

**F<sup>2</sup>MC-16L/16LX**  
**EMULATION POD**  
**MB2145-507**  
**HARDWARE MANUAL**



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**FUJITSU LIMITED**



# PREFACE

## ■ Using the Emulation Pod Safely

This manual contains important information regarding the safe use of the MB2145-507 emulation pod.

Be sure to read this manual before using the MB2145-507 emulation pod and use the emulation pod only as described in this manual.

Read "Safety Warnings" at the beginning of this manual and make a careful safety check before using the emulation pod.

Store this manual in a convenient place so that you can refer to it at any time while you are using the emulation pod.

## ■ Objectives and intended readers

The MB2145-507 emulation pod is a development support tool for developing and evaluating application products that use Fujitsu 16-bit microcontrollers, F<sup>2</sup>MC-16L/16LX/16F series devices.

This manual explains how to handle and connect the MB2145-507 emulation pod. It is intended for engineers who use the MB2145-507 emulation pod (hereafter "emulation pod") to develop application products that use the F<sup>2</sup>MC-16L/16LX/16F series devices.

## ■ Product Environment

The emulation pod operates properly at a temperature of 5 °C to 45 °C and a humidity of 30% to 80%. Do not use in high-temperature and high-humidity environments or in any environment where condensation will form.

Do not put heavy objects on the emulation pod. Since the cabinet is made of plastic, it may break.

When power is turned on, keep the emulation pod away from items that can short-circuit or fire. Keep the emulation pod on as level a surface as possible. Do not operate the emulation pod in a location subject to severe vibration, dust, or explosive gases.

If the emulation pod is not used in the correct environment as described above, injury to the user and nearby persons or damage to the emulation pod or other property may result.

Packing materials used to ship the emulation pod can be reused to transport the emulation pod in the case of a failure. If possible, keep the packing materials.

## ■ Trademark

F<sup>2</sup>MC is the abbreviation of FUJITSU Flexible Microcontroller.

Other system and product names in this manual are trademarks of respective companies or organizations.

The symbols <sup>TM</sup> and ® are sometimes omitted in this manual.





## ■ Safety Warnings

Important warnings items are given on the following pages.

Before using the emulation pod, read each warning and make a safety check.




Indicates that improper use may cause death or severe injury.

Warning	Description	Page
<b>Plug</b> 	<p>If an abnormal condition such as heat, smoke, unusual odor, or unusual noise occurs, immediately turn off the power and disconnect the power plug from the receptacle.</p> <p>When the smoke has disappeared, ask the distributor to repair the emulation pod. Never make repairs yourself, since it is very dangerous. Using the emulation pod in an abnormal state may cause a fire or electric shock.</p>	8
	<p>If water or other liquid, a metallic object, or other foreign substance gets inside the emulation pod, immediately turn off the power and disconnect the power plug from the receptacle.</p> <p>Next, contact the distributor.</p> <p>Using the emulation pod in an abnormal state may cause a failure, fire, or electric shock.</p>	8
	<p>If you hear thunder, disconnect the power plug from the receptacle. Using the emulation pod during a thunderstorm can damage the emulation pod or cause a fire.</p>	9
<b>Electric shock</b> 	<p>Before connecting or disconnecting cables, turn off the power to the emulation pod and connected devices, and disconnect the power plug from the receptacle.</p> <p>Failure to do so may cause an electric shock.</p>	9
	<p>Do not put your fingers in the connector inlet.</p> <p>Putting your fingers in the connector inlet can result in an electric shock or failure.</p>	9
<b>No disassembly</b> 	<p>Never open the emulation pod case. Do not modify the emulation pod without permission.</p> <p>Opening the case or modifying the emulation pod may cause a failure, fire, or electric shock.</p>	9
<b>No moisture</b> 	<p>Do not use the emulation pod in a wet area such as a bathroom or shower room.</p> <p>Using the emulation pod in a wet area may cause a failure, fire, or electric shock.</p>	9





Indicates that improper use may cause death or severe injury.

Warning	Description	Page
<p data-bbox="240 331 386 359"><b>Prohibition</b></p> 	Do not touch the emulation pod with wet hands. Doing so may cause an electric shock.	10
	Do not put the emulation pod in a location with a lot of moisture, dust, or soot or in a location with poor ventilation. Do not place the emulation pod near an open flame. Doing so may cause a failure, fire, or electric shock.	10
	Do not insert or drop any metallic, combustible, or other object through a ventilation or other type of opening in the emulation pod. Doing so may cause a failure, fire, or electric shock.	10
	Do not use a voltage other than the indicated power voltage. Do not connect the power cord in a daisy chain. Doing so may cause a fire or electric shock.	10
	Do not damage or alter any cables. Putting a heavy object on a cable, or pulling, forcibly bending, distorting, or heating a cable may damage the cable and cause a fire or electric shock.	10

**⚠ CAUTION**




Indicates that improper use may cause minor or moderate injury, or may damage the emulation pod, connected equipment, data or other software resources, or other property.

Warning	Description	Page
<p><b>Plug</b></p> 	<p>Before moving the emulation pod, disconnect the power plug from the receptacle. Also, disconnect all other cables. Watch where you step during work. Damaging a cable may cause a fire or electric shock. A falling device may cause injury.</p>	10
	<p>If the emulation pod will not used for a long time, for safety reasons, disconnect the power plug from the receptacle. Failure to do so may cause a fire or electric shock.</p>	10
<p><b>Prohibition</b></p> 	<p>Do not put the emulation pod in a location subject to severe vibration or in a location that is not level or stable. Doing so may cause a failure or cause the emulation pod to fall.</p>	11
	<p>Do not put the emulation pod in a location near a speaker or television tuner or in any location subject to a magnetic or electric field. Doing so may cause a failure.</p>	11
	<p>When disconnecting the power plug or a cable, hold the power plug or connector itself. Do not pull on the cable. Pulling on a cable may cause the core wire to be exposed or cut, resulting in a failure, fire, or electric shock.</p>	11, 12
	<p>To prevent damage from static electricity, do not let a finger or object contact a connector pin.</p>	12
	<p>Do not block the emulation pod's ventilation openings. Blocking ventilation openings causes heat to accumulate and may cause a fire.</p>	11, 12
	<p>Do not subject the emulation pod to a shock. Doing so may cause a failure.</p>	13
	<p>Do not place the emulation pod in direct sunlight, in a high-temperature or high-humidity environment, or in an environment in which condensation can form.</p>	13
	<p>Do not store the emulation pod in a dusty location. Doing so may cause a failure.</p>	13
	<p>Because the emulation pod uses many electronic parts, do not store it in a location subject to strong electric or magnetic fields for a long period. Doing so may cause a failure.</p>	13
<p>Before connecting or disconnecting a cable, turn off the power. Failure to do so may cause an electric shock.</p>	17, 19, 20	



**⚠ CAUTION**

Indicates that improper use may cause minor or moderate injury, or may damage the emulation pod, connected equipment, data or other software resources, or other property.

