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SYSMAC

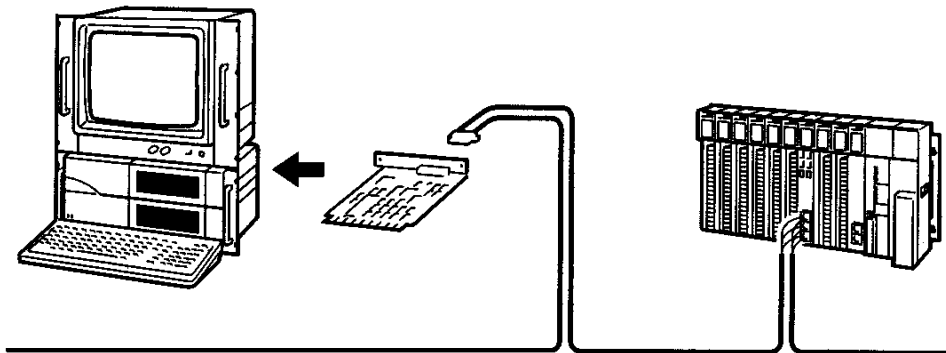
3G8F7-SLK11-E (Optical Fiber Cable)

3G8F7-SLK21-E (Coaxial Cable)

SYSMAC LINK Support Boards for PCI Bus

Installation Guide

Produced March 2001



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.

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- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this manual.
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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

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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-SLK11-E, and 3G8F7-SLK21-E SYSMAC LINK Support Boards for PCI Bus and includes the sections described below. SYSMAC LINK Support Boards are used to connect IBM PC/AT or compatible computers to a SYSMAC LINK Network. The following three manuals are directly related to application of the SYSMAC LINK Network.

Name	Contents	Cat. No. (suffixes omitted)
3G8F7-SLK11-E/ SLK21-E SYSMAC LINK Support Boards for PCI Bus Installation Guide (this manual)	Installation and setup procedures for SYSMAC LINK Support Boards for PCI bus connections. SYSMAC LINK Support Boards are used to connect IBM PC/ATs or compatibles to a SYSMAC LINK Network.	W389
3G8F7-SLK11-E/ SLK21-E SYSMAC LINK Support Boards for PCI Bus Operation Manual	Operating procedures for SYSMAC LINK Support Boards for PCI bus connections. SYSMAC LINK Support Boards are used to connect IBM PC/ATs or compatibles to a SYSMAC LINK Network.	W390
3G8F5-SLK21-E SYSMAC LINK Support Boards for ISA Bus Operation Manual	Installation, setup, and operating procedures for SYSMAC LINK Support Boards for ISA bus connections. SYSMAC LINK Support Boards are used to connect IBM PC/ATs or compatibles to a SYSMAC LINK Network.	W220
CV500-SLK11/21 SYSMAC LINK Units Operation Manual	Installation, setup, and operating procedures for the SYSMAC LINK Units are used to connect CV-series PCs to a SYSMAC LINK Network.	W212
CS1W-SLK11/21 SYSMAC LINK Units Operation Manual	Installation, setup, and operating procedures for the SYSMAC LINK Units. SYSMAC LINK Units are used to connect CS1-series PCs to a SYSMAC LINK Network.	W367

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 SYSMAC LINK Support Board.

Section 1 describes the configuration of the SYSMAC LINK network system, and the product configuration and operating environment of the SYSMAC LINK Support Boards

Section 2 describes how to make settings for the SYSMAC 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 SYSMAC LINK Support Boards.

Section 3 describes the procedure for installing the software necessary for using a SYSMAC 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 SYSMAC 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 SYSMAC LINK Support Board for PCI Bus. You must read this section and understand the information contained before attempting to set up or operate a SYSMAC LINK Support Board for PCI Bus.

- 1 Intended Audience
- 2 General Precautions
- 3 Safety Precautions
- 4 Operating Environment Precautions
- 5 Application Precautions

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 SYSMAC 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 SYSMAC 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 SYSMAC LINK Support Board for PCI Bus to the above mentioned applications.

3 Safety Precautions


 **WARNING** Never attempt to disassemble any SYSMAC 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 SYSMAC 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 SYSMAC 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 SYSMAC 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 SYSMAC 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 SYSMAC 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 SYSMAC LINK network system, and the product configuration and operating environment of the SYSMAC LINK Support Boards.

