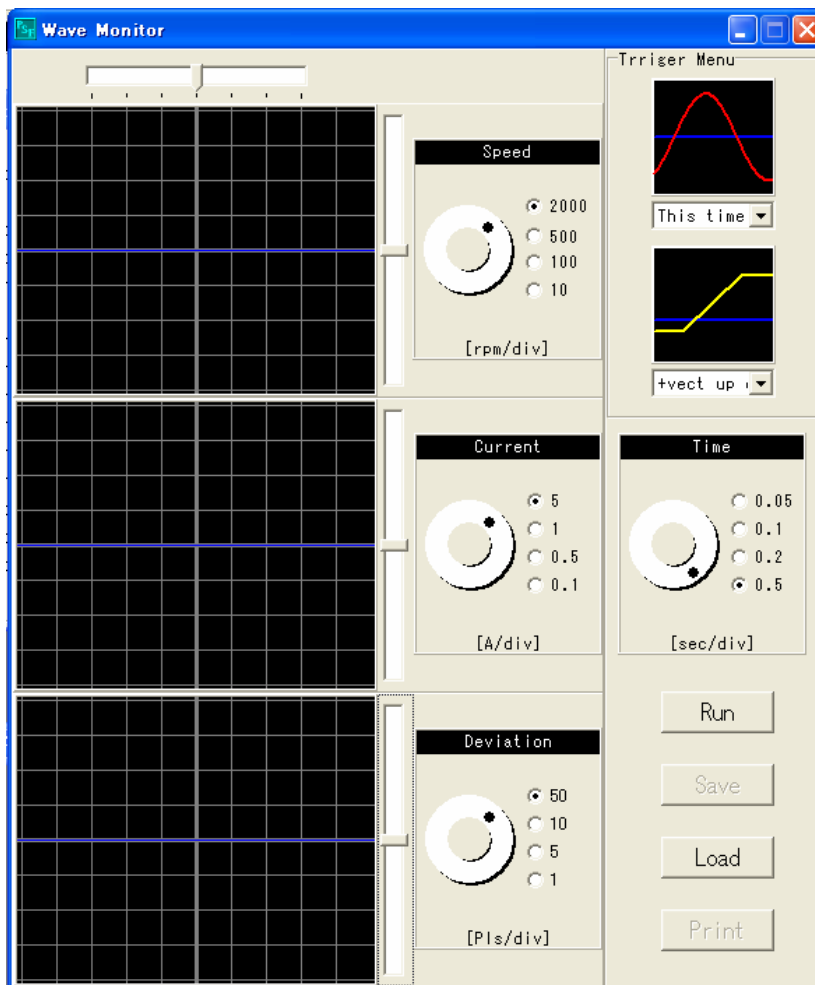
IO monitor for speed control



Io monitor when HA-675 is connected

## Operating program (Description of screen, Start screen)

### ◆ Waveform monitor window



Display the waveform for the speed, current and deviation counter (position control only).

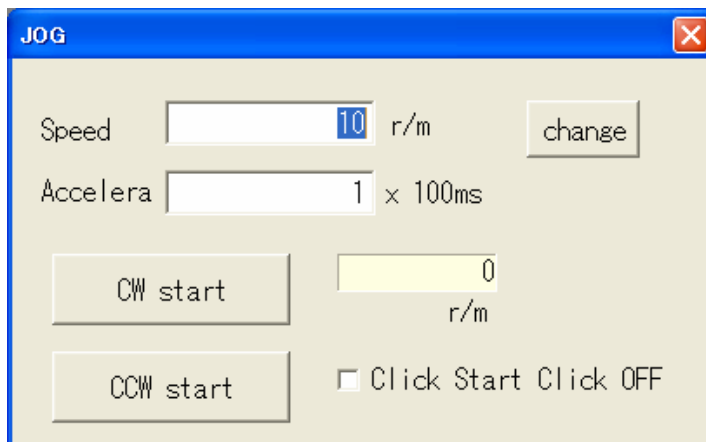
## Operating program (Description of screen, Start screen)

### ◆ Alarm history window



Display the alarm history for the past 8 alarms.