Warning	Description	Page
<p><b>Prohibition</b></p> 	<p>When disconnecting a cable, hold the cable by the connector case. Do not pull on the cable. Doing so may break a wire in the cable.</p>	<p>17, 19, 20</p>
	<p>Before mounting the evaluation MCU, turn off the power. Failure to do so may cause an electric shock.</p>	<p>22</p>
	<p>Before operating the clock switch, turn off the power. Failure to do so may cause an electric shock.</p>	<p>23</p>
	<p>Before setting the jumper switch for the power supply, turn off the power. Failure to do so may cause an electric shock.</p>	<p>25</p>
	<p>Before setting the jumper switch for the C-pin circuit connection, turn off the power. Failure to do so may cause an electric shock.</p>	<p>27</p>
	<p>When turning on the power, follow the procedure described in the manual. Failure to do so may cause a device failure.</p>	<p>28</p>
	<p>After the emulation pod power is turned on, do not turn off and turn on the user system power. Doing so cause a device failure.</p>	<p>28</p>
	<p>When power is on, do not carry the emulation pod, or subject it to shock or vibration. Doing so may cause a device failure.</p>	<p>28</p>
	<p>When turning off the power, follow the procedure described in the manual. Failure to do so may cause a device failure.</p>	<p>29</p>
<p><b>Attention</b></p> 	<p>Insert the power plug firmly in the receptacle. Failure to do so may cause a failure or a fire.</p>	<p>11</p>
<p><b>Caution</b></p> 	<p>The device can be damaged during transport. Store the packing materials used to ship the emulation pod and use them if you need to transport it.</p>	<p>2</p>
	<p>Using the emulation pod at an ambient temperature or humidity outside the specified range may cause a device failure. Always use the emulation pod within the specified temperature and humidity range.</p>	<p>6</p>

## ■ Configuration of This Manual

This manual consists of two chapters.

Read the manual completely before using the emulation pod.

### CHAPTER 1 "PRODUCT HANDLING AND SPECIFICATIONS"

This chapter explains handling of the emulation pod and gives its specifications.

Before using the emulation pod, be sure to read this chapter and check that the product and accessories are complete.

### CHAPTER 2 "CONNECTING AND SETTINGS"

This chapter explains how to connect the emulation pod and to set switches and describes the power-on and power-off sequences.

Read this chapter before turning power on.

An appendix contains the specification for the emulator interface in the user system.

## ■ Related Manuals

Also refer to the following manuals:

- *F<sup>2</sup>MC-16L/16LX/16/16H/16F Emulator Debugger Manual Windows Edition*
- *F<sup>2</sup>MC-16L/16LX/16/16H/16F Emulator Debugger Installation Guide*

- The contents of this document are subject to change without notice. Customers are advised to consult with FUJITSU sales representatives before ordering.
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# CHAPTER 1    PRODUCT HANDLING AND SPECIFICATIONS

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**This chapter explains the handling of the emulation pod and gives its specifications. Before using the emulation pod, read this chapter and check that the product and accessories are complete.**

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- 1.1 "Checking the Components"
- 1.2 "Drawings of Emulation Pod and Names of Parts"
- 1.3 "General Specifications"
- 1.4 "Optional Products"
- 1.5 "Note on Errors"
- 1.6 "Notes on Handling the Emulation Pod"
- 1.7 "Notes on Use"

## 1.1 Checking the Components

---

Before using the emulation pod, make sure that no component is missing.

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### ■ Checking the Components



<b>Caution</b>	The device can be damaged during transport. Store the packing materials used to ship the emulation pod and use them if you need to transport it.

Before using the emulation pod, check that the following component has been provided.

- Emulation pod main unit: 1

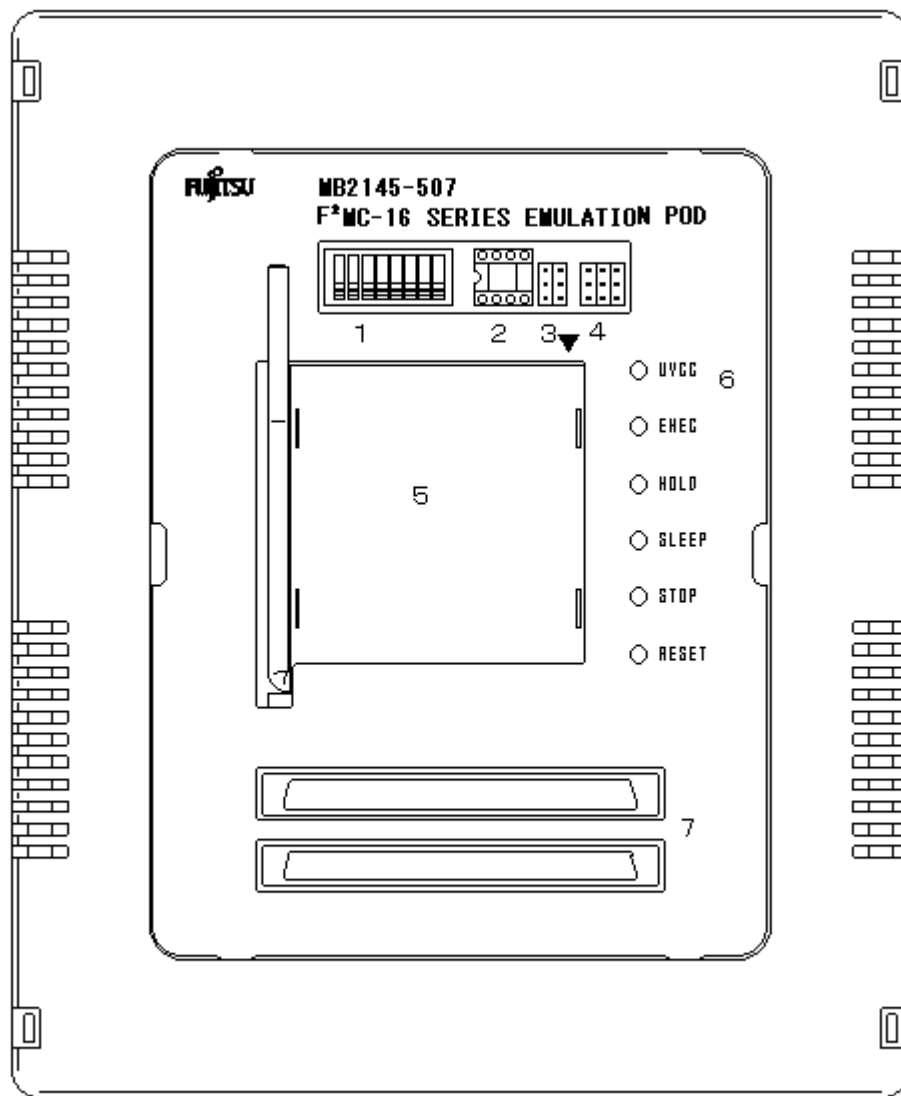
## 1.2 Drawings of Emulation Pod and Names of Parts

This section gives the names of the emulation pod parts. For information on connection and settings, see Chapter 2, "Connection and Settings."

