M37905T-PRB

Pod probe for 7905 Group MCUs

User's Manual

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Preface

The M37905T-PRB is a pod probe for the 7905 Group of Renesas 16-bit MCUs. The M37905T-PRB is used by connecting to the PC4701 emulator main unit and the M37900T2-RPD-E emulation pod main unit (separately available).

This manual mainly explains specifications and how to set up the M37905T-PRB. For detail information about the emulator main unit, emulation pod main unit, and emulator debugger, refer to each user's manual.

Emulator main unit:	PC4701 User's Manual
Emulation pod main unit:	M37900T2-RPD-E User's Manual
Emulator debugger:	M3T-PD79 User's Manual

To check the components of this product, refer to "2.2 Package Components" (page 17) in this manual. If there is any question or doubt about this product, contact your local distributor.

To use the product properly

Precautions for Safety:

- Both in this User's Manual and on the product itself, 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.
- The icons' graphic images and meanings are given in "Chapter 1. Precautions for Safety". Be sure to read this chapter before using the product.

Contents

MEMO

Chapter 1. Precautions for Safety

This chapter describes precautions for using this product safely and properly. For precautions for the emulator main unit, the emulation pod main unit and the emulator debugger, refer to each user's manual included with your product.

Chapter 1. Precautions for Safety

In both the M37905T-PRB User's Manual and on the product itself, 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 the precautions which should be taken in order to use M37905T-PRB safely and properly. Be sure to read this chapter before using this product.

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

Warning for Installation:

- Do not set this product in water or areas of high humidity. Spilling water or some other liquid into the main unit can cause an unrepairable 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.

⚠ CAUTION

Caution to Be Taken for Modifying This Product:

- Do not disassemble or modify this product. Disassembling or modifying this product can cause damage. Disassembling and modifying the product will void your warranty.

Cautions to Be Taken for Handling 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 emulator main unit and the target MCU connector pins directly. Static electricity may damage the internal circuits.
- Do not pull the pod probe by the flexible cable (FLX120-RPD) for connecting to the emulator main unit or the flexible cable (FLX100) for connecting the target system. The cable may cause a break.
- Flexible cable FLX120-RPD and FLX100 are different from earlier models. The slits make them more flexible. However, excessive flexing or force may break conductors.
- Do not use inch-size screws for this equipment. The screws used in this equipment are all ISO (meter-size) type screws. When replacing screws, use same type screws as equipped before.

IMPORTANT

Notes on Target System:

- The Vcc pin of emulator is connected to the target system to observe the voltage of the target system. Therefore the emulator cannot supply the power to the target system. Design your system so that the target system is powered separately.
- The voltage of the target system should be within the range of the MCU specification and suit to the emulator MCUs as shown below:

  - For 5.0V version MCUs: +4.5 to +5.5 V

- Do not change the voltage of the target system after turning on the power.
- Before powering on your emulator system, check that the host machine, the PC4701, M37900T2-RPD-E, converter board and target system are all connected correctly. Next, turn on the power to each equipment following the procedure below.

  (1) Turn ON/OFF the target system and the PC4701 as simultaneously as possible.
  (2) When the PC4701 and emulator debugger M3T-PD79 start up, check the target status LEDs on the emulator main unit's front panel to see if this product is ready to operate.

  - Is the power supplied? Check that target status LED (POWER) is ON.
  - Is the clock supplied? Check that target status LED (CLOCK) is ON.

Note on Reset Input from the Target System:

- The reset input from the target system is accepted only while a user program is being executed (only while the RUN status LED on the PC4701's front panel is lit).

Notes on Stack Area:

- With this product, a maximum 26 bytes of the user stack is consumed as work area.
- If the user stack does not have enough area, do not use areas which cannot be used as stack (SFR area, RAM area which stores data, or ROM area) as work area. Using areas like this is a cause of user program crashes and destabilized emulator control. Therefore, ensure the +26 byte maximum capacity used by the user program as the user stack area.

Note on MCU Files:

- When starting up emulator debugger M3T-PD79, select the MCU file corresponding to the MCU which is going to be debugged by Init dialog (MCU files are included with emulator debugger M3T-PD79).

MCU	MCU file name
M37905F8	M37905F8.MCU
M37905M8	
M37905M6	M37905M6.MCU
M37905M4	M37905M4.MCU

IMPORTANT

Notes on EMEM Dialog:

- When setting the EMEM dialog box of emulator debugger M3T-PD79, pay attention to the following:

  (1) Processor Mode

  Specify a processor mode for the target MCU to be debugged. With 7905 Group MCUs, only the single-chip mode is specifiable. If the MD0 pin setting is not "L" level, emulator debugger M3T-PD79 outputs an error message. In such a case, check the pin settings on the target system.

  (2) Emem Address

  Allocate the 1MB emulation memory that is included in the emulation pod. For the 7905 Group, it is not necessary to set this because this group operates only in the single-chip mode.

  (3) ROM Address

  Disable the allocated emulation memory against writes by the user program. For the 7905 Group, it is not necessary to set this because this group operates only in the single-chip mode.

  (4) DMA Address

  In this dialog box, set a transfer area when using the MCU's DMA function, and executing 1-bus transfer between emulation memory and the target system. For the 7905 Group, do not set such areas because this group does not have the DMA function.

  (5) 8-bit bus mode Address

  When accessing external data buses in 8-bit width using the chip select wait controller when BYTE pin = Low, set this address for the relevant area. For the 7905 Group, it is not necessary to set this because this group operates only in the single-chip mode.

  (6) Map Address

  Set external or internal for the allocated emulation memory area. For the 7905 Group, it is not necessary to set this because this group operates only in the single-chip mode.

Note on Boot Mode:

- It is not possible to debug the MCUs in the boot mode using this emulator system.
  (The MD1 pin of the MCU is fixed to the "L" level.)

Note on Breaks Used with Internal Resources:

- Hardware breaks cannot be used with internal resources (SFR, RAM and flash ROM) when using emulator PC4701L.

Note on Software Breaks:

- Do not use software breaks when operating with a clock frequency of 1 MHz or less. This is the unavoidable limitation imposed for reason of MCU and emulator specifications. In this case, make use of chip breaks or hardware breaks (PC4701M and PC4701HS only).

Note on Debug Monitor Area:

- The debug monitor area is fixed to the "FF" bank. It cannot be set to other banks.

IMPORTANT

Note on Interface with the Target System:

- The pin that connects to the target system is pulled-up by the emulation pod probe using local resistors. For the difference in electric characteristics between the actual MCU and the emulator, see "Chapter 4. Specifications" (page 31).

  Pullup resistors of INT0* and INT4* pins

  To avoid high impedance, these pins are pulled-up with a 510kΩ resistor. This pullup resistor cannot be removed.

Notes on Service-Life of the MCU's Internal Flash ROM:

- With emulators of the 7900 Series, programs are downloaded to the MCU's flash ROM when debugging in the single-chip mode and memory expansion mode. Because the number of write/erase cycles of this ROM is limited, the ROM must be replaced when at the end of its service-life.
- If the following errors occur frequently during program download, replace the MCU board (M37905T-PRBM).

  Flash memory erase error ERROR (11508)
  Flash memory verify error ERROR (11509)

  To purchase the MCU board (M37905T-PRBM) for replacement, contact your local distributor.

Note on Debug Commands during STP/WIT Instruction:

- When a debug command (e.g. referencing memory) is issued during execution of STP/WIT instruction, STP/WIT instruction is canceled. And when the debug program has completed, the following instructions are executed.

