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R0E521000EPB00

User's Manual

Supported Devices:
R8C Family / R8C/1x and R8C/2x Series

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Preface

The R0E521000EPB00 is an emulation probe for the R8C/1x and R8C/2x Series MCUs. The R0E521000EPB00 is used by connecting to the PC7501 emulator main unit.

This user's manual mainly describes specifications of the R0E521000EPB00 emulation probe and how to setup it. For details on the following products, which are used with the R0E521000EPB00, refer to each product's user's manual or online manual.

- Emulator main unit: PC7501
- Integrated development environment: High-performance Embedded Workshop
- Emulator debugger: M16C R8C PC7501 Emulator debugger

All the components of this product are shown in "Table 1.1 Package components" (page 14). If there is any question or doubt about this product, contact your local distributor.

The related manuals for using this product are listed below. You can download the latest manuals from the Renesas Tools homepage (<http://www.renesas.com/tools>).

Related manuals

Item	Manual
Emulator main unit	PC7501 User's Manual
Accessory tools	R0E521134CFG00 User's Manual
	R0E521174CSJ00 User's Manual
	R0E521174CDB00 User's Manual
	R0E521237CFK00 User's Manual
	R0E521258CFJ00 User's Manual
	R0E521276CFG00 User's Manual
	R0E5212BACFG00 User's Manual
	R0E5212BACFK00 User's Manual
	R0E5212DACFK00 User's Manual
R0E5212L4CFG00 User's Manual	
Integrated development environment	High-performance Embedded Workshop User's Manual
Emulator debugger	M16C R8C PC7501 Emulator debugger User's Manual
C/C++ compiler	C/C++ Compiler Package for M16C Series, R8C Family C/C++ Compiler User's Manual
Assembler	C/ C++ Compiler Package for M16C Series, R8C Family Assembler User's Manual

Important

Before using this product, be sure to read this user's manual carefully.

Keep this user's manual, and refer to this when you have questions about this product.

Emulator:

"Emulator" in this document collectively refers to the following products manufactured by Renesas Electronics Corporation

(1) PC7501 Emulator main unit (2) Emulation probe (3) Package converter board for connecting the user system

"Emulator" herein encompasses neither the customer's user system nor the host machine.

Purpose of use of the emulator:

This emulator is a device to support the development of a system that uses the R8C/1x and R8C/2x Series Renesas 16bit single-chip MCUs. It provides support for system development in both software and hardware.

Be sure to use this emulator correctly according to said purpose of use. Please avoid using this emulator for other than its intended purpose of use.

For those who use this emulator:

This emulator can only be used by those who have carefully read the user's manual and know how to use it.

Use of this emulator requires the basic knowledge of electric circuits, logical circuits, and MCUs.

When using the emulator:

- (1) This emulator is a development-support unit for use in your program development and evaluation stages. When a program you have finished developing is to be incorporated in a mass-produced product, the judgment as to whether it can be put to practical use is entirely your own responsibility, and should be based on evaluation of the device on which it is installed and other experiments.
- (2) In no event shall Renesas Electronics Corporation be liable for any consequence arising from the use of this emulator.
- (3) Renesas Electronics Corporation strives to provide workarounds for and correct trouble with products malfunctions, with some free and some incurring charges. However, this does not necessarily mean that Renesas Electronics Corporation guarantees the provision of a workaround or correction under any circumstances.
- (4) This emulator covered by this document has been developed on the assumption that it will be used for program development and evaluation in laboratories. Therefore, it does not fall within the scope of applicability of the Electrical Appliance and Material Safety Law and protection against electromagnetic interference when used in Japan.
- (5) Renesas Electronics Corporation cannot predict all possible situations and possible cases of misuse that carry a potential for danger. Therefore, the warnings in this user's manual and the warning labels attached to this emulator do not necessarily cover all such possible situations and cases. The customer is responsible for correctly and safely using this emulator.
- (6) The emulator covered by this document has not been through the process of checking conformance with UL or other safety standards and IEC or other industry standards. This fact must be taken into account when the product is taken from Japan to some other country.
- (7) Renesas Electronics Corporation will not assume responsibility of direct or indirect damage caused by an accidental failure or malfunction in this product.

When disposing of this product:

Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

Usage restrictions:

This emulator has been developed as a means of supporting system development by users. Therefore, do not use it as an embedded device in other equipment. Also, do not use it to develop systems or equipment for use in the following fields.

- (1) Transportation and vehicular
- (2) Medical (equipment that has an involvement in human life)
- (3) Aerospace
- (4) Nuclear power control
- (5) Undersea repeaters

If you are considering the use of this emulator for one of the above purposes, please be sure to consult your local distributor.

About product changes:

We are constantly making efforts to improve the design and performance of this emulator. Therefore, the specification or design of this emulator, or this user's manual, may be changed without prior notice.

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About diagrams:

Some diagrams in this user's manual may differ from the objects they represent.

Precautions for Safety

This chapter describes the precautions which should be taken in order to use this product safely and properly. Be sure to read and understand this chapter before using this product.

Contact us if you have any questions about the precautions described here.



WARNING

WARNING indicates a potentially dangerous situation that will cause death or heavy wound unless it is avoided.



CAUTION

CAUTION indicates a potentially dangerous situation that will cause a slight injury, a medium-degree injury or a property damage unless it is avoided.

In addition to the two 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.

⚠ 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 standard of the country.

Do not touch the plug of the AC power cable when your hands are wet. This may cause electric shock.

