

1. Before You Begin

1-1 Items Supplied With This Software

Please check to make sure that the following items are included in your PC software package.

- Operating manual
- 3.5-inch floppy disks containing the software (2)
- IAI RS232C communication cable

1-2 What You Will Need (Operating Requirements)

The following PC and accessories will be necessary to run this software program.

- A PC that runs under Windows and compatible keyboard.
- Enough memory to run Windows.
- A monitor compatible with the PC.
- A VGA graphic board or better.
- Mouse or other pointing device and mouse driver.
- (Windows 95, Windows 98 or Windows NT).
- A floppy disk drive unit that runs a 3.5-inch disk with 1.25 or 1.44MB capacity.
- The hard disk should have 2MB or more of free memory space. (The software is run from the hard disk).
- An RS232C serial port (25 or 9 pins).
- A printer compatible with the PC.

1-3 Software Installation

This software is run from the hard disk. In this section, we explain how to install the software.

- Insert floppy disk 1 in the floppy disk drive.
- Execute Setup.EXE in disk 1.
- The installation program will be executed, so simply follow the prompts that appear.
- When the installation program is complete, a short cut called Sel Win is created in the start menu. Select this item to run the software.

Caution: Please remove any CD from your computer during software installation.

1-4 Software Start-up

Step 1: Turn off the power to the Super SEL controller, then connect the Super SEL controller to the PC with the IAI RS232C cable that comes with the software.
Turn the mode switch for the controller to the MANU side.

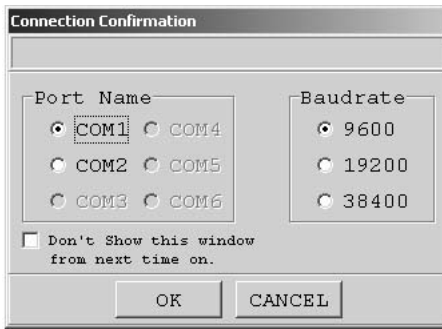
The emergency stop switch, which is used for the PC interface software attached cable, is effective in the MANU mode. It will not operate in the AUTO mode.

Step 2: Turn Super SEL controller power back on.

Step 3: Start the software.

Check for connection" screen (Diagram 1.1) will appear. From the column where "Communication Port" and "Baud Rate" are displayed, select the communication port (* Note1) and Baud Rate (*Note 2) that are connected to the X-SEL Controller, and then, select the "OK" button.

1. Before You Begin



Check for Connection Screen (Diagram 1.1)

- (*Note 1): Selection of communication ports that are usable, is possible, during application start.
 - (*Note 2): If communication is not possible using the selected baud rate, the application will automatically test the connection and change in the order as follows: 9600 → 19200 → 38400.
- Step 4: Once connection is confirmed with the controller, the application will come up in the ON-line mode. In case the PC fails to recognize, or in case the “CANC” button is clicked, OFF-line mode will turn ON (if Start is done using the OFF-line mode, you can move to ON-line mode by using “reconnect” which appears later).

If “Don’t show this window from next time on” is checked, the connection check will be executed automatically for the communication port and the baud rate used at the end of the last application will be the default.

Extra Caution:

While in manual mode, if “OPEN 1” is executed in a program, serial communication will be transferred to the Serial port of the controller, and communication between the PC and controller will be lost. The program in the controller will continue to run. (*Error No. A5D “SCIF Open Error during Anti AUTO mode). Afterwards, if you wish to stop movement, press ON the Emergency Stop Button (Be especially careful during Jog operation). *In case prior to Ver 0.16 of controller main CPU firmware.

For Ver 0.16 of controller main CPU firmware, depending on servo use, channel 1 will be opened as follows:

(MANU Mode · Servo during non-use)

	Before executing "OPEN 1"	After executing "OPEN 1"
Connection with 1 channel	Connection with PC Software	Forced Move to SEL Program connection (Message error) program is executing

Error message after executing “OPEN 1”: Error No. A5D “SCIF open error during non-auto mode

MANU Mode · Servo during -use)

	Before executing "OPEN 1"	After executing "OPEN 1"
Connection with 1 channel	Connection with PC Software	Connection with PC Software (Cold start error) program is ending

Error message after executing “OPEN 1”: Error No. E89 “SCIF open error during non-auto mode (servo ON)

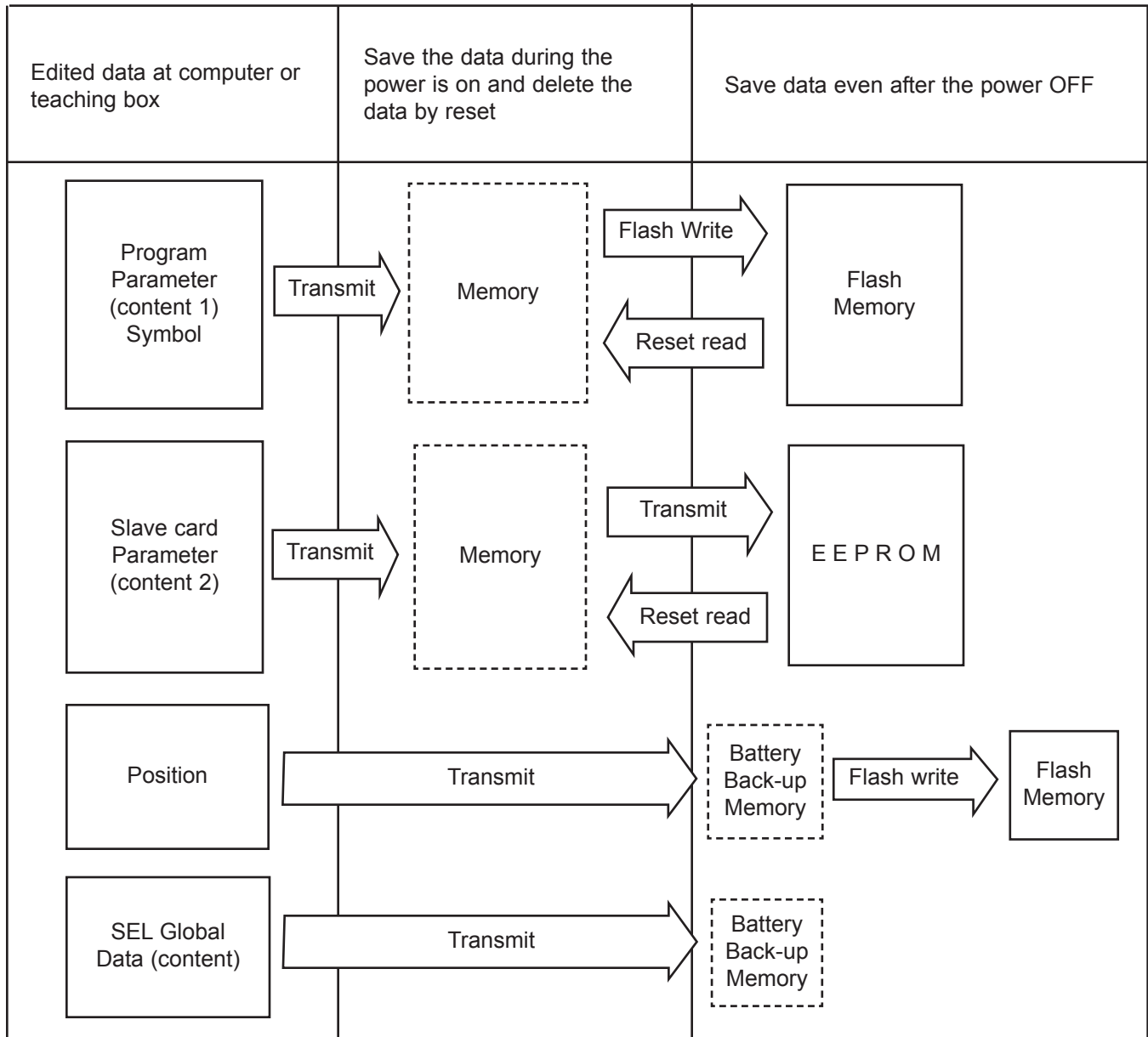
The above “Extra Caution” notes pertain to all other than “Manu Mode with I/O Parameter No.90=2 (IAI Protocol).

2. How to Save Data

The X-SEL Controller contains flash memory. There are two types of memory storage, battery back-up (for encoder data) and flash memory. This is true for both the PC software and the Teaching Pendant. The diagram below shows that information not written to flash memory will be lost when power is cycled on the controller. For non-volatile (permanent) data storage, please save to flash memory.

2-1 Setting At the Time of Shipment (In case of back-up battery)

(Other parameter No. 020=2 (backup battery equipped))



Program · parameter · symbol will read from Flash memory when you restart. Data displayed after restart will be the data that was last saved to flash memory. The controller will always operate obeying the memory data (within the above dotted line) (excluding parameter).

Content 1: Parameter other than below content 2.

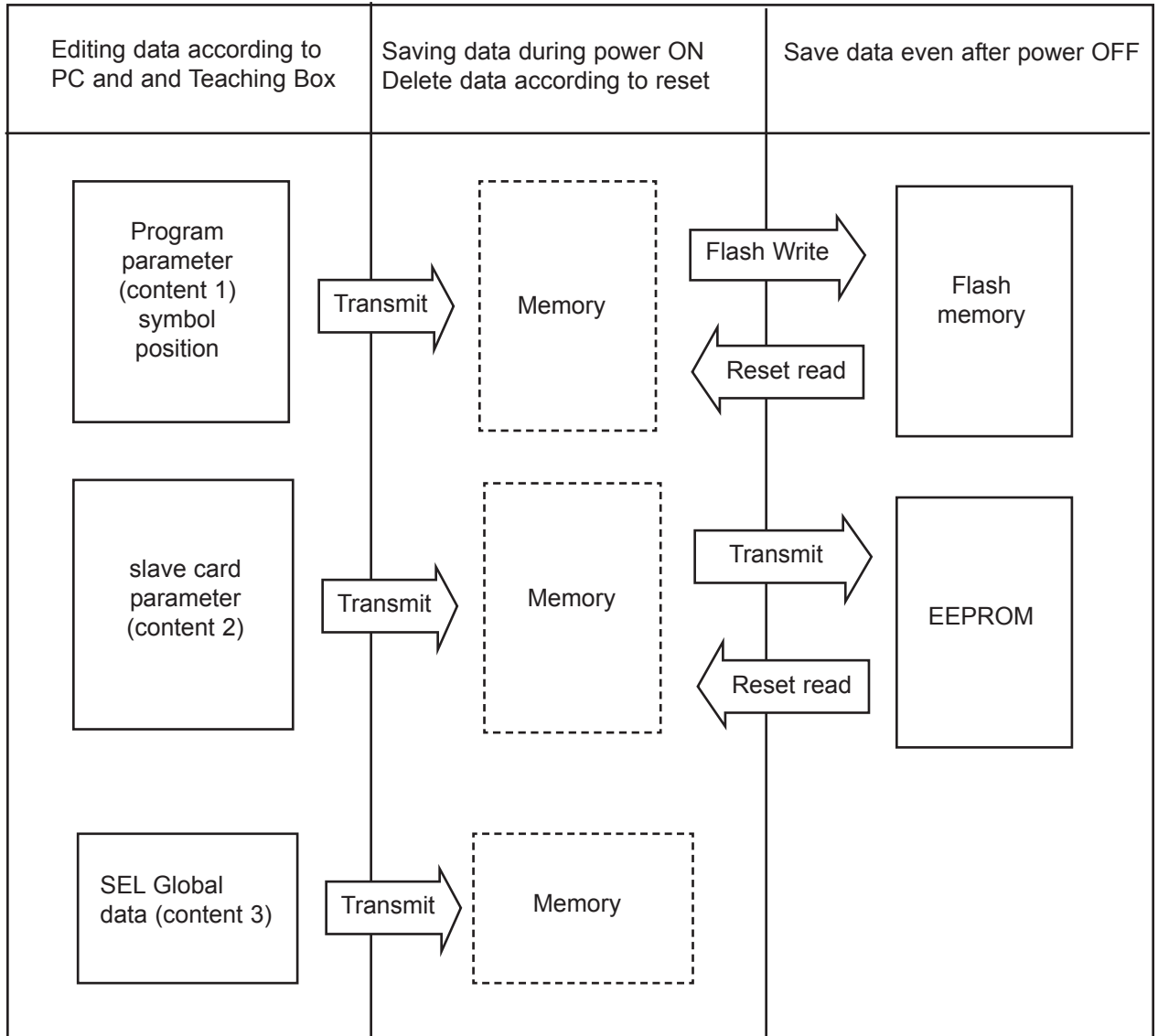
Content 2: Driver card, IO slot card encoder (electric power type card) parameter