Note on Disabling Watchdog Function:

- When disabling the watchdog timer during programming, do not open the DUMP window, the memory window and the RAM monitor window in the area which contains the special function select register 2 (address 64h). When displaying address 64h, it is not possible to disable the timer.

Note on Real-Time RAM Monitor:

- Word access from an odd-numbered address cannot be correctly displayed. This restriction of the MCU - emulator interface cannot be avoided. Use the optional function of assembler AS79 to arrange word data to start from an even-numbered address.

Note on Coverage Measurement:

- The trace data output from the MCU is operational code address information only. Make note of the fact that, in coverage measurement, the calculation result is unpredictable because the operand address is not tagged.

IMPORTANT

Note on Differences between Actual MCU and Emulator:

- Operations of the emulator differs from those of mask MCUs as listed below.

  (1) Initial values of internal resource data (such as a part of SFR, and RAM) at power-on

  (2) Oscillator circuit

  Make note of the fact that in the oscillator circuit where a resonator is connected between the X_{IN} and X_{OUT} pins, oscillation does not occur because a flexible cable, buffer IC and other devices are used between the emulator MCU and the target system.

Note on Switch Settings on the Pod Probe:

- This pod probe has three switches that need to be set according to the target system. Otherwise, the pod probe may not operate normally or get out of order for two reasons described below. For details on how to set these switches, refer to "3.2 Switch Settings" (page 24).

  - Incorrect settings with which the pod probe operates
  - Jumper switches remain removed while the pod probe operates

Note on Synchronous Designed Target Systems:

- Because this pod probe has the clock fed into the MCU via the buffer IC and flexible cable, etc., there is a finite delay time before the clock from the target reaches the MCU.

  In target systems where the MCU and the ASIC, etc. are designed to operate synchronously, this delay time may render the MCU and ASIC unable to operate synchronously. In such a case, evaluate your application system using the actual MCU on the target board.

MEMO

Chapter 2. Preparation

This chapter describes the package components, the system configuration and the preparation for using this product for the first time.

Chapter 2. Preparation

2.1 Terminology

Some specific words used in this user's manual are defined as follows:

Emulator system

This means an emulator system built around the PC4701 emulator. The PC4701 emulator system is configured with an emulator main unit, emulation pod, pod probe, host machine and emulator debugger.

Emulator main unit (Hereafter PC4701)

This means the generic name for emulators for 8 and 16-bit MCUs. For details on specific models of PC4701, visit Renesas Tools Homepage at http://www.renesas.com/en/tools

Emulation pod main unit (M37900T2-RPD-E)

This means the common part of the emulation pod which matches to the 7900 Series MCUs. The emulation pod is used by connecting a pod probe.

Pod probe

This means pod probe M37905T-PRB for the 7905 Group (this product).

Host machine

This means a personal computer used to control the emulator and emulation pod.

Emulator debugger

This means a software tool M3T-PD79 to control the emulator from the host machine through an interface.

Firmware

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

Emulator MCU

This means the special package MCU for the emulator mounted on the emulation pod.

Target system

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

*****

In this user's manual, this symbol is used to show active LOW. (e.g. RESET*: Reset signal)

2.2 Package Components

This product consists of the following items. When unpacking, check to see if your product package contains all of these items.

Package components

Item	Quantity
M37905T-PRB pod probe for 7905 Group MCUs	1
FLX-64SPB converter board for 64-pin SDIP (64P4B)	1
M37905T-PRB User's Manual (this manual)	1
M37905T-PRB User's Manual (Japanese)	1
M37905T-PRB Repair Request Sheet (English/Japanese)	1
Technical Support Communication Sheet (English/Japanese)	1

Please keep the M37905T-PRB'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 the M37905T-PRB.

If any of these items are missing or found faulty, please contact your local distributor. Also, if there is any question or doubt about the packaged product, contact your local distributor.

2.3 Other Tool Products Required for Development

To bring forward programs development on the 7905 Group MCUs, the products listed below are necessary in addition to the package components listed above. Get them separately.

Other tool products

Emulator main unit	PC4701
Emulation pod main unit	M37900T2-RPD-E
Emulator debugger	M3T-PD79 V.2.10 or later
Converter board	Converter board DUMMY64 Necessary for using QFP (64P6N-A)

To purchase these products, contact your nearest distributer.

2.4 System Configuration

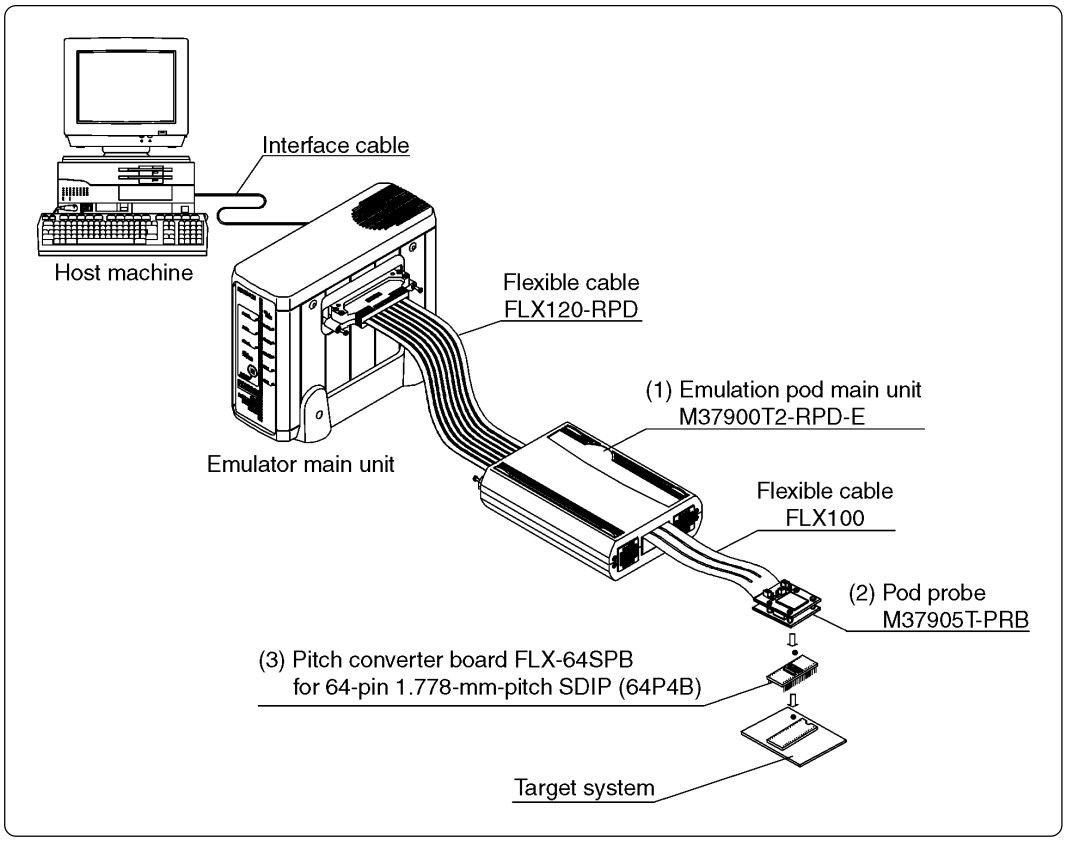


Figure 2.1 System configuration

Products (2) and (3) shown in Figure 2.1 are included with this product. Get (1) separately.

