

CUSTOMER NOTIFICATION

SUD-TT-0214-1-E

August 30, 2002

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IE-703114-MC-EM1

Preliminary User's Manual

TEMPU-3223

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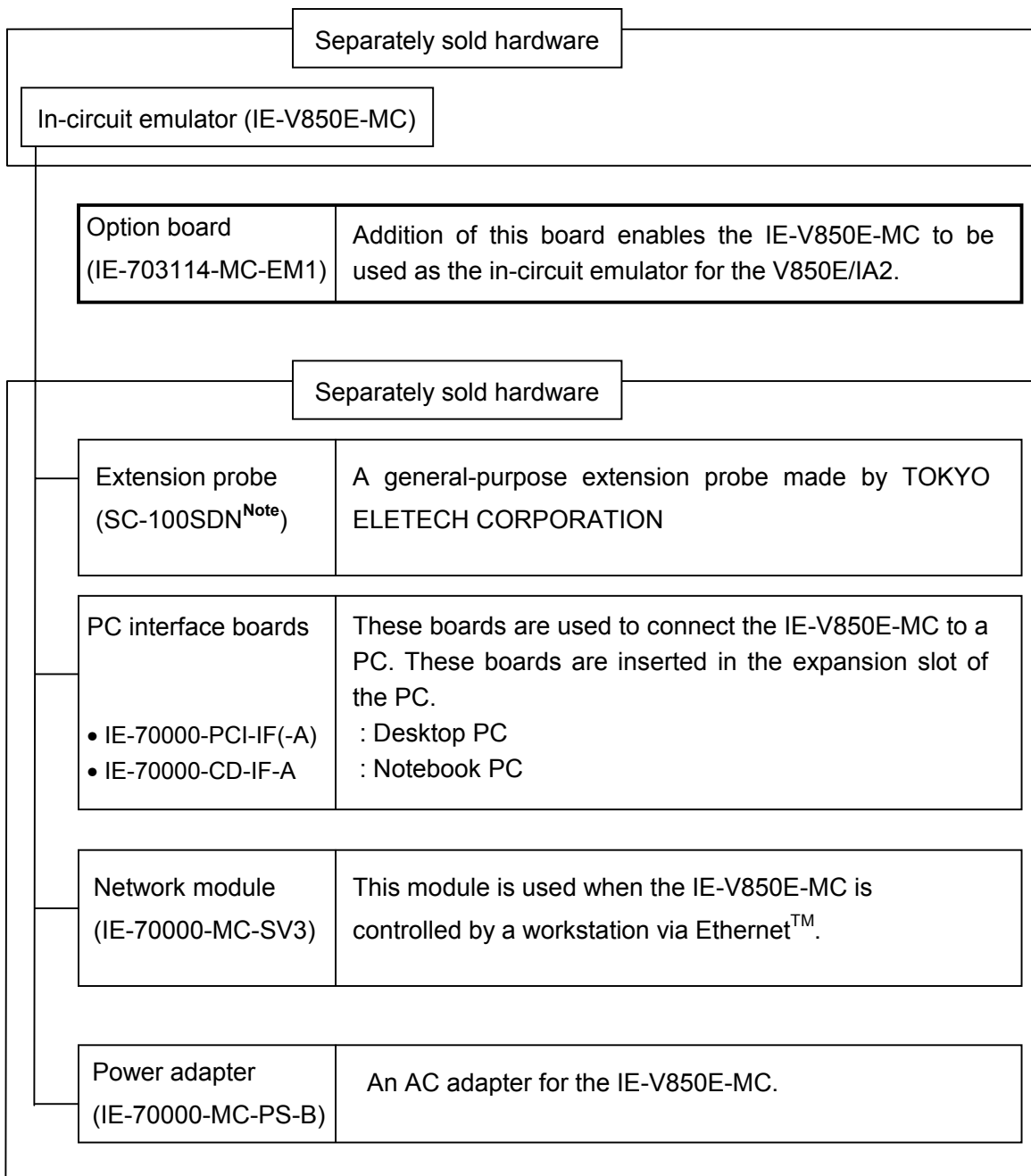
CHAPTER 1 OVERVIEW

The IE-703114-MC-EM1 is an option board for the in-circuit emulator IE-V850E-MC. By connecting the IE-V850E-MC, the IE-703114-MC-EM1 can effectively debug hardware or software in system development using the V850E/IA2.

This manual explains the basic setup procedure, hardware specifications, system specifications, and settings for the switches.

Refer to the IE-V850E-MC, IE-V850E-MC-A User's Manual (U14487E) for details of the names and functions of each block in the IE-V850E-MC and connection with the components.

1.1 Product Configuration



Note For further information, contact: Daimaru Kogyo, Ltd.

Tokyo Electronics Department (TEL +81-3-3820-7112)

Osaka Electronics Department (TEL +81-6-6244-6672)

1.2 Hardware Specifications (When Connected to IE-V850E-MC)

Table 1-1. Hardware Specifications

Parameter		Specification
Target device		μ PD703114GC-8EU (mask ROM) μ PD70F3114GC-8EU (flash memory)
Target board interface voltage		5.0 V \pm 10%
Maximum operating frequency		40 MHz
External dimensions	Height	28 mm
	Width	229 mm
	Length	96 mm
Power consumption		9.1 W (MAX)
Weight		190 g

Extremely lightweight and compact

Compatibility with the target device is enhanced by eliminating buffers between signal lines.

8-bit external trace possible by connecting to the external logic probe (attached).

The following pins can be masked.