### ◆ JOG operation window

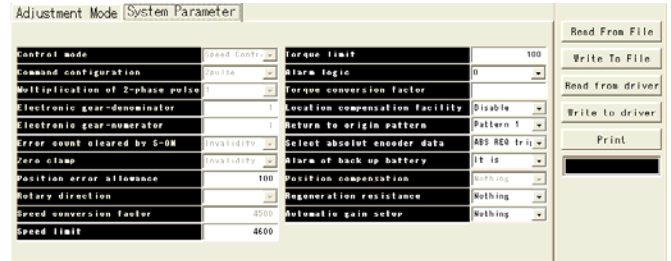
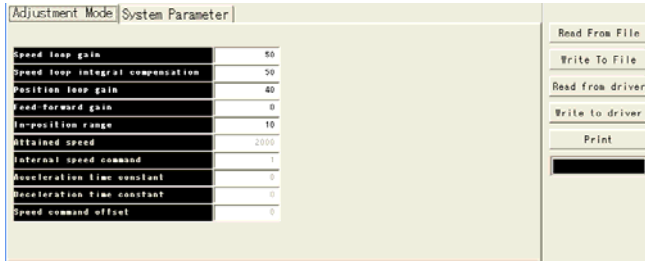


You can check the operation of the actuator.

# Operating program (Description of screen, Parameter setting screen)

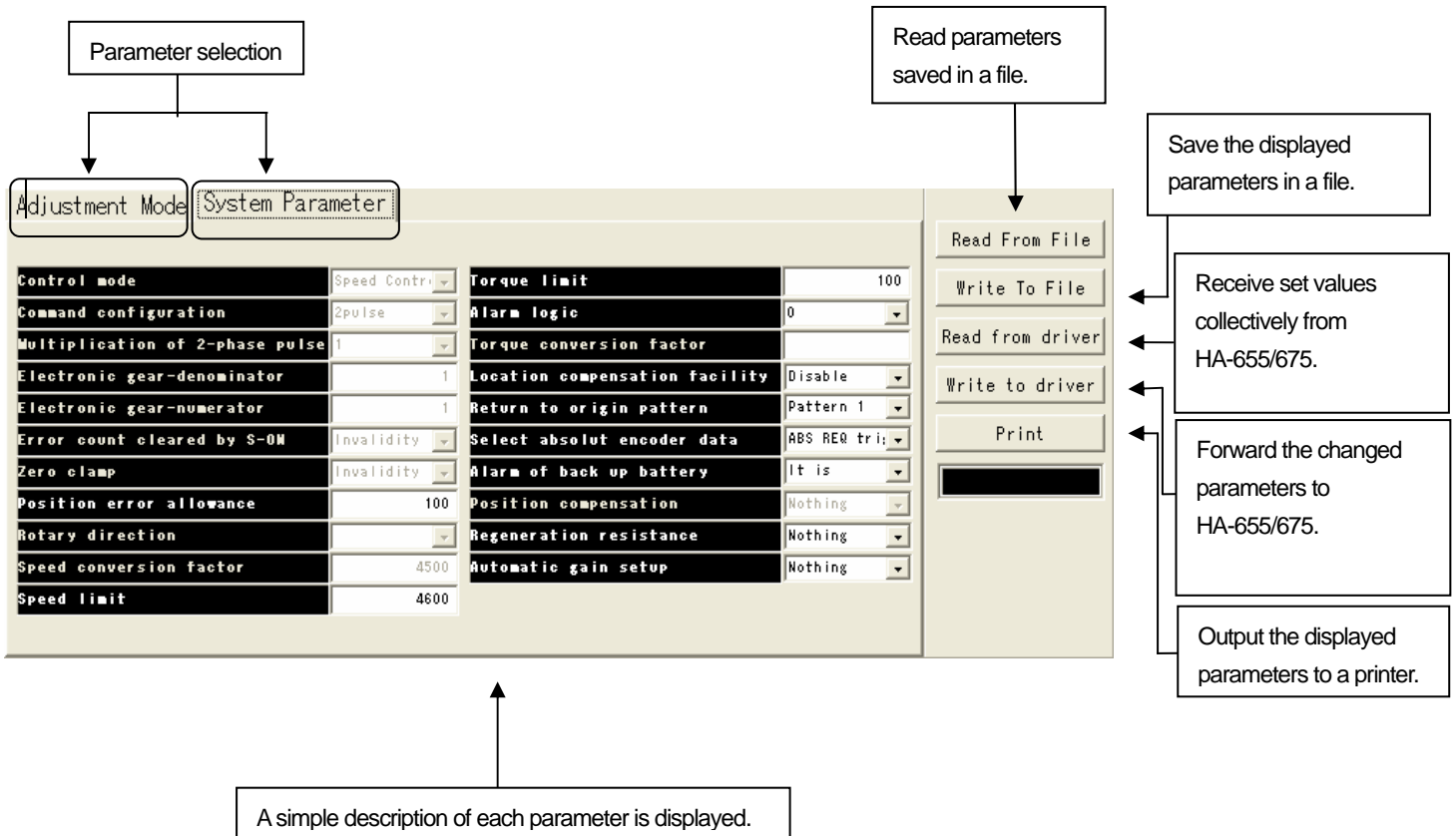
## Parameter setting screen

The HA-655/675 has internal parameters that change the structure of the control loop and determine the operation. The parameter setting screen allows you to set these parameters and output the set values to a printer.