Content 3: Flag, Variable, String and Error List

2. How to Save Data

2-2 Setting at the Time of Shipment without back-up battery

Other parameter No.20=20 (backup battery unequipped)



Program · parameter · symbol will read from flash memory during restart. Therefore, unless written into flash memory, the memory data will return to the previous data before edit. The controller will always operate obeying the memory data (within the above dotted line) (excluding parameter). SEL global data can't be saved without back-up battery.

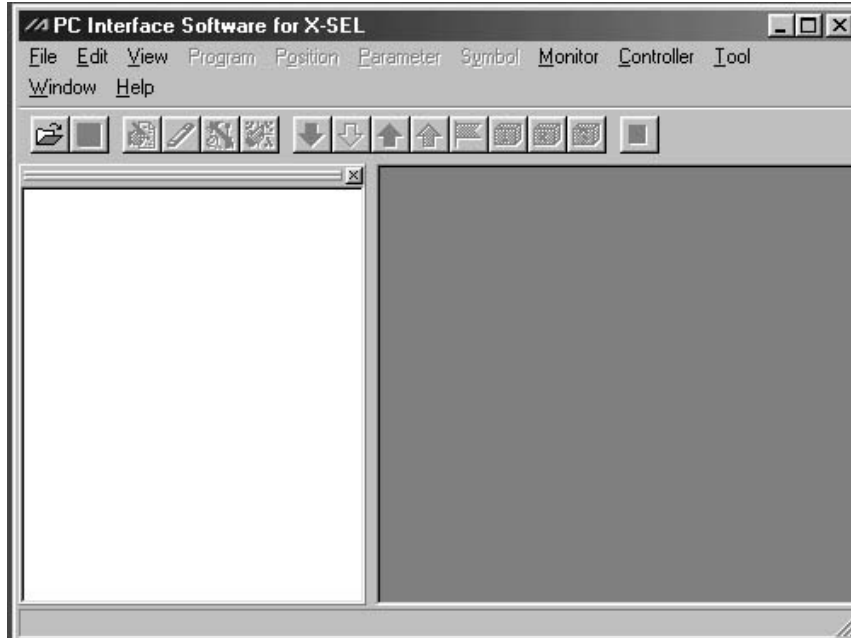
2-3 Caution

Caution: Never shut OFF the main power while the data is transmitting and writing into flash. Data may be lost and controller may be rendered in operable.

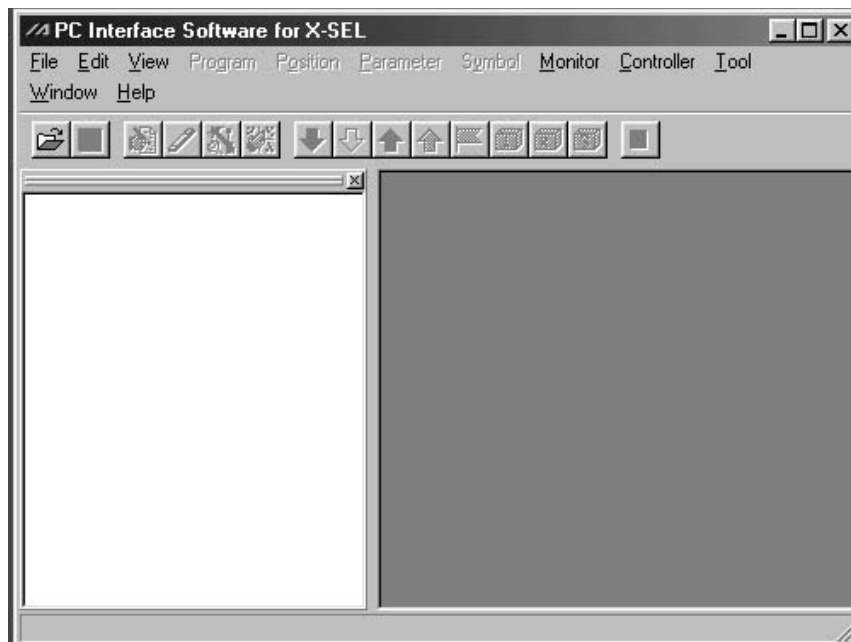
3. Menu Window

3-1 Explanation of Menu

When the software runs and opens the window, there will be 12 items and 16 icons in the menu bar with the tree view appearing on the left side of the window (The initial screen: main menu).



ON-Line Start Screen (Diagram 3.1)



OFF-Line Start Screen (Diagram 3.2)

3. Menu Window

3-2 Explanation of Command

(1) File (F)

- 1. New (N)
 - Program (G) Create a new SEL program.
 - Position (O) Open a new point table edit window .
 - Symbol (Y) Open a new symbol edit window .
- 2. Open (O) Ctrl+O Read the data which is saved in a file.
- 3. Close (C) Close the current active windows.
- 4. Save (S) Ctrl+S Save the active edit window to a file.
- 5. Save As (A) Assign a file name and save the active edit window.
- 6. Print Setup (P) Set the font and the printer.
- 7. Recent File (R) Show recent file history.
- 8. Exit (X) End the application

(2) Edit (E)

Edit auxiliary operations when editing data.

- 1. Cut (X) Ctrl+X Cut the high lighted lines to the clipboard.
- 2. Copy (C) Ctrl+C Copy the lines to the clipboard.
- 3. Paste (V) Ctrl+V Paste the copied or cut contents on the clipboard cursor location.
- 4. Find (F) Ctrl+F Find selected character string.
- 5. Find Next Match (N) F3 Find the selected character string as specified above from where the cursor is located.

(3) View (V)

Functions related to View setting.

- 1. Tree View (T) Turn on and off the tree view on left side of main screen.
- 2. Font (F) Set the font.

(4) Program

Functions related to programming (This is available at ON-line mode only.)

- 1. Edit (E) Read the selected programs from the controller and Edit them.
- 2. Copy/Paste (C) Copy and paste (cut and paste) the program.
- 3. Clear (L) Clear the program.
- 4. Save as (S) Save and name the selected or all programs together.
- 5. Finish All Program (T) Exit all executing programs.

(5) Position (O)

Functions related to position data. (This is available at ON-line mode only)

- 1. Edit (E) Read the position data from the controller to edit.
- 2. Copy/Move (C) Copy and Move (Cut and Paste) the position data.
- 3. Clear (L) Clear the position data.

(6) Parameter (P)

Function related to parameter. (This is available at ON-line mode only)

- 1. Edit (E) Read the parameter from the controller to edit.

(7) Symbol (Y)

Functions related to symbol data. (This is available at ON-line mode only)

- 1. Edit (E) Read the symbol data from the controller to edit.
- 2. Clear All (C) Clear all the symbol data.

3. Menu Window

(8) Monitor (M)

Monitor each status, global variable, port condition, etc (This is available in ON-line mode only).

- | | |
|--------------------------------|--|
| 1. Task Status | Open the Task status monitor window. |
| 2. System Status | Open the System status monitor window. |
| 3. Axis Status | Open the Axis status monitor window. |
| 4. Input Port | Open the Input port monitor window. |
| 5. Virtual Input Port | Open the Virtual Input port monitor window. |
| 6. Output Port | Open the Output Port monitor window. |
| 7. Virtual Output Port | Open the Virtual Output port monitor window. |
| 8. Global Flag | Open the Global Flag monitor window. |
| 9. Global Integer | Open the Global Integer Variable monitor window. |
| 10. Global Real | Open the Global Real Variable monitor window. |
| 11. Global String Variables | Open the Global String monitor window. |
| 12. Detailed Error Information | Open the Detailed Error Information window. |

(9) Controller (C)

Functions related to the software reset, the error reset, the controller, etc.

- | | |
|--|---|
| 1. Reconnect (C) | Execute communication to reconnect with the controller.
If communication is possible, you can switch from OFF-line to ON-line. |
| 2. Baud Rate Change (B) | Change the communication baud rate between the PC and the controller. |
| 3. Write Flash ROM (W) | Saves points programs, parameters, etc. to memory. |
| 4. Initialize Memory (I)
Global Variable(V) | Clear global variables. |
| 5. Abs Encoder Reset (A) | Reset the absolute position data. |
| 6. Software Reset (R) | Reset the controller's software and restart the controller. |
| 7. Error Reset (E) | Reset the controller's errors. |
| 8. Request Driver
Power Recovery(P) | Request Driver Power Recovery from the controller. |
| 9. Request Releasing
Pausing Operation (L) | Request Pause Release Operation from the controller. |
| 10. ROM Version Information (V) | Display the controller's ROM version information. |

(10) Tool (T)

Set the application.

- | | |
|--------------------------|---|
| 1. Environment Setup (S) | Set the environment for the application |
|--------------------------|---|

(11) Window (W)

Change the way of window display.

- | | |
|------------------------|---|
| 1. Cascade (C) | Line up the window in an angle so they overlap. |
| 2. Tile Vertical (V) | Arrange the windows vertically without any overlap. |
| 3. Tile Horizontal (H) | Arrange the windows horizontally without any overlap. |
| 4. Minimize All (M) | Minimize all windows. |
| 5. Arrange Icons (A) | Line up the icons. |

(12) Help (H)

- | | |
|--------------|--------------------------------------|
| 1. About (A) | Display the version of the software. |
|--------------|--------------------------------------|
















3. Menu Window

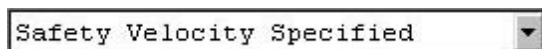
3-3 Explanation of Tool Bar

Explanation (below the menu) of the tool bar of the main menu.