(1) Emulation pod main unit (M37900T2-RPD-E)

This is an emulation pod common for 7900 Series MCUs. By replacing the pod probe on the tip of the emulation pod, it will support future 7900 Series MCUs (option).

(2) Pod probe (M37905T-PRB)

This pod probe is equipped with the emulator MCU, M37905FCCWP.

(3) Pitch converter board for 64-pin 1.778-mm-pitch SDIP (FLX-64SPB)

Board for connecting the pod probe to the socket for 64-pin 1.778-mm-pitch SDIP on the target system.

For details on the connection, refer to "3.5 Connecting the Target System" (page 28).

Chapter 3. Setting Up

This chapter describes switch settings required for using this product and how to connect this product to the PC4701 and the target system.

Chapter 3. Setting Up

With this product, it is necessary to set the following according to your target system.

- Selecting clock supply
- Setting switches
- Mounting the A-D conversion bypass capacitor
- Replacing the MCU boards

3.1 Selecting Clock Supply

There are two ways to supply a clock to the MCU, using the oscillator circuit of the emulation pod or using the oscillator circuit on the target system. Table 3.1 shows the factory-settings of each clock supply.

Table 3.1 Clock supply to the MCU

Clock	Description	Display of emulator debugger	Factory-setting
X_{IN} (J2 side)	Internal oscillator circuit of emulation pod (OSC-3: 20 MHz)	Internal	Yes
	Target system	External	-
X_{CIN} (J1 side)	Internal oscillator circuit of emulation pod (OSC-2: 32.768 kHz)	Internal	Yes
	Target system	External	-

IMPORTANT

Note on Changing the Clock Supply:

- The clock supply can be set by the Init dialog when starting up the emulator debugger or inputting CLK command on the script window.

(1) Using the Oscillator Circuit on the Target System

When turning on the power supply, the internal clock of the emulation pod is selected to supply the clock to the MCU. To use the external clock on the target system, change the clock by the Init dialog or the CLK command of the emulator debugger. (For details, refer to the user's manual of the emulator debugger.)

IMPORTANT

Notes on External Clock:

- To operate the emulation pod with an external clock, construct the oscillator circuit as shown in Figure 3.1 in the target system and input the oscillator output at 50% duty (within the operating range of the emulator MCU) into the X_{IN} pin. And the X_{OUT} pin should be open (same for X_{CIN}).
- Make note of the fact that in the oscillator circuit shown in Figure 3.2 where a resonator is connected between the X_{IN} and X_{OUT} pins, oscillation does not occur because a flexible cable, buffer IC and other devices are used between the emulator MCU and the target system (same for X_{CIN}).
- To use the external clock supply for X_{CIN}, set the JP3 shown in "3.2 Switch Settings" to "P52" side.

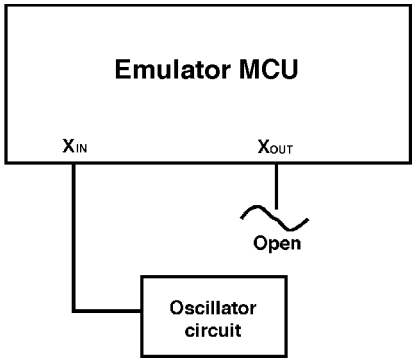


Figure 3.1 External oscillator circuit

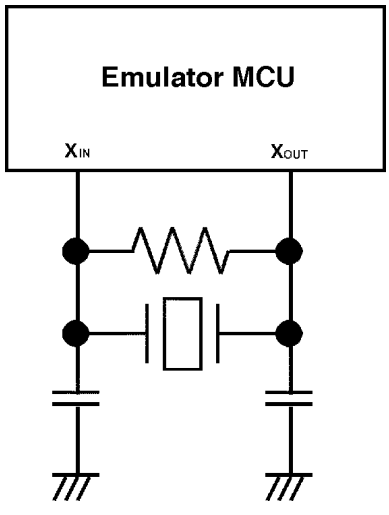


Figure 3.2 Circuit in which oscillation does not occur

(2) Changing the Internal Oscillator Circuit of Emulation Pod

An oscillator circuit board for 20 MHz is mounted on the emulation pod main unit and an oscillator board for 20 MHz is included. To use the emulation pod at a frequency other than 20 MHz, build the desired oscillator circuit on the included OSC-2 oscillator circuit board (bare board) and replace the board installed in the emulation pod when shipped from the factory.

Figure 3.3 shows a view of the OSC-2 oscillator circuit board (bare board) and where connector pins are located. Figure 3.4 shows the circuitry of the OSC-2 oscillator circuit board (bare board). Use the number of oscillator circuits recommended by the oscillator manufacturer.

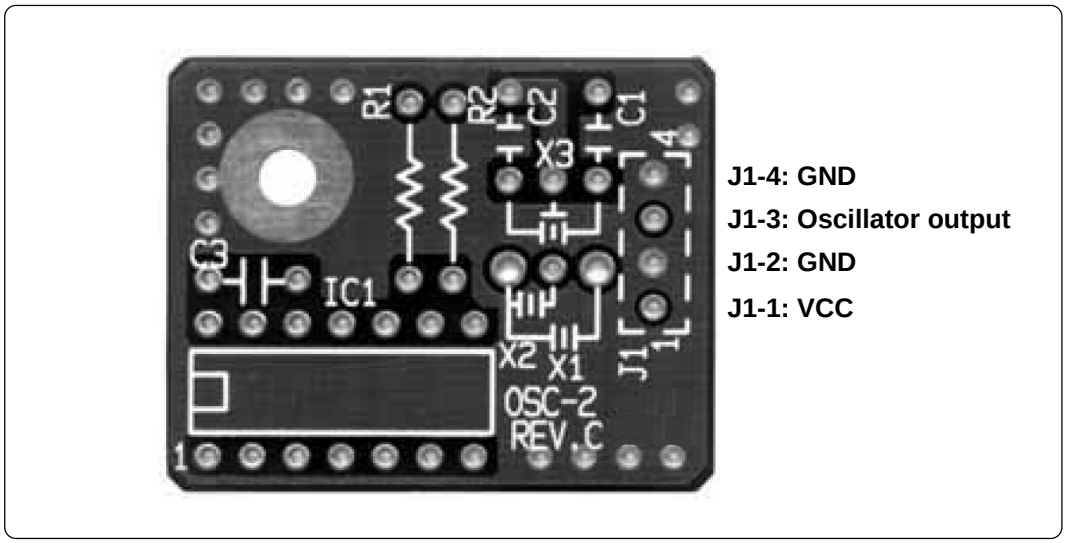


Figure 3.3 External view of oscillator board (OSC-2) and connector pin assignment

