



Changes for the Better

MITSUBISHI CNC



CNC Remote Operation Software
NC Monitor Instruction Manual



MELSOFT
Integrated FA Software

Introduction

This instruction manual describes how to use NC Monitor. Incorrect handling may lead to unforeseen accidents, so make sure to read this instruction manual thoroughly before operation to ensure correct usage. NC Monitor supports the following NC series.

Written as in this manual	Appropriate NC
M700VW/M700VS/M70V/M700/M70/E70	M700VW/M700VS/M70V/M700/M70/E70 series

Notes on Reading This Manual


- (1) For the specifications of individual machine tools, refer to the manuals issued by the respective machine tool builders. The "restrictions" and "available functions" described by the machine tool builders have precedence over this manual.
- (2) This manual describes as many special operations as possible, but it should be kept in mind that operations not mentioned in this manual cannot be performed.


Precautions for safety


Make sure to read this manual, related manuals and auxiliary documents carefully before starting installation, operation, programming, maintenance or inspection to ensure correct usage. Thoroughly understand the device, safety information and precautions of this control system before starting operation.

This manual ranks the safety precautions into "DANGER", "WARNING" and "CAUTION".

 **DANGER** When the user may be subject to imminent fatalities or major injuries if handling is mistaken.

 **WARNING** When the user may be subject to fatalities or major injuries if handling is mistaken.

 **CAUTION** When the user may be subject to injuries or when physical damage may occur if handling is mistaken.

Note that some items ranked as " CAUTION" may lead to major results depending on the situation. In any case, important information that must always be observed is described.

DANGER





Not applicable in this manual.

WARNING

Not applicable in this manual.

CAUTION

1. Items related to product and manual

-  If the descriptions relating to the "restrictions" and "allowable conditions" conflict between this manual and the machine tool builder's instruction manual, the latter has priority over the former.
-  The operations to which no reference is made in this manual should be considered "impossible".
-  This manual is written on the assumption that your machine is provided with all optional functions. Refer to the specifications issued by machine tool builder to confirm the functions available for your machine before proceeding to operation.
-  In some NC system versions, there may be cases where different pictures appear on the screen, the machine operates in a different way or some function is not activated.

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1. OVERVIEW

This chapter explains the outline of NC Monitor.

1.1 Outline of NC Monitor

NC Monitor is software which enables monitoring of remote numerical controllers (referred to as NCs) by use of the intranet on production site.

NC Monitor is possible to connect to more than one NC, thus it can monitor multiple NCs at a time.

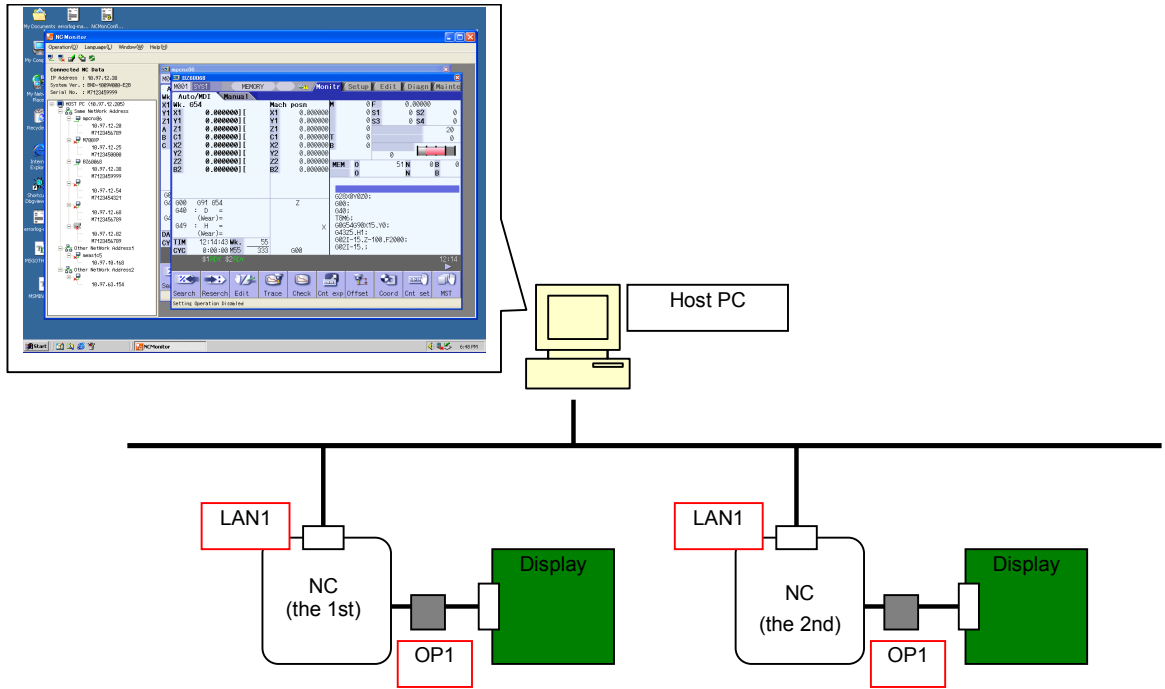


Figure1-1 General schematic diagram

1.2 Specifications of NC Monitor

1.2.1 Operating environment of NC Monitor

NC Monitor works under the following environment.

OS (Note 1)	Windows XP SP3 or later (32bit version) Windows Vista SP2 or later (32bit version) Windows7 SP1 or later (32bit version/64bit version) Windows8 (32bit version/64bit version)
CPU	Windows XP: 300MHz or faster Windows Vista: 800MHz or faster Windows7, Windows8: 1GHz or faster
Memory	Windows XP: 128MB or more Windows Vista: 512MB or more Windows7, Windows8: 1GB (32bit version) / 2GB (64bit version) or more
Available hard disk space	100MB or more (excluding the free space necessary for running the OS)
Interface	10/100M Ethernet
Display	Resolution: SVGA (800x600)

(Note 1) WOW64 (structure that operates 32 bit application by 64bit version OS.) is used for 64bit version OS.

NC Monitor can be connected to the following NC.

Connected NC	Version with which NC Monitor available with
M700 Series *Ver.F0 or later will be the target.	Ver.A0 or later
M70 Series *Ver.F0 or later will be the target.	Ver.A0 or later
M700VW Series	Ver.A1 or later
M700VS Series	Ver.A1 or later
M70V Series	Ver.A2 or later
E70 Series	Ver.A5 or later

For NC Monitor, latest software version is recommended.

1.3 Screen Configuration of NC Monitor

The NC Monitor screen is as shown in Figure 1-2.

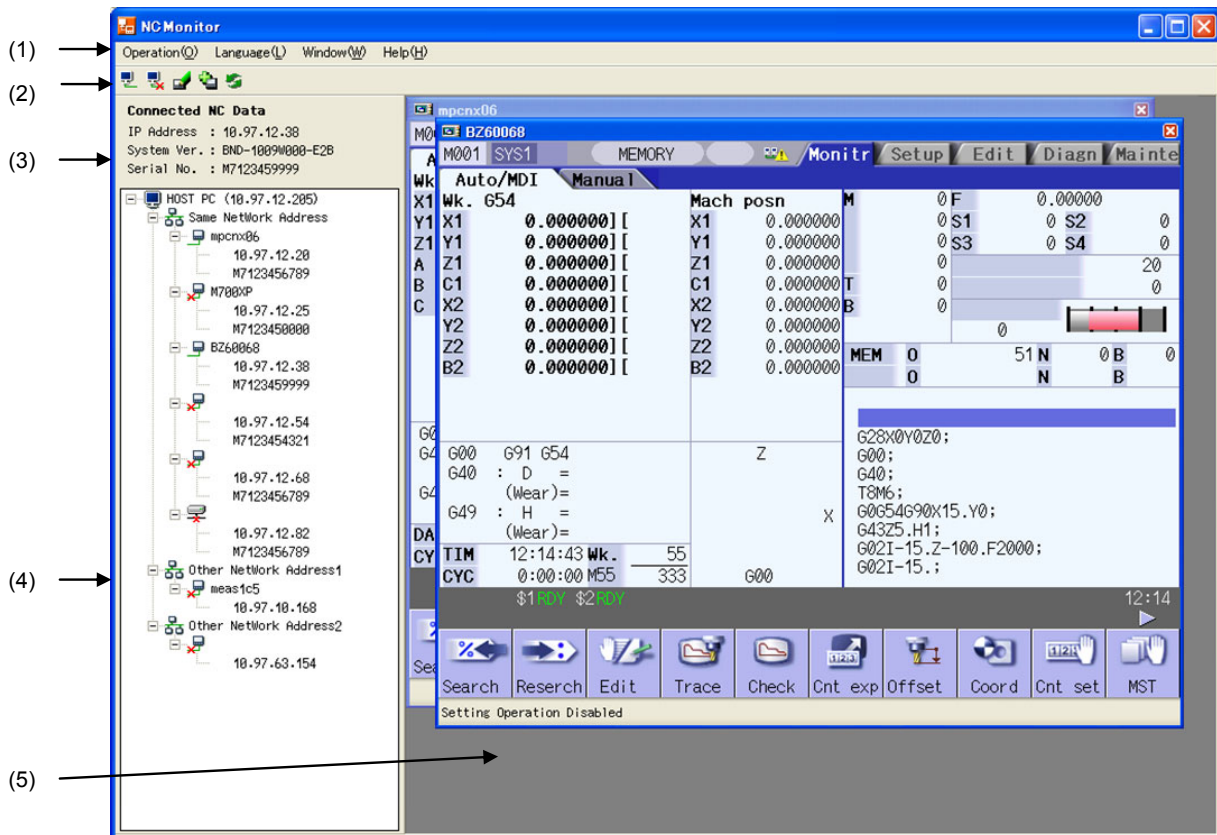


Figure 1-2 NC Monitor screen configuration

Table 1-1 List of items displayed

Item	Description
(1) Menu bar	Possible to select functions such as connection (to display the screen) and addition of NC.
(2) Tool bar	Possible to use frequently used functions without selecting from the menu bar.
(3) Connected NC data	Detailed information (such as IP address, system version and serial No.) of the connected NC, which is displayed in the foreground, appears.
(4) NC list area	A list of NCs is displayed. In this list, connectable NCs and the NCs added by a user using "Add connected NC" function are listed. When an item is selected from the list and right-clicked, a popup menu appears, from which various functions can be selected.
(5) Screen display window	Screens of the connected NCs are displayed.
Title bar	The connected NC's name and the close button are displayed.
Status bar	Tool's status, such as communication state, is displayed.

