

SYSMAC

3G8F7-CLK12-EV1 (Optical Ring, H-PCF Cable)

3G8F7-CLK52-EV1 (Optical Ring, GI Cable)

3G8F7-CLK21-EV1 (Twisted-pair Cable)

Controller Link Support Boards for PCI Bus

INSTALLATION GUIDE

OMRON

SYSMAC

3G8F7-CLK12-EV1 (Optical Ring, H-PCF Cable)

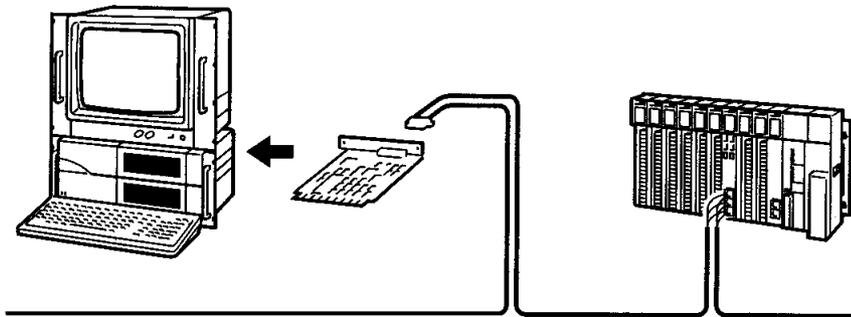
3G8F7-CLK52-EV1 (Optical Ring, GI Cable)

3G8F7-CLK21-EV1 (Twisted-pair Cable)

Controller Link Support Boards for PCI Bus

Installation Guide

Produced June 2003



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 property.

-  **DANGER** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
-  **WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
-  **Caution** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

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.

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About this Manual:

This manual describes the installation, setup, and operation of the 3G8F7-CLK12-EV1, 3G8F7-CLK52-EV1, and 3G8F7-CLK21-EV1 Controller Link Support Boards for PCI Bus and includes the sections described below. Controller Link Support Boards are used to connect IBM PC/AT or compatible computers to a Controller Link Network. The following three manuals are directly related to application of the Controller Link Network.

| Name | Contents | Cat. No. (suffixes omitted) |
|--|--|--------------------------------|
| 3G8F7-CLK12-EV1, 3G8F7-CLK52-EV1, 3G8F7-CLK21-EV1 Controller Link Support Boards for PCI Bus Installation Guide (this manual) | Installation and setup procedures for Controller Link Support Boards for PCI bus connections. Controller Link Support Boards are used to connect IBM PC/ATs or compatibles to a Controller Link Network. | W422 |
| 3G8F7-CLK12-EV1, 3G8F7-CLK52-EV1, 3G8F7-CLK21-EV1 Controller Link Support Boards for PCI Bus Operation Manual | Operating procedures for Controller Link Support Boards for PCI bus connections. Controller Link Support Boards are used to connect IBM PC/ATs or compatibles to a Controller Link Network. | W383 |
| 3G8F5-CLK11-E, 3G8F5-CLK21-E Controller Link Support Boards for ISA Bus Operation Manual | Installation, setup, and operating procedures for Controller Link Support Boards for ISA bus connections. Controller Link Support Boards are used to connect IBM PC/ATs or compatibles to a Controller Link Network. | W307 |
| C200HW-ZW3AT2-E-V2 Controller Link Support Software Operation Manual | Installation and operating procedures for the Controller Link Support Software. The Controller Link Support Software enables manually set data links and other procedures for a Controller Link Network. | W369 |
| CS1W-CLK11/21, C200HW-CLK21, CVM1-CLK21 Controller Link Units (Wired) Operation Manual | Installation, setup, and operating procedures for the Wired Controller Link Units. Controller Link Units are used to connect C200HX/HG/HE, CV-series, and CS1-series PCs to a Controller Link Network. | W309 |
| CS1W-CLK12, CVM1-CLK12 Optical Ring Controller Link Units Operation Manual | Installation, setup, and operating procedures for the Optical Ring Controller Link Units. Controller Link Units are used to connect C200HX/HG/HE CV-series, and CS1-series PCs to a Controller Link Network. | W370 |

Depending on the system, you may also need the SYSMAC or CV Support Software or a Programming Console. Refer to the body of this manual for details. Please read this manual and related manuals carefully and be sure you understand the information provided before attempting to install and operate a Controller Link Support Board.

Section 1 describes the configuration of the Controller Link network system, and the product configuration and operating environment of the Controller Link Support Boards

Section 2 describes how to make settings for the Controller Link Support Boards, and how to mount a Support Board to a personal computer. This section also describes the function of the parts of the Controller Link Support Boards.

Section 3 describes the procedure for installing the software necessary for using a Controller Link Support Board.

Section 4 describes the error messages that may occur during setup, their causes, and their remedies.



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.

PRECAUTIONS

This section provides general precautions for using the Controller Link Support Board for PCI Bus and related devices.

The information contained in this section is important for the safe and reliable application of the Controller Link Support Board for PCI Bus. You must read this section and understand the information contained before attempting to set up or operate a Controller Link Support Board for PCI Bus.

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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 the Controller Link Support Board for PCI Bus and related devices. Be sure to read this manual before attempting to use the software and keep this manual close at hand for reference during operation.

 **WARNING** It is extremely important that a Controller Link Support Board for PCI Bus and all related devices 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 Controller Link Support Board for PCI Bus to the above mentioned applications.

3 Safety Precautions

 **WARNING** Never attempt to disassemble any Controller Link Support Board for PCI Bus while power is being supplied. Doing so may result in serious electrical shock or electrocution.

 **WARNING** Never touch any of the terminals while power is being supplied. Doing so may result in serious electrical shock or electrocution.

 **WARNING** Provide safety measures in external circuits, i.e., not in the Programmable Controller (CPU Unit including associated Units; referred to as "PC"), in order to ensure safety in the system if an abnormality occurs due to malfunction of the PC or another external factor affecting the PC operation. Not doing so may result in serious accidents.

- Emergency stop circuits, interlock circuits, limit circuits, and similar safety measures must be provided in external control circuits.
- The PC will turn OFF all outputs when its self-diagnosis function detects any error or when a severe failure alarm (FALS) instruction is executed. As a countermeasure for such errors, external safety measures must be provided to ensure safety in the system.

- The PC outputs may remain ON or OFF due to deposition or burning of the output relays or destruction of the output transistors. As a countermeasure for such problems, external safety measures must be provided to ensure safety in the system.
- When the 24-VDC output (service power supply to the PC) is overloaded or short-circuited, the voltage may drop and result in the outputs being turned OFF. As a countermeasure for such problems, external safety measures must be provided to ensure safety in the system.

 **Caution** Execute online edit only after confirming that no adverse effects will be caused by extending the cycle time. Otherwise, the input signals may not be readable.

 **Caution** Confirm safety at the destination node before transferring a program to another node or changing contents of the I/O memory area. Doing either of these without confirming safety may result in injury.

 **Caution** Tighten the connector screws for the backup power supply to the torque specified in this manual. The loose screws may result in burning or malfunction.

4 Operating Environment Precautions

 **Caution** Do not operate the control system in the following locations:

- Locations subject to direct sunlight.
- Locations subject to temperatures or humidity outside the range specified in the specifications.
- Locations subject to condensation as the result of severe changes in temperature.
- Locations subject to corrosive or flammable gases.
- Locations subject to dust (especially iron dust) or salts.
- Locations subject to exposure to water, oil, or chemicals.
- Locations subject to shock or vibration.

 **Caution** 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 Controller Link Support Board for PCI Bus or the computer 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 Controller Link Support Board for PCI Bus or the computer. 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 Controller Link Support Board for PCI Bus or the computer into which it is installed.

 **WARNING** Failure to abide by the following precautions could lead to serious or possibly fatal injury. Always heed these precautions.

- Always ground the system to 100 Ω or less when installing the system to protect against electrical shock.
- Always turn off the power of the computer before attempting any of the following. Performing any of the following with the power supply turned on may lead to electrical shock:
 - Installing or removing the Support Board.
 - Assembling the Units.
 - Setting DIP switches or short-circuiting pins.
 - Connecting or disconnecting any cables or connectors.

 **Caution** Failure to abide by the following precautions could lead to faulty operation of the computer or the system or could damage the Controller Link Support Board for PCI Bus or related devices. 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.
- Always use the power supply voltage specified in the operation manuals. An incorrect voltage may result in malfunction or burning.
- 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. An incorrect power supply may result in malfunction.
- Install external breakers and take other safety measures against short-circuiting in external wiring. Insufficient safety measures against short-circuiting may result in burning.
- Disconnect the functional ground terminal when performing withstand voltage tests. Not disconnecting the functional ground terminal may result in burning.
- Do not attempt to take the Boards apart, to repair the Boards, or to modify the Boards in any way.
- Be sure that all the mounting screws, terminal screws, and cable connector screws are tightened to the torque specified in this manual. Incorrect tightening torque may result in malfunction.
- Use crimp terminals for wiring. Do not connect bare stranded wires directly to terminals. Connection of bare stranded wires may result in burning.
- Double-check all the wiring before turning ON the power supply. Incorrect wiring may result in burning.
- Wire correctly.
- Double-check all the connectors before mounting the Board.
- Be sure that the communications cable connectors and other items with locking devices are properly locked into place. Improper locking may result in malfunction.

- Use a special packing box when transporting the Board. Handle the product carefully so that no excessive vibration or impact is applied to the product during transportation.
- Check the user program for proper execution before actually running it on the Unit. Not checking the program may result in an unexpected operation.
- Observe the following precautions when wiring the communications cable or backup power supply cables.
 - Separate the cables from power lines or high-tension lines.
 - Do not bend the cables.
 - Do not pull on the cables.
 - Do not place heavy objects on top of the cables.
 - Route cables inside conduits.
- Before touching the Unit, be sure to first touch a grounded metallic object in order to discharge any static built-up. Not doing so may result in malfunction or damage.
- Do not touch the Board surfaces or parts.
- Install the Board according to instructions in the operation manuals. Improper installation may cause faulty operation.
- When using the Optical Ring Controller Link Support Board for public utilities systems, such as electricity, gas, or water supply, use the Optical Ring mode and provide appropriate fail-safe measures.

SECTION 1

Outline

This section describes the configuration of the Controller Link network system, and the product configuration and operating environment of the Controller Link Support Boards.

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1-1 Product Configuration

The following table lists the product configuration for Controller Link Support Boards for PCI Bus connections.

| System | Model number | Details and additional products |
|-------------------------------------|-----------------|--|
| Wired System | 3G8F7-CLK21-EV1 | <ul style="list-style-type: none"> • Controller Link Support Board x 1 • CD-ROM x 1 • Operation Manual x 1 • Communications connector x 1 • Board ID switch No./indicator label x 1 • User registration card (software user agreement) x 1 |
| Optical Ring System for H-PCF Cable | 3G8F7-CLK12-EV1 | <ul style="list-style-type: none"> • Controller Link Support Board x 1 • CD-ROM x 1 • Operation Manual x 1 • Optical Fiber Cable Bracket x 1 |
| Optical Ring System for GI Cable | 3G8F7-CLK52-EV1 | <ul style="list-style-type: none"> • Power supply connector x 1 • Board ID switch No./indicator label x 1 • User registration card (software user agreement) x 1 |

- Note**
1. The CD-ROM contains the following software.
 - Controller Link (PCI) Driver
 - FinsGateway Version 2003 (PCI-CLK Edition)
 - FinsGateway Version 3 (PCI-CLK Edition)
 - Setup Diagnostic Utility
 - C Library
 2. This product does not include the personal computer OS. One must be provided separately.