Tool Bar Screen (Diagram 3.3)

	Open Files	The same function as File (F) -> Open (O)
	Save	The same function as File (F) -> Save (S)
	Edit Programs	The same function as Program (S) -> Edit (E)
	Edit Positions	The same function as Position (O) -> Edit (E)
	Edit Parameters	The same function as Parameter (P) -> Edit (E)
	Edit Symbols	The same function as Symbol (Y) -> Edit (E)
	Input Port Monitor	The same function as Monitor (M) -> Input Port(I)
	Virtual Input monitor	The same function as Monitor (M) -> Virtual Input Monitor(N)
	Output Port Monitor	The same function as Monitor (M) -> Output Port (O)
	Virtual Output Port	The same function as Monitor (M) -> Virtual Output Monitor(U)
	Global Flag Monitor	The same function as Monitor (M) -> Global Flag (F)
	Global Integral Variable Monitor	The same function as Monitor (M) -> Global Integral (L)
	Global Variable Monitor	The same function as Monitor (M) -> Global Variable(R)
	Global String Variable Monitor	The same function as Monitor (M) -> Global String (G)
	All Exit	The same function as Program (S) -> All Exit (T)

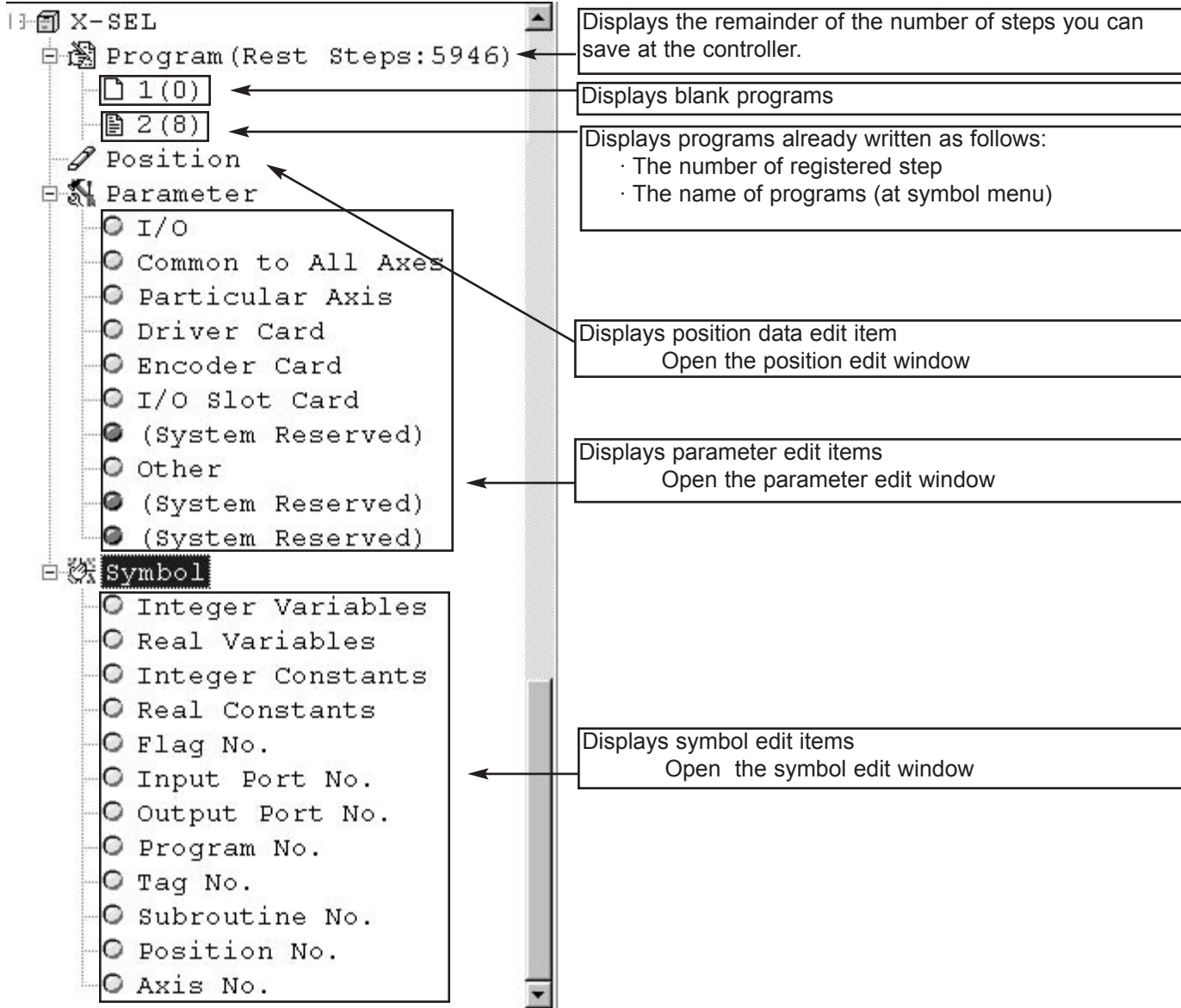


Switch Safety Velocity Specified in manual mode.
 [Safety Velocity Specified] ---- There is Safety Velocity.
 (The fastest velocity is under 120mm/second. Setting of the program and the parameter do not effect it.)
 [Safety Velocity Not Specified] ---- There is no Safety Velocity.
 (Moves are executed with programmed velocity.)

3. Menu Window

3-4 Tree View

By double clicking items which are displayed at the left side of the main menu, it makes operating edit windows in ON-line mode easier. You can show and hide the tree view from the menu -> View (V) -> Tree Display(T).

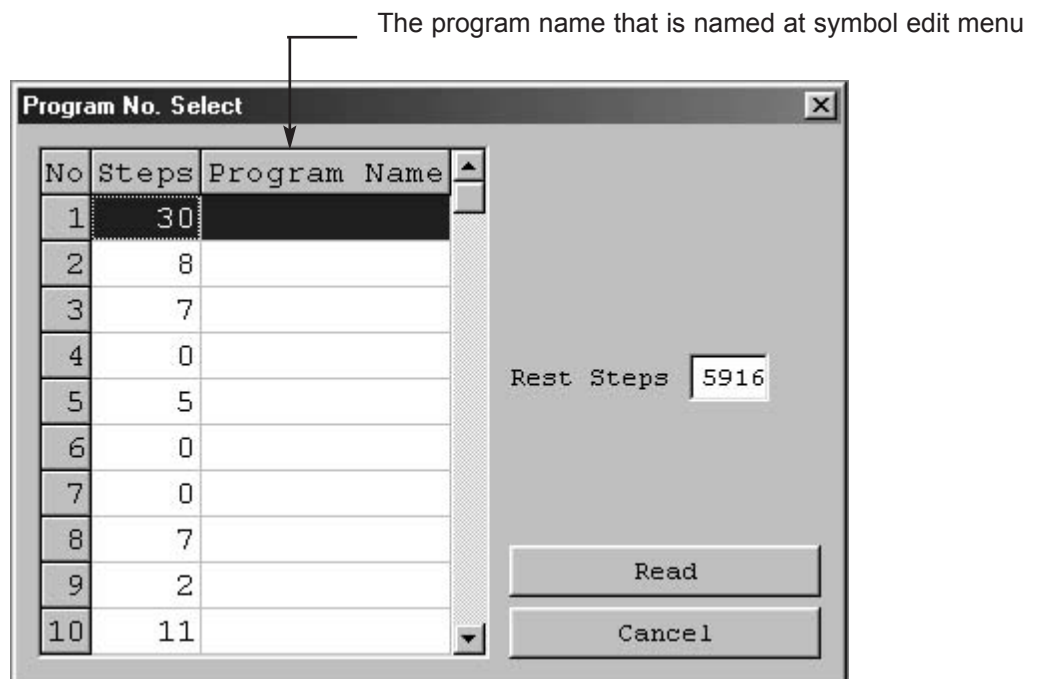


Tree View Screen (Diagram 3.4)

4. Program Edit Window

4-1 Explanation of Program Edit Window.

- (1) From the menu, select Program (S) -> Edit (E).
- (2) The Program No. Select window will be displayed, then select the program you want to edit and click Read.



Program No. Select Screen (Diagram 4.1)

- (3) The program edit window will be displayed and there are the following items on this window.

- No.** -> Shows step No.
- B** -> Set the brake point (This is available at the "On line" editing windows only). Click B on the line you want to edit. Then "B" appears on the line that the brake point has been set.
- E** -> Input the extension condition.
- N** -> Select "N" which is the opposite input condition.
- Cnd*** -> Conditional column for input conditions using outputs, inputs, flags, etc.
- Cmnd** -> Double click or press [F1] to display the SEL command explanation window. You can select command language and input them to step data from this window.
- Operand1*** -> Input operation 1 (Operand 1).
- Operand2*** -> Input operation 2 (Operand 2).
- Pst*** -> Post - trigger output or flag.
- Comment** -> Comment as needed (MAX 18 characters).
By double clicking, you can fix comment partially which has been entered.
*Press F11 to search input condition and symbol which is input on Operand.

4. Program Edit Window

No.	B	E	N	Cnd	Cmnd	Operand 1	Operand 2	Pst	Comment
1					BTOF	600	650		
2					IN	7011	7011		
3					CPEQ	99	1	601	
4				601	PRED	11	17		
5									
6									
7		N		601	LET	9	1		
8									
9									
10					HOME	11			
11									

Program Edit Screen (Diagram 4.2)

Right click the mouse at the selected line. The pop-up menu will be displayed (Diagram 4.3).

Cut (T) Ctrl + X ->

Copy(C) Ctrl + C ->

Paste(P) Ctrl + V ->

Insert one Line (I) ->

Delete Selected lines (D) ->

Set Comment (S) ->

Release Comment (R)->

The same function as Menu Edit (E) -> Cut (T)

The same function as Menu Edit (E) -> Copy (C)

Copy the whole line where the cursor is located.

The same function as Menu Edit (E) -> Paste (P)

Insert one line where the cursor is located.

Delete the selected area.

Set comment on the line cursor is located (step will not be executed).

In case the effective step is turned into comment, using the "Release Comment" listed below, you can return to the original effective step.

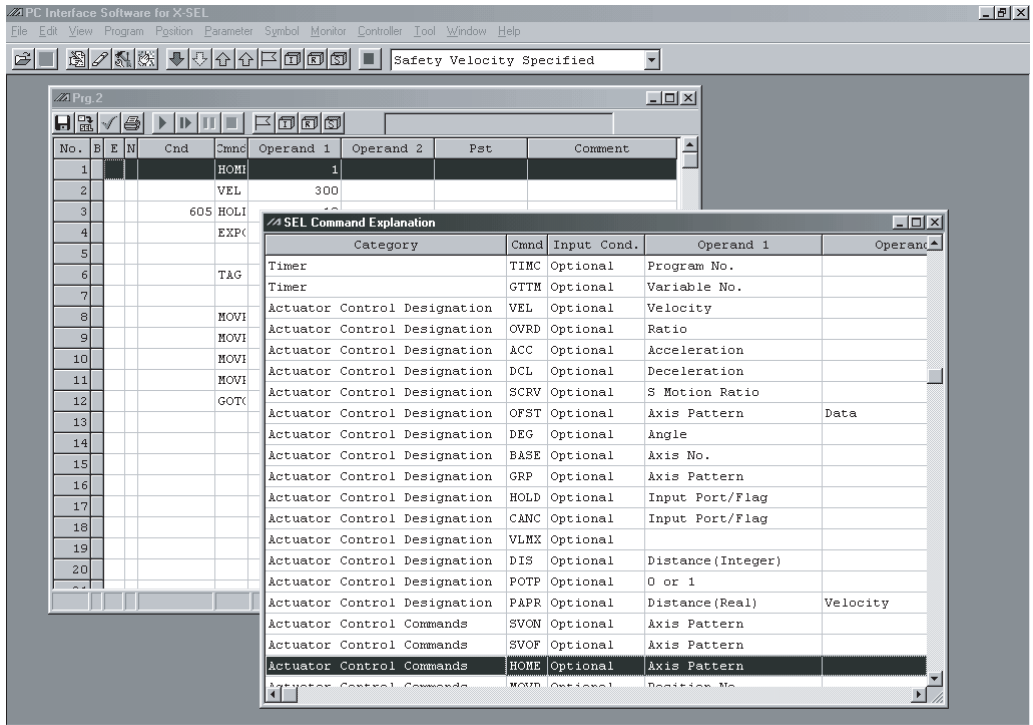
Disables the comment, allowing the line of code to be executed.

