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PC4701U

User's Manual

Emulator for M16C, 7700, 740 Families

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Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

For inquiries about the contents of this document or product, fill in the text file the installer of the emulator debugger generates in the following directory and email to your local distributor.

\\SUPPORT\Product-name\SUPPORT.TXT

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Preface

The PC4701U system is designed for use with Renesas M16C Family (32/16- and 16-bit), 7700 Family (16-bit) and 740 Family (8-bit) MCUs. The PC4701U system is configured with the emulator PC4701U, an emulation pod, an emulator debugger M3T-PDxx, and a host machine.

This User's Manual describes the emulator PC4701U centering around specifications and an explanation of how to set up your PC4701U system. For details about an emulation pod and emulator debugger M3T-PDxx, refer to the user's manuals (Online Help) supplied with your emulation pod and software package.

To check the components of this product, refer to "PC4701U Packing List". If there is any suggestion, opinion or question about this product, please contact your local distributor.

To use the product properly

Precautions for Safety



- Either in this PC4701U user's manual or on the product, several icons are used to insure proper handling of this product and also to prevent injuries to you or other persons, or damage to your properties.
- Their graphic images and meanings are given in Chapter 1, Precautions for Safety. Be sure to read this chapter before using the product.

When using outside Japan



- When using this product in Europe, the United States, and Canada, be sure to use the emulator PC4701U and the emulation pod which meet the overseas standards.

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Terminology

Some specific words used in this User's Manual are defined as follows:

Emulation pod

An emulation pod is provided for each MCU family/series and it emulates the operation of each MCU characteristic. There are two kinds of emulation method in the PC4701U system's emulation pods. One is the emulator MCU method of equipping the tip of the emulation pod probe with emulator MCU. The other is the evaluation MCU method of equipping the inside of the emulation pod with evaluation MCU.

Emulator debugger

This means a software tool, M3T-PDxx to control the emulator PC4701U from a personal computer through an interface.

The letter "xx" of the emulator debugger M3T-PDxx name varies with the types of MCUs matched.

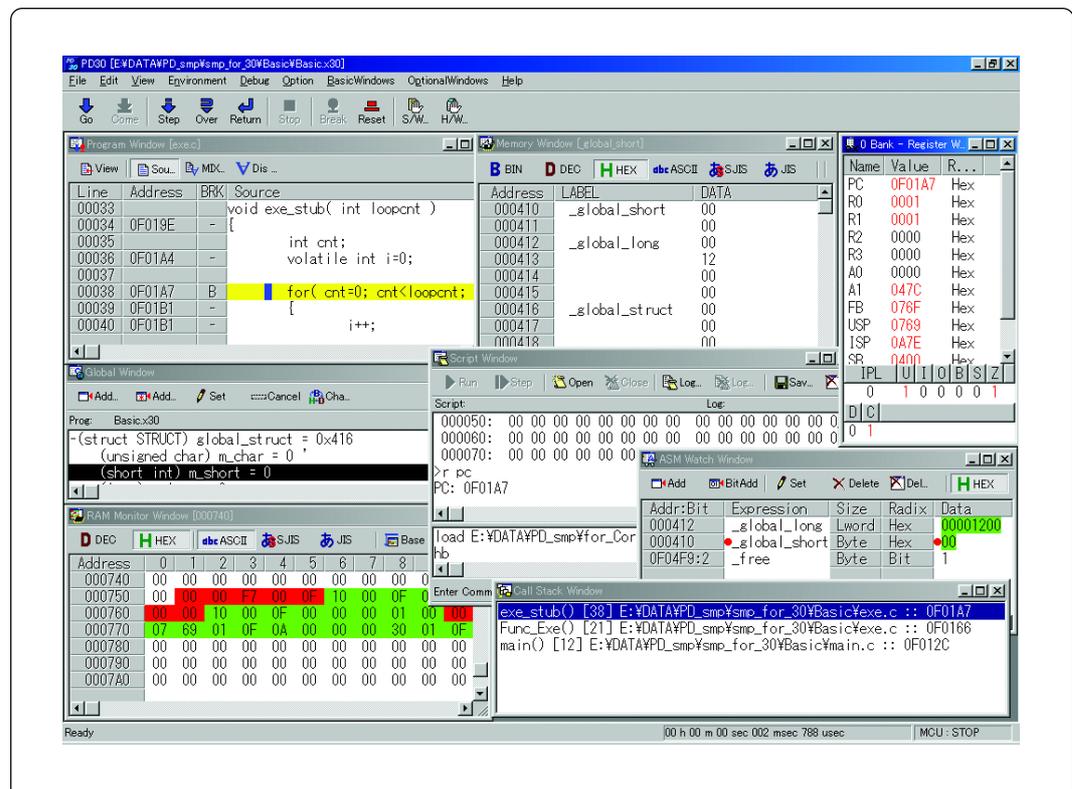
Emulator MCU

An emulator MCU means an MCU for tools which are connected to the probe of the M38000TL2-FPD emulation pod for 740 Family. For emulator MCUs, two types (RSS type of SDIP and RFS type of LCC) are available.

Firmware

This means a program that controls the hardware of the PC4701U system by decoding the contents of communication with the emulator debugger M3T-PDxx. This program is contained in EEPROM on the emulator PC4701U's inside board.

At startup, the emulator debugger M3T-PDxx checks the configuration of the emulator PC4701U and emulation pod, and downloads the appropriate firmware when it is necessary.



Example of emulator debugger M3T-PDxx screen display (M3T-PD30)

Host machine

This means a personal computer where the emulator debugger M3T-PDxx is running to control the emulator PC4701U.

Emulator MCU method M3xxxxTxx-FPD

Evaluation MCU method M3xxxxTxx-RPD-E

The letter "x" of M3xxxxTxx-FPD/RPD-E varies with the types of MCUs or tools.

PC4701U system

This means the emulator system built around the emulator PC4701U. This emulator system is configured with the emulator PC4701U, an emulation pod, an emulator debugger M3T-PDxx, and a host machine.

Target MCU

A target MCU means the MCU you are going to debug.

Target system

A target system means a user's application system using the MCU to be debugged.

MEMO

Either in the PC4701U User's Manual or on the product, several icons are used to insure proper handling of this product and also to prevent injuries to you or other persons, or damage to your properties. This chapter describes precautions which should be taken in order to use the emulator PC4701U safely and properly. Be sure to read this chapter before using this product. For precautions on using the emulator debugger M3T-PDxx and emulation probe M3xxxxTx-FPB/RPD/RPD-E, refer to each user's manual (or Online Help) of them.

1.1 Safety Symbols and Meanings

	WARNING	If the requirements shown in the "WARNING" sentences are ignored, the equipment may cause serious personal injury or death.
	CAUTION	If the requirements shown in the "CAUTION" sentences are ignored, the equipment may malfunction.
	IMPORTANT	It means important information on using this product.

In addition to the three above, the following are also used as appropriate.

 means WARNING or CAUTION.
Example:  **CAUTION AGAINST AN ELECTRIC SHOCK**

 means PROHIBITION
Example:  **DISASSEMBLY PROHIBITED**

 means A FORCIBLE ACTION
Example:  **UNPLUG THE POWER CABLE FROM THE RECEPTACLE.**

The following pages describe the symbols "WARNING", "CAUTION", and "IMPORTANT".

WARNING

Warnings for AC Power Supply:



- If the attached AC power cable does not fit the receptacle, do not alter the AC power cable and do not plug it forcibly. Failure to comply may cause electric shock and/or fire.
- Use an AC power cable which complies with the safety standards of each country.
- Do not touch the plug of AC power cable when your hands are wet. This may cause electric shock.
- This product is connected signal ground with frame ground. If your developing product is transformless (not having isolation transformer of AC power), this may cause electric shock. Also, this may give an unreparable damage to this product and your developing one.

While developing, connect AC power of the product to commercial power through isolation transformer in order to avoid these dangers.

- If other equipment is connected to the same branch circuit care should be taken not to overload the circuit. Refer to nameplate for electrical ratings.



- When installing this equipment, insure that a reliable ground connection is maintained.



- If you smell a strange odor, hear an unusual sound, or see smoke coming from this product, then disconnect power immediately by unplugging the AC power cable from the outlet.

Do not use this as it is because of the danger of electric shock and/or fire. Please, contact your local distributor.

Warnings to Be Taken for This Product:



- Do not disassemble or modify this product. Personal injury due to electric shock may occur if this product is disassembled and modified.
- Make sure nothing falls into the cooling fan on the top panel, especially liquids, metal objects, or anything combustible.

WARNING

Warnings for Installation:

- The cooling system of this equipment causes air to flow from lower part of front panel to upper part of rear panel. Cables or other objects must be isolated no less than 10 cm (4 inches) from ventilating openings of this equipment to ensure reasonable ventilating condition.



- Do not set this product in water or areas of high humidity. Make sure that the product does not get wet. Spilling water or some other liquid into the product may cause unreparable damage.

Warning for Use Environment:

- This equipment is to be used in an environment with a maximum ambient temperature of 35°C. Care should be taken that this temperature is not exceeded.

WARNING

Cautions to Be Taken for This Product:



- Use caution when handling the main unit. Be careful not to apply a mechanical shock.
- Do not touch the connector pins of the emulation pod and the interface connector pins directly with your hand.
- Do not pull the main unit by the probe of the emulation pod or the interface cable which are connected to this product.
- Do not use inch-size screws for this equipment. The screws used in this equipment are all ISO type (meter-size) screws. When exchanging screws, use same type screws as equipped before.

Caution for AC Power Supply:



- When installing or connecting this product with other equipment, shut down AC power or disconnect the AC power cord from the equipment to prevent personal injury or damage to the equipment.

Caution for Installation:



- Do not place the main unit on its side.

Caution for Communication Interface:



- Always make sure that the emulator PC4701U's interface selection switch setting and emulator PC4701U the emulator debugger M3T-PDxx's interface specification are matched.

IMPORTANT

Note for Installation:

- The emulator PC4701U does not operate stand-alone. It must always be connected with the emulation pod before you can execute the self-check or download firmware after setting up. If using an emulator MCU method emulation pod, both the emulator MCU and target system must be connected as well.

Notes for Difference between the Actual MCU and Emulator:

- Emulator operation differs from a mask MCU, as listed below:
 - (1) Reset condition
 - (2) Initial values of internal resource data at power-on
 - (3) Internal RAM and ROM capacities
 - (4) A-D converter characteristics when using emulation pods in the evaluation MCU method.
- Therefore, always be sure to evaluate your system with an evaluation MCU (EPROM or OTP version). Also, be sure to perform board-mounted evaluation with CS (Commercial Sample) version MCU to make final confirmation of device operation before starting mask production.

Notes for Unusual Operation:

- Do not turn off the power when executing the self-check or downloading firmware. If the emulator PC4701U is powered off in the middle of a process, it will become unable to start up normally. In cases when the power is inadvertently shut off, re-execute the self-check or downloading.
- If the self-check does not terminate normally (except for status errors), the emulator PC4701U can be faulty. In such a case, contact your local distributor.
- If the emulator PC4701U malfunctions due to external interference or some other causes, follow the steps given below.
 - (1) Press the system reset switch located on the front panel of the emulator PC4701U.
 - (2) If the emulator PC4701U doesn't return to the normal operation despite the step (1) above, turn off the power source of the emulator PC4701U, and turn it on again.

Notes for Downloading Firmware:

- Download firmware as described in "4.3 Downloading Firmware" (P.37) when:
 - (1) you have set up the emulator PC4701U for the first time.
 - (2) you have upgraded the firmware.
 - (3) you have upgraded your emulator debugger.
 - (4) you have changed your emulator debugger.
 - (5) you have changed your emulation probe.

IMPORTANT

Note for LAN Interface:

- With the LAN interface of the PC4701U, not all hardware (such as host machine, network devices) combinations will work and are guaranteed.

Notes for USB Interface:

- USB interface can not be used with a host machine running Windows 95 or Windows NT 4.0.
- With the USB interface of the PC4701U, not all hardware (such as host machine, USB devices, USB hub) combinations will work and are guaranteed.

Note for LPT Parallel Interface:

- With the LPT parallel interface of the PC4701U, not all host machine will work and are guaranteed. According to the specifications and settings of the host machine, some operation modes of LPT parallel port cannot be used.