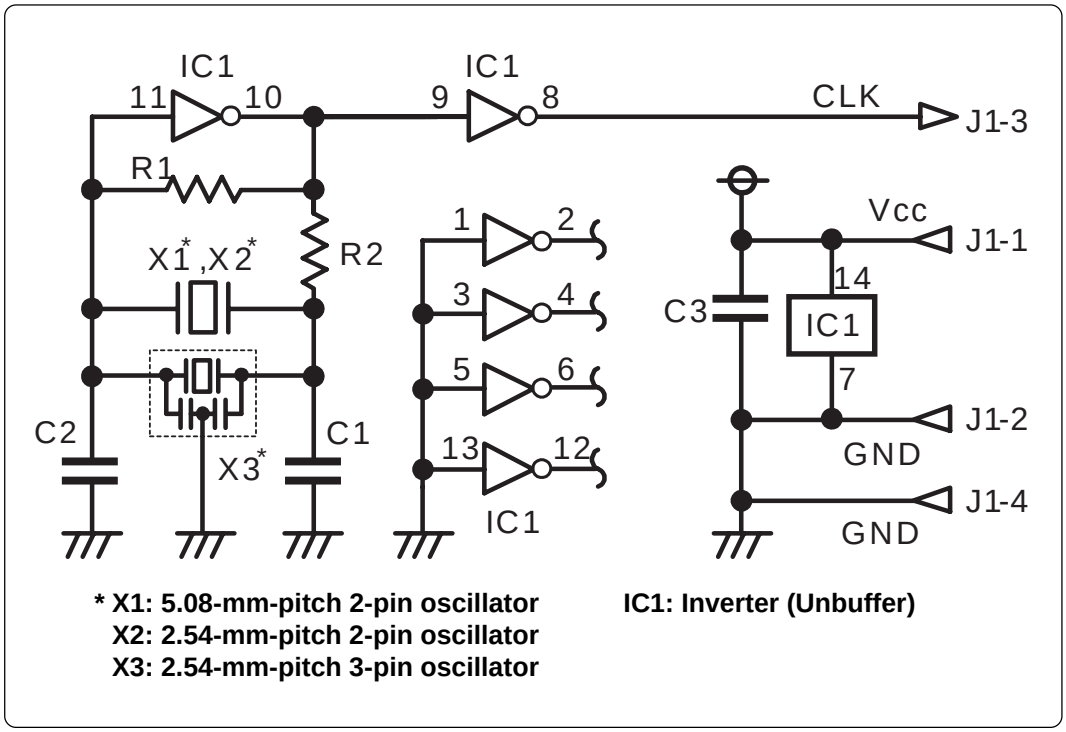


Figure 3.4 Circuit of oscillator board (OSC-2)

(3) Replacing the Oscillator Circuit Boards

Figures 3.5 and 3.6 show how to replace the oscillator circuit boards. For the position of the oscillator circuit board, see Figure 2.2 of M37900T2-RPD-E User's Manual.

(1) Remove the four screws of both sides of this product and lift off the upper cover (see Figure 3.5).
(2) Unscrew the screw connecting the oscillator circuit board (see Figure 3.6).
(3) Lift off the oscillator circuit board.
(4) Attach the J1 connector of another oscillator circuit board for replacement to the connector J1 (or J2) of the interface board M37900T-PRT.
(5) Secure the oscillator circuit board to the interface board M37900T-PRT with the screw.
(6) Replace the upper cover and secure it with the four screws.

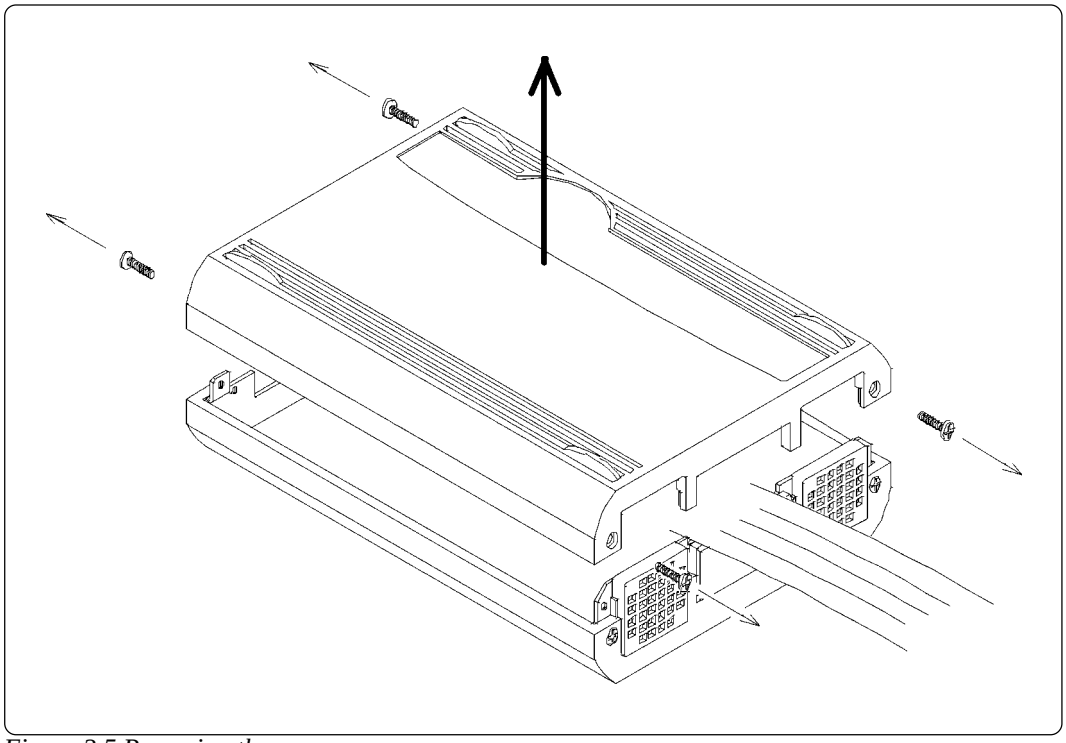


Figure 3.5 Removing the upper cover

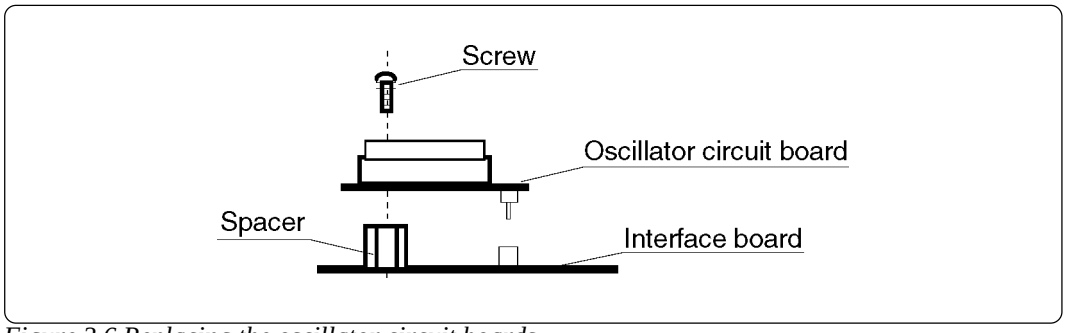


Figure 3.6 Replacing the oscillator circuit boards

⚠ CAUTION

When Removing the Upper Cover:

- Always shut OFF power when removing the upper cover or setting the switches.

3.2 Switch Settings

It is necessary to set the switches of the M37905T-PRB for debugging according to the target system. Figure 3.7 shows the positions of the switches of the M37905T-PRB, and Table 3.2 shows the switch settings.

