

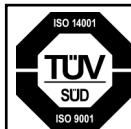
Harmonic Drive[®]

For HA-800C/HA-680CL
Operation Data Preparation Program

PSF-680CL Operation Manual

- 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.

This manual covers
PSF-680CL Ver.2.1*



ISO14001
(HOTAKA Plant)

ISO9001

Introduction

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Log on to <http://www.hds.co.jp>, move to the catalog request page, and enter your comment/request in the comment field and click the Send button.
- E-mail
Send your comment/request to marketing@hds.co.jp.
- FAX
Send your comment/request to any of our sales offices listed on the back cover of this manual.

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SO14001

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Chapter 1 Outlines of PSF-680CL

The PSF-680CL software lets you create operation data for the CC-Link servo drivers HA-800C and HA-680CL.

It runs on Windows and allows for creation of operation data with simple steps.

1-1 Setup

You can download the PSF-680CL from our website (<http://www/hds.co.jp>).

The downloaded files are compressed, so extract them into an appropriate folder. Thereafter, run SETUP.EXE to set up the software according to the on-screen instructions.

1-2 Operating environment

PSF-680CL needs the following environment to operate correctly.

Be sure to use PSF-680CL in the following environment to prevent malfunction.

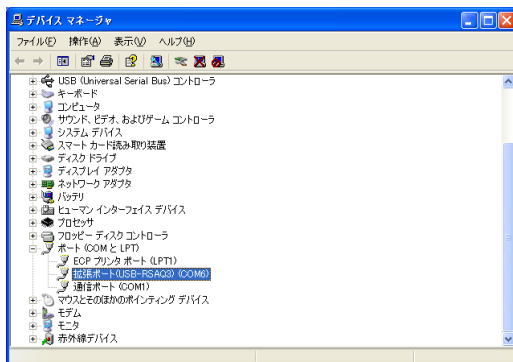
Computer	Personal computer running Windows Me, NT, 2000 or XP, having a built-in RS-232C communication port or USB* port
OS	Windows/Me, Windows NT/2000 and/or Windows Xp
Memory	Memory size required by each OS or more
Hard disk	Free disk space of 3 MB or more (Additional free disk space is needed if created data will be saved.)
Display	256 colors or more
	<ul style="list-style-type: none"> • Microsoft mouse, Microsoft Intel mouse or other compatible pointing device • Printer operating on the specified OS, if created data will be printed

* If a USB port is used, you need an adapter to convert the USB port to a RS-232C port. (USB-RSQQ3 IO data, etc.)

The built-in RS-232C port of the personal computer is normally assigned to COM1. However, this assignment changes if a USB conversion adapter is used. Perform the following setting procedure:

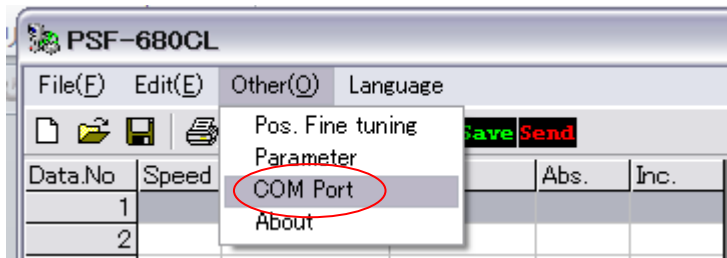
(1) Go to "Control Panel", open "System", and display "Device Manger."

(2) Check the port (COM) details. (In the following example, COM6 is assigned.)

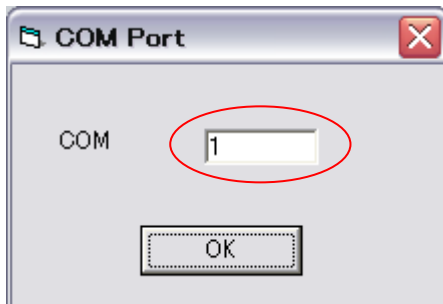


(3) Change the port number using one of the methods described in (1) or (2) below. Note that (1) is available only for PSF-680CL-V2.1* or later.

(1) Start PSF-680CL, click the Other menu, and select COM Port.



Enter the COM Port number and click the OK button.



(2) Before starting PSF-680CL, use Text Editor to open PSF-680I.INI in the installed folder and change COM1 in ConnectString=COM1,19200,E,7,1 in line 11 with the port number you have checked in Device Manager.

1-3 Setting the connection target

Before starting PSF-680CL, set the connection target.

Use Text Editor to open PSF-680CL.INI in the installed folder, make the above change, and then select Save As.

(1) When connecting to the HA-800C driver (The HA-800C has been selected by default during the installation.)

```

;
; 0:Japanese,1:English
;
[System]
Language=0
Target=HA-800C
;Target=HA-680CL

```

(2) When connecting to the HA-680CL driver.

```

;
; 0:Japanese,1:English
;
[System]
Language=0
;Target=HA-800C
Target=HA-680CL

```

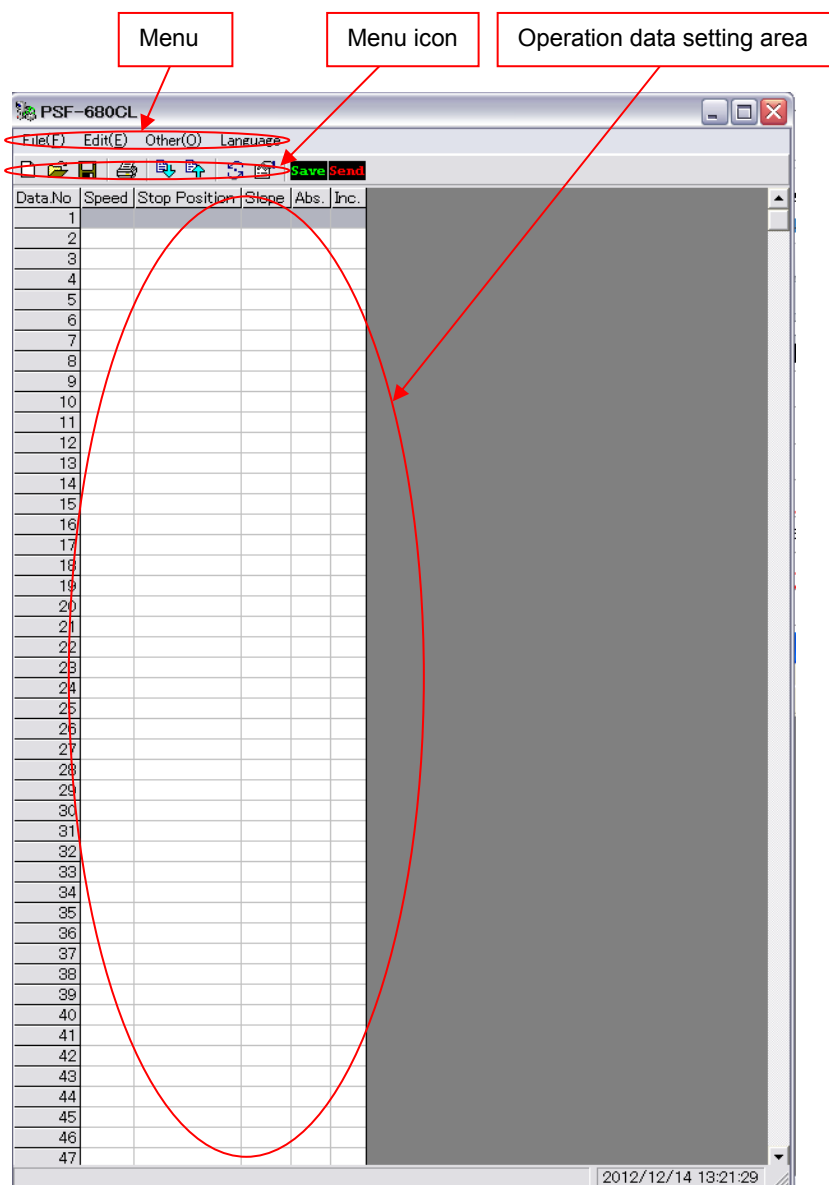
Chapter 2 Starting the program

When PSF-680CL is started, Operation Data Creation Screen where you can create operation data opens. In addition to the operation data creation screen, Displacement Compensation Screen for fine-tuning of movement data, and Parameter Setting Screen for setting parameters, are available in PSF-680CL. Each screen is explained below.