1.3.1 Menu bar

Menu bar contains various functions to select, such as connection/disconnection with NC and addition of connected NC.

(1) [Operation] menu

Using this menu, you can perform operations such as connection with NC.

Table 1-2 Items in Operation menu

Item	Description
Connect (<u>O</u>)	Connects to an NC to display the NC's screen. If the NC you've selected from the NC list is already connected (its screen is being displayed), this NC's screen is displayed in the foreground. If a cursor is not over NC in the list area, selecting this item is not possible.
Disconnect (<u>C</u>)	Cuts off the connection to the NC and closes the NC's screen. When this tool is not connected to the NC, which you've selected from NC list (when this tool is not displaying the selected NC's screen), or when a cursor is not over an NC in the list area, selecting this item is not possible.
Change NC Name (<u>R</u>)	Opens the [Change NC Name] dialog box, where you can change the name of NC that is pointed by a cursor in the NC list area. If a cursor is not over an NC in list area, selecting this item is not possible.
Add connected NC (<u>A</u>)	Opens the [Add connected NC] dialog box, where you can add an NC that belongs to the other network group (a group different from the host PC's IP address) to the NC list.
Delete connected NC (<u>D</u>)	Deletes an NC, which you've added by "Add connected NC" function, from the NC list. When the NC you've selected from the list is already connected (its screen is being displayed) or when a cursor is not pointing at an NC which belongs to the other network group (a group different from the host PC's IP address) in the list area, selecting this item is not possible.
Update (<u>U</u>)	Refreshes the list of the connectable NCs (NCs belonging to the same network group as the host PC's IP address).
End (<u>X</u>)	Terminates the tool.

(2) [Language] menu

Using this menu, you can switch the displayed languages of this tool. The default language is the one selected at the time of installation.

Language switching is enabled after restarting this tool.

(3) [Window] menu

Using this menu, you can arrange the screen.






(4) [Help] menu

Using this menu, you can see this tool's version information.

1.3.2 Tool bar

You can use the functions such as connect/disconnect without selecting from the menu. When you move a cursor over the tool bar, a note explaining the function's outline appears.

Table 1-3 Items on Tool bar

Item	Icon	Description
Connect		Connects to an NC to display the NC's screen. If the NC you've selected from the NC list is already connected (its screen is being displayed), this NC's screen is displayed in the foreground. Clicking on this button is not possible, if a cursor is not over an NC in NC list area.
Disconnect		Cuts off the connection to the NC and closes the NC's screen. If this tool is not connected to the NC, which you've selected from the NC list (If this tool is not displaying the selected NC's screen), or if a cursor is not over an NC in NC list area, clicking on this button is not possible.
Change NC Name		Opens [Change NC Name] dialog box, where you can change the name of NC that is pointed by a cursor in NC list area. If a cursor is not over an NC in NC list area, clicking on this button is not possible.
Add connected NC		Opens [Add connected NC] dialog box, where you can add an NC that belongs to the other network group (different from the host PC's IP address) to the NC list.
Update		Refreshes the list of the connectable NCs (NCs belonging to the same network group as the host PC's IP address).

1.3.3 Connected NC data

This area shows the detailed information of the connected NC whose screen is displayed in the foreground. When not connected to any NC, only the item name "Connected NC Data" is displayed.

Table1-4 Items in Connected NC Data

Item	Description
IP Address	Displays the connected NC's IP address (set in the base common parameter "#1926 Global IP address", which is referred to as NCIP address).
System Ver.	Displays the connected NC's system version.
Serial No.	Displays the connected NC's serial number. If the serial number is not set, it is left blank (only the item name is shown).

1.3.4 NC list area

In NC list area, connectable NCs and NCs added by "Add connected NC" function are displayed in a tree structure.

When you select an item from the list and right click on it, a pop-up menu appears.

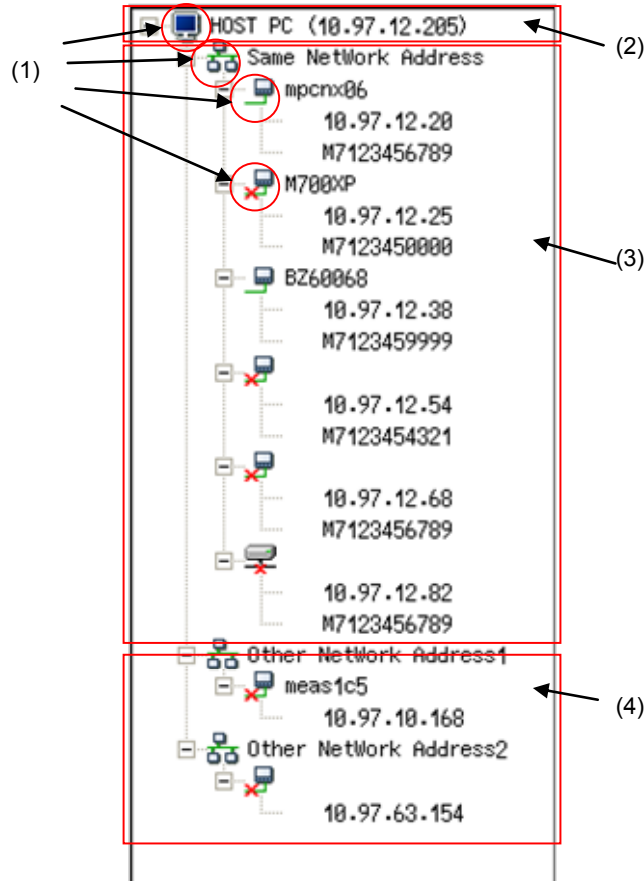






Table 1-5 Items in NC list area

Item	Description
(1) Icon	<p>There are four types of icons:</p>  : means that it is Host PC.  : means that they belongs to the same network group.  : means that it is being connected (its screen is displayed).  : means that it is not being connected (its screen is not displayed).
(2) HOST PC (Host PC's IP address)	<p>The host PC's IP address is shown inside the brackets next to the item name, "HOST PC".</p>
(3) List of connectable NCs	<p>This shows a list of connectable NCs, which are displayed in the following configuration.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <pre> ├ NC name ├ NCIP address └ Serial No.</pre> </div> <p>"Connectable NC" means that the NC belongs to the same network group as the host PC's IP address. (E.g.) Host PC's IP address: 10.97.12.205 Host PC's subnet mask: 255.255.255.0 1) NCIP address: 10.97.12.20 → This NC belongs to the same network address, <u>10.97.12.0</u>. So this NC is included in the list. 2) NCIP address: 10.97.10.20 → The network addresses are different as <u>10.97.12.0</u> and <u>10.97.10.0</u>, thus this NC is not included in the list.</p> <p>(Note 1) Right after the installation of this tool, only connectable NCs are shown in the list. (Note 2) When connection to the NC is impossible for a reason such as the power is OFF, this NC is not shown in the list. (Note 3) If the NC name is not set, the NC name is left blank. It is possible to move a cursor over the blank area.</p>
(4) List of NCs added by the "Add connected NC" function	<p>This shows a list of NCs belonging to the other network group (a group different from the host PC's IP address), which have been added by the "Add connected NC" function. These NCs are displayed in the following configuration.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <pre> ├ NC name └ NCIP address</pre> </div> <p>(Note 1) See "3.2.4 Add connected NC" for how to add NCs. (Note 2) All of the added NCs are listed, regardless of whether the NC is connectable or not. (Note 3) The added NCs are still displayed in the list, even after closing and then restarting this tool.</p>

1.3.5 Screen display window

This window shows the connected NC's screen.
 If there is more than one connectable NC, screens of up to 10 NCs can be displayed.
 But, it's not possible to open multiple screens for one NC.

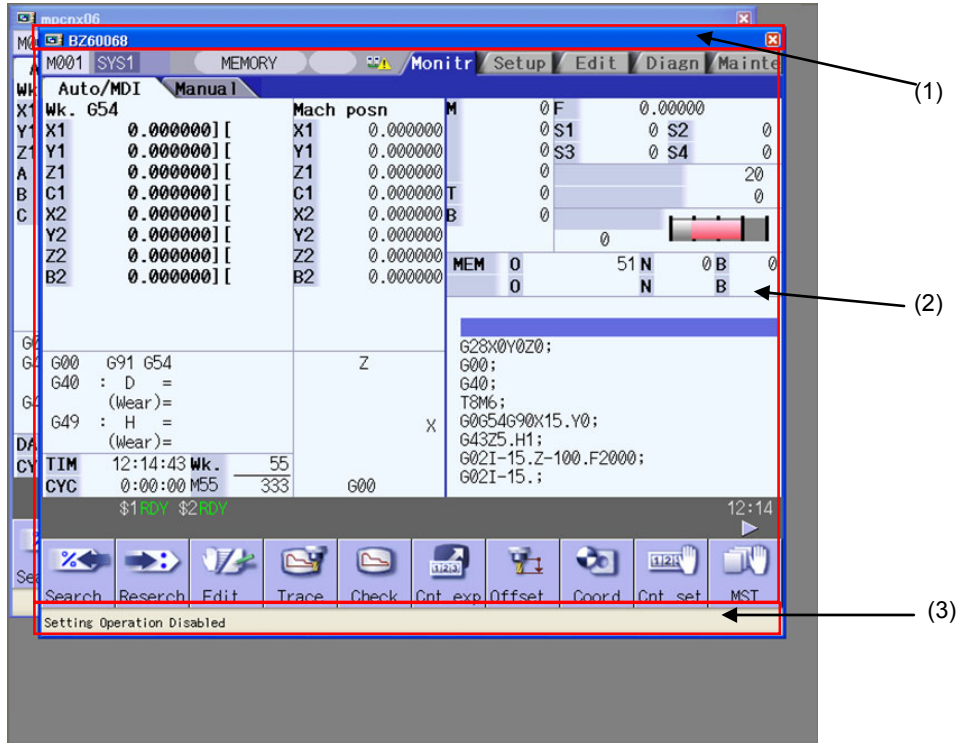




Table 1-1 List of screen elements

Item	Description
(1) Title bar	Displays the NC name and the close button.
NC name	Displays the connected NC's name. The name designated by "Add connected NC" or "Change NC Name" is displayed. When NC name is not set, this is left blank.
Disconnect (Close the connected NC's screen)	Cuts off the connection to an NC to close the NC's screen.
(2) Connected NC's screen	Displays the connected NC's screen. When the operation parameter "#8931 Display/Set limit" is set to "0" or "1" and when other host PC or display is being connected (this state is hereinafter called "host connection state"), the icon  appears. (Note 1) The NC screen shown by NC Monitor has no [SOFT KEY] button. (Note 2) When Anshin (MTB) net communication is active in host connection state, the icon  is indicated with higher priority.
(3) Status bar	Displays various conditions, such as communication status.
Setting Operation Disabled	The connected NC's operation parameter "#8931 Display/Set limit" is set to "1" or "2", thus setting of parameters etc. is impossible via this tool.
Communication Abnormalities	While connected NC's screen is being displayed, a communication failure such as the NC's power OFF has happened.

