

**SYSMAC**  
**WS01-NCTF1-E**  
**SYSMAC-NCT Support Tool**

**OPERATION MANUAL**

**OMRON**

**SYSMAC**  
**WS01-NCTF1-E**  
**SYSMAC-NCT Support Tool**

**Operation Manual**




*Revised June 2005*



## Notice:

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to the product.

-  **DANGER** Indicates information that, if not heeded, is likely to result in loss of life or serious injury. Additionally, there may be severe property damage.
-  **WARNING** Indicates information that, if not heeded, could possibly result in loss of life or serious injury. Additionally, there may be severe property damage.
-  **Caution** Indicates information that, if not heeded, could result in relatively serious or minor injury, damage to the product, or faulty operation.

## OMRON Product References

All OMRON products are capitalized in this manual. The word “Unit” is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product.

The abbreviation “Ch,” which appears in some displays and on some OMRON products, often means “word” and is abbreviated “Wd” in documentation in this sense.

The abbreviation “PC” means Programmable Controller and is not used as an abbreviation for anything else.

## Visual Aids

The following headings appear in the left column of the manual to help you locate different types of information.

**Note** Indicates information of particular interest for efficient and convenient operation of the product.

**1, 2, 3...** 1. Indicates lists of one sort or another, such as procedures, checklists, etc.

## © OMRON, 1997

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form, or by any means, mechanical, electronic, photocopying, recording, or otherwise, without the prior written permission of OMRON.

No patent liability is assumed with respect to the use of the information contained herein. Moreover, because OMRON is constantly striving to improve its high-quality products, the information contained in this manual is subject to change without notice. Every precaution has been taken in the preparation of this manual. Nevertheless, OMRON assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained in this publication.



# TABLE OF CONTENTS

<b>PRECAUTIONS</b> .....	<b>XV</b>
1 Intended Audience .....	xvi
2 General Precautions .....	xvi
3 Safety Precautions .....	xvi
4 Operating Environment Precautions .....	xvii
5 Application Precautions .....	xvii
<b>SECTION 1</b>	
<b>Introduction</b> .....	<b>1</b>
1-1 Outline .....	2
1-2 System Configuration .....	4
1-3 Functions .....	6
1-4 Operating Procedure .....	6
<b>SECTION 2</b>	
<b>Setup and Basic Functions</b> .....	<b>9</b>
2-1 Connecting to the PC .....	10
2-2 Formatting Floppy Disks .....	11
2-3 Backing Up Installation Disks .....	12
2-4 Installation .....	13
2-5 Basic Functions .....	14
<b>SECTION 3</b>	
<b>Settings</b> .....	<b>21</b>
3-1 Selecting the Model .....	22
3-2 Setting Communications Specifications .....	22
3-3 Specifying the Destination Position Control Unit: C200HW-NC113/213/413 PCUs .....	24
<b>SECTION 4</b>	
<b>Editing Data</b> .....	<b>25</b>
4-1 List of Data Items .....	26
4-2 Data Edit Screens .....	30
4-3 Saving and Reading Data .....	34
4-4 Clearing Data and Jumping .....	36
4-5 Copying Axis Data .....	37
4-6 Editing Parameter Data .....	39
4-7 Editing Sequence Data: C200HW-NC113/213/413 .....	42
4-8 Editing Positioning Actions: C500-NC113/211 .....	44
4-9 Editing Speed Data .....	46
4-10 Editing Acceleration/Deceleration Time and Pattern Data .....	48
4-11 Editing Dwell Time Data .....	50
4-12 Editing Zone Data: C200HW-NC113/213/413 .....	51
<b>SECTION 5</b>	
<b>Transferring and Verifying Data</b> .....	<b>53</b>
5-1 Transferring Data .....	54
5-2 Verifying Data .....	56
5-3 Writing Data to Flash Memory/EEPROM .....	57
<b>SECTION 6</b>	
<b>Monitoring the Position Control Unit</b> .....	<b>59</b>
6-1 Overview .....	60
6-2 PCU Monitor Screen .....	60
6-3 Multimonitor (C200HW-NC113/NC213/NC413) .....	61
6-4 Command Status (C500-NC113/NC211) .....	61
6-5 Command Trace (C500-NC113/NC211) .....	62

# TABLE OF CONTENTS

<b>SECTION 7</b>	
<b>Managing and Printing Files</b> .....	<b>63</b>
7-1 Deleting Files .....	64
7-2 Printing Data .....	65
<b>Appendix</b>	
Error Messages and Troubleshooting .....	67
<b>Index</b> .....	<b>69</b>
<b>Revision History</b> .....	<b>71</b>

## About this Manual:

This manual describes the installation and operation of the SYSMAC-NCT Support Tool and includes the sections described below.

Please read this manual carefully and be sure you understand the information provided before attempting to install and operate the SYSMAC-NCT Support Tool. **Be sure to read the precautions in the next section.**

This manual is used in conjunction with the following Position Control Unit operation manuals. The suffixes have been left off the catalog numbers. Be sure you are using the most recent version for your area.

*C200HW-NC113/NC213/NC413 Position Control Units Operation Manual (Cat. No. W334)*

*C500-NC113/NC211 Position Control Units Operation Manual (Cat. No. W323)*

**Section 1** introduces the SYSMAC-NCT Support Tool and provides brief outlines of the system configuration, functions, and operating procedure.

**Section 2** provides information on connecting the computer running the SYSMAC-NCT Support Tool to the Position Control Unit or CPU Unit. It also provides details on the installation and basic functions of the SYSMAC-NCT Support Tool.

**Section 3** provides information on setting the Position Control Unit model to be used and the communications specifications used for data exchange between the PC and personal computer.

**Section 4** provides information on editing, clearing, saving, and loading data.

**Section 5** provides information on data exchange between the Position Control Unit and personal computer, the comparison of such data, and writing the data to the flash memory/EEPROM of the Position Control Unit.

**Section 6** describes the PCU monitoring function, which is used to display information such as error codes, sequence numbers, the Position Control Unit's I/O status, and the present position. Details on how to use the multimonitor function for the C200HW-NC113/213/413 and the monitoring functions for the C500-NC113/211 are also given.

**Section 7** provides information on managing files such as deleting and printing data.

The **Appendix** provides a troubleshooting table with error messages.



**WARNING** Failure to read and understand the information provided in this manual may result in personal injury or death, damage to the product, or product failure. Please read each section in its entirety and be sure you understand the information provided in the section and related sections before attempting any of the procedures or operations given.



## ***Read and Understand this Manual***

Please read and understand this manual before using the product. Please consult your OMRON representative if you have any questions or comments.

## ***Warranty and Limitations of Liability***

### ***WARRANTY***

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

### ***LIMITATIONS OF LIABILITY***

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

# ***Application Considerations***

## ***SUITABILITY FOR USE***

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this manual.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

**NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.**

## ***PROGRAMMABLE PRODUCTS***

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

## ***Disclaimers***

### ***CHANGE IN SPECIFICATIONS***

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

### ***DIMENSIONS AND WEIGHTS***

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

### ***PERFORMANCE DATA***

Performance data given in this manual is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

### ***ERRORS AND OMISSIONS***

The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.



# PRECAUTIONS

This section provides general precautions for using the Programmable Controller (PC) and related devices.

**The information contained in this section is important for the safe and reliable application of the SYSMAC-NCT Support Tool. You must read this section and understand the information contained before attempting to set up or operate a PC System.**

1 Intended Audience .....	xvi
2 General Precautions .....	xvi
3 Safety Precautions .....	xvi
4 Operating Environment Precautions .....	xvii
5 Application Precautions .....	xvii

## 1 Intended Audience

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent).

- Personnel in charge of installing FA systems.
- Personnel in charge of designing FA systems.
- Personnel in charge of managing FA systems and facilities.


## 2 General Precautions

The user must operate the product according to the performance specifications described in the operation manuals.


Before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems, machines, and equipment that may have a serious influence on lives and property if used improperly, consult your OMRON representative.


Make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines, and equipment, and be sure to provide the systems, machines, and equipment with double safety mechanisms.

This manual provides information for programming and operating OMRON PCs. Be sure to read this manual before attempting to use the Tool and keep this manual close at hand for reference during operation.

 **WARNING** It is extremely important that a PC and all PC Units be used for the specified purpose and under the specified conditions, especially in applications that can directly or indirectly affect human life. You must consult with your OMRON representative before applying a PC System to the abovementioned applications.

## 3 Safety Precautions

 **WARNING** Do not attempt to take the Unit apart and do not touch any internal parts while the power is being supplied. Doing either of these may result in electric shock.

 **WARNING** Do not touch any of the terminals or terminal blocks while power is being supplied. Doing either of these may result in electric shock.

## 4 Operating Environment Precautions

Do not install the Unit in any one of the following locations.

- Locations subject to direct sunlight.
- Locations subject to temperatures of 5°C to 55°C.
- Locations subject to condensation as the result of severe changes in temperature.
- Locations subject to humidity of 10% to 90% RH.
- Locations subject to corrosive or flammable gases.
- Locations subject to dust (especially iron dust) or salts.
- Locations subject to shock or vibration.
- Locations subject to exposure to water, oil, or chemicals.
- Take appropriate and sufficient countermeasures when installing systems in the following locations.
  - Locations subject to static electricity or other forms of noise.
  - Locations subject to strong electromagnetic fields.
  - Locations subject to possible exposure to radioactivity.
  - Locations close to power supplies.



### Caution

The operating environment of the PC System can have a large effect on the longevity and reliability of the system. Improper operating environments can lead to malfunction, failure, and other unforeseeable problems with the PC System. Be sure that the operating environment is within the specified conditions at installation and remains within the specified conditions during the life of the system.

## 5 Application Precautions

Observe the following precautions when using the Position Control Unit and PC.



### Caution

Failure to abide by the following precautions could lead to faulty operation of the Position Control Unit or PC or could damage the Position Control Unit or PC. Always heed these precautions.

- Fail-safe measures must be taken by the customer to ensure safety in the event of incorrect, missing, or abnormal signals caused by broken signal lines, momentary power interruptions, or other causes.
- Provide external interlock circuits, limit circuits, and other safety circuits in addition to any provided within the PC to ensure safety.
- Install external breakers and take other safety measures against short-circuiting in external wiring.
- Be sure that all mounting screws, terminal screws, and cable connector screws are tightened to the torque specified in this manual.
- Mount the Unit only after checking the connectors completely.
- Always use the power supply voltage specified in this manual.
- Take appropriate measures to ensure that the specified power with the rated voltage and frequency is supplied. Be particularly careful in places where the power supply is unstable.
- Always connect to a class-3 ground (to 100 Ω or less) when installing the Units.
- Be sure that the terminal blocks, Memory Units, expansion cables, and other items with locking devices are properly locked into place.
- Double-check all the wiring before turning on the power supply.

- Disconnect the functional ground terminal when performing withstand voltage tests.
- Always turn off the power supply to the PC before attempting any of the following.
  - Mounting or disconnecting I/O Units, CPU Units, Memory Cassettes, or any other Units.
  - Assembling the Units.
  - Setting DIP switches or rotary switches.
  - Connecting or disconnecting any cables or wiring.
  - Connecting or disconnecting the connectors.
- Confirm that no adverse effect will occur in the system before changing the present value of any word in memory.
- Confirm that no adverse effect will occur in the system before changing any set value in memory.
- Be sure to confirm that the set parameters operate properly.
- Do not attempt to disassemble, repair, or modify any Units.
- Do not damage, pull, apply stresses to, place heavy objects on, or twist the cables.
- Do not hold cables when transporting the Units.



# SECTION 1

## Introduction

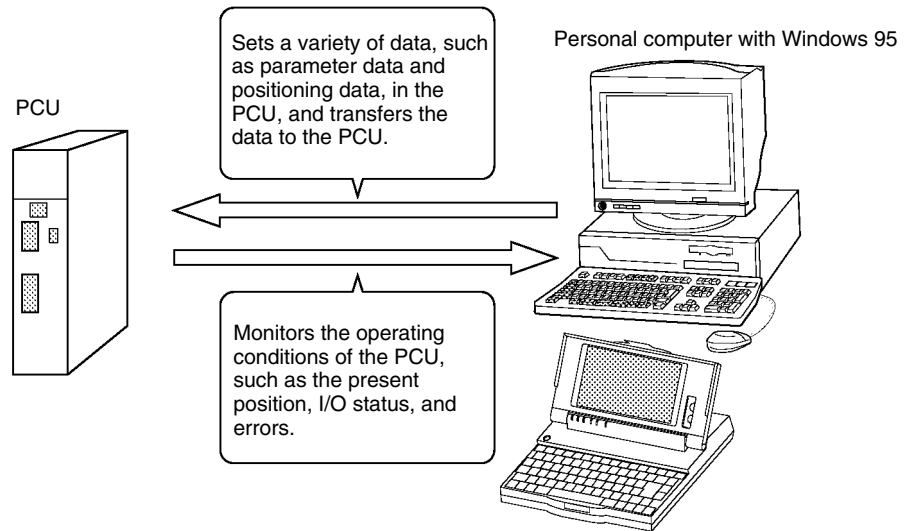
This section introduces the SYSMAC-NCT Support Tool and provides brief outlines of the system configuration, functions, and operating procedure.

1-1	Outline .....	2
1-2	System Configuration .....	4
1-3	Functions .....	6
1-4	Operating Procedure .....	6

# 1-1 Outline

The SYSMAC-NCT Support Tool makes it possible to set a variety of data in a Position Control Unit; to transfer, save, and print data; and to monitor the operation of a Position Control Unit.

The SYSMAC-NCT Support Tool is used with personal computers that have the Windows 95 operating system.



### Applicable Position Control Units

The following Position Control Units can be used with the SYSMAC-NCT Support Tool.

Applicable Position Control Units	Corresponding PCs
C200HW-NC113/213/413	C200HX/HG/HE(-Z) PCs
C500-NC113/211	C-series and CV-series PCs

**Note** The SYSMAC-NCT Support Tool cannot be used with C200H/C200HS CPU Units.

Refer to *1-2 System Configuration* for details on the system configuration.

### Required Specifications of Personal Computer

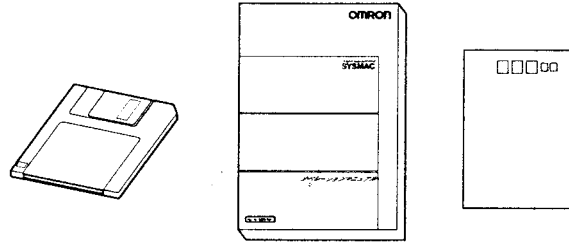
SYSMAC-NCT Support Tools can be used with personal computers that have the following specifications.

Item	Condition
Personal computer	IBM PC/AT personal computer
Operating system	Windows 95
CPU Unit	At least i486 SX
Memory	16 Mbytes min.
Hard disk drive	Minimum of 10 Mbytes available
Floppy disk drive	3.5-inch floppy disk drive (for 1.44-MB floppy disks)
Monitor display	At least VGA

**Checking the Contents of the SYSMAC-NCT Support Tool**

Check the contents of the WS01-NCTF1-E SYSMAC-NCT Support Tool as soon as you obtain it. It should contain the following.

- Installation disks (3.5-inch, 2HD, 1.44-MB): 4
- Operation manual (this document): 1
- Product registration card: 1

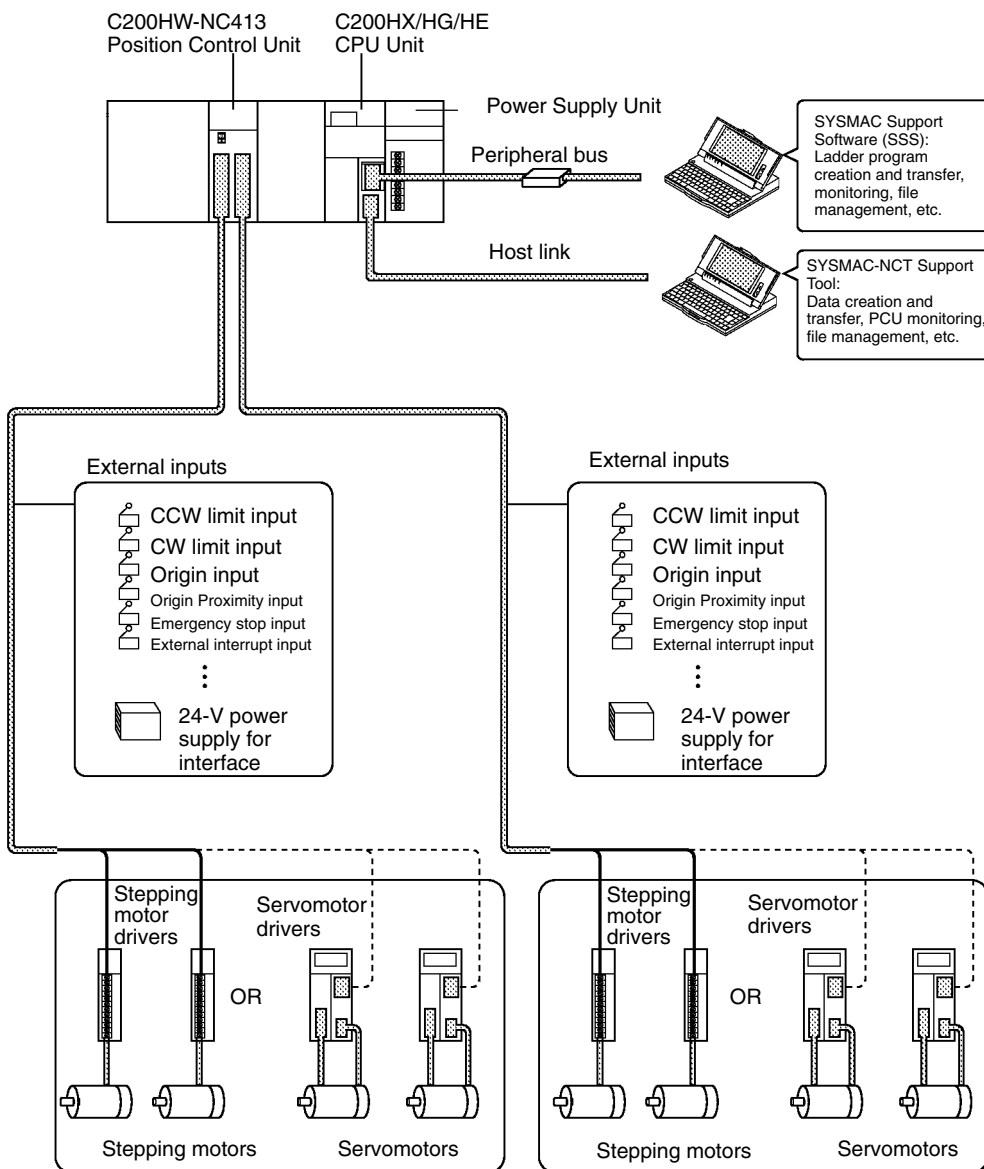


# 1-2 System Configuration

The following examples show the system configuration of applicable Position Control Units.