2.1 Outline of PC4701U System Configuration

The PC4701U system is configured with the following products:

- (1) Host machine Personal computer
- (2) Emulator PC4701U
- (3) Emulation pod M3xxxxTxx-FPD/RPD/RPD-E
- (4) Emulator debugger M3T-PDxx

Figure 2.1 shows the PC4701U system configuration.

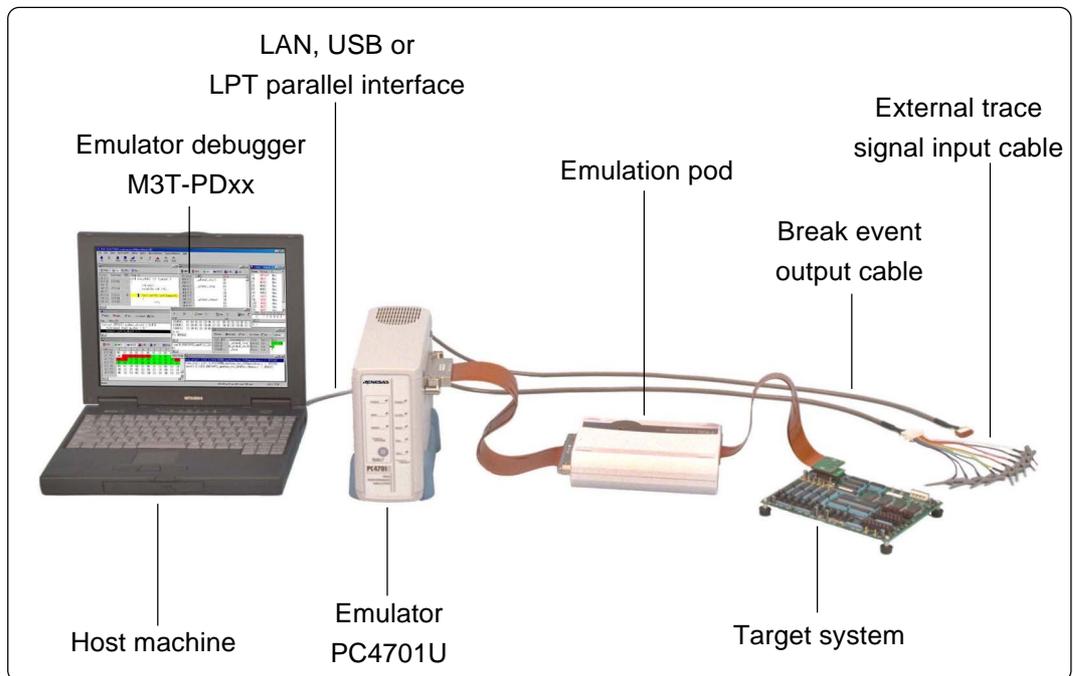


Figure 2.1 Emulator PC4701U system configuration

2.2 PC4701U System Configuration

2.2.1 Host Machine

The PC4701U system uses a personal computer (IBM PC/AT or compatible) as a host machine to control the emulator PC4701U by the emulator debugger M3T-PDxx.

2.2.2 Emulator PC4701U

The PC4701U is an emulator for Renesas MCUs. The emulator PC4701U has LED indicators on its front panel to indicate the status of the target MCU and the conditions of the emulator. The emulator PC4701U is controlled by the emulator debugger M3T-PDxx running on the host machine. It is connected to the host machine via a LAN interface, USB interface or LPT parallel interface.

2.2.3 Emulation Pod

The emulation pod is available for each family, series or type of MCUs used. This emulation pod is connected directly to the emulator PC4701U by a flexible cable.

The letter "x" of the M3xxxxTxx-FPD/RPD-E varies with the types of MCUs or tools.

2.2.4 Emulator Debugger M3T-PDxx

Emulator debugger M3T-PDxx means a software tool, M3T-PDxx for the emulator that runs on a Windows-based personal computer. The letter "x" in the product names varies with MCUs.

Note on Firmware:

You will need to download firmware when:

- (1) you have set up the emulator PC4701U for the first time.
- (2) you have upgraded the firmware.
- (3) you have upgraded your emulator debugger.
- (4) you have changed your emulator debugger.
- (5) you have changed your emulation probe.

For details on downloading firmware, refer to "4.3 Downloading Firmware" (P.37).

2.3 Specifications

Table 2.1 lists the specifications of the emulator PC4701U. Supported debugging functions vary according to the emulator debuggers.

Table 2.1 Specifications

Applicable MCUs	M16C Family (32/16- and 16-bit) 7700 Family (16-bit) 740 Family (8-bit)	
Software break	64 points	
Hardware break	6 points (Bus detection / Interrupt / External trace signal)	
Hardware break condition	AND / OR / State transition	
Exception event detection	Access protect	
Real-time trace	<ul style="list-style-type: none"> Trace range: 32K cycles. Trace data: Bus, 8-bit external trace signal, 40-bit time stamp. Five trace modes: Break/Before/About/After/Full Can be recorded ON/OFF by events. Can be used for performance analysis and overhead measurement. 	
Real-time RAM monitor	1024 bytes (Data / Access or not / Final access result)	
Time measurement	<ul style="list-style-type: none"> Execution time between program start to stop. Maximum/minimum/average execution time and pass count of specified four zones. Count clock : Equal to MCU Clock or 16 MHz 	
C0 coverage	256 KB	
Event output	<ul style="list-style-type: none"> Break signals: one point Event signals: 6 points 	
External trace signal input	TTL level: 8 points	
Host computer Interface	LAN	10BASE-T
	USB	USB 1.1, full-speed
	LPT parallel	ECP, EPP, Byte/compatibility and Nibble/compatibility modes
Connection to target system	Via an emulation pod (option), connected to the target. (For details, refer to data sheets of emulation pods.)	
AC supply voltage for emulator unit	Built-in. Converted automatically. 100 V to 120 V AC (50/60 Hz), 200 V to 240 V AC (50/60 Hz).	
Power consumption	66 W maximum	
External dimensions *	Width	112 mm
	Depth	242 mm
	Height	197 mm
Weight	2.7 kg	
Operating environmental conditions	Temperature	5° to 35°C
	Humidity	20% to 80% (non-condensing)
	Dust and dirt	General office environment
Storage environmental conditions	Temperature	-10° to 60°C
	Humidity	0% to 90% (non-condensing)
	Dust and dirt	General office environment
Overseas standards	<ul style="list-style-type: none"> US Safety Standards (UL1950), also applied in Canada US EMI Standards (FCC part 15 Class A) CE marking (EN60950, EN55022, EN55024, EN61000-3-2) 	

* For details about external dimensions, refer to "7.2 External Dimensions" (P.46).

MEMO

3.1 Names and Functions of Parts on the Front Panel

Figure 3.1 shows the name and function of each switch and indicator on the front panel of the emulator PC4701U.

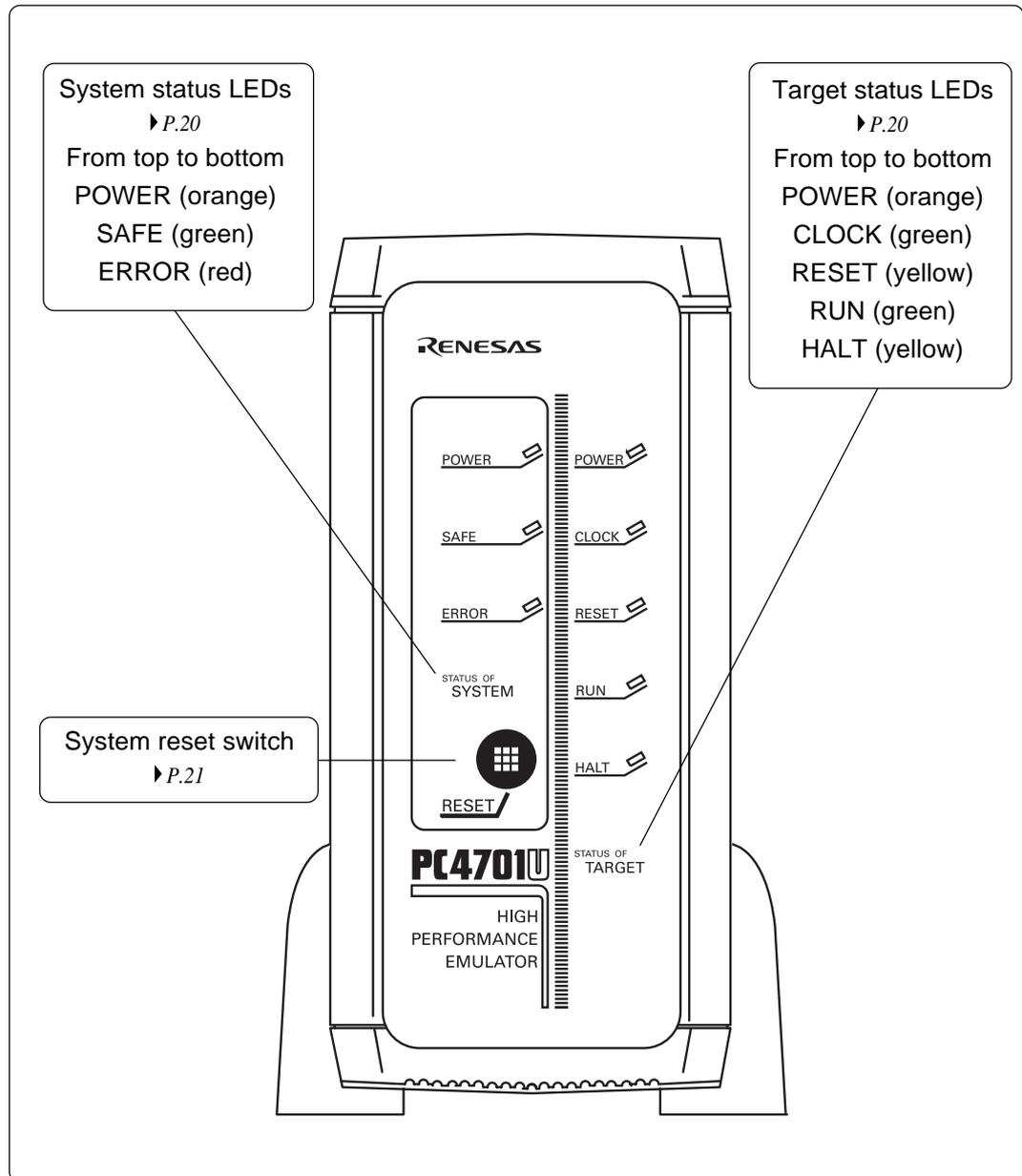


Figure 3.1 Front panel of the emulator PC4701U

3.1.1 System Status LEDs

The system status LEDs indicate the emulator PC4701U's power supply, firmware operating status, etc. Table 3.1 lists the definition of each system status LED.

Table 3.1 Definition of system status LEDs

Name	ON/OFF	Meaning
POWER	Turned On	Emulator PC4701U power supply is turned on.
	Turned OFF	Emulator PC4701U power supply is turned off.
SAFE	Turned On	PC4701U system is operating normally.
	Flashing	1. Self-check is under way. 2. Firmware download is written into EEPROM. 3. If SAFE and ERROR LED are lit at a time, it means that the self-check can not be executed because of target system operating error.
	Turned OFF	PC4701U system is faulty (system status error).
ERROR	Turned On	PC4701U system is faulty (system status error).
	Flashing	1. Firmware is being downloaded. 2. If SAFE and ERROR LED are lit at a time, it means that the self-check can not be executed because of target system operating error.
	Turned OFF	PC4701U system is operating normally.

3.1.2 Target Status LEDs

The target status LEDs typically indicate the target MCU's power supply and operating status. Table 3.2 lists the definition of each target status LED.

Table 3.2 Definition of target status LEDs

Name	ON/OFF	Meaning
POWER	Turned On	Power is supplied to target MCU.
	Turned OFF	Power is not supplied to target MCU.
CLOCK	Turned On	Target MCU clock is oscillating.
	Turned OFF	Target MCU clock is not oscillating.
RESET	Turned On	Target MCU is reset.
	Turned OFF	Target MCU is not reset.
RUN	Turned On	Target program is being executed.
	Turned OFF	Target program has been halted.
HALT	Turned On	Target MCU has been halted by an instruction or hardware condition.
	Turned OFF	Target MCU is operating.