1-1	Product Configuration
1-2	Operating Environment
1-3	Application Procedure

1-1 Product Configuration

The following table lists the product configuration for SYSMAC LINK Support Boards for PCI Bus connections.

System	Model number	Details and additional products
Coaxial System	3G8F7-SLK21-E	<ul style="list-style-type: none"> • SYSMAC LINK Support Board x 1 • CD-ROM x 1 • Operation Manual x 1 • F-Adapter x 1 • Insulation cover x 1 • Coaxial Cable Bracket x 1 • Board ID switch No./indicator label x 1 • User registration card (software user agreement) x 1
Optical System	3G8F7-SLK11-E	<ul style="list-style-type: none"> • SYSMAC LINK Support Board x 1 • CD-ROM x 1 • Operation Manual x 1 • Optical Fiber Cable Bracket x 1 • 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.
 - FinsGateway Version 3 (PCI-SLK)
 - Setup Diagnostic Utility
 - C Library
 2. This product does not include the personal computer OS. One must be provided separately.

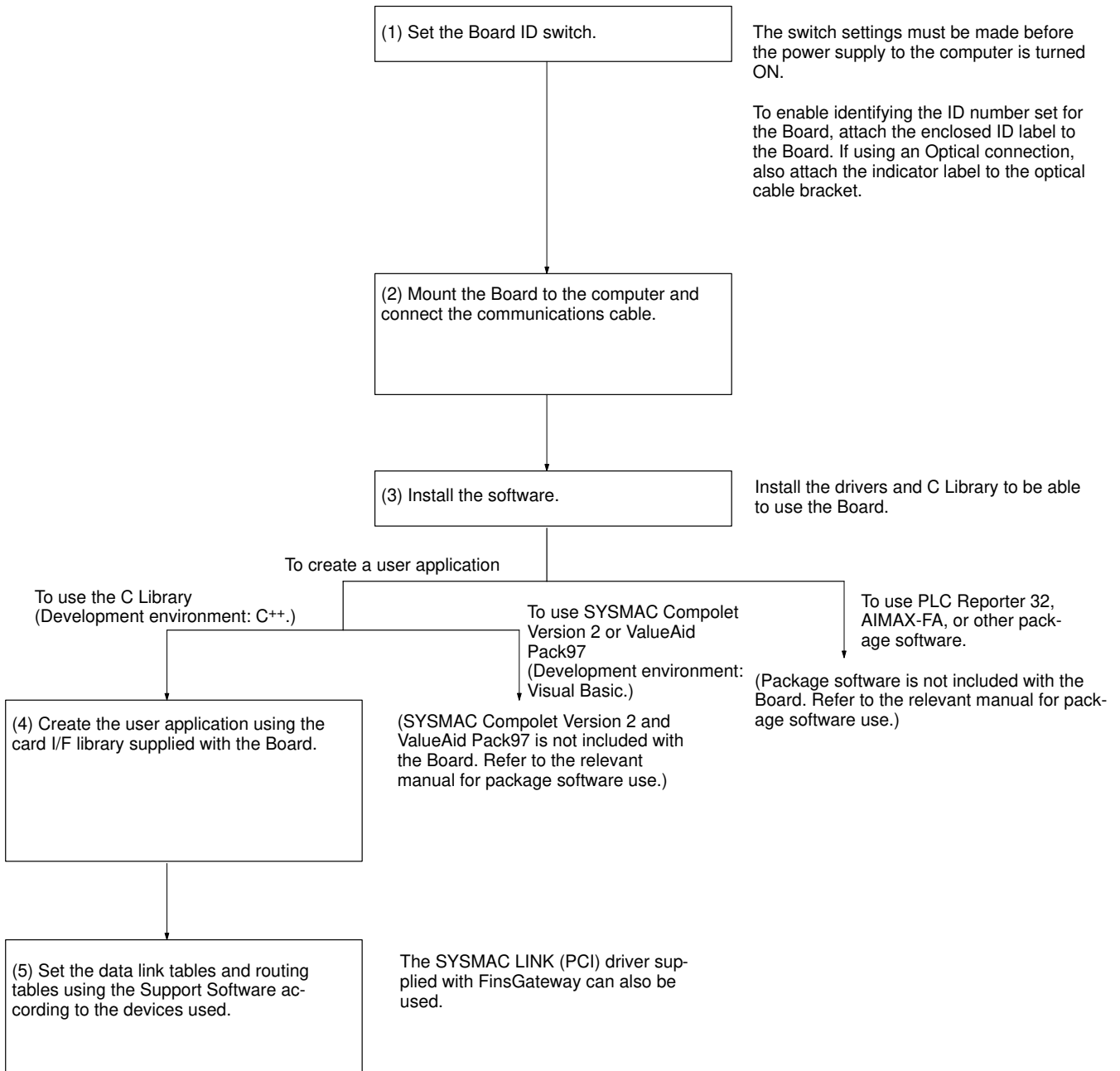
1-2 Operating Environment

The following table lists the operating environment for SYSMAC LINK Support Boards for PCI Bus connections.

Compatible computers	Compatible OS	Compatible language