2-1 Setting up the HA-800C/HA-680CL

So that the HA-800C/HA-680CL can communicate with PSF-680CL, set the station number rotary switches on the HA-800C/HA-680CL to 70. If these switches are not set to 70, communication cannot be established.

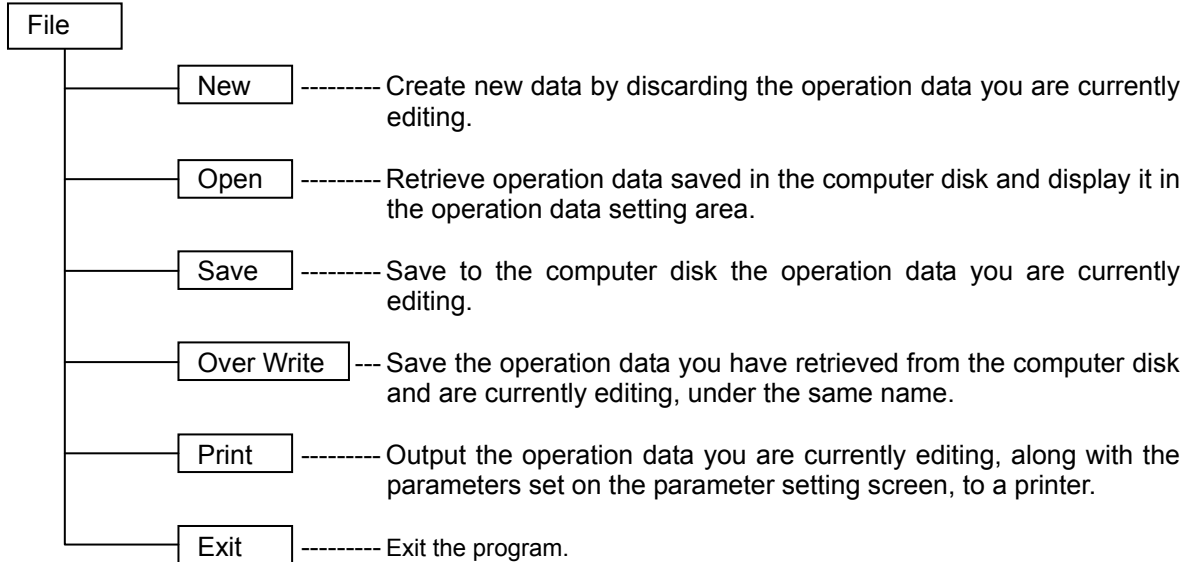
2-2 Operation data creation screen



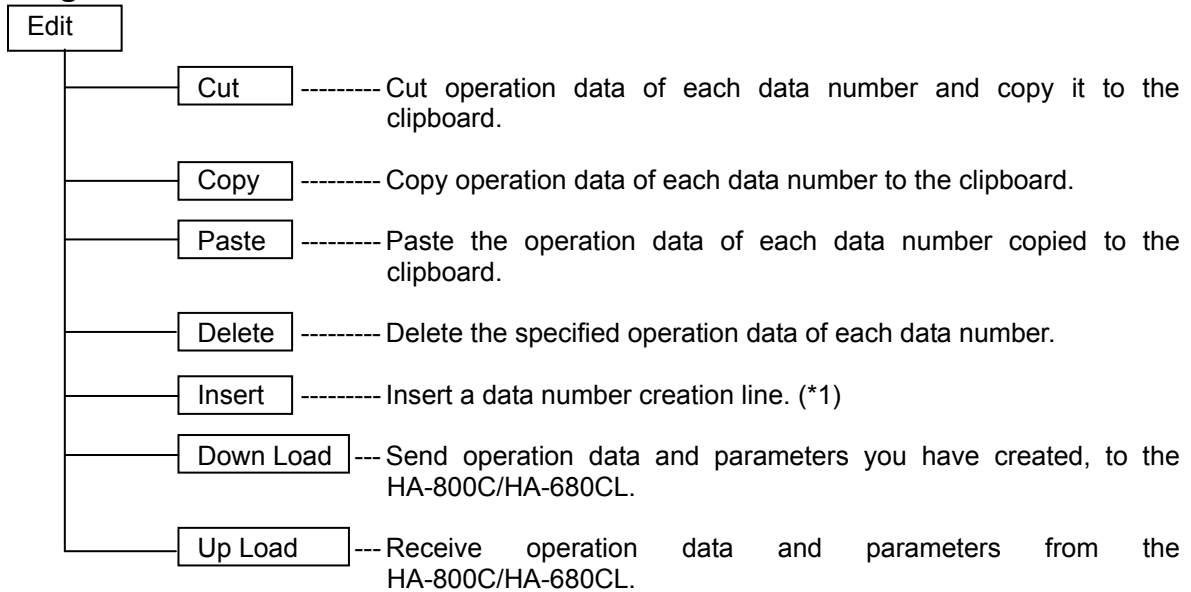
2-2-1 Menu

PSF-680CL provides menus from which you can perform various operations. The details of menus are as follows.

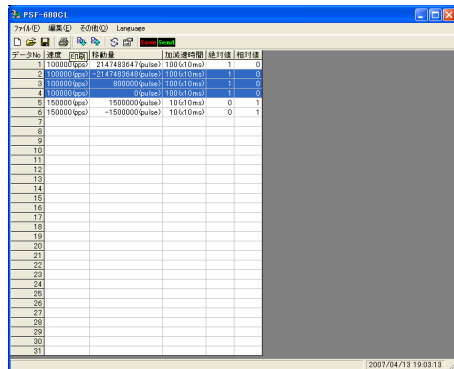
File menu



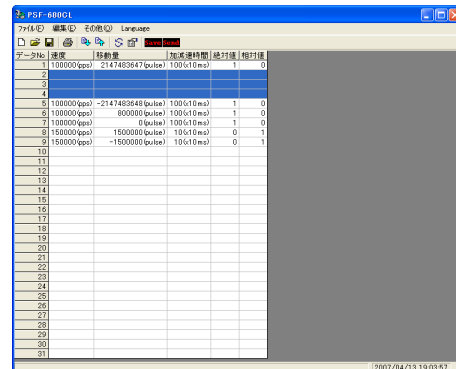
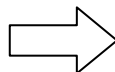
Editing menu



*1

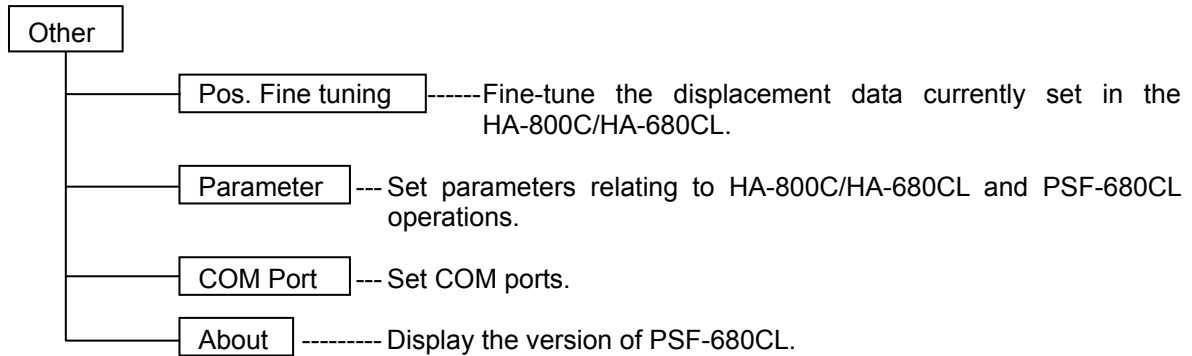


Select 3 lines.

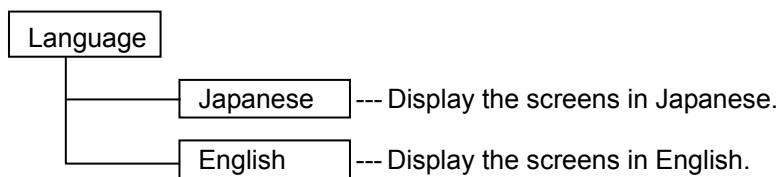


3 lines are inserted.