When the emulator PC4701U is powered on, all LEDs are lit for about two seconds. Figure 3.2 shows a transition of system status LEDs and target status LEDs on/off conditions when the emulator PC4701U has started up normally after power-on, with the target MCU and target system functioning normally.

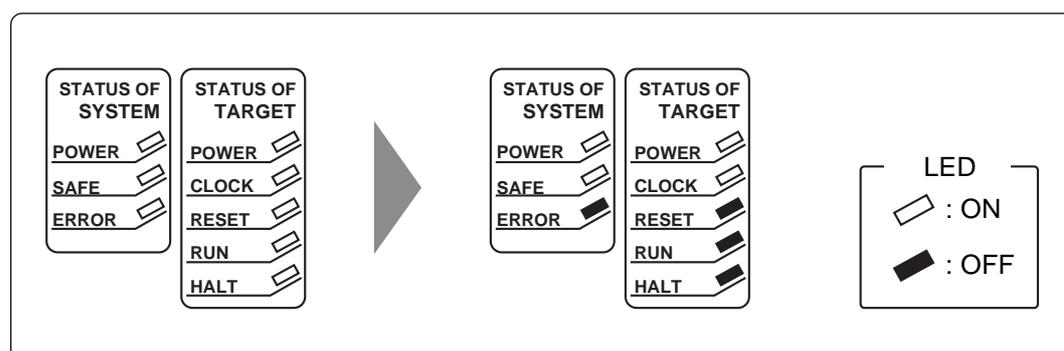


Figure 3.2 LED display when system has started up normally

3.1.3 System Reset Switch

▶ 4.4 Self-check (P.38)

The system reset switch has dual functions. Not only does it initialize the target MCU, but it also establishes maintenance mode to execute the self-check, etc. when pressed within two seconds after power-on.

If you do not press the switch within two seconds after power-on, the emulator PC4701U and the target MCU are initialized directly, and ready to accept command input for the emulator debugger M3T-PDxx. Table 3.3 lists the functions of the system reset switch.

Table 3.3 Functions of system reset switch

Emulator PC4701U Status	Function
When switch is pressed within two seconds after power-on	Switched to maintenance mode. Then, as you press the switch a second time, the self-check is executed. After execution of the self-check, the system waits for command input from the emulator debugger M3T-PDxx. * When the emulator PC4701U is in maintenance mode and the emulator debugger M3T-PDxx is started up, a dialog box prompting to download firmware is displayed. Download the latest firmware file as needed.
When switch is pressed during target program execution	Target MCU is initialized after forcibly halting execution of the target program.
When the emulator debugger M3T-PDxx is waiting for command input	Target MCU is initialized.

▶ 4.3 Downloading
Firmware (P.37)

3.2 Names and Functions of Parts on Rear Panel

Figure 3.3 shows the name and function of each switch and connector mounted on the rear panel of the emulator PC4701U.

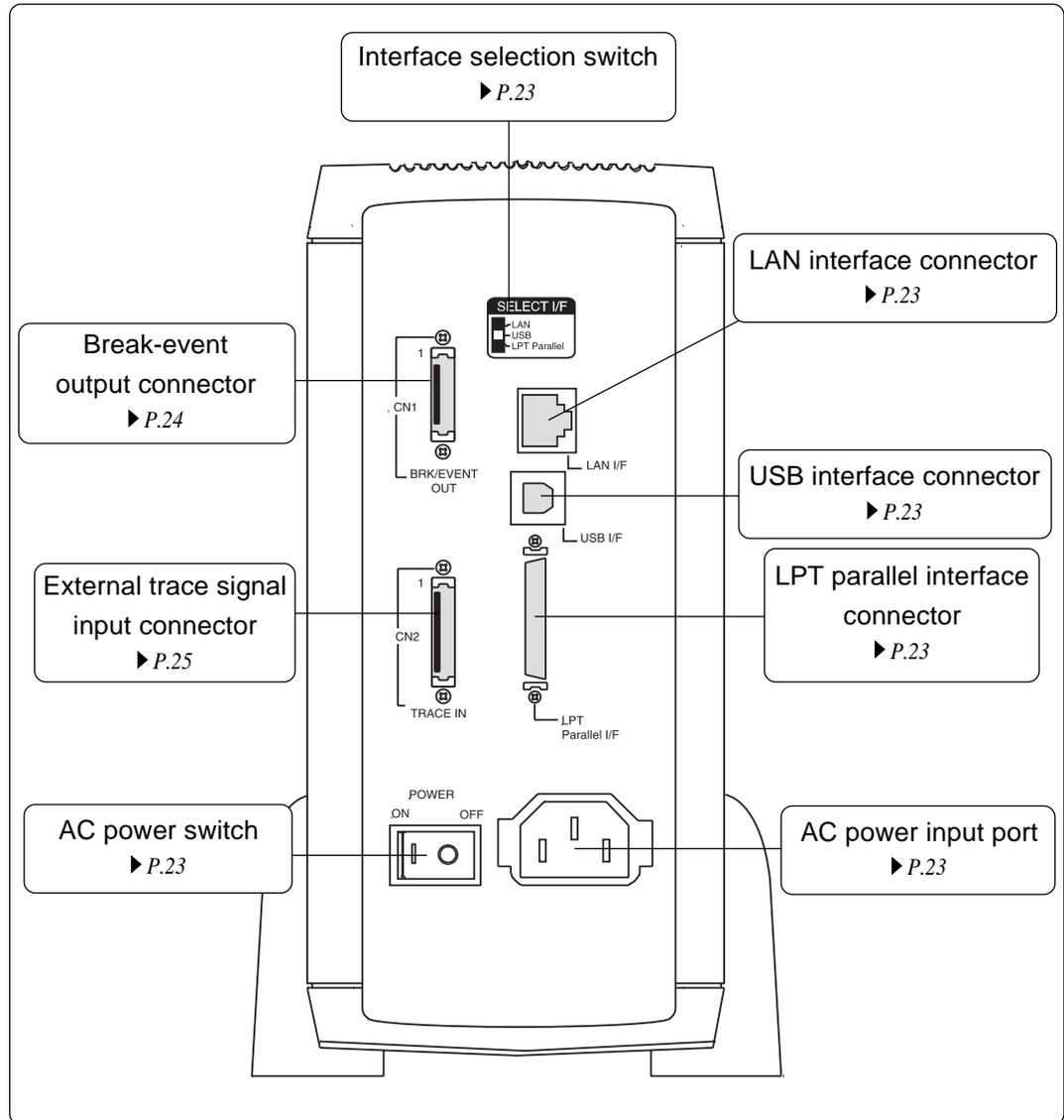


Figure 3.3 Rear panel of the emulator PC4701U

3.2.1 Interface Selection Switch

The emulator PC4701U allows you to specify one of three types of interfaces for communication with the host machine as listed below.

- (1) LAN interface
- (2) USB interface
- (3) LPT parallel interface

The interface selection switch is used to specify the type of communication interface available. The setting of the interface selection switch is checked to see the available type after the emulator PC4701U is powered on or you press the system reset switch.

Figure 3.4 shows the relationship between the interface selection switch settings and the interfaces recognized by the emulator PC4701U.

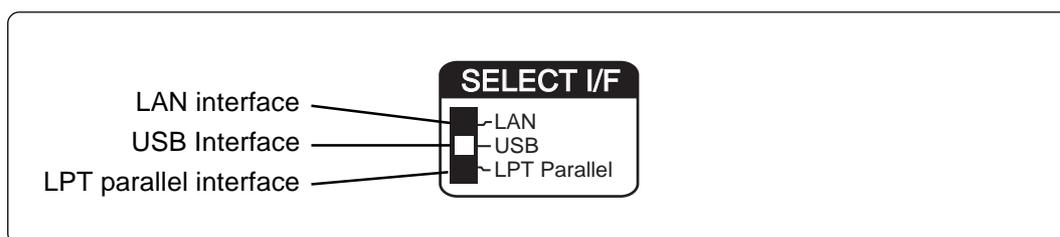


Figure 3.4 Relationship between interface selection switch and interfaces

3.2.2 LAN Interface Connector

- ▶ 4.1.1 Connecting by LAN Interface (P.28)

The LAN interface connector used for the emulator PC4701U is a 10BASE-T cable. As this product package does not contain a 10BASE-T cable, get it separately.

3.2.3 USB Interface Connector

- ▶ 4.1.2 Connecting by USB Interface (P.32)

The USB interface connector used for the emulator PC4701U is USB cable compliant with USB 1.1.

3.2.4 LPT Parallel Interface Connector

- ▶ 4.1.3 Connecting by LPT Parallel Interface (P.34)

The LPT parallel interface connector is an IEEE 1284-C (36-pin half-pitch) connector.

3.2.5 AC Power Switch

The power switch of the emulator PC4701U is used to turn the power on and off. Push the switch to the left position (facing the rear panel) to turn on; push the switch to the right position to turn off.

3.2.6 AC Power Input Port

The AC power input port of the emulator PC4701U is a 3-wire connector with a grounding pin receptacle.

3.2.7 Break-Event Output Connector

The break-event output cable (Figure 3.5) is an 8-pin cable and is included with the emulator PC4701U package. It carries the break and event signals output from the break-event output connector. Signals are output at TTL (74F244) level.

The break signal is output as a low level signal when break conditions are established. The event signal is output at high level for the duration that the event (No. 1 to 6) designated as the break point factor is maintained. Table 3.4 gives pin assignments of the break-event output connector.

Table 3.4 Pin assignments of break-event output connector

Pin No.	I/O	Signal Name	Active	Pin No.	I/O	Signal Name	Active
1	Output	EV1: EVENTOUT1	HIGH	5	Output	EV5: EVENTOUT5	HIGH
2	Output	EV2: EVENTOUT2	HIGH	6	Output	EV6: EVENTOUT6	HIGH
3	Output	EV3: EVENTOUT3	HIGH	7	Output	BRK*: BRKOUT	HIGH
4	Output	EV4: EVENTOUT4	HIGH	8	-	GND: GND	HIGH