### ■ Views of Emulation Pod and Names of Parts

Figure 1.2-1 "Appearance of emulation pod [Front view]" to Figure 1.2-3 shows views of the emulation and names of parts of its various parts.

Figure 1.2-1 Appearance of emulation pod (Top view)

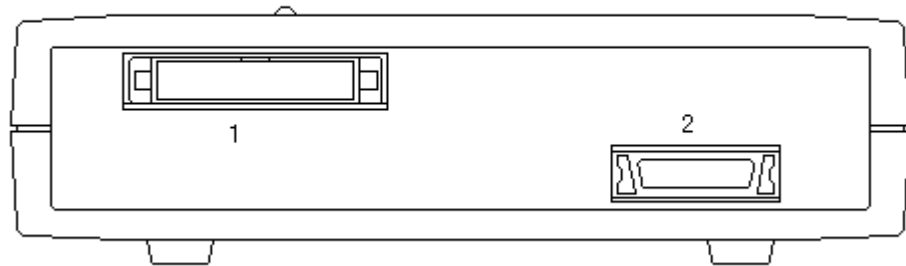


## CHAPTER 1 PRODUCT HANDLING AND SPECIFICATIONS

No.	Part	Description
1	Switches	Clock/C-pin toggle switch.
2	Crystal oscillator mounting socket	IC socket for mounting the crystal oscillator.
3	Secondary clock supply jumper	Jumper setting for switching connections for secondary clocks and terminals X0A and X1A.
4	Power source jumper	Jumper for changing the power source.
5	MCU mounting socket	IC socket for mounting the evaluation MCU.
6	UVCC LED	LED indicating the status of the evaluation MCU power. Lights when the user system power is from 1.8 V to 5.5 V.
	EXEC LED	Lights during program execution.
	HOLD LED	Lights in the hold state.
	SLEEP LED	Lights in the sleep state.
	STOP LED	Lights in the stop state.
	RESET LED	Lights in the reset state.
7	Probe connector	Connector for connecting the probe cable.

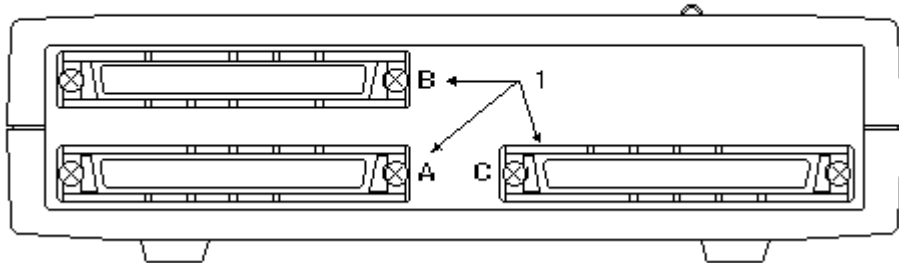


Figure 1.2-2 Appearance of emulation pod (Front view)



No.	Name	Description
1	Expansion connector	Connector for connecting an accessory.
2	External probe connector	Connector for connecting the external probe.

Figure 1.2-3 Appearance of emulation pod (Rear view)




No.	Name	Description
1	Main unit interface cable connector	Connector for connecting the main unit interface cable.

## 1.3 General Specifications

Table 1.3-1 "General specifications" lists the general specifications of the emulation pod.

### ■ General Specifications of the Emulation Pod



<p><b>Caution</b></p> 	<p>Using the emulation pod at an ambient temperature or humidity outside the specified range may cause a device failure. Always use the emulation pod within the specified temperature and humidity range.</p>
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**Table 1.3-1 General specifications**

Item	Specification	
Name	F <sup>2</sup> MC-16L/16LX/16F emulation pod	
Model	MB2145-507	
Power	Emulator power	Voltage: +5V ± 5%
	User system power	Voltage: +1.8 V to 5.5 V <sup>(*1)</sup> Current consumption: 40 mA (maximum) <sup>(*2)</sup>
Operating frequency	8 KHz to 20 MHz <sup>(*1)</sup> (machine clock frequency)	
Operating temperature	5°C to 35°C	
Operating humidity	30% to 80% (no condensation)	
Cabinet dimensions	158 mm (W) x 126 mm (D) x 38 mm (H)	
Weight	500 g	

\*1: The upper limit and lower limit depend on the evaluation MCU used.  
For details, contact the Fujitsu sales division.

\*2: Current consumption for the evaluation MCU is not included.

## 1.4 Optional Products

---

Optional products for the emulation pod are listed in Table 1.4-1 "Optional products". Purchase these as necessary.

---

### ■ Optional Products

**Table 1.4-1 Optional products**

Name	Model
2140 main unit	MB2141A
Probe cable	- (*1)
External probe	MB2142-11
Evaluation MCU	MB90Vxxx (*2)

\*1: The model differs according to the package.

For details, contact the Fujitsu sales division.

\*2: The model differs according to the evaluation MCU used.

For details, contact the Fujitsu sales division.

## 1.5 Note on Errors

---

If an error occurs while you are using the emulation pod, read the warning below.

---

### ■ Note on Errors

#### WARNING

##### Plug



If an abnormal condition such as heat, smoke, unusual odor, or unusual noise occurs, immediately turn off the power and disconnect the power plug from the receptacle.

When the smoke has disappeared, ask the distributor to repair the emulation pod. Never make repairs yourself, since it is very dangerous.

Using the emulation pod in an abnormal state may cause a fire or electric shock.

If water or other liquid, a metallic object, or other foreign substance gets inside the emulation pod, immediately turn off the power and disconnect the power plug from the receptacle.

Next, contact the distributor.

Using the emulation pod in an abnormal state may cause a failure, fire, or electric shock.

## 1.6 Notes on Handling the Emulation Pod

When handling the product, observe the precautions below.

### ■ Notes on Handling the Emulation Pod

#### WARNING

##### Electric shock



Before connecting or disconnecting cables, turn off the power to the emulation pod and connected devices, and disconnect the power plug from the receptacle. Failure to do so may cause an electric shock.

Do not put your fingers in the connector inlet. Putting your fingers in the connector inlet can result in an electric shock or failure.

##### Plug



If you hear thunder, disconnect the power plug from the receptacle. Using the emulation pod during a thunderstorm can damage the emulation pod or cause a fire.

##### No disassembly



Never open the emulation pod case. Do not modify the emulation pod without permission. Opening the case or modifying the emulation pod may cause a failure, fire, or electric shock.

##### No moisture



Do not use the emulation pod in a wet area such as a bathroom or shower room. Using the emulation pod in a wet area may cause a failure, fire, or electric shock.

**⚠ WARNING**

**Prohibition**



Do not touch the emulation pod with wet hands.  
Doing so may cause an electric shock.

Do not put the emulation pod in a location with a lot of moisture, dust, or soot or in a location with poor ventilation. Do not place the emulation pod near an open flame.  
Doing so may cause a failure, fire, or electric shock.

Do not insert or drop any metallic, combustible, or other object through a ventilation or other type of opening in the emulation pod.  
Doing so may cause a failure, fire, or electric shock.