When the adjusting mode parameters are selected

When the system parameters are selected



### CAUTION !!

Settable parameters vary depending on the control mode for the driver Ha-650. You may not set parameters dimly displayed. Improper change can cause an unexpected accident.



## Operating program (Description of screen, Alarm history screen)

### Alarm history screen

HA-655/675 stores 8 alarms ever occurred. You can check the history of 8 alarms in the past by starting the alarm history window.



The alarm history window reads the history when it is started. Every time you click [Read alarm history] button, the latest history will be displayed.

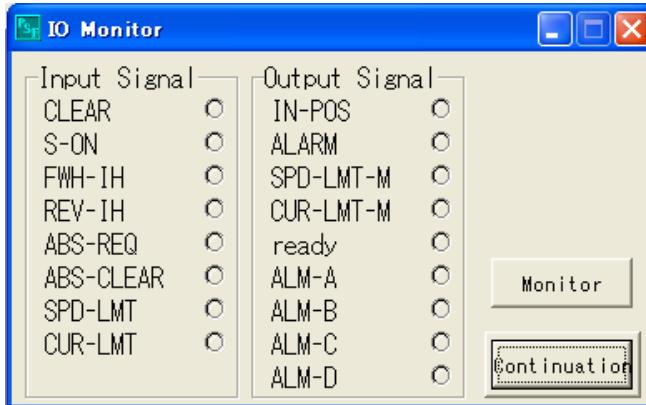
You can clear the alarm history.  
We recommend that you clear the history when ship finished devices or when you make a periodical maintenance.  
When you click [Alarm history] and do not click [Read alarm history] button, nothing will be displayed in the alarm history display area. Click [Read alarm history] button and check the history has been cleared.

# Operating program (Description of screen, IO monitor)

## IO monitor

The monitor reads and displays the status of the input and output signals of the CN2 (control input/output connector) of HA-655/675. The circle mark to the right of the signal name is displayed in red when the signal is inputted or outputted.

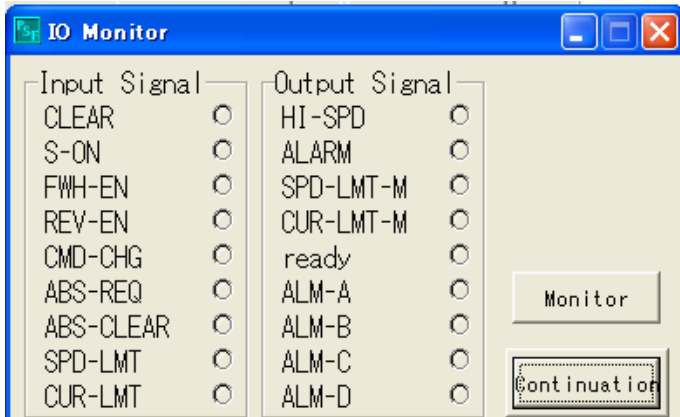
IO monitor screen for position control



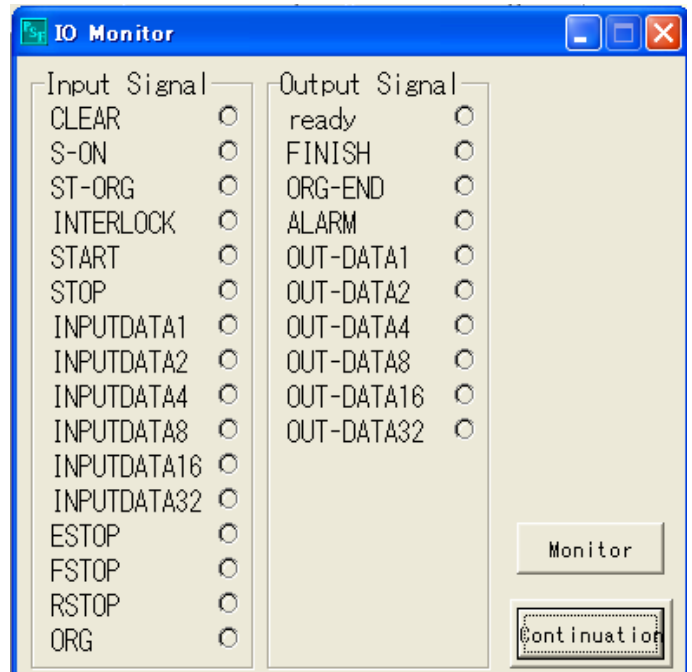
Click this to display the current status.