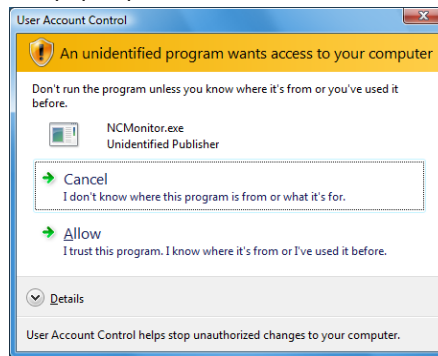
2. INSTALLATION AND SETUP

2.1 How to Install onto Your Computer for the First Time

(1) Double click on NC Monitor.exe.

(Note) The installation of NC Monitor has to be carried out by the authority of the administrator.

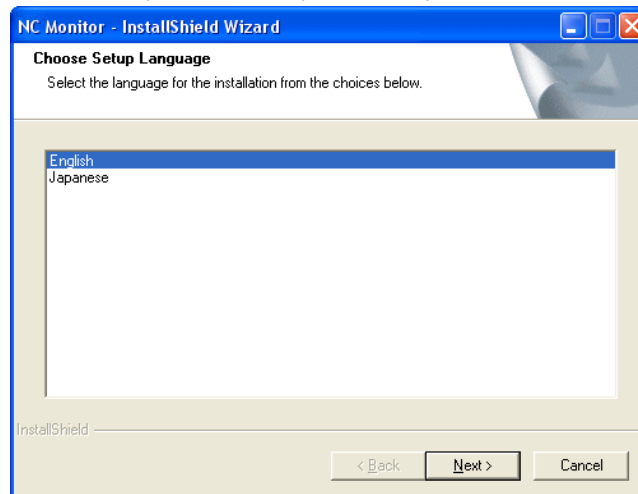
If User Account Control in Windows Vista, Windows7 or Windows8 is enabled, the confirmation dialog box as below pops up. Then, allow the execution of NCMonitor.exe to start the installation.



(2) "Choose Setup Language" screen appears.

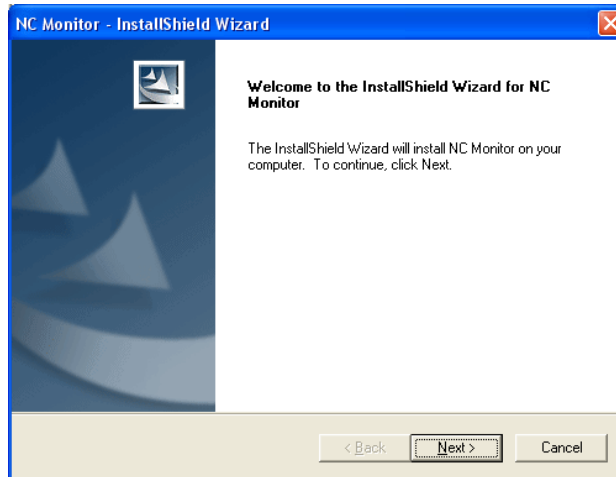
Select the language to use for installation, and press [Next].

* Select "English" when installing the NC Monitor on other than Japanese version of Windows. If you select "Japanese", characters may not be displayed correctly.



(3) The setup screen appears.

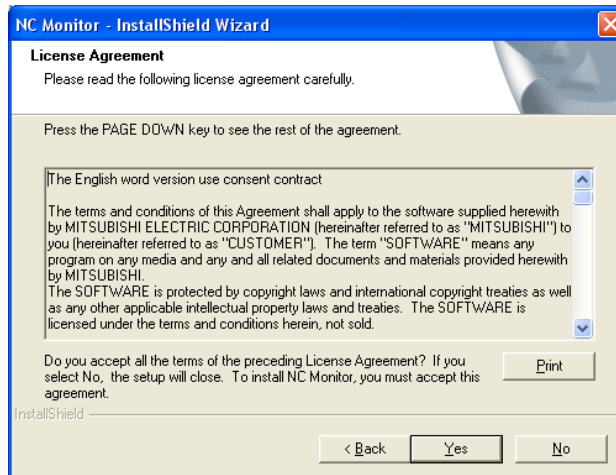
Press [Next].



(4) The software license agreement dialog box appears.

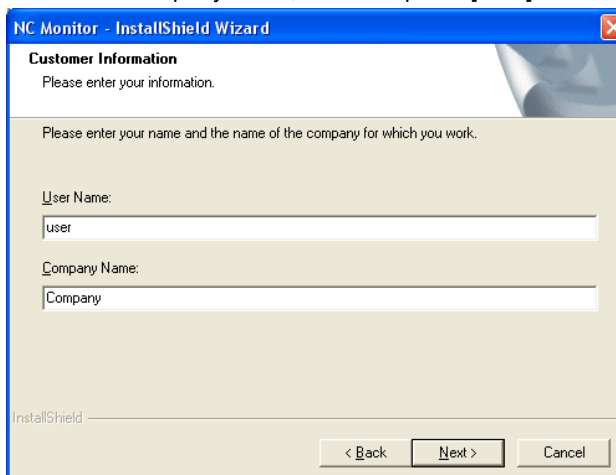
Read it through and press [Yes].

Select [No] (if you don't agree to this) to cancel the installation of NC Monitor.

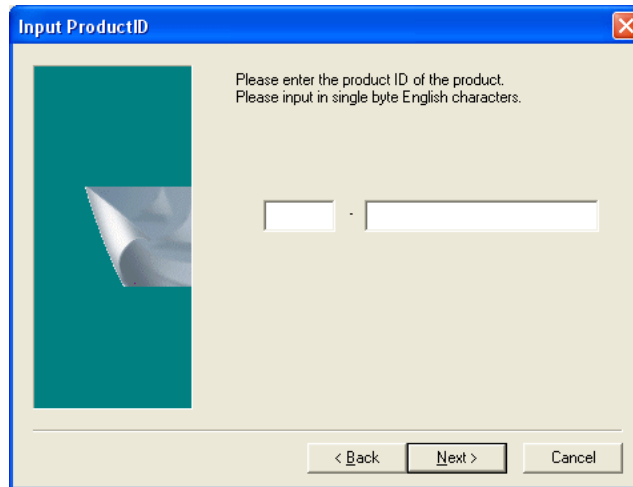


(5) The user information dialog box appears.

Input your user name and company name, and then press [Next].



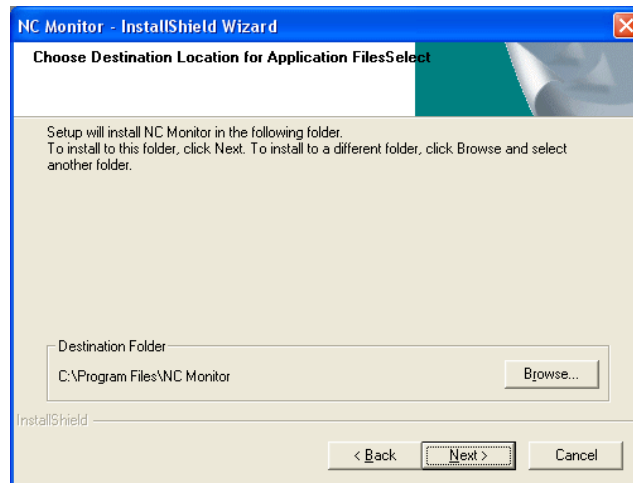
(6) Input the product ID and press [Next].



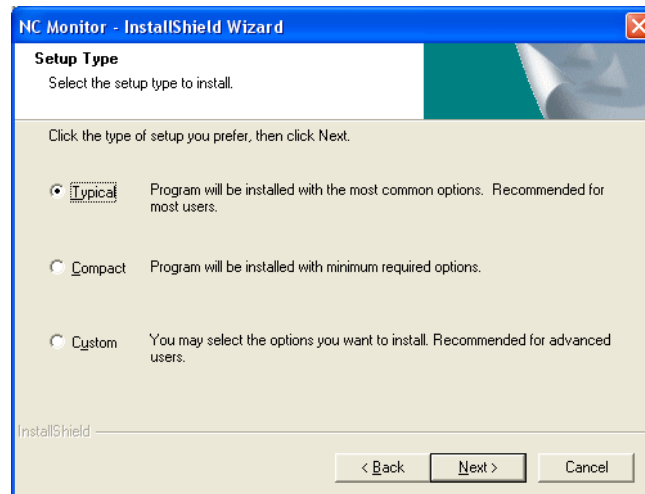
(7) The installation location selection screen appears.

If you wish to change where to install, press [Browse] and select the location.

After setting, press [Next].

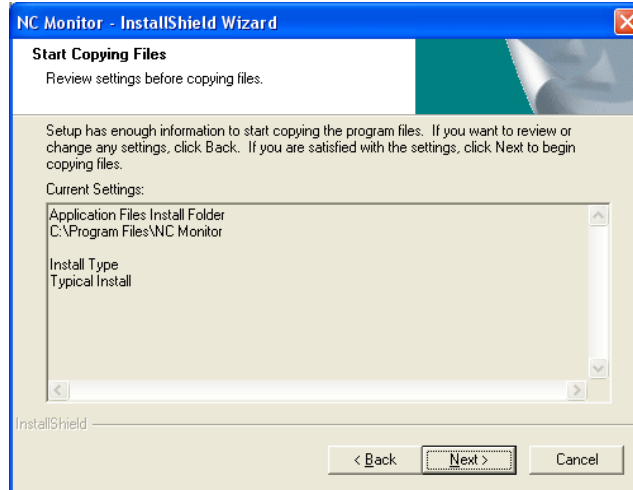


(8) The setup type information appears. After selecting the setup type, press [Next].