Other menus

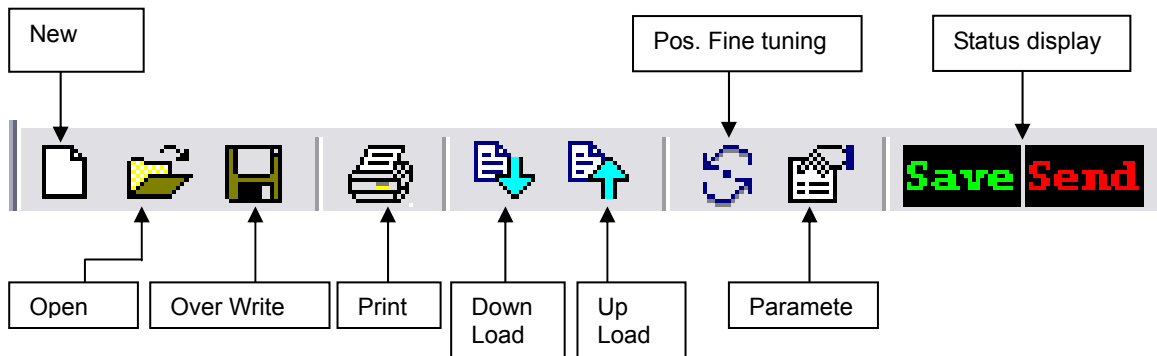


Other menus for Language



2-2-2 Icon

Among the various operations available in PSF-680CL, frequently used operations can be performed not only from the menus, but also by clicking the corresponding icons. The menu icons are shown below. Clicking these icons have the same effects as selecting the corresponding menu items.



Status display	<p>The status of the operation data you are currently creating is displayed.</p> <p>If the operation data you are currently creating is not yet saved to the computer disk, Save is shown in red. If the data has been saved, it is shown in green.</p> <p>If the operation data you are currently creating is not yet sent to the HA-800C/HA-680CL, Send is shown in red. If the data has been sent, it is shown in green.</p>
----------------	---

2-2-3 Operation data setting area

The operation data you have created is displayed.

Data.No	Speed	Displacement	Acceleration/ deceleration time	Displacement mode display	
Data.No	Speed	Stop Position	Slope	Abs	Inc.
1	10000(pps)	2147483647(pulse)	100(ms)	1	0
2					
3					
4					
5	10000(pps)	-2147483648(pulse)	100(ms)	1	0
6	10000(pps)	800000(pulse)	100(ms)	1	0
7	10000(pps)	0(pulse)	100(ms)	1	0
8	150000(pps)	1500000(pulse)	10(ms)	0	1
9	150000(pps)	-1500000(pulse)	10(ms)	0	1
10					

Data No.

- **Descriptions of functions**

Operation data consists of speed, displacement, acceleration/deceleration time and displacement mode. These items are grouped together and assigned a data number.

Move the mouse cursor to the line corresponding to the data number under which you want to create operation data and then double-click the mouse, and the operation data creation screen will open where you can create operation data.

The dialog box titled "Data No. 1" contains the following fields and options:

- Speed:** A numeric input field with the value "10000" and the unit "(pps)".
- Stop Position:** A numeric input field with the value "2147483647" and the unit "(pulse)".
- Slope:** A numeric input field with the value "100" and the unit "(ms)".
- Displacement Mode:** Two radio buttons labeled "Absolute" (which is selected) and "Incremental".
- Buttons:** "OK" and "Cancel" buttons at the bottom right.

Speed

- **Descriptions of functions**

Specify the speed at which to move the actuator to the position specified by the Stop Position data under this data number.

The unit of speed is the one set in the [Speed unit] parameter on the parameter setting screen.

pps: Pulse/second

rpm: 1/100 r/min

This unit applies to all addresses and different units cannot be used at the same time. Even when the data value is the same, the actuator speed varies depending on the unit.

Convert the unit using the conversion formula below.

$$\text{rpm value} = \frac{\text{p/s value} / \text{Actuator resolution}}{60}$$

$$\text{p/s speed value} = \frac{\text{rpm speed value}}{60} \times \text{Actuator resolution}$$

The actuator will not move unless speed data is entered.

- **Operations**

- (1) Double-click the address you want to set.
- (2) This opens the data creation screen as shown below.
- (3) Enter the speed in the Speed data box.
- (4) Click the OK button, and the set value will be reflected in the operation data setting area.

The screenshot shows a dialog box titled "Data No. 1" with a close button in the top right corner. The dialog is divided into three main sections for data entry: "Speed", "Stop Position", and "Slope". Each section has a numeric input field and a unit label. The "Speed" field contains "10000" and "(pps)". The "Stop Position" field contains "2147483647" and "(pulse)". The "Slope" field contains "100" and "(ms)". To the right of these fields are two radio buttons: "Absolute" (which is selected) and "Incremental". At the bottom right of the dialog are two buttons: "OK" and "Cancel".

Displacement

- **Descriptions of functions**

Set the position at which to stop the actuator.



The stop position can be set as a relative value (increment) or absolute value. Whether to use a relative value or absolute value is set at the time of programming.

The unit of displacement is the one set in the [POS. unit] parameter on the parameter setting screen.

pulse: Pulse unit

1/1000 deg: Data is set in units of 1/1000°.

If pulse has been selected as the setting unit and you want to convert the set value into angle, use the calculation formula below to do the conversion.

$$\text{Angle position} = \frac{360}{\text{Actuator resolution}} \times \text{Pulse value set}$$

The actuator will not move unless displacement data is input.

The setting range is +360.000 to -360.000 when the unit is 1/1000°, and -2,147,483,648 to 2,147,483,647 when the unit is pulse. Note that, with the HA-680CL, the actuator will move infinitely in the CCW direction at the set speed when a data number under which -2,147,483,648 is set is executed. To stop the actuator, set RYnF: Decelerates to Stop to 1 via CC-Link. When a data number under which 2,147,483,647 is set is executed, the actuator will move infinitely in the CW direction at the set speed. To stop the actuator, set RYnF: Decelerates to Stop to 1 via CC-Link.

- **Operations**

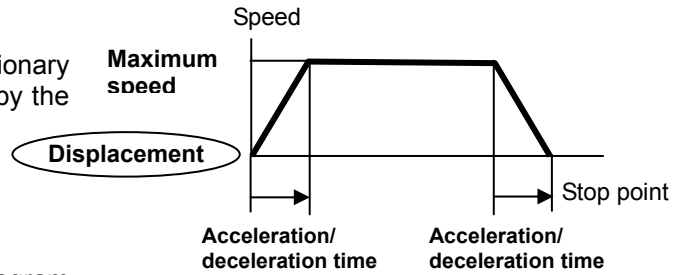
- (1) Double-click the address you want to set.
- (2) This opens the data creation screen as shown below.
- (3) Enter data in the Stop Position data box.
- (4) If the entered data represents an absolute position, click Absolute. If it represents a relative position, click Incremental.
- (5) Click the OK button, and the set value will be reflected in the operation data setting area.

Speed	Stop Position	Slope	Mode
10000 (pps)	2147483647 (pulse)	100 (ms)	<input checked="" type="radio"/> Absolute <input type="radio"/> Incremental

Acceleration/deceleration time

- Descriptions of functions**

Set the time it will take for the stationary actuator to reach the speed specified by the Maximum Speed data.

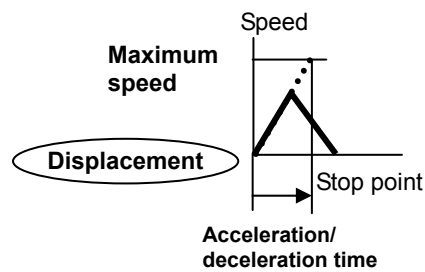


The moving time in the top speed diagram on the right is calculated using the formula below.

When Displacement \geq Maximum speed x Acceleration/deceleration time (Unit: Pulse)

$$\text{Moving time (sec)} = \frac{\text{Displacement}}{\text{Maximum speed}} + \text{Acceleration/deceleration time}$$

In the middle diagram on the right, however, the actuator starts to decelerate before the Maximum Speed is reached.



In this case, the moving time is calculated using the formula below.

When Displacement $<$ Maximum speed x Acceleration/deceleration time (Unit: Pulse)

$$\text{Moving time (sec)} = 2 \times \sqrt{\frac{\text{Displacement}}{\text{Maximum speed}}} \times \text{Acceleration/deceleration time}$$

The actuator will not move unless acceleration/deceleration time is entered.