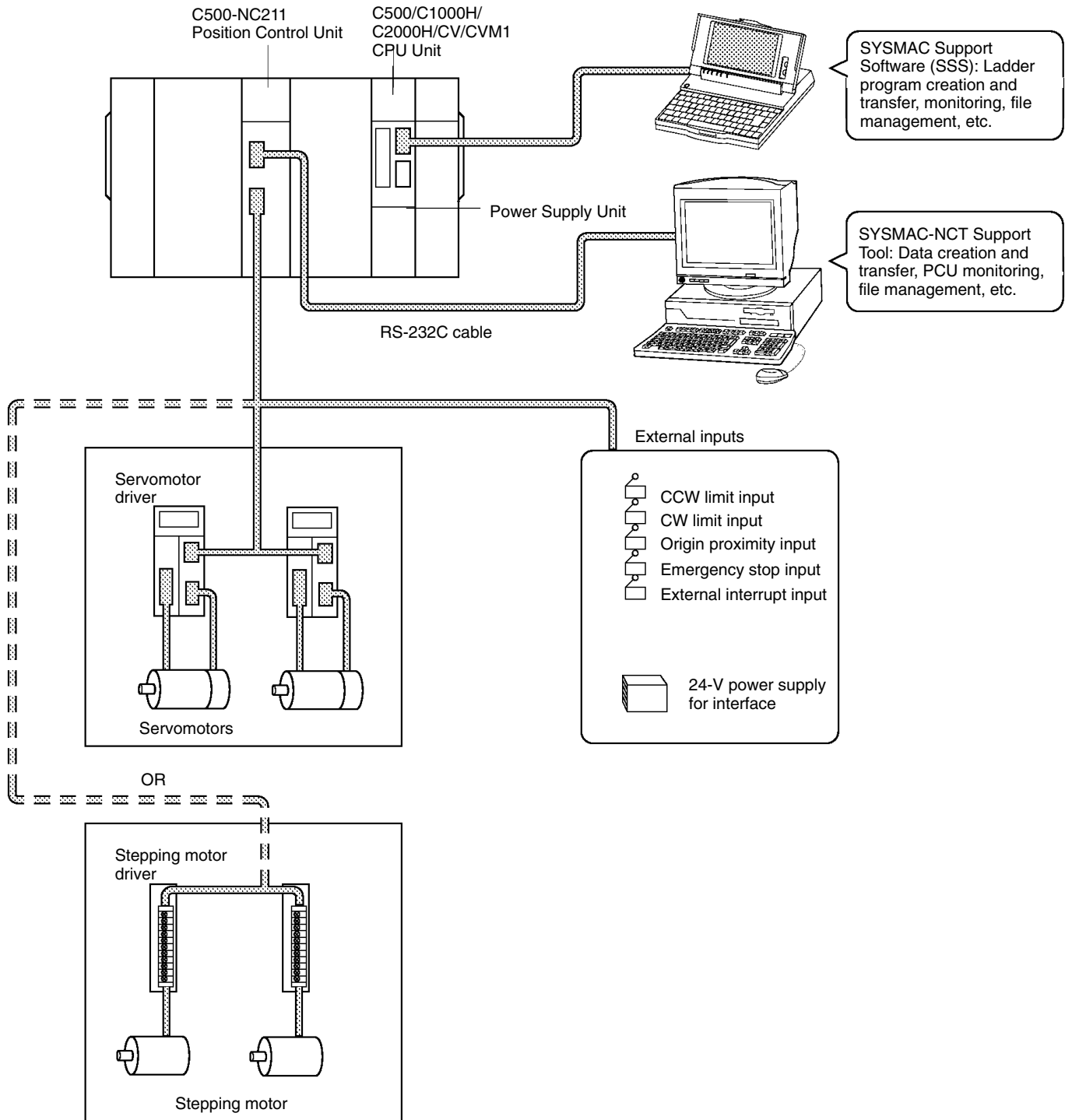
## C200HW-NC113/213/413 PCUs

The following example shows the system configuration for the C200HW-NC413, which is a four-axis Position Control Unit. The C200HW-NC213 is a two-axis Position Control Unit, and the C200HW-NC113 is a single-axis Position Control Unit.



**C500-NC211/113 PCUs**

The following example shows the system configuration for the C500-NC211, which is a two-axis Position Control Unit. The C500-NC113 is a single-axis Position Control Unit.



## 1-3 Functions

The SYSMAC-NCT Support Tool has the following functions.

Name	Function	Description	Page
System Setup	PCU model	Selects the PCU model.	22
	Communications specifications	Sets communications specifications for data exchange with the personal computer.	22
Data Edit	Create	Edits parameter data.	39
		Edits sequence data <sup>*1</sup> .	42
		Edits positioning data. <sup>*2</sup>	44
		Edits speed data.	46
		Edits acceleration time <sup>*1</sup> and acceleration/deceleration pattern data <sup>*2</sup> .	48
		Edits dwell time data.	50
		Edits zone data <sup>*1</sup> .	51
	Save	Saves all data.	34
	Load	Reads all data.	34
	Clear	Clears all or part of the data.	36
	Jump	Displays the specified data number as the first data item (or moves the cursor to the specified data number).	36
Default settings	Returns all or part of the data to the default settings.	39, 49, 51	
Online	Transfer/Verify	Transfers/Verifies data.	54, 56
	Flash memory write <sup>*1</sup>	Writes data to flash memory.	57
	EEPROM write <sup>*2</sup>	Writes data to EEPROM.	57
	PCU monitoring	Displays errors, the present position, I/O status, and other information on the Position Control Unit	Section 6
	Multimonitor <sup>*1</sup>	The C200HW-NC113/213/413 PCUs provide a multimonitor function, which displays the status of four different Position Control Units.	
	Command/status information <sup>*2</sup>	The C500-NC113/211 PCUs provide a command status information function, which displays the commands and statuses allocated in the PC area, and a command tracing function, which traces the commands executed by the Position Control Unit.	
	Command tracing <sup>*2</sup>		
Option <sup>*1</sup>	Specifies the unit number of the destination Position Control Unit.	24	
File Management	File list	Displays file lists.	34
	File delete	Deletes files.	64
Printing	Print	Prints data.	65

\*1: Applicable to C200HW-NC113/213/413 PCUs.

\*2: Applicable to C500-NC113/211 PCUs.

## 1-4 Operating Procedure

Follow the procedure given below to install the SYSMAC-NCT Support Tool in the personal computer, create data, and transfer the data to the Position Control Unit.

- 1, 2, 3...**
1. Connect to the Position Control Unit or CPU Unit.  
Refer to *2-1 Connecting to the PC.*
  2. Back up the installation disks.  
Refer to *2-3 Backing Up Installation Disks.*
  3. Install the SYSMAC-NCT Support Tool.  
Refer to *2-4 Installation.*

4. Start up the SYSMAC-NCT Support Tool.  
Refer to *2-5 Basic Functions*.
5. Set the PCU model and set the communications specifications.  
Refer to *Section 3 Settings*.
6. Prepare the data.  
Refer to *Section 4 Editing Data*.
7. Transfer data to the Position Control Unit and write data to flash memory or EEPROM.  
Refer to *Section 5 Transferring and Verifying Data*.
8. Position with the Position Control Unit.  
Refer to the *C500-NC113/NC211 Position Control Units Operation Manual (W323)* or *C200HW-NC113/NC213/NC413 Position Control Units Operation Manual (W334)*.
9. Monitor the Position Control Unit.  
Refer to *Section 6 Monitoring the Position Control Unit*.

## SECTION 2

# Setup and Basic Functions

This section provides information on connecting the computer running the SYSMAC-NCT Support Tool to the Position Control Unit (PCU) or CPU Unit. It also provides details on the installation and basic functions of the SYSMAC-NCT Support Tool.

2-1	Connecting to the PC .....	10
2-1-1	Connecting Cables .....	10
2-1-2	Connecting to C200HX/HG/HE(-Z) CPU Units .....	10
2-1-3	Connecting to a C500-NC113/211 Position Control Unit .....	10
2-1-4	Preparing the Connecting Cable .....	11
2-2	Formatting Floppy Disks .....	11
2-3	Backing Up Installation Disks .....	12
2-4	Installation .....	13
2-5	Basic Functions .....	14
2-5-1	Starting the Software .....	14
2-5-2	Quitting .....	15
2-5-3	Menus .....	15
2-5-4	Menu Items .....	15
2-5-5	Tool Bar .....	17
2-5-6	Help .....	18



## 2-1 Connecting to the PC

### 2-1-1 Connecting Cables

Connect the computer to the Position Control Unit or CPU Unit with the following cables and conversion connectors. These items are sold separately.

**Personal Computer with D-sub 9-pin RS-232C Connector**

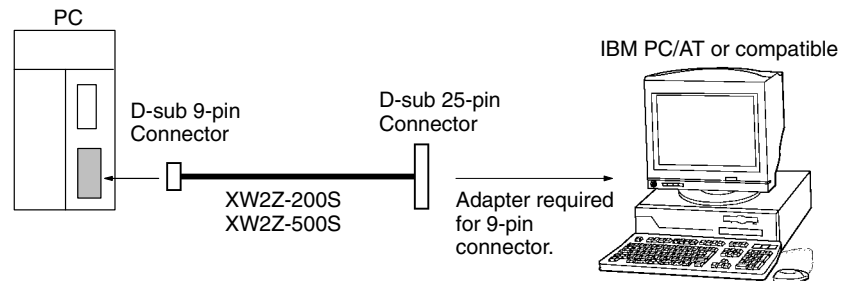
Model	Cable length	Specifications
XW2Z-200S/500S	2 m/5 m	D-sub 25-pin – D-sub 9-pin
XW2Z-200R/500R (See note 1.)	2 m/5 m	

- Note**
1. These cables and connectors cannot be used for the C200HX/HG/HE(-Z) PCs.
  2. The connector of the XW2Z-200S/500S and XW2Z-200R/500R Connecting Cable is a male 25-pin terminal. An adapter is required for the 9-pin male D-sub terminal on the IBM PC/AT or compatible.

### 2-1-2 Connecting to C200HX/HG/HE(-Z) CPU Units

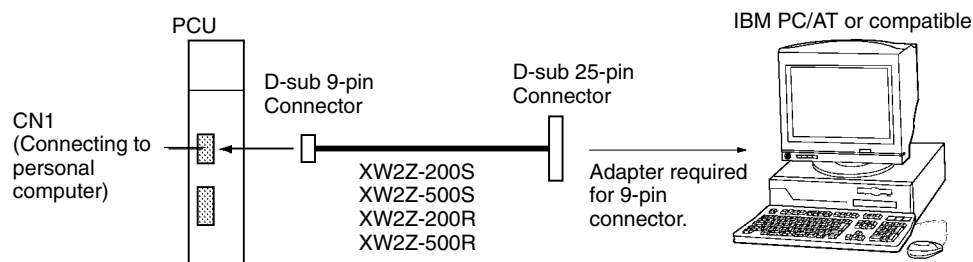
If the SYSMAC-NCT Support Tool is to be used with the C200HW-NC113/213/413 Position Control Unit mounted to a C200HX/HG/HE(-Z) PC, connect the RS-232C port on the CPU Unit to the personal computer with a connecting cable. The connection to the CPU Unit must be a host link connection.

The SYSMAC-NCT Support Tool can access only Position Control Units that are mounted on a CPU Rack or an Expansion I/O Rack. It cannot access Position Control Units mounted on Slave Racks.



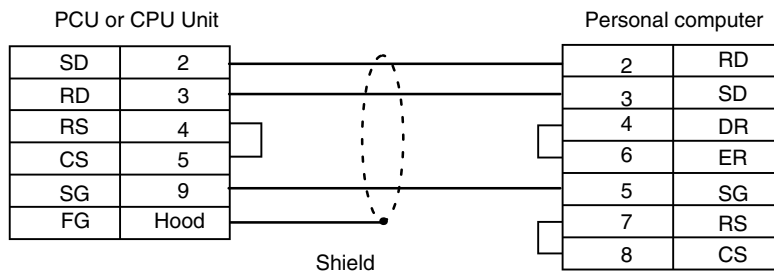
### 2-1-3 Connecting to a C500-NC113/211 Position Control Unit

If the SYSMAC-NCT Support Tool is to be used with the C500-NC113/211 Position Control Unit, connect the CN1 connector (for connecting to personal computer) of the Position Control Unit to the personal computer with a connecting cable.



### 2-1-4 Preparing the Connecting Cable

#### Personal Computer with D-sub 9-pin RS-232C Connector



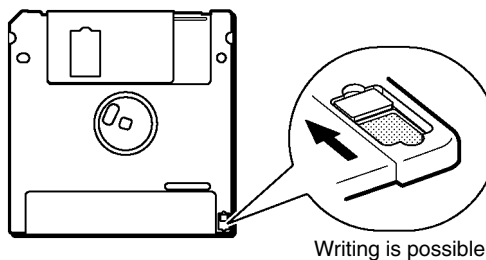
Use the following Connectors and Connector Hoods with the Connecting Cable.

Name	Model	Remarks
Connector	XM2D-0901	9-pin connector for the personal computer
	XM2A-0901	9-pin connector for the Position Control Unit
Connector Hood	XM2S-0911	9-pin connector (2 pieces)

## 2-2 Formatting Floppy Disks

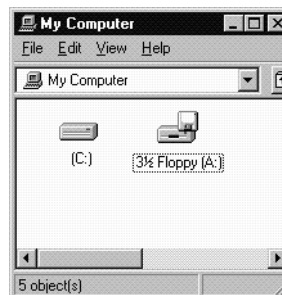
Before using a new floppy disk to back up or save data, be sure to format the floppy disk.

Check that the floppy disk is not write-protected. If the floppy disk is write-protected, slide the tab as shown in the following illustration so that data can be written to the floppy disk.

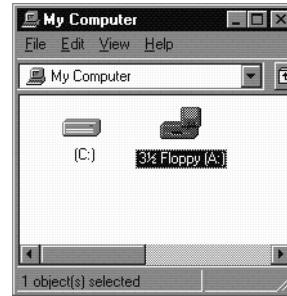


#### Procedure

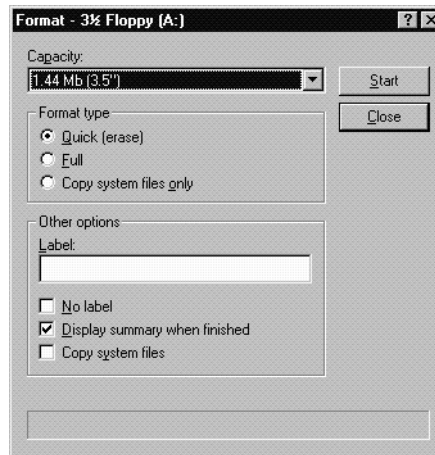
- 1, 2, 3...**
1. Insert the floppy disk into the floppy disk drive.
  2. Double-click "My Computer."



3. Click “3½ Floppy (A:).”



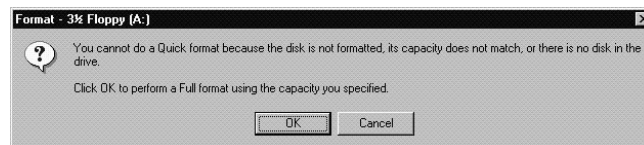
4. Click “File” and “Format.”



5. Select the 1.44-Mbyte size in “Capacity” and click “Start.”

Close “Format” and “My Computer” after formatting the floppy disk.

The following message will appear if quick-formatting of the floppy disk is not possible. Click “OK.”



## 2-3 Backing Up Installation Disks

Before installing the SYSMAC-NCT Support Tool, back up the installation disks. Use the backup disks to install the SYSMAC-NCT Support Tool.

### Requirements

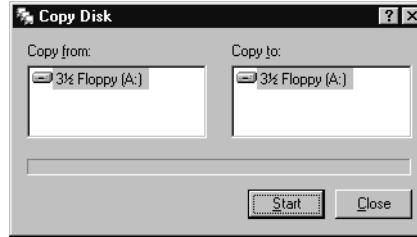
The following items are required:

- Four installation disks
- Four 2HD floppy disks formatted for 1.44 Mbytes

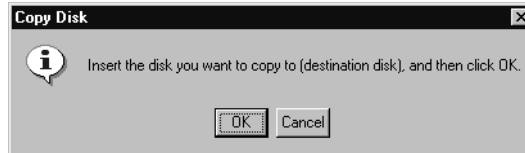
### Procedure

- 1, 2, 3... 1. Insert Installation Disk 1 into the floppy disk drive.
2. Double-click “My Computer” and then click “3½ Floppy (A:).”

- Click "File" and then click "Copy Disk (Y)."



- Click "Start." In this example, the data is copied through the same drive. After the data is read, the following message will appear.

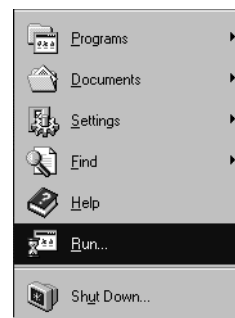


- Eject the floppy disk.
- Insert another floppy disk into the floppy disk drive and click "OK."
- Eject the floppy disk.
- Insert Installation Disks 2, 3, and 4 to the floppy disk drive in sequence to copy the data.
- When the last floppy disk is finished, eject the floppy disk.
- Close "Copy Disk" and "My Computer."

## 2-4 Installation

Use the following procedure to install the SYSMAC-NCT Support Tool onto the hard disk.

- 1, 2, 3... 1. Insert Installation Disk 1 to the floppy disk drive.
2. Click "Start."
3. Click "Run."




The following screen will be displayed.



- Input "A:\SETUP" and click "OK."

In this example, drive A is the floppy disk drive.  
The following display will appear.



5. Close any applications as required or just click "OK" if you are ready to proceed.
6. By default, the program will be installed in C:\Program Files\Sysmac\Sysmac-NCT. If the program is to be installed in this directory, click the  icon on the left side of the screen. If it is to be installed in another directory, click "Change Directory(C)".
7. To select an existing directory, select the directory using "Directory(D):" and click it.
8. To create a new directory in which the program is to be installed, input a directory name in "Path Name(P):" and click "OK."  
A confirmation message will be displayed asking whether a directory is to be created. Select "Yes" and then click the icon.
9. The following screen will be displayed prompting the user to specify the group name to be registered in the Start Menu. If the group name is to be changed, input a new group name and click "OK." If the group name can be left as "SYSMAC," click "OK."