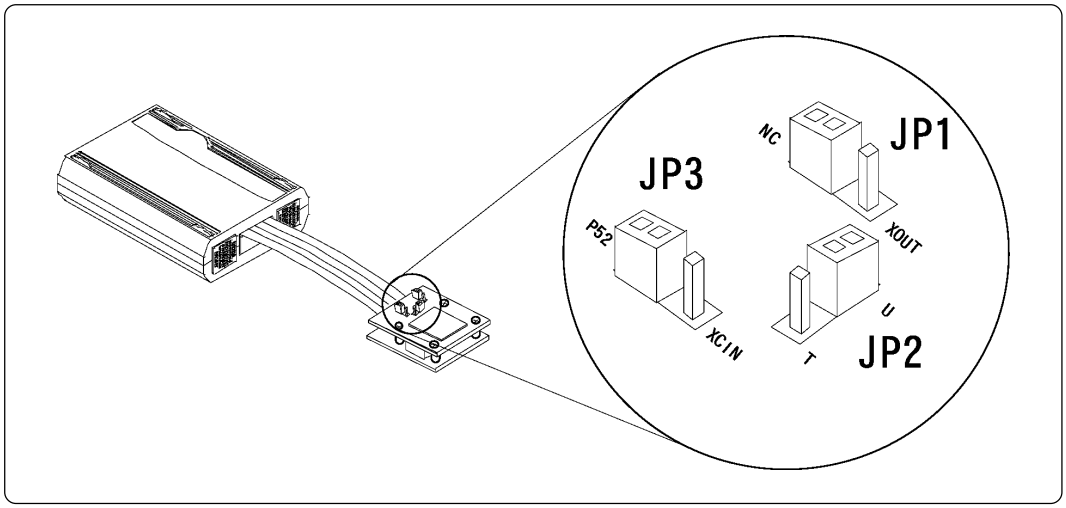


Figure 3.7 Positions of the switches and their factory-settings

Table 3.2 Switch settings of the M37905T-PRB

Function	Switch No.	Switch setting	
X_{OUT} output	JP1	NC ○○○ XOUT Does not output X_{OUT}. (Factory-setting)	NC ○○○ XOUT Outputs X_{OUT}.
PLL filter circuit	JP2	U ○ ○ ○ T Uses the PLL filter circuit on the target system or does not using the PLL function (Factory-setting).	U ○ ○ ○ T Uses the PLL filter circuit on the pod probe.
MCU 32-pin function	JP3	P52 ○○○ XCIN Uses as P52 or uses X_{CIN} on the target system (Factory-setting).	P52 ○○○ XCIN Uses the oscillator board for X_{CIN} in the emulation pod.

⚠ CAUTION

Note on Switch Settings:

- Always shut OFF power before setting switches. The power ON state could destroy internal circuits.

3.3 A-D Conversion Bypass Capacitor

This product has foot patterns on the board for mounting a bypass capacitor for the A-D converter circuit. Mount a suitable bypass capacitor as occasion demands.

Figure 3.8 shows the position of the bypass capacitor.

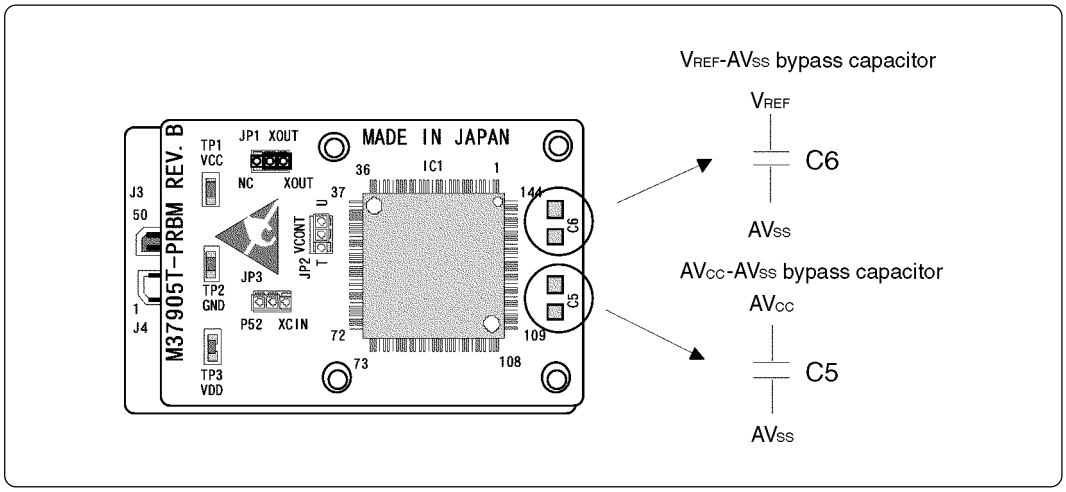


Figure 3.8 Foot patterns of A-D conversion bypass capacitor

IMPORTANT

Note on the Operation of A-D Converter:

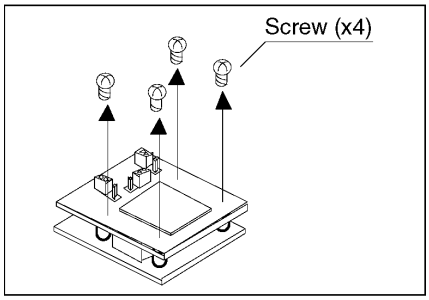
- The characteristics of A-D converter differ from those of actual MCU because there are a converter board and other devices between the emulator MCU and the target system. Make the final evaluation of the A-D converter with the actual MCU.

3.4 Connecting the Emulation Pod Main Unit

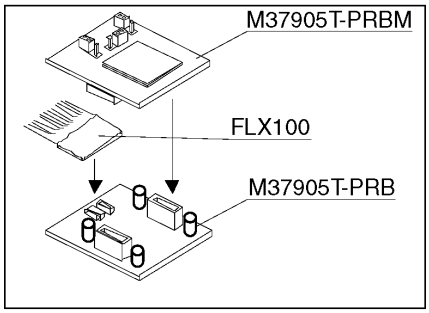
The emulation pod for 7905 Group MCUs consists of the following two products.

(1) Emulation pod: M37900T2-RPD-E
(2) Pod probe: M37905T-PRB

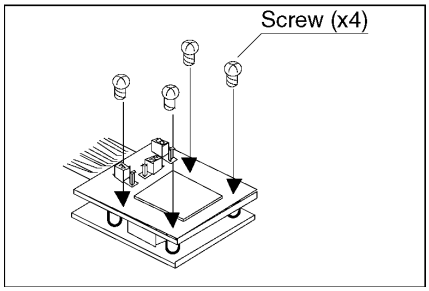
It is necessary to connect the M37905T-PRB to the M37900T2-RPD-E for the emulation of 7905 Group MCUs. Figure 3.9 shows how to connect them.



(1) Unscrew the four screws of the M37905T-PRB.



(2) Connect connectors J3 and J4 of the M37900T2-RPD-E's FLX100 to connectors J3 and J4 of the M37905T-PRB. And connect connectors J1 and J2 of the M37905T-PRBM to connectors J5 and J6 of the M37905T-PRB.



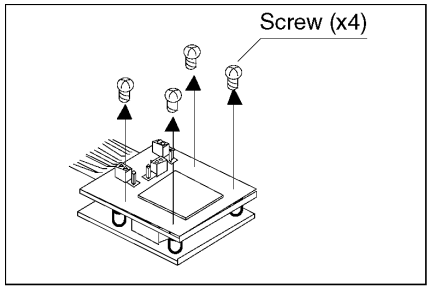
(3) Fix the M37905T-PRB with the four screws.