This emulator is connected signal ground with frame ground. If your developing product is transform-less (not having isolation transformer of AC power), this may cause electric shock. Also, this may give an un-repairable damage to this emulator and your developing product.

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.



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. In this case, contact your local distributor.

Before setting up this emulator and connecting it to other devices, turn off power or remove a power cable to prevent injury or product damage.

Warnings to Be Taken for Handling:



Do not modify this emulator. Personal injury due to electric shock may occur if this emulator is modified. Modifying the emulator will void your warranty.

Make sure nothing falls into the cooling fan on the top panel, especially liquids, metal objects, or anything combustible.

Warning for Installation:



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 un-repairable damage.

Warning for Use Temperature:



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.

 **CAUTION****Cautions to Be Taken for the AC Adapter:**

Use only the AC adapter included in this emulator.
Do not use the AC adapter for other equipment.

Cautions to Be Taken for Turning On the Power:

Turn ON/OFF the power of the emulator and user system as simultaneously as possible.
If you cannot turn on the powers simultaneously, turn on the emulator first and then the user system

When turning on the power again after shutting off the power, wait about 10 seconds.

Cautions to Be Taken for Handling This Emulator:

Use caution when handling the emulator. Be careful not to apply a mechanical shock.

Do not touch the connector pins of the emulator and the target MCU connector pins directly. Static electricity may damage the internal circuits.

When attaching and removing the cable, hold the plug of the cable and do not touch the cable. Do not pull the emulator by the communications interface cable or the flexible cable. And, excessive flexing or force may break conductors.

Do not flex the flexible cable excessively. The cable may cause a break.

Do not use inch-size screws for this emulator. The screws used in this emulator are all ISO (meter-size) type screws. When replacing screws, use same type screws as equipped before.

Do not tape the flexible cable or apply adhesives to secure the cable. The shielding material on the surface of the cable may come off.

Note on Transporting the Product:

When sending your product for repair, use the packing box and cushioning material supplied with the product when it was delivered to you and specify caution in handling (handling as precision equipment). If packing of your product is not complete, it may be damaged during transportation. When you pack your product in a bag, make sure to use the conductive plastic bag supplied with the product (usually a blue bag). If you use a different bag, it may lead to further trouble with your product due to static electricity.

 **CAUTION****Caution to Be Taken for System Malfunctions:**

If the emulator malfunctions because of interference like external noise, do the following to remedy the trouble.

- (1) Press the RESET button on the emulator front panel.
- (2) If normal operation is not restored after step (1), shut OFF the emulator once and then reactivate it.

Caution to Be Taken for Disposal:

Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

European Union regulatory notices:

The WEEE (Waste Electrical and Electronic Equipment) regulations put responsibilities on producers for the collection and recycling or disposal of electrical and electronic waste. Return of WEEE under these regulations is applicable in the European Union only. This equipment (including all accessories) is not intended for household use. After use the equipment cannot be disposed of as household waste, and the WEEE must be treated, recycled and disposed of in an environmentally sound manner.

Renesas Electronics Europe GmbH can take back end of life equipment, register for this service at "<http://www.renesas.eu/weee>".

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User Registration

When you install debugger software, a text file for user registration is created on your PC. Fill it in and email it to your local distributor. If you have replaced an emulator main unit or emulation probe, rewrite an emulator name and serial number in the text file you filled in earlier to register your new hardware products.

Your registered information is used for only after-sale services, and not for any other purposes. Without user registration, you will not be able to receive maintenance services such as a notification of field changes or trouble information. So be sure to carry out the user registration.

For more information about user registration, please contact your local distributor.

Terminology

Some specific words used in this user's manual are defined below.

Emulator system

This means an emulator system built around the PC7501 emulator. The PC7501 emulator system is configured with an emulator main unit, emulation probe, host machine and the integrated development environment High-performance Embedded Workshop.

Emulator main unit (Hereafter PC7501)

This means an emulator main unit for M16C Family.

Emulation probe

This means the emulation probe (this product) for the R8C/1x and R8C/2x Series MCUs.

Integrated development environment High-performance Embedded Workshop

This tool provides powerful support for the development of embedded applications for Renesas microcomputers. It has an emulator debugger function allowing for the emulator to be controlled from the host machine via an interface. Furthermore, it permits a range of operations from editing a project to building and debugging it to be performed within the same application. In addition, it supports version management.

Emulator debugger

This means a software tool starting up from the High-performance Embedded Workshop to control the PC7501 and this product and enable debugging. Please be sure to use this product with the M16C R8C PC7501 Emulator debugger.

Firmware

Program that analyzes contents of communication with the emulator debugger and controls the PC7501 hardware. This program is installed in the flash memory in the emulator main unit. This program is downloadable from the emulator debugger to upgrade the firmware or to support other MCUs.

Host machine

This means a personal computer used to control the PC7501 and emulation probe.

Software break

A software break is a function to break the program before the system executes an instruction at the specified address. The instruction at the preset address will not be executed.

Hardware break

A hardware break is a function to break the program when the system detects a write/read of data to/from memory or a leading/trailing edge of the signal entered from the external trace cable. The former break function is called address break; and the latter break function is called trigger break. While the instruction at the address where the software break is set is not executed, a hardware break is performed after the specified instruction is executed.

Target MCU

This means the MCU to be debugged.

User system

This means a user's application system in which the MCU to be debugged is used.

User program

This means the program to be debugged.

Evaluation MCU

This means the MCU mounted on the emulation probe which is operated in the specific mode for tools.