Click this to continuously display the current status with 1s sampling cycle. Click this again to stop monitoring.

IO monitor screen for speed control



IO monitor screen when HA-675 is connected



# Operating program (Description of screen, Waveform monitor)

## Waveform monitor

The waveform monitor allows you to observe the motor (actuator) rotation speed, motor (actuator) current and the status of the deviation counter ( $\pm 128$  pulse position control) as a waveform.

The screenshot shows the 'Wave Monitor' software interface. It features three main waveform displays on the left: Speed, Current, and Deviation. Each display has a corresponding control panel on the right with a rotary knob and radio buttons for resolution and scaling. A 'Trigger Menu' window is open, showing two waveform examples. At the bottom right, there are four buttons: Run, Save, Load, and Print. Red arrows point from labels to specific UI elements.

- Trigger position
- Speed resolution
- Speed waveform display
- Current waveform display
- Status of the deviation counter
- Waveform display method
- Trigger
- Current resolution
- Sampling time
- Resolution of the deviation amount
- Execute button
- Save button
- Read button
- Print button

※ Though the current waveform may be superimposed on the previous one by selecting the waveform display method, the previous waveform will not be displayed after the trigger has been changed.

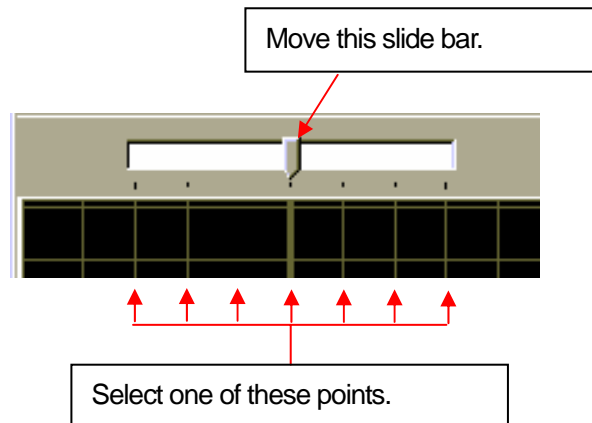
This close-up shows a portion of the waveform display. A red waveform is overlaid on a yellow waveform. Red and yellow arrows point from text boxes to the respective waveforms.

- The previous waveform is displayed in yellow.
- This waveform is displayed in red.

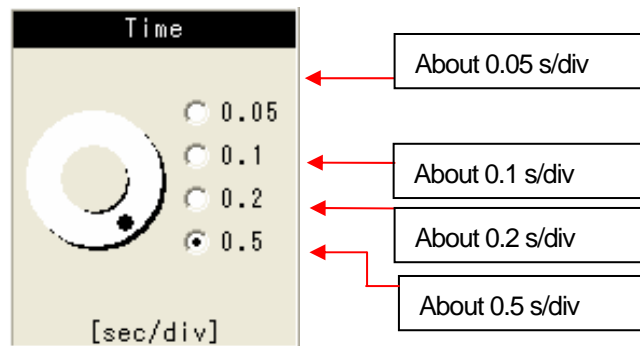
## Operating program (Description of screen, Waveform monitor)

### Operation procedure of the waveform monitor

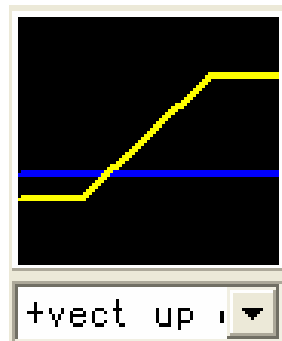
(1) Set the trigger position.



(2) Set the sampling time.

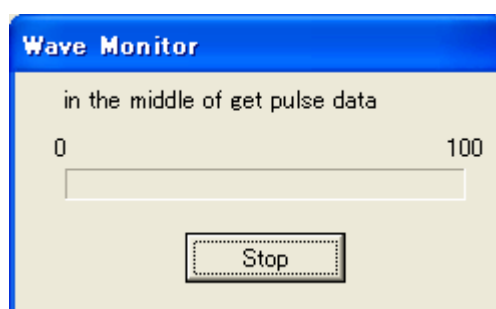


(3) Set the trigger.



- + direction start: This is triggered by the point where the actuator started rotation in a CW direction.
- + direction stop: This is triggered by the point where the actuator started slowing down after it rotated in a CW direction.
- direction start: This is triggered by the point where the actuator started rotation in a CCW direction.
- direction stop: This is triggered by the point where the actuator started slowing down after it rotated in a CCW direction.
- No trigger: This is triggered by the point where the [Execute] button is clicked.