10. The following message will appear when installation is successful. Click "OK."



## 2-5 Basic Functions

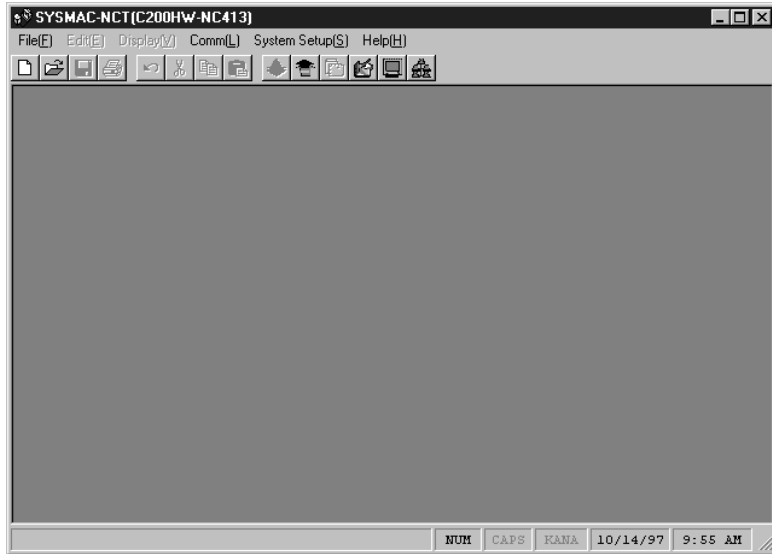
The following sections provides information on the basic functions of the SYSMAC-NCT Support Tool.

### 2-5-1 Starting the Software

- 1, 2, 3... 1. Click "Start" and then point at "Programs" and "Sysmac."



2. Click “SYSMAC-NCT.” The following screen will appear.



### 2-5-2 Quitting

Select “File(F),” and then click “Exit application(X)” or the corresponding icon on the “X” icon in the upper-right corner of the screen.

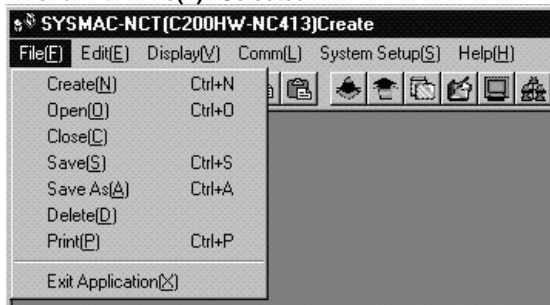
If data has been edited but not saved, the following message will appear. Click “Yes(Y)” to save the data.



### 2-5-3 Menus

To display the “File(F)” menu, for example, click “File(F)” or press the Alt and F Keys. To select a function from the menu, click the function.

Menu with “File(F)” Selected

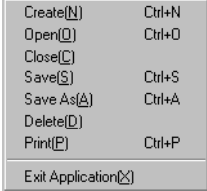
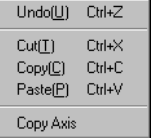
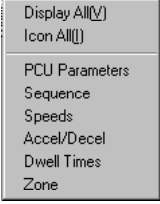
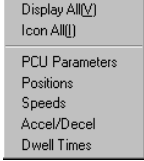


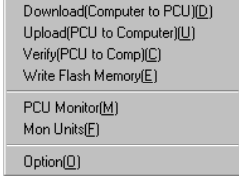
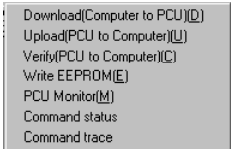
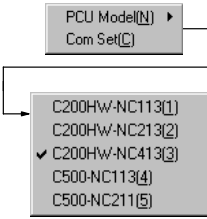
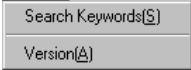
If shortcut keys are available for a function, the keys will be displayed to the right of the item. For example, the Ctrl + N Keys are allocated to “Create(N).” In this case, press the Ctrl + N Keys to create a new file. Furthermore, if the N Key is pressed while the menu is displayed, “Create(N)” will be selected.

### 2-5-4 Menu Items

The following table provides a list of menus along with their functions.

If a menu is clicked, a dialog box will appear. The SYSMAC-NCT Support Tool can be then operated according to the instructions that appear on the screen.

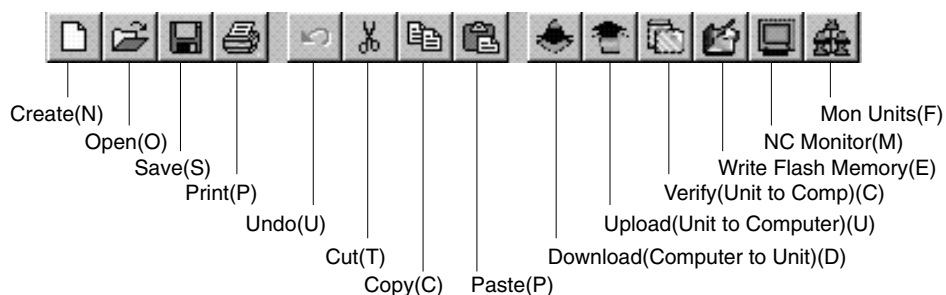
Menu	Function name	Description	Shortcut keys
<b>File(F)</b> 	Create(N)	Displays the icons of all data edit screens at the bottom of the screen.	Ctrl + N
	Open(O)	Reads existing data files and displays the icons of all data edit screens.	Ctrl + O
	Close(C)	Closes all the icons of all data edit screen.	---
	Save(S)	Overwrites and saves existing data files.	Ctrl + S
	Save As(A)	Renames and saves edited data files.	Ctrl + A
	Delete(D)	Deletes files.	---
	Print(P)	Prints data.	Ctrl + P
	Exit Application(X)	Exits the SYSMAC-NCT Support Tool.	---
	<b>Edit(E)</b> 	Undo(U)	Reverts to the previous state.
Cut(T)		Cuts and copies specified data to the clipboard.	Ctrl + X
Copy(C)		Copies specified data to the clipboard.	Ctrl + C
Paste(P)		Copies data from the clipboard.	Ctrl + V
Copy Axis		Copies 1-axis data.	---
<b>Display(V)</b> <b>C200HW-NC113/213/413 PCUs</b> 		Display All(V)	Displays the data edit screen.
	Icon All(I)	Converts the data edit screen into icons and displays the icons at the bottom of the screen.	---
	PCU Parameters	Displays the parameter edit screen.	---
	Sequence	Displays the sequence data edit screen.	---
	Speed	Displays the speed data edit screen.	---
	Accel/Decel	Displays the acceleration/deceleration time data edit screen.	---
	Dwell Times	Displays the dwell time data edit screen.	---
	Zone	Displays the zone data edit screen.	---
	<b>C500-NC113/211 PCUs</b> 	All Windows(V)	Displays the data edit screen.
Icon All(I)		Converts the data edit screen into icons and displays the icons at the bottom of the screen.	---
PCU Parameters		Displays the parameter edit screen.	---
Positions		Displays the positioning data edit screen.	---
Speeds		Displays the speed data edit screen.	---
Accel/Decel		Displays the acceleration/deceleration data edit screen.	---
Dwell Times		Displays the dwell time data edit screen.	---

Menu	Function name	Description	Shortcut keys
Comm(L) C200HW-NC113/213/413 PCUs 	Download(Computer to PCU)(D)	Transfers data to the Position Control Unit from the personal computer.	---
	Upload(PCU to Computer)(U)	Transfers data to the personal computer from the Position Control Unit.	---
	Verify(PCU to Comp)(C)	Compares and verifies edit data with Position Control Unit data.	---
	Write Flash Memory(E)	Writes data from the Position Control Unit to the flash memory.	---
	PCU Monitor(M)	Monitors the Position Control Unit in operation.	---
	Mon Units(F)	Monitors the operation status of up to four Position Control Units.	---
	Option(O)	Specifies the Position Control Unit for which the SYSMAC-NCT Support Tool is to be used.	---
C500-NC113/211 PCUs 	Computer to PCU(D)	Transfers data to the Position Control Unit from the personal computer.	---
	PCU to Computer(U)	Transfers data to the personal computer from the Position Control Unit.	---
	Verify(PCU to Computer)(C)	Compares and verifies edit data with Position Control Unit data.	---
	Write EEPROM(E)	Writes data from the Position Control Unit to the EEPROM.	---
	PCU Monitor(M)	Monitors the Position Control Unit in operation.	---
	Command status	Displays the commands and status area allocated to the PC memory area.	---
System Setup(S) 	PCU Model(N)	Selects the Position Control Unit model.	---
	Comm Set(S)	Sets the communications specifications.	---
Help(H) 	Search Keywords(S)	Displays help.	---
	Version(A)	Displays the version of the SYSMAC-NCT Support Tool.	---

### 2-5-5 Tool Bar

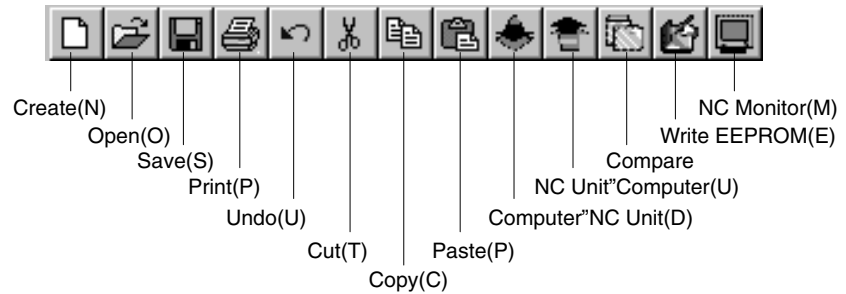
The following functions can be selected from the tool bar.

#### C200HW-NC113/213/413





## C500-NC113/211

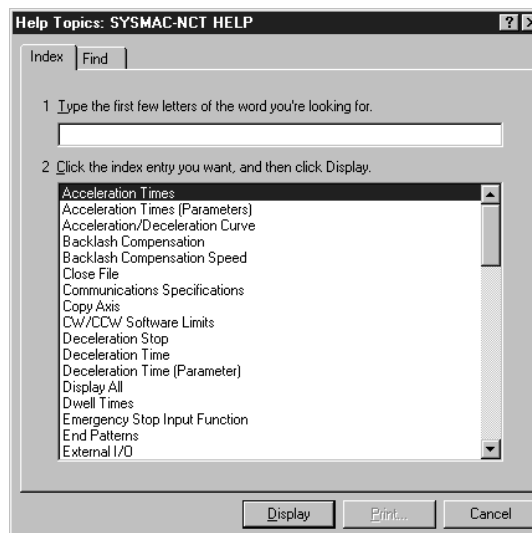


## 2-5-6 Help

## Search

- 1, 2, 3... 1. The help dialog box appears by clicking "Help(H)" and then "Search Keywords(S)."

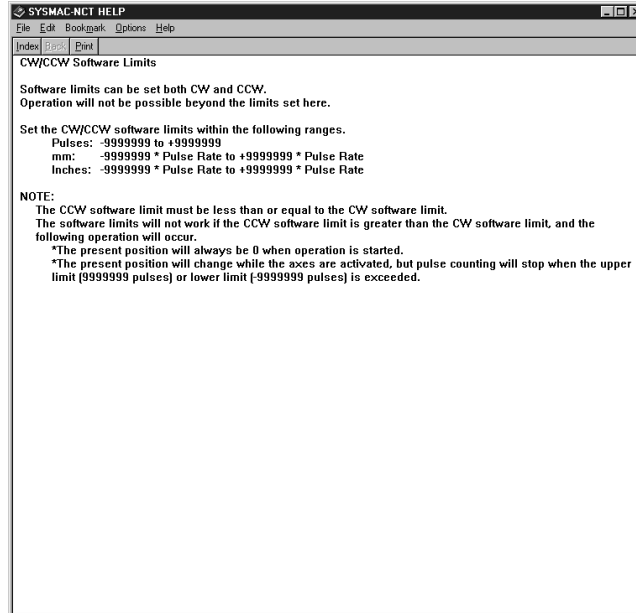
Help Screen for C200HW-NC113/213/413 PCUs



2. Input the first few characters of the item to be searched for and press the Enter Key. The characters will be found, and displayed in reverse video. The help for that item will appear on screen by clicking "Display." (Items can also

be selected directly to display help for them by clicking the item and “Display.”

### Help Display for CW/CCW Limit Values



# SECTION 3

## Settings

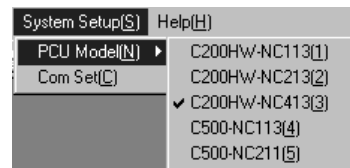
This section provides information on setting the Position Control Unit model to be used and the communications specifications used for data exchange between the PC or PCU and personal computer.

3-1	Selecting the Model .....	22
3-2	Setting Communications Specifications .....	22
3-3	Specifying the Destination Position Control Unit: C200HW-NC113/213/413 PCUs .....	24

## 3-1 Selecting the Model

### Procedure

- 1, 2, 3... 1. Click "System Setup(S)" and point to "Model(N)."



2. Click the model number of the Position Control Unit to be used.  
If an attempt is made to change the Position Control Unit model when the Data Edit Screen is displayed, the following screen will appear.



3. If the data is to be saved, click "Yes," input a file name and a title in the Save As Dialog Box, then click "Save."  
4. If the data is not to be saved, click "No."  
5. To return to the data edit screen without changing the model, click "Cancel."  
Refer to 4-3 Saving and Reading Data for how to save data.

## 3-2 Setting Communications Specifications

Set the communications specifications for data exchange between the personal computer and the CPU Unit or Position Control Unit. The settings vary depending on the model of Position Control Unit being used.

### C200HW-NC113/213/413 PCUs

Set the communications specifications for data exchange between the personal computer and the PC when they are connected via a host link. The settings must be the same as the communications specifications for the host link for the CPU Unit.

Communications port:	COM1, COM2, COM3, COM4
CPU Unit's unit number:	00 to 31
Baud rate:	1200, 2400, 4800, 9600, 19200 (bps)
Parity:	Even, odd, none
Data length:	7, 8 (bits)
Stop bits:	1, 1.5, 2 (bits)
Response monitoring time:	2 to 60 (seconds)

### C500-NC113/211 PCUs

Set the communications specifications for data exchange between the personal computer and Position Control Unit. Only the communications port and response monitoring time can be set. Settings are as follows:

Communications port:	COM1, COM2, COM3, COM4
Response monitoring time:	2 to 60 (seconds)

Other specifications are fixed as below and cannot be changed.

Baud rate:	4,800 (bps)
Parity:	None
Data length:	8 (bits)
Stop bits:	2 (bits)

Procedure

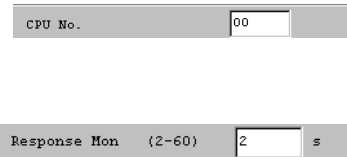
- 1, 2, 3... 1. Click "System Setup(S)" and then click "Comm Set(C)."

Setting Screen for the C200HW-NC113/213/413 PCUs

Setting Screen for the C500-NC113/211 PCUs

2. To change the communications port, baud rate, parity, data length, or stop bits, click "▼" and then select the desired setting. The baud rate, parity, data length, and stop bits can be changed for the C200HW-NC113/213/413 PCUs only.

- To change the CPU Unit's unit number and response monitoring time, input the new value directly. Unit numbers for CPU Units can be changed for the C200HW-NC113/213/413 PCUs only.



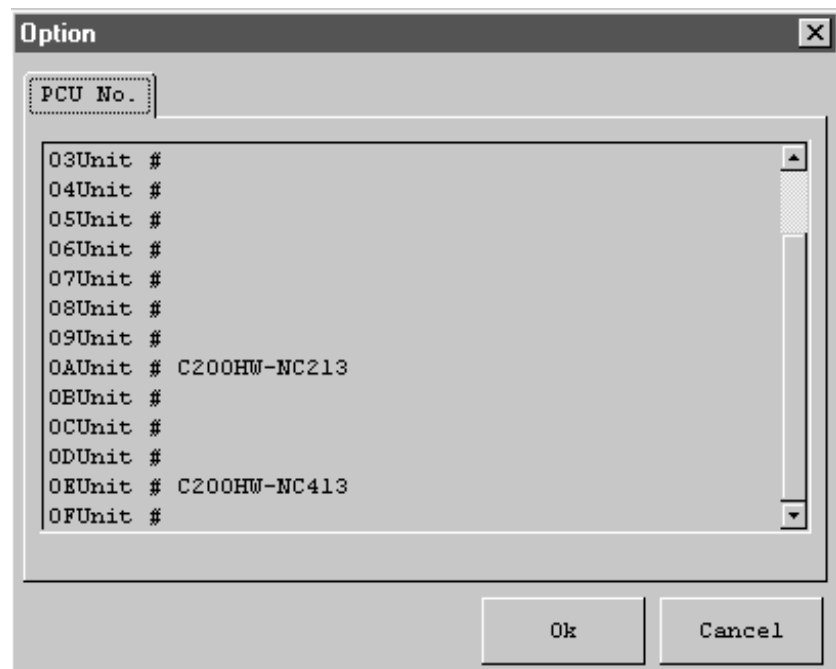
- After making the changes, click "OK."

### 3-3 Specifying the Destination Position Control Unit: C200HW-NC113/213/413 PCUs

For the C200HW-NC113/213/413 PCUs, specify the unit number of the default destination Position Control Unit to be used when "Download(Computer to PCU)[D]," "Upload(PCU to Computer)[U]," "Verify(PCU to Comp)[C]," "Write Flash Memory," "PCU Monitor," or some other operation is executed.

The specified unit number will be displayed in "Unit #" at the top of the screen when "Download(Computer to PCU)[D]," "Upload(PCU to Computer)[U]," "Verify(PCU to Comp)[C]," "Write Flash Memory," "PCU Monitor," or some other operation is executed. The unit number displayed in "Unit #" can be changed when required using the following procedure.

- 1, 2, 3... 1. Click "Comm(L)" and then click "Option(O)."



2. Click the unit number of the destination Position Control Unit.
3. Click "OK."

# SECTION 4

## Editing Data

This section provides information on editing, clearing, saving, and reading data.

This manual describes data setting ranges and operating methods only. Refer to the *C200HW-NC113/NC213/NC413 Position Control Units Operation Manual (W334)* and the *C500-NC113/NC211 Position Control Units Operation Manual (W323)* for further details on data items.

4-1	List of Data Items .....	26
4-1-1	C200HW-NC113/213/413 Data .....	26
4-1-2	C500-NC113/211 Data .....	28
4-1-3	Data Setting Ranges .....	29
4-2	Data Edit Screens .....	30
4-2-1	Data Edit Screen .....	30
4-2-2	Switching Axes .....	31
4-2-3	Selecting Items and Inputting Numeric Values .....	32
4-3	Saving and Reading Data .....	34
4-3-1	Saving Data .....	34
4-3-2	Reading Data .....	35
4-4	Clearing Data and Jumping .....	36
4-4-1	Clearing Data .....	36
4-4-2	Jumping .....	37
4-5	Copying Axis Data .....	37
4-6	Editing Parameter Data .....	39
4-6-1	PCU Parameters Edit Screen (C200HW-NC413) .....	39
4-6-2	Editing Parameters .....	39
4-6-3	PCU Parameters Edit Screen (C200HW-NC413) .....	40
4-7	Editing Sequence Data: C200HW-NC113/213/413 .....	42
4-7-1	Sequence Data Edit Screen .....	42
4-7-2	Editing Sequence Data .....	43
4-8	Editing Positioning Actions: C500-NC113/211 .....	44
4-8-1	Positioning Action Edit Screen .....	44
4-8-2	Editing Positioning Actions .....	44
4-9	Editing Speed Data .....	46
4-9-1	Speed Data Edit Screen .....	46
4-9-2	Editing Speed Data .....	47
4-10	Editing Acceleration/Deceleration Time and Pattern Data .....	48
4-10-1	Accel/Decel Data Edit Screens .....	48
4-10-2	Editing Accel/Decel Time and Pattern Data .....	48
4-11	Editing Dwell Time Data .....	50
4-11-1	Dwell Time Data Edit Screen .....	50
4-11-2	Editing Dwell Time Data .....	50
4-12	Editing Zone Data: C200HW-NC113/213/413 .....	51
4-12-1	Zone Data Edit Screen .....	51
4-12-2	Editing Zone Data .....	51

## 4-1 List of Data Items

The C200HW-NC113/213/413 Position Control Units use six types of data (sequences, speeds, acceleration/deceleration times, dwell times, zones, and parameters) and the C500-NC113/211 Position Control Units use five types of position control data (positioning actions, speeds, acceleration/deceleration patterns, dwell times, and parameters).