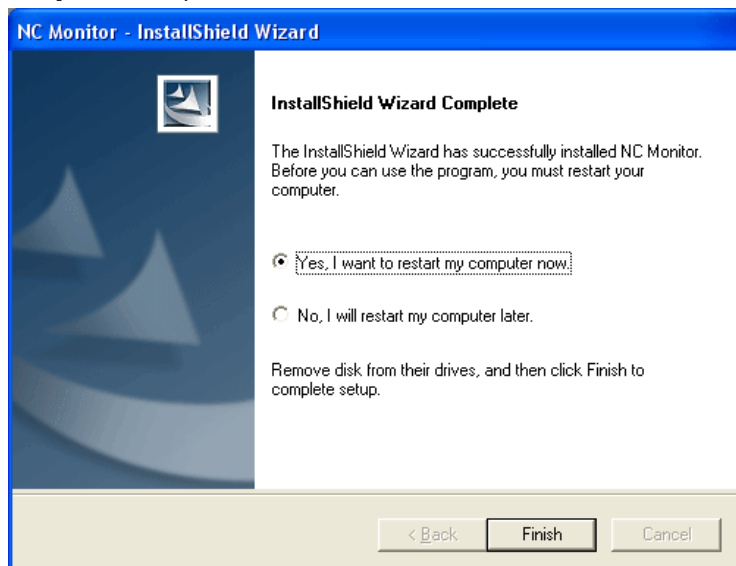


- (9) The information on the installation location appears. Check the location setting and then press [Next] (or [Back] to change the setting).

Then the setup starts.

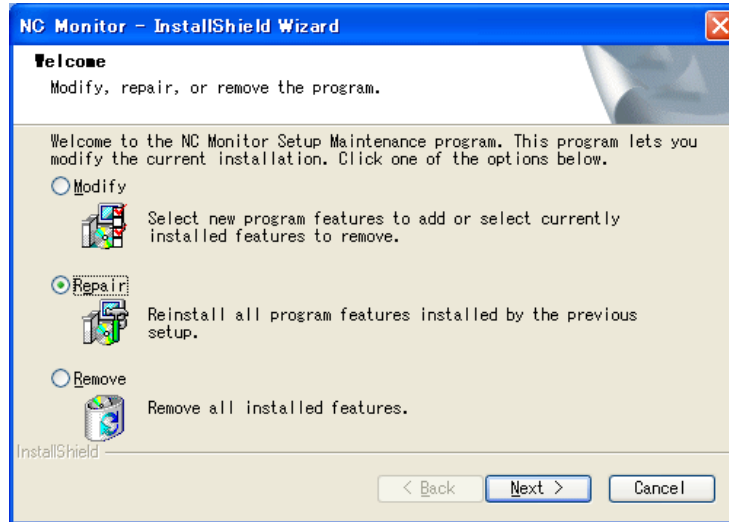


- (10) When the installation has finished normally, the completion dialog box appears. Press [Finish] to end the procedure.

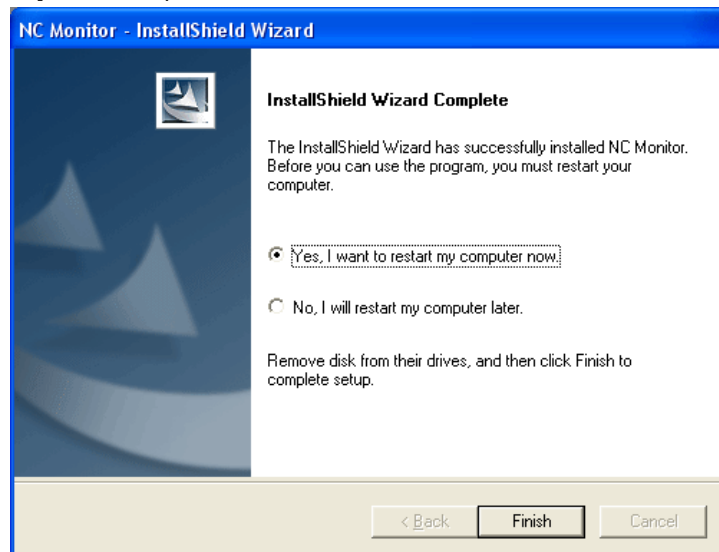


2.2 How to Install to Upgrade the Software

- (1) Double click on the new version of NCMonitor.exe.
Select [Repair] and press [Next].



- (2) When the installation has finished normally, the completion dialog box appears.
Press [Finish] to end the procedure.



2.3 How to Uninstall

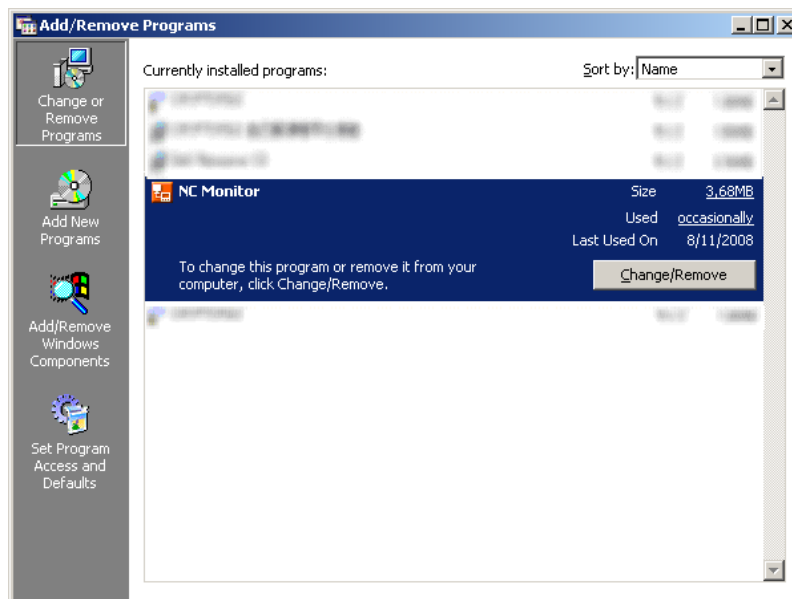
There are two kinds of ways to uninstall NC Monitor; one is by using Control Panels and the other is by double clicking NC Monitor.exe.

2.3.1 Use Control Panels to uninstall

(1) Select [Start] - [Control Panels] - [Add/Remove Programs].

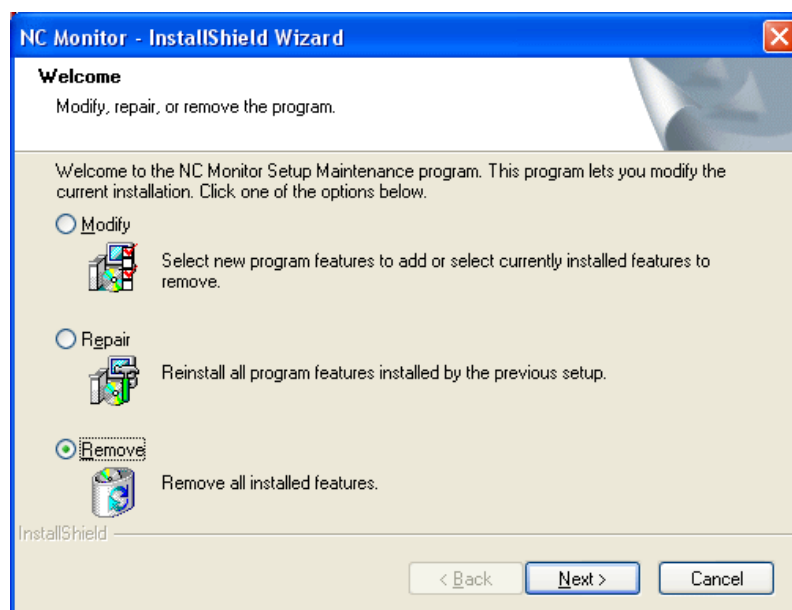
The [Add/Remove Programs] screen appears.

Choose NC Monitor from the list and press the [Change/Remove] button.



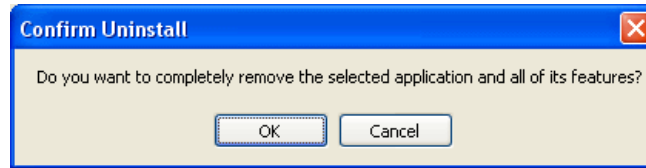
(2) The [InstallShield Wizard] screen appears.

Select [Remove] and press [Next].



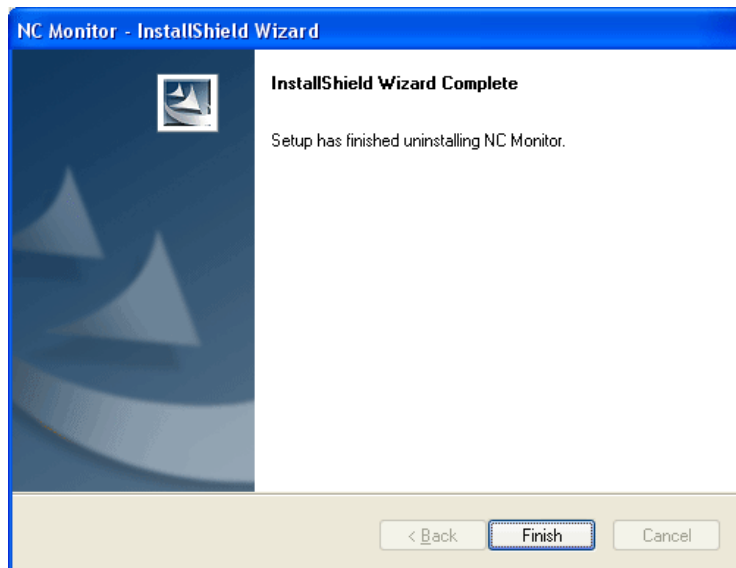
(3) The [Confirm Uninstall] dialog box appears.

Press [OK] to start the uninstallation (or [Cancel] to go back to the [InstallShield Wizard] screen).



(4) When the uninstallation has finished, the completion dialog box appears.

Press [Finish] to end the procedure.

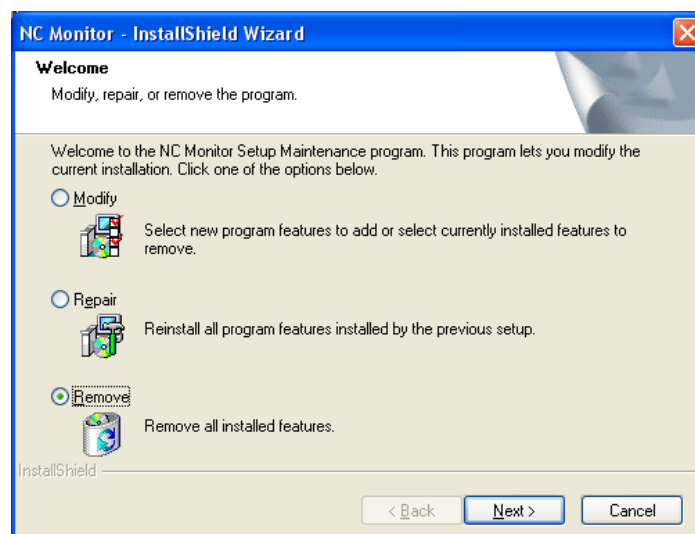


2.3.2 Use NCMonitor.exe to uninstall

(1) Double click on NC Monitor.exe.