1-2 Operating Environment

The following table lists the operating environment for Controller Link Support Boards for PCI Bus connections.

| Compatible computers | FinsGateway version | Compatible OS | Compatible language |
|--|--------------------------|---|---|
| IBM PC/AT or compatible <ul style="list-style-type: none"> • CPU: Intel Celeron 400 MHz or better • Main memory: 128 MB minimum • 1 or more PCI bus slots (PCI bus revision 2.0 or later, power supply: 5 V) • Free hard disk space: 70 MB min. (not including user applications) • CD-ROM drive: One required for software installation • Display: VGA (640 x 480 (pixels) min. (Other conditions conform to the OS.) | FinsGateway Version 2003 | <ul style="list-style-type: none"> • Windows XP Professional • Windows XP Home Edition • Windows 2000 Professional | Microsoft Visual C++ Ver. 6.0 (Service Pack 3) (When using the C language library provided in the CD-ROM with the product) |

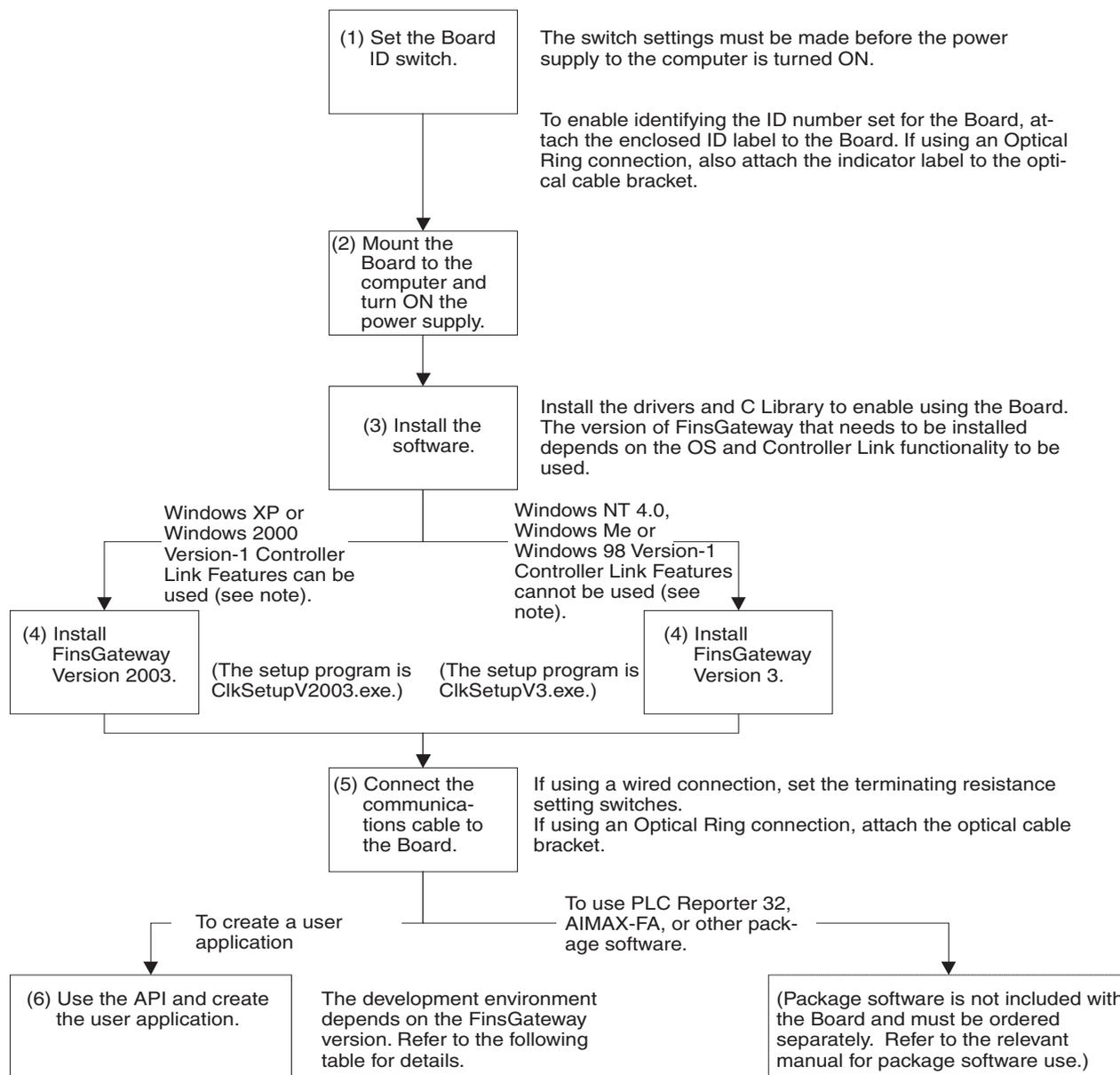
- Note**
1. There are two versions for FinsGateway (Version 2003 and Version 3) provided on the CD-ROM that comes with the product. The applicable OS depends on the version of FinsGateway.
 2. When using Windows NT 4.0 (service pack 3 or later), Windows Me, or Windows 98SE, install FinsGateway Version 3. Using version 3 of the FinsGateway, however, with disable the following functions supported by version-1 Controller Link Support Boards for PCI Bus: Automatic 1:N data

link allocations, changing data link tables while data links are active, and using 62 wired nodes.

| FinsGateway version | Automatic allocation of 1:N data link tables | Setting 62 wired nodes | Changing data link tables with active data links |
|----------------------------|---|-------------------------------|---|
| FinsGateway Version 2003 | Supported. | Supported. | Supported. |
| FinsGateway Version 3 | Not supported. | Not supported. | Not supported. |

3. A Controller Link Support Board cannot be used with Windows 95 or Windows NT 3.51 or earlier.
4. Controller Link Support Boards for PCI Bus connection may not operate correctly when used with other computers or operating systems. Always use the Controller Link Support Board with a personal computer and OS that satisfy the above conditions.
5. Controller Link Support Boards conform to PCI Local Bus Specifications, Revision 2.0.
6. User applications can also be written with Microsoft Visual Basic Version 6.0 if the optional SYSMAC Compolet Version 2 is purchased.
7. User applications can also be written with Microsoft Visual Basic .NET or Microsoft Visual Basic .NET 2003 if the optional SYSMAC Compolet Version 2003 is purchased. SYSMAC Compolet Version 2003 can be used only with FinsGateway 2003. Microsoft .NET framework 1.0 or 1.1 is required to use SYSMAC Compolet Version 2003. Refer to the operation manual for SYSMAC Compolet Version 2003 for details.

1-3 Application Procedure



Note The new version-1 Controller Link functionality is as follows: Automatic 1:N data link allocations, support for 62 wired nodes, and data link table changes with active data links.

| FinsGateway version | Compatible OS | Restrictions for version-1 Controller Link functionality | API (applications programming interface) | Development environment |
|--------------------------|---|--|--|---|
| FinsGateway Version 2003 | <ul style="list-style-type: none"> Windows XP Professional Windows XP Home Edition Windows 2000 Professional | The following functions can be used. <ul style="list-style-type: none"> Automatic 1:N data link allocations 62 wired nodes Data link table changes with active data links | SYSMAC Compolet .NET | Microsoft Visual Basic .NET 2003 or Microsoft Visual Basic .NET |
| | | | SYSMAC Compolet Version 2 | Microsoft Visual Basic Ver. 6.0 |
| | | | The C language library provided with the product | Microsoft Visual C++ Ver. 6.0 (Service Pack 3) |

| FinsGateway version | Compatible OS | Restrictions for version-1 Controller Link functionality | API (applications programming interface) | Development environment |
|-----------------------|--|---|--|--|
| FinsGateway Version 3 | <ul style="list-style-type: none"> • Windows XP Professional • Windows XP Home Edition • Windows 2000 Professional • Windows NT 4.0 (Service Pack 3 or later) • Windows Me • Window 98SE | The following functions cannot be used. <ul style="list-style-type: none"> • Automatic 1:N data link allocations • 62 wired nodes • Data link table changes with active data links | SYSMAC Compolet Version 2 | Microsoft Visual Basic Ver. 6.0 |
| | | | The C language library provided with the product | Microsoft Visual C++ Ver. 6.0 (Service Pack 3) |

- Note**
1. SYSMAC Compolet .NET and SYSMAC Compolet Version 2 are not included with the product and must be ordered separately. Refer to the operation manual for details.
 2. SYSMAC Compolet Version 2003 can be used only with FinsGateway 2003. Microsoft .NET framework 1.0 or 1.1 is required to use SYSMAC Compolet Version 2003. Refer to the operation manual for SYSMAC Compolet Version 2003 for details.
 3. To use the new version-1 Controller Link functionality, the OS must be Windows XP Professional, Windows XP Home Edition, or Windows 2000 Professional and FinsGateway must be Version 2003. The new functionality is not supported on other OS (Windows NT 4.0, Windows Me, and Windows 98) or by FinsGateway Version 3.

SECTION 2

Settings and Installation

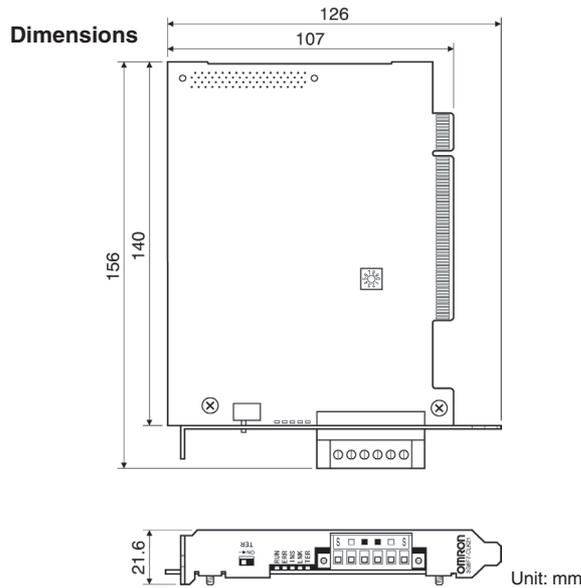
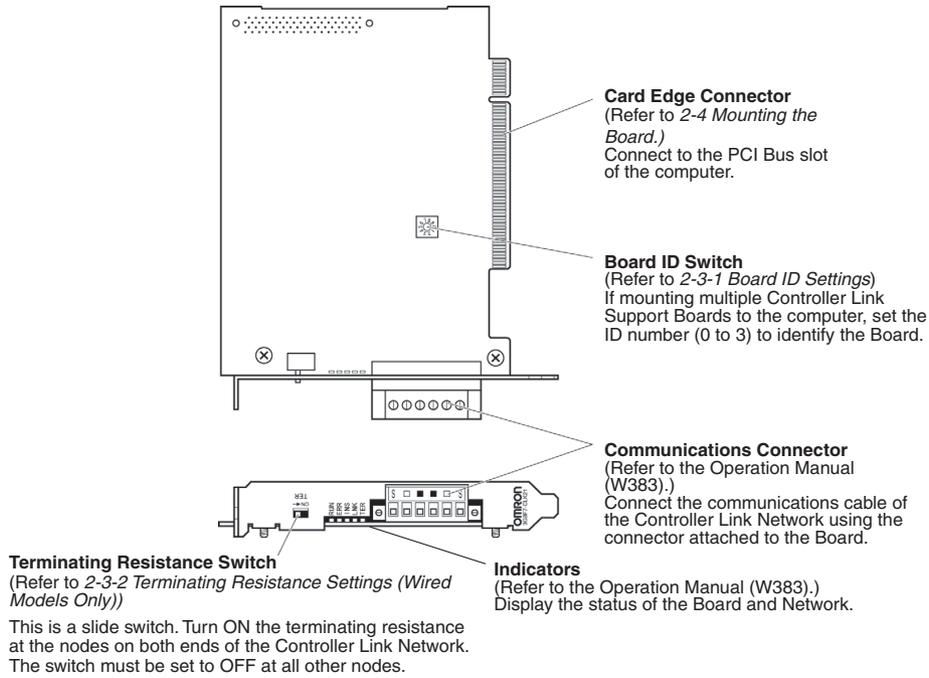
This section describes how to make settings for the Controller Link Support Boards, and how to mount a Support Board to a computer. This section also describes the function of the parts of the Controller Link Support Boards.