Do not use a voltage other than the indicated power voltage. Do not connect the power cord in a daisy chain.  
Doing so may cause a fire or electric shock.

Do not damage or alter any cables.  
Putting a heavy object on a cable, or pulling, forcibly bending, distorting, or heating a cable may damage the cable and cause a fire or electric shock.

**⚠ CAUTION**

**Plug**



Before moving the emulation pod, disconnect the power plug from the receptacle.  
Also, disconnect all other cables.  
Watch where you step during work.  
Damaging a cable may cause a fire or electric shock. A falling device may cause injury.

If the emulation pod will not be used for a long time, for safety reasons, disconnect the power plug from the receptacle.  
Failure to do so may cause a fire or electric shock.

 **CAUTION**

**Prohibition**



Do not block the emulation pod's ventilation openings. Blocking ventilation openings causes heat to accumulate and may cause a fire.

Do not put the emulation pod in a location subject to severe vibration or in a location that is not level or stable. Doing so may cause a failure or cause the emulation pod to fall.

When disconnecting the power plug or a cable, hold the power plug or connector itself. Do not pull on the cable. Pulling on a cable may cause the core wire to be exposed or cut, resulting in a failure, fire, or electric shock.

Do not put the emulation pod in a location near a speaker or television tuner or in any location subject to a magnetic or electric field. Doing so may cause a failure.

**Attention**



Insert the power plug firmly in the receptacle. Failure to do so may cause a failure or a fire.

## 1.7 Notes on Use

---

When using the emulation pod, observe the precautions below.

---

### ■ Notes on Use

#### CAUTION

##### Prohibition



When disconnecting the power plug or a cable, hold the power plug or connector itself. Do not pull on the cable.

Pulling on a cable may cause the core wire to be exposed or cut, resulting in a failure, fire, or electric shock.

To prevent damage from static electricity, do not let a finger or object contact a connector pin.

Do not block the emulation pod's ventilation openings.  
Blocking ventilation openings causes heat to accumulate and may cause a fire.

##### Note:

Observe setting procedures and other procedures on using the emulation pod contained in this manual.



■ Notes on Storing

 CAUTION

**Prohibition**



Do not subject the emulation pod to a shock.  
Doing so may cause a failure.

Do not place the emulation pod in direct sunlight, in a high-temperature or high-humidity environment, or in an environment in which condensation can form.

Do not store the emulation pod in a dusty location.  
Doing so may cause a failure.

Because the emulation pod uses many electronic parts, do not store it in a location subject to strong electric or magnetic fields for a long period.  
Doing so may cause a failure.

Table 1.7-1 "Ambient operating and storage temperature and humidity" shows the ambient operating and storage temperature and humidity.

**Table 1.7-1 Ambient operating and storage temperature and humidity**

	Temperature	Humidity
During operation	5 °C to 35 °C	30% to 80% (no condensation)
In storage	-20 °C to 70 °C	20% to 90% (no condensation)



# CHAPTER 2 CONNECTION AND SETTINGS

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**This chapter explains how to connect the emulation pod and set switches. It also describes power-on and power-off sequences.**

**Read this chapter before turning the power on.**

---

- 2.1 "System Configuration"
- 2.2 "Connecting the 2140 Main Unit"
- 2.3 "Connecting the Probe Cable"
- 2.4 "Connecting the External Probe"
- 2.5 "Mounting the Evaluation MCU"
- 2.6 "Supplying a Clock to the Evaluation MCU"
- 2.7 "Emulator-specific Power Supply"
- 2.8 "Switching the C-pin Circuit Connection"
- 2.9 "Power-on Sequence"
- 2.10 "Power-off Sequence"

## 2.1 System Configuration

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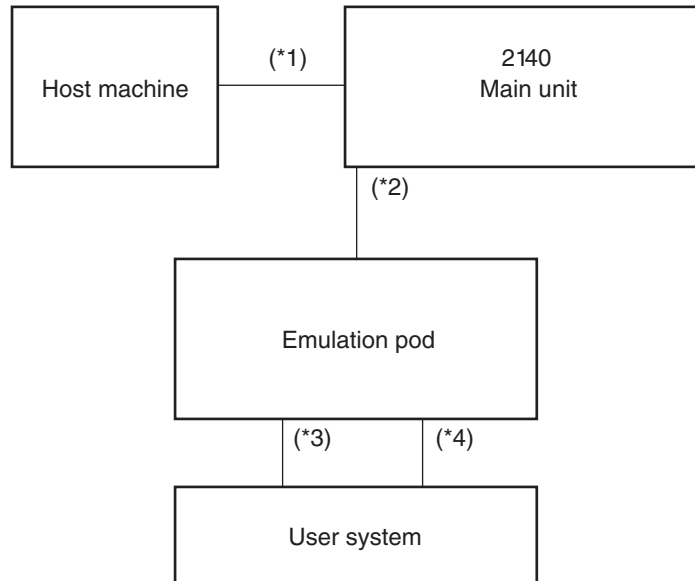
The emulation pod is designed to be connected a host machine, from which the emulation pod will be controlled.

---

### ■ System Configuration

Figure 2.1-1 "System configuration" shows the emulation pod system configuration.

**Figure 2.1-1 System configuration**



- \*1: RS232C cable
- \*2: Main unit interface cable
- \*3: Probe cable
- \*4: External probe

## 2.2 Connecting the 2140 Main Unit

---

Connect the three main unit interface cables to the main unit interface cable connectors on the back of the emulation pod as shown in Figure 2.2-1 "Connecting the 2140 main unit".

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### ■ Connecting the 2140 Main Unit