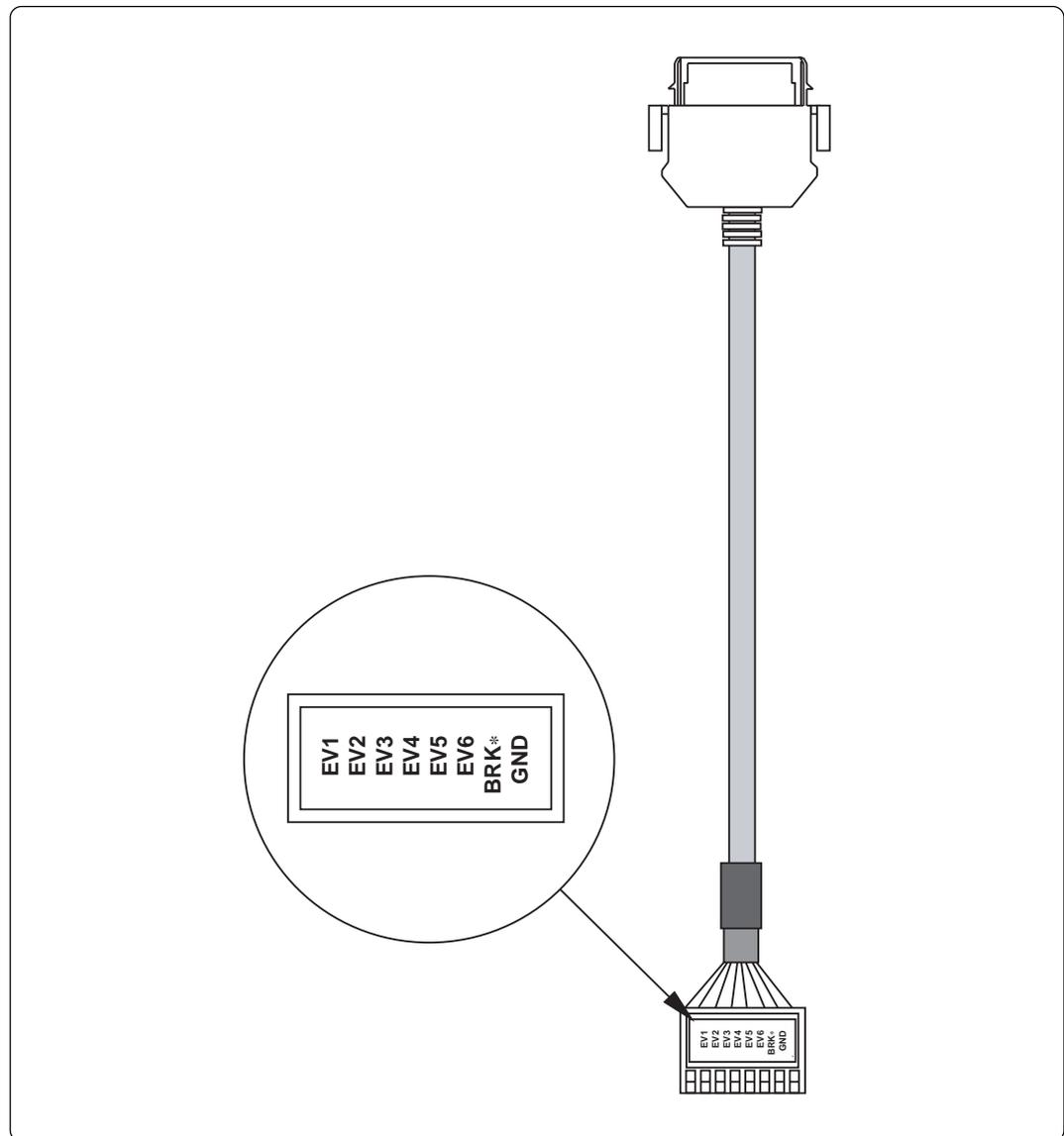


Figure 3.5 Break-event output cable

3.2.8 External Trace Signal Input Connector

The external trace signal input cable is a 12-pin cable and is included with the emulator PC4701U package. It is connected to the external trace signal input connector and carries trace signals input from an external point. The external trace signal can also be used as the external trigger break factor. Input the external trace signal as a TTL level signal. Table 3.5 gives pin assignments of the external trace signal input connector.

Table 3.5 Pin assignments of external trace signal input connector

Pin No.	I/O	Signal Name	Cable Color	Pin No.	I/O	Signal Name	Cable Color
1	-	Unused	-	7	Input	EV5: EXTIN5	Green
2	Input	EV0: EXTIN0	White	8	Input	EV6: EXTIN6	Blue
3	Input	EV1: EXTIN1	Brown	9	Input	EV7: EXTIN7	Purple
4	Input	EV2: EXTIN2	Red	10	-	GND	Black
5	Input	EV3: EXTIN3	Orange	11	-	Unused	-
6	Input	EV4: EXTIN4	Yellow	12	-	Unused	-

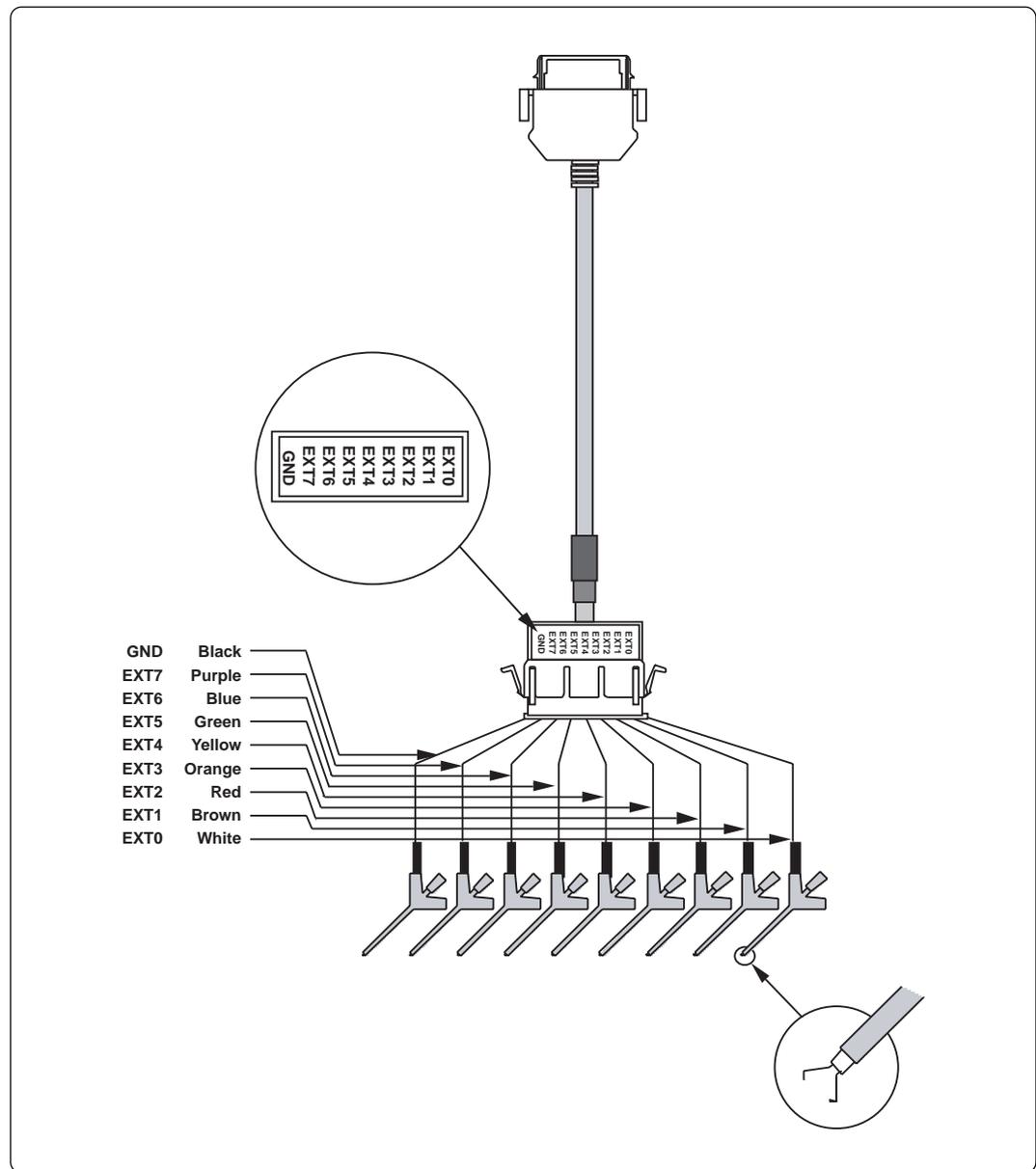


Figure 3.6 External trace signal input cable

3.3 Names and Functions of Parts on the Side Panel

Figure 3.7 shows the name and function of each part on the side panel of the emulator PC4701U.

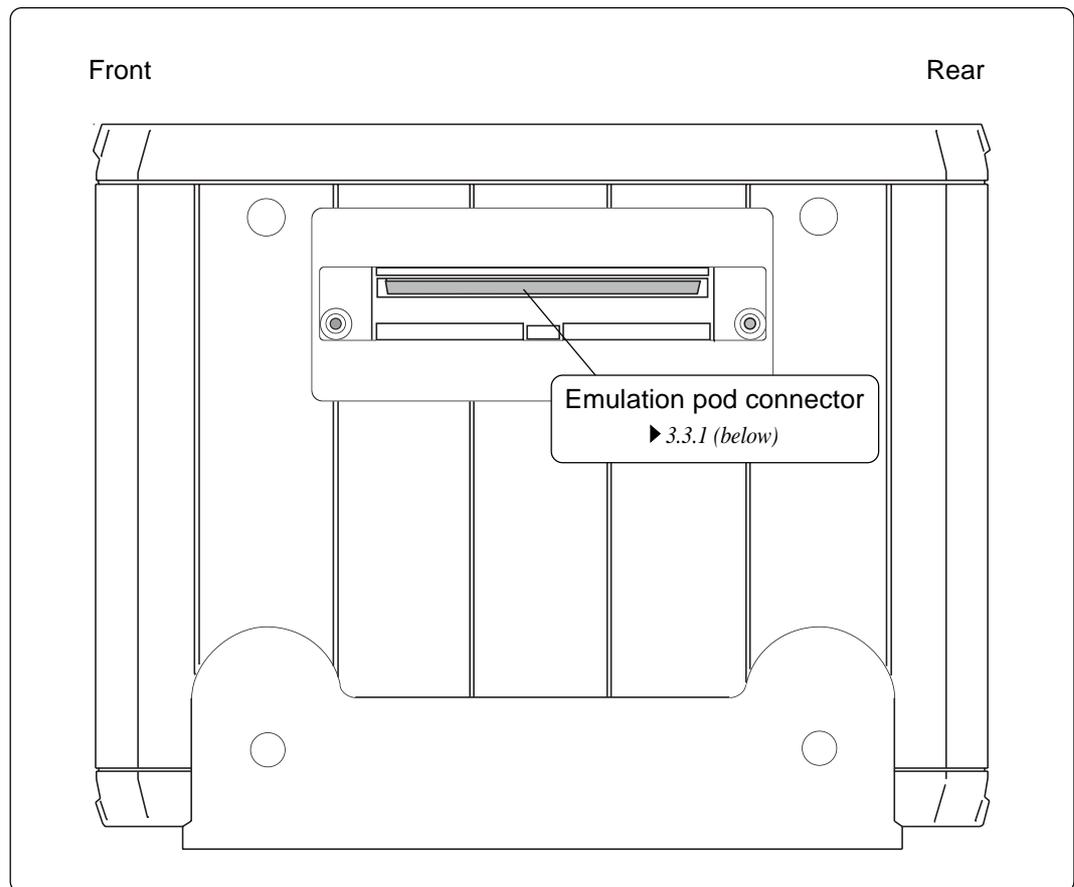


Figure 3.7 Side panel of the emulator PC4701U

3.3.1 Emulation Pod Connector

▶ 4.2 Connecting
Emulation Pod (P.36)

This connector is used to connect the emulator PC4701U and emulation pod. After plugging in the connector on the emulation pod, fix it in place with the two screws.

For specifications and handling precautions about the emulation pod, refer to the user's manual supplied with your emulation pod.

This chapter describes how to connect the emulator PC4701U with your host machine and emulation pod. For details on how to install the emulator debugger M3T-PDxx, refer to the emulator debugger M3T-PDxx User's Manual (Online Help).

This chapter also explains the emulator PC4701U's self-check and the procedure for setting up its interface. Before you run the self-check, you must have the emulation pod. If you use the emulation pod with the emulator MCU method, you must have the emulator MCU and target system connected to your emulator PC4701U.

IMPORTANT Before making connections, be sure to turn off the power to the emulator PC4701U and the host machine.

4.1 Connecting the Host Machine

► 7.1 LPT Parallel Interface Cable (P.45)

When connecting the emulator PC4701U to a host machine, you can choose your desired interface from LAN interface, USB interface and LPT parallel interface. Use the interface selection switch on the emulator PC4701U's rear panel to specify your desired interface.

Figure 4.1 shows the outline to connect each interface cable.