#

This symbol indicates that a signal is active-low (e.g. RESET#).

1. Outline

This chapter describes the package components, the system configuration, the specifications of the emulator functions and the operating environment.

1.1 Package Components

The R0E521000EPB00 package consists of the following items. After you have unpacked the box, check if your R0E521000EPB00 contains all of these items.

Table 1.1 Package components

Item	Quantity
R0E521000EPB00 emulation probe	1
OSC-3 (20MHz) oscillator circuit board	1
OSC-2 oscillator circuit bare board	1
R0E521000EPB00 Release Notes (English)	1
R0E521000EPB00 Release Notes (Japanese)	1
R0E521000EPB00 User's Manual (this manual)	1
R0E521000EPB00 User's Manual (Japanese)	1

* Please keep the R0E521000EPB00's packing box and cushion material in your place for reuse at a later time when sending your product for repair or other purposes. Always use these packing box and cushion material when transporting this product.

* If there is any question or doubt about the packaged product, contact your local distributor.

1.2 Other Tool Products Required for Development

To bring forward programs development on the R8C/1x and R8C/2x Series MCUs, the products listed below are necessary in addition to those contained package above. Get them separately.

Table 1.2 Other tool products required for development

Product		Product name	Notes
Emulator main unit		PC7501	Required (Use of the emulator debugger is bundled with the emulator main unit.)
Emulator debugger		M16C R8C PC7501 Emulator Debugger	
Converter board	For 32-pin 0.8mm pitch LQFP (PLQP0032GB-A, formerly 32P6U-A)	R0E521134CFG00 (included with the R0E521134EPB00) R0E521276CFG00 (included with the R0E521276EPB00) R0E5212L4CFG00 (included with the R0E5212L4EPB00)	Required according to the foot pattern of the user system (see "2.9 Connecting the User System" on page 31)
	For 20-pin 0.65mm pitch LSSOP (PLSP0020JB-A, formerly 20P2F-A)	R0E521174CSJ00 (included with the R0E521174 EPB00)	
	For 20-pin 1.778mm pitch SDIP (PRDP0020BA-A, formerly 20P4B)	R0E521174CDB00 (included with the R0E521174 EPB10)	
	For 48-pin 0.5mm pitch LQFP (PLQP0048KB-A, formerly 48P6Q-A)	R0E521237CFK00 (included with the R0E521237 EPB00)	
	For 52-pin 0.65mm pitch LQFP (PLQP0052JA-A, formerly 52P6A-A)	R0E521258CFJ00 (included with the R0E521258 EPB00)	
	For 64-pin 0.8mm pitch LQFP (PLQP0064GA-A, formerly 64P6U-A)	R0E5212BACFG00 (included with the R0E5212BAEPB00)	
	For 64-pin 0.5mm pitch LQFP (PLQP0064KB-A, formerly 64P6Q-A)	R0E5212BACFK00 (included with the R0E5212BAEPB10)	
	For 80-pin 0.5mm pitch LQFP (PLQP0080KB-A, formerly 80P6Q-A)	R0E5212DACFK00 (included with the R0E5212DAEPB00)	

* To purchase these products, contact your local distributor.

1.3 System Configuration

1.3.1 System Configuration

Figure 1.1 shows a configuration of the R0E521000EPB00 system.