No.	B	E	N	Cnd	Cmnd	Operand 1	Operand 2	Pst	Comment
1					BTOF	600	650		
2					IN	7011	7011		
3					CPEQ	99	1	601	
4				601	PRED	11	17		
5									
6									
7		N		601	LET				
8									
9									
10					HOME				
11									
12					VEL	700			
13					ACC	2			
14					TAG	repeat_pg			
15									
16									
17					*this section sets up the pallet				
18					BGPA	1			

Pop Up Menu Screen (Diagram 4.3)

4. Program Edit Window

The SEL command explanation window is opened by double clicking Command or pressing F1 in the “cmdn” field. Use this window as the editing reference.



SEL Command Explanation Screen (Diagram 4.4)

4. Program Edit Window

Right click on the SEL command field. The pop-up menu will be displayed.

- Input (I) ->** Input the command on the line that the cursor is located at.
 (the cursor line at the program edit window).
- Font (F) ->** Set the SEL command font.
- Sort (S) ->** Sort according to alphabetical order (A)
 Sort according to category (C)

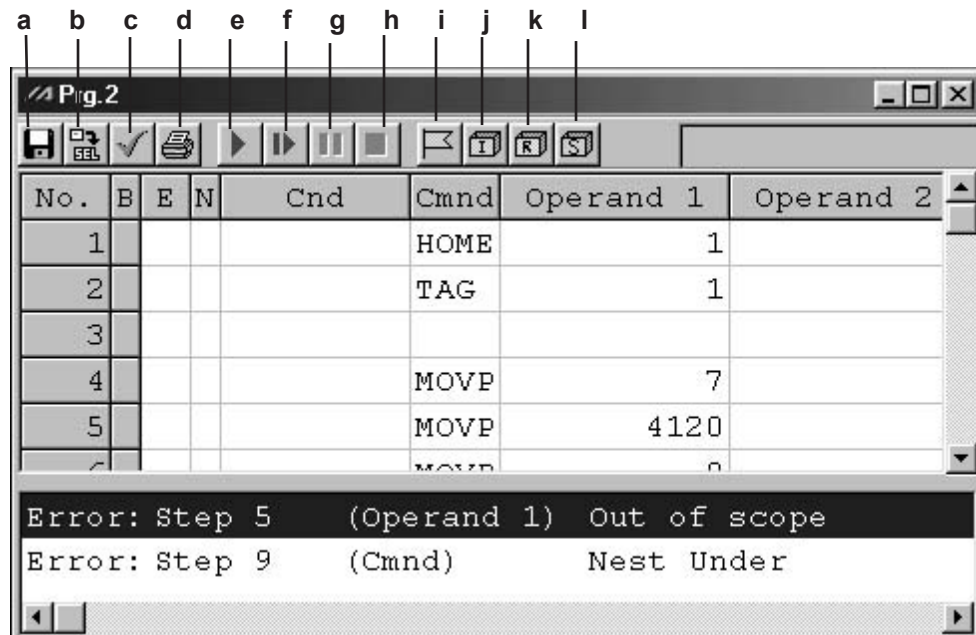
The screenshot shows a window titled "SEL Command Explanation" containing a table with the following columns: Category, Cmnd, Input Cond., Operand 1, and Operand 2. A context menu is open over the row where Cmnd is "VEL". The menu options are "Input", "Font", and "Sort". The "Sort" option has a sub-menu with "Alphabetically" and "By Category".

Category	Cmnd	Input Cond.	Operand 1	Operand 2
Timer	TIMC	Optional	Program No.	
Timer	GTTM	Optional	Variable No.	
Actuator Control Designation	VEL	Optional	Velocity	
Actuator Control Designation	OVRD	Optional		
Actuator Control Designation	ACC	Optional	Acceleration	
Actuator Control Designation	DCL	Optional	S Mot	
Actuator Control Designation	OFST	Optional	Axis Pattern	Data
Actuator Control Designation	DEG	Optional	Angle	
Actuator Control Designation	BASE	Optional	Axis No.	
Actuator Control Designation	GRP	Optional	Axis Pattern	
Actuator Control Designation	HOLD	Optional	Input Port/Flag	
Actuator Control Designation	CANC	Optional	Input Port/Flag	
Actuator Control Designation	VLMX	Optional		
Actuator Control Designation	DIS	Optional	Distance (Integer)	
Actuator Control Designation	POTP	Optional	0 or 1	
Actuator Control Designation	PAPR	Optional	Distance (Real)	Velocity
Actuator Control Commands	SVON	Optional	Axis Pattern	
Actuator Control Commands	SVOF	Optional	Axis Pattern	
Actuator Control Commands	HOME	Optional	Axis Pattern	
Actuator Control Commands	MOVD	Optional	Position No.	

Pop-Up Menu Screen (Diagram 4.5)

4. Program Edit Window

(4) The following buttons exists in the window below.



Buttons (Diagram 4.6)

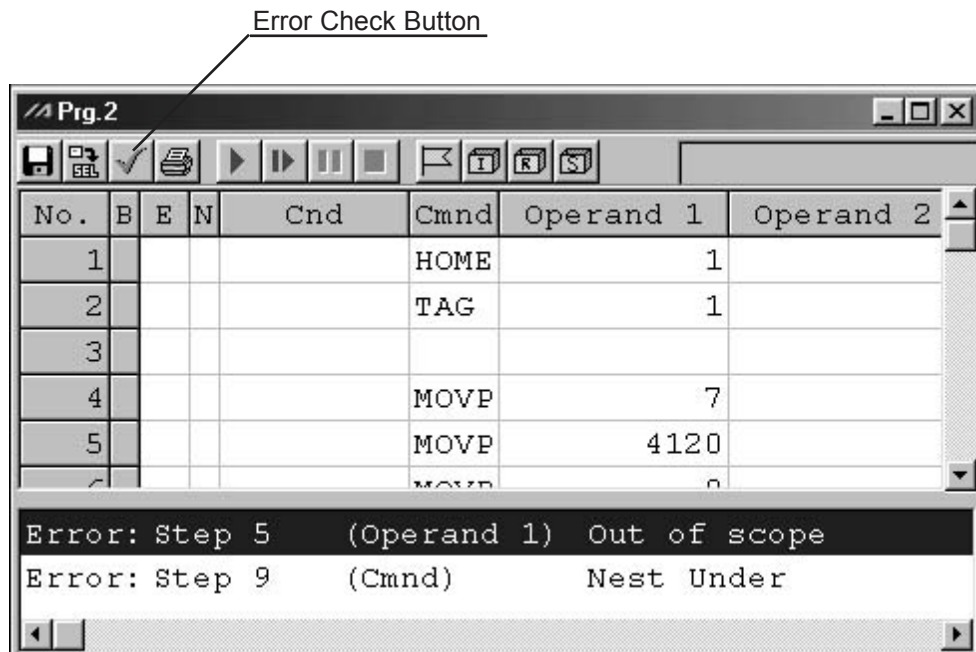
- a -> **Save As**
Save to a file.
- b -> **Transmit to Controller**
Transmits the program data to the controller after the error check is done.
- c -> **Error check**
Check errors in the program and displays the details of these errors.
- d -> **Print**
Print the program.
- e -> **Execute**
Executes (run) the program.
To execute the program during editing process, you need to transmit the program to the controller first.
- f -> **Execute Single Step**
Executes a single line of code at a time.
- g -> **Pause**
Pauses the program, if it is running.
- h -> **Finish**
Exits the program, if it is running.
- i -> **Local Flag Display**
Displays the local flag window in the executing program, if it is running.
- j -> **Local Integral Variable Display**
Displays the local integral variable window in the executing program, if it is running.
- k -> **Local Real Number Variable Display**
Displays the local real number variable window in the program that is running.
- l -> **Local String Variable Display**
Displays the local string variable window on the program that is running.

4. Program Edit Window

(5) Explanation of the Error Check

Check programming errors on SEL language in the edit menu.

1. Click the error check button on the program edit window.
2. If there are any errors, the error list will be displayed. This list shows the number of the column & the row and the detail of the error. Double click that part and the cursor will move to the error part.



Error Check (Diagram 4.7)

4. Program Edit Window

4-2 Program Save and Exit

- (1) Save the program data to a file.
Click Save As button on the program edit window.
The same function as File (F) -> Save as (A)
- (2) Transmit the program data to the controller.
Save it to the memory of the controller.
Click Transmit to Controller button.
(It is available at the "On line" editing only only.)

Caution : If there are any errors in the program, the error content will be displayed and you will not be able to transmit data at this time.

- (3) Flash ROM Writing
After transmission is complete, the confirmation message "Write Flash ROM?" will be prompted.



Confirm (Diagram 4.8)

- Yes (Y)** -> Write the data into Flash ROM
- No (N)** -> Do not Write the data into Flash ROM
The data is deleted by resetting (power restart and software reset) and reads the data from Flash ROM (until reset, the controller using the new data).

- (4) Exit Program Edit
When you close the edit menu, the confirmation message, "Save edited data in the Controller?" will be prompted.



Confirm (Diagram 4.9)

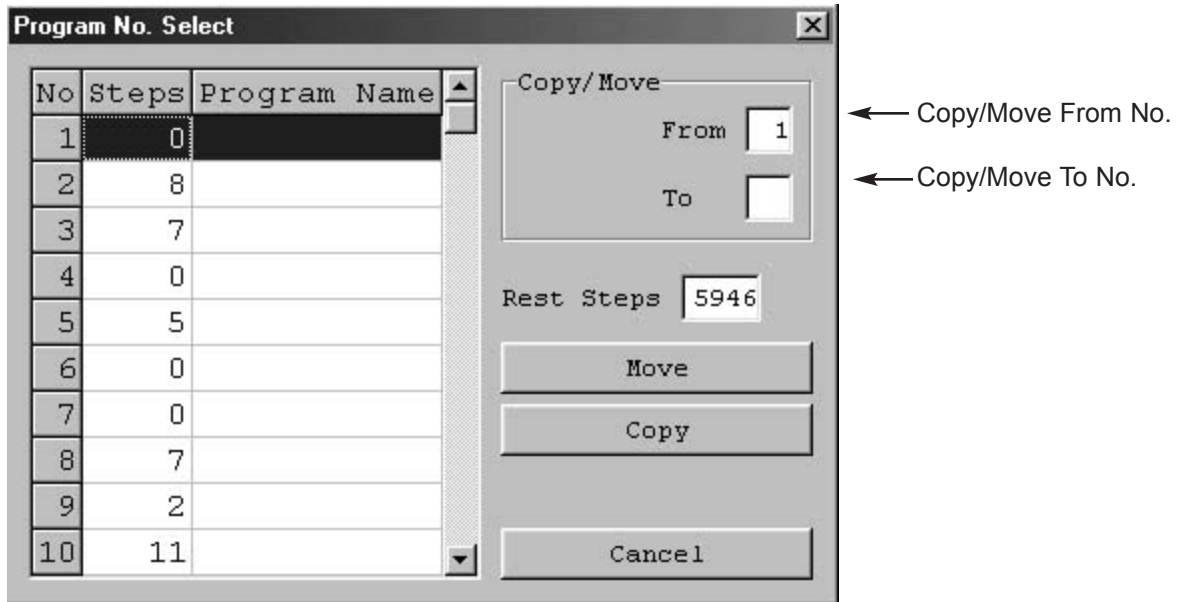
- Yes (Y)** -> Transmit the data to the controller ->(3) Write into Flash ROM
- No (N)** -> Delete the changed data and exit.
- Cancel** -> Cancel exit and return to the edit window.