The tables in this section show the parameters, setting ranges, and default values. For details, refer to the following operation manuals:

*C500-NC113/NC211 Position Control Units Operation Manual (W323)*

*C200HW-NC113/NC213/NC413 Position Control Units Operation Manual (W334)*

### 4-1-1 C200HW-NC113/213/413 Data

Item	Setting range	Default
Unit setting	Pulse, mm, inch	Pulse
Pulse rate	0.0001 to 1.0000	1.0000
Pulse output selection	CW/CCW output, Pulse/Direction output	CW/CCW output
Limit input signal type	N.C. contact, N.O. contact	N.C. contact
CCW software limit	-9999999 to 9999999	-9999999
CW software limit	-9999999 to 9999999	9999999
Backlash compensation	0 to 9999	0
Backlash compensation speed	0 to 500000	0
Operation mode selection	Mode 0 to 3	Mode 0
Origin search method	Reversal Method 1, Reversal Method 2, Non-reversible	Reversal Method 1
Origin search mode	Mode 0 to 3	Mode 0
Origin search direction	CW, CCW	CW
Origin proximity signal type	N.C. contact, N.O. contact	N.O. contact
Origin signal type	N.C. contact, N.O. contact	N.O. contact
Origin compensation	-9999999 to 9999999	0
Maximum speed	1 to 500000	500000
Initial speed	0 to 500000	0
Origin search high speed	1 to 500000	25000
Origin search low speed	1 to 10000	2500
Acceleration/Deceleration curve	Trapezoid, s-curve	Trapezoid
Acceleration time	0 to 250000	100
Deceleration time	0 to 250000	100
Positioning monitor time	0 to 9999	9999
Emergency stop input function	Stop only pulse output, or stop pulse output and output the error counter reset	Stop only pulse output
No-origin setting	Maintain status or disable origin	Maintain status

#### Setting Ranges

Setting ranges for position and zone data will change if the unit is set to millimeters or inches. Refer to *4-1-3 Data Setting Ranges* for details.



**Sequence Data**  
(X/Y/Z/U: Nos. 0 to 99)

Data for all four axes can be set for the C200HW-NC413. For the C200HW-NC113, however, only the X axis can be set and for the C200HW-NC213, only the X and Y axes can be set.

Item	Setting range
Position (See note.)	-9999999 to 9999999 (pulses)
Axis Specification	X/Y/Z/U
Output Code	0 to F
Completion Code	0 to 6
Dwell No. (Dwell time data number)	0 to 19
Acceleration No. (Acceleration time data number)	0 to 9
Deceleration No. (Deceleration time data number)	0 to 9
Initial Speed (Initial speed number)	0 to 99
Target Speed (Target speed number)	0 to 99

**Note** For position data, either an absolute specification or incremental specification can be selected. If incremental specification is selected, add \* to the beginning of the position data.

**Speed Data**  
(X/Y/Z/U: Nos. 0 to 99)

All four axes can be set for the C200HW-NC413. For the C200HW-NC113, however, only the X axis can be set and for the C200HW-NC213, only the X and Y axes can be set.

Setting Range: 1 to 1000000 (pps)

**Note** Any value within this range can be set as an interpolation speed. The resolved speed for each axis must not exceed 500,000 pps or the maximum speed specified in the parameters.

**Acceleration/  
Deceleration Time Data**  
(X/Y/Z/U: Nos. 1 to 9)

All four axes can be set for the C200HW-NC413. For the C200HW-NC113, however, only the X axis can be set and for the C200HW-NC213, only the X and Y axes can be set.

Setting Range: 0 to 250000 (ms)

**Dwell Time Data**  
(X/Y/Z/U: Nos.1 to 19)

For the C200HW-NC113, only the X axis can be set. For the C200HW-NC213, only the X and Y axes can be set.

Setting Range: 0 to 9.99 (s)

**Zone Data**  
(X/Y/Z/U: Zones 0 to 2)

Setting Range: -9999999 to 9999999 (pulses)

## 4-1-2 C500-NC113/211 Data

Item	Setting range	Default value
Unit setting	Pulse, mm, inch	Pulse
Pulse rate	0.0001 to 1.0000	1.0000
Pulse output selection	CW/CCW output, pulse/direction output	CW/CCW output
CW limit	0 to 9999999	9999999
CCW limit	0 to 9999999	9999999
Backlash compensation value	0 to 99999	0
Origin search mode	0 to 3	0
Origin search pattern	0 to 5	0
Origin search direction	CW, CCW	CW
Origin proximity signal	Prox signal, no signal	Prox. signal
Origin proximity signal type	N.O. contact, N.C. contact	N.O. contact
Origin signal type	N.O. contact, N.C. contact	N.O. contact
Origin search method	Reversal, no reversal	Reversal
Origin compensation data sign	CW, CCW	CW
Origin compensation data	0 to 9999	0
Startup positioning action number	0 to 499	0
Origin return speed data number	0 to 49	0
Origin search high-speed data number	0 to 49	1
Origin search proximity speed data number	0 to 49	2
High-speed JOG data number	0 to 49	3
Low-speed JOG data number	0 to 49	4
Initial speed data number	0 to 49	5
Origin return acceleration/deceleration pattern data number	0 to 99	0
Origin search acceleration/deceleration pattern data number	0 to 99	1
High-speed JOG acceleration/deceleration pattern data	0 to 99	2
Origin return dwell time data number	0 to 29	0
Origin search dwell time data number	0 to 29	1
Inching pulse number	1 to 100	1
Home shift	-999999 to 999999	0
Present position change set value	-9999999 to 9999999	0
Interrupt input signal type	Variable, Fixed	Variable
Interrupt input signal definition	Deceleration stop, speed change	Deceleration stop
Interrupt input immediate stop parameter	Deceleration stop, emergency stop	Deceleration stop
Positioning action cancel/change	Enabled, disabled	Disabled
Zone setting (0 to 7)	-9999999 to 9999999 (8 points/axis)	0

**Positioning Actions (X/Y:  
Nos. 0 to 499)**

Both axes can be set for the C500-NC213, but only the X axis can be set for the C500-NC113.

Item	Setting range
Speed (Speed data number)	0 to 49
Dwell (Dwell time data number)	0 to 29
Acceleration/Deceleration (Acceleration/deceleration pattern data number)	0 to 99
Completion Code	0 to 5
Output code	0 to 499
Position (Position data)	0 to 9999999 (pulse)
Sign	0 to 7

The setting range for position data will change if the unit is set to millimeters or inches. Refer to 4-1-3 Data Setting Ranges for details.

**Speed Data  
(X/Y: Nos. 0 to 49)**

For the C500-NC113, only the X axis can be set.

Setting Range: 0 to 250000 (pps)

**Acceleration/  
Deceleration Pattern Data  
(X/Y: Nos. 0 to 99)**

For the C500-NC113, only the X axis can be set.

Setting Range: 2 to 2000 (pps/ms)

**Dwell Time Data (0 to 29)**

For the C500-NC113, only the X axis can be set.

Setting Range: 0 to 999 (10 ms)

**4-1-3 Data Setting Ranges**

The following tables show the permissible data setting ranges for each of the PCU models.

**C200HW-NC113/213/413**

Item		Setting range	
Parameters	Origin compensation	mm inch	–9999999 * (pulse rate) to 9999999 * (pulse rate)
	CW software limit	mm inch	–9999999 * (pulse rate) to 9999999 * (pulse rate)
	CCW software limit	mm inch	–9999999 * (pulse rate) to 9999999 * (pulse rate)
Positions		mm inch	–9999999 * (pulse rate) to 9999999 * (pulse rate)
Zones 0 to 2		mm inch	–9999999 * (pulse rate) to 9999999 * (pulse rate)

## C500-NC113/211



Item		Setting range
Parameters	Origin compensation data	0 to 999.9 mm 0 to 99.99 inch
	Home shift	-9999.99 to 9999.99 mm -999.999 to 999.999 inch
	CW limit	0 to 9999.999 mm 0 to 999.9999 inch
	CCW limit	0 to 9999.999 mm 0 to 999.9999 inch
	Zones 0 to 7	-9999.999 to 9999.999 mm -999.9999 to 999.9999 inch
	Present position change set value	-9999.999 to 9999.999 mm -999.9999 to 999.9999 inch
Positions (the sign is specified separately)		0 to 9999.999 mm 0 to 999.9990 inch

**Note** An error will occur if values set in millimeters or inches are not within the specified ranges when converted to pulses.

## 4-2 Data Edit Screens

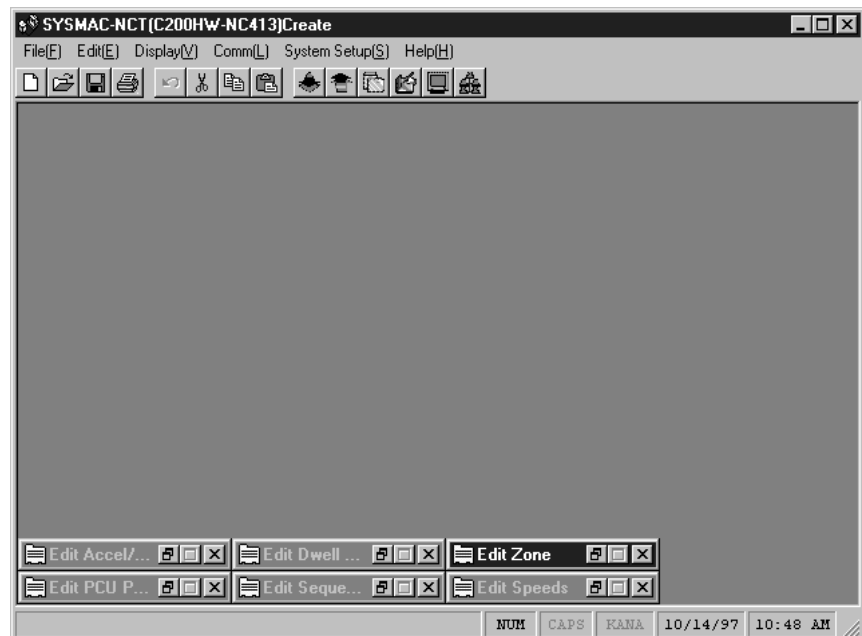
This section explains how to use the data edit screens.

### 4-2-1 Data Edit Screen


- Click “New(N)” or “Open(O)” from the “File(F)” menu or open a data file by clicking the icons  (New) or  (Open). The following screen will appear with the icons for the data edit screens at the bottom of the screen.

**Note** Refer to 4-3 *Saving and Reading Data* for details on how to open a data file.

Data Edit Screen for the C200HW-NC413



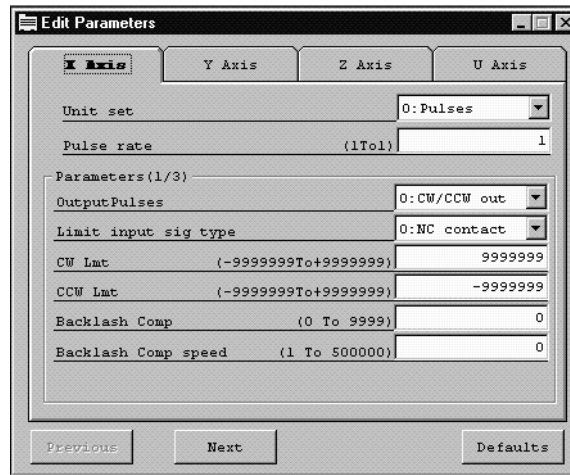
- To edit data, open a data edit screen.
- To open all screens, click “Display All(V)” in the “Display(V)” menu.
- To open a specific screen, click the corresponding icon.
- Open or close each data edit screen by clicking the icons in the upper-right corner of the screen.


Click  or click "PCU Parameters" in the "Display(V)" menu to display the Edit Parameters Screen.



Click this button or click "Close(C)" in the "File(F)" menu to close the data file.

Click this button or click "Icon All(I)" in the "Display(V)" menu to minimize the screen.



- Click the minimized data edit screen (icon) or  on the left side of the minimized data edit screen to display the following menu.




**Minimized Edit Screen**



**Displayed Edit Screen**



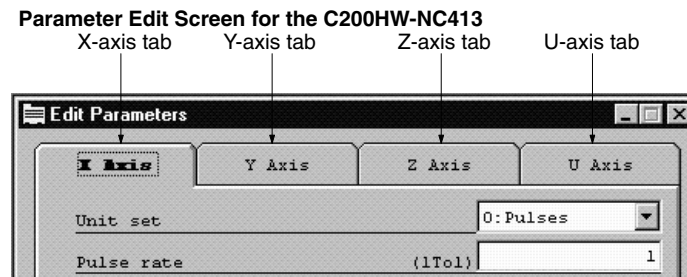
The function of each menu option is as follows:

Option	Function
Restore	Displays the data edit screen from its icon. This option has the same function as  on the right side of the icon.
Move	Moves the minimized data edit screen (icon). Click "Move" first, then click the mouse again at the destination. The icon will be moved to the destination. This operation has the same effect as clicking and dragging the active title bar.
Minimize	Changes the data edit screen to its icon, which will be displayed at the bottom of the screen. This option is displayed in gray (i.e., cannot be selected) when the data edit screen is currently minimized (icon). It has the same function as  on the right side of the data edit screen.
Close	Closes the current data edit screen. This option has the same function as  on the right side of the data edit screen.
Next	Makes the next minimized data edit screen (icon) active.

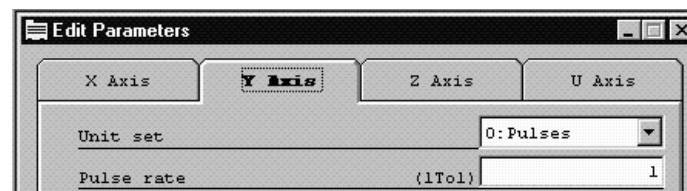
**4-2-2 Switching Axes**

For two-axis and four-axis Position Control Units, the following tabs are displayed for the number of controlled axes. If, for example, Y-axis data is to be set,

click the Y-axis tab in the upper part of the screen to switch to the Y-axis data edit screen.



Clicking the Y-axis tab displays the Y-axis data edit screen. This also applies to the Z and U axes.



### 4-2-3 Selecting Items and Inputting Numeric Values

Use the following procedure to select items and input numeric values.

#### Selecting Items

Select the desired item by clicking “▼” or activating the input window and pressing F4.

#### Parameter Data Edit Screen for the C200HW-NC413



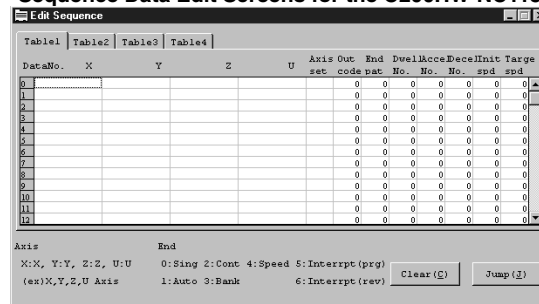
Alternatively, simply input the number displayed before the colon (:), e.g., to select “1: Pulse/dir out,” “1” can be directly input to select the item.

#### Inputting Numeric Values

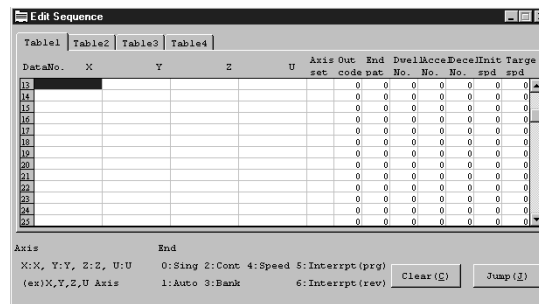
- Move the cursor to the desired field by using the Cursor Keys (Up, Down, Right, and Left) or clicking in the field, and then input a numeric value.
- When the cursor is located at the rightmost position, press the Right Key to move the cursor to the beginning (leftmost field) of the next data number.
- When the cursor is located at the leftmost position, press the Left Key to move the cursor to the end (rightmost field) of the previous data number.
- To edit the data that is not displayed on the screen, press the Page Down Key, click “▼” or “▲” on the scroll bar on the right side of the screen, or click and drag the scroll box (▢) until the desired data appears on the screen.
- To display the next screen, press the Page Down Key.
- To display the previous screen, press the Page Up Key.

- To scroll the screen up or down by one row of data at a time, click “▼” or “▲”.

Sequence Data Edit Screens for the C200HW-NC113/213/413

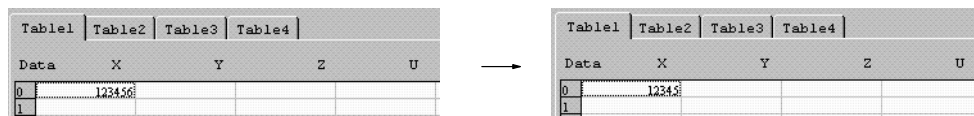


Page Down ↓ ↑ Page Up

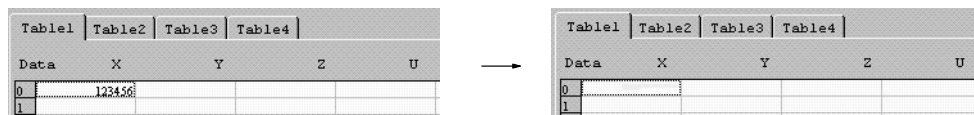


- To erase one character from the input value, press the Backspace Key.
- To erase the entire value, press the Delete Key.

Backspace Key

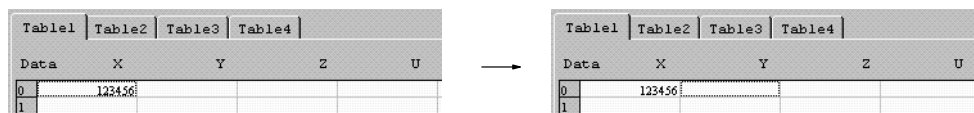


Delete Key



- After inputting a numeric value, press the Enter Key to move the cursor to the next field.
- After inputting a numeric value in the last (rightmost) field, press the Enter Key to move the cursor to the beginning (leftmost field) of the next data number.