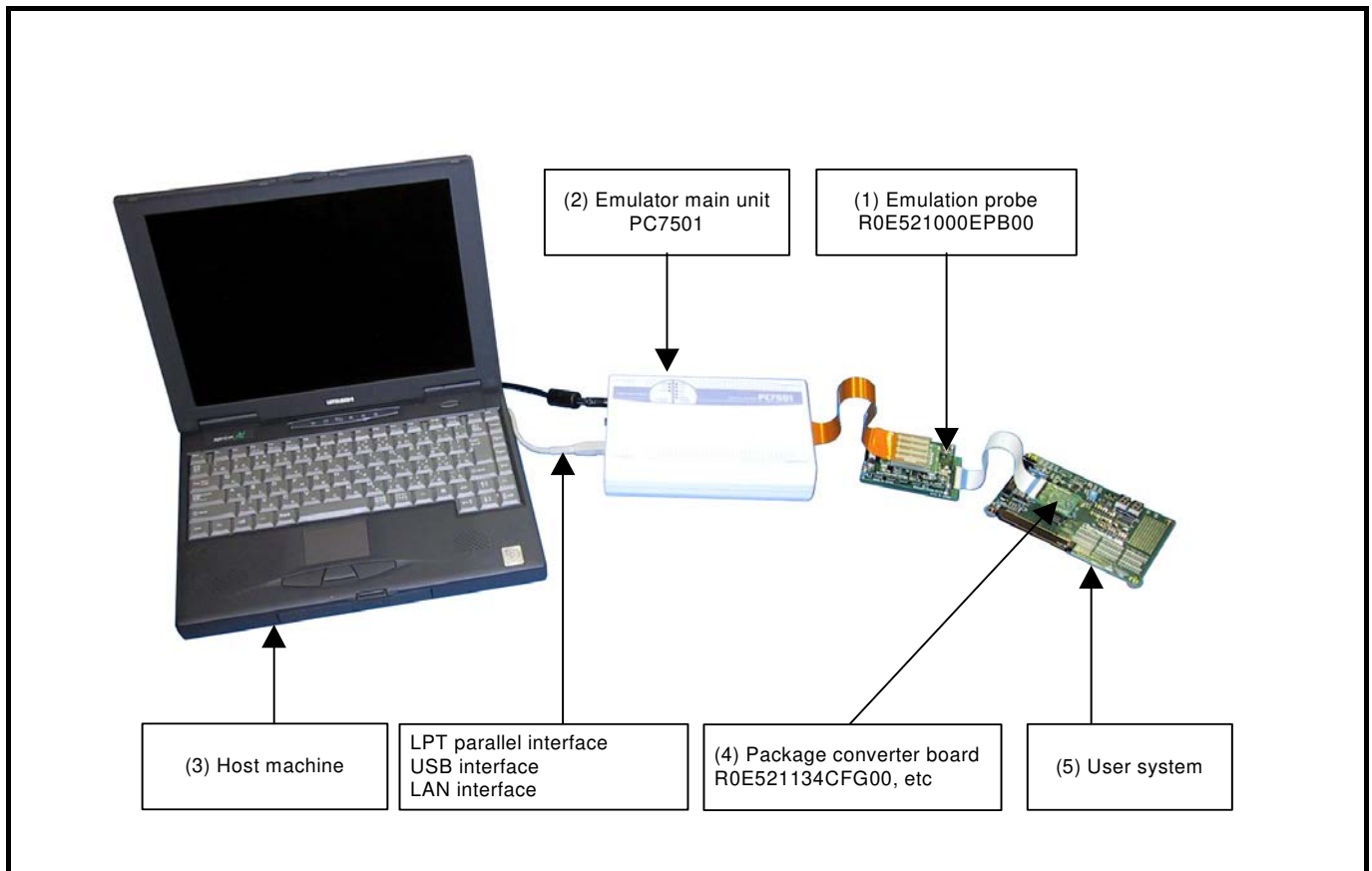


Figure 1.1 System configuration

- (1) Emulation probe R0E521000EPB00 (this product)
This emulation probe contains an evaluation MCU.
For your target MCU, set packages that consist of the converter board for connecting the user system are also available.
- (2) Emulator main unit PC7501
The emulator main unit for the M16C and R8C Families to be used with this product.
- (3) Host machine
A personal computer to control the emulator.
- (4) Package converter board such as R0E521134CFG00
This is a package converter board for connecting to the MCU foot pattern on the user system. For details, refer to "2.9 Connecting to the User System" (page 31)
- (5) User system
This is your application system.
This emulator cannot supply the power to the user system. Therefore design your system so that the user system is powered separately.

1.3.2 Names and Functions of the PC7501 Upper Panel LEDs

Figure 1.2 shows the names of the LEDs on the upper panel of the emulator.

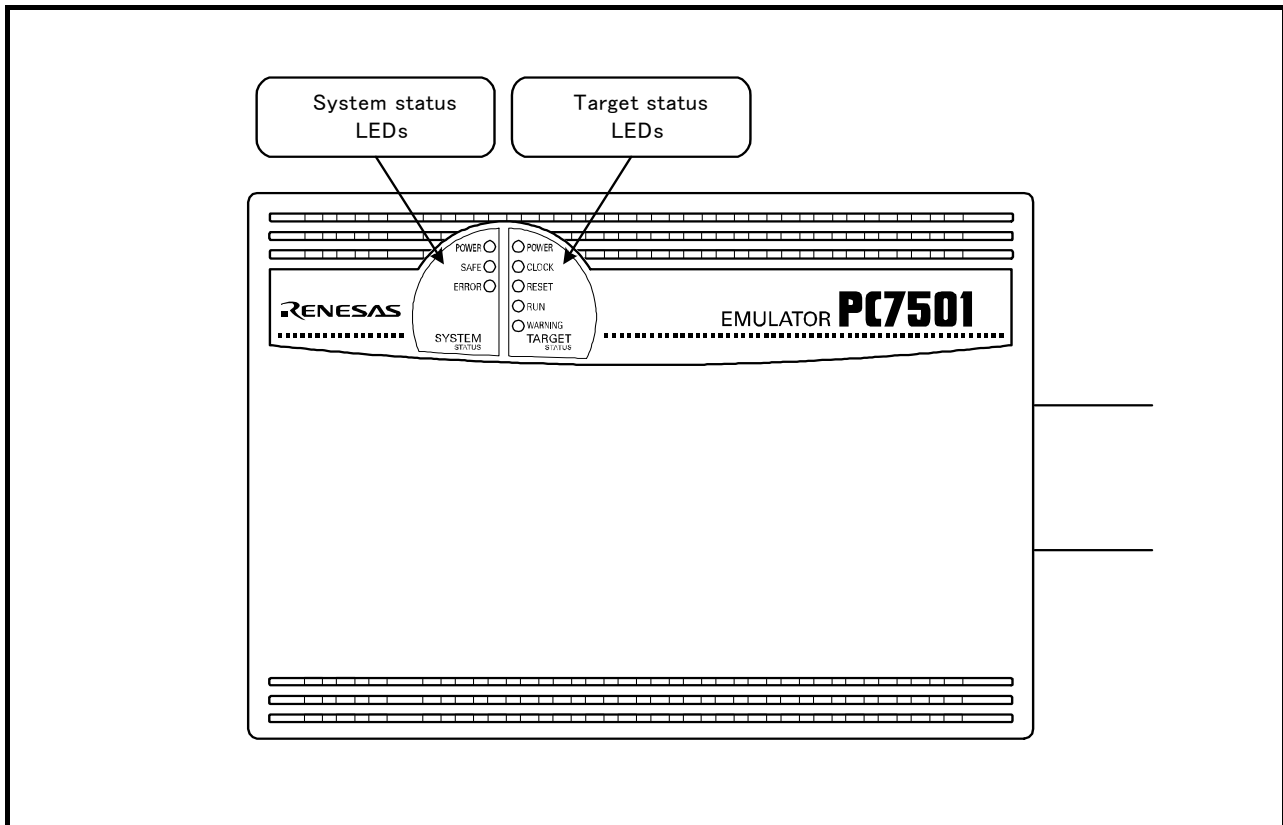


Figure 1.2 Names of the LEDs on the upper panel of the PC7501

(1) System Status LEDs

The system status LEDs indicate the emulator PC7501's power supply, firmware operating status, etc. Table 1.3 lists the definition of each system status LED.