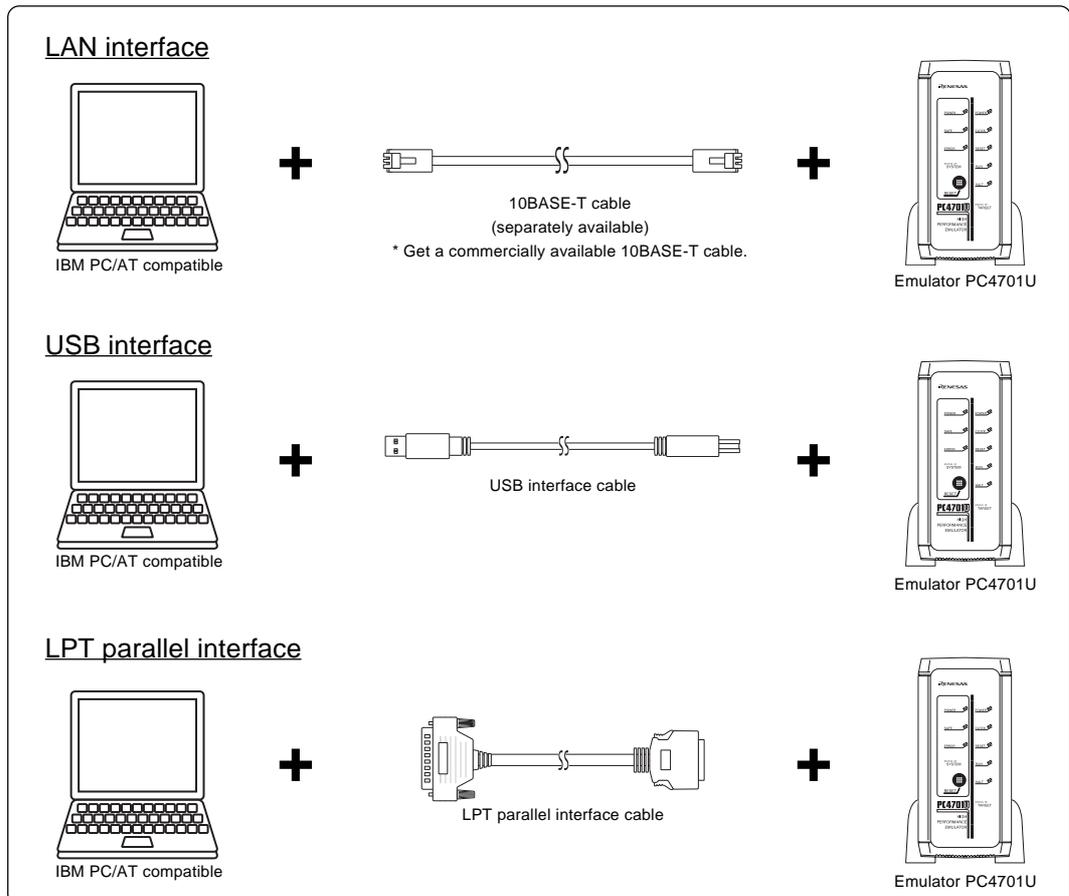


Figure 4.1 Outline for interface cable connection

4.1.1 Connecting by LAN Interface

To connect the emulator PC4701U by use of a LAN interface, you need to register some network information such as an IP address, a subnet mask, a port number, etc. in the emulator PC4701U in addition to the ordinary setup information. There are following two ways to setup and to register the network information.

- Using the emulator debugger M3T-PDxx
- Using the utility SETIP.EXE

If you incorporate the host machine and the PC4701U in separate networks, read "Incorporating the emulator PC4701U in a different network" (P.30) too.

Using the emulator debugger M3T-PDxx

This method can be executed with all the OS's on which the M3T-PDxx runs.

First, use a USB or an LPT parallel interface other than LAN interface to start up the emulator PC4701U and register the network information from the emulator debugger M3T-PDxx. When the registration of the network information in the emulator PC4701U is completed, you can connect the emulator debugger M3T-PDxx to the emulator PC4701U by use of the LAN interface.

The setup procedure is as follows.

1. Connect over a USB interface as explained in "4.1.2 Connecting by USB Interface" (P.32) or LPT parallel interface as explained in "4.1.3 Connecting by LPT Parallel Interface" (P.34), according to the equipment status of the host machine OS and communication interface.

If the environment allows you to use both USB and LPT parallel, it is recommended to select the LPT parallel interface.
2. Register network information in the PC4701U as described in "Setting of the LAN Interface" of emulator debugger M3T-PDxx User's Manual (Online Help).
3. Quit the emulator debugger M3T-PDxx.
4. Turn power to the host machine, PC4701U and target system off.
5. Disconnect the interface cable, used earlier, the PC4701U and host machine.
6. Switch the interface selection switch on the rear panel to the LAN side.
7. Connect a 10BASE-T cable to the LAN interface connector of the PC4701U.
8. Turn power to the host machine, target system and PC4701U back on in the given order.
9. Start up the emulator debugger M3T-PDxx. (Select LAN on the MCU tab of the Init dialog box.)

Important If the LAN interface is used as the PC4701U communication interface, it is necessary to acquire an IP address of the PC4701U. For details, contact your network administrator.

Important To register network information, shut power to the PC4701U off and restart. The registered information is activated by restarting the PC4701U.

Important The PC4701U cannot communicate with more than one host machine at a time. It communicates with the first host machine it connects to.

Important The initial values of network information for the PC4701U are as follows.

IP address: 39.40.41.43 Subnet mask: 255.255.255.255
Port number: 4700 Gateway: 255.255.255.255 (not in use)

Using the SETIP.EXE

If you use the emulator debugger M3T-PDxx on Windows 95 or Windows NT 4.0, the SETIP.EXE cannot be used. In this case, register the network information by using the emulator debugger M3T-PDxx.

Use the utility software SETIP.EXE, which is accompanied by the emulator debugger M3T-PDxx, to register the network information of the emulator PC4701U by use of the LAN interface. When the registration of the network information in the emulator PC4701U is completed, you can connect the emulator debugger M3T-PDxx to the emulator PC4701U by use of the LAN interface.

The setup procedure is as follows.

1. Turn power to the host machine, PC4701U and target system off.
2. Switch the interface selection switch on the rear panel to the LAN side.
3. Connect a 10BASE-T cable to the LAN interface connector of the PC4701U.
4. Turn power to the host machine, target system and PC4701U back on in the given order.
5. Start up SETIP.EXE and register network information in the PC4701U as specified in "Setting of the LAN Interface using the SETIP.EXE" of emulator debugger M3T-PDxx User's Manual (Online Help).
6. Turn power to the PC4701U and target system off.
7. Turn power to the target system and PC4701U back on in the given order.
8. Start up the emulator debugger M3T-PDxx. (Select LAN on the MCU tab of the Init dialog box, the IP address and port number) However, it is not necessary to set the IP address of the gateway.

Important If you've already used IP address 39.40.41.43 in a local area network, you cannot use this procedure. Carry out "Using the emulator debugger M3T-PDxx" (P.28).

Important If the LAN interface is used as the PC4701U communication interface, it is necessary to acquire an IP address of the PC4701U. For details, contact your network administrator.

Important To register network information, shut power to the PC4701U off and restart. The registered information is activated by restarting the PC4701U.

Important The PC4701U cannot communicate with more than one host machine at a time. It communicates with the first host machine it connects to.

Important The initial values of network information for the PC4701U are as follows.

IP address: 39.40.41.43 Subnet mask: 255.255.255.255
Port number: 4700 Gateway: 255.255.255.255 (not in use)

Important SETIP.EXE detects the PC4701U at IP address 39.40.41.43 and port number 4700. If the IP address is changed, you cannot register network information using the SETIP.EXE.

Important SETIP.EXE does not detect a PC4701U on another network.

Important When SETIP.EXE detects the PC4701U, it temporarily rewrites the network table of the host machine.

Incorporating the emulator PC4701U in a different network

In incorporating the emulator PC4701U in a network that does not include the host machine, you need to register the IP address of the gateway from the network in which the emulator PC4701U is incorporated to the network in which the host machine is incorporated. You register the IP address of the gateway by means of either step 1 described in "Using the emulator debugger M3T-PDxx" (P.28) or step 5 described in "Using the SETIP.EXE" (P.29).

After you finished registering the network information by use of the host machine in which the emulator debugger M3T-PDxx is installed, incorporate the emulator PC4701U in the network intended. In case of the following network construction, register 192.168.2.254 as the IP address of the gateway.

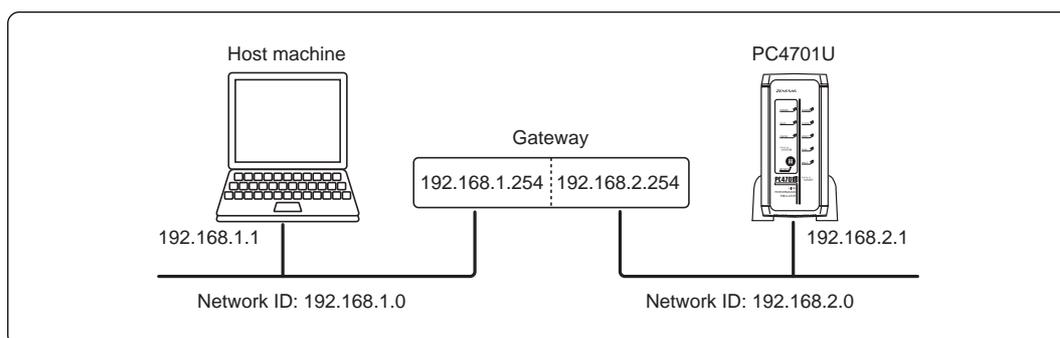


Figure 4.2 Network configuration

Note The easiest way to change the registered network information is to use the emulator debugger M3T-PDxx's Init dialog box. The emulator debugger M3T-PDxx can be used similarly to change network information prior to moving the PC4701U to another network.

Note The PC4701U can download firmware over a LAN interface.

Note Connecting multiple PC4701U's to the same network without registering network information can cause registration errors. Therefore, it is recommended to connect them sequentially one at a time.

Note The emulator PC4701U communicates with the host machine using the TCP.

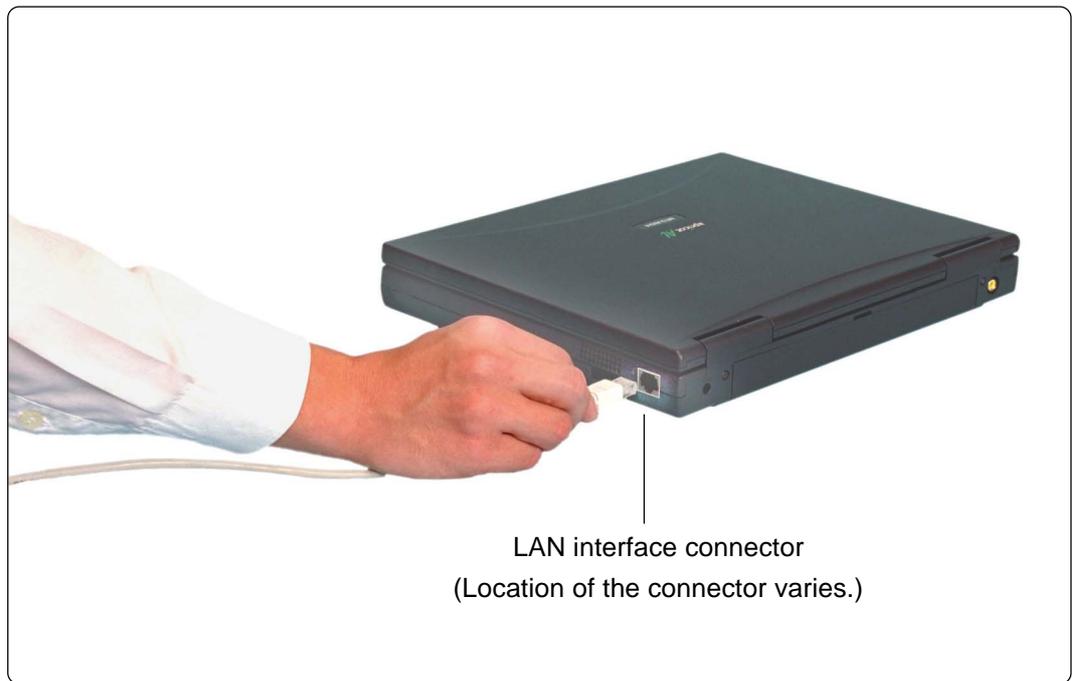


Figure 4.3 Connecting LAN interface cable (host machine side)



Figure 4.4 Connecting LAN interface cable (emulator PC4701U side)

IMPORTANT

4.1.2 Connecting by USB Interface

We do not ensure the operation in every combination with host machine, USB device and USB hub.

The procedure to set up your system using the USB interface is shown below.

Turn off the power to the emulator PC4701U.

Set the interface selection switch on the rear panel to "USB".

▶ 3.2.1 Interface Selection Switch (P.23)

Connect the USB interface cable to the USB port of the host machine.

▶ Figure 4.5 Connecting USB interface cable (host machine side) (P.33)

Connect the cable to the USB interface connector on the emulator PC4701U.

▶ Figure 4.6 Connecting USB interface cable (emulator PC4701U side) (P.33)

Connect the emulation pod to the connector on the emulator PC4701U.

▶ 4.2 Connecting the Emulation Pod (P.36)

Connect the emulation pod and the target system.