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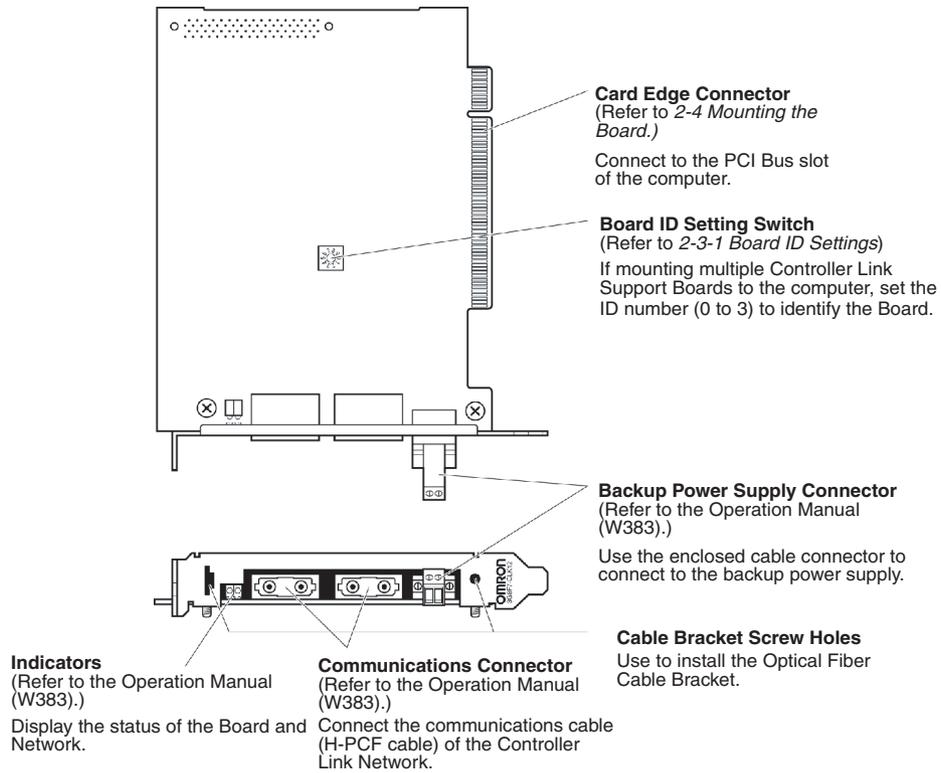
2-1 Parts Names and Functions

The following section shows the external appearance of the Controller Link Support Boards for PCI Bus connections (hereinafter called “Boards”), and provides the names of parts, functions, and dimensions of the Board.

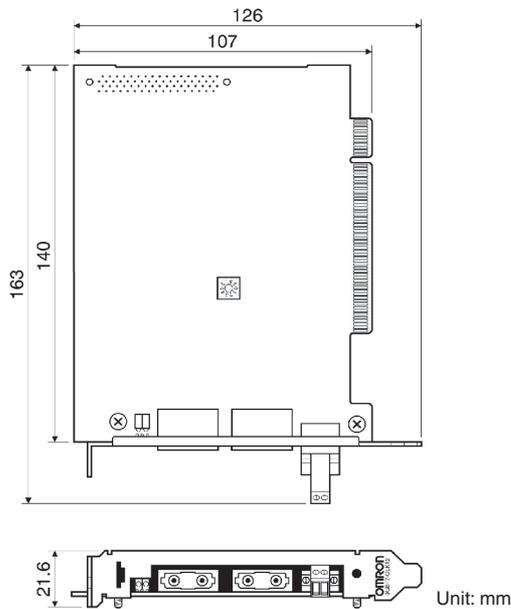
2-1-1 Wired Model: 3G8F7-CLK21-EV1



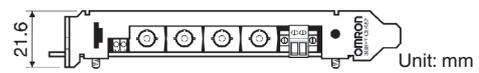
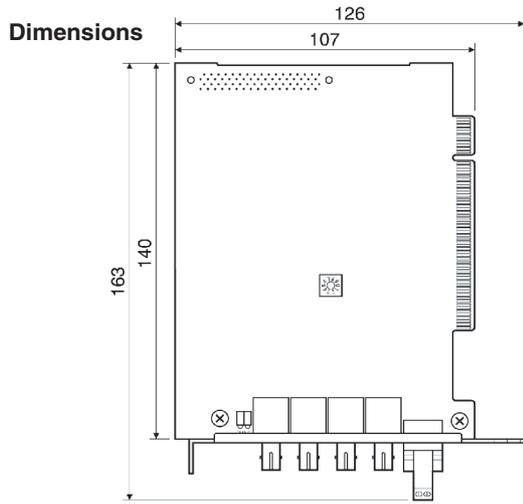
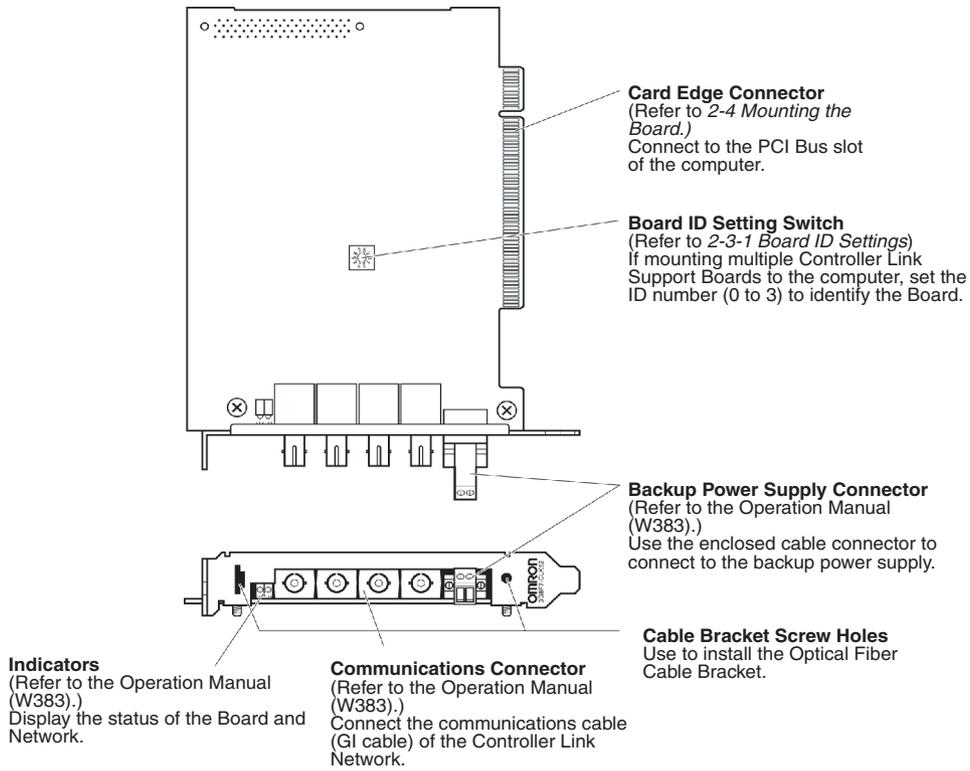
2-1-2 Optical Ring Model for H-PCF Cable: 3G8F7-CLK12-EV1



Dimensions



2-1-3 Optical Ring Model for GI Cable: 3G8F7-CLK52-EV1



2-2 Checks before Use

Check the following before mounting the Board to the computer.

Note The PCI Bus Controller Link Support Board supports Windows Plug & Play.

| Check item | Check details |
|--------------------------------------|---|
| Unused PCI Bus slots | Check that there is an unused PCI Bus slot on the computer to be used. |
| IRQ (Interrupt Required) duplication | <p>The Board uses an IRQ. The IRQ is allocated automatically on the PCI bus. In computers using an ISA bus, the IRQ may be duplicated with the ISA bus, thus preventing the computer from starting. Perform one of the following operations to prevent IRQ duplication with the ISA bus.</p> <ul style="list-style-type: none"> • Display the computer BIOS menu, and set Plug & Play to disabled. • Display the computer BIOS menu and set the IRQ used by the ISA bus to Reserved (auto allocation prohibited) using the PCI bus IRQ allocation settings. |

- Note**
1. For display and setting procedures for the computer BIOS menu, refer to the computer user manual.
 2. Check the IRQ used by the ISA bus using the following procedure.
- 1,2,3...**
1. Start the computer before mounting the Board.
 2. Click the **Start** Button, select **Settings** and then **Control Panel** from the Windows Start Menu.
 3. Double-click the **System** Icon and click the **Device Manager** Tab.
 4. Click the **Properties** Button for the ISA board using IRQ, and then click the **Resources** Tab to check the IRQ status.

2-3 Switch Settings

2-3-1 Board ID Setting

A maximum of four Boards can be mounted to one computer. The Board ID is used by the computer to identify individual Boards when multiple Boards have been mounted.

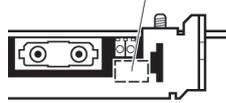


Make the settings using a small flat-blade screwdriver. Settings can be made between 0 and 3 (in decimal) provided that each ID number is used only once on the same computer.

- Note**
1. Make the settings so that each ID number is used only once on the same computer.
 2. The maximum number of Boards that can be mounted is a total of four for all three models: 3G8F7-CLK21-EV1, 3G8F7-CLK12-EV1, and 3G8F7-CLK52-EV1.
 3. The Board ID number is set to 0 at the factory.
 4. Do not set the Board ID number between 4 and 9.
 5. When the Board is mounted to the computer, it is difficult to check the Board ID from the outside. Write the Board ID setting on the enclosed ID

No. label, and attach the label in the designated position on the Board.
(Refer to the following diagram.)

Attach the label within the dotted lines.



2-3-2 Terminating Resistance Settings (Wired Models Only)

Set whether or not to connect the built-in terminating resistance using the Terminating Resistance Switch (slide switch). Terminating resistance is required to terminate wired networks to absorb excess signals and reduce noise. The Board has built-in terminating resistance, so terminating resistance can be connected simply by setting the switch.

When using a wired network, turn the terminating resistance switch ON at the nodes on both ends of the network and OFF at all other nodes.



| Setting | Terminating resistance |
|-------------------|---------------------------|
| OFF (See note 2.) | No terminating resistance |
| ON | Terminating resistance |

- Note**
1. This setting can be made after mounting the Board to the computer, but always turn OFF the power to the computer before changing the setting.
 2. The terminating resistance is set to OFF (i.e., no terminating resistance) at the factory.

2-4 Mounting the Board

After the settings have been completed, mount the Board to the PCI bus slot on the computer. An example of the mounting procedure is given below.