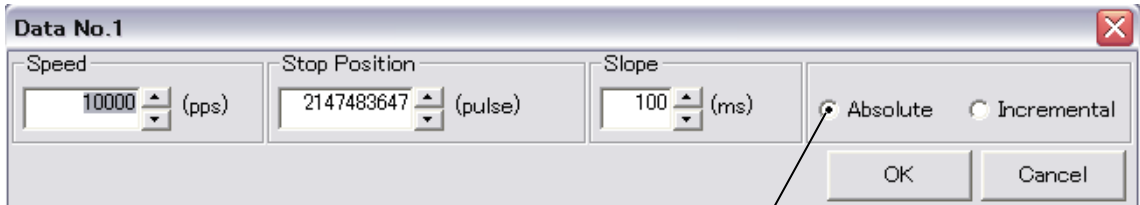
- Operations**

- (1) Double-click the address you want to set.
- (2) This opens the data creation screen shown to the right.
- (3) Enter data in the data box.
- (4) The actual acceleration/deceleration time corresponds to the set value (ms) in the case of the HA-800C, or the set value x 10 (ms) in the case of the HA-680CL.
- (5) Click the OK button, and the set value will be reflected in the operation data setting area.

Set the displacement mode

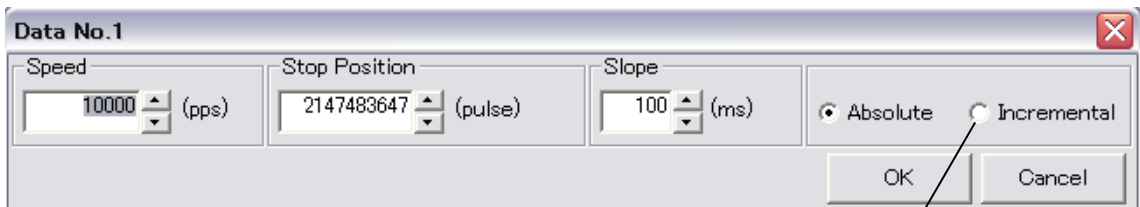
- **Descriptions of functions**

For the data to be set as the amount of actuator operation, either an absolute value or relative value can be specified. If an absolute value has been specified, 1 is shown under Absolute in the displacement mode display area. If a relative value has been specified, 1 is shown under Incremental.



The screenshot shows a dialog box titled "Data No. 1" with a close button (X) in the top right corner. It contains three input fields: "Speed" with the value "10000" and unit "(pps)", "Stop Position" with the value "2147483647" and unit "(pulse)", and "Slope" with the value "100" and unit "(ms)". To the right of these fields are two radio buttons: "Absolute" (which is selected) and "Incremental". Below the radio buttons are "OK" and "Cancel" buttons.

1 is shown under Absolute.



The screenshot shows the same "Data No. 1" dialog box as above, but with the "Incremental" radio button selected instead of "Absolute". The "Speed", "Stop Position", and "Slope" fields remain the same. The "OK" and "Cancel" buttons are also present.

1 is shown under Incremental.

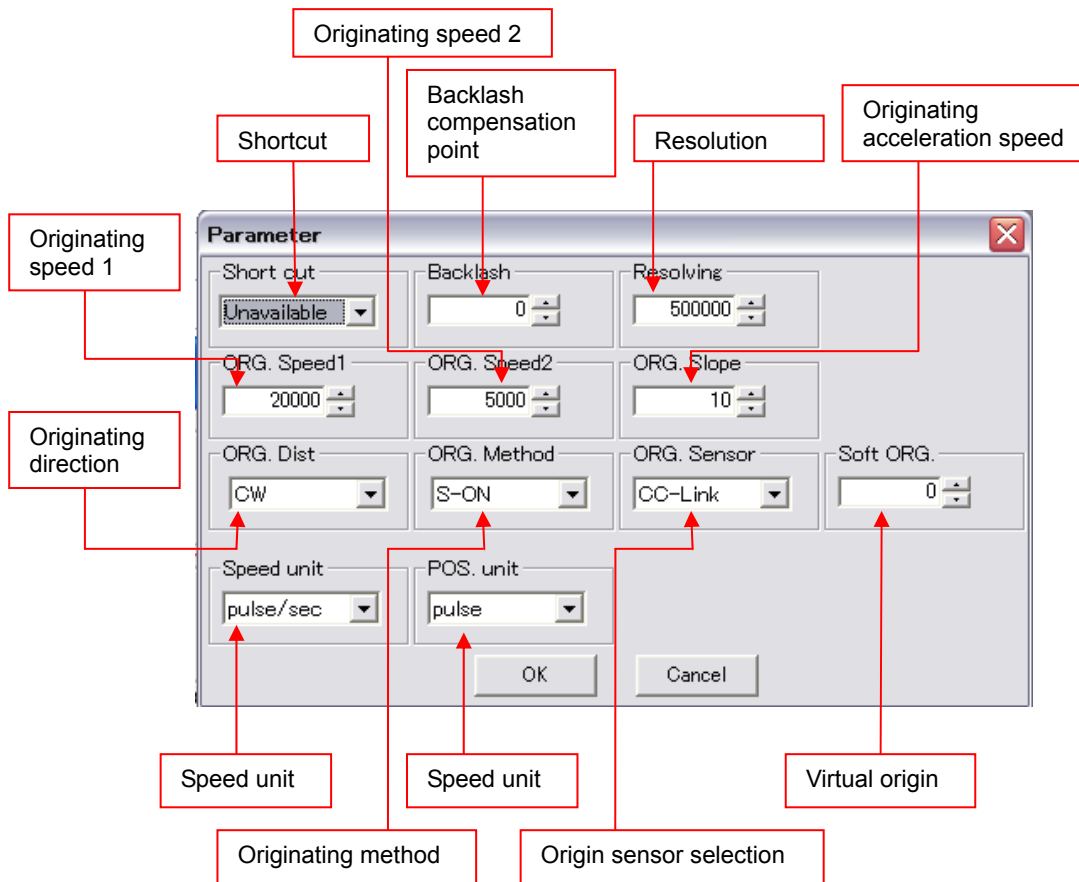
Chapter 3 Parameter setting

3-1 Explanation of screens

The parameter setting screen lets you set parameters relating to HA-800C/HA-680CL operation or PSF-680CL operation.

Normally when PSF-680CL is started to create a operation program, open the parameter setting screen and set the necessary information first, before creating an operation program.

Specifically, click the applicable icon or select "Parameters" from the Other menu. When the following parameter setting screen appears, set the parameters you want to set.



* The parameters you have changed can be sent to the HA-800C/HA-680CL by selecting Down Load from the Edit menu, provided that the parameters set in the HA-800C/HA-680CL have been read from the driver or from a file by selecting Up Load in the Edit menu.

3-2 Detailed explanation of parameters

Shortcut

- **Descriptions of functions**

If the actuator's drive mechanism rotates, turning in the opposite direction may sometimes shorten the positioning time depending on the travel angle. This is called Shortcut operation. Note, however, that repeating a shortcut operation with a hollow type actuator having wires, etc., passed through its hollow shaft may cause damage. Here, specify whether or not to perform this shortcut operation.

Unavailable: Do not permit shortcut.

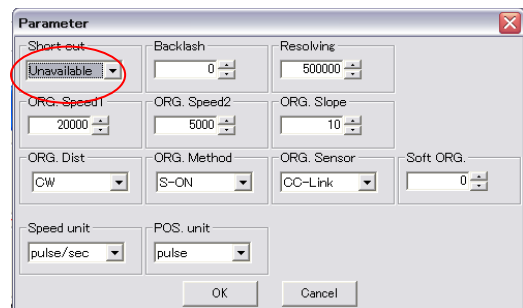
Available: Permit shortcut.

If the actuator is to move linearly, set 0: Shortcut operation disable.

- **Operations**

- (1) Enter data in the Short cut data box on the parameter setting screen.
- (2) Click the OK button.

* **The data you have set will not become effective until it is transferred to the HA-800C/HA-680CL. Once the parameters have been set, be sure to transfer them to the HA-800C/HA-680CL.**



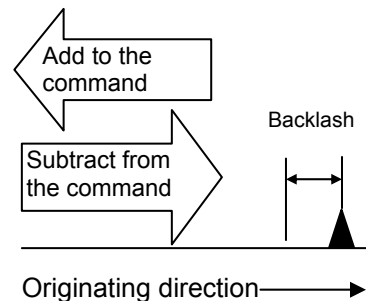
Backlash offset

- **Descriptions of functions**

If the drive mechanism of the actuator has a backlash, the set value will be incremented/decremented every time the actuator reverses its moving direction to compensate for the backlash and thereby improve the positioning accuracy.

When the actuator moves in the direction opposite the originating direction, the backlash offset value is added to the command pulses.