▶ See the user's manual of the emulation pod

Turn on the power to the target system and emulator PC4701U in that order.

Perform the procedure below after making connections for the first time or when necessary.

Press the system reset switch within 2 seconds after powering up the emulator PC4701U to establish maintenance mode.

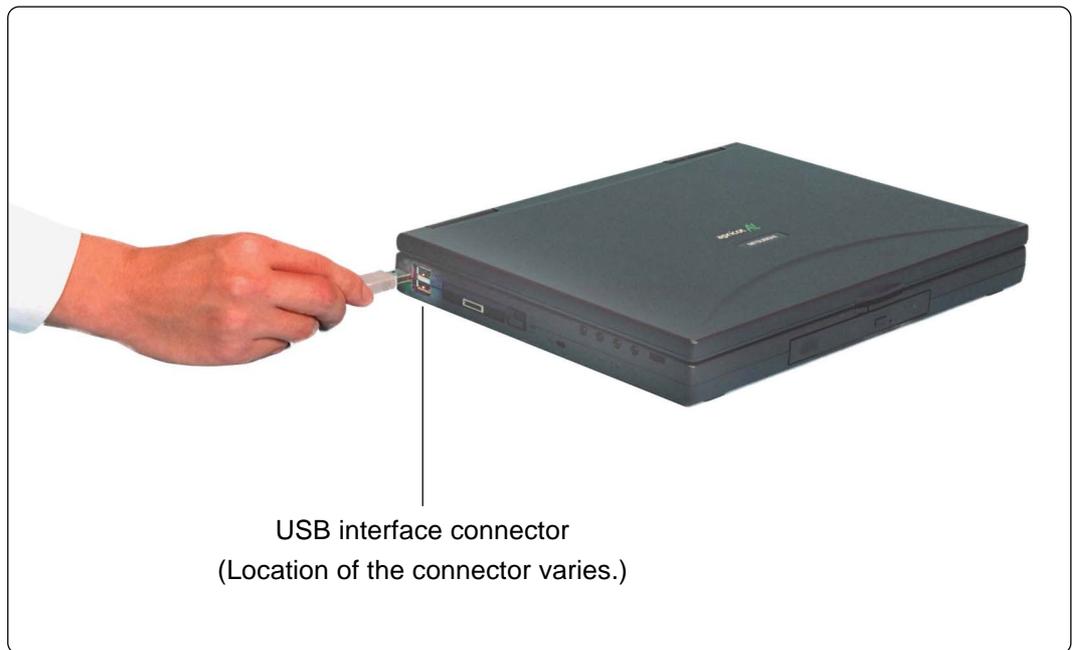
▶ 4.3 Downloading Firmware (P.37)

Start up the emulator debugger M3T-PDxx to download firmware to the emulator PC4701U.

▶ See "Setup 1. Starting the Debugger" of the emulator debugger M3T-PDxx User's Manual (Online Help)

Emulator PC4701U executes the self-check.

▶ 4.4 Self-check (P.38)



USB interface connector
(Location of the connector varies.)

Figure 4.5 Connecting USB interface cable (host machine side)



USB interface connector

Figure 4.6 Connecting USB interface cable (emulator PC4701U side)

IMPORTANT

4.1.3 Connecting by LPT Parallel Interface

The procedure to set up your system using the LPT parallel interface is shown below.

Turn off the power to the host machine and emulator PC4701U.

Set the interface selection switch on the rear panel to "LPT Parallel".

▶ *3.2.1 Interface Selection Switch (P.23)*

Connect the LPT parallel interface cable to the printer port of the host machine.

▶ *Figure 4.7 Connecting LPT parallel interface cable (host machine side) (P.35)*

Fasten the cable to the host machine using the screws of the cable.

Connect the cable to the LPT parallel interface connector on the emulator PC4701U.

▶ *Figure 4.8 Connecting LPT parallel interface cable (emulator PC4701U side) (P.35)*

Connect the emulation pod to the connector on the emulator PC4701U.

▶ *4.2 Connecting the Emulation Pod (P.36)*

Connect the emulation pod and the target system.

▶ *See the user's manual of the emulation pod*

Turn on the power to the host machine, target system, and emulator PC4701U in that order.

Perform the procedure below after making connections for the first time or when necessary.

Press the system reset switch within 2 seconds after powering up the emulator PC4701U to establish maintenance mode.

▶ *4.3 Downloading Firmware (P.37)*

Start up the emulator debugger M3T-PDxx to download firmware to the emulator PC4701U.

▶ *See "Setup 1. Starting the Debugger" of the emulator debugger M3T-PDxx User's Manual (Online Help)*

Emulator PC4701U executes the self-check.

▶ *4.4 Self-check (P.38)*

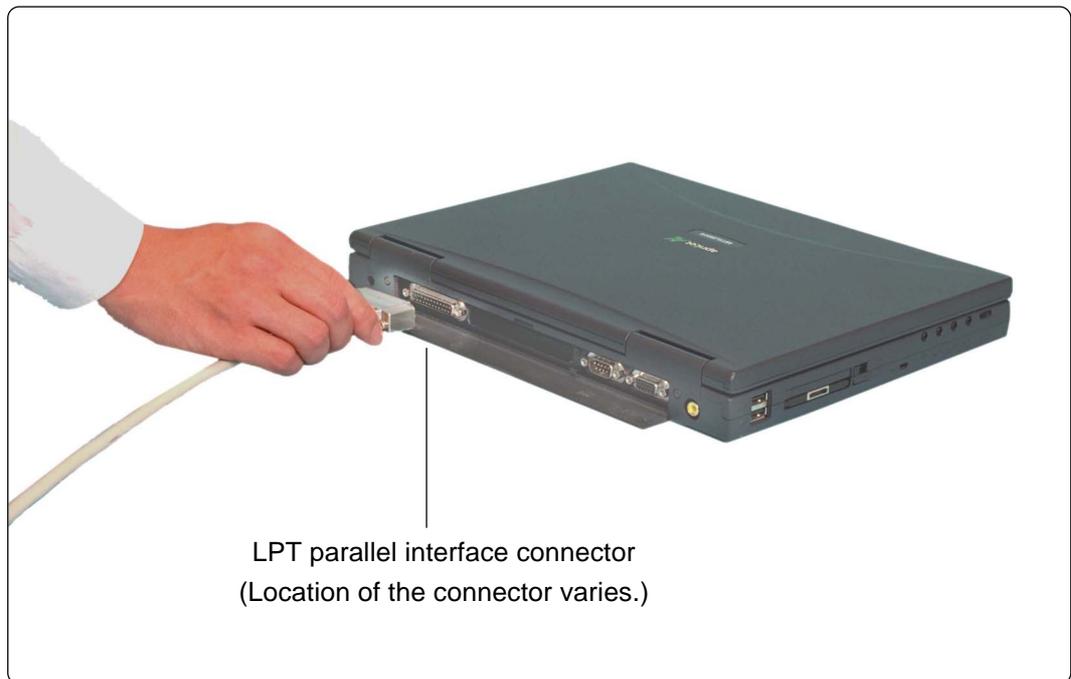


Figure 4.7 Connecting LPT parallel interface cable (host machine side)

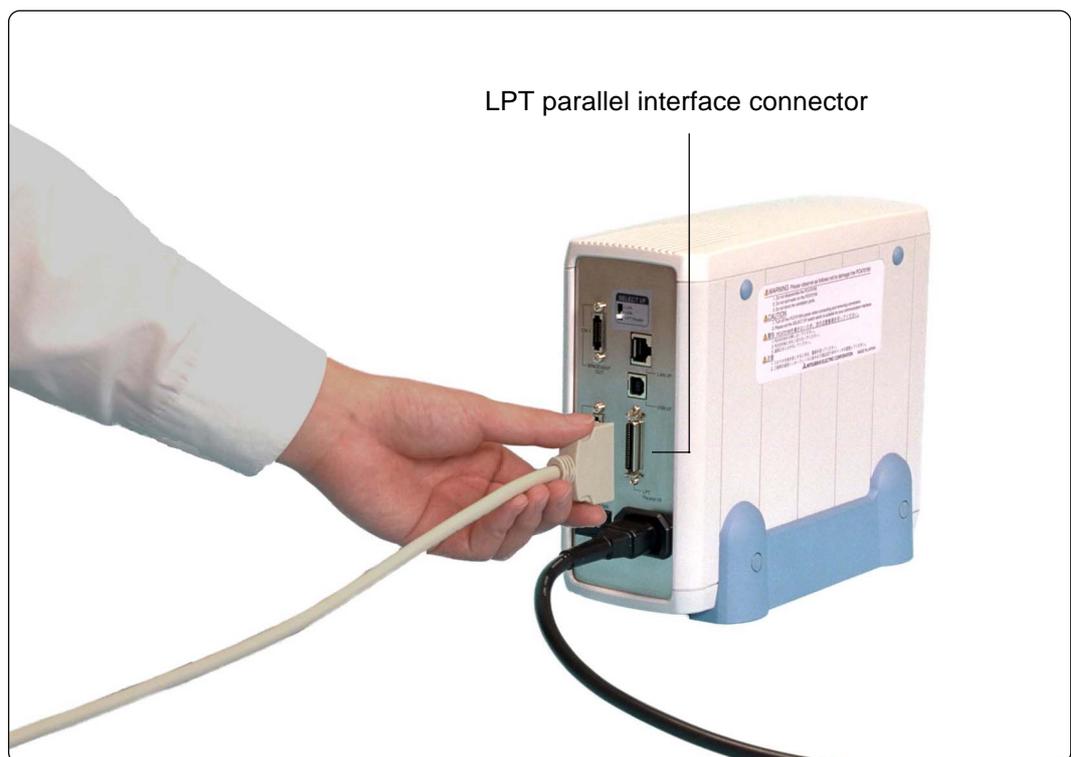


Figure 4.8 Connecting LPT parallel interface cable (emulator PC4701U side)

4.2 Connecting the Emulation Pod

The procedure for connecting the emulation pod to the emulator PC4701U is shown below. The screws for fixing the emulator is supplied with the product package of an emulation pod.

Turn off the power to the emulator PC4701U.

Connect the emulation pod to the connector of the emulator PC4701U.

▶ *Figure 4.9 Connecting emulation pod (below)*

Secure the connector with the two screws.

▶ *Figure 4.9 Connecting emulation pod (below)*

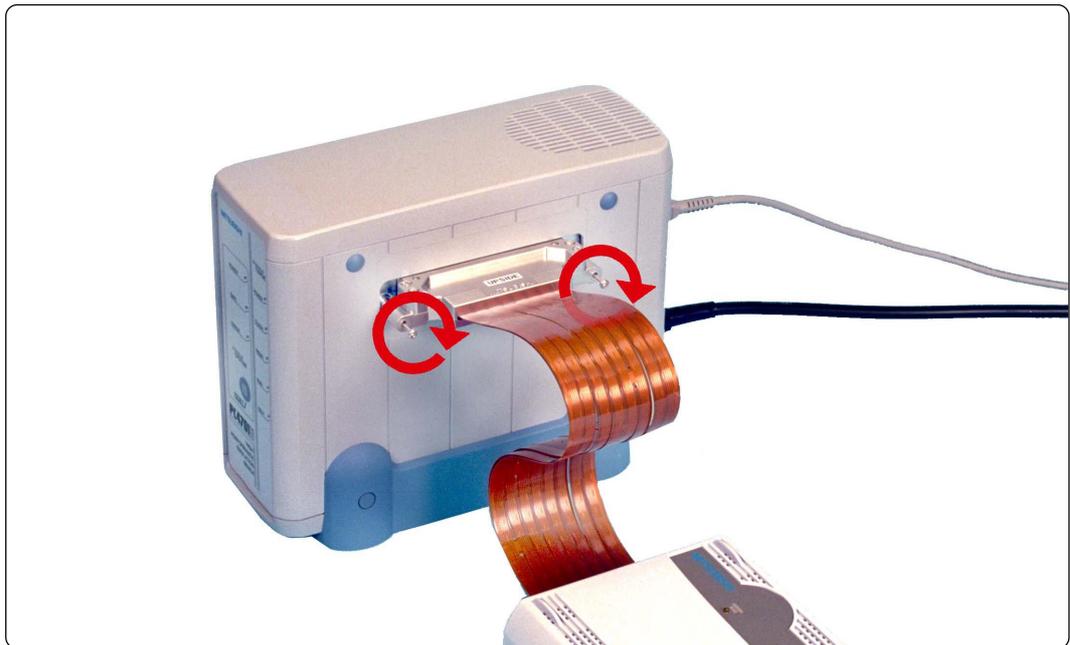


Figure 4.9 Connecting emulation pod

4.3 Downloading Firmware

4.3.1 When It is Necessary to Download Firmware

It is necessary to download firmware when:

- (1) you have set up the emulator PC4701U for the first time.
- (2) you have upgraded the firmware.
- (3) you have upgraded your emulator debugger.
- (4) you have changed your emulator debugger.
- (5) you have changed your emulation probe.