5. Program: Copy · Move · Delete

5-1 Program: Copy · Move

The following are how to copy or cut a program to another program slot.

- (1) From the menu, select Program (S) -> Copy/Move(C)
- (2) Displays the Program No. Select window.



Program No. Select (Diagram 5.1)

Double click the source program.
Then, double click the destination program.

To copy, click the Copy button. To move, click the Move button.
Click the Cancel button to cancel the operation.

- (3) Flash ROM Writing:
After copying or moving, the confirmation message “Write Flash ROM?” will be displayed.



Confirm (Diagram 5.2)

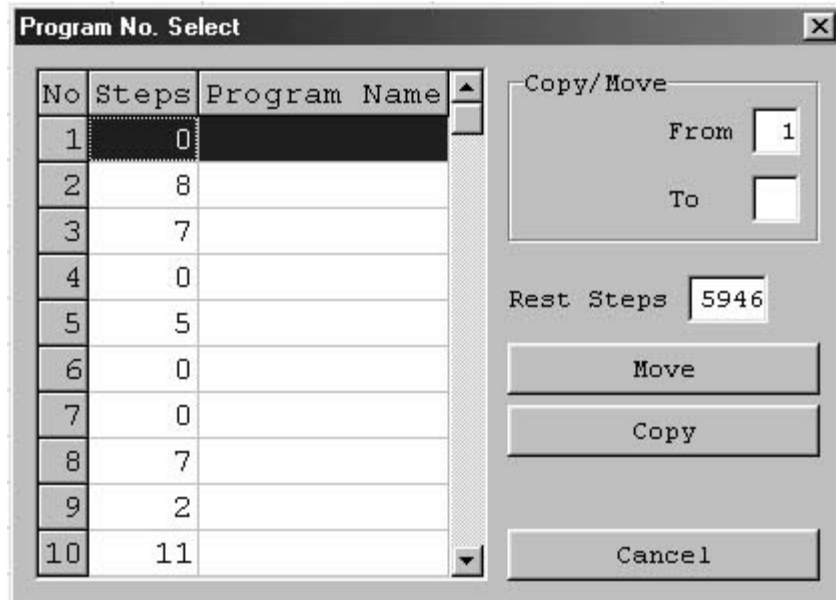
- Yes (Y) ->** Write the memory data into Flash ROM
 - No (N) ->** Do not write the memory data into Flash ROM
- After reset (restart power, software reset), it returns to the data before copying or moving.

5. Program: Copy · Move · Delete

5-2 Program: Clear Window

How to clear the program:

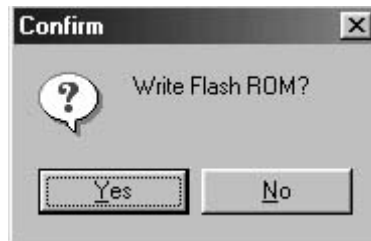
- (1) From the menu, select Program (S) ->Clear (L)
- (2) The program clear window will be displayed.



Program No. Select (Diagram 5.3)

- Click the program you wish to delete.
- Then, click the Delete button.
- Click the Cancel button to cancel the operation.

- (3) Flash ROM Writing:
After deletion, the confirmation message, "Write Flash ROM?" will be prompted.



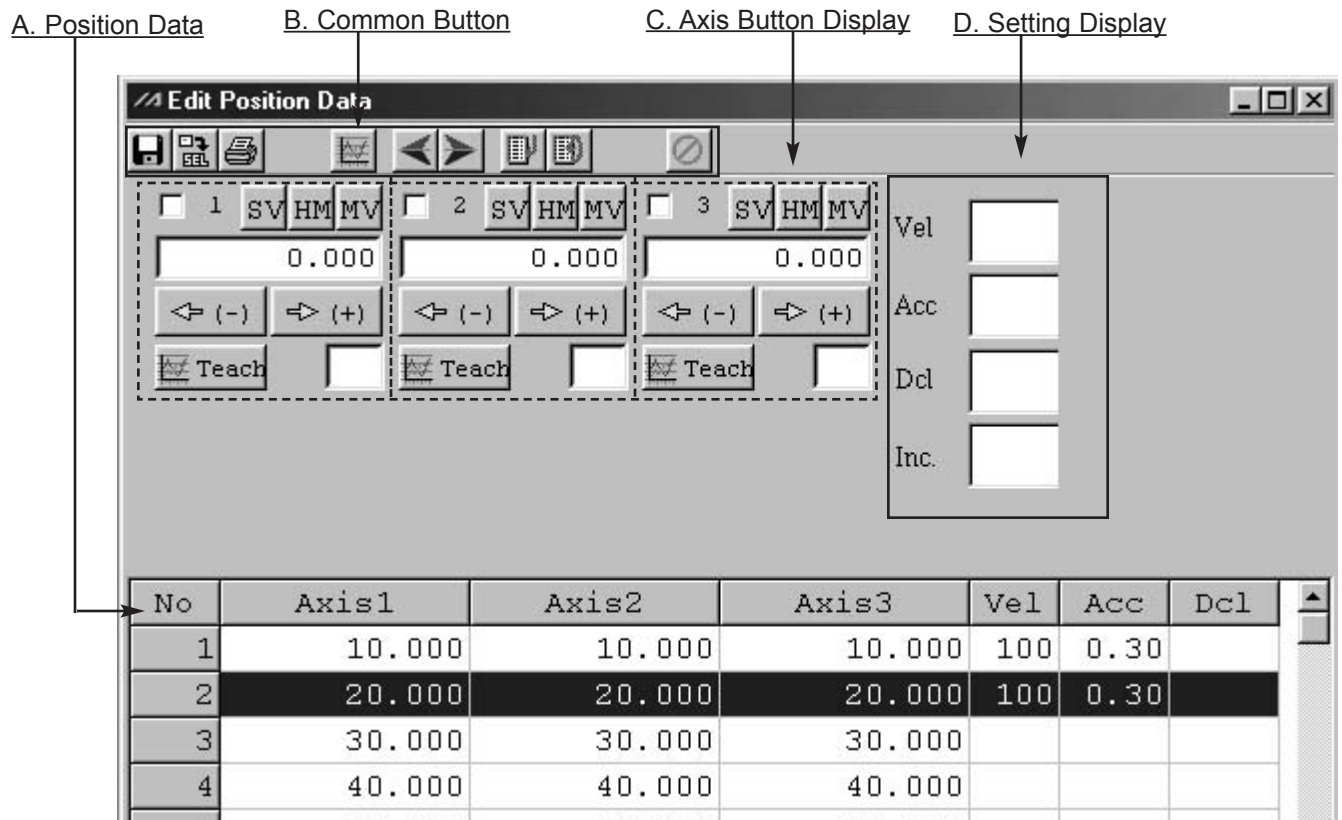
Confirm (Diagram 5.4)

- Click Yes (Y)** -> Write the memory data into Flash ROM
- Click No (N)** -> Do not write the memory data into Flash ROM
After reset (restart power and software reset), returns to the data before deleting.

6. Position Data Edit Window

6-1 Explanation of Position Data Edit Window

- (1) From the menu, select Position (P) -> Edit (E).
- (2) The position data edit window will be displayed. This window has the following items.



Edit Position Data Screen (Diagram 6.2)

No	Axis1	Axis2	Axis3
----	-------	-------	-------

Position Data Screen (Diagram 6.2)

A. Position Data

No.

This is position No. It is not editable.

Axis1~4

Set the coordinates for each axis.

The setting range is -99999.999~99999.999.

Vel

Set the velocity.

The range is from 1 to the value stored in All Axis Common parameter No.21 "Input value check drive velocity MAX."

* If all axes common parameter No. 20 (Operating speed check timing) is 0 (check during input), during Vel data is input, it will be checked by this MAX speed.

Acc

Set the acceleration.

The range is from 1 to the value stored in all axis common parameter No.22 "Acceleration MAX"

Dcl

Set the deceleration

The range is from 1 to the value stored in all axis common parameter No.23 "Deceleration MAX"

6. Position Data Edit Window

B. Common Buttons



Common Buttons (Diagram 6.3)



→ **Save as**

Saves point table to a file.



→ **Transmit to Controller**

Writes the positions to the controller.



→ **Print**

Prints the point table.



→ **Obtain Current Position**

Teaches current position to point table.



→ **- Direction Jog**

While this button is pressed, axis that displays the “check” mark will jog backward.
If an increment distance is indicated (0.001mm~1mm), the selected axis will move backward that specified distance every time the button is pressed.



→ **+ Direction Jog**

While this button is pressed, axis that display the “check” mark will jog forward
If an increment distance is indicated (0.001mm~1mm), the selected axis will move forward that specified distance every time the button is pressed.



→ **Move Specific Position**

Axis that displays “check” mark or servo ON will move to position No. where No. of the cursor is located in the point table.

*If there is written position data, transmit to the controller first.



→ **Move Specific Position Continuously**

Axis that displays “check” mark or servo On will move to position No. where the cursor is located.

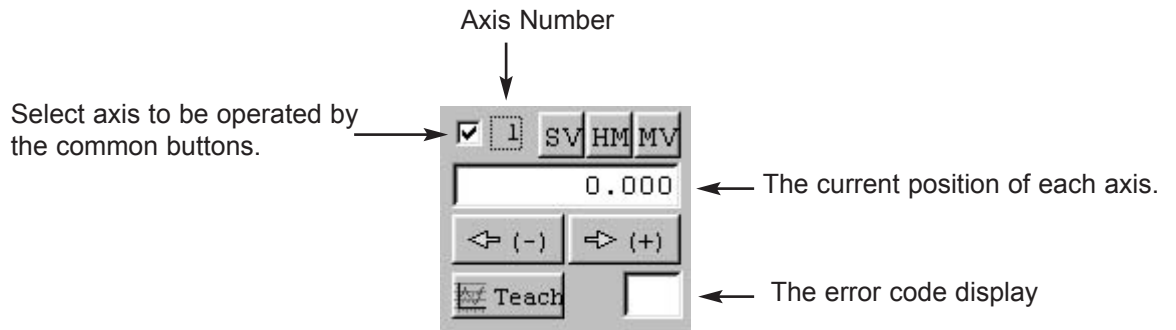


→ **Cancel Motion of All Axes**

Cancels motion of all axes.