When the actuator moves in the same direction as the originating direction, the backlash offset value is subtracted from the command pulses.



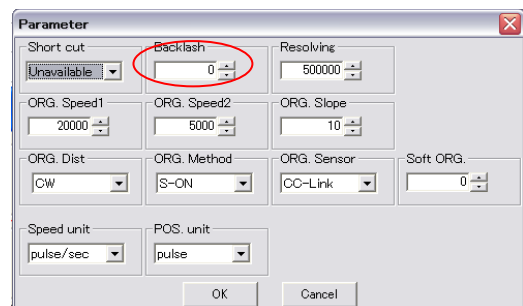
- **Details of set value**

The setting range of values is 0 to 32,767. The units are in pulses.

- **Operations**

- (1) Enter data in the Backlash data box on the parameter setting screen.
- (2) Press the OK button.

* **The data you have set will not become effective until it is transferred to the HA-800C/HA-680CL. Once the parameters have been set, be sure to transfer them to the HA-800C/HA-680CL.**



Resolution

- **Descriptions of functions**

Set the number of pulses per actuator rotation.

If an additional speed reducer is installed on the actuator, the number of pulses per actuator rotation is multiplied by the reduction ratio. For the number of pulses per actuator rotation, refer to the manual for each actuator.

- **Details of set value**

The setting range of values is as follows. The units are in pulse/sec.

HA-800C: 10 to 2,147,483,647

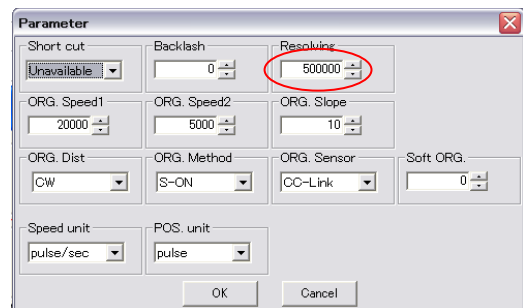
HA-680CL: 1 to 10,027,007

- **Operations**

(1) Enter data in the Resolving data box on the parameter setting screen.

(2) Click the OK button.

* **The data you have set will not become effective until it is transferred to the HA-800C/HA-680CL. Once the parameters have been set, be sure to transfer them to the HA-800C/HA-680CL.**



* This data provides the reference in the case of shortcut operation. If shortcut operation is not performed, changing this data will not affect the actual operation.

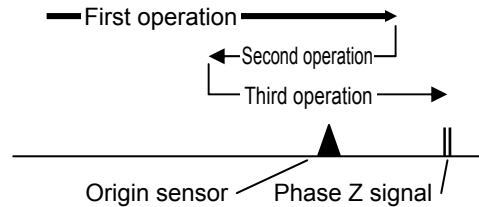
Originating speed 1

• Descriptions of functions

Set the speed of first originating operation.

With the HA-680CL driver, this is done in the sequence shown below.

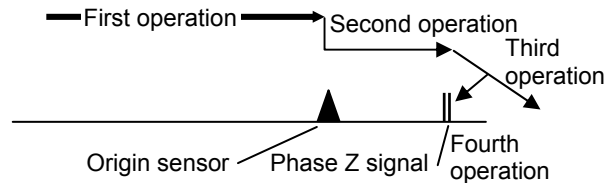
- (1) First operation in which the actuator moves to detect the origin sensor
- (2) Second operation in which the actuator passes the origin sensor and reverses its position and then moves, at low speed, to detect the origin sensor again
- (3) Third operation in which the actuator reverses its position again and moves to detect the phase Z signal of the encoder



Originating speed 1 is reflected in the first operation in (1).

With the HA-800C driver, this is done in the sequence shown below.

- (1) First operation in which the actuator moves to detect the origin sensor
- (2) Second operation in which the actuator, after detecting the origin sensor, moves to detect the phase Z signal
- (3) Third operation in which the actuator detects the Z signal and then decelerates to stop



- (4) Fourth operation in which the actuator returns the distance it has overshoot while decelerating
- Originating speed 1 is reflected in the first operation in (1).

• Details of set value

The setting range of values is as follows. Set a value not exceeding the maximum value. The units are in pulse/sec.

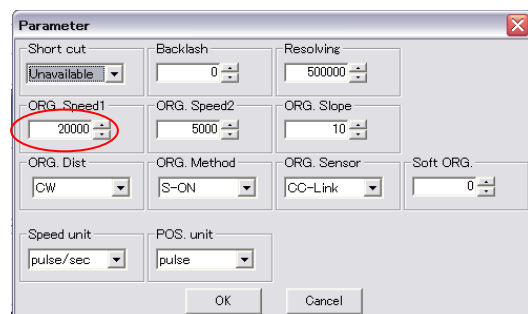
HA-800C: 125 to 2,147,483,647

HA-680CL: 200 to 1,048,575

• Operations

- (1) Enter data in the ORG. Speed1 data box on the parameter setting screen.
- (2) Click the OK button.

* The data you have set will not become effective until it is transferred to the HA-800C/HA-680CL. Once the parameters have been set, be sure to transfer them to the HA-800C/HA-680CL.



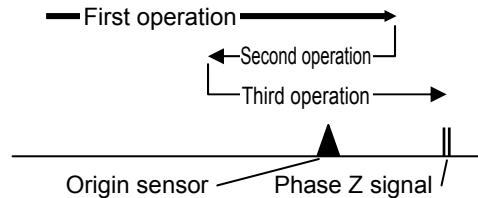
Originating speed 2

- **Descriptions of functions**

Set the speed of second originating operation.

With the HA-680CL driver, this is done in the sequence shown below.

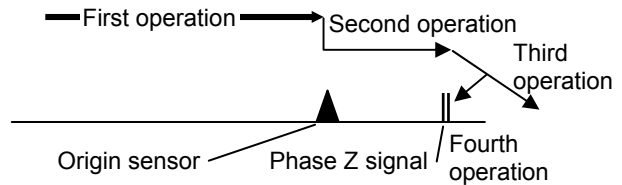
- (1) First operation in which the actuator moves to detect the origin sensor
- (2) Second operation in which the actuator passes the origin sensor and reverses its position and then moves, at low speed, to detect the origin sensor again
- (3) Third operation in which the actuator reverses its position again and moves to detect the phase Z signal of the encoder



Originating speed 2 is reflected in the second and third operations in (2) and (3).

With the HA-800C driver, this is done in the sequence shown below.

- (1) First operation in which the actuator moves to detect the origin sensor
- (2) Second operation in which the actuator, after detecting the origin sensor, moves to detect the phase Z signal
- (3) Third operation in which the actuator detects the Z signal and then decelerates to stop



(4) Fourth operation in which the actuator returns the distance it has overshoot while decelerating to stop
Originating speed 2 is reflected in the second, third and fourth operations in (2), (3) and (4).

- **Details of set value**

The setting range of values is as follows. Set a value not exceeding the maximum value. The units are in pulse/sec.

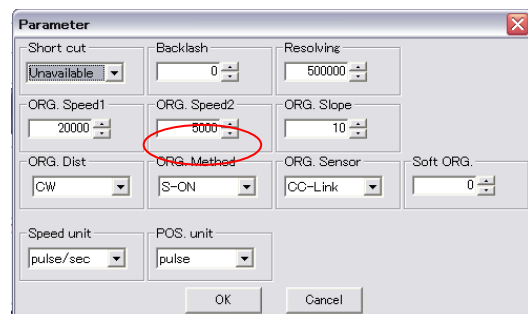
HA-800C: 125 to 32,767

HA-680CL: 200 to 65,535

- **Operations**

- (1) Enter data in the ORG. Speed2 data box on the parameter setting screen.
- (2) Click the OK button.

* **The data you have set will not become effective until it is transferred to the HA-800C/HA-680CL. Once the parameters have been set, be sure to transfer them to the HA-800C/HA-680CL.**



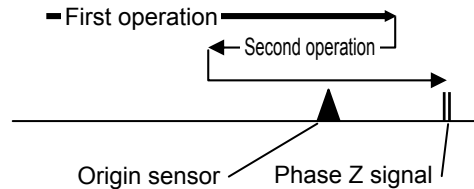
Originating acceleration speed

• Descriptions of functions

Set the acceleration/deceleration time of the originating.

With the HA-680CL driver, this is done in the sequence shown below.