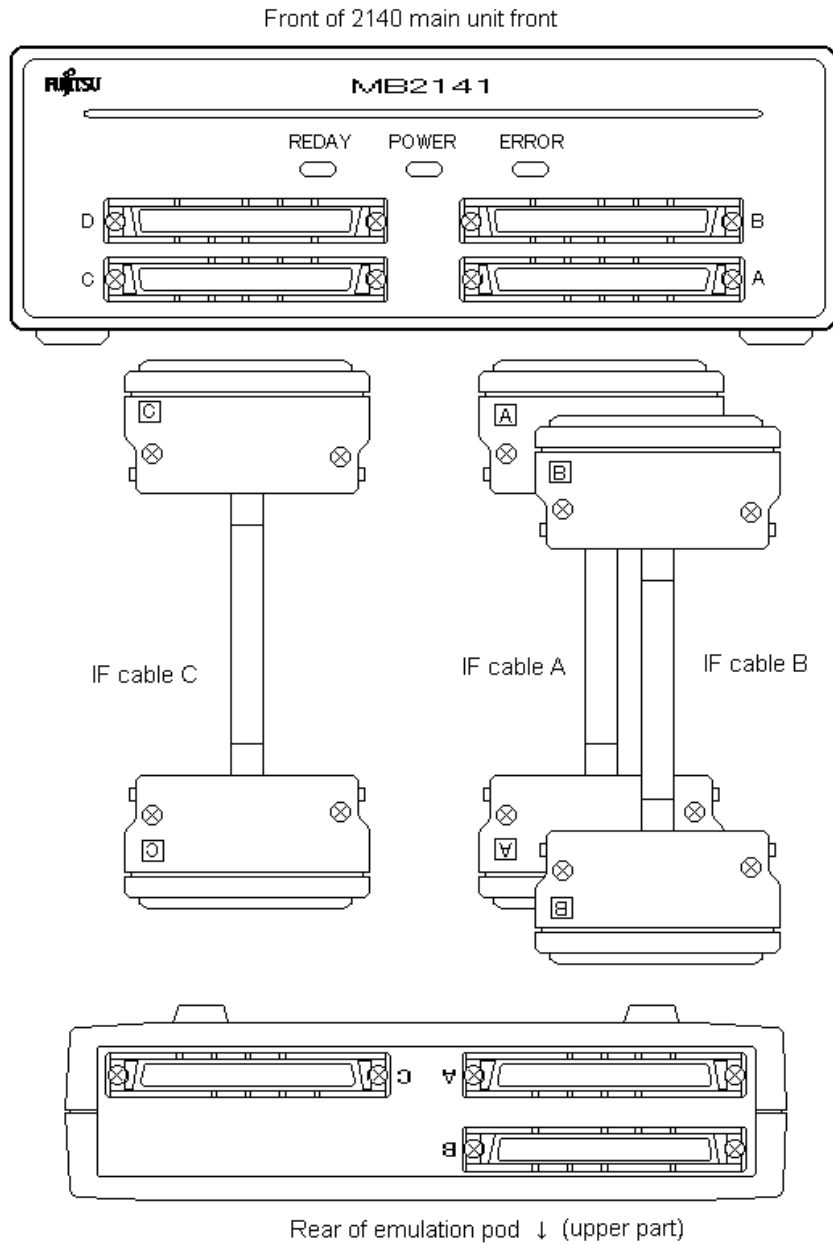
#### Prohibition



Before connecting or disconnecting a cable, turn off the power.  
Failure to do so may cause an electric shock.

When disconnecting a cable, hold the cable by the connector case. Do not pull on the cable.  
Doing so may break s wire in the cable.

Figure 2.2-1 Connecting the 2140 main unit



## 2.3 Connecting the Probe Cable

Connect the probe cable to the probe cable connector on the top of the emulation pod as shown in Figure 2.3-1 "Connecting the probe cable".

### ■ Connecting the Probe Cable

#### ⚠ CAUTION

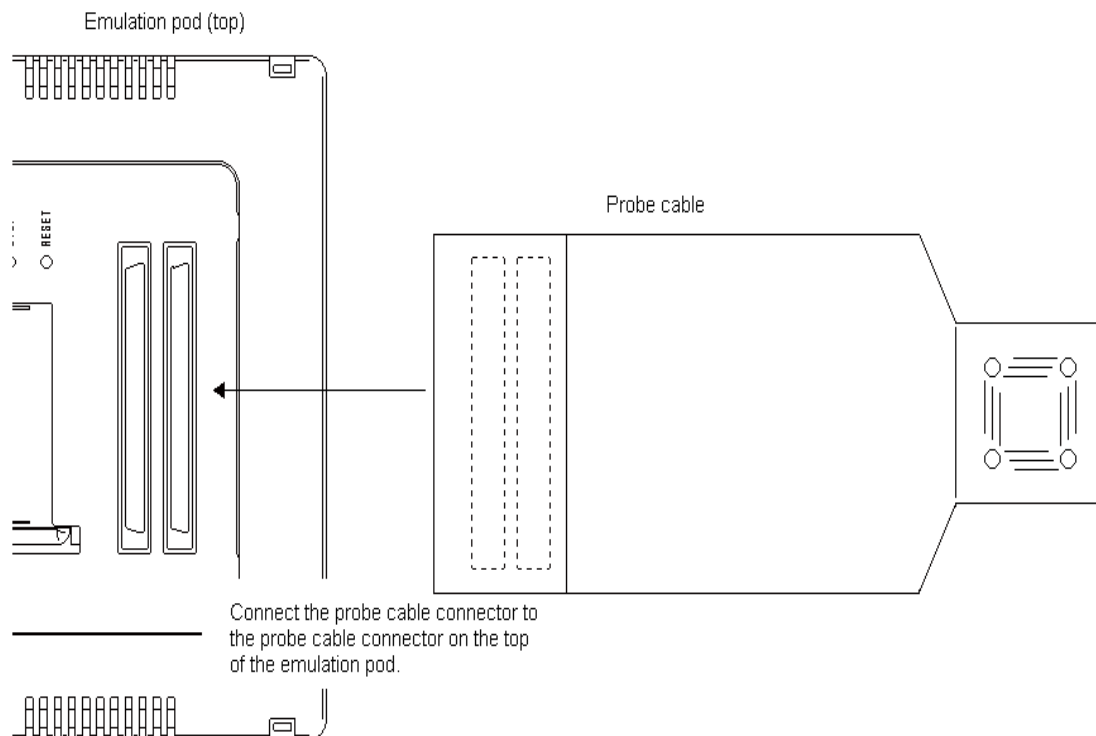
##### Prohibition



Before connecting or disconnecting a cable, turn off the power. Failure to do so may cause an electric shock.

When disconnecting a cable, hold the cable by the connector case. Do not pull on the cable. Doing so may break a wire in the cable.

Figure 2.3-1 Connecting the probe cable



## 2.4 Connecting the External Probe

Connect the external probe to the external probe connector on the front of the emulation pod.