Table 1.3 Definitions of the system status LEDs

Name	Status	Meaning
POWER	ON	Emulator system power supply is turned ON.
	OFF	Emulator system power supply is turned OFF.
SAFE	ON	Emulator system is operating normally.
	Flashing	1. The self-check is being executed. 2. Downloaded firmware is being written into memory. 3. If the ERROR LED is flashing on at the same time or alternately, it indicates that the self-check error occurred.
	OFF	PC7501 system is not operating normally (system status error).
ERROR	ON	PC7501 system is not operating normally (system status error).
	Flashing	1. Firmware is being downloaded. 2. If the SAFE LED is flashing at the same time or alternately, it indicates that the self-check error occurred.
	OFF	Emulator system is operating normally.

(2) Target Status LEDs

The target status LEDs indicate operating status of the target MCU and power supply of the user system. Table 1.4 lists the definition of each target status LED.

Table 1.4 Definitions of the target status LEDs

Name	Status	Meaning
POWER	ON	Power is supplied to the target MCU.
	OFF	Power is not supplied to the target MCU.
CLOCK	ON	Target MCU clock is oscillating.
	OFF	Target MCU clock is not oscillating.
RESET	ON	Target MCU is being reset, or reset signal of the user system is held low.
	OFF	Target MCU is not being reset.
RUN	ON	User program is being executed.
	OFF	User program has been halted.
WARNING	ON	Address 00000h or 00001h is read out wrongly.
	OFF	Address 00000h or 00001h is not read out.

1.4 Specifications

1.4.1 Product Specifications

Tables 1.5 and Table 1.6 list the specifications of the R0E521000EPB00.

Table 1.5 R0E521000EPB00 specifications (1)

Applicable MCUs	R8C/1x and R8C/2x Series MCUs	
Maximum ROM/RAM capacity	ROM capacity: 112KB (04000h to 1FFFFh) + 4KB (02000h to 02FFFh) RAM capacity: 8KB (00300h to 012FFh, 03000h to 03FFFh)	
Usable mode	Single-chip mode	
Maximum operating frequency	20MHz at 3.0--5.5V 10MHz at 2.7--5.5V 5MHz at 2.2--5.5V	
Applicable power supply	User system connected	2.2--5.5V* ¹ (depends on the Power selection jumper)
	User system not connected	5.0V (supplied from the emulator)
Basic debugging functions	<ul style="list-style-type: none"> - Download - Software break (max. 64 points) - Program execution/stop (allows free-run execution supporting software breaks) - Memory reference/setting (reference/setting C-variables, run-time execution) - Register reference/setting - Disassemble display - C-level debugging, etc. 	
Real-time trace function	<ul style="list-style-type: none"> - 256K-cycle bus information recordable (Bus, external trigger, time stamp) - 5 trace modes supported (Break/Before/About/After/Full) - Can be recorded ON/OFF by events 	
Real-time RAM monitor function	<ul style="list-style-type: none"> - 4,096 bytes (256 bytes x16) - Data/last access result 	
Hardware break function	8 points (Execution address, bus detection, interrupt, external trigger signal)	
Execution time measurement function	Time between program start and stop Maximum/minimum/average execution time and pass count of specified four zones. Count clock: Equal to MCU Clock or 16MHz	
C0 coverage	8,192KB (256KB x 32 blocks)	
External trigger input/event output* ²	External trigger input (MCU-dependent-voltage CMOS level x8) or event output (break x1, event x7)	
Host machine interface	<ul style="list-style-type: none"> - LPT parallel (ECP, EEP, Byte/compatibility and Nibble/compatibility modes) - USB (USB 1.1, full-speed)*³ - LAN (10BASE-T) 	
Power supply to emulator	Supplied from included AC adapter (power supply voltage: 100--240V, 50/60Hz)	
EMC	EU: EN 55022 Class A, EN 55024 USA: FCC part 15 Class A	

*1: If using this product when the voltage is less than 2.7V, the JP1 of the R0E521000EPB00 should be set to EXT.

For details, refer to "2.10.2 Setting the POWER Selection Jumper" (page 41).

*2: When the POWER selection jumper is switched to the EXT side, the upper limit of the external trigger input level (VI) is 3.6 [V]. Similarly, the upper limit of the event output level (Vo) is 3.3 [V].

*3: Can be connected to the USB2.0 port of the host machine.

With the USB interface of this product, not all hardware (such as host machine, USB devices, USB hub) combination will work and guaranteed.