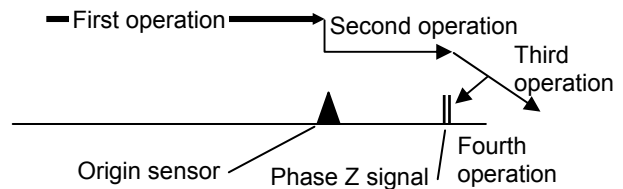
- (1) First operation in which the actuator moves to detect the origin sensor
- (2) Second operation in which the actuator passes the origin sensor and reverses its position and then moves, at low speed, to detect the origin sensor again
- (3) Third operation in which the actuator reverses its position again and moves to detect the phase Z signal of the encoder



The originating acceleration speed is reflected in the acceleration/deceleration time in (1).

With the HA-800C driver, this is done in the sequence shown below.

- (1) First operation in which the actuator moves to detect the origin sensor
- (2) Second operation in which the actuator, after detecting the origin sensor, moves to detect the phase Z signal
- (3) Third operation in which the actuator detects the Z signal and then decelerates to stop



- (4) Fourth operation in which the actuator returns the distance it has overshoot while decelerating to stop
- The originating acceleration speed is reflected in the acceleration/deceleration times in (1), (2), (3) and (4).

• Details of set value

The setting range of values is as follows. Set the time the actuator will take to accelerate to the maximum speed.

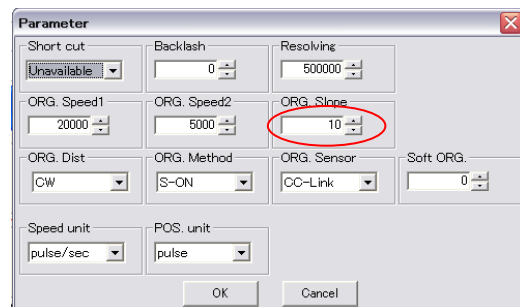
HA-800C: 1 to 9,999 ms

HA-680CL: 0 to 1,000 10 ms

• Operations

- (1) Enter data in the ORG. Slope data box on the parameter setting screen.
- (2) Click the OK button.

* The data you have set will not become effective until it is transferred to the HA-800C/HA-680CL. Once the parameters have been set, be sure to transfer them to the HA-800C/HA-680CL.

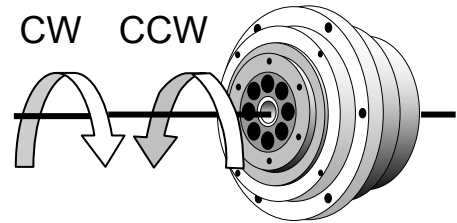


Originating direction

- **Descriptions of functions**

Specify the direction in which the actuator rotates when returning to its mechanical origin.

CW: CW viewed from output
CCW: CCW viewed from output



* **The definition of rotation direction varies depending on the actuator. The foregoing applies to the FHA series. For details, refer to the manual of your actuator.**

- **Operations**

- (1) Select CW or CCW from the pull-down menu in the ORG. Dist data box on the parameter setting screen.
- (2) Click the OK button.

* **The data you have set will not become effective until it is transferred to the HA-800C/HA-680CL. Once the parameters have been set, be sure to transfer them to the HA-800C/HA-680CL.**

A screenshot of a 'Parameter' dialog box. The 'ORG. Dist' dropdown menu is highlighted with a red circle and contains the text 'CW'. Other fields include 'Short cut' (Unavailable), 'Backlash' (0), 'Resolving' (500000), 'ORG. Speed1' (20000), 'ORG. Speed2' (5000), 'ORG. Slope' (10), 'ORG. Method' (S-ON), 'ORG. Sensor' (CC-Link), 'Soft ORG.' (0), 'Speed unit' (pulse/sec), and 'POS. unit' (pulse). 'OK' and 'Cancel' buttons are at the bottom.

Originating method

- **Description of functions**

The HA-800C/HA-680CL uses the origin sensor and encoder Z signal for originating, but if the system does not require originating, the current actuator position can be used as the origin position.

Set in Originating Method which method is used to perform originating.

- **Operations**

- (1) Select Sensor or S-ON from the pull-down menu in the ORG. Method data box on the parameter setting screen.

If Sensor is selected, the actuator performs originating using the origin sensor and phase Z. If S-ON is selected, the current actuator position will be used as the origin position when an originating command is received via CC-Link.

- (2) Click the OK button.

A screenshot of a 'Parameter' dialog box. The 'ORG. Method' dropdown menu is highlighted with a red circle and contains the text 'S-ON'. Other fields are the same as in the previous screenshot, but 'ORG. Dist' is now 'CW'. 'OK' and 'Cancel' buttons are at the bottom.

* **The data you have set will not become effective until it is transferred to the HA-800C/HA-680CL. Once the parameters have been set, be sure to transfer them to the HA-800C/HA-680CL.**

Origin sensor selection

- **Description of functions**

The HA-680CL performs originating using the origin sensor connected to the driver's CN2-11: ORG: Originating Signal or origin sensor connected to the CC-Link line, and the Z signal of the encoder.

The HA-800C performs originating using the origin sensor connected to the driver's CN2-5: ORG: Originating Signal or origin sensor connected to the CC-Link line, and the Z signal of the encoder.

In Origin Sensor Selection, select where to input the origin sensor signal to (CN2 or CC-Link).

- **Operations**

(1) Select CC-Link or HA-800/680 from the pull-down menu in the ORG. Sensor data box on the parameter setting screen.

If CC-Link is selected, originating operation is performed using RYn7: Origin Dog ON and phase Z. If HA-800/680 is selected, originating operation is performed using CN2-5: ORG: Origin Signal (HA-800) or CN2-11: ORG: Origin Signal (HA-680) and phase Z.

The screenshot shows a 'Parameter' dialog box with the following fields:

Short cut: Unavailable	Backlash: 0	Resolving: 500000	
ORG. Speed1: 20000	ORG. Speed2: 5000	ORG. Slope: 10	
ORG. Dist: CW	ORG. Method: S-ON	ORG. Sensor: CC-Link (circled in red)	Soft ORG.: 0
Speed unit: pulse/sec	POS. unit: pulse		

Buttons: OK, Cancel

(2) Click the OK button.*

* **The data you have set will not become effective until it is transferred to the HA-800C/HA-680CL. Once the parameters have been set, be sure to transfer them to the HA-800C/HA-680CL.**

* If S-ON has been selected as the originating method, this setting does not affect originating.

Virtual origin

- **Descriptions of functions**

Sometimes providing a program origin in addition to the mechanical origin make things easier. For example, assume that the mechanical origin has deviated from the position of the encoder's phase Z signal after troubleshooting. If the mechanical origin (phase Z signal) is used as the program origin, all address positions must be corrected. By setting this software origin, however, there is no need to correct the program. You can correct all positions only by adjusting the set value of the software origin.

In actual originating operation, the actuator moves to the mechanical origin first, and then moves to the software origin.

- **Details of set value**

The setting range of values is as follows. The units are in pulses.

HA-800C: -262,144 to 262,143

HA-680CL: -32,768 to 32,767

- **Operations**

- (1) Enter data in the Soft ORG. data box on the parameter setting screen.
- (2) Press the OK button.

* **The data you have set will not become effective until it is transferred to the HA-800C/HA-680CL. Once the parameters have been set, be sure to transfer them to the HA-800C/HA-680CL.**

The screenshot shows a 'Parameter' dialog box with the following fields:

Short cut: Unavailable	Backlash: 0	Resolving: 500000	
ORG. Speed1: 20000	ORG. Speed2: 5000	ORG. Slope: 10	
ORG. Dist: CW	ORG. Method: S-ON	ORG. Sensor: CC-Link	Soft ORG: 0
Speed unit: pulse/sec	POS. unit: pulse		

Buttons: OK, Cancel

Speed unit

- **Descriptions of functions**

When creating operation data, specify the unit in which to set the speed. This unit applies to all data numbers and different units cannot be used at the same time. Even when the data value is the same, the actuator speed varies depending on the unit.

pulse/sec: Pulse/sec

1/100 r/min: 1/100 r/min

The following relationship holds water in the case of linear/rotational operation.

$$\text{Linear travel speed (mm/min)} = \text{Command pulse/sec} \times \frac{\text{Lead(mm)}}{\text{Number of pulses per rotation}}$$

$$\text{Rotation speed (r/min)} = \text{Command pulse/sec} \times \frac{360}{\text{Number of pulses per rotation}}$$

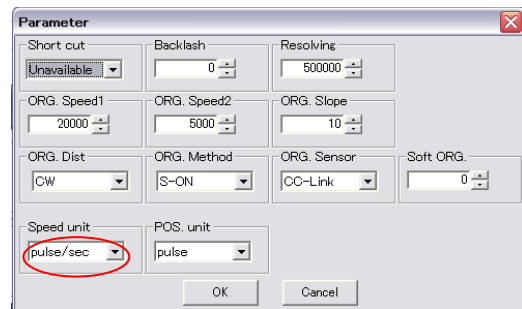
* For the number of pulses per actuator rotation, refer to the manual for each actuator.