6. Position Data Edit Window

C. Single Axis Buttons



Axis Button (Diagram 6.4)

SV → Turns ON or OFF the servo.
(The button color becomes sky blue when servo is on.)

HM → Returns to home if the axis servo is ON.

MV → Moves to position no. where the cursor is located in the point table, if the axis servo is ON.
(The button color becomes yellow during moving).

⇒ (+) → Jogs forward if the axis servo is ON.
If an increment distance is indicated (0.001mm~1mm), the axis will move forward that jog that specified distance every time the button is pressed.

⇐ (-) → Jogs backward if the axis servo is ON.
If an increment distance is indicated (0.001mm~1mm), the axis will move backward that jog that specified distance every time the button is pressed.

Teach → Will read the current location of the actuator and place it into the line of the point table that is highlighted.
(It will not transmit to the controller).

6. Position Data Edit Window

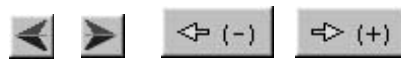
D. Setting Function

Vel	<input type="text"/>
Acc	<input type="text"/>
Dcl	<input type="text"/>
Inc.	<input type="text"/>

Set Vel (velocity), Acc (acceleration), Dcl (deceleration) and Inc (incremental distance) for manual servo control.

If the Vel, Acc and Dcl data has been entered in the point table, these settings will be ignored for that one point.

Setting Function (Diagram 6.5)



Jog Buttons (Diagram 6.6)

Though Position Edit menu displays coordinates, those coordinates are only valid if the axes have been homed. If they have not, the coordinates displayed may not be the true location. When an increment distance has been specified, the Jog button will trigger increment moves. If the button is held down longer than 1.6 seconds the actuator will start to jog. Every second, thereafter, this will cause the actuator to jog faster. The jog speeds will increase as such: 1 -> 10 -> 30 -> 50 -> 100 (mm/s)

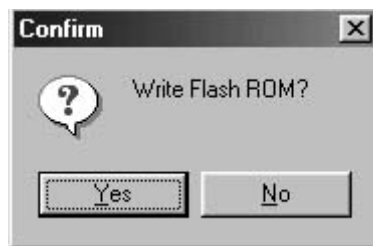
Caution:

If there is motion, such as through a program, an error may occur if a jog command is sent while in motion. The error will stop the program and start to jog.

6. Position Data Edit Window

6-2 Save Position and End Edit

- (1) Save the edited position data to a file:
Click the Save as button at the position edit window.
This is the same function as File (F) -> Save as (A).
- (2) Transmit the edited position to the controller:
Click the Transmit to the controller button in the position edit window.
Save the edited position data into the controller memory.
This is available in the ON-line editing menu only.
- (3) Flash ROM Write:
After transmission to the controller, the confirmation message, "Write Flash ROM?" will be prompted.



Confirm (Diagram 6.7)

- Click Yes (Y)** -> Write the memory data into Flash ROM.
- Click No (N)** -> Do not write the memory data into Flash memory.

- (4) End point edit:
When you close the point edit window, the confirmation message, "Save edited data in the Controller?" will be prompted.



Confirm (Diagram 6.8)

- Yes (Y)** -> Transmit the edited data to the controller. -> Write into Flash ROM.
- No (N)** -> Delete the edited data and end operation.
- Cancel** -> Cancel finish, and return to position edit window.

7. Position Data: Copy, Move and Delete

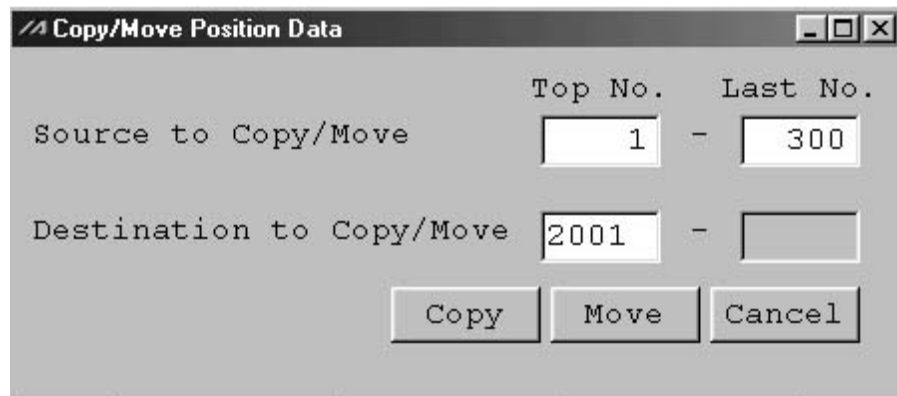
7-1 Position Data: Copy · Move

(1) From the menu, select (O) -> Copy/Move (C).

(2) The position data copy/move window will be displayed.

To copy: Select the Top No. and the Last No. of source and destination you wish to copy.
Click the Copy button.
Copy the selected position.

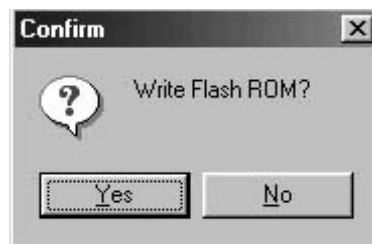
To move: Click the Move button.
Move the selected position.



Copy/Move Position Data Screen (Diagram 7.1)

(3) Flash ROM write:

After complete copy or move, the confirmation message "Write Flash ROM?" will be prompted.



Confirm (Diagram 7.2)

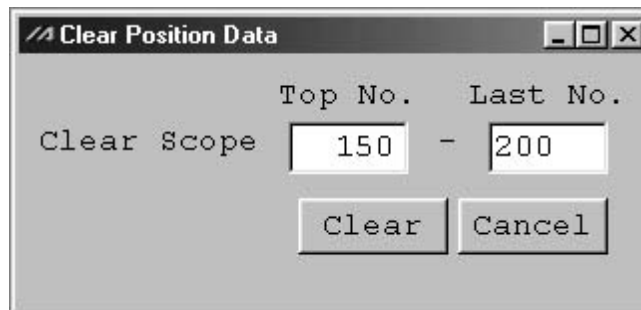
Yes (Y) -> Write the memory data into Flash ROM

No (N) -> Do not write the memory data into Flash ROM

7. Position Data Copy, Move and Delete

7-2 Clear Position Data

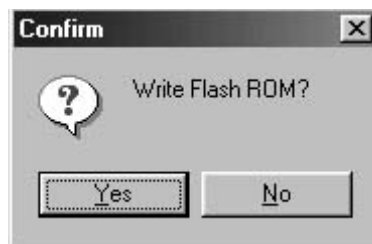
- (1) From the menu, select Position (O) -> Clear (L).
- (2) The position data clear window will be displayed.



Clear Position Data (Diagram 7.3)

- Input the Top No and the Last No. you wish to clear.
- Click the Clear button.
- By clicking the Cancel button, the operation will be canceled.

- (3) Flash Rom write:
After completing clear, the confirmation message, "Write into Flash ROM?" will be prompted.






Confirm (Diagram 7.4)

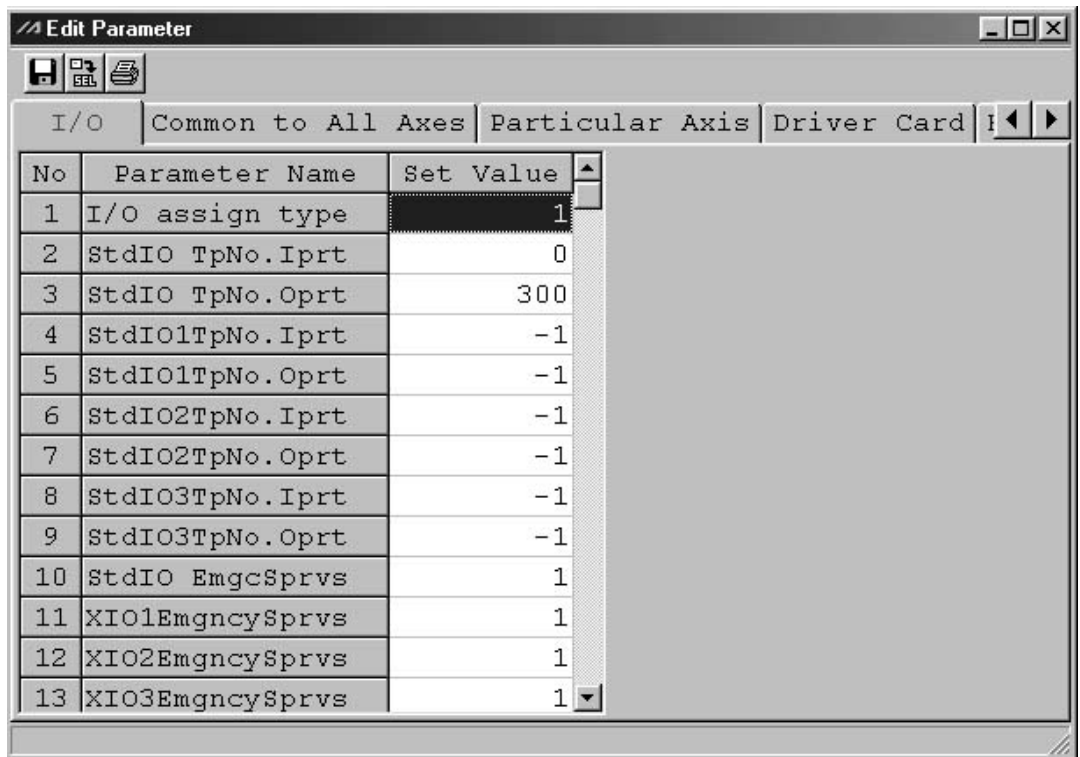
- Yes (Y)** -> Write the memory data into Flash ROM.
- No (N)** -> Do not write the memory data into Flash ROM.

8. Parameter Edit Window

8-1 Explanation of Parameter Edit Window

- (1) From the menu, select Parameter (P) -> Edit (E).
- (2) The parameter edit window will be displayed.
Select the appropriate parameter and change its value.
You may not change any number that are shaded since they are values exclusive to the controller.

-  → **Save As:**
Assigns a name to the program and save.
-  → **Transmit to the controller:**
Transmits the parameter data to the controller.
-  → **Print:**
Prints parameters.



No	Parameter Name	Set Value
1	I/O assign type	1
2	StdIO TpNo.Iprt	0
3	StdIO TpNo.Oprt	300
4	StdIO1TpNo.Iprt	-1
5	StdIO1TpNo.Oprt	-1
6	StdIO2TpNo.Iprt	-1
7	StdIO2TpNo.Oprt	-1
8	StdIO3TpNo.Iprt	-1
9	StdIO3TpNo.Oprt	-1
10	StdIO EmgcSprvs	1
11	XIO1EmgncySprvs	1
12	XIO2EmgncySprvs	1
13	XIO3EmgncySprvs	1

Parameter Edit (Diagram 8.1)

*The parameter above is I/O. Clicking by each items, display other parameter.