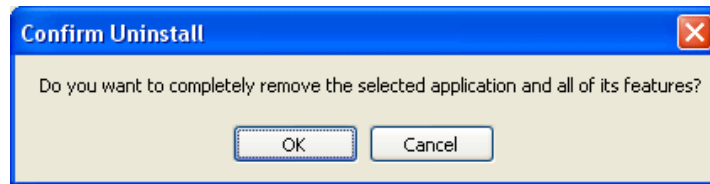
The [InstallShield Wizard] dialog box appears.

Select [Remove] and press [Next].



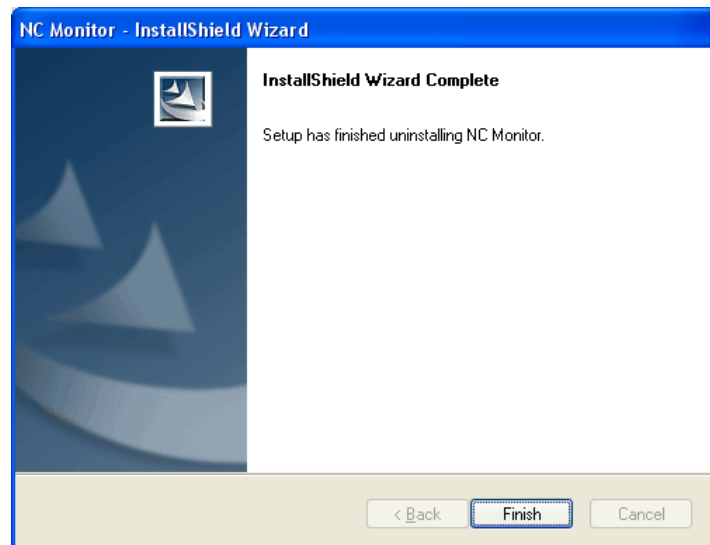
(2) The [Confirm Uninstall] dialog box appears.

Press [OK] to start uninstallation (or [Cancel] to go back to [InstallShield Wizard] screen).



(3) When the uninstallation has finished, the completion dialog box appears.

Press [Finish] to end the procedure.



3. HOW TO USE NC MONITOR

This chapter explains how to operate NC Monitor.

3.1 Start and Terminate NC Monitor

3.1.1 Start NC Monitor

Select [NC Monitor] from the [Start] menu to activate this tool.

More than one NC Monitor can't be activated at a time.

(Note) When there is more than one network card (such as both wired LAN and wireless LAN), NC monitor uses the IP address of the first found network card as the host PC's IP address.

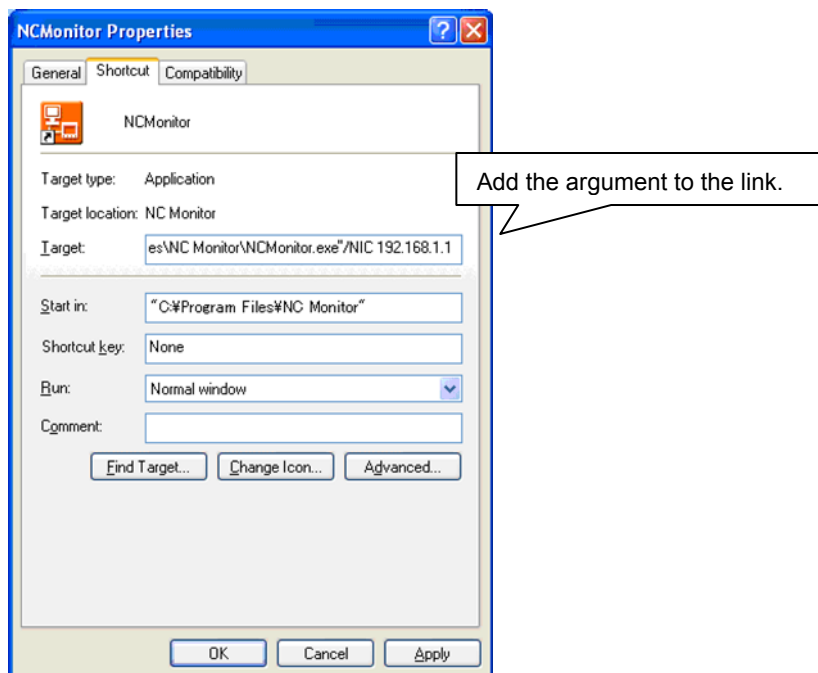
This host PC's IP address is used for searching for connectable NCs, determining network group, and so on.

To specify an arbitrary fixed IP address, designate the IP address to the start argument, as "/NIC xxx.xxx.xxx.xxx".

If the IP address specified for the network card does not exist, an error message appears.


After the error message is closed, NC Monitor will start in the same state as when there is no argument specification.

(E.g.) When the host PC's IP address is 192.168.1.1



3.1.2 Terminate NC Monitor

Perform either one of the followings to terminate this tool;


- Select [Operation (O)] and [End (X)] from the menu bar.
- Click on  button on the tool's title bar.



If this tool is in connection state (displaying NC's screen), connection with NC is cut off and the NC's screen is closed.

3.2 Connect and Disconnect

3.2.1 Display the connected NC's screen (Connect)

To connect this tool with an NC to display the NC's screen, select the NC to connect from the NC list and perform one of the followings.

- (a) Select [Operation (O)] and [Connect (O)] from the menu bar.
- (b) Click on  on the tool bar.
- (c) Right click to open its pop-up menu and select [Connect (O)].
- (d) Double click.
- (e) Press the [Enter] key.

After NC connection is completed, the NC's icon in the NC list area is changed from  to .



If the NC you've selected is already in connection state (its screen is being displayed), the connected NC's screen is displayed in the foreground.



If connection fails due to problems such as the selected NC's power is OFF or communication trouble, the [Connection Error] message box pops up.

Similarly, when the selected NC's parameter "#8931 Display/Set limit" is set to "2" (Restrict display on NC Monitor), the connection error dialog box pops up.

3.2.2 Close the connected NC's screen (Disconnect)

Perform one of the followings to cut off the connection with NC and close the NC's screen.

- (a) Select an NC to cut off from NC list and select [Operation (O)] - [Disconnect (C)] from the menu bar.
- (b) Select an NC to cut off from NC list and click on  button on the tool bar.
- (c) Right click to open the pop-up menu and select [Disconnect (C)].
- (d) Click on  button on the screen display window's title bar.

After the cutoff, the NC's icon in the NC list area changes from  to .

3.2.3 Change NC name

If you wish to change the NC name, select the NC from the NC list and perform one of the followings to open the [Change NC Name] dialog box.

(a) Select [Operation (O)] and [Change NC Name (R)] from the menu bar.

(b) Click on  button on the tool bar.

(c) Right click to open the pop-up menu and select [Change NC Name (R)].

The connected network address is shown in IP Address, Subnet Mask and Default Gateway boxes.

Input an arbitrary NC name and click on OK button.

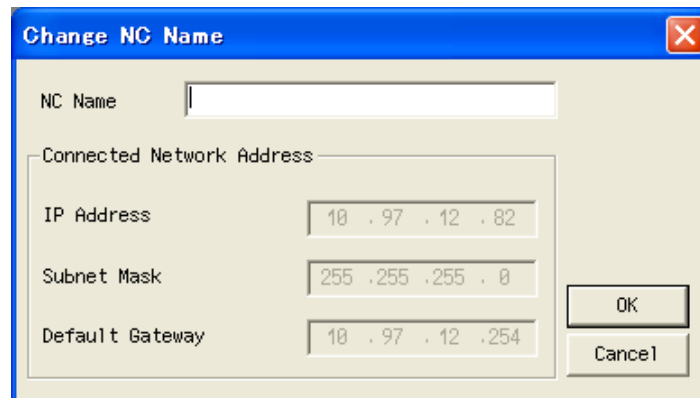
Then, the [Change NC Name] dialog box closes and the screen is switched back to the NC Monitor operation screen.

The new NC name is shown in the NC list.

If you've changed the NC name, which is already in connection state (its screen is being displayed), the new name is also shown on Screen display window's title bar.

To cancel this operation, click on  or CANCEL button.

The NC name can be up to 32 one-byte characters in length.



3.2.4 Add connected NC

If you wish to add an NC that belongs to the other network group (a group different from the host PC's IP address), perform one of the followings to open the [Add connected NC] dialog box.

(a) Select [Operation (O)] and [Add Connected NC (A)] from the menu bar.

(b) Click on  on the tool bar.

(c) Right click on the NC list area to open the pop-up menu and select [Add connected NC (A)].

Input the NC name and network address (IP address, subnet mask and default gateway) and click on OK.


Then, the [Add connected NC] dialog box closes and the screen is switched back to NC Monitor.

Added NCs, both connectable and non-connectable, are all included in the NC list area.

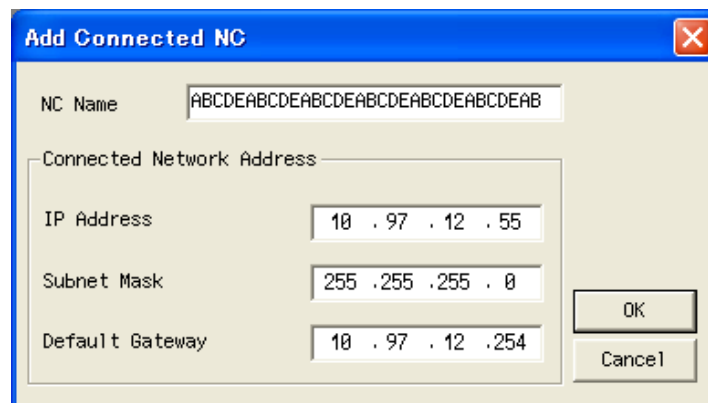
(Even if you designate an NC whose power is OFF, for example, the NC is also added to the list.)

If you attempt to add a network address which is already registered (displayed in the NC list area), the [Duplication Error] message box pops up.