Table 1.6 R0E521000EPB00 specifications (2)

Connection with the user system (For details, refer to 2.9)	For 32-pin 0.8mm pitch LQFP (PLQP0032GB-A, formerly 32P6U-A)	R0E521134CFG00 (included with the R0E521134EPB00) R0E521276CFG00 (included with the R0E521276EPB00) R0E5212L4CFG00 (included with the R0E5212L4EPB00)
	For 20-pin 0.65mm pitch LSSOP (PLSP0020JB-A, formerly 20P2F-A)	R0E521174CSJ00 (included with the R0E521174EPB00)
	For 20-pin 1.778mm pitch SDIP (PRDP0020BA-A, formerly 20P4B)	R0E521174CDB00 (included with the R0E521174EPB10)
	For 48-pin 0.5mm pitch LQFP (PLQP0048KB-A, formerly 48P6Q-A)	R0E521237CFK00 (included with the R0E521237EPB00)
	For 52-pin 0.65mm pitch LQFP (PLQP0052JA-A, formerly 52P6A-A)	R0E521258CFJ00 (included with the R0E521258EPB00)
	For 64-pin 0.8mm pitch LQFP (PLQP0064GA-A, formerly 64P6U-A)	R0E5212BACFG00 (included with the R0E5212BAEPB00)
	For 64-pin 0.5mm pitch LQFP (PLQP0064KB-A, formerly 64P6Q-A)	R0E5212BACFK00 (included with the R0E5212BAEPB10)
	For 80-pin 0.5mm pitch LQFP (PLQP0080KB-A, formerly 80P6Q-A)	R0E5212DACFK00 (included with the R0E5212DAEPB00)

1.4.2 Regulatory Compliance Notices

● European Union regulatory notices

This product complies with the following EU Directives. (These directives are only valid in the European Union.)

CE Certifications:

- Electromagnetic Compatibility (EMC) Directive 2004/108/EC
EN 55022 Class A

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.

EN 55024

- Information for traceability
 - Authorised representative
 - Name: Renesas Electronics Corporation
 - Address: 1753, Shimonumabe, Nakahara-ku, Kawasaki, Kanagawa, 211-8668, Japan
 - Manufacturer
 - Name: Renesas Solutions Corp.
 - Address: Nippon Bldg., 2-6-2, Ote-machi, Chiyoda-ku, Tokyo 100-0004, Japan
 - Person responsible for placing on the market
 - Name: Renesas Electronics Europe GmbH
 - Address: Arcadiastrasse 10, 40472 Dusseldorf, Germany
 - Trademark and Type name
 - Trademark: Renesas
 - Product name: R8C/1x, R8C/2x Series Emulation Probe
 - Type name: R0E521000EPB00

Environmental Compliance and Certifications:

- Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC
- Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC

● United States Regulatory notices

This product complies with the following EMC regulation. (This is only valid in the United States.)

FCC Certifications:

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.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

1.4.3 Operating Environment

Be sure to use this emulator with the operating environmental of the emulator and host machine listed in Tables 1.6 and 1.7.

Table 1.7 Operating environmental conditions

Item	Description
Operating temperature	5 to 35°C (no dew)
Storage temperature	-10 to 60°C (no dew)

Table 1.8 Operating environment of the host machine

Item	Description
Host machine	IBM PC/AT compatibles
OS	Windows XP Windows 2000
CPU	Pentium III 600 MHz or more recommended
Memory	128 MB or greater (more than 10 times the file size of the load module) recommended
Hard disk	Emulator debugger installation needs 100 MB or more free space. (In view of swap area, keep another free space which is more than twice the memory capacity. (More than four times the memory capacity recommended.))
Display resolution	1024 × 768 or greater recommended
Pointing device such as mouse	Mouse or any other pointing device usable with the above OS that can be connected to the main body of the host machine.
CD drive	Needed to install the emulator debugger or refer to the user's manual

* Windows is either registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.

2. Setup

This chapter describes the preparation for using this product, the procedure for starting up the emulator and how to change settings.

2.1 Flowchart of Starting Up the Emulator

The procedure for starting up the emulator is shown in Figure 2.1. For details, refer to each section hereafter. And, when the emulator does not start up normally, refer to “5. Troubleshooting” (page 83).