### ■ Connecting the External Probe



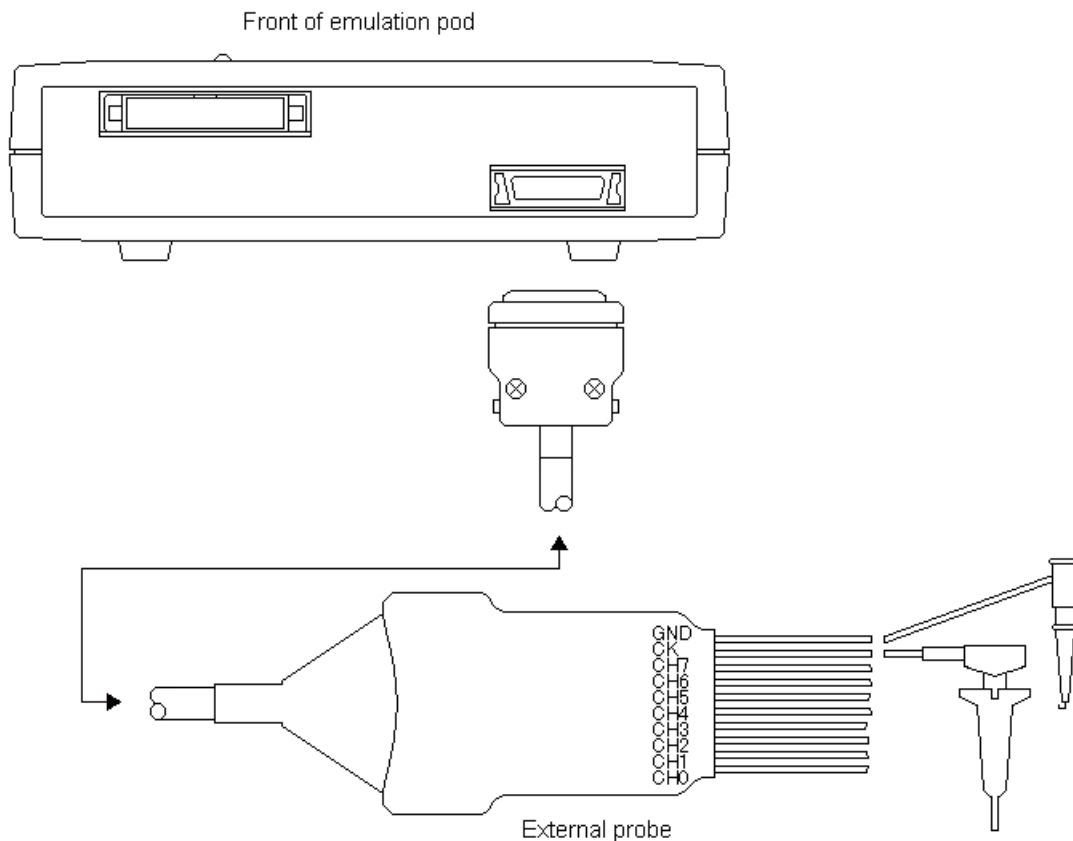
**Prohibition**



Before connecting or disconnecting a cable, turn off the power. Failure to do so may cause an electric shock.

When disconnecting a cable, hold the cable by the connector case. Do not pull on the cable. Doing so may break a wire in the cable.

**Figure 2.4-1 Connecting the external probe**





**Table 2.4-1 External probe data**

Color	External probe data	Color	External probe data
Black	CH0 (channel 0 input)	Green	CH5 (channel 5 input)
Brown	CH1 (channel 1 input)	Blue	CH6 (channel 6 input)
Red	CH2 (channel 2 input)	Purple	CH7 (channel 7 input)
Orange	CH3 (channel 3 input)	Gray	CK (external clock input)
Yellow	CH4 (channel 4 input)	Black	GND (ground)

**Notes:**

- To connect the external probe to the user system, check the signal name indicated on the label on the external probe and connect it to the user system with a test clip.
- The connection of the test clip and signal line is not strong. Do not add stress by pulling on the external probe.
- Firmly connect the connector that connects the external probe to the emulation pod.


## 2.5 Mounting the Evaluation MCU

Mount the evaluation MCU in the evaluation MCU IC socket on the top of the emulation pod as shown in Figure 2.5-1 "Mounting the Evaluation MCU".

### ■ Mounting the Evaluation MCU

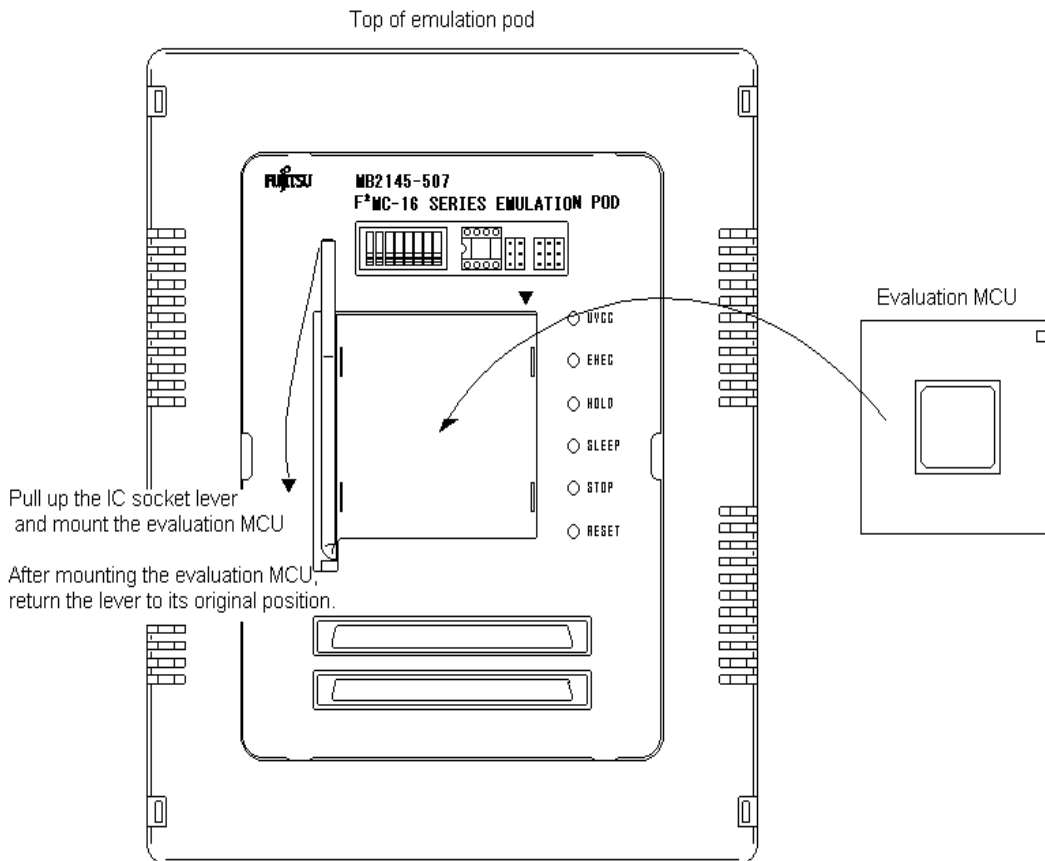
**⚠ CAUTION**

**Prohibition**



Before mounting the evaluation MCU, turn off the power.  
Failure to do so may cause an electric shock.

Figure 2.5-1 Mounting the evaluation MCU



## 2.6 Supplying a Clock to the Evaluation MCU

Select the clock to be supplied to the evaluation MCU using the clock switch and secondary clock supply jumper on the top of the emulation pod as shown in Figure 2.6-1 "Clock peripheral circuit" and Table 2.6-1 "Clock switching method".

### ■ Supplying a Clock to the Evaluation MCU

#### ⚠ CAUTION

##### Prohibition



Before operating the clock switch, turn off the power. Failure to do so may cause an electric shock.