If the network address includes a value outside the setting range (between 0 and 255), the [Setting Error] message box pops up.

If you wish to cancel the operation, click on  or CANCEL button.

The NC name can be up to 32 one-byte characters in length.



Add Connected NC	
NC Name	ABCDEABCCDEABCCDEABCCDEABCCDEAB
Connected Network Address	
IP Address	10 . 97 . 12 . 55
Subnet Mask	255 . 255 . 255 . 0
Default Gateway	10 . 97 . 12 . 254
OK	
Cancel	

3.2.5 Delete connected NC

If you wish to delete an NC that belongs to a network group different from the host PC's IP address, which you've added by "Add connected NC" function (See "3.2.4 Add connected NC"), perform either one of the followings.

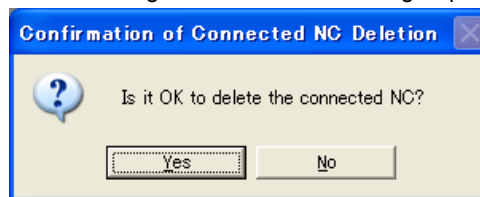
- (a) Select an NC to delete from the NC list and select [Operation (O)] and [Delete connected NC (D)] from the menu bar.
- (b) Select an NC to delete from the NC list and right click on it to open the pop-up menu. Then select [Delete connected NC (D)].

Then, the [Confirmation of Connected NC Deletion] message box pops up.

Click on the [Yes] button to delete the NC.


Click on the [No] button to cancel the deletion.

You cannot delete an NC which belongs to the same network group as the host PC's IP address.



3.2.6 Update connected NC

If you wish to refresh the list of NCs that belong to the same network group as the host PC's IP address, perform either one of the followings.

- (a) Select [Operation (O)] and [Update (U)] from the menu bar.
- (b) Click on  on the tool bar.

3.2.7 Switch languages

If you wish to change the language displayed on NC Monitor, select [Language (L)] and [English (E)] or [Language (L)] and [Japanese (J)] from the menu bar.

After the language switching, a message box requesting you to restart the tool pops up.

After restarting the tool, selected language display is enabled.

(Note) This tool will not be restarted automatically just by pressing the OK button.

3.2.8 Arrange windows

If you wish to display multiple NCs' screens in an aligned (overlapped) manner, select [Window (W)] and [Overlap Display (C)] from the menu bar.

3.2.9 Version information

If you wish to check NC Monitor's version, select [Help (H)] and [Version Information (A)] from the menu bar to open the [Version Information] dialog box.

3.3 Display/Setting Limitations of Connected NC

By setting the NC's operation parameter "#8931 Display/Set limit", you can restrict the NC's display or setting on or from NC Monitor.

The initial setting value is "0", so there are no limitations in displaying the connected NC on NC Monitor and in setting operation from NC Monitor.

Parameter "#8931" value	Display/Setting operation
0	NC Monitor can display the connected NC's screen. Setting of this NC is possible from this tool.
1	NC Monitor can just display the connected NC's screen.
2	NC Monitor is unable to connect to the NC.

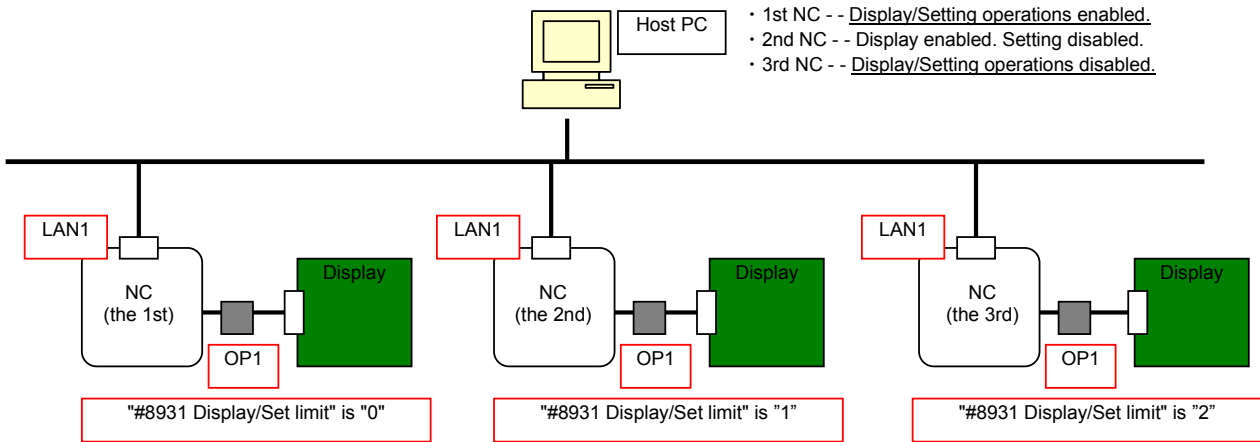


Figure 3-14

3.4 Points to Note

There are some points to note when using this tool.

- (1) When connected NC's parameter "#8931 Display/Set limit" is set to "0", another host PC or display may be operating this NC. Thus be careful if you perform setting for this NC.
- (2) When the screen display window of the connected NC appears, Caps Lock turns ON. Thus please be careful during setting operation.
- (3) Regardless of the connected NC model or the version, input/output of device and the setting value of the directory from this tool will not be maintained when the power of the connected NC is turned OFF.
- (4) When the connected NC is M700VS/M70V/E70/M70 and you wish to carry out operations (such as search, edit and input/output) to the memory card, select the [DS] menu. To format the memory card, select [DS format].
- (5) When the connected NC is M700VS/M70V/E70/M70, if you wish to select the memory card as subprogram storage destination, set the parameters between "#8880 Subpro stor D0" and "#8888 Subpro stor D4" to "DS". (On the M700VS/M70V/E70/M70 screen it will be displayed as "Memory card".)
- (6) When the connected NC is M700VS/M70V/E70/M70, the HD, memory card and FD memory card and FD cannot be selected as subprogram storage destination.

Depending on the computer you are using, 3D program check screen on the connected NC might not be displayed correctly. Try either (a) or (b) as updating the graphic driver might solve this.

(a) Update your graphic driver card.

(Check with the graphic card manufacturer or the computer manufacturer for the latest graphic driver.)

(b) Set "Hardware acceleration" to "None".

(You need to have an administrator account for Windows Vista and Windows7. There is no hardware acceleration setting for Windows8, so this function cannot be attempted.)

[Procedure]

<Windows XP>

1. Right click on the desktop and select [Properties].
2. Select "Settings" tab in "Display Properties".
3. Select "Advanced".
4. Move "Hardware acceleration's" slider to "None" in the "Troubleshoot" tab.
5. Press "OK" and restart Windows.

<Windows Vista>

1. Right click on the desktop and select [Personalize].
2. Select "Display Settings".
3. Select "Advanced Settings...".
4. Select "Change settings" in "Troubleshoot" tab and move "Hardware acceleration's" slider to "None".
(If "Hardware acceleration's" settings cannot be changed from "Troubleshooting" tab, change the setting with utility provided by graphic card manufacturer.)
5. Press "OK" and restart Windows.

<Windows 7>

1. Right click on the desktop and select [Screen resolution].
2. Select [Advanced Settings].
3. Select "Change settings" in "Troubleshoot" tab and move Hardware acceleration's slider to "None".
(If "Hardware acceleration's" settings cannot be changed from "Troubleshoot" tab, change the setting with utility provided by graphic card manufacturer.)
4. Press "OK" and restart Windows.

APPENDIX

This chapter explains the information which you can refer to in using NC Monitor. Reference this information when necessary.

Appendix 1. Messages

The messages (message boxes) listed below are shown during each operation of NC Monitor.

Message	Meaning	Action
Setting Operation Disabled	Because the connected NC's operation parameter "#8931 Display/Set limit" is set to "1" or "2", this tool is unable to do parameter setting, etc.	Change the setting of the connected NC's operation parameter "#8931 Display/Set limit".
Communication Error	Communication failure has occurred because, for example, the connected NC's power turned OFF while its screen was being displayed.	<ul style="list-style-type: none"> - Check if the connected NC's power is ON. - Check if the connected NC has a proper network connection.
Duplication Error	The network address you attempted to add has been already registered.	Cancel the operation or set another network address.
Setting Error	The network address you attempted to add includes a value outside the range (between 0 and 255), thus failed to add the address.	Make sure that the network address is within the setting range (between 0 and 255).
Connection Error	<ul style="list-style-type: none"> - The connected NC doesn't exist. - The connected NC power is not ON. - Communication failure - The number of connected NCs reached the maximum. - Displaying on NC Monitor is restricted. Connection failed due to one of these reasons.	<ul style="list-style-type: none"> - Check if the connected NC exists. - Turn ON the connected NC's power. - Check if the connected NC has a proper network connection. - Reduce the number of connected NCs. - Check the setting value of the connected NC's operation parameter "#8931 Display/Set limit".

The messages listed below are shown on the screen display window only during NC Monitor operation.

Message	Meaning	Action
Setting operation is restricted.	Because the connected NC's operation parameter "#8931 Display/Set limit" is set to "1" or "2", this tool is unable to do parameter setting, etc.	Change the setting of the connected NC's operation parameter "#8931 Display/Set limit".

Appendix 2. Shortcut Key List

On the connected NC's screen, the following shortcut keys are available.

	Keys on NC keyboard	Supplements	Keys on PC keyboard
FUNC	MONITOR	Monitor screen	SHIFT+F1
	SET_UP	Setup screen	SHIFT+F2
	EDIT	Edit screen	SHIFT+F3
	DIAGN	Diagnosis screen	SHIFT+F4
	MAINTE	Maintenance screen	SHIFT+F5
Part system	(\$↔\$)	Switch \$↔\$	CTRL+F1
Help	?	Display/Hide the operation/parameter/alarm guidance	CTRL+F2
Previous screen	(Back)	Select the previous screen	CTRL+F6
Menu list	MENU LIST	Display/Hide the menu list	CTRL+F8
Tab	←	Backward tab	CTRL+F9
	→	Forward tab	CTRL+F10
Page	↑	Previous page	PageUp
	↓	Next page	PageDown
MENU	MENU1		F1
	MENU2		F2
	MENU3		F3
	MENU4		F4
	MENU5		F5
	MENU6		F6
	MENU7		F7
	MENU8		F8
	MENU9		F9
	MENU10		F10
Left <	◁	Return (Menu)	F11
right >	▷	Next menu	F12
Delete		DELETE	DELETE
Insert		INSERT	INSERT
Cancel	C.B.	Clear the input area	SHIFT+Home
	CAN		ESC
Input	ENTER		ENTER
Cursor	↑		↑
	↓		↓
	←		←
	→		
Tab	Left tab (←)	Move the input target cursor	SHIFT+TAB
	Right tab (→)	Move the input target cursor	TAB
Special	ABC/abc...		Caps Lock

Appendix 3. Restrictions

This tool has the following restrictions.