- **Operations**

(1) Select pulse/sec or 1/100 r/min from the Speed unit pull-down menu on the parameter setting screen.

(2) Click the OK button.

This parameter affects PSF-680CL operation. It does not directly affect HA-800C/HA-680CL operation, so there is no need to transfer the set value to the HA-800C/HA-680CL.



The screenshot shows a 'Parameter' dialog box with various settings. The 'Speed unit' dropdown menu is highlighted with a red circle and is set to 'pulse/sec'. Other settings include 'Short cut' (Unavailable), 'Backlash' (0), 'Resolving' (50000), 'ORG. Speed1' (20000), 'ORG. Speed2' (5000), 'ORG. Slope' (10), 'ORG. Dist' (CW), 'ORG. Method' (S-ON), 'ORG. Sensor' (CC-Link), 'Soft ORG.' (0), and 'POS. unit' (pulse). 'OK' and 'Cancel' buttons are at the bottom.

Positional unit

- **Descriptions of functions**

When creating operation data, specify the unit in which to set the stop position. This unit applies to all addresses and different units cannot be used at the same time. Even when the data value is the same, the point at which the actuator stop points varies depending on the unit.

Pulse: Pulse

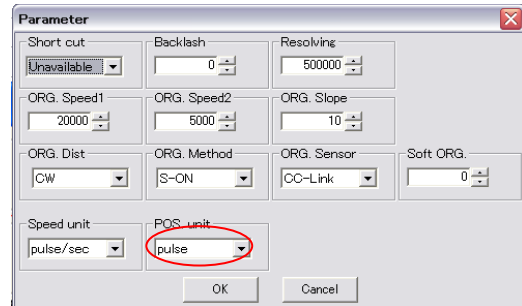
1/1000 deg: Angle (in 1/1000° units)

- **Operations**

(1) Select pulse or 1/1000 deg from the POS. unit pull-down menu on the parameter setting screen.

(2) Click the OK button.

This parameter affects PSF-680CL operation. It does not directly affect HA-800C/HA-680CL operation, so there is no need to transfer the set value to the HA-800C/HA-680CL.



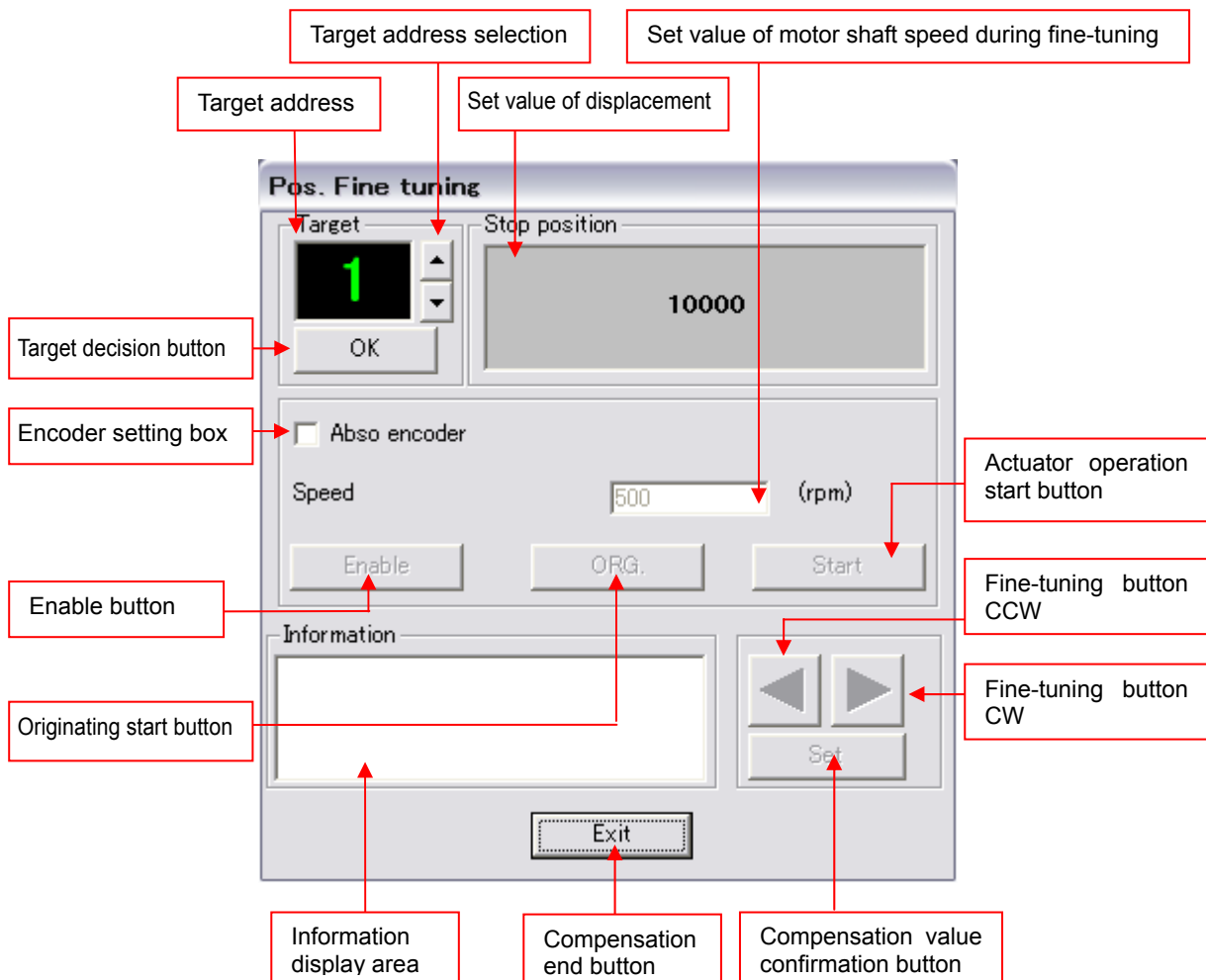
Chapter 4 Displacement fine-tuning screen

The HA-800C/HA-680CL performs positioning according to operation data created in PSF-680CL. On the actual unit, however, the displacement set by PSF-680CL may not be exactly the expected displacement. Addressing such situation in a cut-and-dry method, such as setting new data again and verifying the data, is very inefficient.

For this reason, PSF-680CL provides a displacement compensation function that involves moving the actuator by the currently set displacement and determine the final displacement through fine-tuning. To fine-tune the displacement, select Pos. Fine tuning from the Other menu, or click the corresponding menu icon, to open the displacement fine-tuning screen.

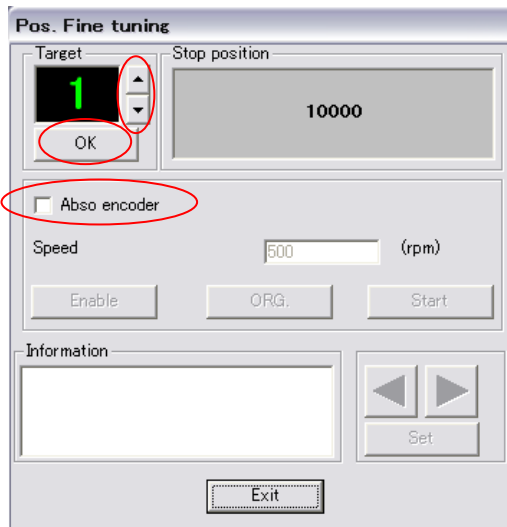
Before the displacement can be fine-tuned, the HA-800C/HA-680CL which has been fully wired and to which operation data has been transferred must be connected to the computer via the dedicated RS-232C cable.

- * Operation data must be received from the HA-800C/HA-680CL before fine-tuning the displacement.
- * If ORG. Sensor is set to CC-Link on the parameter setting screen, displacement compensation cannot be performed.