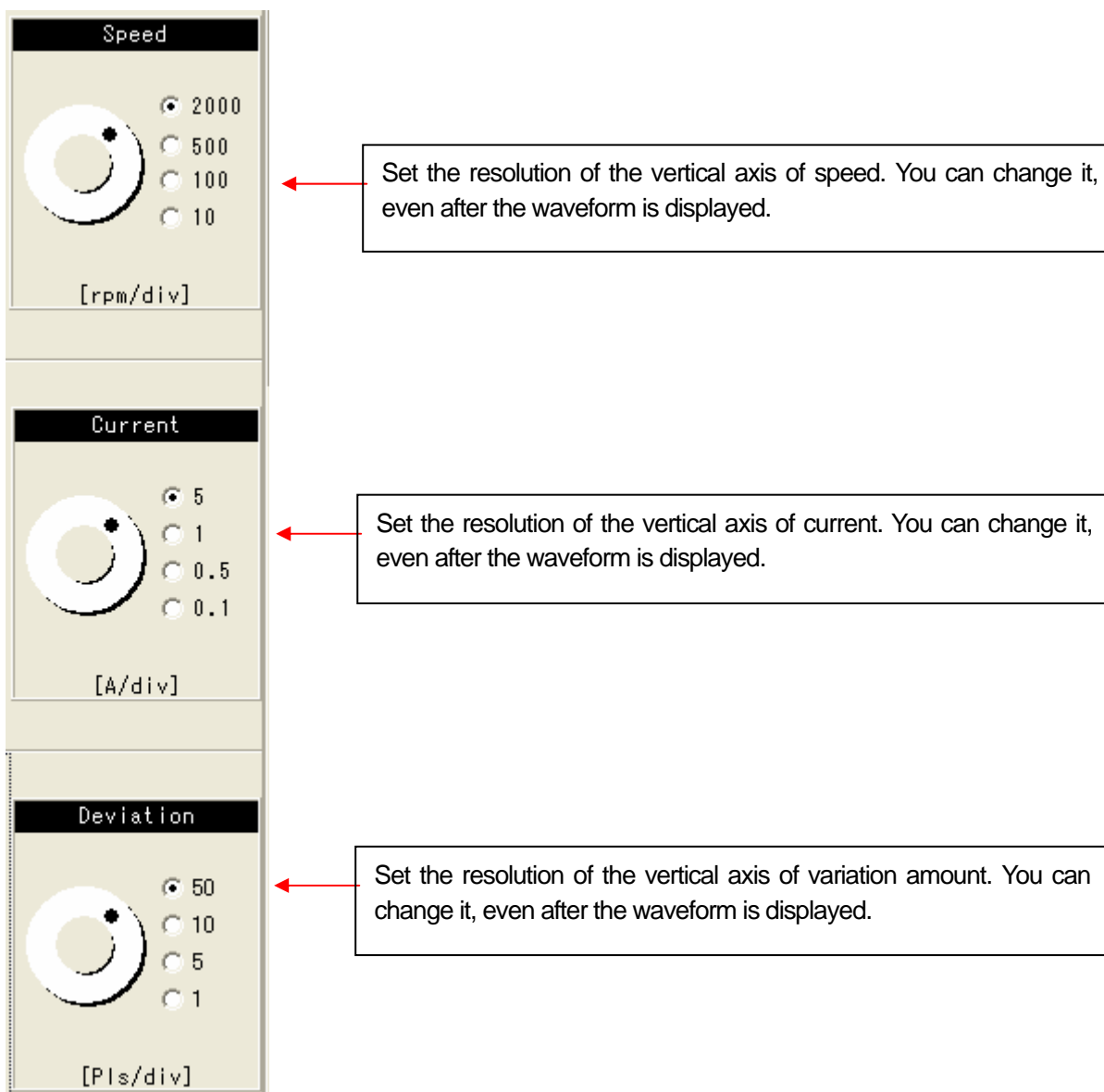
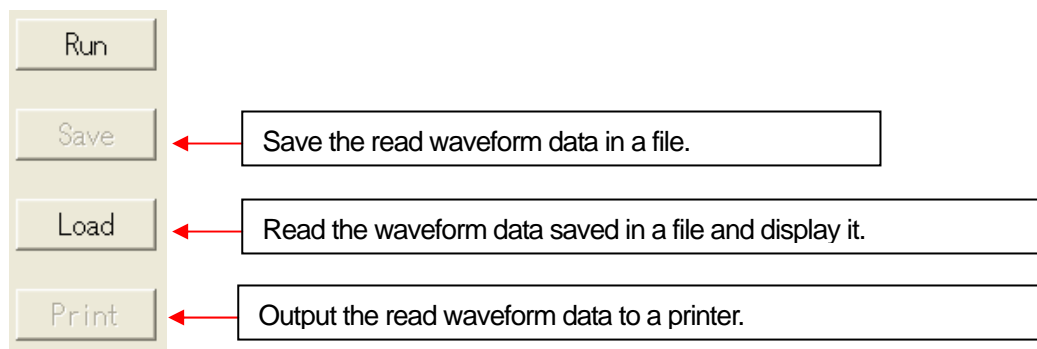
(4) Click the [Execute] button.