Figure 2.6-1 Clock peripheral circuit

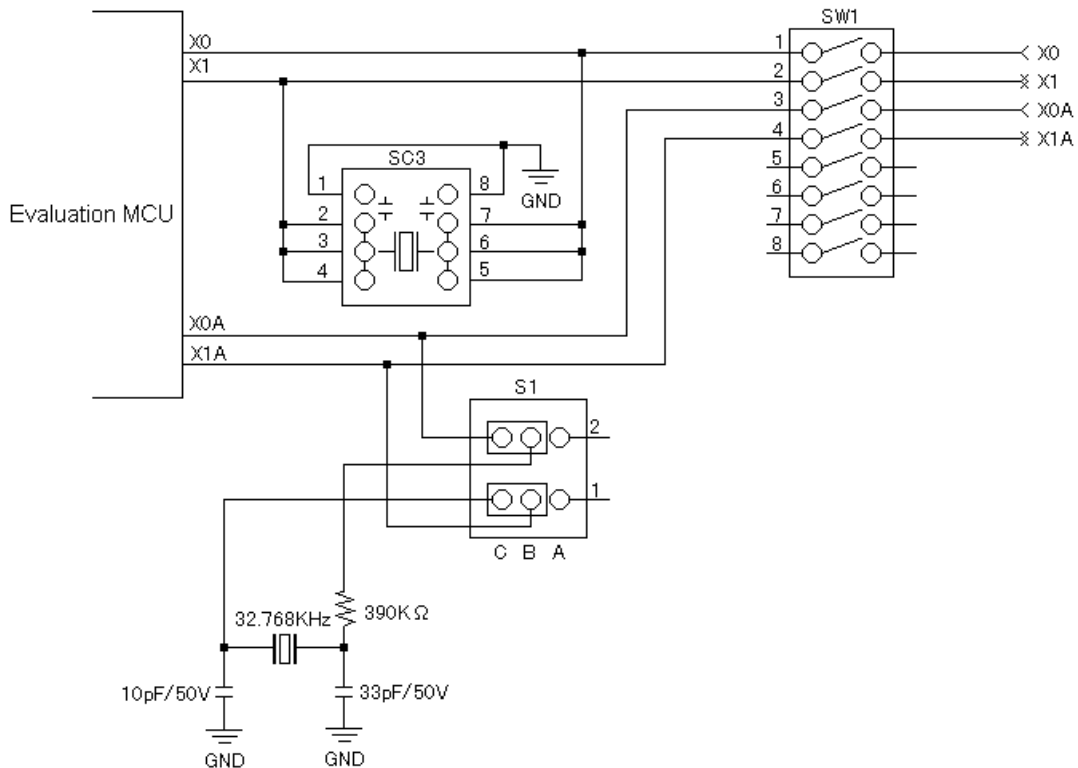


Figure 2.6-2 Crystal mounting example

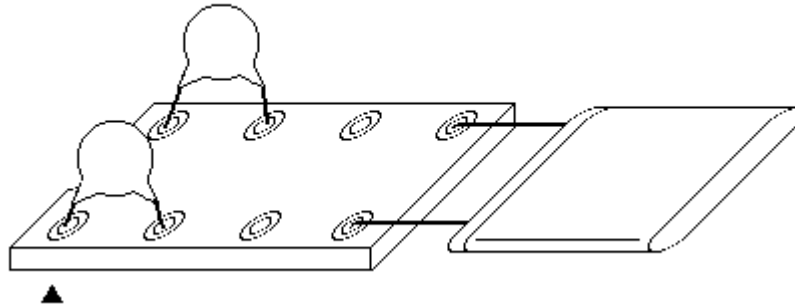


Table 2.6-1 Clock switching method

Clock supply method		SW1 setting				S1 setting
Main clock	Secondary clock	1	2	3	4	
Crystal area	Yes	OFF	OFF	OFF	OFF	B1-C1, B2-C2 shorted
	No	OFF	OFF	ON	ON	A1-B1, A2-B2 shorted
User system	Yes	ON	ON	OFF	OFF	B1-C1, B2-C2 shorted
	No	ON	ON	ON	ON	A1-B1, A2-B2 shorted

**Note:**

Oscillation by mounting crystals on the user system is not supported.

To supply a clock from the user system, provide an oscillation circuit in the user system. Include a buffer such as the CMOS buffer in the circuit, then supply the clock via the buffer.

## 2.7 Emulator-specific Power Supply

Set the jumper switch (S2) as follow by the function of the evaluation MCU.

### 1. Emulator-specific power supply switching

The setting of the emulator power supply switch depends on the power supply function of the tool interface of each evaluation MCU.

#### ■ Switching the Emulator Power Supply

Follow the precautions described below when setting of the emulator power supply switch.



#### Prohibition



Before setting the jumper switch for the power supply, turn off the power.  
Failure to do so may cause an electric shock.

#### ■ Jumper Switch (S2) Configuration

Set the emulator-specific power supply switch according to the function of the evaluation MCU and target board.

S2		A	B	C			
(1) UVCC1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		UVCC2	[Fixed]	Jumper switch for the function extension (A-B shorted)
(2) UVCC1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		UVCC2	[Fixed]	Jumper switch for the function extension (A-B shorted)
(3) UVCC1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		+5V	[Selected]	Jumper switch for switching the emulator-specific power supply

\*: UVCC1 (A-B shorted): MCU power supply  
+5V (B-C shorted): Development tool power supply

#### 1. Reserved [setting of (1) and (2)]

These jumper switches are reserved for the function extension.  
These switches short-circuit on the A-B side.

#### 2. Emulator-specific power supply switching [setting of (3)]

On the evaluation MCU, select the user system power supply (UVCC1) or the development tool power supply (+5V) as the tool interface power supply to the development tool by setting the jumper switch for switching the emulator-specific power supply.



If the evaluation MCU has a emulator-specific power supply pin, the development tool power supply (+5V) must be connected as the tool interface.

For information on the emulator-specific power supply pin of an evaluation MCU, see the hardware manual of each product.

## CHAPTER 2 CONNECTION AND SETTINGS

### ■ Switching the Emulator-specific Power Supply Pin [Setting of (3)]

If the evaluation MCU has not a emulator-specific power supply pin, set the jumper switch for the user system power supply [UVCC1 (A-B shorted)]. Otherwise, set the jumper switch for the development tool power supply [+5V (B-C shorted)].

Emulator-specific power supply circuit pin	S2 setting
No	A-B shorted  (3) UVCC1  +5V
Yes	B-C shorted  (3) UVCC1  +5V

## 2.8 Switching the C-pin Circuit Connection

Set the jumper switch for the C-pin circuit connection according to whether there is a C-pin on the evaluation MCU.

### ■ Switching the C-pin

#### ⚠ CAUTION

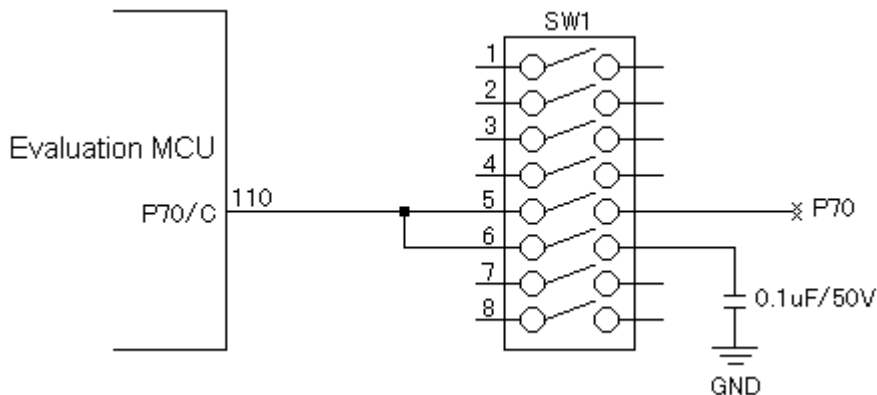
##### Prohibition



Before setting the jumper switch for the C-pin circuit connection, turn off the power.  
Failure to do so may cause an electric shock.