[Enter]



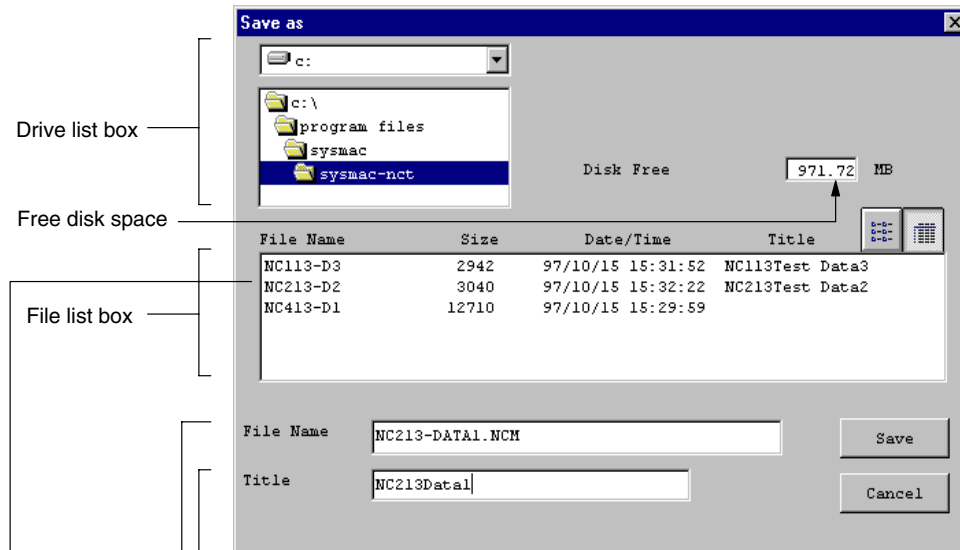
**Note** The data edit screen for the C200HW-NC113/213/413 displays the setting range as “-9999999 to +9999999.” The minus sign “-” must be input for negative values, but the plus sign “+” need not be input.

## 4-3 Saving and Reading Data

Use the following procedures to save and read data. Five or six data edit screens can be simultaneously opened and the data displayed on these data edit screens can be saved as a single file.

### 4-3-1 Saving Data


- 1, 2, 3...
1. To save data, click “Save(S)” or “Save As(A)” in the “File(F)” menu.
    - a) To edit and save existing data without changing the file name, click “Save(S).”
    - b) To save new data for the first time or to change a file name, click “Save As(A).” A screen for inputting a file name will be displayed.
  2. Input a file name and a title, then click “Save.” The file will be saved in the directory named “SYSMAC-NCT” unless otherwise specified. The title can be omitted.
  3. To save the data in a different drive, click “▼” in the drive list box, switch to the desired drive, then double-click the directory in which the data is to be saved.




Up to 31 characters can be input.

Up to 255 characters can be input.

Any file name of more than 8 characters will be truncated to the first 8 characters when displayed.

4. Click  to display the file names only. Use this icon to display only the file names when the number of files is more than eight files.



5. Click  to return to the file detail list box.

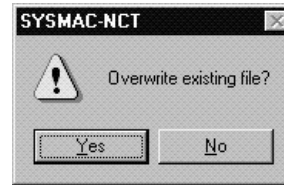
File Name	Size	Date/Time	Title
NC113-D1	8371	97/10/15 15:37:40	NC113Test Data1
NC113-D2	8371	97/10/15 15:37:53	NC113Test Data2
NC113-D3	2942	97/10/15 15:31:52	NC113Test Data3
NC213-D1	8371	97/10/15 15:36:47	NC213Test Data1
NC213-D2	8371	97/10/15 15:36:29	NC213Test Data2
NC213-D3	8371	97/10/15 15:37:17	NC213Test Data3



NC113-D1	NC413-D1
NC113-D2	NC413-D2
NC113-D3	NC413-D3
NC213-D1	
NC213-D2	
NC213-D3	

The desired file can be selected from the file list box instead of directly inputting the file name. This operation has the same function as “Save(S).”

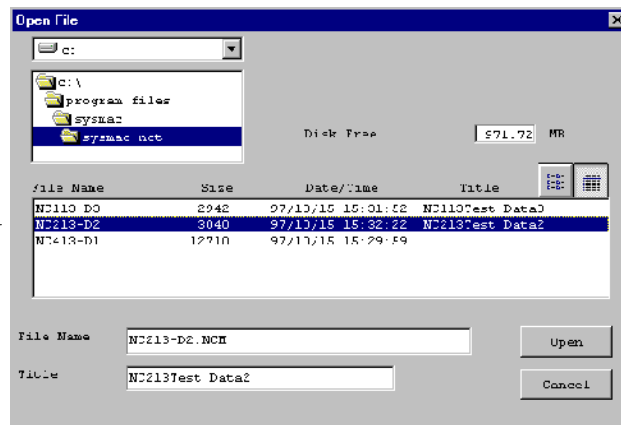
When the file is selected, the following confirmation message will be displayed asking whether the existing file is to be overwritten. Click “Yes” to overwrite the file, or “No” to cancel the saving process.



### 4-3-2 Reading Data

Use the following procedure to read data.

- 1, 2, 3... 1. Click “Open(O)” in the “File(F)” menu.
2. Input the file name or click the file from the list of files.
3. To read the data stored in a different drive and directory, click “▼” in the drive list box and switch to the desired drive.



→ A file in the list can be selected by clicking on it.

## 4-4 Clearing Data and Jumping

Refer to the following procedures to set data to default values and to display the specified data as the first data item (by moving the cursor to the specified data number).

### 4-4-1 Clearing Data

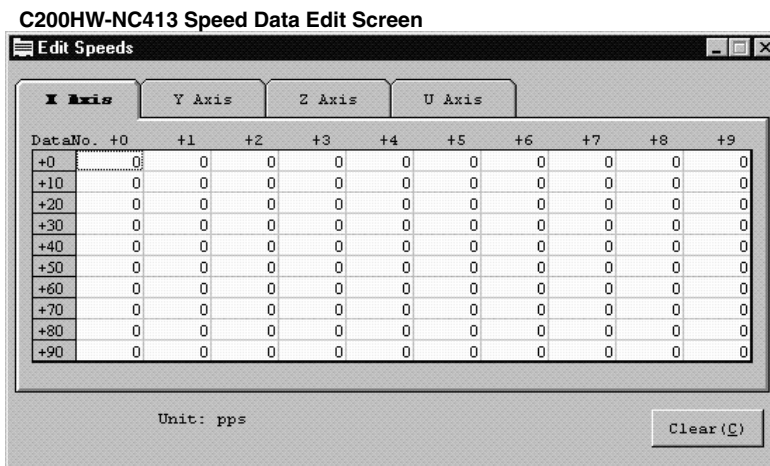
Data displayed on the following data edit screens can be set to default values by specifying the start and end data numbers of the data to be cleared.

#### C200HW-NC113/213/413

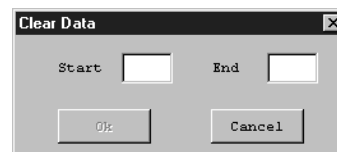
- Sequence data
- Speed data
- Acceleration/Deceleration time data
- Dwell time data

#### C500-NC113/211

- Positioning actions
- Speed data
- Dwell time data



- 1, 2, 3...** 1. Click “Clear” in the data edit screen.



2. Input into the “Start” field the first data number to be cleared.
3. Press either the Tab Key or Enter Key, or click in the “End” input field.
4. Input the desired end data number.
5. Click “OK.” The data in the specified range will be set to default values.

### 4-4-2 Jumping

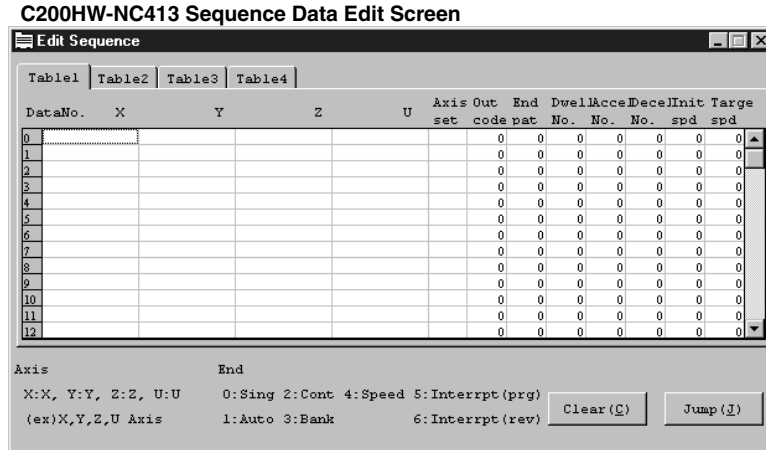
A specified data number can be displayed as the first data item (by moving the cursor to the specified data number) in the data edit screens for the following data.

C200HW-NC113/213/413

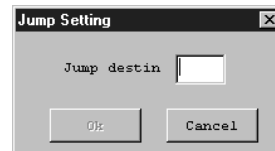
- Sequence data

C500-NC113/211

- Positioning actions
- Acceleration/deceleration pattern data



- 1, 2, 3... 1. Click “Jump(J)” in the sequence data, positioning action, or acceleration/deceleration data edit screen. The following screen will appear.



2. Input the data number in the “Position” field.
3. Click “OK.”

## 4-5 Copying Axis Data

For two-axis and four-axis Position Control Units, data for one axis can be copied to another axis. To copy data, specify the axes in the “Source” and “Destination” list boxes.

**Applicable Position Control Units**

Four-axis Model: C200HW-NC413  
 Two-axis Models: C200HW-NC213, C500-NC211

**Applicable Data**

The following data can all be copied at the same time.

**C200HW-NC213/413**

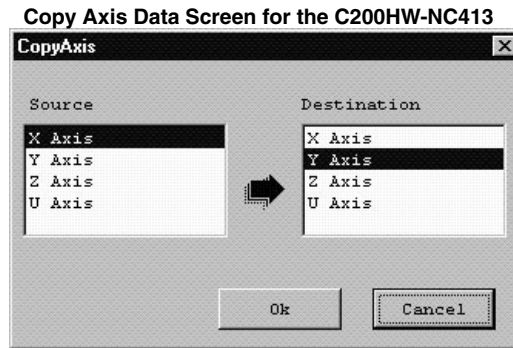
- Parameter data
- Speed data
- Acceleration/Deceleration data
- Dwell time data
- Zone data

**C500-NC113/211**

- Parameter data
- Positioning actions
- Speed data
- Acceleration/Deceleration data

**Procedure**

- 1, 2, 3...** 1. Click “Copy Axis” in the “Edit(E)” menu.



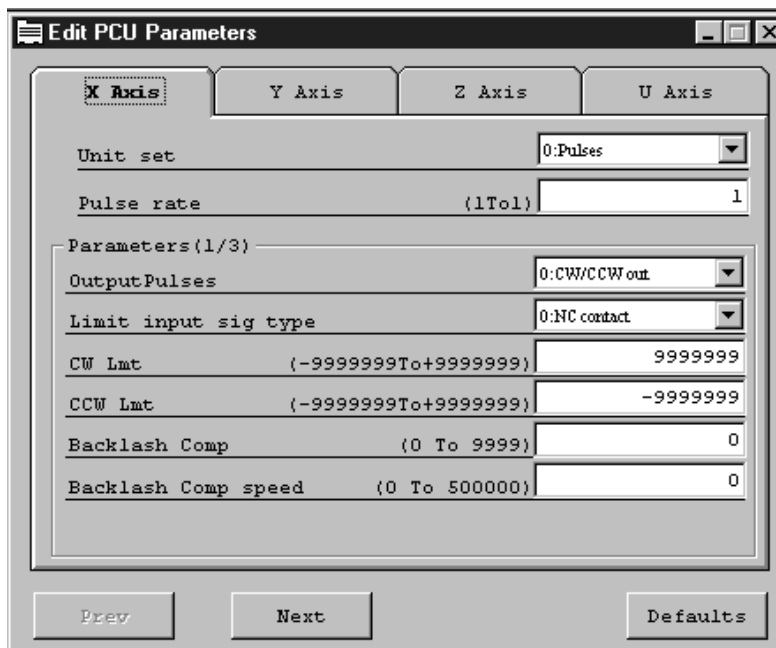
2. Click the desired axis in the “Source” list box. When the “Copy Axis” is clicked, the X and Y axes will be automatically selected in the “Source” and “Destination” list boxes, respectively.
3. For four-axis Position Control Units, click the Y axis in the “Source” list box, and the Z axis will be automatically selected in the “Destination” list box.  
In this way, the axis following the axis specified in the “Source” list box will be automatically selected in the “Destination” list box in the order of X, Y, Z, and U axes.
4. For two-axis Position Control Units, click the Y and X axes in the “Source” list box in this order, and the X and Y axes will be automatically selected in the “Destination” in the same order.
5. To change the copy destination, click the desired axis.
6. Make sure that the axis is selected correctly and then click “OK.”

## 4-6 Editing Parameter Data

Refer to the following procedures to set or edit the Position Control Unit's parameter data.

### 4-6-1 PCU Parameters Edit Screen (C200HW-NC413)

The following screen is the PCU Parameters Edit Screen for the C200HW-NC413.



For the C200HW-NC113/213/413, three edit screens are used. For the C500-NC113/211, five edit screens are used. The previous page can be displayed by clicking “Previous” and the next page can be displayed by clicking “Next.”

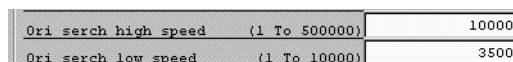
### 4-6-2 Editing Parameters

The Position Control Unit's parameters can be edited by using the following procedure.

- 1, 2, 3... 1. Click “▼” to select the item or input the value directly.



2. Select the desired item by clicking it or directly inputting the number displayed before the colon (:). For example, to select “1: Pulse/dir out,” input “1”.



#### Default Settings

When “Defaults” is clicked, a prompt message will appear. All parameters can be set to the default values by clicking “OK.”

### 4-6-3 PCU Parameters Edit Screen (C200HW-NC413)

C200HW-NC113/213/413

Examples of PCU Parameters Edit Screens for the C200HW-NC413 are shown below.

**Edit PCU Parameters**

X Axis | Y Axis | Z Axis | U Axis

Unit set: 0:Pulses

Pulse rate (1To1): 1

Parameters(1/3)

OutputPulses: 0: CW/CCW out

Limit input sig type: 0: NC contact

CW Lmt (-9999999To+9999999): 9999999

CCW Lmt (-9999999To+9999999): -9999999

Backlash Comp (0 To 9999): 0

Backlash Comp speed (0 To 500000): 0

Prev | Next | Defaults

**Edit PCU Parameters**

X Axis | Y Axis | Z Axis | U Axis

Parameters(2/3)

Set operation mode: 0: Mode 0

Ori serch operation: 0: Rev mode 1

Ori serch method: 0: Method 0

Ori serch dir: 0: CW

Ori prox sig type: 1: NO contact

Ori sig type: 1: NO contact

Ori comp (-9999999To+9999999): 0

Prev | Next | Defaults

**Edit PCU Parameters**

X Axis | Y Axis | Z Axis | U Axis

Parameters(3/3)

Top Speed (1 To 500000): 500000

Start speed (0 To 500000): 0

Ori serch high speed (1 To 500000): 25000

Ori serch low speed (1 To 10000): 2500

Acc/dec curve: 0: Trapezoid

Acc time (0 To 250000): 100

Dec time (0 To 250000): 100

Positioning mon time (0 To 9999): 9999

Emerg Stop Fun: 0: Pulse output

No-origin setting: 0: Hold status

Prev | Next | Defaults

C500-NC113/211

Examples of PCU Parameters Edit Screens for the C500-NC211 are shown below.

**Edit PCU Parameters**

X

Edit Parameter (1/5Page)

Unit	(0:Pulse)	0:Pulse
Pulse Rate	(0.0001 to 1.0000)	1.0000
OutputPulses	(0: CW/CW Out)	0: CW/CW Out
CW Limit	(0 to 9999999)	9999999
CCW Limit	(0 to 9999999)	9999999
Backlash Compen	(0 to 99999)	0

Prev Next Default

**Edit Parameters**

X Y

Edit Parameter (2/5Page)

Ori Search Mode	(0: Mode 0)	0: Mode 0
Ori Search Pptrn	(0: Ptrn 0)	0: Ptrn 0
Ori Search Direction	(0: CW)	0: CW
Ori Prox Signal	(1: Prox)	1: Prox
Ori Prox Signal Type	(1: NO)	1: NO
Ori Signal Type	(1: NO)	1: NO
Ori Search Method	(1: Reverse)	1: Reverse
Ori Compen Sign	(0: CW)	0: CW
Ori Compen	(0 to 9999)	0

Prev Next Default

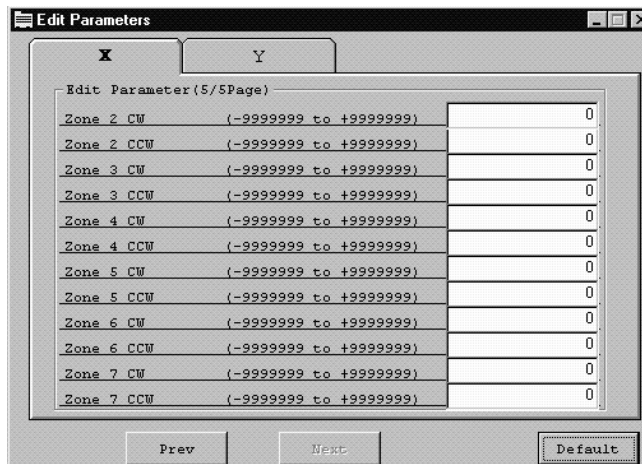
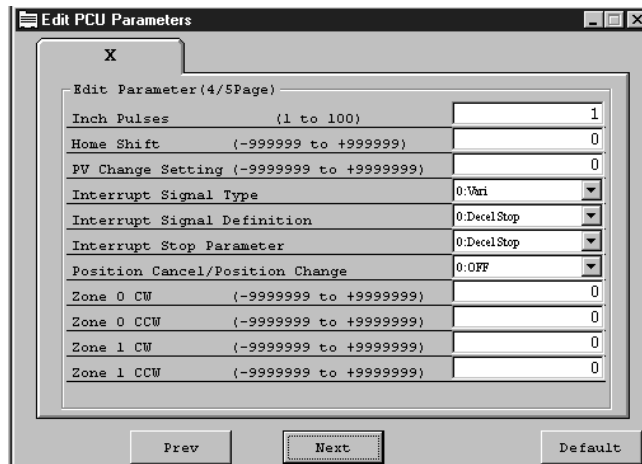
**Edit PCU Parameters**

X

Edit Parameter (3/5Page)

Start Position No.	(0 to 499)	0
Ori Return Speed No.	(0 to 49)	0
Ori Search High Speed No.	(0 to 49)	1
Ori Search Prox Speed No.	(0 to 49)	2
High Joq Speed No.	(0 to 49)	3
Low Joq Speed No.	(0 to 49)	4
Start Speed No.	(0 to 49)	5
Ori Return Ac/Dec Pptrn No.	(0 to 99)	0
Ori Search Ac/Dec Pptrn No.	(0 to 99)	1
Hi-speed Joq Ac/Dec Pptrn No.	(0 to 99)	2
Ori Return Dwell Time No.	(0 to 29)	0
Ori Search Dwell Time No.	(0 to 29)	1

Prev Next Default

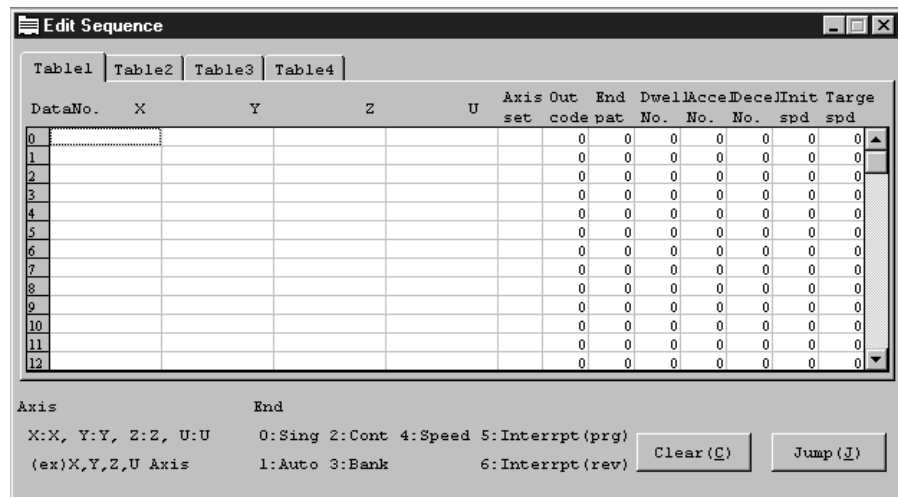


## 4-7 Editing Sequence Data: C200HW-NC113/213/413

Sequence data can be edited or set for the C200HW-NC113/213/413 as shown in this section.