Figure 3.9 Connecting pod probe M37905T-PRB

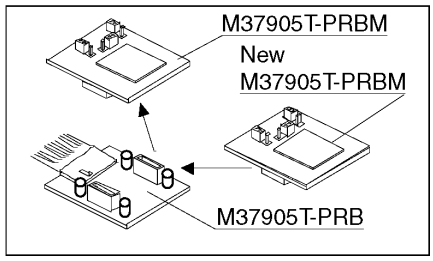
With the 7900 Series emulator system, the internal flash ROM of the emulator MCU is used as an emulation memory.

As write/erase iterations to the internal ROM are limited, it is necessary to replace the MCU board (M37905T-PRBM) depending on its life span.

How to replace the MCU board is shown in Figure 3.10.



(1) Unscrew the four screws of the M37905T-PRB.



(2) Remove the M37905T-PRBM from the M37905T-PRB. In this time, lift off the M37905T-PRBM horizontally. Otherwise, the connector may cause a break.

Figure 3.10 Removing MCU board M37905T-PRBM

⚠ CAUTION

When Connecting Pod Probe:

- Be sure to turn off the power before making connections. Otherwise, the internal circuits may be damaged.
- The small connectors (J3 and J4) of the M37905T-PRB are guaranteed for only 20 insertion/removal iterations.
- The small connectors (J1 and J2) of the M37905T-PRBM and those (J5 and J6) of the M37905T-PRB are guaranteed for only 50 insertion/removal iterations.

3.5 Connecting the Target System

There are two ways available to connect the emulation pod to target systems as shown in Figure 3.11.

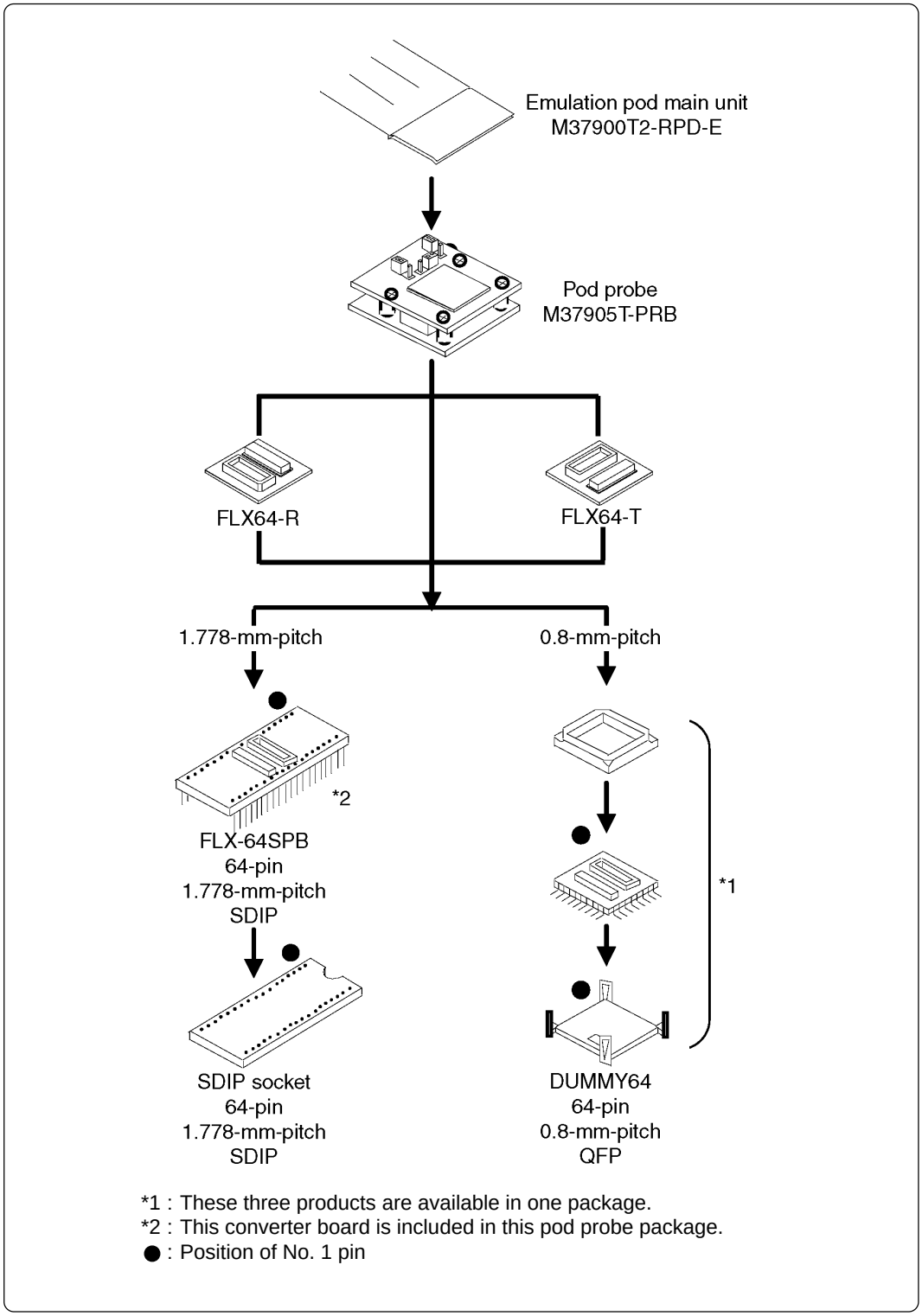
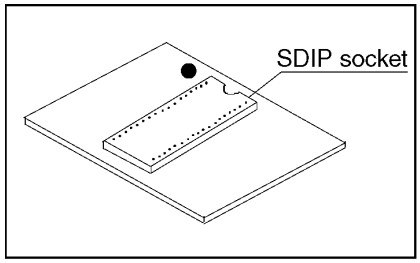


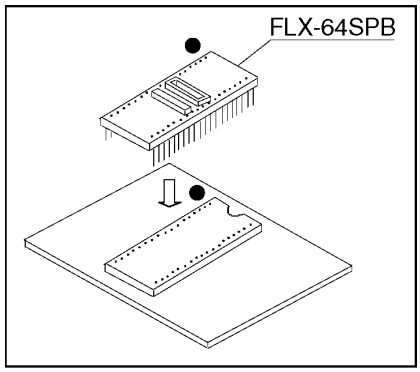
Figure 3.11 Connecting the target system

For purchasing the FLX64-T, FLX64-R and DUMMY64, contact your local distributor.

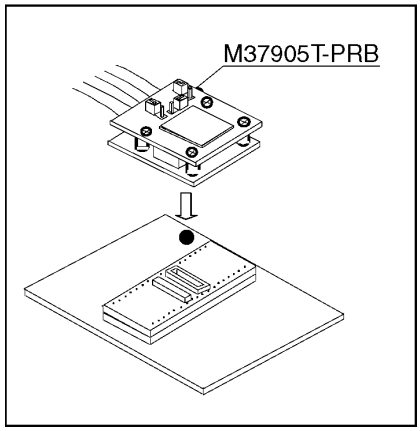
Figure 3.12 shows how to connect the pitch converter board FLX-64SPB for 64-pin 1.778-mm-pitch SDIP.



(1) Mount the commercially available SDIP socket on the target system.



(2) Attach the FLX-64SPB to the SDIP socket.



(3) Connect the M37905T-PRB to the FLX-64SPB.

Figure 3.12 Connecting the pitch converter board FLX-64SPB for 64-pin 1.778-mm-pitch SDIP

⚠ CAUTION

Notes on Connecting the Target System:

- Always shut OFF power before connecting the target system.
- Take care not to attach the FLX-64SPB to the socket in an inverted position. It may cause a fatal damage to the internal circuit.