- Note**
1. When mounting or dismantling the Board, always turn OFF the power supply to the computer and all peripheral devices.
 2. When mounting the Board, beware of static electricity. There is a risk that the Board or the computer will be damaged.
 3. When mounting or dismantling the Board, be careful not to damage the memory or other parts in the computer.
 4. Do not directly touch the back of the Board or the parts.
 5. The Board mounting procedure depends on the computer. Perform the procedure correctly according to the user manual for the computer.

- 1,2,3...**
1. Remove all cables (communications cables and power supply cables) from the Board.
 2. Turn OFF the power supply to the computer to which the Board is to be mounted, and remove the power supply cable.
 3. Refer to the user manual for the computer, remove the casing, and mount or remove the PCI Board.
 4. Align the position and orientation of the PCI bus connectors on the computer and the Board, and press in the connectors as far as it will go. Make sure that the Board connector is inserted into the computer connector evenly, i.e., not at an angle. When mounting the Board, do not apply too much force.
 5. Pull the Board gently to check that it does not come out too easily.
 6. Secure the left side of the Board using screws tightened to a torque of 0.5 N•m.

SECTION 3

Software Installation

This section describes the procedure for installing the software necessary for using a Controller Link Support Board.

| | | |
|-------|---|----|
| 3-1 | Software Installation Method | 14 |
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| 3-3-2 | Checking Completed Installation | 25 |
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| 3-4 | Installing the C Library and Setup Diagnostic Utility | 30 |
| 3-4-1 | Installation Procedure | 30 |
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| 3-5-1 | Uninstallation Procedure | 33 |
| 3-6 | Setup Diagnostic Utility | 34 |
| 3-6-1 | Application | 34 |

3-1 Software Installation Method

To use the Controller Link Support Board, the following software must be installed.

- Controller Link (PCI) Driver
- FinsGateway Version 2003 (PCI-CLK Edition)
- FinsGateway Version 3 (PCI-CLK Edition)
- Setup Diagnostic Utility
- C Library

- Note**
1. The version of FinsGateway that is used determines the applicable OS, the development environment for user applications, and the usability of the new version-1 Controller Link functionality. Refer to *SECTION 1 Outline* for details.
 2. If not creating user applications using MS-C, the C Library is not required.
 3. The Setup Diagnostic Utility is used only when setting up the Support Board.

The installation procedure is given below.

- 1,2,3...**
1. Install the PCI Controller Link Support Board drivers (Windows XP, Windows 2000, or Windows 98 only).
 2. Install the FinsGateway Version 2003 (PCI-CLK Edition) or FinsGateway Version 3 (PCI-CLK Edition) and set the drivers.
 3. Install the C Library and the Setup Diagnostic Utility. (Only if using the C Library or Setup Diagnostic Utility.)
 4. Make detailed Board settings using FinsGateway. (Refer to *page 26 Setting Drivers*.)

3-2 Installing the Controller Link (PCI) Drivers

If using Windows XP, Windows 2000, or Windows 98, install the PCI Controller Link drivers using the operating system's Found New Hardware Wizard function.

If using Windows NT4.0, proceed to *3-3 Installing FinsGateway*.

3-2-1 Installation Procedure

This section describes an installation example using Windows 2000. If using Windows 98, the operations and windows displayed may be slightly different, but installation can be performed using the same procedure.

System Has Detected the New Drivers

Note It is necessary to log on as a user with Administrator privileges to perform the installation.

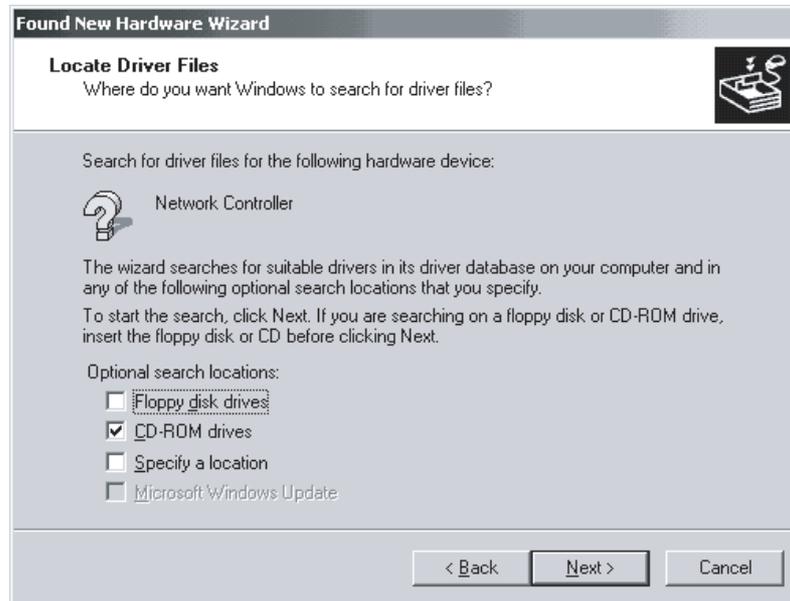
- 1,2,3...
1. When the computer is started after the Board has been mounted, the Board will be detected as new hardware, and the Found New Hardware Wizard will start. Click the **Next** Button.



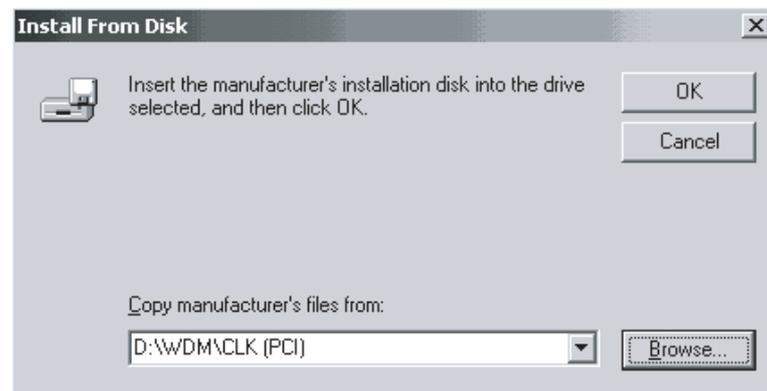
2. If the Install Hardware Device Drivers Window is displayed, select the **Search for a suitable driver for any device (recommended)** option, and click the **Next** Button.



3. Insert the applications CD-ROM first, select the **CD-ROM Drives** option in the Locate Driver Files Window, and click the **Next** Button.



In Windows 98, select the **Specify a location** option, select the CD-ROM drive directory as shown below, and click the **OK** Button.



4. Click the **Next** Button.



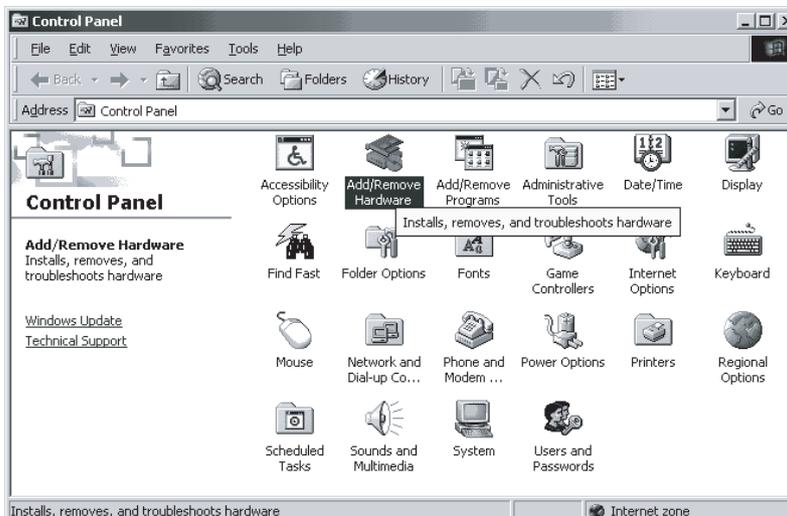
Installation has been completed.



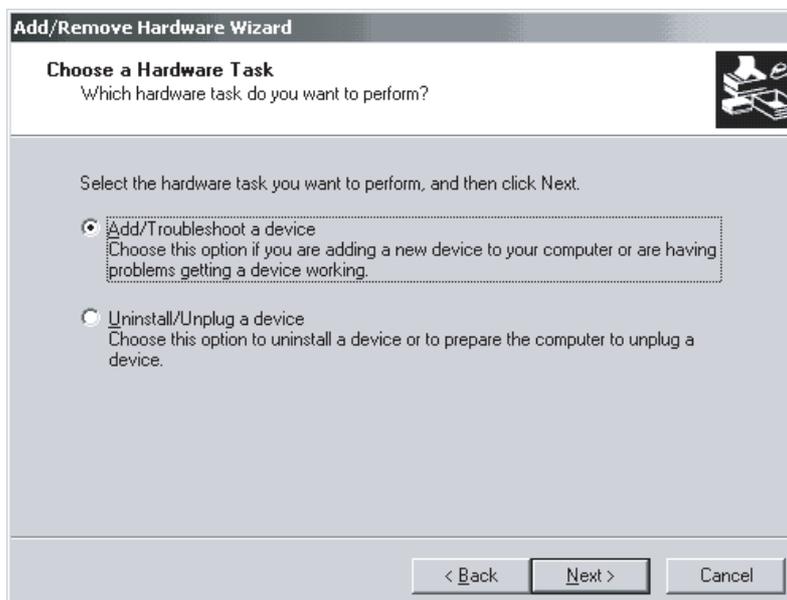
Registering a New Device from the Control Panel

Note It is necessary to log on as a user with administrator privileges to perform the installation.

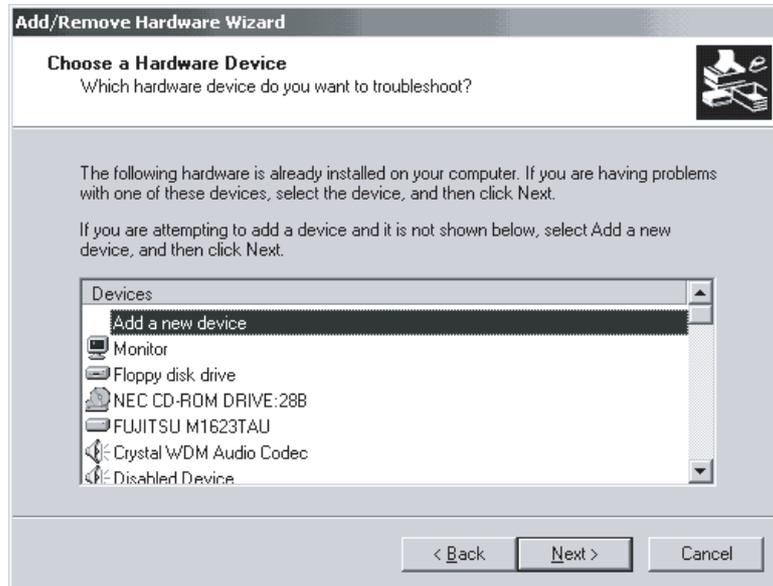
- 1,2,3... 1. Select **Settings** and **Control Panel** from the Windows Start Menu, and then click the **Add/Remove Hardware** Icon.