If downloading the firmware is not completed in the cases below, redownload the firmware as described in 4.4.2.

- When the power is unexpectedly shut down during a download from the emulator debugger
- When a communications interface cable is unexpectedly pulled out

4.3.2 Downloading the Firmware in Maintenance Mode

Download the firmware in maintenance mode as explained here following. The target system must not be connected when downloading the firmware.

Set the interface selection switch on the rear panel to "LPT".



Connect the LPT parallel interface cable to the emulator PC4701U and the host machine.



Within 2 seconds of activating power to the emulator PC4701U, press the RESET switch on the front panel.



Switched to maintenance mode, the SAFE SYSTEM STATUS LED begins to flash.



Start up the emulator debugger.



When the Init dialog box setup is complete, the dialog which urges to download the firmware will appear. Download the firmware following messages. Required time for downloading the firmware is about 30 seconds.

4.4 Self-check

IMPORTANT

The self-check is a function to check the memory and other conditions of the emulator PC4701U's internal circuit boards. This function can only be executed after the emulator PC4701U is connected to an emulation pod.

If you use the emulation pod with the emulator MCU method, make sure that the target system is powered on and that the emulator MCU is supplied with the power and clock before you can actually run the self-check function. Before executing the self-check, you may need to change settings of the emulation pod, so read the user's manual of the emulation pod. Figure 4.10 shows a transition of LEDs' on/off conditions during the self-check.

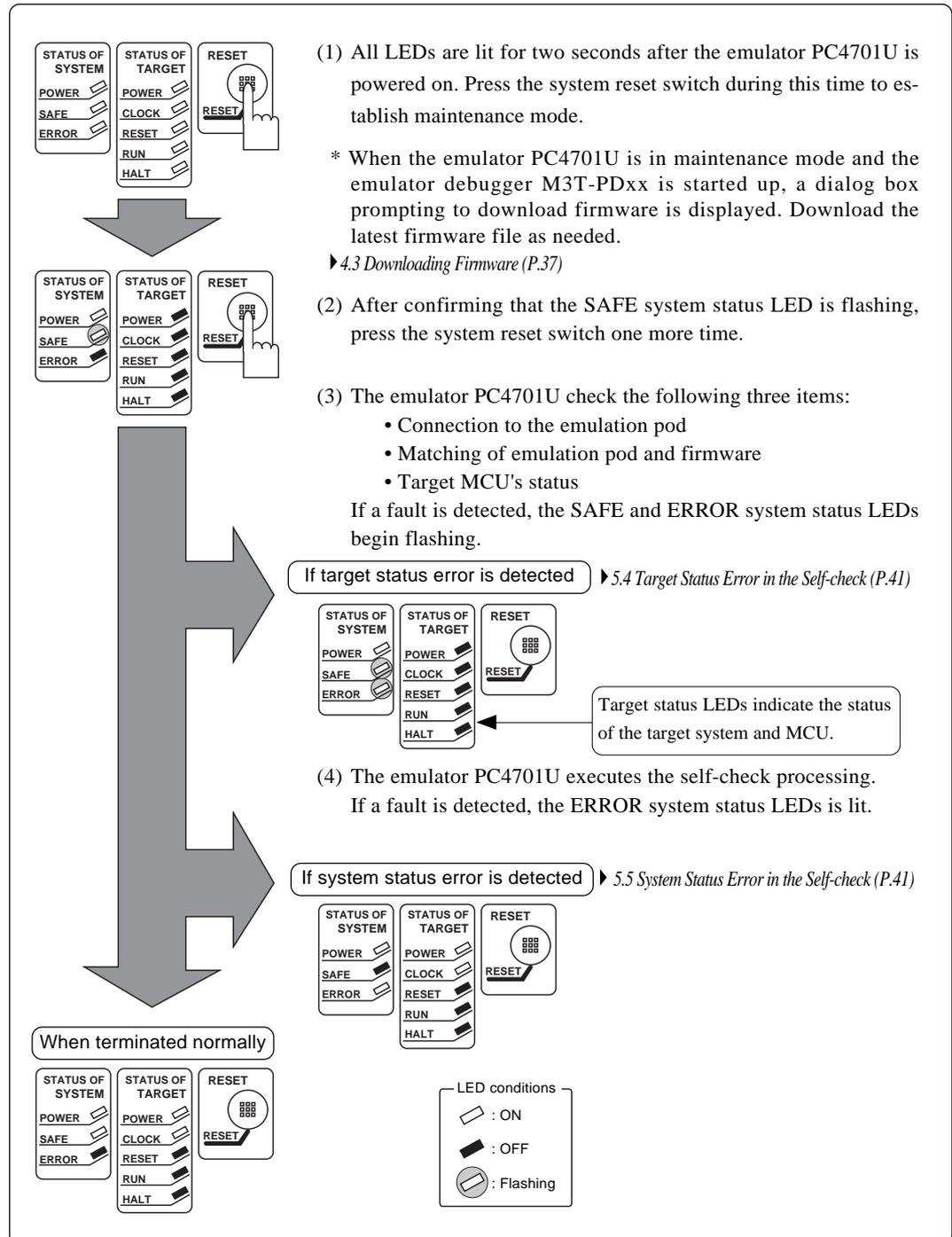


Figure 4.10 LED display during the self-check

5.1 Emulator PC4701U Cannot Be Powered On

- Is the power cord firmly plugged into the receptacle?
- Is the AC supply voltage within the range specified for the emulator PC4701U?

▶ *Table 2.1 Specifications (P.17)*

5.2 Interface Connection Error

When an interface connection error occurs, check the following.

5.2.1 For LAN Interface

- Was the PC4701U shut off and restarted after the IP address was set?
- Is the interface selection switch on the rear panel of the emulator PC4701U set to "LAN"?
▶ *3.2.1 Interface Selection Switch (P.23)*
- Is the 10BASE-T cable connected correctly to both the emulator PC4701U and the hub?
▶ *4.1.1 Connecting by LAN Interface (P.28)*
- If the PC4701U and host machine are directly connected, are they connected by a 10BASE-T cross cable?
- If the PC4701U replies to the ping command in the DOS window, recheck the settings in the Init dialog box of the emulator debugger M3T-PDxx.
- The interface setting of the emulator debugger M3T-PDxx is specified by the Init dialog box. Recheck the setting.
- Is the emulator debugger M3T-PDxx set for the LAN interface?
- If the PC4701U and host machine are set to separate networks, execute the ping command for the PC/EWS on the network to which the PC4701U is connected. If no reply is received, check the network setting of the host machine.
- If the PC4701U and host machine are set to separate networks, is a gateway set in the OS? (192.168.1.254 in the figure below)
- Does an IP address for a gateway registered with the PC4701U specify the gateway that the PC4701U uses? (192.168.2.254 in the figure below)

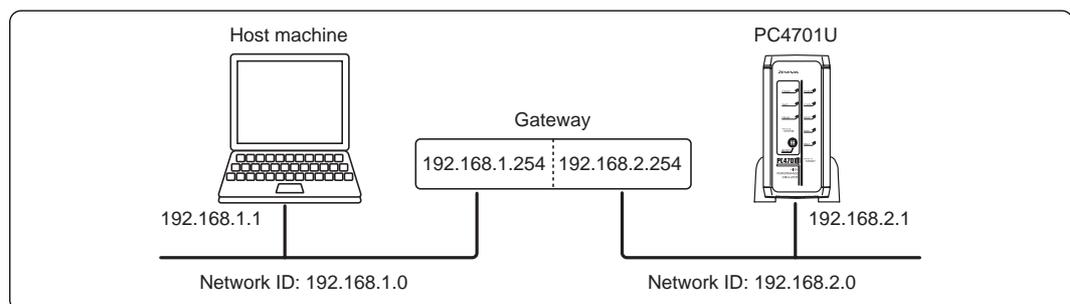


Figure 5.1 Network configuration

5.2.2 For USB Interface

- The USB interface cannot be used with Windows 95 or Windows NT 4.0.
- By the device manager, check the USB driver (musbdrv.sys) is recognized by the host machine.
- Is the PC4701U interface selection switch on the rear panel of the PC4701U set to the USB side?
 - ▶ 3.2.1 Interface Selection Switch (P.23)
- Is the USB interface cable connected correctly to both the PC4701U and host machine?
 - ▶ 4.1.2 Connecting by USB Interface (P.32)
- The interface setting of the emulator debugger M3T-PDxx is specified by the Init dialog box. Recheck the setting.
- Is the interface setting of the emulator debugger M3T-PDxx set for the USB interface?

5.2.3 For LPT Parallel Interface

- Is the interface selection switch on the rear panel of the PC4701U set to the LPT Parallel side?
 - ▶ 3.2.1 Interface Selection Switch (P.23)
- Is the LPT parallel interface cable connected correctly to both the PC4701U and host machine?
 - ▶ 4.1.3 Connecting by LPT Parallel Interface (P.34)
- The interface setting of the emulator debugger M3T-PDxx is specified by Init dialog box. Recheck the setting.
- Is the interface setting of the emulator debugger M3T-PDxx set for the LPT parallel interface?
- Are the Type and I/O address for the LPT parallel interface of the emulator debugger M3T-PDxx corresponding to the host machine?

5.3 Firmware Download Error

If the power is shut off during the self-check or firmware download unexpectedly, it may happen that the system does not start up normally. In such a case, follow the procedure below to download firmware one more time.

▶ 4.3 Downloading Firmware (P.37)

- (1) Set the interface selection switch on the PC4701U rear panel to the LPT side, and connect the LPT parallel interface cable to the emulator PC4701U and host machine.
 - (2) Press the system reset switch within two seconds after powering up the emulator PC4701U to establish maintenance mode.
 - (3) Start up the emulator debugger M3T-PDxx.
 - (4) When a firmware download instruction appears on the emulator debugger M3T-PDxx's startup screen, follow the message to download firmware one more time.
- * During downloading, the ERROR system status LED flashes. This means firmware is being downloaded, so it is not a fault of the system.
- (5) The download requires approximately 30 seconds. When the download is completed, the system automatically restarts and returns to the normal mode.
 - (6) Execute the self-check after turning off the power.

The startup procedure in step (1) above is provided for entering a special mode for maintenance purposes. Do not use this procedure unless you are executing the self-check or downloading firmware.

▶ 4.4 Self-check (P.38)

5.4 Target Status Error in the Self-check

The emulator PC4701U checks the status of the emulation pod, firmware, and target MCU before it starts the self-check processing. A target status error results if a fault is detected with respect to the following three items:

▶ 4.4 Self-check (P.38)

- (1) Connection to the emulation pod
- (2) Matching of emulation pod and firmware
- (3) Status of target MCU (evaluation MCU or emulator MCU)

If a target status error is encountered, check the following:

- Is the emulation pod firmly plugged into the emulator PC4701U's connector?

▶ 4.2 Connecting the Emulation Pod (P.36)

- Is the firmware matched to the emulation pod?

Execute the latest emulator debugger M3T-PDxx. If the emulator debugger M3T-PDxx starts up normally (waiting for command input), firmware is not the cause of error.

If a firmware download instruction appears on the screen when you call up the emulator debugger M3T-PDxx, follow the message to download the firmware that is matched to the emulation pod.

▶ 4.3 Downloading Firmware (P.37)

When using an emulation pod (M3xxxxTx-FPD) with the emulator MCU method:

- Is the emulator MCU connected to the target system correctly?
- Is the emulator MCU supplied with the power (subject to MCU specifications) and clock?

Because the emulation pod does not have the capacity to supply power to other devices, design your system so that the emulator MCU is powered by the target system.