Clicking the [Execute] button displays the loading window.  
When the specified trigger becomes active, the waveform data is loaded and displayed.  
When you click the [Stop] button before the trigger becomes active, the waveform loading stops.

## Operating program (Description of screen, Waveform monitor)

### (5) Processing the read data



# Operating Program (Description of screen, JOG operation)

## JOG operation

When you have finished the wiring of the HA-655/675 and the actuator, you can check the operation using this function.

The screenshot shows a software window titled "JOG" with a blue header and a close button. The interface includes:

- A "Speed" input field with the value "10" and the unit "r/m".
- An "Acceleration" input field with the value "1" and the unit "x 100ms".
- A "change" button to the right of the speed field.
- Two start buttons: "CW start" and "CCW start".
- A "Click" checkbox and a "Start Click OFF" button.
- A small display showing "0 r/m".

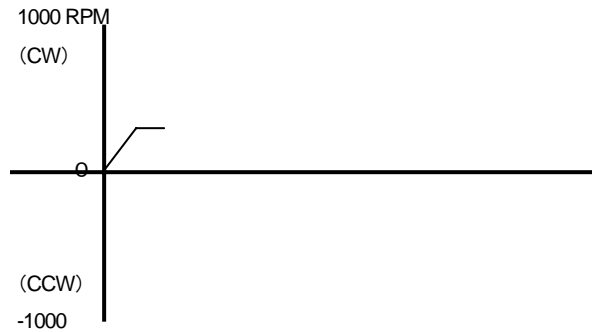
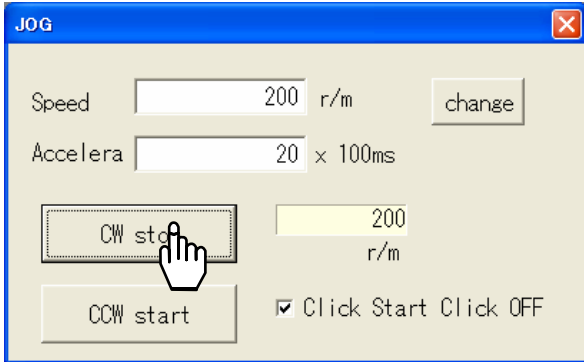
Callout boxes provide the following information:

- Top-left:** The JOG frequency set for HA-655/675 is displayed. You can also change the set value.
- Top-right:** Click this button and change the setting to change the frequency, acceleration and deceleration. (You may not change the acceleration and deceleration during the JOG operation.)
- Left:** The JOG acceleration and deceleration set for HA-655/675 are displayed. Though you can change the set value, you may not do so during the JOG operation.
- Right:** The frequency is displayed during the actuator operation.
- Bottom-left:** The JOG operation of the actuator starts. The operation is determined by the status of the continuous checkbox. To re-activate the JOG operation after its termination, this button does not function unless the motor has completely stopped.
- Bottom-right:** When you check the checkbox and click the start button, the JOG operation starts. When you click the button again, it terminates. When you don't check the checkbox, left mouse clicking the start button activates the JOG operation and releasing the button terminates operation.