2. Select the **Add/Troubleshoot a device** option, and click the **Next** Button.



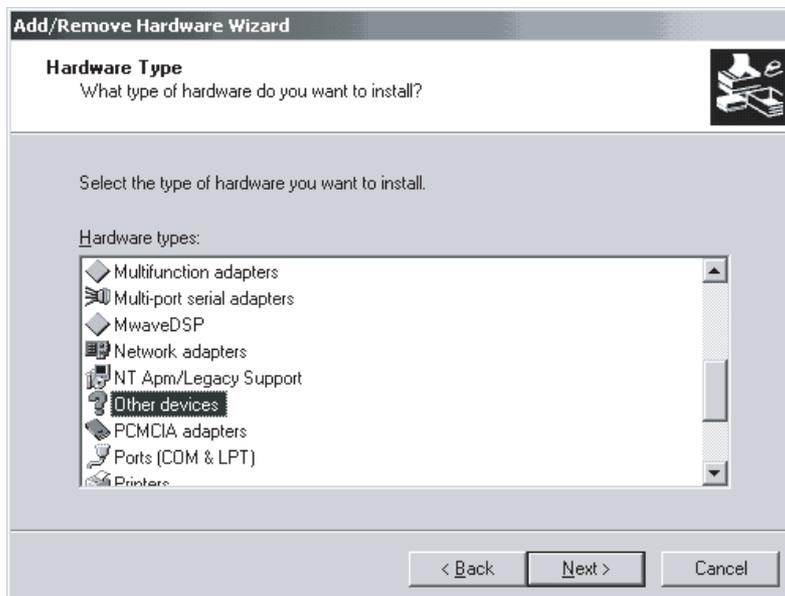
3. Select the **Add a new device** option, and click the **Next** Button.



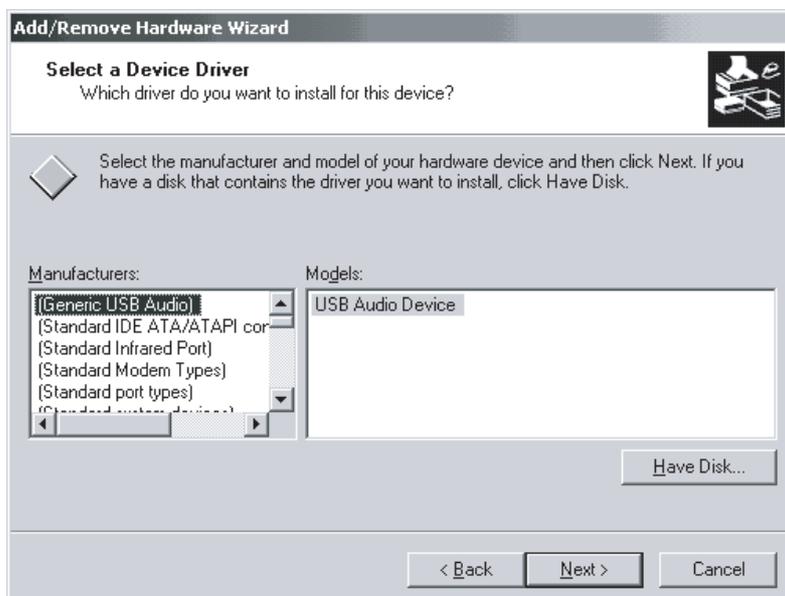
4. Select the **No, I want to select the hardware from a list** option, and click the **Next** Button.



5. Select the **Other Device** option, and click the **Next** Button.

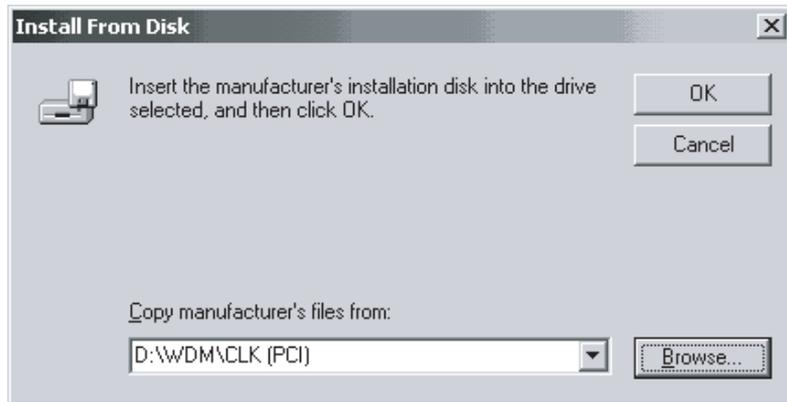


6. Click the **Have Disk...** Button.



7. Insert the applications CD-ROM first, specify the CD-ROM drive, and click the **OK** Button.

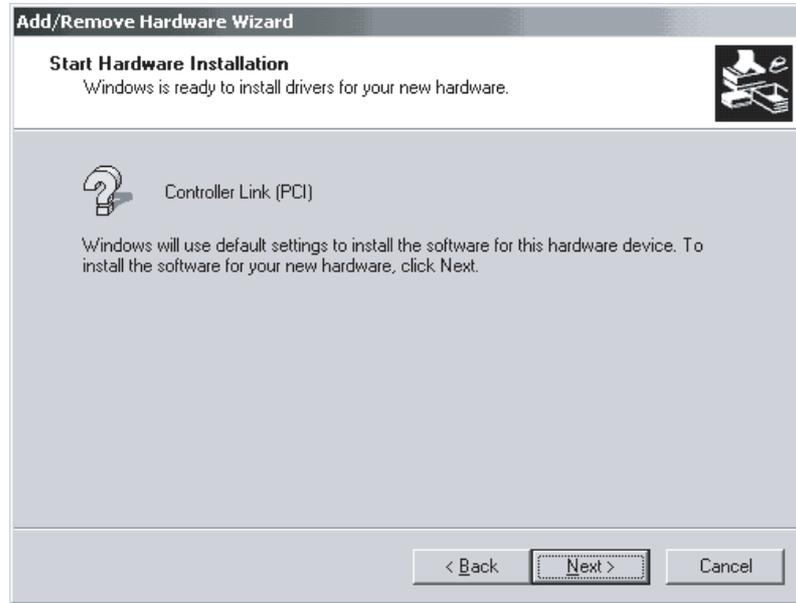
- 8. Click the **Browse...** Button, and select the **D:\WDM\CLK (PCI)** Folder on the applications CD.



- 9. Select the **Controller Link (PCI)** option from the Models List, and click the **Next** Button.



10. Click the **Next** Button.



Installation has been completed.



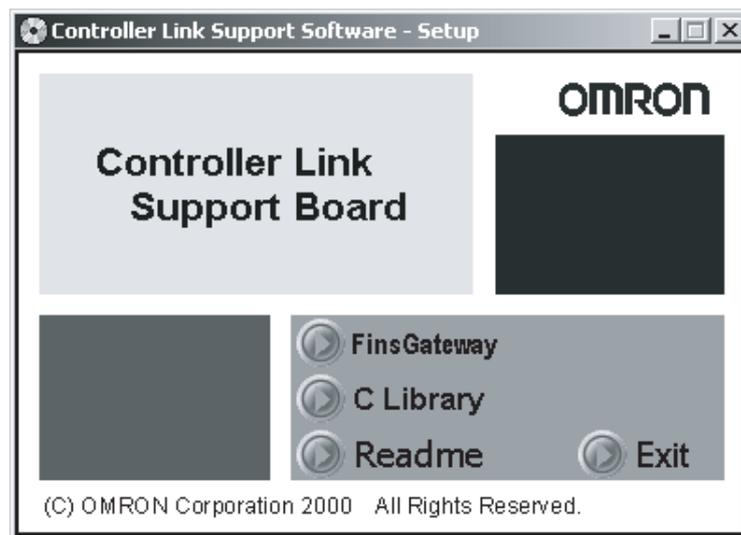
3-3 Installing FinsGateway

To use the Support Board, FinsGateway Version 2003 (PCI-CLK Edition) or Version 3 (PCI-CLK Edition) must be installed.

- Note**
1. The version of FinsGateway that is used determines the applicable OS, the development environment for user applications, and the usability of the new version-1 Controller Link functionality. Refer to *SECTION 1 Outline* for details.
 2. Execute *ClkSetupV2003.exe* in the root directory on CD-ROM provided with the product to install FinsGateway2003. If you are using Windows NT 4.0, Windows Me, or Windows 98, however, execute *ClkSetupV3.exe*.
 3. If a previous version of FinsGateway is already installed, uninstall the earlier version first, and then install FinsGateway.
 4. For the procedure to uninstall earlier versions of FinsGateway and uninstallation precautions, refer to the *FinsGateway User Manual*, or the *FinsGateway Version 3 Installation/Application Precautions (Readme_e.txt)* in the Root Folder on the Applications CD-ROM.
 5. FinsGateway Version 2003 (PCI-CLK Edition), FinsGateway Version 3 (PCI-CLK Edition), and FinsGateway Version 2 cannot both be installed on the same computer.
 6. The Board Controller Link (PCI) drivers cannot be used with FinsGateway Version 2 or earlier.
 7. The FinsGateway User Manual is supplied on the applications CD-ROM in the */OnlineDocument* folder. For detailed setup information, refer to the on-line manual.

3-3-1 Installation Procedure

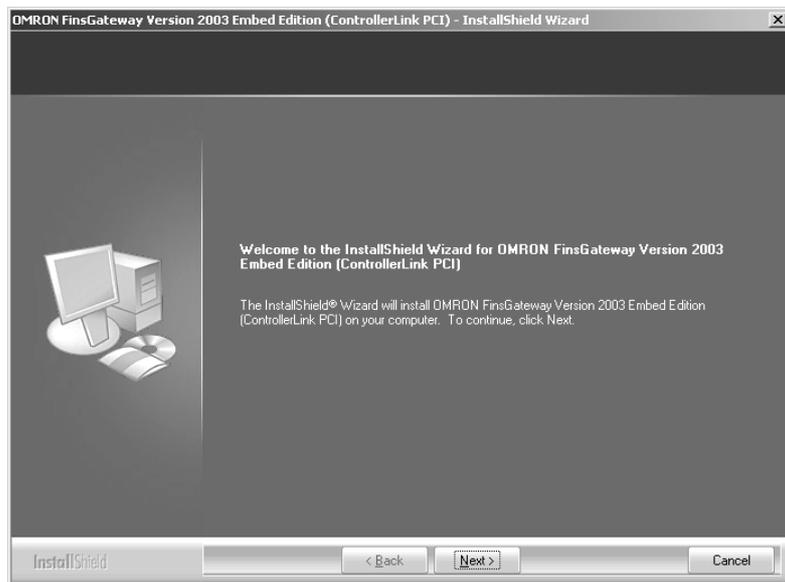
- 1,2,3...**
1. Close all applications that are currently running.
 2. Insert the *Controller Link Support Board-Support Software* CD-ROM in the CD-ROM drive.
 3. Click the **Start** Button, select **Run...**, enter *D:/ClkSetupV2003.exe*, and click the **OK** Button. (If the CD-ROM drive is not drive D, enter the correct drive.)