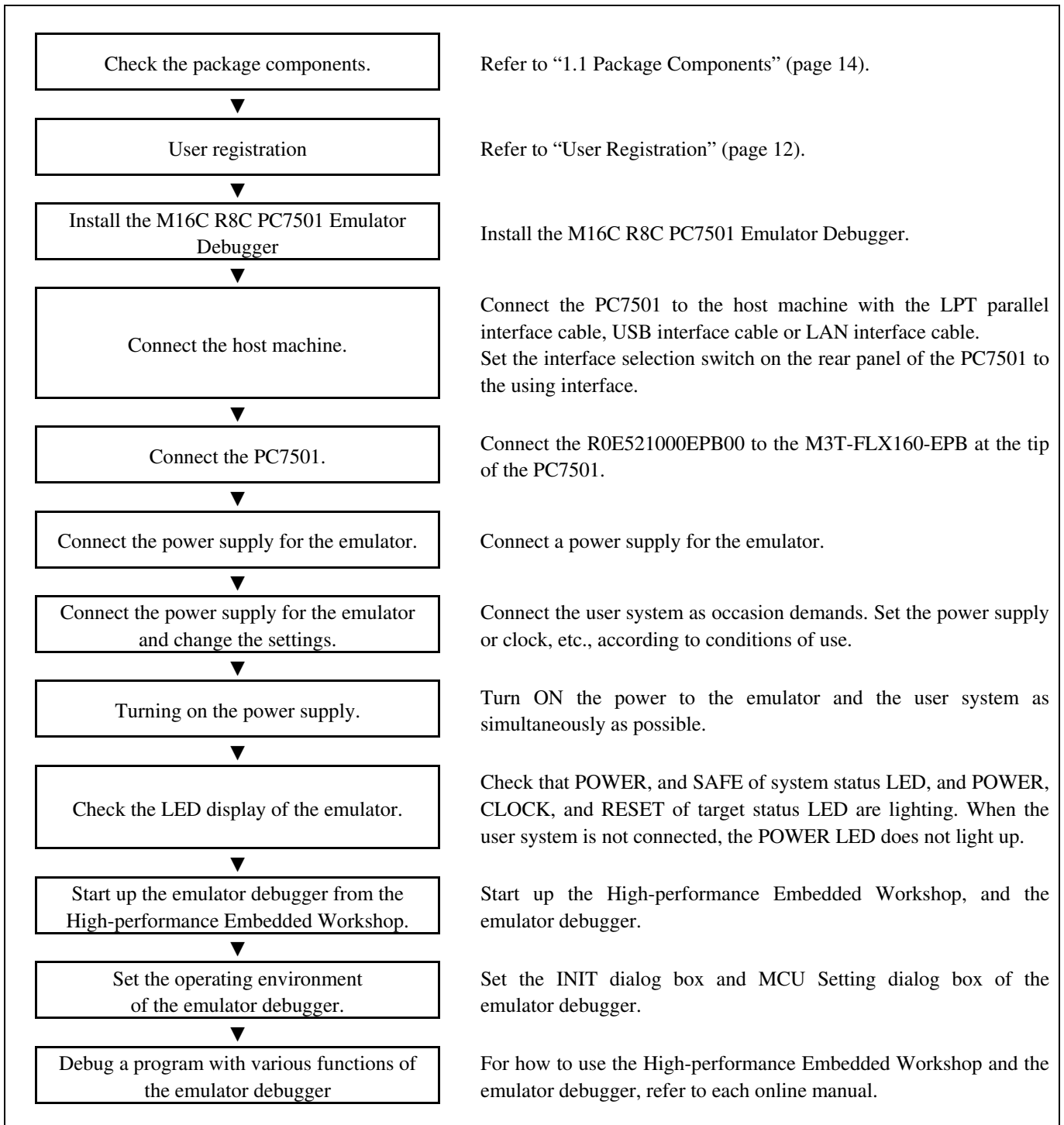


Figure 2.1 Flowchart of starting up the emulator

2.2 Installing the M16C R8C PC7501 Emulator Debugger

If the OS used in your host machine is Windows XP or 2000, this installation must be executed by a user with administrator rights. Be aware that users without administrator rights cannot complete the installation.

Install the emulator debugger (M16C R8C PC7501 Emulator Debugger) following the procedure described below.

(1) Downloading the emulator debugger

Download the latest emulator debugger from the URL below.

<http://www.renesas.com/download>

(2) Launching the installer

Start the "setup.exe" program.

(3) Entering the user information

In the "user information" dialog box, enter the user information (contractor, section, contact address, and host machine). The supplied information will be turned into a format by which user registration will be provided by e-mail.

(4) Completing the installation

A dialog box will be displayed indicating that setup has been completed. It means that the installation you made is completed.

2.3 Connecting to the Host Machine

When connecting the emulator PC7501 to a host machine, you can choose your desired interface from LPT parallel interface, USB interface and LAN interface. Use the interface selection switch on the emulator PC7501's rear panel to specify your desired interface. Figure 2.2 shows the outline to connect each interface cable.