IBM PC/AT or compatible <ul style="list-style-type: none"> • CPU: Intel Celeron 400 MHz or better • Main memory: 32 MB minimum • 1 or more PCI bus slots • Free hard disk space: 70 MB min. (not including user applications) • CD-ROM drive: Required for software installation • Display: VGA (640 x 480 (pixels) min. display) (Other conditions depend on the OS.)	<ul style="list-style-type: none"> • Windows 98 • Windows 2000 • Windows NT 4.0 (Service Pack 3 or later) 	Microsoft Visual C++ Ver. 6.0 (Service Pack 3)

- Note**
1. SYSMAC LINK Support Boards for PCI Bus connection may not operate correctly when used with other computers or operating systems. Always use the SYSMAC LINK Support Board with a personal computer and OS that satisfy the above conditions.
 2. The SYSMAC LINK Support Board cannot be used with Windows 95 or Windows NT 3.51 or earlier.

1-3 Application Procedure



SECTION 2

Settings and Installation

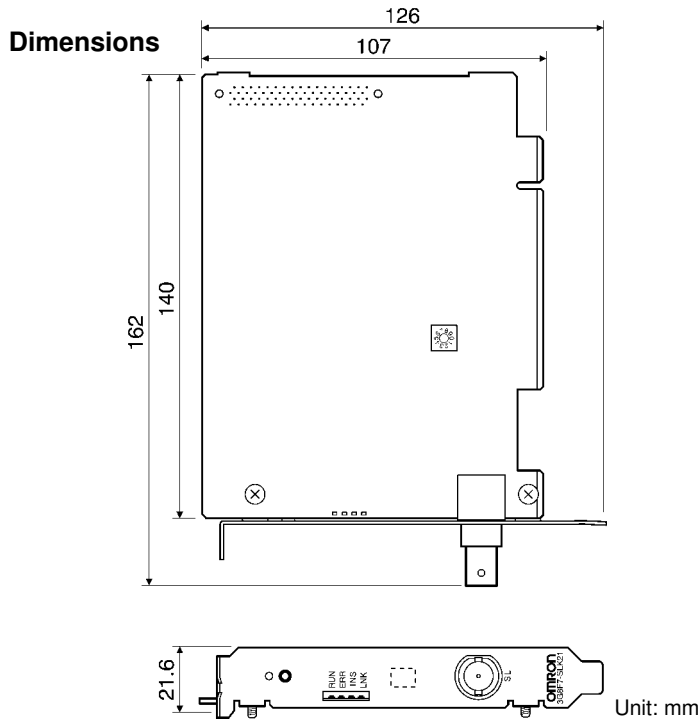
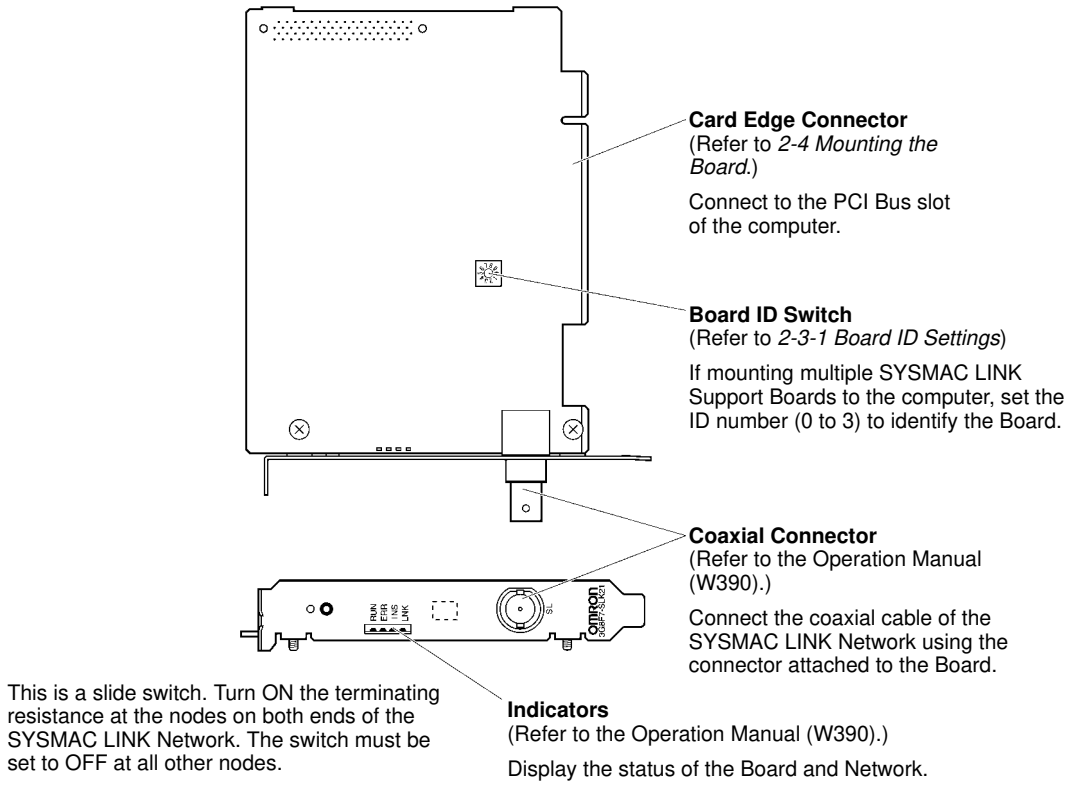
This section describes how to make settings for the SYSMAC LINK Support Boards, and how to mount a Support Board to a computer. This section also describes the function of the parts of the SYSMAC LINK Support Boards.