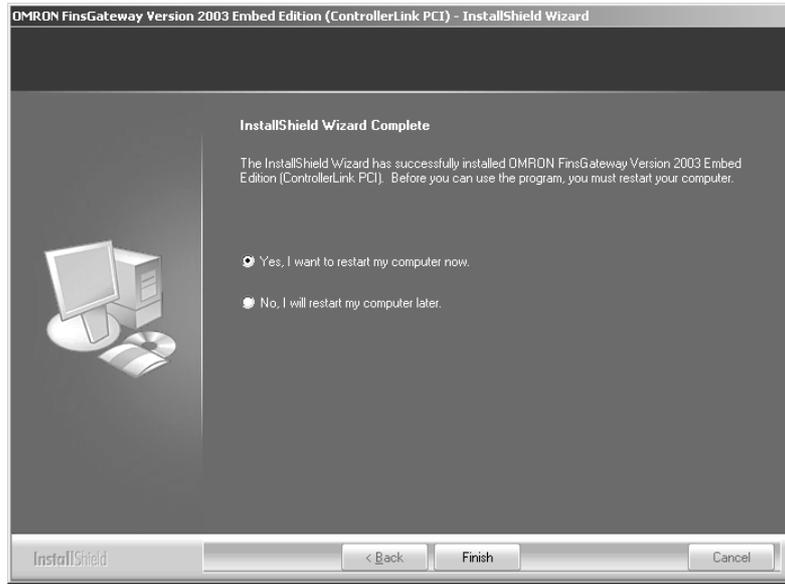
- 4. First, install FinsGateway as follows: Click the **FinsGateway Version2003** Button in the Controller Link Support Board Software Setup Window to start the FinsGateway installation.



The following window will be displayed when the **FinsGateway Version2003** Button is clicked.

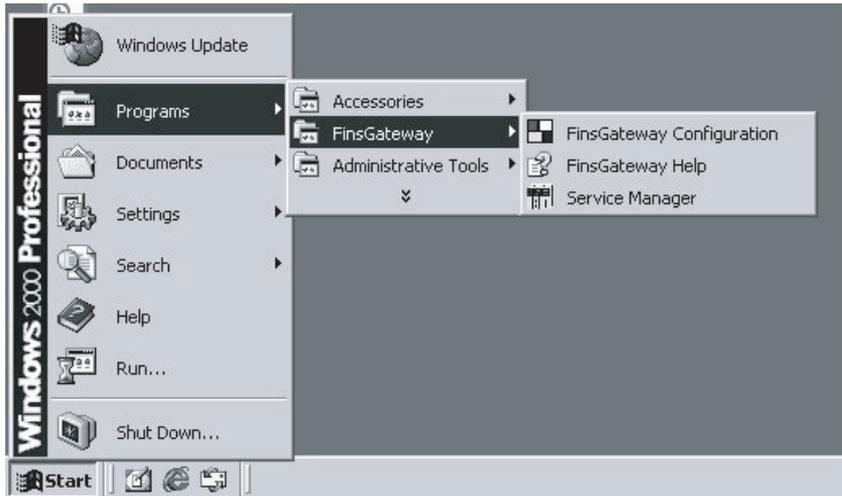


- 5. Follow the setup program instructions. When setup has been completed, restart the computer.



3-3-2 Checking Completed Installation

Check that FinsGateway has been installed correctly, and that *FinsGateway* has been added to the Windows Start Menu.



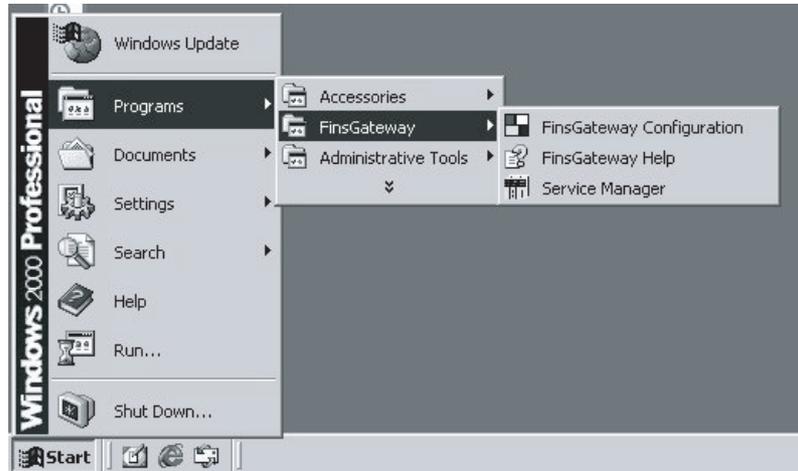
3-3-3 Setting Drivers

Next, make the Controller Link Support Board driver settings. The setting details are given in the following table.

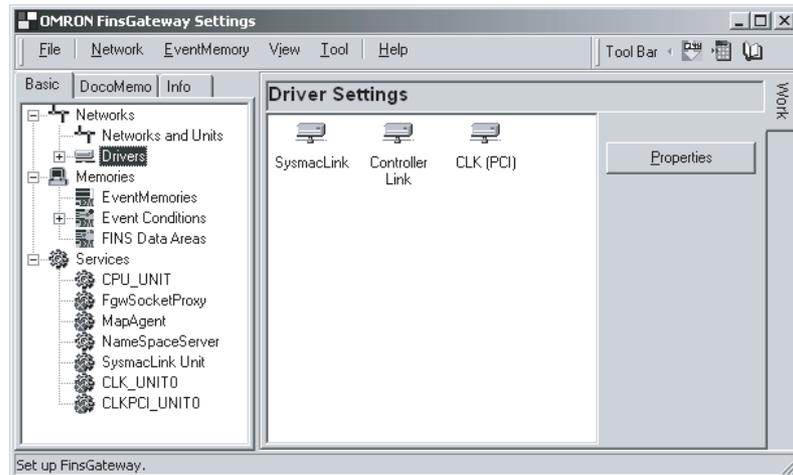
| Setting item | Details |
|---|--|
| Local node address (Node address) | Set the Board node address in decimal. The possible setting range is given below. 1 to 62: Optical Fiber models 1 to 32: Wired models (See note 1.) Make sure there are no duplicate node settings on the same Controller Link network. |
| Communications Unit address (Unit address) | Set the Board Unit address in decimal. The possible setting range is given below. 16 to 31 Make sure there are no duplicate Unit addresses for Boards mounted to the same computer. |
| Protocol mode (Communications format) | Set the token link and token Bus mode. This setting is only possible for Optical Fiber models. Make sure there are no duplicate settings for any node on the same Controller Link network. |
| Baud rate | Set the baud rate. This setting is only possible for Wired models. Make sure there are no duplicate settings for any node on the same Controller Link network. |
| Polling node and polled node settings | Set the Board startup mode. The Board setting is usually Polling Node. (Set the mode to Polled Node when replacing the Board.) |

- Note**
1. Select *Max Node Number set 62* to configure a wired network containing up to 62 nodes. When this is done, all nodes on the same network must support networks containing 62 nodes.
 2. When configuring a network containing between 33 and 62 nodes, the following Units and Board must be used at all nodes. If these Units/Board are not used, the network will not work with more than 32 nodes. If networks with 32 or fewer nodes are being used, clear the selection for *Max Node Number set 62*.
 - CS1W-CLK21-EV1
 - CJ1W-CLK21-EV1
 - 3G8F7-CLK21-EV1
 3. If connecting an Optical Fiber model (i.e., the model number ends in CLK11), set the mode to Token Bus mode.

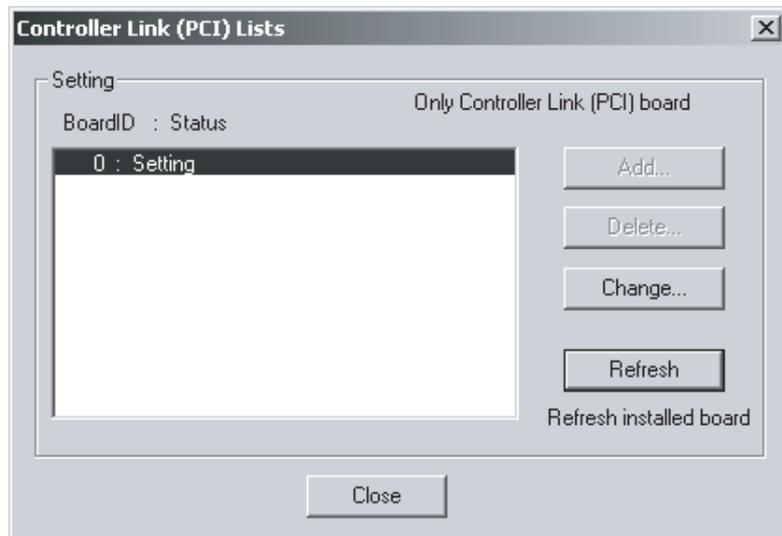
- 1,2,3... 1. Click the **Start** Button, and select **Programs, FinsGateway, and FinsGateway Configuration**.



2. Click the **Basic** Tab in the FinsGateway Settings Window, and click the **Drivers** Icon. Next, click the **CLK (PCI)** Icon in the Driver Settings Section, and click the **Properties** Button.

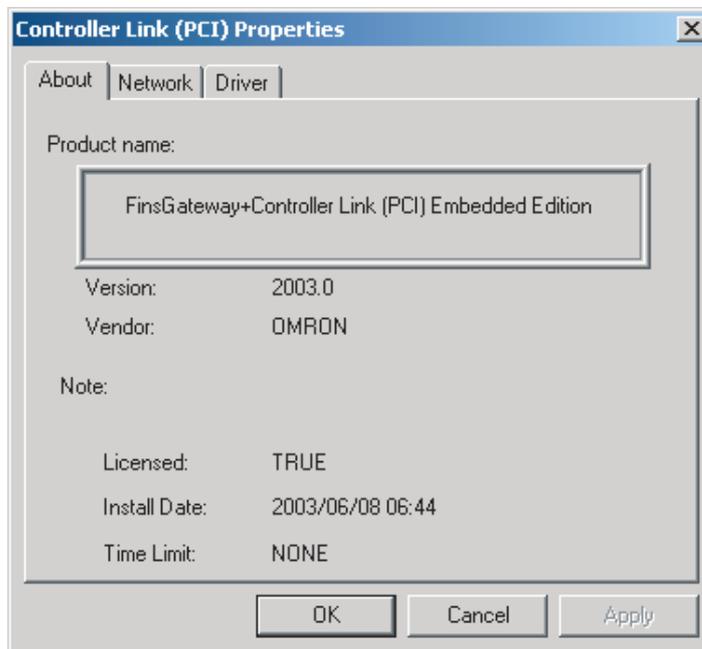


3. The mounted Boards will be displayed in the Controller Link (PCI) Lists Dialog Box. Select the Board to be changed, and click the **Change** Button.

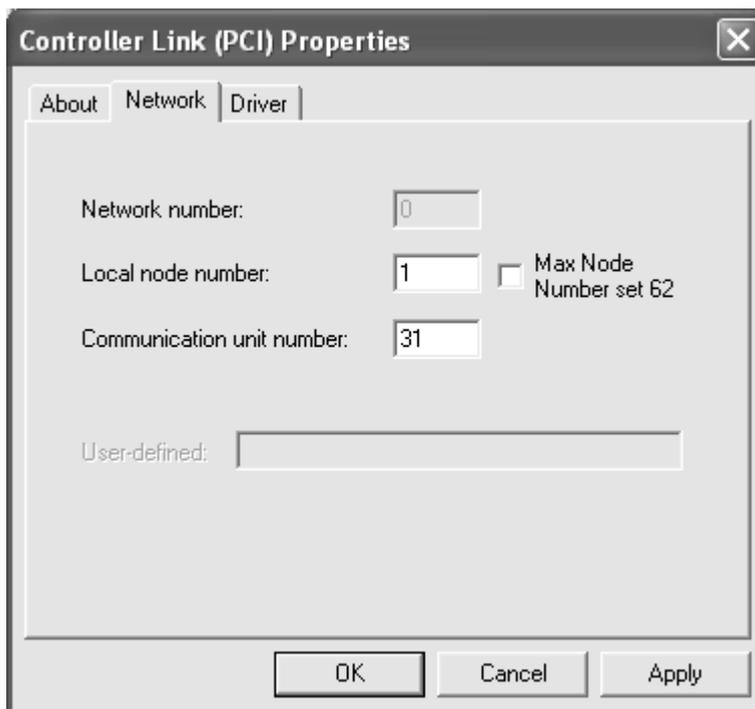


If the Board is not displayed in the dialog box, click the **Refresh** Button. The example window shows the Board ID has been set to 0. If multiple Boards are mounted, all the mounted boards will be displayed in the dialog box. Select the ID for the Board to be set.