Appendix 3.1 Common Restriction

- (1) More than one NC Monitor cannot start at a time.
- (2) Screens of up to 10 connected NCs can be displayed on NC Monitor.
- (3) More than one screen cannot be activated for one NC.
- (4) Regardless of the connected NC type (M700, M70 etc.), NC Monitor displays the M700VW's screen. The connected NC's menu displayed on the NC monitor is same menu as the connected NC.
- (5) Background check is not available with NC Monitor.
- (6) This tool is unable to display a PLC onboard screen.
- (7) This tool is unable to display a custom screen.
- (8) Screen saver (Back-light OFF) function is disabled.
- (9) Hard disk, memory card and floppy disk operations are disabled.
- (10) Some screens and menus, etc. are not displayed depending on the connected NC version.
- (11) Restricting the part system switching using "#11035 Sys. change limit" is disabled for NC Monitor.
- (12) When using the NC Monitor with other than Japanese version of Windows, use only alphanumeric character for the NC name.
- (13) When the connected NC is M70V/E70/M70, [System setup] menu will not be displayed. In addition, customized data cannot be backed up or restored by all backup.
- (14) When the connected NC is M700V/E70/M70, the option list will not be displayed on the option screen.
- (15) NC Monitor is not compatible to be connected to the NC under the VPN connection environment.

Appendix 3.2 Restriction on Devices

An external device (HD, memory card and floppy disk) displayed on the NC screen means either a host PC or connected NC depending on the screen when using this tool.

Operation	Device on the display	Access target	
		PC/NC	Device
Operation search Restart search Check search Verification stop registration Pallet program registration	Memory (MDI)	Connected NC	Memory (MDI)
	Serial	Host PC/ Connected NC	Serial
	DS	Connected NC	DS(IC card in the control unit) or memory card (front IC card)
	Memory card		
	HD		
	FD		
Edit Input/Output SRAM backup All backup	Memory (MDI)	Connected NC	Memory (MDI)
	Serial	Host PC/ Connected NC	Serial
	DS	Connected NC	DS(IC card in the control unit) or memory card (front IC card)
	Memory card	Host PC	The first found fixed disk or removable disk after the drive E
	HD	Host PC	D:\NCFILE
	FD	Host PC	A:\

(Note 1) The program file search, verification stop registration and pallet program registration are disabled for hard disk, memory card and floppy disk.

(Note 2) When the serial device is selected, the access target varies depending on the setting of the parameter "#9051 Data I/O port".

(Note 3) It is possible to edit a file stored in the host PC's hard disk (D:\NCFILE), memory card or floppy disk, but a file stored in the connected NC's hard disk, memory card or floppy disk cannot be edited.

(Note 4) Files can be input/output to/from the host PC's hard disk (D:\NCFILE), memory card or floppy disk, but cannot be input/output to/from the connected NC's hard disk, memory card or floppy disk.

(Note 5) Using "SRAM backup" or "All backup", a backup to the host PC's hard disk (D:\NCFILE) or memory card is enabled, but a backup to the connected NC is disabled.

Appendix 3.3 Restriction on Guidance

(1) PLC alarm guidance can not be displayed.

Appendix 3.4 Restriction on device open parameter screen

(1) The comments on the device open parameter screen will not be displayed.

(2) The [Commentdisplay] menu of the group detail screen is controlled. Comments will be hidden regardless of the display/hidden status of comments held by the NC.

Revision History

Date of revision	Manual No.	Revision details
Aug. 2008	IB(NA)-1500914-*	<ul style="list-style-type: none"> ● First edition created.
Oct. 2009	IB(NA)-1500914-A	<ul style="list-style-type: none"> ● Contents were revised to correspond to NC Monitor software version A1. ● Contents were revised to be compatible with Windows Vista. ● Contents were revised to correspond to Mitsubishi CNC M700V/M70 Series software version F5. ● Reviewed and modified the overall structure of this instruction manual.
Jan. 2010	IB(NA)-1500914-B	<ul style="list-style-type: none"> ● Contents were revised to correspond to NC Monitor software version A2. ● Contents were revised to correspond to Mitsubishi CNC M700/M70 Series software version F6. ● Contents were revised to correspond to Mitsubishi CNC M700V/M70V Series software version G0.
Jan. 2011	IB(NA)-1500914-C	<ul style="list-style-type: none"> ● Contents were revised to correspond to NC Monitor software version A3. ● Contents were revised to correspond to Windows7. ● Contents were revised to correspond to Mitsubishi CNC M700/M70 Series software version FB. ● Contents were revised to correspond to Mitsubishi CNC M700V/M70V Series software version G4.
Jun. 2012	IB(NA)-1500914-D	<ul style="list-style-type: none"> ● Contents were revised to correspond to NC Monitor software version A4. ● Contents were revised to correspond to Mitsubishi CNC M700V/M70 Series software version FE. ● Contents were revised to correspond to Mitsubishi CNC M700V/M70V Series software version H3.
Sep. 2013	IB(NA)-1500914-E	<ul style="list-style-type: none"> ● Contents were revised to correspond to NC Monitor software version A5. ● Contents were revised to correspond to Windows8. ● Contents were revised to correspond to Mitsubishi CNC M700V/M70V/E70 Series software version J3.

Global Service Network

AMERICA

MITSUBISHI ELECTRIC AUTOMATION INC. (AMERICA FA CENTER)

Central Region Service Center
500 CORPORATE WOODS PARKWAY, VERNON HILLS, ILLINOIS 60061, U.S.A.
TEL: +1-847-478-2500 / FAX: +1-847-478-2650

Michigan Service Satellite
ALLEGAN, MICHIGAN 49010, U.S.A.
TEL: +1-847-478-2500 / FAX: +1-847-478-2650

Ohio Service Satellite
LIMA, OHIO 45901, U.S.A.
TEL: +1-847-478-2500 / FAX: +1-847-478-2650
CINCINNATI, OHIO 45201, U.S.A.
TEL: +1-847-478-2500 / FAX: +1-847-478-2650

Minnesota Service Satellite
ROGERS, MINNESOTA 55374, U.S.A.
TEL: +1-847-478-2500 / FAX: +1-847-478-2650

West Region Service Center
16900 VALLEY VIEW AVE., LAMIRADA, CALIFORNIA 90638, U.S.A.
TEL: +1-714-699-2625 / FAX: +1-847-478-2650

Northern CA Satellite
SARATOGA, CALIFORNIA 95070, U.S.A.
TEL: +1-714-699-2625 / FAX: +1-847-478-2650

East Region Service Center
200 COTTONTAIL LANE SOMERSET, NEW JERSEY 08873, U.S.A.
TEL: +1-732-560-4500 / FAX: +1-732-560-4531

Pennsylvania Service Satellite
PITTSBURG, PENNSYLVANIA 15644, U.S.A.
TEL: +1-732-560-4500 / FAX: +1-732-560-4531

Connecticut Service Satellite
TORRINGTON, CONNECTICUT 06790, U.S.A.
TEL: +1-732-560-4500 / FAX: +1-732-560-4531

South Region Service Center
1845 SATELLITE BOULEVARD STE. 450, DULUTH, GEORGIA 30097, U.S.A.
TEL: +1-678-258-4529 / FAX: +1-678-258-4519

Texas Service Satellites
GRAPEVINE, TEXAS 76051, U.S.A.
TEL: +1-678-258-4529 / FAX: +1-678-258-4519
HOUSTON, TEXAS 77001, U.S.A.
TEL: +1-678-258-4529 / FAX: +1-678-258-4519

Tennessee Service Satellite
Nashville, Tennessee, 37201, U.S.A.
TEL: +1-678-258-4529 / FAX: +1-678-258-4519

Florida Service Satellite
WEST MELBOURNE, FLORIDA 32904, U.S.A.
TEL: +1-678-258-4529 / FAX: +1-678-258-4519

Canada Region Service Center
4299 14TH AVENUE MARKHAM, ONTARIO L3R 0J2, CANADA
TEL: +1-905-475-7728 / FAX: +1-905-475-7935

Canada Service Satellite
EDMONTON, ALBERTA T5A 0A1, CANADA
TEL: +1-905-475-7728 FAX: +1-905-475-7935

Mexico Region Service Center
MARIANO ESCOBEDO 69 TLALNEPANTLA, 54030 EDO. DE MEXICO
TEL: +52-55-3067-7500 / FAX: +52-55-9171-7649

Monterrey Service Satellite
MONTERREY, N.L., 64720, MEXICO
TEL: +52-81-8365-4171

BRAZIL

MELCO CNC do Brasil Comércio e Serviços S.A

Brazil Region Service Center
ACESSO JOSE SARTORELLI, KM 2.1 CEP 18550-000, BOITUVA-SP, BRAZIL
TEL: +55-15-3363-9900 / FAX: +55-15-3363-9911

EUROPE

MITSUBISHI ELECTRIC EUROPE B.V.
GOTHAER STRASSE 10, 40880 RATINGEN, GERMANY
TEL: +49-2102-486-0 / FAX: +49-2102-486-5910

Germany Service Center
KURZE STRASSE, 40, 70794 FILDERSTADT-BONLANDEN, GERMANY
TEL: +49-711-770598-121 / FAX: +49-711-770598-141

France Service Center DEPARTEMENT CONTROLE NUMERIQUE
25, BOULEVARD DES BOUVETS, 92741 NANTERRE CEDEX FRANCE
TEL: +33-1-41-02-83-13 / FAX: +33-1-49-01-07-25

France (Lyon) Service Satellite DEPARTEMENT CONTROLE NUMERIQUE
120, ALLEE JACQUES MONOD 69800 SAINT PRIEST FRANCE
TEL: +33-1-41-02-83-13 / FAX: +33-1-49-01-07-25

Italy Service Center
VIALE COLLEONI, 7 - CENTRO DIREZIONALE COLLEONI PALAZZO SIRIO INGRESSO 1
20864 AGRATE BRIANZA (MB), ITALY
TEL: +39-039-6053-342 / FAX: +39-039-6053-206

Italy (Padova) Service Satellite
VIA G. SAVELLI, 24 - 35129 PADOVA, ITALY
TEL: +39-039-6053-342 / FAX: +39-039-6053-206