MEMO

Chapter 4. Specifications

This chapter describes specifications of this product.

Chapter 4. Specifications

4.1 Specifications

Table 4.1 lists the specifications of the M37905T-PRB.

Table 4.1 Specifications of the M37905T-PRB

Emulators		PC4701
Emulation pod main unit		M37900T2-RPD-E
Applicable MCUs		7905 Group MCUs
Emulator MCU		M37905FCCWP (pre-mounted on the M37905T-PRBM)
Usable MCU mode		Single-chip mode
Running mode	Max. operating frequency	20 MHz
	Clock supply	Internal oscillator board, switchable to an external oscillator
	Min. instruction execution time	About 50 ns (20 MHz)
Operating temperature range		5 to 35°C (no dew)
Storage temperature range		-10 to 60°C (no dew)
Power supply to emulation pod		Supplied from the emulator main unit
Connection to the target system	64P4B	When connecting to the 1.778-mm-pitch 64-pin SDIP foot pattern, possible to connect via the FLX-64SPB.
	64P6N-A	When connecting to the 0.8-mm-pitch 64-pin QFP foot pattern, possible to connect via the DUMMY64 (option).

4.2 Electrical Characteristics

The pins of MCU excluding X_{IN}, MD0, MD1 and RESET* pins are directly connected to the target system via the converter board.

Table 4.2 lists the electrical characteristics of the device used for X_{IN}, MD0 and RESET* pins.

*Table 4.2 Electrical characteristics of X_{IN}, MD0 and RESET**

Symbol	Parameter		Standard values		Unit
		V_{CC}	Min.	Max.	
V_{IH}	High level input voltage	3.0 - 5.0	V_{CC} ×0.7	-	V
V_{IL}	Low level input voltage	3.0 - 5.0	-	V_{CC} ×0.3	V
I_{IN}	Input current	0.0 - 5.0	-	±0.1	μA

4.3 Connection Diagram

Figure 4.1 shows the connection diagram of the emulation pod for 7905 Group (M37900T2-RPD-E and M37905T-PRB). This connection diagram mainly shows the interface section, and the circuits which are not connected to the target system such as the emulator's control system are omitted.

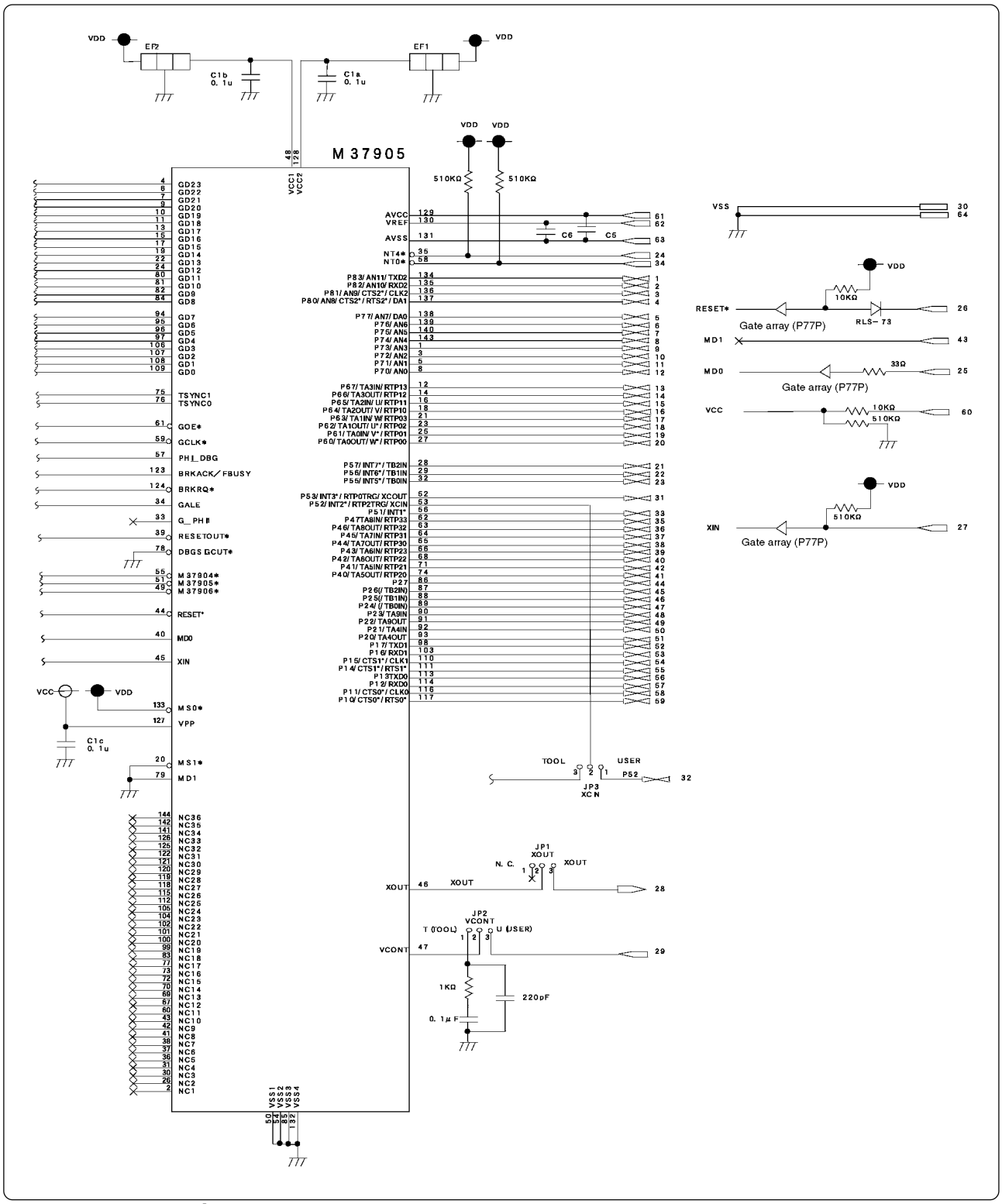


Figure 4.1 Connection diagram

4.4 External Dimensions of Pod Probe

Figure 4.2 shows the external dimensions of the M37905T-PRB.