4. The Controller Link (PCI) Properties Dialog Box will be displayed. Click the **Driver** Tab, and make the driver settings.



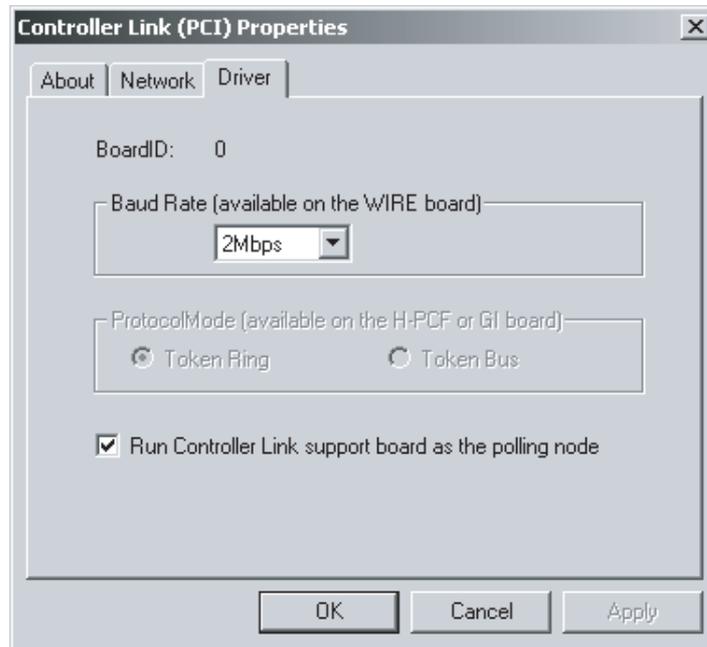
5. Click the **Network** Tab, and make the settings by entering the Board node address in the *Local node number* Field, and the communications Unit address in the *Communications unit number* Field.



Note When configuring a network containing between 33 and 62 nodes, the following Units and Board must be used at all nodes. If these Units/Board are not used, the network will not work with more than 32 nodes. If networks with 32 or fewer nodes are being used, clear the selection for *Max Node Number set 62*.

- CS1W-CLK21-EV1
- CJ1W-CLK21-EV1
- 3G8F7-CLK21-EV1

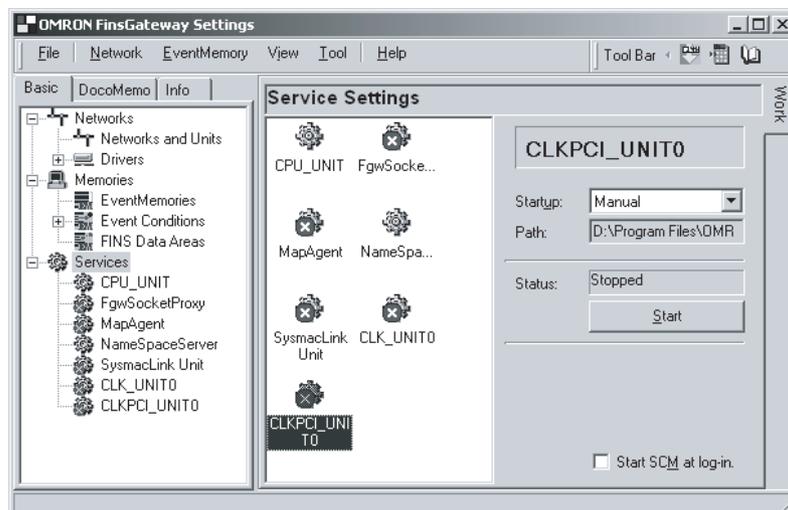
6. Click the **Driver** Tab, and set the baud rate for the Board. When all the settings have been made, click the **OK** Button.

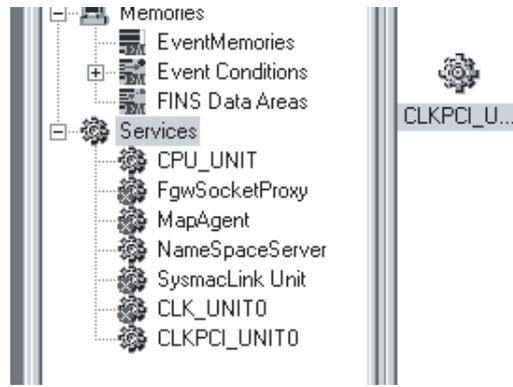


The baud rate setting is enabled only for the Wired models.

The Protocol Mode setting is enabled only for the Optical Fiber models.

7. Click the **Basic** Tab and the **Services** Icon in the main FinsGateway Settings Window to add CLKPCI_UNIT0 to the service settings. Next, click the **CLKPCI_UNIT0** Icon in the right Service Settings Section, and click the **Start** Button.





- Note**
1. When the CLKPCI_UNIT Service is started, the Board will start to participate in the network.
 2. The Board ID numbers correspond to the service names given in the following table.

| Board ID | Service name |
|----------|--------------|
| 0 | CLKPCI_UNIT0 |
| 1 | CLKPCI_UNIT1 |
| 2 | CLKPCI_UNIT2 |
| 3 | CLKPCI_UNIT3 |

3-4 Installing the C Library and Setup Diagnostic Utility

The C Library is a library of special functions (Microsoft Visual C++ Ver. 6.0) used to control the Board from the user applications. Install the C Library if creating user applications for the Board.

The Setup Diagnosis Utility checks if the Board and software have been installed correctly, and that data exchange can be performed correctly between the Board and the computer (drivers).

- Note**
1. To use the C Library, FinsGateway Version 2003 (PCI-CLK Edition) or FinsGateway Version 3 (PCI-CLK Edition) must be installed.
 2. For details of the C Library functions, refer to the *Controller Link Support Boards for PCI Bus Operation Manual (W383)*.
 3. For details on the Setup Diagnosis Utility, refer to *3-6 Setup Diagnostic Utility*.

3-4-1 Installation Procedure

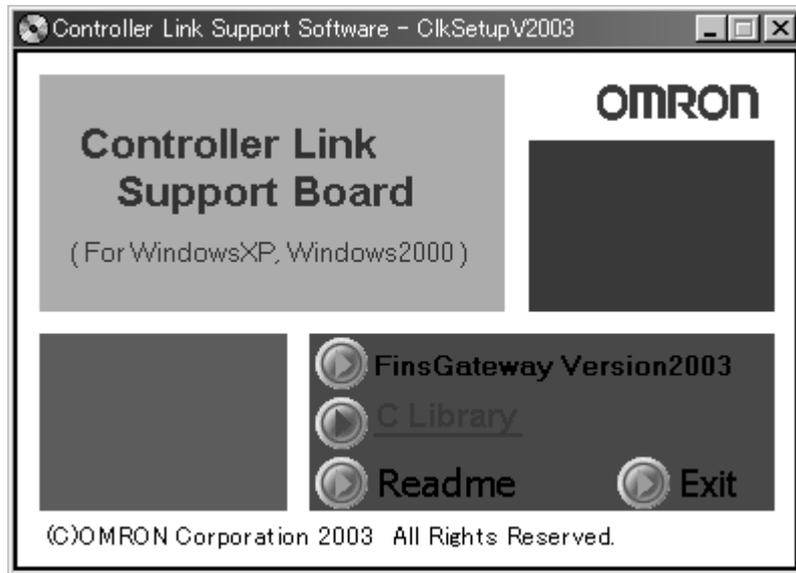
The installation procedure for the C Library and the Setup Diagnosis Utility is described below.

- 1,2,3...**
1. Close all applications currently open.
 2. Insert the *Controller Link Support Board-Support Software* CD-ROM in the CD-ROM drive.

- 3. Click the **Start** Button, select **Run...**, enter *D:/ClkSetup.exe*, and click the **OK** Button. (If the CD-ROM drive is not drive D, enter the correct drive.)



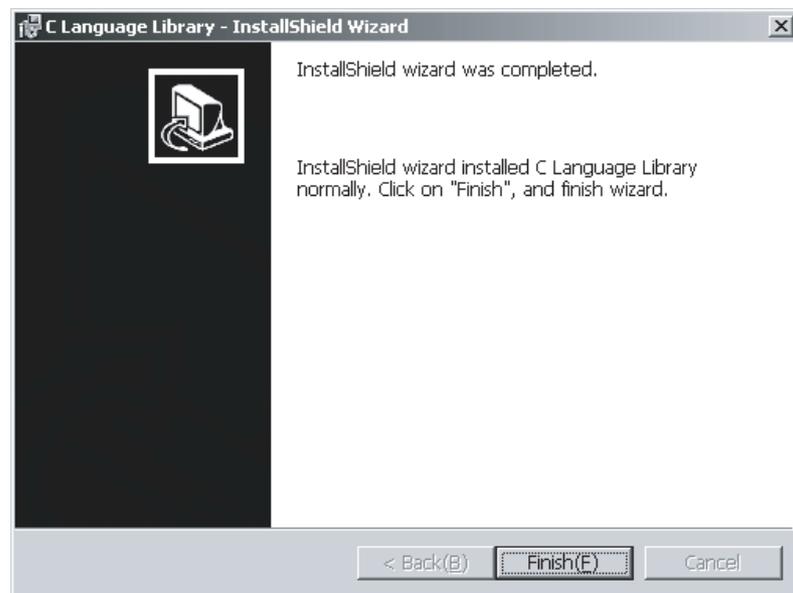
- 4. Click the **C Library** Button in the Controller Link Support Software-Setup Window to start the C Library and the Setup Diagnostic Utility installation.



5. Click the **C Library** Button. The following window will be displayed.



6. Follow the setup program instructions. If setup has been completed normally, the following window will be displayed.



The C Library folder configuration is described below.

- /ControllerLink/Lib: C Library files and header files (CLK_LIB.LIB, and CLK_LIB.H)
- /ControllerLink/Sample: Sample programs used by the C Library (Visual C++ MFC application project files)
- /ControllerLink/Help: Help files using the C Library (HTML files)

Note The C Library DLL (CLK_LIB.DLL) file is copied to the Windows system directory.