### 4-7-1 Sequence Data Edit Screen

The screen shown below is the Sequence Data Edit Screen for the C200HW-NC413.





### 4-7-2 Editing Sequence Data

The following sequence data items can be input.

Item	Setting
X/Y/Z/U (Position data for each axis) (See note.)	-9999999 to 9999999 (pulses) -9999.999 to 9999.999 (mm) -999.9999 to 999.9999 (inches)
Axis set:	X:X axis, Y:Y axis, Z:Z axis, U:U axis
Out code:	0 to F
End pat (End Pattern) (Note: The "end pattern" is the completion code.)	0: Sing (Single), 1: Auto (Automatic), 2:Cont (Continuous), 3: Bank (Bank End), 4: Speed (Speed Control), 5: Interrupt (prg) (Interrupt Feeding (Same Direction)), 6: Interrpt (rev) (Interrupt Feeding(Opposite Direction))
Dwell No. (Dwell time data No.)	0 to 19 (If "0" is specified, timeout processing will not be performed.)
Accel No. (Acceleration time data No.)	0 to 9 (If "0" is specified, the acceleration time specified in the parameter will be used.)
Decel No. (Deceleration time data No.)	0 to 9 (If "0" is specified, the deceleration time specified in the parameter will be used.)
Start spd (Initial speed No.)	0 to 99
Target spd (Target speed)	0 to 99

**Note** For position data, either absolute specification or incremental specification can be selected. To select incremental specification, add an asterisk (\*) to the beginning of the position data.

"Table 1," "Table 2," "Table 3," and "Table 4" are used for the X, Y, Z, and U axes respectively.

**Example:**

Sequence data number 0 and number 1 are set in Table 1 for the C200HW-NC413.

Table1   Table2   Table3   Table4												
Data	X	Y	Z	U	Axis set	Out code	End pat	Dwell No.	Accel No.	Decel No.	Start spd	Target spd
0	150000				X	1	2	0	3	3	15	80
1	350000				Y	2	3	19	2	4	5	55
2						0	0	0	0	0	0	0
3						0	0	0	0	0	0	0

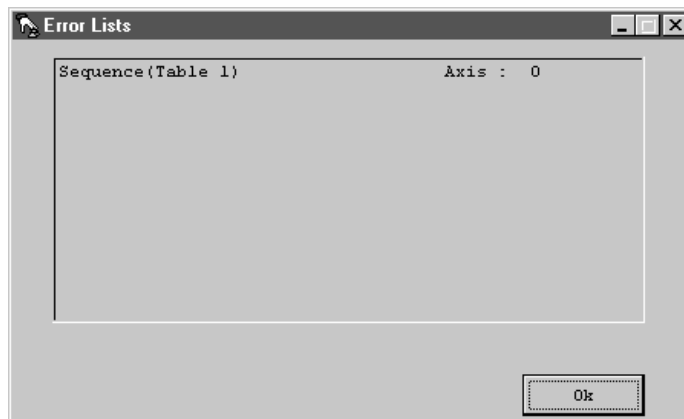
If, for example, position data is input in the "X" and "Y" fields of Table 1 when interpolation operation is specified, "-----" will appear in the "X" and "Y" fields of Table 2 to indicate that no data can be input in these fields. If "X" or "Y" data is input by axis designation at this time, an error will be generated when the data is transferred to the PCU.

Sequence data consists of nine different items, such as position data, axis setting, and output code. If an attempt is made to transfer data without specifying any of the nine items, an error list will be displayed.

The following screen shows an example of a table with no data specified in the "Axis set" field.

Table1   Table2   Table3   Table4												
Data	X	Y	Z	U	Axis set	Out code	End pat	Dwell No.	Accel No.	Decel No.	Start spd	Target spd
0	150000					1	2	0	3	3	15	80
1						0	0	0	0	0	0	0
2						0	0	0	0	0	0	0

If "Download(Computer to Unit)[D]" is selected with the above settings, the following error will be displayed.



This error list indicates that the X-axis sequence data number 0 is invalid. After clicking "OK," check for invalid or missing data and correct the sequence data accordingly.

**Clearing Data and Jumping**

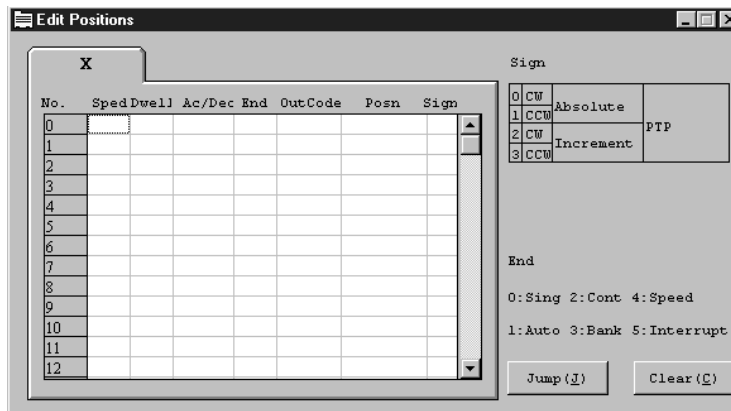
Refer to 4-4 *Clearing Data and Jumping* for details on how to clear data and jump the cursor.

## 4-8 Editing Positioning Actions: C500-NC113/211

Positioning actions for the C500-NC113/211 can be edited and set as shown in this section.

### 4-8-1 Positioning Action Edit Screen

The following screen is the Positioning Action Edit Screen for the C500-NC211.



### 4-8-2 Editing Positioning Actions

The following positioning action settings can be input.

Item	Setting
Sped (Speed Data Number)	0 to 49
Dwell (Dwell Time Data Number)	0 to 29
Ac/Dec (Acceleration/Deceleration Pattern Data Number)	0 to 99
End (Completion Code)	0: Sing (Single), 1: Auto (Automatic), 2: Cont (Continuous), 3: Bank (Bank End), 4: Speed (Speed Control), 5: Interrupt (Interrupt Feeding)
Out (Output Code)	0 to 499
Posn (Position Data)	Pulse: 0 to 9999999 Millimeter: 0.000 to 9999.999 Inch: 0.0000 to 999.9999
Sign	0 to 7

0	CW	Absolute	PTP
1	CCW	Absolute	
2	CW	Increment	
3	CCW	Increment	CP
4	CW	Absolute	
5	CCW	Absolute	
6	CW	Increment	
7	CCW	Increment	

Setting Example of Positioning Actions 0 and 1

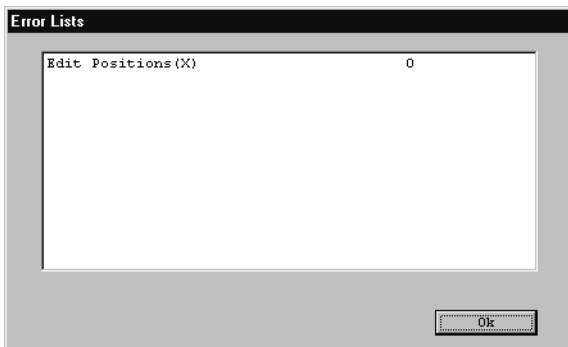
No.	Sped	Dwell	Ac/Dec	End	OutCode	Posn	Sign
0		3	5	1	0	20	1
1		5	1	51	0	100	0
2							
3							

Positioning actions consists of seven data items including the speed data and dwell time data number. A error list will appear if a positioning action missing any of the data items is downloaded.

**Example**

- 1, 2, 3... 1. Prepare and download the following positioning action, which has no acceleration/deceleration pattern data number and sign.

The following error will appear.



This error list indicates that the setting for the X axis of positioning action 0 is incorrect.

2. Correct the positioning action by checking for incorrect or missing values.

### Clearing Data and Jumping

- 1, 2, 3...
  1. To clear data, click “Clear(C)” and then specify the data number.
  2. To display a particular data number as the first data item (or move the cursor to a particular data number), click “Jump(J)” and then specify the data number.

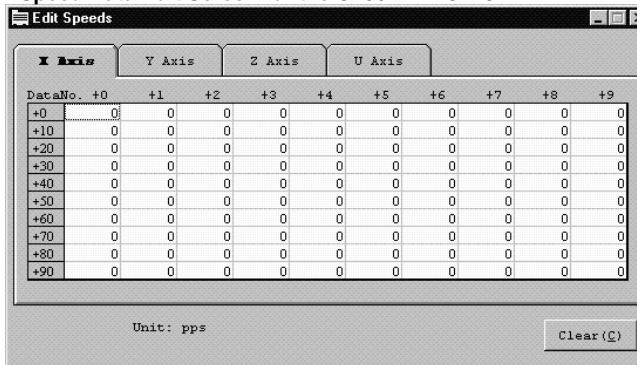
Refer to 4-4 *Clearing Data and Jumping* for further details on how to clear data and jump the cursor.

## 4-9 Editing Speed Data

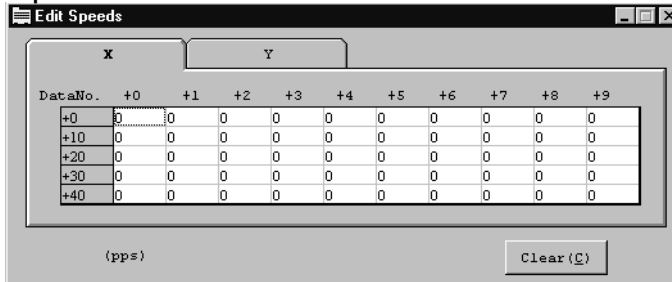
### 4-9-1 Speed Data Edit Screen

The following screens are examples of Speed Data Edit Screens.

Speed Data Edit Screen for the C200HW-NC413

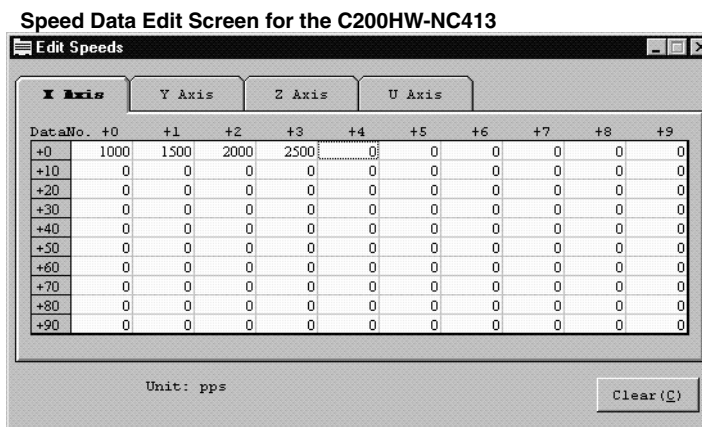


Speed Data Edit Screen for the C500-NC211

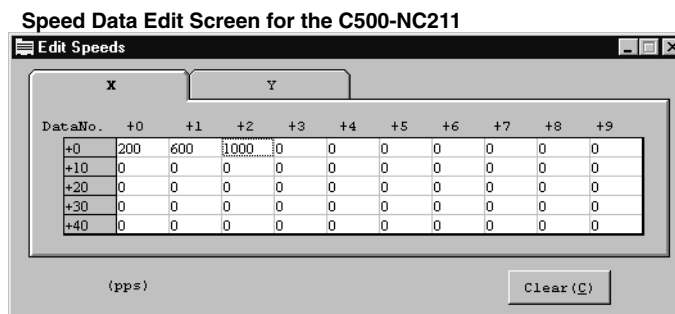


### 4-9-2 Editing Speed Data

For the C200HW-NC113/213/413, speed data can be specified from 1 to 1000000 (pps). Make sure, however, to specify the speed data within the range of values that can be specified as an interpolation speed. The resolved speed for each axis must not exceed 500,000 pps or the maximum speed specified in the parameters.



For the C500-NC113/211, values must be input within the range of 0 to 250000 (pps).



#### Clearing Data

Data can be cleared by clicking “Clear(C)” and then specifying the data number. Refer to 4-4 *Clearing Data and Jumping* for details on how to clear data and jump the cursor.

## 4-10 Editing Acceleration/Deceleration Time and Pattern Data

### 4-10-1 Accel/Decel Data Edit Screens

The following screens are examples of acceleration/deceleration time and pattern data edit screens.

Accel/Decel Data Edit Screen for the C200HW-NC413

	1	2	3	4	5	6	7	8	9
Acce	0	0	0	0	0	0	0	0	0
Dece	0	0	0	0	0	0	0	0	0

Accel/Decel Data Edit Screen for the C500-NC211

DataNo.	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
+50	Acce	2	2	2	2	2	2	2	2	2
	Dece	2	2	2	2	2	2	2	2	2
+60	Acce	2	2	2	2	2	2	2	2	2
	Dece	2	2	2	2	2	2	2	2	2
+70	Acce	2	2	2	2	2	2	2	2	2
	Dece	2	2	2	2	2	2	2	2	2
+80	Acce	2	2	2	2	2	2	2	2	2
	Dece	2	2	2	2	2	2	2	2	2
+90	Acce	2	2	2	2	2	2	2	2	2
	Dece	2	2	2	2	2	2	2	2	2

### 4-10-2 Editing Accel/Decel Time and Pattern Data

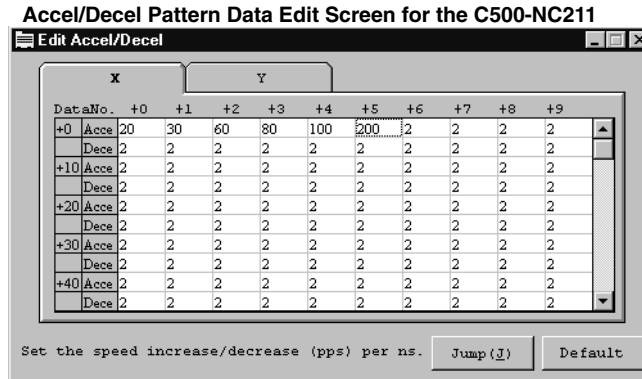
For the C200HW-NC113/213/413, the acceleration time required to increase the speed from the initial speed to the maximum speed and the deceleration time required to decrease the speed from the maximum speed to the initial speed can be specified. The values must be input within the range of 0 to 250000 (ms).

Edit Accel/Decel Screen for the C200HW-NC413

	1	2	3	4	5	6	7	8	9
Acce	100	200	300	0	0	0	0	0	0
Dece	100	200	300	0	0	0	0	0	0

For the C200HW-NC113/213/413, input the acceleration data values and then press the Enter Key. The cursor will move to the deceleration data field.

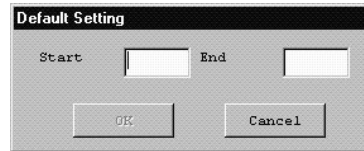
For the C500-NC113/211, specify acceleration/deceleration pattern data as the amount of speed change (pps) per millisecond. The input value must be within the range of 2 to 2000 (pps/ms).



**Default Settings**

For the C500-NC211, the data in the range specified in “Default Setting” can be reset to the default value (2).

- 1, 2, 3... 1. Click “Default” in the data edit screen.



2. Input the data numbers into the “Start” and “End” fields.  
 3. Click “OK” so that the data in the specified range will be set to default values (2).

**Clearing Data and Jumping**

For the C200HW-NC113/213/413, data can be cleared by clicking “Clear(C)” and specifying the data number.

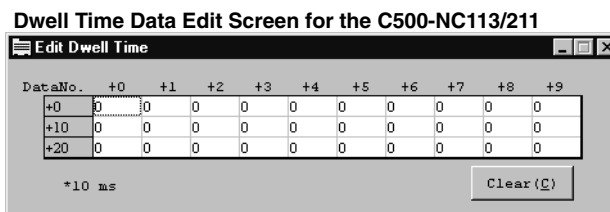
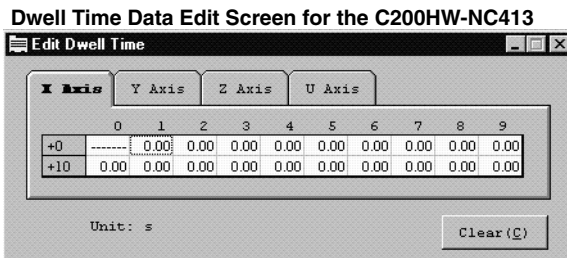
For the C500-NC113/211, a particular data number can be displayed as the first data item (or the cursor can be moved to a particular data number) by clicking “Jump(J)” and specifying the data number.

Refer to 4-4 *Clearing Data and Jumping* for details on how to clear data and move the cursor.