# Operating Program (Description of screen, JOG operation)

## 【Example of use】

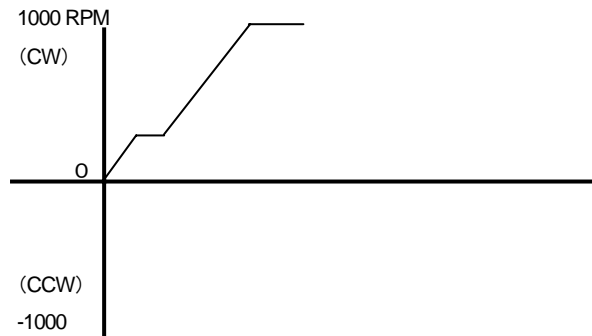
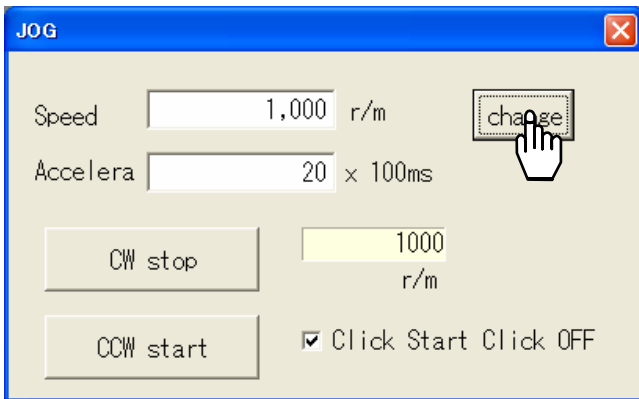
(1)



Acceleration from 0 to 200 RPM in 2s.

If you click the [CW start] button when the motor is at a standstill, the [CW start] button changes to the [CW stop] button. The motor accelerates to the preset frequency within the preset acceleration/deceleration time. You may not change the acceleration/deceleration time (2s/200 RPM for (1)) until the motor stops or changes the direction of rotation.

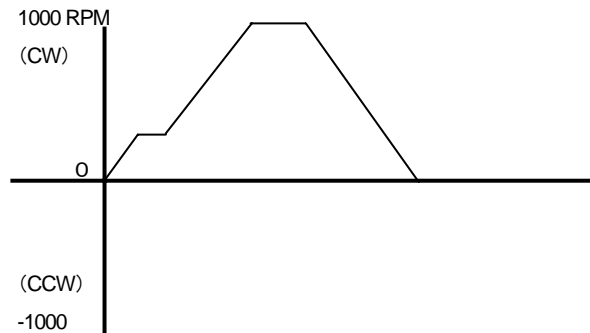
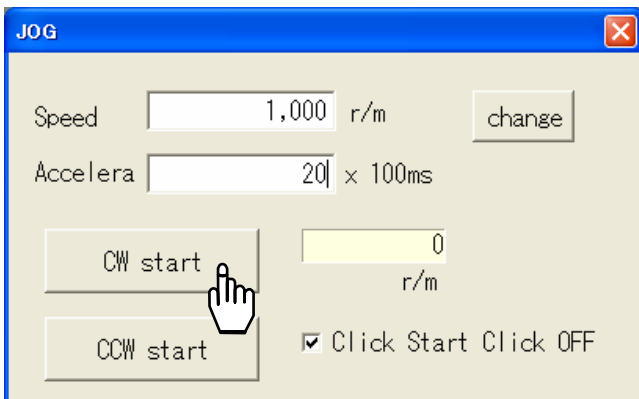
(2)



Acceleration from 200 to 1000 RPM in 8s.

If you change the frequency and click the [Change] button, the motor accelerates to 1000 RPM, according to the acceleration/deceleration time set by (1). The acceleration time will be  $(1000-200)/200 \times 2 = 8s$ , as 2s/200 RPM set by (1) is valid.

(3)

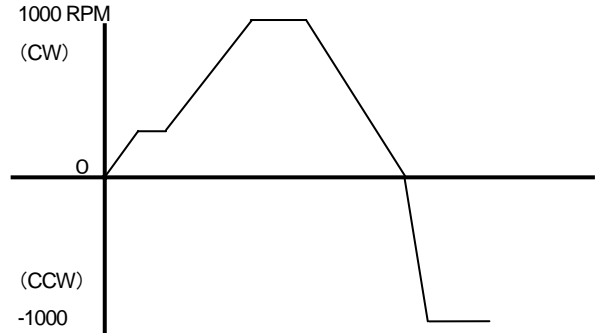
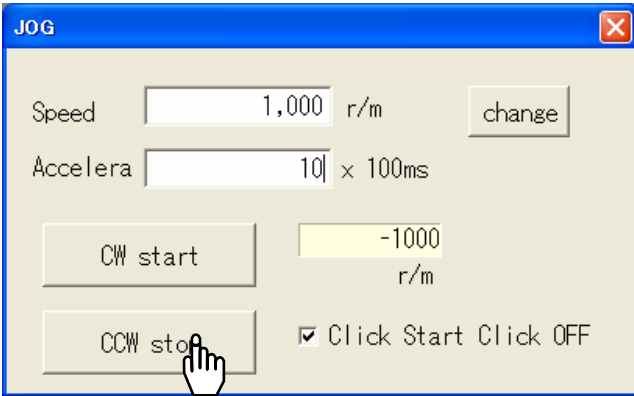


Stopped from 1000 RPM in 10s.