Note also that when using a reset IC in your target system, remove the reset IC from the target system and set approximately 10kΩ pull-up resistor to input emulator MCU's reset signal for a time. After completing debugging by using the emulator PC4701U, set the reset IC to the target system again.

5.5 System Status Error in the Self-check

If the self-check does not terminate normally, your system may be malfunctioning. In such a case, consult your local distributor.

▶ 6.4 How to Make Request for Repair (P.44)

5.6 How to Request for Support

After checking the items in "Chapter 5 Troubleshooting", fill in the text file the installer of the emulator debugger generates in the following directory and email to your local distributor.

\\SUPPORT\product name\SUPPORT.TXT

For prompt response, please specify the following information:

(1) Operating environment

- Operating voltage: X.X [V]
- Operating frequency: XX.X [MHz]
- Clock supply to the MCU: Internal oscillator/External oscillator
- Target system: Connected/Not connected

(2) Condition

- The emulator debugger starts up/does not start up
- The error is detected/not detected in the self-check
- Frequency of errors: always/frequency ()

(3) Problem

6.1 Maintenance

If dust or dirt collects on any equipment of your emulation system, wipe it off with a dry soft cloth. Do not use thinner or other solvents because these chemicals can cause the equipment's surface coating to separate.

6.2 Guarantee

If your product becomes faulty within one year after its purchase while being used under good conditions by observing "Precautions for Safety" described in Chapter 1 of this user's manual, we will repair or replace your faulty product free of charge. Note, however, that if your product's fault is raised by any one of the following causes, we will repair it or replace it with new one with extra-charge:

- Misuse, abuse, or use under extraordinary conditions
- Unauthorized repair, remodeling, maintenance, and so on
- Inadequate user's system or misuse of it
- Fires, earthquakes, and other unexpected disasters

In the above cases, contact your local distributor. If your product is being leased, consult the leasing company or the owner.

6.3 Repair Provisions

(1) Repair with extra-charge

The products elapsed more than one year after purchase can be repaired with extra-charge.

(2) Replacement with extra-charge

If your product's fault falls in any of the following categories, the fault will be corrected by replacing the entire product instead of repair, or you will be advised to purchase new one, depending on the severity of the fault.

- Faulty or broken mechanical portions
- Flaw, separation, or rust in coated or plated portions
- Flaw or cracks in plastic portions
- Faults or breakage caused by improper use or unauthorized repair or modification
- Heavily damaged electric circuits due to overvoltage, overcurrent or shorting of power supply
- Cracks in the printed circuit board or burnt-down patterns
- Wide range of faults that makes replacement less expensive than repair
- Unlocatable or unidentified faults

(3) Expiration of the repair period

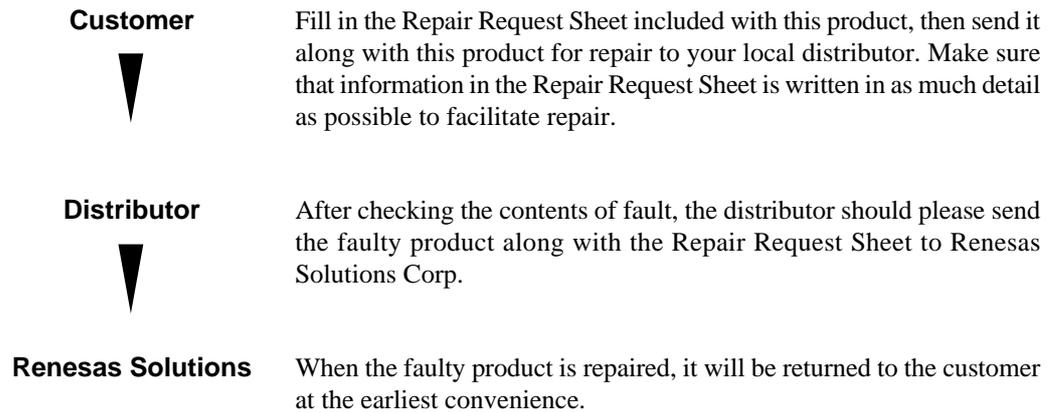
When a period of one year elapses after the model was dropped from production, repairing products of the model may become impossible.

(4) Transportation fees at sending your product for repair

Please send your product to us for repair at your expense.

6.4 How to Make Request for Repair

If your product is found faulty, follow the procedure below to send your product for repair.



7.1 LPT Parallel Interface Cable

The LPT parallel interface connector used for emulator PC4701U is an IEEE1284-C (36-pin half-pitch) connector.

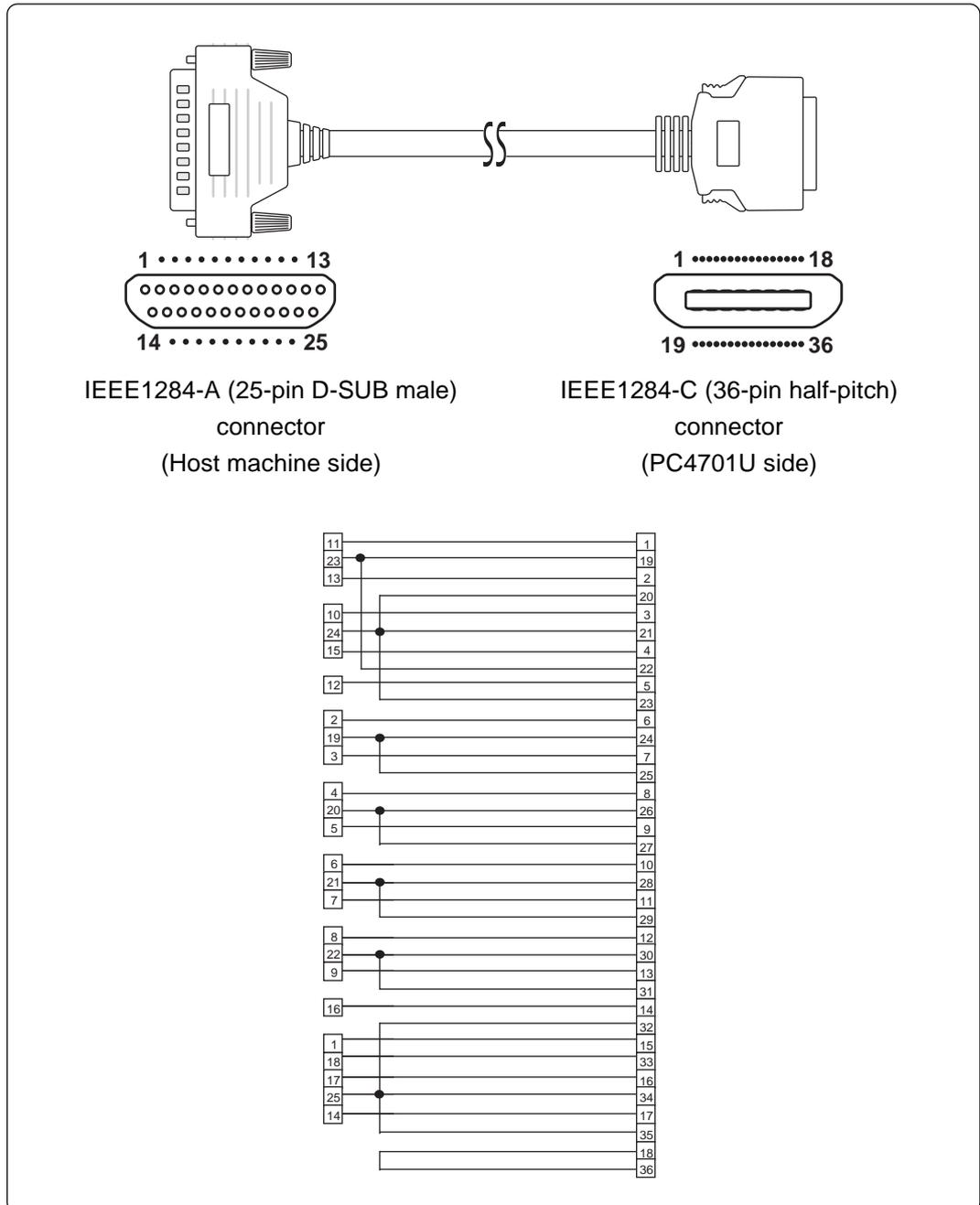


Figure 7.1 Pin assignments of connectors and connection of LPT parallel interface cable

7.2 External Dimensions

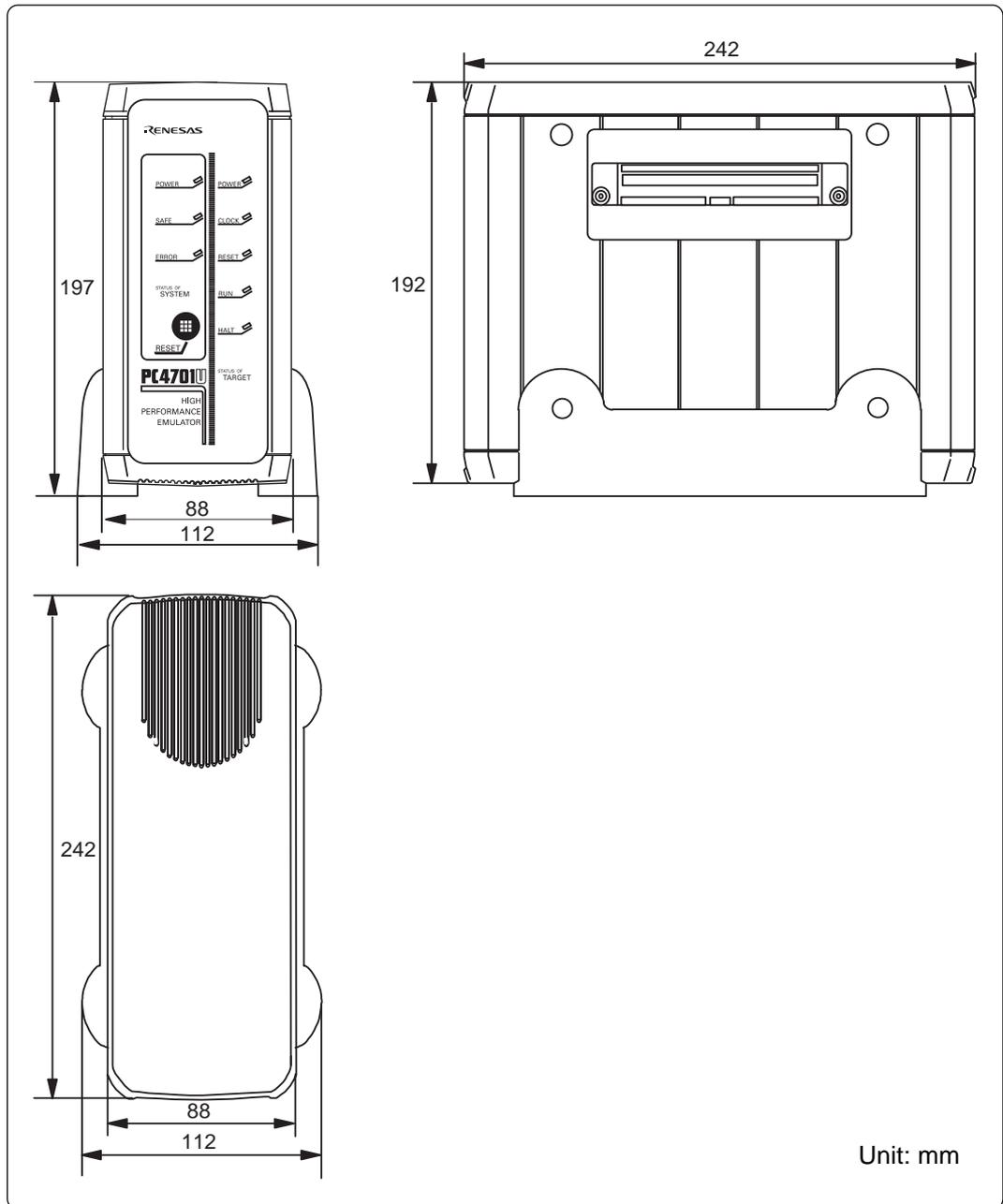


Figure 7.2 External dimensions of the emulator PC4701U

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PC4701U
User's Manual



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