## 4-11 Editing Dwell Time Data

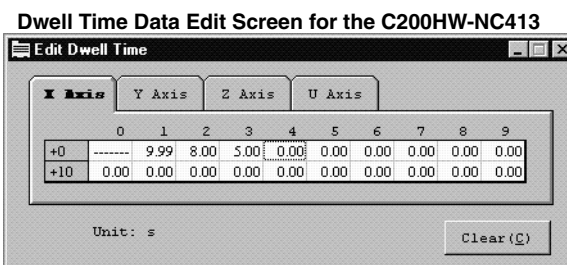
### 4-11-1 Dwell Time Data Edit Screen

The following screens are examples of Dwell Time Data Edit Screens.

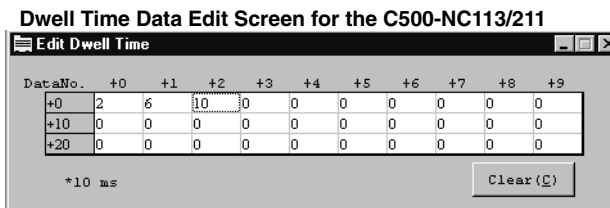


### 4-11-2 Editing Dwell Time Data

For the C200HW-NC113/213/413, values must be input within the range of 0 to 9.99 (s). Dwell time data can be input into numbers 1 to 19. It cannot be input into 0.



For the C500-NC113/211, values must be input within the range of 0 to 999 (x 10 ms).



#### Clearing Data

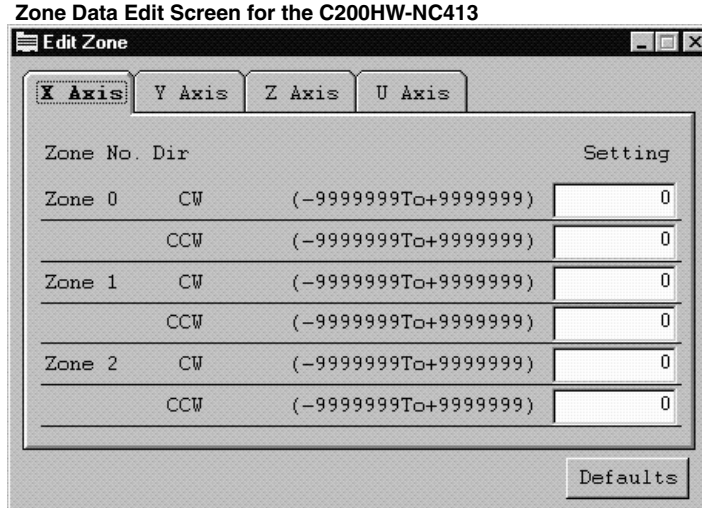
Data can be cleared by clicking “Clear(C)” and specifying the data number. Refer to 4-4 *Clearing Data and Jumping* for details on how to clear data.



## 4-12 Editing Zone Data: C200HW-NC113/213/413

### 4-12-1 Zone Data Edit Screen

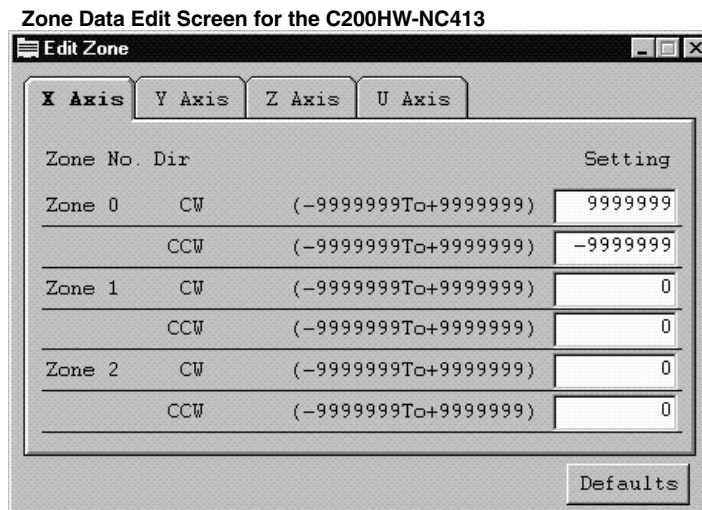
The following screen is an example of the Zone Data Edit Screen.



### 4-12-2 Editing Zone Data

Use the following procedure to edit zone data.

- 1, 2, 3... 1. Specify zone data for CW and CCW directions of Zones 0 to 2.
2. Input a value within the following ranges.
  - Pulse: -9999999 to 9999999
  - Millimeter: -9999.999 to 9999.999
  - Inch: -999.9999 to 999.9999



#### Default Settings

3. To reset all zone data for zones 0 to 2 to the default values (0), click "Default Setting" and then click "Yes."

# SECTION 5

## Transferring and Verifying Data

This section provides information on data exchange between the Position Control Unit and personal computer, the comparison of such data, and writing the data to the flash memory/EEPROM of the Position Control Unit.

5-1	Transferring Data .....	54
5-2	Verifying Data .....	56
5-3	Writing Data to Flash Memory/EEPROM .....	57

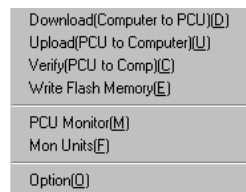
## 5-1 Transferring Data

Edited data can be transferred from the Position Control Unit to personal computer and vice versa using the procedure described below. All data can be transferred as a group or as individual items.

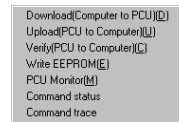
**Note** Before transferring data, make sure that the personal computer is connected to the PC with a Connecting Cable.

- 1, 2, 3...**
1. Open the data to be transferred to the Position Control Unit or open the file that contains the data written from the Position Control Unit.
  2. Click “Comm(L).” One of the following menus will appear.

### C200HW-NC113/213/413



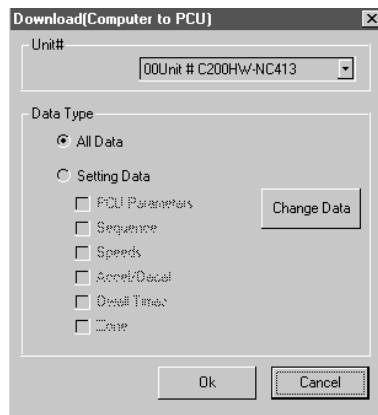
### C500-NC113/211



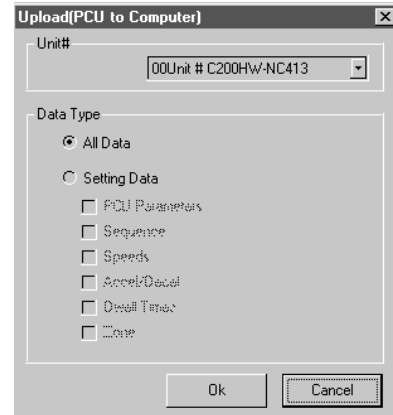
3. Click “Computer to PCU(D)” to download the data to the Position Control Unit and click “PCU to Computer(U)” to upload the data to the personal computer.

### C200HW-NC113/213/413

Download (Computer to PCU)(D) Screen

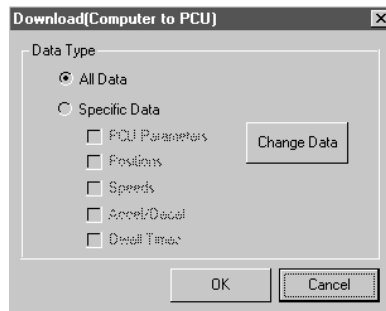


Upload (PCU to Computer)(U) Screen

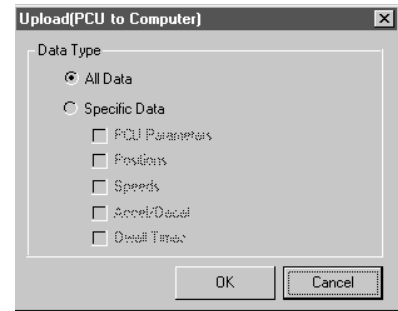


**C500-NC113/211**

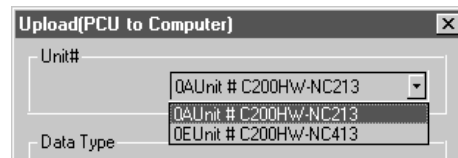
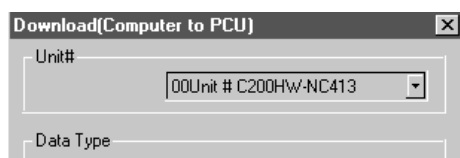
Computer to PCU(D) Screen



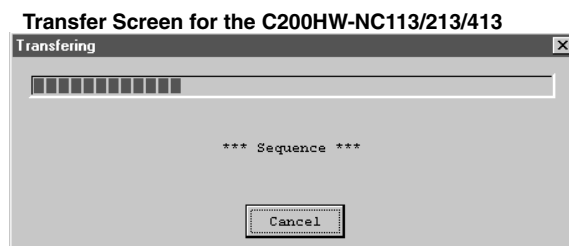
PCU to Computer(U) Screen



- For the C200HW-NC113/213/413, specify the destination Position Control Unit unit number in the “Unit #” list box when selecting “Download (Computer to PCU)[D]” or specify the unit number of the source Position Control Unit in the “Unit #” list box when selecting “Upload (PCU to Computer)[U].” The default unit number displayed in the list box is the unit number specified in “Option(O).”



- To send data items individually, click “Setting Data” and then click the data to be transferred.
- Click “OK.” The data transfer will start and the following screen will appear.



- Click “Cancel” to cancel the data transfer.
- For the C200HW-NC113/213/413, when the data has been transferred to the Position Control Unit by selecting “Download (Computer to PCU)[D]”, a confirmation message will be displayed asking whether the data is to be saved in the flash memory.
- For the C500-NC113/211, when the data has been transferred to the Position Control Unit by selecting “Download (Computer to PCU)[D]”, a confirmation message will be displayed asking whether the data is to be saved in the EEPROM.

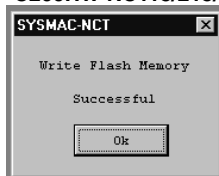
10. Click "OK" to save the data, or click "Cancel."

C200HW-NC113/213/413 Screen



The following screen will appear if the data transfer is successful.

C200HW-NC113/213/413 Screen



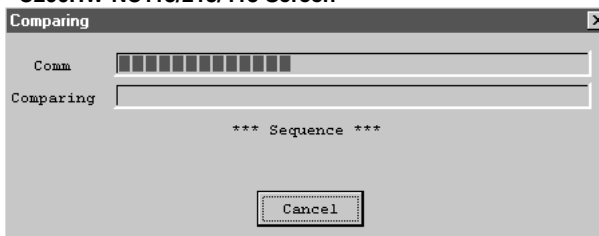
11. Click "OK" to exit.

## 5-2 Verifying Data

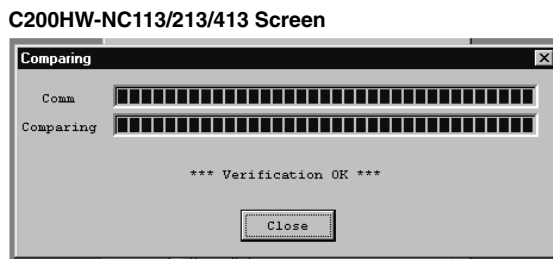
All data or specified individual data currently being edited can be compared and verified with the corresponding data of the Position Control Unit by following the procedure described below.

- 1, 2, 3... 1. Open the data file to be verified.
2. Click "Comm(L)" and then "Verify(Unit to Comp)."
3. For the C200HW-NC113/213/413, specify the unit number of the Position Control Unit to be verified in the "Unit #" list box. The default unit number displayed in the list box is the unit number specified in "Option(O)."
4. To compare and verify data individually, click "Setting Data" and click the data to be compared and verified.
5. Click "OK." The following screen will appear when verification begins.

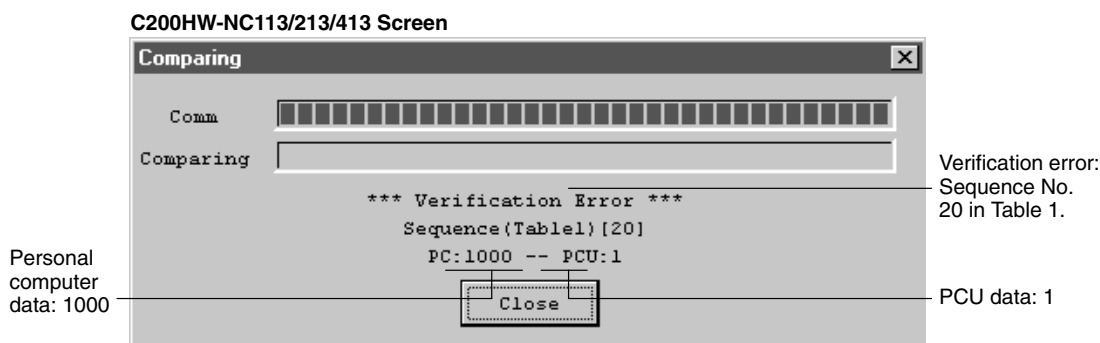
C200HW-NC113/213/413 Screen



- To cancel the verification, click “Cancel.” The following screen will appear if the verification is successful.



- If a verification error occurs during the comparison (i.e., if the data being compared does not match), a screen such as the following will appear (depending on the content of the error). Click “Close” to terminate the comparison.



**! Caution** Data transferred to the Position Control Unit will be lost when the Position Control Unit is turned off, so be sure to use this procedure to save any data that must be retained.

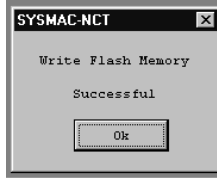
## 5-3 Writing Data to Flash Memory/EEPROM

All data or individual data can be written to the flash memory or EEPROM of the Position Control Unit. To save the data, write the data to the flash memory or EEPROM following the procedure described below.

- For the C200HW-NC113/213/413, click “Comm(L)” and then “Write Flash Memory(E).”
- For the C500-NC113/211, click “Comm(L)” and then “Write EEPROM(E).”
- For the C200HW-NC113/213/413, specify in the “Unit #” list box the unit number of the Position Control Unit for which data is to be saved. The default unit number displayed in the list box is the unit number specified in “Option(O).”
- For the C500-NC113/211, when writing data individually, click “Specific data” and then select the data to be saved.

5. Click "OK." The following screen will be appear when the data has been saved successfully.

C200HW-NC113/213/413 Screen



6. Click "OK" to complete the operation

# SECTION 6

## Monitoring the Position Control Unit

This section describes the monitoring functions for the Position Control Unit, which are used to display information such as error codes, sequence numbers, the Position Control Unit's I/O status, and the present position.

Details on how to use the multimonitor function to display the status of up to four Position Control Units when monitoring the C200HW-NC113/213/413 are also given in this section. Monitoring functions for the C500-NC113/211, such as the command status function used to display the commands and status data allocated to the PC area, and the command trace function used to trace the commands executed by the Position Control Unit are also covered.

6-1	Overview .....	60
6-2	PCU Monitor Screen .....	60
6-3	Multimonitor (C200HW-NC113/NC213/NC413) .....	61
6-4	Command Status (C500-NC113/NC211) .....	61
6-5	Command Trace (C500-NC113/NC211) .....	62



## 6-1 Overview

### C200HW-NC113/213/413

“PCU Monitor(M)” is used to display error codes, sequence numbers, the Position Control Unit’s I/O status, and the present position.

### C500-NC113/211

“PCU Monitor(M)” is used to display errors, the Position Control Unit’s I/O status, the present position, and the present positioning action number.

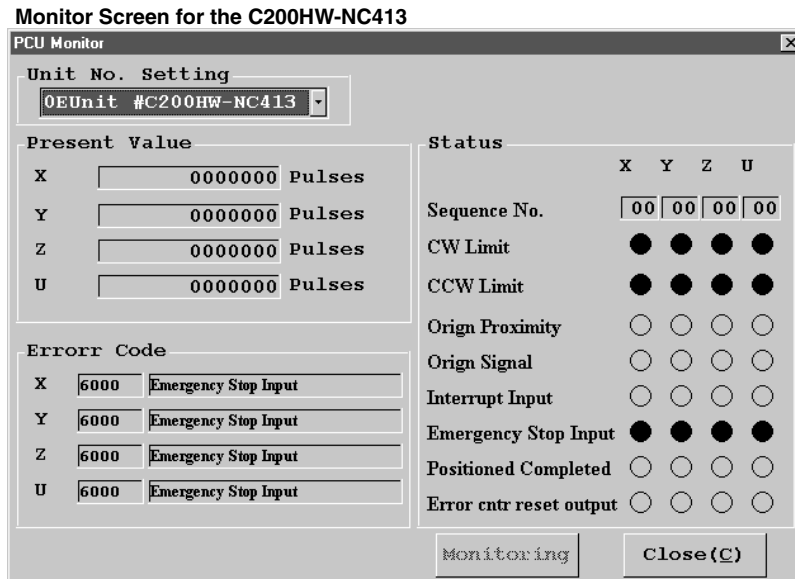
## 6-2 PCU Monitor Screen

Use the following procedure to display the PCU Monitor Screen.

### C200HW-NC113/213/413

- 1, 2, 3... 1. Click “Comm(L)” and then click “PCU Monitor(M).”
2. Specify the unit number of the Position Control Unit to be monitored in the “Unit No. Setting” list box.

The default unit number displayed in the list box is the unit number specified in “Option(O).” The following screen will appear.

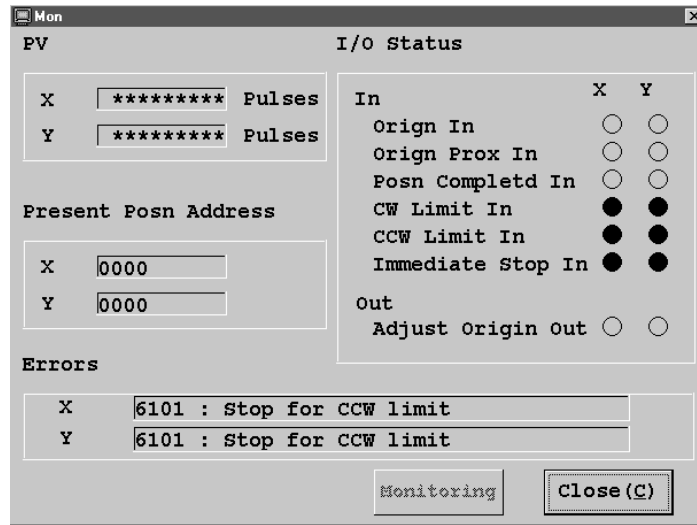


The present position of each axis will be displayed in the “Present Value” box. Error codes and details will be displayed in the “Error Code” box. The I/O status and sequence number for each axis will be displayed in the “Status” box. A filled circle (●) indicates that I/O activity is occurring.

Refer to the *C200HW-NC113/NC213/NC413 Position Control Units Operation Manual (W334)* for further details on errors.

C500-NC113/211

- 1, 2, 3... 1. Click “Comm(L)” and then click “PCU Monitor(M).” The following screen will appear.