- 2-1 Parts Names and Functions
- 2-1-1 Coaxial Model: 3G8F7-SLK21-E
- 2-1-2 Optical Ring Model for H-PCF Cable: 3G8F7-SLK11-E
- 2-2 Checks before Use
- 2-3 Switch Settings
- 2-3-1 Board ID Setting
- 2-4 Mounting the Board

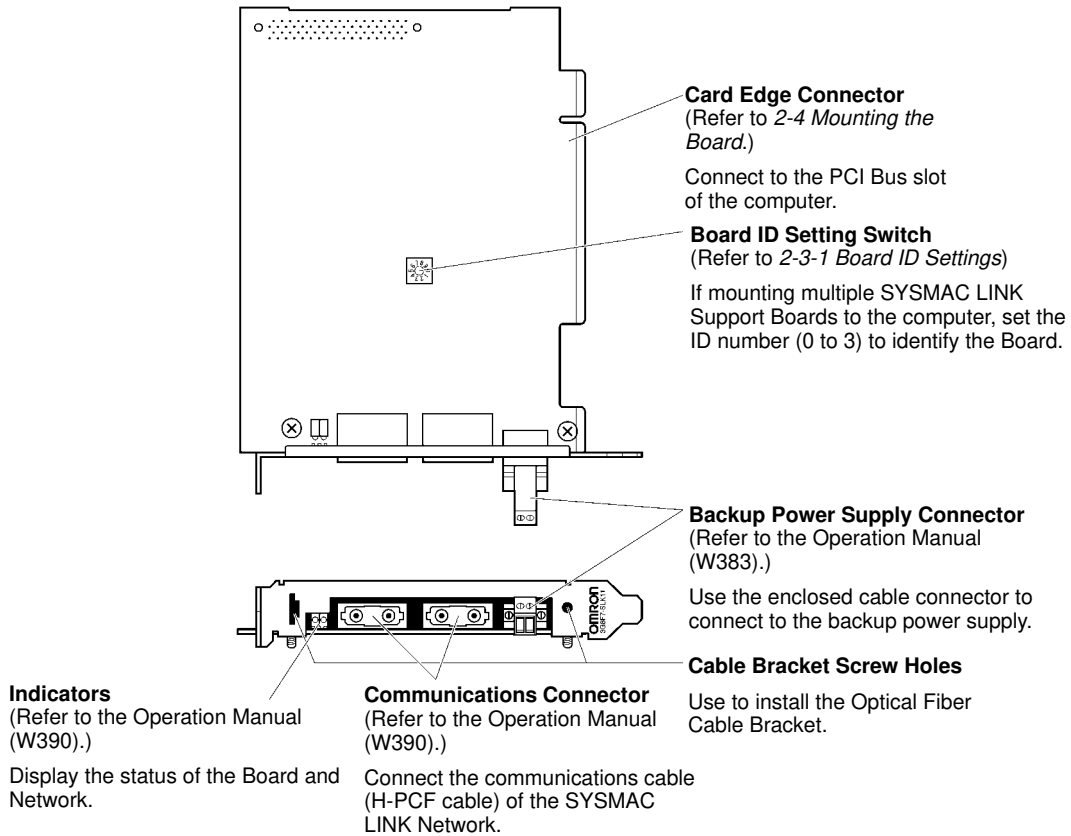
2-1 Parts Names and Functions

The following section shows the external appearance of the SYSMAC LINK Support Boards for PCI Bus connections (hereinafter called "Boards"), and provides the names of parts, functions, and dimensions of the Board.

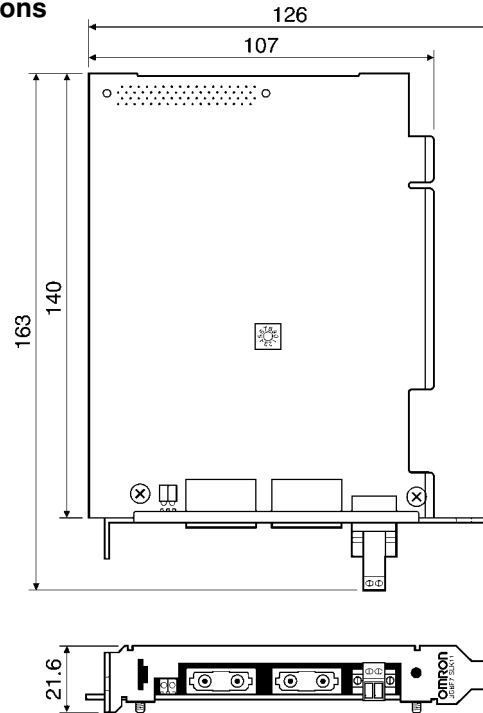
2-1-1 Coaxial Model: 3G8F7-SLK21-E



2-1-2 Optical Ring Model for H-PCF Cable: 3G8F7-SLK11-E



Dimensions



Unit: mm

2-2 Checks before Use

Check the following before mounting the Board to the computer.

Note The PCI Bus SYSMAC 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-SLK11-E, and 3G8F7-SLK21-E.
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.



2-4 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 dismounting 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 dismounting 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 mounting operation 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 the correct torque of 0.5 N•m.

SECTION 3

Software Installation

This section describes the procedure for installing the software necessary for using a SYSMAC LINK Support Board.