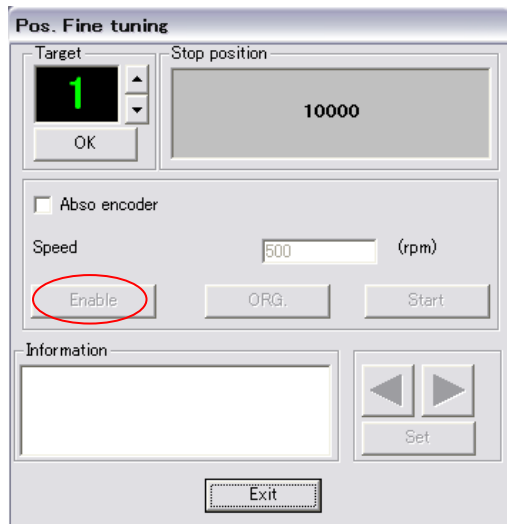
Displacement fine-tuning procedure

①

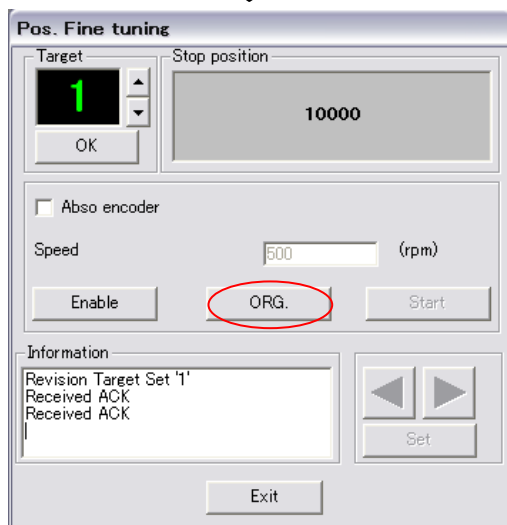


1. If the connected actuator uses an absolute encoder, select the Abso encoder checkbox.
2. Click the target address selection button and select the address to compensate for. At this time, the Stop position display area shows the displacement set for the address shown in the target address display area. This area shows nothing if no displacement is set for the address or displacement is set as a relative value.
3. After selecting the target address, click the OK button.

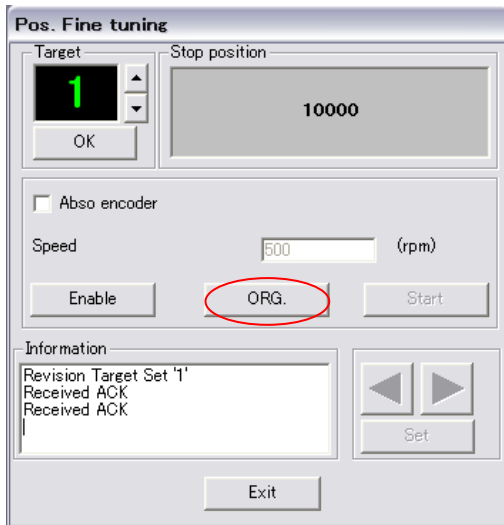
②



4. Click the Enable button to excite the actuator.
5. Once the actuator is excited, the ORG. button is enabled.



③

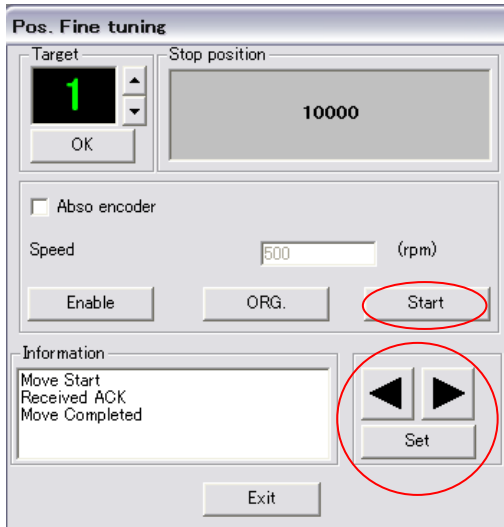


6. Click the ORG. button to start originating.

7. When the originating is complete, the Start button is enabled.

* If the connected actuator uses an absolute encoder, the actuator can operate without originating first. Start from step (4).

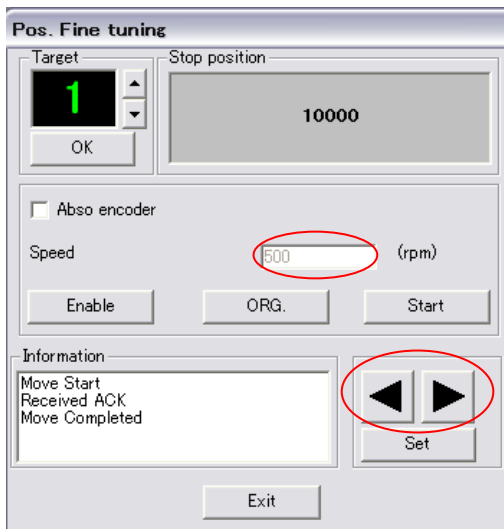
④



8. Clicking the Start button moves the actuator by the displacement (set value of displacement being displayed) and at the speed set under the data number displayed as the target, after which a message indicating that the movement has completed appears in the information area.

9. Once the movement is complete, the fine-tuning button CCW, fine-tuning button CW and Set button are enabled.

⑤



10. Set the motor shaft speed during fine-tuning. The setting range is 10 to 1000 r/min.

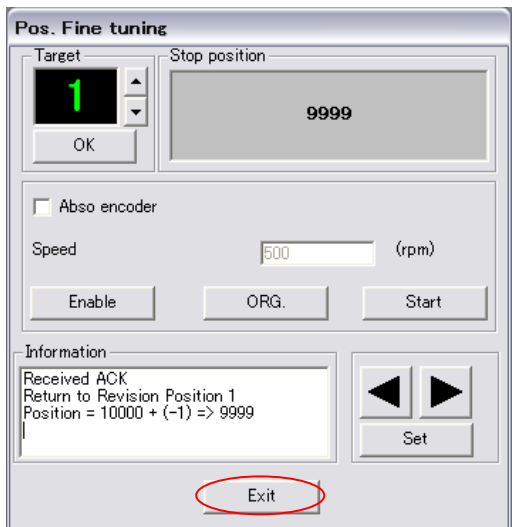
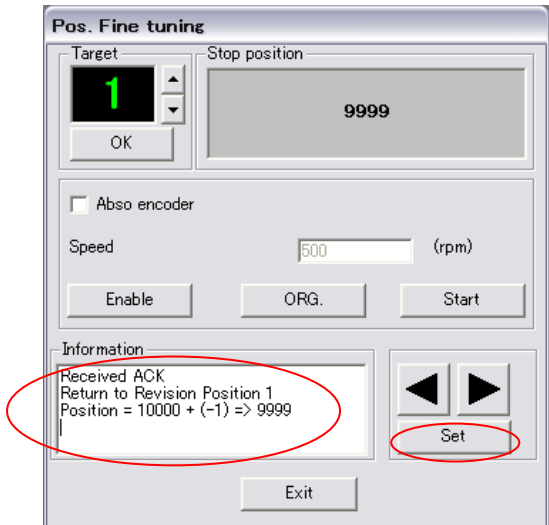
* This operation is valid only on HA-800Cs of Version 2.01 or later. On all other drivers, the speed is fixed to 500 r/min.

11. Move the actuator using the fine-tuning button CCW and fine-tuning button CW to adjust the final displacement.

12. One click of each fine-tuning button moves the actuator by one pulse in the CW or CCW direction.

Pressing and holding the left mouse button for 1 second or more with the mouse cursor on a fine-tuning button, the actuator moves at the set speed.

⑥



13. When you are done with fine-tuning, click the Set button. The compensation amount will be displayed in the Information display area and new displacement in the displacement display area.

14. To fine-tune the displacement under a different data number, follow the operation sequence of (1) → (4) → (5) → (6).

15. To end the fine-tuning, click the Exit button.

16. When the fine-tuning ends, the result of fine-tuning is reflected in the Stop Position display area, so transfer the data to the HA-800C/HA-680CL.

Data.No	Speed	Stop Position	Slope	Abs.	Inc.
1	100000(pps)	10000(pulse)	10(ms)	1	0



Data.No	Speed	Stop Position	Slope	Abs.	Inc.
1	100000(pps)	9999(pulse)	10(ms)	1	0



Certified to ISO14001 (HOTAKA Plant) / ISO9001 (TÜV Management Service GmbH)
 All specifications and dimensions in this manual subject to change without notice.
 This manual is correct as of December 2012.

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