U.K. Branch
TRAVELLERS LANE, HATFIELD, HERTFORDSHIRE, AL10 8XB, U.K.
TEL: +49-2102-486-0 / FAX: +49-2102-486-5910

Spain Service Center
CTRA. DE RUBI, 76-80-APDO. 420
08173 SAINT CUGAT DEL VALLES, BARCELONA SPAIN
TEL: +34-935-65-2236 / FAX: +34-935-69-1579

Poland Service Center
UL. KRAKOWSKA 50, 32-083 BALICE, POLAND
TEL: +48-12-630-4700 / FAX: +48-12-630-4701

Mitsubishi Electric Turkey A.Ş Ümraniye Şubesi
Turkey Service Center
ŞERİFALİ MAH. NUTUK SOK. NO.5 34775
ÜMRANIYE / İSTANBUL, TURKEY
TEL: +90-216-526-3990 / FAX: +90-216-526-3995

Czech Republic Service Center
KAFKOVA 1853/3, 702 00 OSTRAVA 2, CZECH REPUBLIC
TEL: +420-59-5691-185 / FAX: +420-59-5691-199

Russia Service Center
213, B.NOVODIMITROVSKAYA STR., 14/2, 127015 MOSCOW, RUSSIA
TEL: +7-495-748-0191 / FAX: +7-495-748-0192

Sweden Service Center
STRANDKULLEN, 718 91 FRÖVI, SWEDEN
TEL: +46-581-700-20 / FAX: +46-581-700-75

Bulgaria Service Center
4 ANDREJ LJAPCHEV BLVD, POB 21, BG-1756 SOFIA, BULGARIA
TEL: +359-2-8176009 / FAX: +359-2-9744061

Ukraine (Kharkov) Service Center
APTEKARSKIY LANE 9-A, OFFICE 3, 61001 KHARKOV, UKRAINE
TEL: +380-57-732-7774 / FAX: +380-57-731-8721

Ukraine (Kiev) Service Center
4-B, M. RASKOVOYI STR., 02660 KIEV, UKRAINE
TEL: +380-44-494-3355 / FAX: +380-44-494-3366

Belarus Service Center
OFFICE 9, NEZAVISIMOSTI PR.177, 220125 MINSK, BELARUS
TEL: +375-17-393-1177 / FAX: +375-17-393-0081

South Africa Service Center
P.O. BOX 9234, EDLEEN, KEMPTON PARK GAUTENG, 1625 SOUTH AFRICA
TEL: +27-11-394-8512 / FAX: +27-11-394-8513

ASEAN**MITSUBISHI ELECTRIC ASIA PTE. LTD. (ASEAN FA CENTER)**

Singapore Service Center
307 ALEXANDRA ROAD #05-01/02 MITSUBISHI ELECTRIC BUILDING SINGAPORE 159943
TEL: +65-6473-2308 / FAX: +65-6476-7439

Malaysia (KL) Service Center
60, JALAN USJ 10 /1B 47620 UEP SUBANG JAYA SELANGOR DARUL EHSAN, MALAYSIA
TEL: +60-3-5631-7605 / FAX: +60-3-5631-7636

Malaysia (Johor Baru) Service Center
NO. 16, JALAN SHAH BANDAR 1, TAMAN UNGKU TUN AMINAH, 81300 SKUDAI, JOHOR MALAYSIA
TEL: +60-7-557-8218 / FAX: +60-7-557-3404

Philippines Service Center
UNIT NO.411, ALABAMG CORPORATE CENTER KM 25, WEST SERVICE ROAD
SOUTH SUPERHIGHWAY, ALABAMG MUNTINLUPA METRO MANILA, PHILIPPINES 1771
TEL: +63-2-807-2416 / FAX: +63-2-807-2417

VIETNAM**MITSUBISHI ELECTRIC VIETNAM CO.,LTD**

Vietnam (Ho Chi Minh) Service Center
UNIT 01-04, 10TH FLOOR, VINCOM CENTER 72 LE THANH TON STREET, DISTRICT 1,
HO CHI MINH CITY, VIETNAM
TEL: +84-8-3910 5945 / FAX: +84-8-3910 5947

Vietnam (Hanoi) Service Satellite
SUITE 9-05, 9TH FLOOR, HANOI CENTRAL OFFICE BUILDING, 44B LY THUONG KIET STREET,
HOAN KIEM DISTRICT, HANOI CITY, VIETNAM
TEL: +84-4-3937-8075 / FAX: +84-4-3937-8076

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Indonesia Service Center
GEDUNG JAYA 11TH FLOOR, JL. MH. THAMRIN NO.12, JAKARTA PUSAT 10340, INDONESIA
TEL: +62-21-3192-6461 / FAX: +62-21-3192-3942

THAILAND**MITSUBISHI ELECTRIC AUTOMATION (THAILAND) CO., LTD. (THAILAND FA CENTER)**

Thailand Service Center
BANG-CHAN INDUSTRIAL ESTATE NO.111 SOI SERITHAI 54
T.KANNAYAO, A.KANNAYAO, BANGKOK 10230, THAILAND
TEL: +66-2906-8255 / FAX: +66-2906-3239

Thailand Service Center
898/19,20,21,22 S.V. CITY BUILDING OFFICE TOWER 1, FLOOR 7
RAMA III RD., BANGPONGPANG, YANNAWA, BANGKOK 10120, THAILAND
TEL: +66-2-682-6522 / FAX: +66-2-682-9750

INDIA**MITSUBISHI ELECTRIC INDIA PVT. LTD.**

India Service Center
2nd FLOOR, TOWER A & B, DLF CYBER GREENS, DLF CYBER CITY,
DLF PHASE-III, GURGAON 122 002, HARYANA, INDIA
TEL: +91-124-4630 300 / FAX: +91-124-4630 399
Ludhiana satellite office
Jamshedpur satellite office

India (Pune) Service Center
EMERALD HOUSE, EL-3, J-BLOCK, MIDC BHOSARI, PUNE – 411 026, MAHARASHTRA, INDIA
TEL: +91-20-2710 2000 / FAX: +91-20-2710 2100
Baroda satellite office
Mumbai satellite office

India (Bangalore) Service Center
PRESTIGE EMERALD, 6TH FLOOR, MUNICIPAL NO. 2,
LAVELLE ROAD, BANGALORE - 560 043, KAMATAKA, INDIA
TEL: +91-80-4020-1600 / FAX: +91-80-4020-1699
Chennai satellite office
Coimbatore satellite office

OCEANIA**MITSUBISHI ELECTRIC AUSTRALIA LTD.**

Australia Service Center
348 VICTORIA ROAD, RYDALMERE, N.S.W. 2116 AUSTRALIA
TEL: +61-2-9684-7269 / FAX: +61-2-9684-7245

CHINA**MITSUBISHI ELECTRIC AUTOMATION (CHINA) LTD. (CHINA FA CENTER)**

China (Shanghai) Service Center
1-3,5-10,18-23/F, NO.1386 HONG QIAO ROAD, CHANG NING QU,
SHANGHAI 200336, CHINA
TEL: +86-21-2322-3030 / FAX: +86-21-2308-2830

China (Ningbo) Service Dealer
China (Wuxi) Service Dealer
China (Jinan) Service Dealer
China (Hangzhou) Service Dealer
China (Wuhan) Service Satellite

China (Beijing) Service Center
9/F, OFFICE TOWER 1, HENDERSON CENTER, 18 JIANGUOMENNEI DAJIE,
DONGCHENG DISTRICT, BEIJING 100005, CHINA
TEL: +86-10-6518-8830 / FAX: +86-10-6518-3907
China (Beijing) Service Dealer

China (Tianjin) Service Center
UNIT 2003, TIANJIN CITY TOWER, NO 35 YOUYI ROAD, HEXI DISTRICT,
TIANJIN 300061, CHINA
TEL: +86-22-2813-1015 / FAX: +86-22-2813-1017

China (Shenyang) Service Satellite
China (Changchun) Service Satellite

China (Chengdu) Service Center
ROOM 407-408, OFFICE TOWER AT SHANGRI-LA CENTER, NO. 9 BINJIANG DONG ROAD,
JINJIANG DISTRICT, CHENGDU, SICHUAN 610021, CHINA
TEL: +86-28-8446-8030 / FAX: +86-28-8446-8630

China (Shenzhen) Service Center
ROOM 2512-2516, 25/F., GREAT CHINA INTERNATIONAL EXCHANGE SQUARE, JINTIAN RD.S.,
FUTIAN DISTRICT, SHENZHEN 518034, CHINA
TEL: +86-755-2399-8272 / FAX: +86-755-8218-4776
China (Xiamen) Service Dealer
China (Dongguan) Service Dealer

KOREA**MITSUBISHI ELECTRIC AUTOMATION KOREA CO., LTD. (KOREA FA CENTER)**

Korea Service Center
1480-6, GAYANG-DONG, GANGSEO-GU, SEOUL 157-200, KOREA
TEL: +82-2-3660-9602 / FAX: +82-2-3664-8668

Korea Taegu Service Satellite
4F KT BUILDING, 1630 SANGYEOK-DONG, BUK-KU, DAEGU 702-835, KOREA
TEL: +82-53-382-7400 / FAX: +82-53-382-7411

TAIWAN**MITSUBISHI ELECTRIC TAIWAN CO., LTD. (TAIWAN FA CENTER)**

Taiwan (Taichung) Service Center (Central Area)
NO.8-1, INDUSTRIAL 16TH RD., TAICHUNG INDUSTRIAL PARK, SITUN DIST.,
TAICHUNG CITY 40768, TAIWAN R.O.C.
TEL: +886-4-2359-0688 / FAX: +886-4-2359-0689

Taiwan (Taipei) Service Center (North Area)
10F, NO.88, SEC.6, CHUNG-SHAN N. RD., SHI LIN DIST., TAIPEI CITY 11155, TAIWAN R.O.C.
TEL: +886-2-2833-5430 / FAX: +886-2-2833-5433

Taiwan (Tainan) Service Center (South Area)
11F-1., NO.30, ZHONGZHENG S. ROAD, YONGKANG DISTRICT, TAINAN CITY 71067, TAIWAN, R.O.C
TEL: +886-6-252-5030 / FAX: +886-6-252-5031

Notice

Every effort has been made to keep up with software and hardware revisions in the contents described in this manual. However, please understand that in some unavoidable cases simultaneous revision is not possible.

Please contact your Mitsubishi Electric dealer with any questions or comments regarding the use of this product.

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MITSUBISHI CNC



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