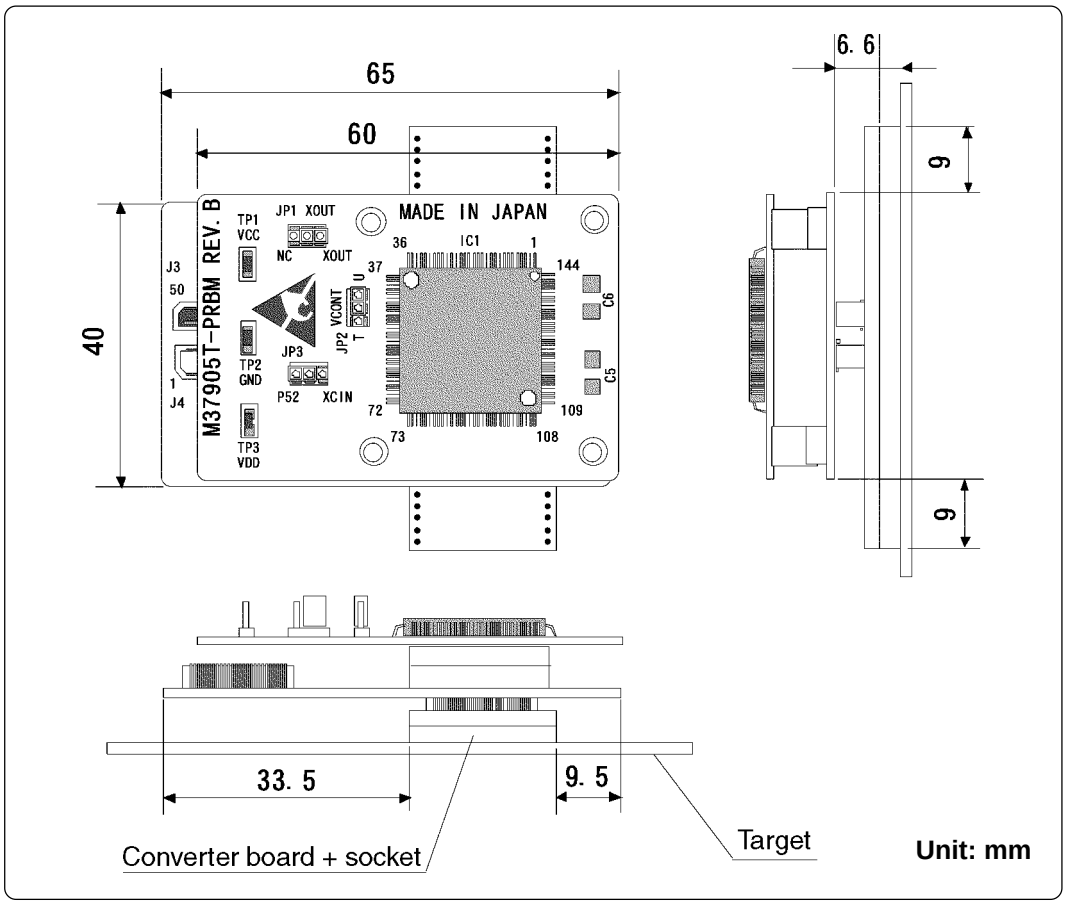


Figure 4.2 External dimensions of the pod probe (M37905T-PRB)

Chapter 5. Troubleshooting

This chapter describes how to troubleshoot when this product does not work properly.

Chapter 5. Troubleshooting

When this product does not work properly, check the following.

5.1 When the Emulator Debugger Does Not Operate

(1) Errors Occur When Operating the Emulator Debugger (When the target system is connected)

Table 5.1 Checkpoints of errors when starting up emulator debugger M3T-PD79 (target is connected)

Error	Checkpoint
Communication ERROR Data is not sent to the target	Check all emulator debugger settings, interface cable connections and switches on the rear of the PC4701 match. *- See the user's manuals of the PC4701 and emulator debugger.*
Target system is not constructed properly	(1) Download the proper firmware. *- See the user's manuals of the emulator debugger.* (2) Recheck the connection between the PC4701, the emulation pod and this product. *- See "3.4 Connecting the Emulation Pod Main Unit" (page 26).* *- See user's manual of the M37900T2-RPD-E.*
The version of M3T-PD79 and the firmware on the target system are not same	Download the proper firmware. *- See the user's manual of the emulator debugger.*
Target MCU is reset state	(1) Check the reset pin of the target system is pulled up. (2) Check the reset pin of the target system has changed from "L" to "H" level.
Target MCU cannot be reset Flash ROM erase error occurred	(1) If the reset circuit of the target system has a watchdog timer, disable the timer. (2) Check power is properly supplied to the target system and that the target system is properly grounded. (3) Check your emulator debugger M3T-PD79 is V.2.10 or later. (4) The flash ROM of the MCU may be worn-out. Contact your local distributor.
Target clock is stopped	Check the oscillation circuit of the target system is oscillating properly.
Target MCU is not receiving power	Check power is properly supplied to the target system and that the target system is properly grounded.
Not connected to target Cannot connect to target	(1) Recheck the connection of the emulation pod and this product. *- See "3.4 Connecting the Emulation Pod Main Unit" (page 26).* (2) Recheck the connection of the FLX-64SPB and the socket. *- See "3.5 Connecting the Target System" (page 28).*
Target MCU is uncontrollable Reset target system	(1) Check the program is not accessing to the unused area. (2) Check the switch settings of the pod probe. *- See "3.2 Switch Settings" (page 24).*

(2) Errors Occur When Operating the Emulator Debugger (When the target system is not connected)

Table 5.2 Checkpoints of errors when starting up emulator debugger M3T-PD79 (target is not connected)

Error	Checkpoint
Communication ERROR Data is not sent to the target	Check all emulator debugger settings, interface cable connections and switches on the rear of the PC4701 match. *- See the user's manuals of the PC4701 and emulator debugger.*
Target system is not constructed properly	(1) Download the proper firmware. *- See the user's manual of the emulator debugger.* (2) Recheck the connection between the PC4701, the emulation pod and this product. *- See "3.4 Connecting the Emulation Pod Main Unit" (page 26).* *- See user's manual of the M37900T2-RPD-E.*
The version of M3T-PD79 and the firmware on the target are not same	Download the proper firmware. *- See the user's manual of the emulator debugger.*
Target MCU cannot be reset Flash ROM erase error occurred	(1) Check your emulator debugger M3T-PD79 is V.2.10 or later. (2) The flash ROM of the MCU may be worn-out. Contact your local distributor.
Target MCU is uncontrollable Reset target system	(1) Check the program is not accessing to the unused area. (2) Check the switch settings of the pod probe. *- See "3.2 Switch Settings" (page 24).*

5.2 Operation Differs from That of Actual MCUs

(1) Initializing the Internal Resources of MCU at Power-on

With this product, the internal resources of the MCU are initialized when starting up the emulator. Therefore, the operation differs from that of actual MCUs.

(2) Oscillator Circuits

Make note of the fact that in the oscillator circuit where a resonator is connected between the X_{IN} and X_{OUT} pins, oscillation does not occur because a flexible cable, buffer IC and other devices are used between the emulator MCU and the target system.

(3) When the A-D Conversion Values are Different from Expected Values

The A-D converter characteristics differ from actual MCU characteristics because there are a converter board and other devices between the MCU and the target system. Make the final evaluation of the A-D converter with the actual MCU.

(4) When the D-A Conversion Values are Different from Expected Values

The D-A converter characteristics differ from actual MCU characteristics because there are a converter board and other devices between the MCU and the target system. Make the final evaluation of the D-A converter with the actual MCU.

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Chapter 6. Maintenance and Warranty

This chapter describes how to maintenance, repair provisions and how to request for repair.

Chapter 6. Maintenance and Guarantee

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 twelve months 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 twelve months 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 twelve months 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 Request for Repair

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

Customer

Fill in the Repair Request Sheet included with this product, then send it along with this product for repair to your local distributor. Make sure that information in the Repair Request Sheet is written in as much detail as possible to facilitate repair.

Distributor

After checking the contents of fault, the distributor should please send the faulty product along with the Repair Request Sheet to Renesas Solutions Corp.

Renesas Solutions

When the faulty product is repaired, it will be returned to the customer at the earliest convenience.

⚠ CAUTION

Note on Transporting the Product:

- When sending your product for repair, use the packing box and cushion material supplied with this product when delivered to you and specify handling caution for it to be handled 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 conductive polyvinyl supplied with this product (usually a blue bag). When you use other bags, they may cause a trouble on your product because of static electricity.

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M37905T-PRB User's Manual

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