Set the C-pin switch depending on whether there is a C-pin on the evaluation MCU. Make the setting according to Table 2.8-1 "Jumper switch for setting the C-pin circuit connection".

**Figure 2.8-1 Jumper switch and C-pin circuit connection**



**Table 2.8-1 Jumper switch for setting the C-pin circuit connection**

C-pin function	SW1 setting	
	5	6
Yes	OFF	ON
No	ON	OFF

## 2.9 Power-on Sequence

---

When all connections and settings have been completed, turn on the power of the host machine, emulation pod, and user system in this sequence.

---

### ■ Power-on Sequence

#### ⚠ CAUTION

##### Prohibition



When turning on the power, follow the procedure described in the manual.

Failure to do so may cause a device failure.

After the emulation pod power is turned on, do not turn off and turn on the user system power.

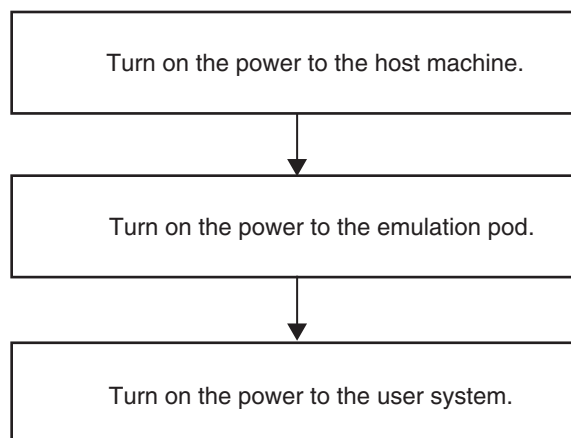
Doing so may cause a device failure.

When power is on, do not carry the emulation pod, or subject it to shock or vibration.

Doing so may cause a device failure.

Turn on the power after completing all connections and settings in the sequence shown in Figure 2.9-1 "Power-on sequence".

**Figure 2.9-1 Power-on sequence**



To turn on the power of the emulation pod, press the power switch on the rear of the 2140 main unit toward the "I" side.



## 2.10 Power-off Sequence


---

Turn off the power of the user system, emulation pod, and host machine in this sequence.

---

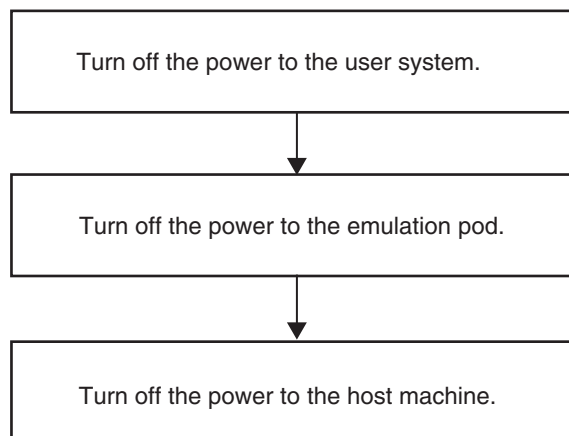
### ■ Power-off Sequence



<b>Prohibition</b> 	When turning off the power, follow the procedure described in the manual. Failure to do so may cause a device failure.
---	---

Turn off the power using the sequence shown in 2.10-1 "Power-off sequence".

**Figure 2.10-1 Power-off sequence**



To turn off the power of the emulation pod, press the power switch on the rear of the 2140 main unit toward the "0" side.



# APPENDIX

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**This appendix explains the differences between the emulation pod and a production MCU.**

---

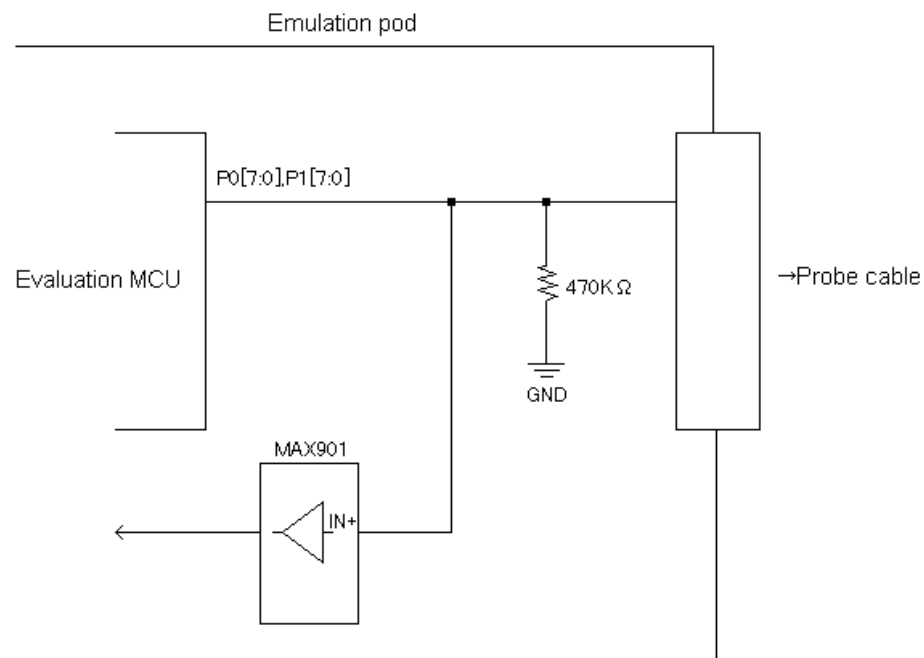
APPENDIX A "Differences between the Emulation Pod and a Regular  
Production MCU"

## APPENDIX A Differences between the Emulation Pod and a Regular Production MCU

When the emulation pod is used, a buffer circuit is added to some pins for control of the evaluation MCU. This produces electrical characteristic different from a regular production MCU.

### ■ Differences between the Emulation Pod and a Regular Production MCU

Figure A-1 Buffer circuit



MAX901B DC characteristic

Input power lin	10 $\mu$ A
-----------------	------------

■ Pins to which a Buffer Circuit is Added

Table A-1 "Pins to which a buffer circuit is added" shows the pins to which a buffer circuit is added.

**Table A-1 Pins to which a buffer circuit is added**

Evaluation MCU pin name	Evaluation MCU pin name
P00	P10
P01	P11
P02	P12
P03	P13
P04	P14
P05	P15
P06	P16
P07	P17

The pin names listed in the table are the pin names of the evaluation MCU.

For the relationship to the actual MCU, contact the Fujitsu sales division.

## APPENDIX A Differences between the Emulation Pod and a Regular Production MCU

CM42-00411-2E

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**FUJITSU SEMICONDUCTOR • CONTROLLER MANUAL**

F<sup>2</sup>MC-16L/16LX/16F

EMULATION POD

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HARDWARE MANUAL

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