If you click the [CW stop] button, the motor decelerates and stops, according to the acceleration/deceleration time set by (1). The deceleration time will be  $1000/200 \times 2 = 10s$ , as 2s/200 RPM set by (1) is valid.

# Operating Program (Description of screen, JOG operation)

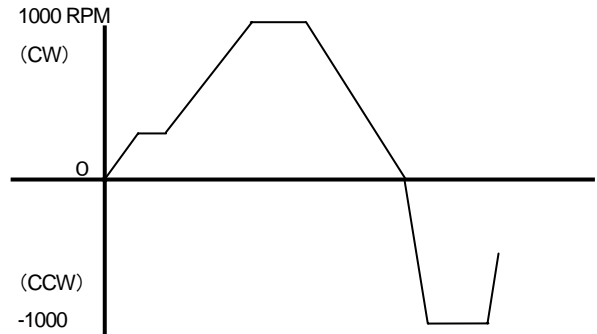
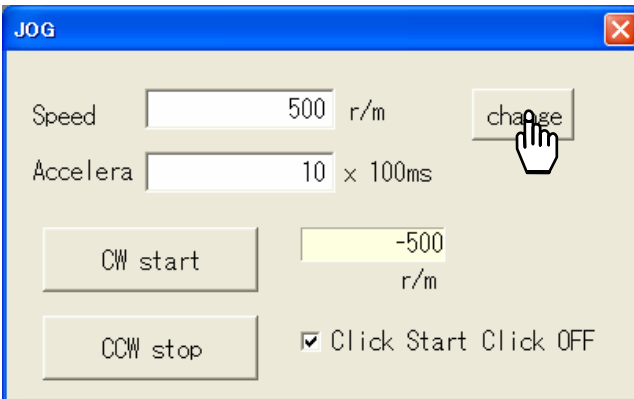
(4)



Deceleration from 0 to -1000 RPM in 1s.

If you click the [CW start] button when the motor is at a stop, the [CW start] button changes to the [CW stop] button. The motor accelerates to the preset frequency within the preset acceleration/deceleration time. You may not change the acceleration/deceleration time (1s/100 RPM for (4)) until the motor stops or changes the direction of rotation.

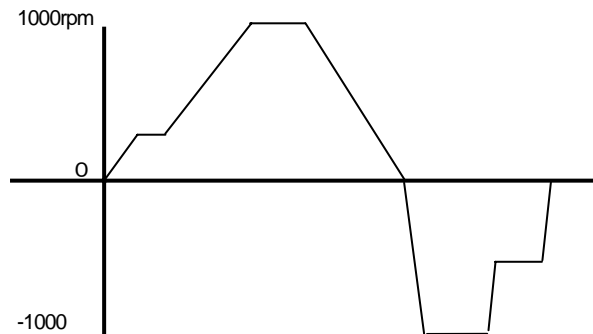
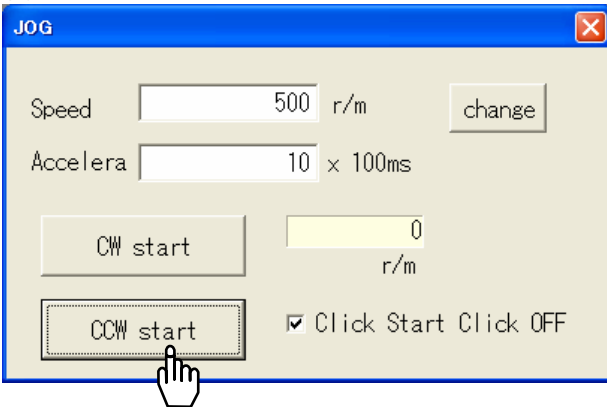
(5)



Deceleration from 0 to -500 RPM in 0.5s.

If you change the frequency and click the [Change] button, the motor decelerates to 500 RPM according to the acceleration/deceleration time set by (4). The deceleration time will be  $(1000-500)/1000 \times 1 = 0.5s$ , as 1s/1000 RPM set by (1) is valid.

(6)



Stopped from -500 RPM in 0.5s.

If you click the [CW stop] button, the motor decelerates and stops, according to the acceleration/deceleration time set by (4). The deceleration time will be  $500/1000 \times 1 = 0.5s$ , as 1s/1000 RPM set by (4) is valid.





Certified to ISO14001 (HOTAKA Plant) / ISO9001 (TUV Management Service GmbH)  
All specifications and dimensions in this manual are subject to change without prior notice.

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