8-2 Save parameter and end edit

- (1) Save the edited parameter data to a file:
Click the Save As button at the parameter edit window.
The same function as File (F) -> Save as (A).
- (2) Transmit the edited parameter data to the controller:
Save the edited parameter data at the controller memory.
Click Transmit to Controller button at the parameter edit window.
This is available at the On-line editing menu only.

8. Parameter Edit Window

(3) Flash ROM write:

After completing transmission, the confirmation message, "Write Flash ROM?" will be prompted.



Confirm (Diagram 8.2)

Yes (Y) -> Write the data into Flash ROM.

No (N) -> Do not write the data into Flash ROM.

If reset (restart the power, software reset), the memory data is deleted and data from Flash ROM will be used.

(4) Controller Restart (software reset):

After complete writing into Flash ROM, the confirmation message, "Reset the controller?" will be prompted.

Yes (Y) -> Restart and load changed parameters.

No (N) -> Do not reset (current parameter remain ineffect).

The changed parameter will used controller after restart (software reset) or power installation.



Confirm (Diagram 8.3)

(5) End parameter edit:

When you close the parameter edit window, the confirmation message, "Save edited data in the Controller?" will be prompted.



Confirm (Diagram 8.4)

Yes (Y) -> Transmit the edited data to the controller.

No (N) -> Delete the edited data and exit.

Cancel -> Cancel exit and return to the edit window.

Parameter back-up is recommended when you set up the system.

*Since there are many parameters, backing up the parameter is highly recommended.

9. Symbol Edit Window

9-1 Regarding Symbol

Names can be applied to variables, flags, tags and etc. They are considered Symbols in the X-SEL controller.

(1) Support area:

We support the following items in which to apply symbols.

Variable No., Flag No., Tag No., Subroutine No., Program No., Position No., Input Port No., Output Port No., Axis No., and Constants.

(2) Rules for writing symbols:

1. Symbol should be maximum of 9 alphanumeric characters and start with a letter or an under score.
2. Different subroutines, tags, and other functions may not share the same symbol name.
3. Flags, Inputs and Outputs may not share the same name (Exception - local flags in different program may share a name).
4. Integer and real variables may not share the same name. (Exception - local variables in different programs share a name.)




(3) Maximum defined symbols - 1,000

(4) Maximum use of all symbols, collectively - 5,000. A single line of code can use 4 symbols (as a condition, operand one, operand two and a post.)

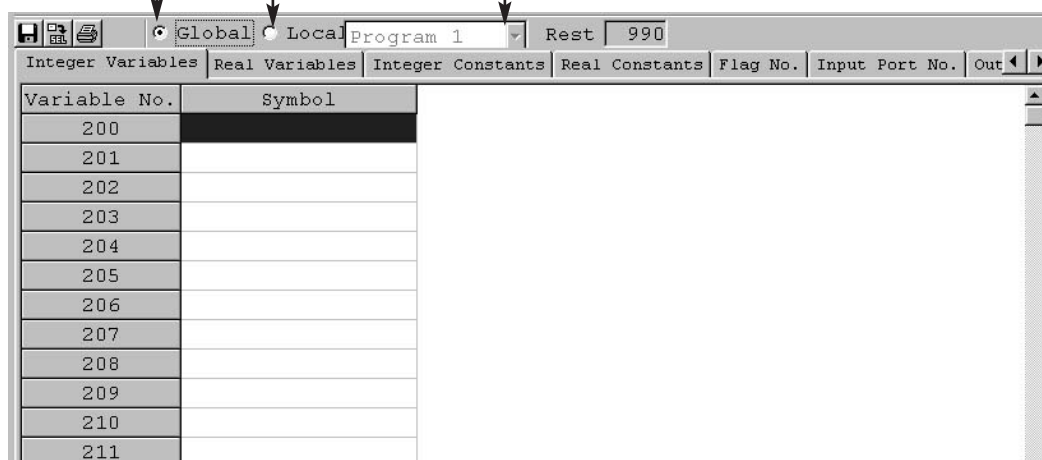
9. Symbol Edit Window

9-2 Explanation of Symbol Edit Window

- (1) From the menu select Symbol (Y) -> (E).
- (2) The symbol edit window will be displayed.

-  Save as:
Assigns a name to the symbol and saves.
-  Transmit to Controller:
Transmits the symbol data to the controller.
-  Print:
Prints the symbol data.

Select the global area and the local area Designate program No. if you chose the local area



Symbol Edit (Diagram 9.1)

*Although only the integral variable symbol edit window is displayed, by clicking each tab, other symbol edit windows will be displayed.

9-3. Symbol Save and Edit Completion

- (1) Save the symbol to file.
Click **Save As** button in the symbol edit window.
The same function as **File (F) -> Save as (A)**.
- (2) Transmit the symbol data to the controller.
Save the symbol data to the controller memory.
This is only available at the On-line editing menu.

9. Symbol Edit Window

(3) Writing into Flash ROM:

After transmitting to the controller, the confirmation message, "Write Flash ROM?" will be prompted.



Confirm (Diagram 9.2)

Yes (Y) -> Write the memory data to Flash ROM

No (N) -> Do not write the memory data into Flash ROM.

If reset (restart the power, software reset), the memory data is deleted and data from Flash ROM will be used.

(4) Symbol edit completion:

When you close the symbol edit window, the confirmation message, "Save edited data in the Controller?" will be prompted.



Confirm (Diagram 9.3)

Yes (Y) -> Transmit the edited data to the Controller.

No (N) -> Delete the edited data and end operation.

Cancel -> Cancel exit and return to the symbol edit window.

10. Monitor

You may view the current status of each item from the monitor of the menu.

(1) Task Form Window:

Displays the executing program status.

No	Name	Step	Tk	Sts	L	Exec	T	Err
1		0						
2		8						
3		7						
4		0						
5		5						
6		0						
7		0						
8		7						
9		2						

Task Form (Diagram 10.1)

(2) System Status Monitor Window:

Status Name	Status
Drive Mode SW Status	MANUAL
TP Enable SW Status	ON
Safety Gate Status	OPEN
Emergency Stop SW Status	Non Emergency-Stop
Power Abnormality Status	NORMAL
Battery Voltage Down Warning Status	No Lowering
Battery Voltage Abnormality Status	NORMAL
(Reserved)	OFF

System Status (Diagram 10.2)

(3) Axis Status Monitor Window:

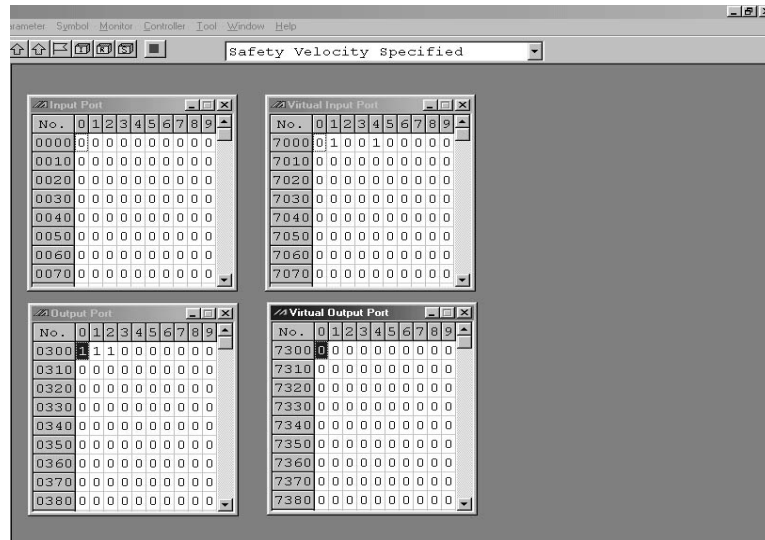
Displays the status of each axis.

Axis Status	Axis Sensor Status	Ecdr Status (when resta)
<input checked="" type="radio"/> Servo Axis in Use	<input checked="" type="radio"/> Creep Sensor	<input checked="" type="radio"/> Over Speed
<input checked="" type="radio"/> Home Return	<input checked="" type="radio"/> Overrun Sensor	<input checked="" type="radio"/> Full Abs. Status
<input checked="" type="radio"/> Servo ON/OFF	<input checked="" type="radio"/> Home Sensor	<input checked="" type="radio"/> Count Error
<input checked="" type="radio"/> Motion Cmnd Completion	<input checked="" type="radio"/> (System Reserve)	<input checked="" type="radio"/> Count Overflow
<input checked="" type="radio"/> Press Panning the Air		<input checked="" type="radio"/> (System Reserve)
<input checked="" type="radio"/> (System Reserve)		<input checked="" type="radio"/> Rotation Error
<input checked="" type="radio"/> (System Reserve)		<input checked="" type="radio"/> Battery Error
		<input checked="" type="radio"/> Battery Alarm

Axis Status (Diagram 10.3)

10. Monitor

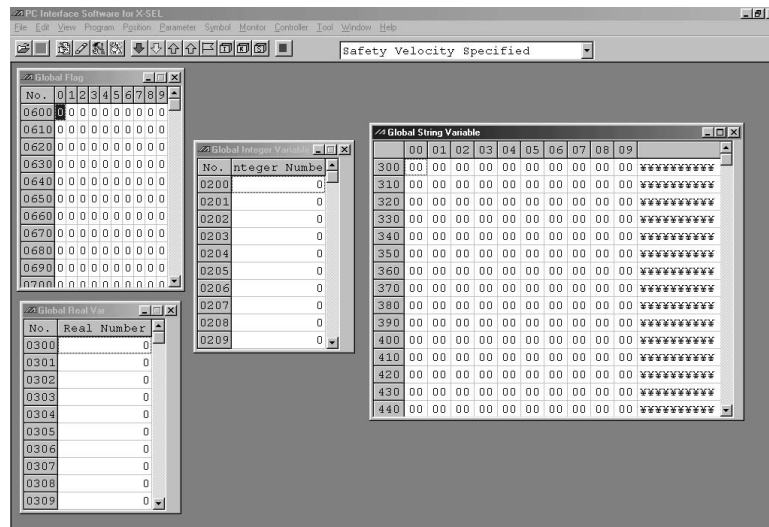
- (4) Input Port Window, Virtual Input Port Window, Output Port Window, and Virtual Output Window:
 Displays ON/OFF status of each input and output. 1: ON 0:OFF



Input and Output Port (Diagram 10.4)

State of output ports, virtual output ports, and global flags can be switched by double clicking.

- (5) Global Flag Window, Global Integer Variable Window, Global Real Variable Window, and Global String Variable:



Global (Diagram 10.5)

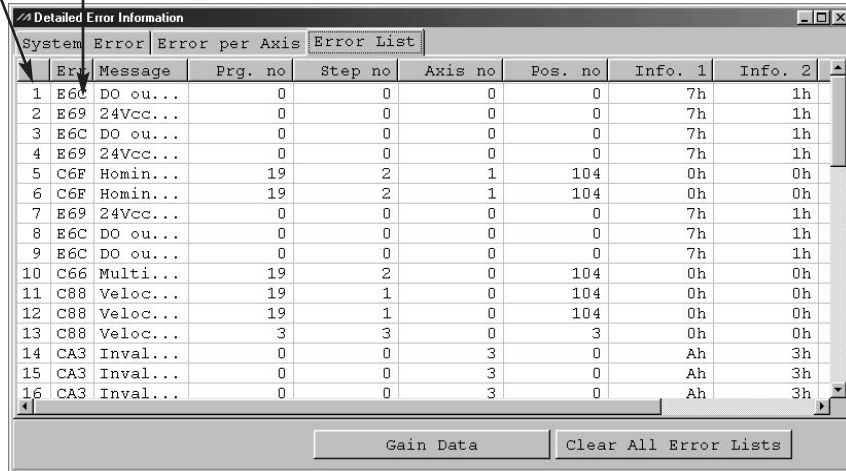
You can change and substitute the values of global variables.
 You can also change and substitute the letters of global strings.