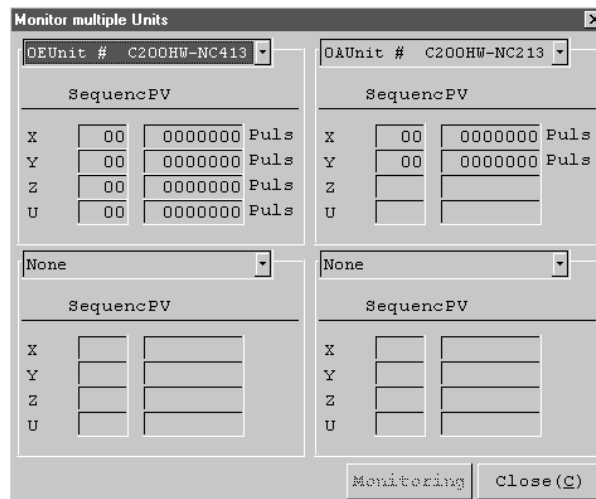
The latest error will be displayed. A filled circle (●) in the “I/O Status” box indicates that I/O activity is occurring. The present position and present position address will be displayed.

Refer to the *C500-NC113/NC211 Position Control Units Operation Manual (W323)* for further details on errors.

### 6-3 Multimonitor (C200HW-NC113/NC213/NC413)

Use the following procedure to display the status of up to four Position Control Units on the same screen with the multimonitor function. This function is available for the C200HW-NC113/NC213/NC413 only.

- 1, 2, 3... 1. Click “Comm(L)” and then click “Mon Units(F).”
2. Specify the unit number of the Position Control Unit to be monitored in the “Unit No. Setting” list box. The sequence number and present position of each axis will be displayed as shown in the following screen.

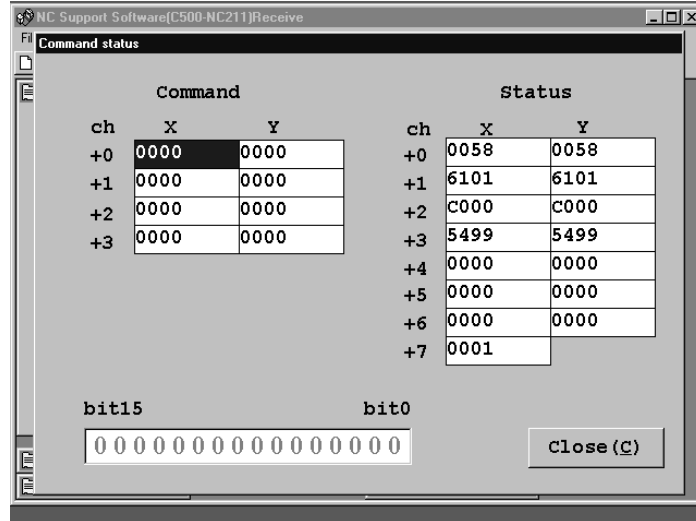


### 6-4 Command Status (C500-NC113/NC211)

Use the following procedure to display the commands and status data allocated to the PC area with the command status function.

Commands: X axis (n+1) to (n+4) (words)  
 Y axis (n+5) to (n+8) (words)  
 Status data: X axis (s+0) to (s+7) (words)  
 Y axis (s+8) to (s+14) (words)

Click “Comm(L)” and then click “Command status.” The Command Status Screen will appear.

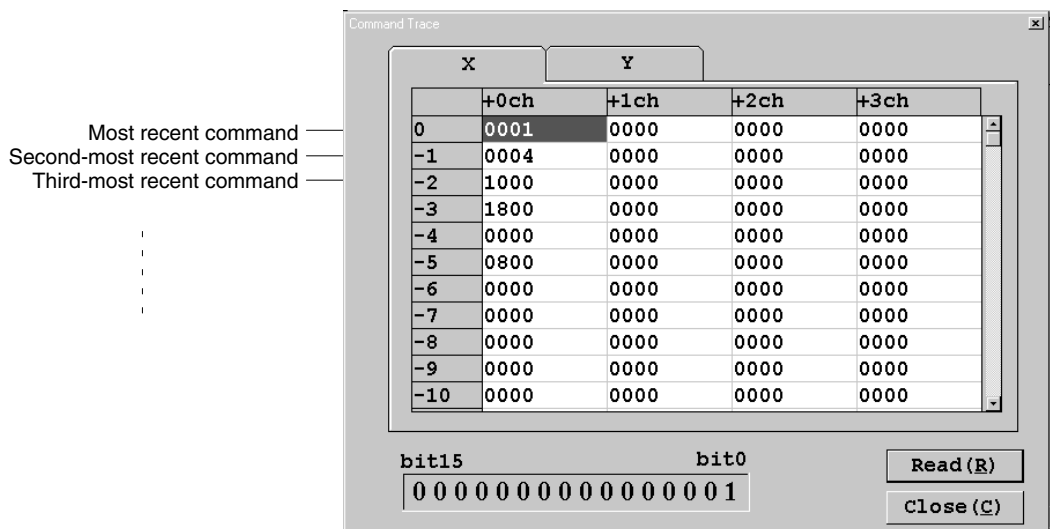


Refer to the *C500-NC113/NC211 Position Control Unit Operation Manual (W323)* for the detailed areas to which commands and status data are allocated.

## 6-5 Command Trace (C500-NC113/NC211)

Use the following procedure to display the commands that have been executed. The commands will be displayed in order from the most recently executed command.

Click “Comm(L)” and then click “Command trace.” The Command Trace Screen will appear.



**Note** Command trace data will be lost when the Position Control Unit is turned off. Therefore, if you need see the trace data at system startup or when some trouble occurs, be sure to not turn off the power to the Position Control Unit.

# SECTION 7

## Managing and Printing Files

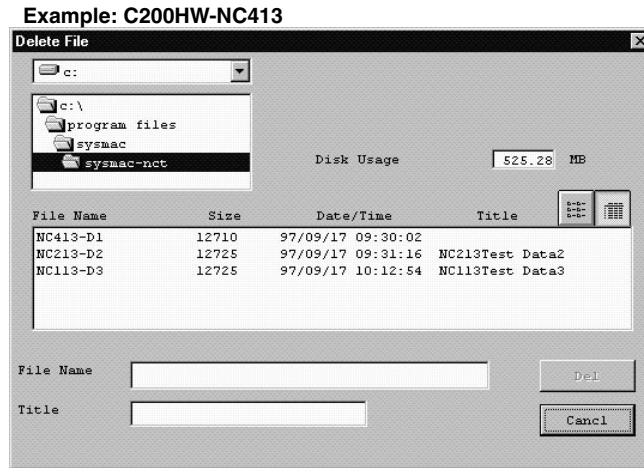
This section provides information on managing files, such as deleting and printing data.

7-1	Deleting Files .....	64
7-2	Printing Data .....	65

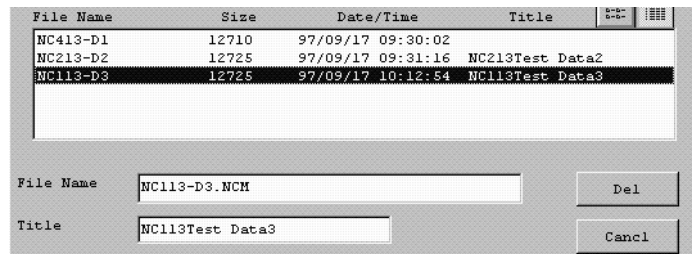
## 7-1 Deleting Files

Take the following steps to delete unnecessary files.

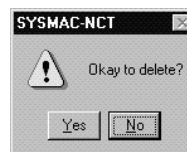
- 1, 2, 3... 1. Click “File(F)” and then click “Delete(D).” The Delete File Screen will appear.



2. Input the file name or click the file to be deleted in the list. The selected file will be displayed as shown in the following screen.



3. Click “Del.” A confirmation message will appear.

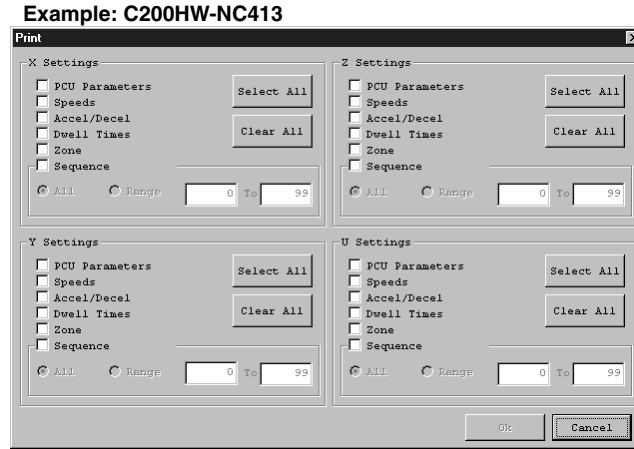


4. Click “Yes” to delete the file.

## 7-2 Printing Data

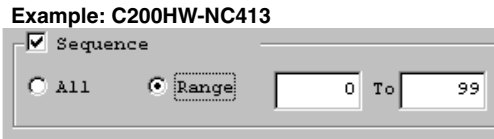
Use the following procedure to print all data or specific data. Sequence data and zone data can be printed by specifying the printing range with data numbers.

- 1, 2, 3... 1. Click “File(F)” and then click “Print(P).” The following screen will appear.



For two-axis control, the screen for the X and Y axes will be displayed. For one-axis control, the screen for the X axis alone will be displayed.

2. Click “Select All” to print all data.
3. To select specific data, click the applicable check box “. Clicking the check box for “Sequence Data” (C200HW-NC113/213/413) or “Positions” (positioning actions, C500-NC113/211) will automatically select “All.”
4. To specify the printing range, click “Range” and input the first and last data numbers of the range.



5. Click “OK.”

# Appendix

## Error Messages and Troubleshooting

Error message	Cause	Remedy
Environment error. Please reinstall.	The SYSMAC-NCT Support Tool cannot run successfully under the present environment.	Reinstall and run the SYSMAC-NCT Support Tool.
NC model setting differs from data file model setting. Open data file?	The model set with the SYSMAC-NCT Support Tool does not coincide with the model set in the data file or the data file is partly damaged.	Specify a correct data file or open and re-save the present data file.
The data file cannot be used.	The file is not an SYSMAC-NCT Support Tool file or the file is damaged and not readable.	Specify an SYSMAC-NCT Support Tool file or prepare a new data file.
File does not exist. Environment error. Please reinstall.	The printing environment is not ready.	Reinstall and run the SYSMAC-NCT Support Tool.
Cannot read data file properly. Will operate with data that was read.	All or part of the specified file includes data that cannot be handled by the SYSMAC-NCT Support Tool.	The SYSMAC-NCT Support Tool will read the data regardless of this error. Therefore, take the following countermeasures. <ul style="list-style-type: none"> <li>• Check, fix, and save the data.</li> <li>• Delete the data and create new data.</li> </ul>
Specified drive or file is write-protected.	The specified drive or file is write-protected.	Perform the following and try the operation again. <ul style="list-style-type: none"> <li>• Set the write protect tab of the floppy disk so that writing will be possible.</li> <li>• Use the Windows 95 Explorer and cancel the read-only attribute of the file.</li> </ul>
Insufficient space available to save.	There is no space to save the data.	Delete unnecessary files to regain the disk space and try the operation again.
Illegal file name.	Illegal characters or letters are used for the file name	Use a file name acceptable to Windows 95.
Drive does not exist.	The specified drive does not exist.	Specify an existing drive.
Folder does not exist.	The specified folder does not exist.	Specify an existing folder.
File does not exist.	The specified file does not exist.	Specify an existing file.
File read error. There may be a problem with the disk. Use Scandisk to check.	The disk has a problem.	Check the disk with the Scandisk function provided with Windows 95.
File write error. There may be a problem with the disk. Use Scandisk to check.	The disk has a problem.	Check the disk with the Scandisk function provided with Windows 95.
Unexpected error. SYSMAC-NCT Support Tool will be exited.	The SYSMAC-NCT Support Tool cannot run successfully under the present environment due to a problem caused by Windows 95 or another application.	Quit other applications and run the SYSMAC-NCT Support Tool again. If the same error occurs again, restart the personal computer and run the SYSMAC-NCT Support Tool.
Format of copy and paste areas are not the same.	You have attempted to paste data in the wrong range (e.g., data of one row by two columns has been copied, followed by an attempt to paste it in a range of one row by one column).	Select the same range for the copied data with the mouse or the Shift + Cursor Keys, and paste the data.

<b>Error message</b>	<b>Cause</b>	<b>Remedy</b>
<p>Communications line not connected.</p>	<p>The following may be the causes.</p> <ul style="list-style-type: none"> <li>• The PC (CPU Unit or Position Control Unit) is not connected to the personal computer.</li> <li>• The cable connecting the Position Control Unit and personal computer is broken.</li> <li>• The communication port setting of the SYSMAC-NCT Support Tool is incorrect.</li> <li>• The Position Control Unit (Programmable Controller) is turned off.</li> </ul>	<p>Check the following and try the operation again.</p> <ul style="list-style-type: none"> <li>• Connect the PC (CPU Unit or Position Control Unit) and personal computer through a communications cable.</li> <li>• Check the communications cable.</li> <li>• Correct the communications port setting of the SYSMAC-NCT Support Tool.</li> <li>• Turn on the Position Control Unit (Programmable Controller).</li> </ul>
<p>Communications error.</p>	<p>The following may be the causes.</p> <ul style="list-style-type: none"> <li>• The communications cable is connected incorrectly or almost broken.</li> <li>• The communications cable was disconnected during the data exchange.</li> <li>• The Position Control Unit (Programmable Controller) was turned off during the data exchange.</li> <li>• Noise.</li> </ul>	<p>Check the following and retry the operation.</p> <ul style="list-style-type: none"> <li>• Check the communications cable.</li> <li>• Connect the communications cable securely.</li> <li>• Turn on the Position Control Unit (Programmable Controller).</li> <li>• Take countermeasures against the noise.</li> </ul>



# Index

## A–B

Accel/Decel Data Edit Screen, 48  
acceleration/deceleration pattern data, 29  
    setting ranges, 29  
acceleration/deceleration time data, 27  
axis data, copying, 37  
backup disks, 12

## C

command status  
    displaying, 62  
    function, 61  
command trace function, 62  
commands executed, displaying, 62  
communications, 22  
    specifications, setting, 22  
compatibility  
    personal computers, 2  
    Position Control Units, 2  
    Programmable Controllers, 2  
    Windows 95, 2  
connecting  
    cables, 10  
    preparation, 11  
    to NC113/211 PCU, 10  
    to the Programmable Controller, 10  
copying, axis data, 37  
CPU Parameters Edit Screen, 40

## D

data  
    acceleration/deceleration patterns, 29  
    acceleration/deceleration times, 27  
    clearing, 36  
    copying, 37  
    dwell times, 27, 29  
    editing, 39, 42, 44, 46  
    for C200HW PCUs, 26  
    for C500 PCUs, 28  
    monitoring, 59  
    printing, 65  
    reading, 35  
    saving, 34

    sequences, 27  
    setting ranges, 29  
    speeds, 27, 29  
    transferring, 54  
    types, 26  
    verifying, 56  
    writing, 57  
    zones, 27  
data edit screens, 30  
deleting, files, 64  
destination PCU, specifying, 24  
dwell time data, 27, 29  
    editing, 50  
    setting ranges, 29

## E

editing  
    acceleration/deceleration data, 48  
    dwell time data, 50  
    parameter data, 39  
    positioning actions, 44  
    sequence data, 43  
    speed data, 46  
    zone data, 51  
EEPROM, writing data to, 57  
errors  
    displaying, 60  
    messages, 67

## F

files, deleting, 64  
flash memory, writing to, 57  
floppy disks, formatting, 11  
functions, 6

## H–J

help, NC Support Tool, 18  
I/O status, displaying, 60  
installation disks, backing up, 12  
installing, NC Support Tool, 13  
jumping, 37, 46

## **M–N**

model, selecting, 22  
monitoring, the PCU, 59  
multimonitor function, 61  
NC Support Tool  
  help, 18  
  installing, 13  
  menu, 15  
  menu items, 15  
  quitting, 15  
  starting up, 14  
  tool bar, 17  
numeric values, inputting, 32

## **O**

operating procedure, 6  
operating system, compatibility, 2

## **P–R**

parameters, editing, 39  
PCU Monitor Screen, 60  
PCU Parameters Edit Screen, 39, 41  
position data, setting ranges, 29  
Positioning Action Edit Screen, 44  
positioning actions, 29  
  editing, 44  
precautions, general, xv  
present position, displaying, 60  
printing, data, 65  
RS-232C Connector, 10

## **S**

sequence data, 27  
  editing, 42, 43  
Sequence Data Edit Screen, 42  
setting ranges  
  acceleration/deceleration pattern data, 29  
  dwell time data, 29  
  in millimeter, inch, or pulse, 29  
  position data, 29  
  speed data, 29  
speed data, 27, 29  
  editing, 46  
  setting ranges, 29  
starting up, NC Support Tool, 14  
switching axes, 31  
system configuration, 4

## **T**

tool bar, NC Support Tool, 17  
transferring, data, 54  
troubleshooting, 67

## **V–Z**

verifying, data, 56  
writing, data, to Flash memory/EEPROM, 57  
zone data, 27  
  editing, 51

## Revision History

A manual revision code appears as a suffix to the catalog number on the front cover of the manual.

Cat. No. W324-E1-04

↑  
Revision code

The following table outlines the changes made to the manual during each revision. Page numbers refer to the previous version.

Revision code	Date	Revised content
1	June 1997	Original production
2	October 1997	This manual was extensively revised to include information on new Position Control Units.
3	November 2000	<b>Page 2</b> : Note added after first table.
04	June 2005	<b>Page v</b> : Added information on general precautions. <b>Page ix</b> : Added information on warranty and liability

**OMRON Corporation**  
**Control Devices Division H.Q.**  
Shiokoji Horikawa, Shimogyo-ku,  
Kyoto, 600-8530 Japan  
Tel: (81)75-344-7109/Fax: (81)75-344-7149

**Regional Headquarters**

**OMRON EUROPE B.V.**  
Wegalaan 67-69, NL-2132 JD Hoofddorp  
The Netherlands  
Tel: (31)2356-81-300/Fax: (31)2356-81-388

**OMRON ELECTRONICS LLC**  
1 East Commerce Drive, Schaumburg, IL 60173  
U.S.A.  
Tel: (1)847-843-7900/Fax: (1)847-843-8568

**OMRON ASIA PACIFIC PTE. LTD.**  
83 Clemenceau Avenue,  
#11-01, UE Square,  
Singapore 239920  
Tel: (65)6835-3011/Fax: (65)6835-2711

**OMRON (CHINA) CO., LTD.**  
Room 2211, Bank of China Tower,  
200 Yin Cheng Zhong Road,  
PuDong New Area, Shanghai, 200120 China  
Tel: (86)21-5037-2222/Fax: (86)21-5037-2200

# OMRON

**Authorized Distributor:**