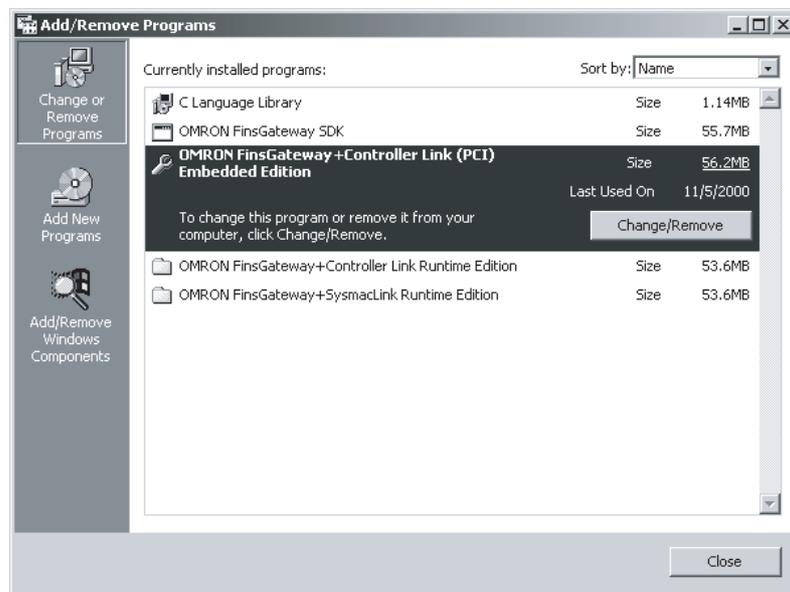
3-5 Uninstalling

If the Board software (FinsGateway, C Library, and the Setup Diagnostic Utility) are no longer required because the Board has been removed from the computer, the relevant program files can be deleted using the following procedure. (Only installed files will be deleted. Files created later will not be deleted.)

3-5-1 Uninstallation Procedure

This section describes uninstalling FinsGateway as an example of uninstallation. If using Windows 98 or Windows NT4.0, the windows, item names, and operations displayed may differ slightly, so be careful.

- 1,2,3...**
1. Close all programs and services using FinsGateway.
 2. Right-click the **Service Manager** Icon in the Task Tray, and select **Stop all services** from the popup menu.
 3. Double-click the **Add/Remove Programs** Icon in the Control Panel Window.
 4. Select the programs to be uninstalled from the table displayed.
 5. Click the **Change/Remove** Button to start the uninstallation. Follow the program instructions to uninstall the software.



- Note**
1. After uninstalling FinsGateway Version 2003 (PCI-CLK Edition) or FinsGateway Version 3 (PCI-CLK Edition), restart the system. If FinsGateway is installed and operated without restarting the system, FinsGateway will no longer operate normally.
 2. When the C library is uninstalled, the Setup Diagnosis Utility will also be deleted.

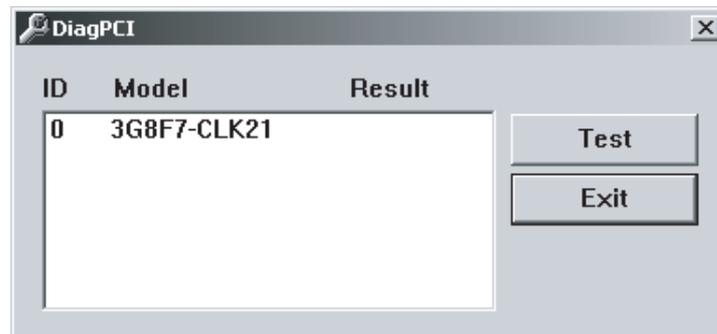
3-6 Setup Diagnostic Utility

The Setup Diagnosis Utility checks if the Board and software have been installed correctly, and that data exchange can be performed correctly between the Board and the computer (drivers).

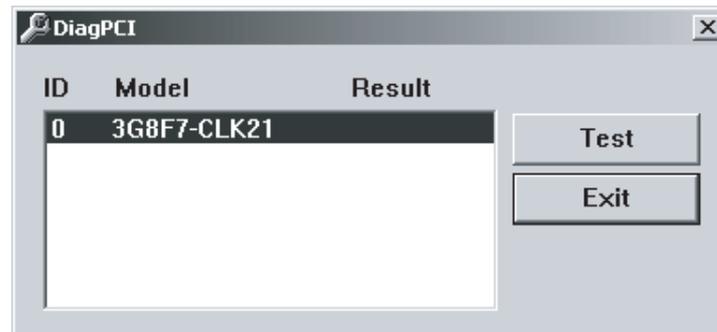
- Note**
1. The Setup Diagnosis Utility operates in a special mode to perform diagnosis of the Controller Link Support Board, so while diagnosis is being performed, normal communications cannot be performed. Do not start the Setup Diagnosis Utility while the system is operating.
 2. The Setup Diagnosis Utility can be used once FinsGateway has been set up, and the Board driver settings have been made correctly.

3-6-1 Application

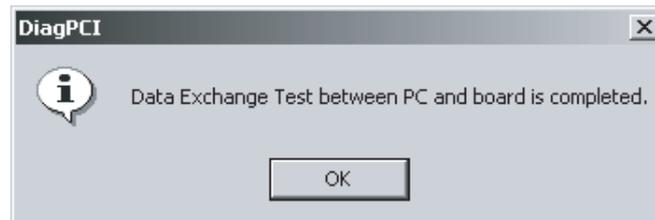
- 1,2,3...
1. Click the **Start** Button, and select *Programs, Omron, Controller Link, and CLKDiagPCI* to start the Setup Diagnosis Utility. A table of the Support Boards currently installed will be displayed in the main window.



2. Select the Board to be diagnosed, and click the **Test** Button to start the data exchange test between the specified Board and the computer.



When the test has been completed, the results will be displayed.



- Note** While the test is being performed, the RUN indicator and ERR indicator on the Board will flash.

Error Messages and Remedies

| Error message | Error details and remedy |
|---|--|
| This board has a hardware problem | Board hardware error. A data checksum error has occurred between the computer and the Board. Replace the Board. |
| Driver I/F error | An error has occurred in the interface with the Fins Gateway driver. If the FinsGateway service CLKPCI_UNIT is operating, stop the service Open the FinsGateway Service manager and check the settings. For details, refer to <i>3-3-3 Setting Drivers</i> . |
| The main window board table is not displayed. | FinsGateway drivers cannot detect the Board. Open the FinsGateway Service manager and check the settings. For details, refer to <i>3-3-3 Setting Drivers</i> . |

SECTION 4

Setup Error Messages and Troubleshooting

This section describes the error messages that may occur during setup, their causes, and their remedies.

| | | |
|-----|-------------------------------|----|
| 4-1 | Errors during Setup | 38 |
| 4-2 | Errors after Setup | 39 |

4-1 Errors during Setup

The following table explains error messages that might be displayed during FinsGateway installation or removal. The appropriate corrections are also provided.

| Symptom/Message | Correction |
|---|--|
| Nothing happens when inserting the FinsGateway CD. | Use the following procedure to execute the ClkSetup.exe in the root directory of the CD. From the Windows Start menu, select the <i>Execute File</i> option, and enter the following: <CD-ROM drive>:ClkSetup.V2003.exe Alternatively, execute ClkSetup.V2003.exe from Explorer. |
| Setup found the following products on the system. Remove the old product versions, then install FinsGateway Version3. Refer to the manual for details about removing the previous product versions. | Follow the procedure described in this manual to remove the previous version of FinsGateway. For details, refer to <i>3-5 Uninstalling</i> . When installing FinsGateway Version 3 (PCI-CLK) or FinsGateway Version 3 (PCI-SLK), however, onto a computer with FinsGateway Version 3 Runtime Edition already installed, or when installing FinsGateway Version 3 Runtime Edition onto a computer with FinsGateway Version 3 (PCI-CLK) or FinsGateway Version 3 (PCI-SLK) already installed, do not remove the product already installed. Click the Next Button and continue installation. |
| Setup fails during installation program startup. | The product installer startup failed. Be sure the Setup.exe is being executed from the CD. |
| <xxx> file delete failure. Check whether the file is read-only, or being used by another application. Then, run Setup again. | A file deletion failed. The file may be used by another application program. Close all the applications that use FinsGateway, and try again. |
| The FinsGateway online Help requires Internet Explorer Version3.02, or higher. Currently, Internet Explorer is not installed, or an older version is installed. If the online Help does not display properly, install Internet Explorer Version3.02, or higher. Setup will continue. | To open the FinsGateway Help an appropriate version of Internet Explorer is required. For details, refer to Setup Procedure in this manual. For details, refer to Setup Procedure in this manual. Internet Explorer can be set up after installing FinsGateway. |
| The FinsGateway online Help requires the HTML Help runtime component version 1.31, or higher. Currently, the HTML Help runtime component is not installed, or an older version is installed. If the online Help does not display properly, install the HTML Help runtime component. Setup will continue. | To open the FinsGateway Help an appropriate version of the HTML Help runtime component is required. For details, refer to Setup Procedure in this manual. The HTML Help runtime component can be installed after installing FinsGateway. |
| No products are selected to install. Exit Setup? | To continue Setup, click the No Button, and select at least one product to install. To exit Setup, click the Yes Button. |
| Setup found FinsGateway Version 1. Previous versions of FinsGateway cannot be on the same system. Before installing FinsGateway Version3, remove FinsGateway Version 1. Clicking Yes will delete the appropriate version 1 files, and continue the FinsGateway Version3 installation. Clicking No will exit Setup. | FinsGateway Version 1, or another previous version, cannot be installed and run on the same system. Remove Version 1 first, then install the new FinsGateway version. |
| Insufficient hard disk space available to install. | Install to a different drive, or open some of the space on the same drive. Then, start Setup, again. |
| Cannot continue Setup. Exiting now. | This message is displayed when the confirmation dialog for stopping FinsGateway services is rejected. Setup cannot run with services running. |

| Symptom/Message | Correction |
|--|--|
| After switching applications, and closing the FinsGateway Service Manager, click Yes. To exit Setup, click No. | The FinsGateway Service Manager is running. To continue Setup, close the Service Manager from the icon in the task tray. To exit Setup, click No . |
| Could not create temporary files. Could not modify the environment variable, PATH. | The environment variable setting failed. Add the following to the Autoexec.bat file in the root directory of the boot disk: SET FinsServer=<full path to the FinsGateway installation folder> The following is an example of the default installation to the C drive: SET FinsServer = C:\Program Files\OMRON\FinsServer95 |

Note The *FinsGateway Users Manual* is stored in the online document folder in the application CD-ROM.

4-2 Errors after Setup

The following table explains the error message that might be displayed after FinsGateway installation. The appropriate corrections are also provided.

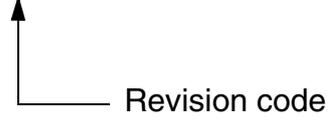
| Symptom/Message | Correction |
|---|--|
| Selecting FinsGateway Help from the Start menu does not start the Help. | To open the FinsGateway Help an appropriate version of Internet Explorer and the HTML Help runtime component are required. For details, refer to <i>Section 3 Setup Procedure</i> . |
| This control requires COMCTL32.DLL version 4.70, or higher. | The system COMCTL32.DLL needs to be updated. Follow the procedure described in <i>Section 3 Setup Procedure</i> . |
| Clicking on the Help hyperlink does not display the target file. | To open a PDF file, Acrobat Reader 4 is required. For details, refer to <i>Section 3 Setup Procedure</i> in this manual. |
| Event log ID 97 is registered. (Event log ID 97: This ID indicates that an event memory type not supported by FinsGateway for sending data link data has been set. Data will not be sent between the Support Board and event memory. (This ID is logged when there are not data link tables.) | This ID is logged when data link tables have not been set. Registration can be prevented by setting data link tables. If data links are not being used, then there will be no problems in operation and this ID can be ignored. |

Note The *FinsGateway Users Manual* is stored in the online document folder in the application CD-ROM.

Revision History

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

Cat. No. W422-E1-01



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 |
|---------------|-----------|---|
| 01 | June 2003 | Original production based on addition of version-1 models and FinsGateway Version 2003 to W388. |

Revision History

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OMRON

INSTALLATION GUIDE

SYSMAC 3G8F7-CLK12-EV1/CLK52-EV1/CLK21-EV1 Controller Link Support Boards for PCI Bus

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.