10. Monitor

(6) Error Detail Information:

When the error occurs, the error code and the message will be displayed.
The smaller number, the most recent the error.

Error Code



Err.	Message	Prg. no	Step no	Axis no	Pos. no	Info. 1	Info. 2
1	E6C DO ou...	0	0	0	0	7h	1h
2	E69 24Vcc...	0	0	0	0	7h	1h
3	E6C DO ou...	0	0	0	0	7h	1h
4	E69 24Vcc...	0	0	0	0	7h	1h
5	C6F Homin...	19	2	1	104	0h	0h
6	C6F Homin...	19	2	1	104	0h	0h
7	E69 24Vcc...	0	0	0	0	7h	1h
8	E6C DO ou...	0	0	0	0	7h	1h
9	E6C DO ou...	0	0	0	0	7h	1h
10	C66 Multi...	19	2	0	104	0h	0h
11	C88 Veloc...	19	1	0	104	0h	0h
12	C88 Veloc...	19	1	0	104	0h	0h
13	C88 Veloc...	3	3	0	3	0h	0h
14	CA3 Inval...	0	0	3	0	Ah	3h
15	CA3 Inval...	0	0	3	0	Ah	3h
16	CA3 Inval...	0	0	3	0	Ah	3h

Gain Data Clear All Error Lists

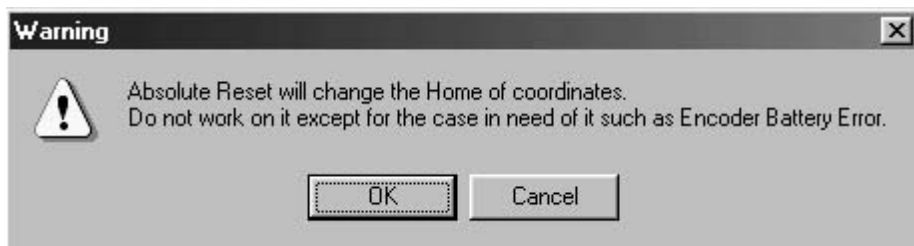
Error Detail Information (Diagram 10.6)

11. Absolute Encoder Reset Method

When the X-SEL Controller's absolute encoder battery voltage is low or when the encoder battery error occurs by removing the battery and encoder cable, you will need to execute absolute encoder reset.

(1) From the menu, select Controller (C) -> Absolute Encoder Reset (A).

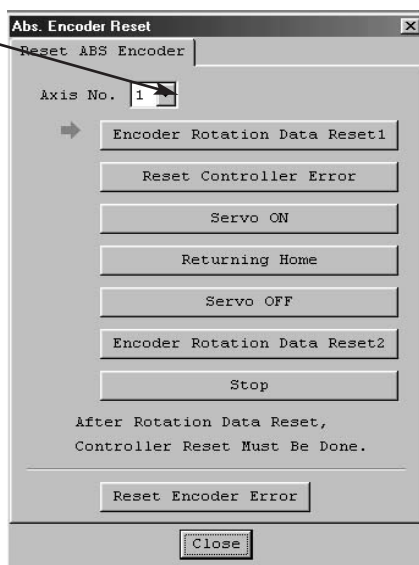
(2) The Warning window will be displayed and click OK button.



Warning (Diagram 11.1)

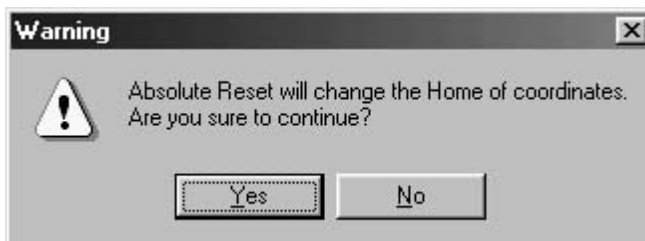
(3) The Absolute Encoder Reset window will be displayed.

Click [here](#) and select the axis you wish to execute Absolute Encoder Reset.



Absolute Reset (Diagram 11.2)

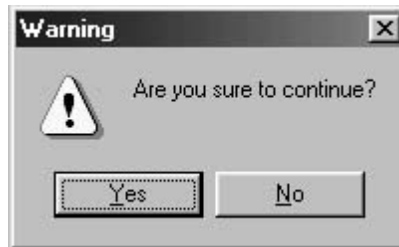
(4) Click the Encoder Rotation Data Reset 1 button. The Warning window will be displayed. Click Yes (Y).



Warning (Diagram 11.3)

11. Absolute Encoder Reset Method

(5) The Warning window will be displayed again and click Yes (Y).



Warning (Diagram 11.4)

(6) After complete processing Encoder Rotation Data Reset 1, the red arrow will move to next item. Click the following processing buttons after every completion (When one process is completed, the red arrow moves to the next item).

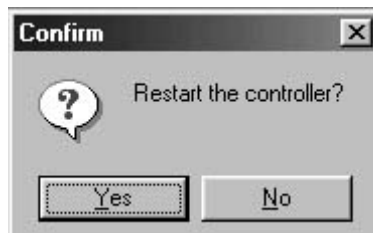
1. Reset Controller Error
2. Servo ON
3. Returning Home
4. Servo OFF
5. Encoder Rotation Data Reset 2

Caution: "Error No. D10 IPM Error" may occur when you process "Reset Controller Error" on the first edition software. When this error occurs, exit the program. Then restart the power on the controller and execute the program again from (2). (If the encoder battery is normal, the error will not occur and the controller 7-segment displays "rdy" or "Ardy" but the home point of axis is not adjusted.)

After processing Encoder Rotation Data Reset 2, click the Close button to close the Absolute Encoder Reset window.

(7) Select Controller (C) -> Software Reset (R).

(8) The Confirm window will be displayed. Click Yes and restart the controller.



Confirm (Diagram 11.5)

(9) If there is no error, the controller displays "rdy" at the 7 seg LED.

(10) Processing Absolute Encoder Reset is complete now.

If you want to do it over again, exit the X-SEL Controller PC Interface Software and start from the beginning.

12. Supplementary Explanation of the Controller Menu

12-1 Software Reset

Restart the controller.

The data which is not written into Flash ROM will be deleted.

From the menu, click Controller (C) -> Software Reset (R).

12-2 Error Reset

Reset the message level and the operation release level error. If the error is not solved, it will occur again. From the menu, click Controller (C) -> Error Reset (R).

12. Supplementary Explanation of the Controller Menu

12-3 Request Driver Power Recovery and Request Releasing Pausing Operation

(1) Request Driver Power Recovery Method:

1. How to execute Request Driver Power Recovery:

Execute in Request Driver Power Recovery by any of the following.

* Set 1 in I/O parameter No.44 (Input Select Function 014 = Driver Power Cut-off Release Input) and ON edge input on Input port No.14.

*From the software menu, execute Controller -> Request Driver Power Recovery.

*From the mode select window of the teaching pendant, select Ctl (Controller operation) -> R Pwr (Request Power Drive Recovery) and execute.

2. Case which requires executing Request Power Drive Recovery:

Only the following case requires executing Request Power Drive Recovery.

*When you set 1 on I/O parameter No.44, Driver Power Cut-off occurs. -> Recover after the main cause of cut-off is solved.

(2) Operation Hold Release Request:

1. How to execute Request Release Pausing Operation:

Execute Request Releasing Pausing Operation by any of the following

*Set 1 on I/O parameter No. 35 (input select function 005 = Operation Hold Release Signal) and ON edge input on input port No.5.

*From the software menu, execute Controller (C) -> Operation Hold Release Signal.

*From the mode select window of the teaching pendant, select Ctl -> RAct and execute.

2. Case which requires Operation Hold Release Request:

Each of the following cases require executing Request Releasing Pausing Operation.

*When you set 2 on other parameter No.9, (Dead man SW recovery release according to type = continuous operation release [during automatic operation only]), stop according to dead man SW during automatic operation -> recover after releasing stop (Operation Hold Release).

*When you set 2 on other parameter No.9, (emergency stop recovery according to type =continuous operation recovery during automatic operation only), emergency stop during automatic operation -> recover after emergency stop release (operation hold release).

*When you set 2 on other parameter No.11, (according to recovery type during safety gate open recovery =continuous operation recovery (during automatic operation only) safety gate OPEN during automatic operation -> recovery after safety gate CLOSE (operation hold release).

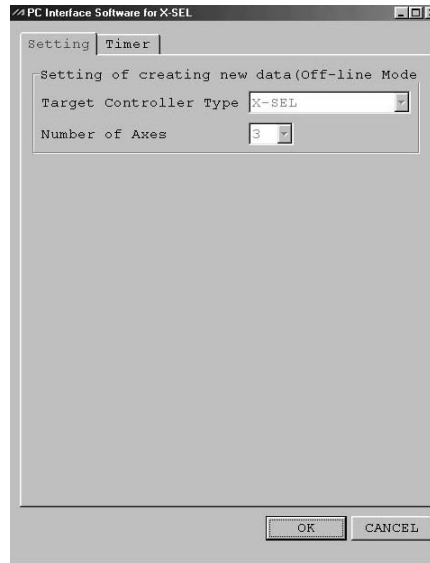
*When you set 1 on I/O parameter No.36, (input selective function 006 = pausing operation signal), OFF level input on input port No.6 at automatic operation (pausing operation) -> recover after ON level input on Input port No.6 (operation hold release).

*If the case (1) 2. and (2) 2 occur at the same time, you need to first execute Request Driver Power Recovery. After complete it, execute Operation Hold Release Request.

13. Tool

Setting and Timer exist in Tool.

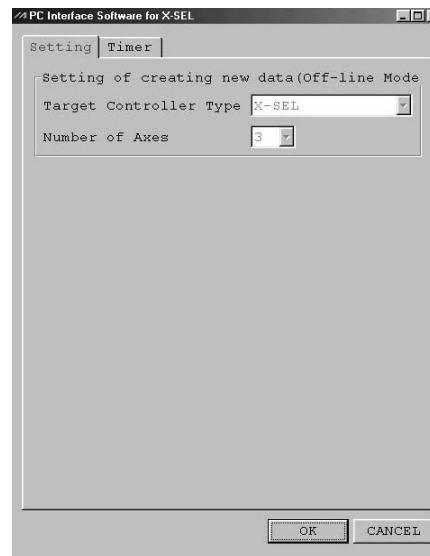
- (1) When you create a new program and position ON-line, you can choose the type of controller. Besides X-SEL controller, you can edit the program and position of SEL-E/G, DS, and SEL-H controllers as well. This is only available at on-line editing.



Setting (Diagram 13.1)

- (2) Timer

Set the time for the controller to inquire each data. It is not usually necessary to change.



Timer (Diagram 13.2)

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