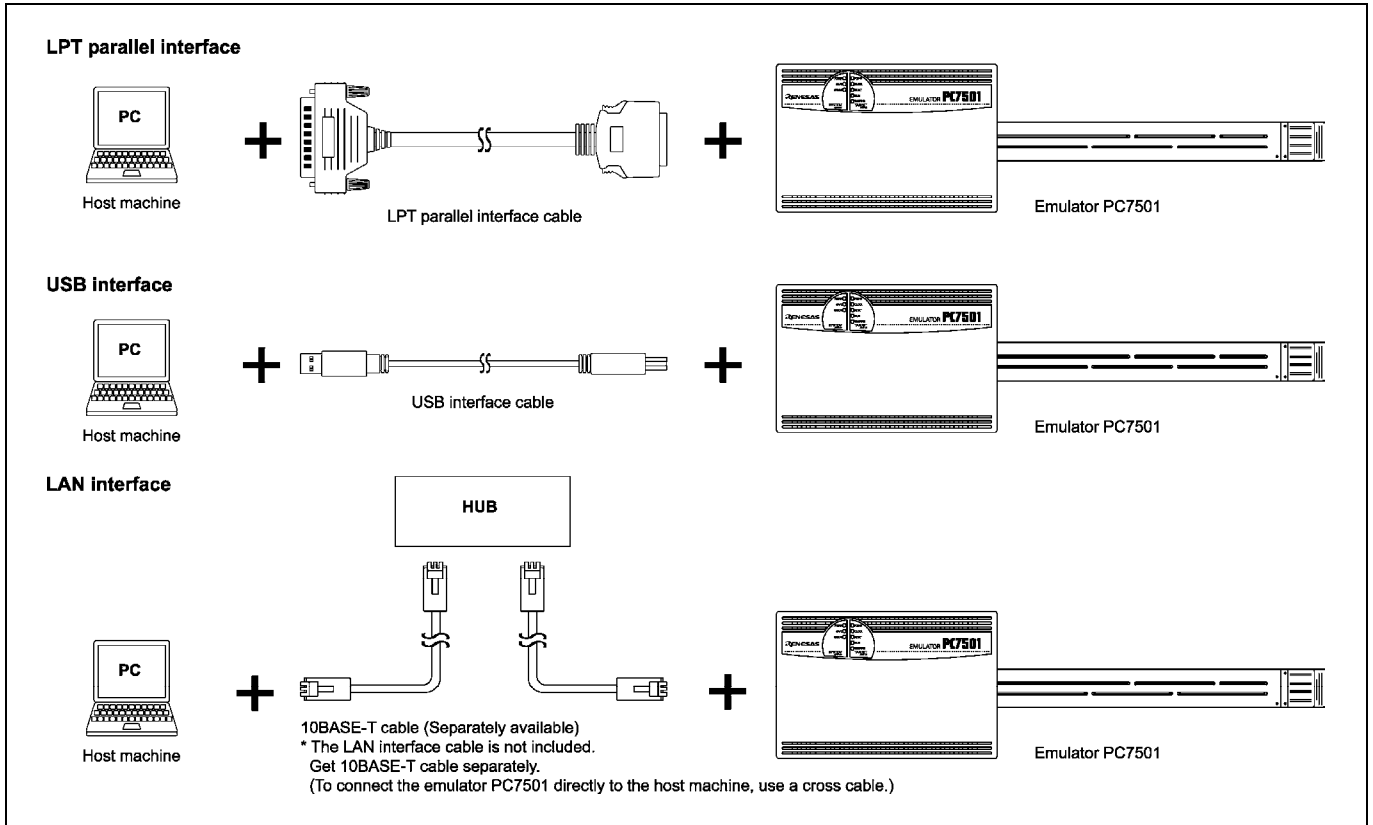


Figure 2.2 Outline for interface cable connections

2.4 Connecting to the PC7501

Figure 2.3 shows how to connect the emulation probe to the PC7501.

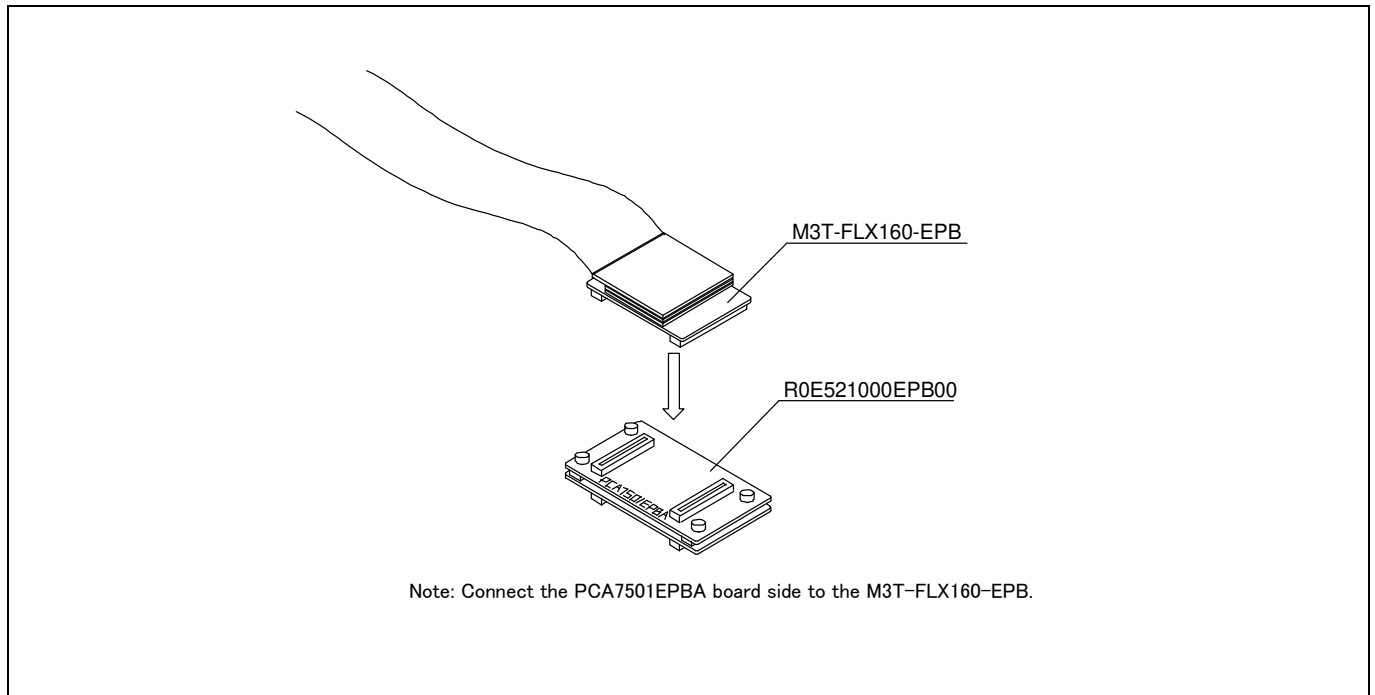


Figure 2.3 Connecting the emulation probe to the PC7501

⚠ CAUTION

Caution for Connecting to the PC7501:



Always shut OFF power before connecting the emulation probe. Otherwise, internal circuits may be damaged.

Notes on Connecting to the PC7501:

When connecting the emulation probe, be sure to hold the both sides of the emulation probe horizontally and insert it directly.

The connectors of the R0E521000EPB00 are guaranteed for only 50 insertion/removal iterations.