- 3-1 Software Installation Method
- 3-2 Installing the SYSMAC LINK (PCI) Drivers
- 3-2-1 Installation Procedure
- 3-3 Installing FinsGateway Version 3 (PCI-SLK)
- 3-3-1 Installation Procedure
- 3-3-2 Checking Completed Installation
- 3-3-3 Setting Drivers
- 3-4 Installing the C Library and Setup Diagnostic Utility
- 3-4-1 Installation Procedure
- 3-5 Uninstalling
- 3-5-1 Uninstallation Procedure
- 3-6 Setup Diagnostic Utility
- 3-6-1 Application

3-1 Software Installation Method

To use the SYSMAC LINK Support Board, the following software must be installed.

- FinsGateway Version 3 (PCI-SLK)
- C Library
- Setup Diagnostic Utility

Note If not creating user applications using MS-C, the C Library is not required. 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 SYSMAC LINK Support Board drivers (Windows 2000 and Windows 98 only.)
 2. Install the FinsGateway Version 3 (PCI-SLK) 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 *3-3-3 Setting Drivers*.)

3-2 Installing the SYSMAC LINK (PCI) Drivers

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

If using Windows NT4.0, proceed to *3-3 Installing FinsGateway Version 3 (PCI-SLK)*.

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

- 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.