RESET, NMI, WAIT, HLDRQ, STOP

1.3 IE-703114-MC-EM1 System Specifications (When Connected to IE-V850E-MC)

Table 1-2. IE-703114-MC-EM1 System Specifications (When Connected to IE-V850E-MC)

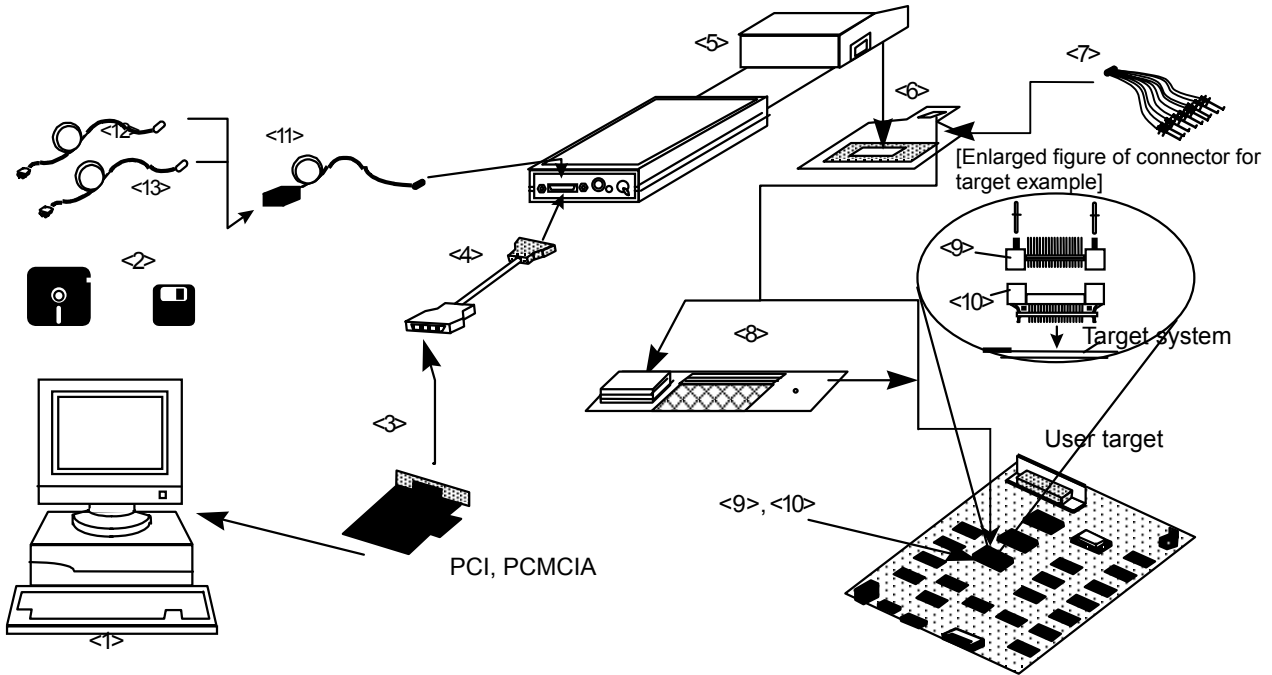
Parameter		Specification
Emulation memory capacity	Internal ROM	128 KB
	External memory	4 MB
Execution/pass detection	Internal ROM	128 KB
Program execution function	Real-time execution function	Go, Start, Go & Go, Come, Restart, Return out
	Non-real-time execution function	Step-in, next over, slowmotion
Break function		Event detection break, software break, forced break, break by Come function, break on satisfaction of condition during step execution, Fail-safe break
Trace function	Trace condition	All trace, section trace, qualify trace
	Memory capacity	168 bits × 32K frames
Other functions		Mapping function, event function, coverage measurement function, snapshot function, stub function, register manipulation function, memory manipulation function, time measurement function, real-time RAM sampling function

Caution Some functions may not be supported, depending on the debugger used.

1.4 System Configuration

The following shows the system configuration when using the IE-703114-MC-EM1 connected to the IE-V850E-MC and a PC (PC-9800 series or PC/AT compatible).

Figure 1-1. System Configuration



- <1> Host machine (PC-9800 series, IBM PC/AT compatible)
- <2> Debugger (sold separately), device file (separately available)
- <3> PC interface board (IE-70000-PCF-IF(-A), IE-70000-CD-IF-A: sold separately)
- <4> PC interface cable (included with IE-V850E-MC)
- <5> In-circuit emulator (IE-V850E-MC: sold separately)
- <6> In-circuit emulator option board (IE-703114-MC-EM1)
- <7> External logic probe (included)
- <8> Extension probe (optional) (SC-100SD: sold separately)
- <9> IE connector (YQPACK100SD: included)
- <10> Target connector (NQPACK100SD: included)
- <11> Power supply adapter (IE-70000-MC-PS-B: sold separately)
- <12> AC 220 V power supply cable (included with IE-70000-MC-PS-B)
- <13> AC 100 V power supply cable (included with IE-70000-MC-PS-B)

1.5 Package Contents

The IE-703114-MC-EM1 contains the following items. Please check that all the items are included. If any items are missing or damaged, contact an NEC sales representative or distributor.

(1) IE-703114-MC-EM1:	1
(2) Warranty:	1
(3) Package details:	1
(4) Accessory list:	1
(5) External logic probe:	1
(6) Target connector (NQPACK100SD):	1
(7) IC mounting cover (HQPACK100SD):	1
(8) IE connector (YQPACK100SD):	1
(9) User's manual (this document):	1

1.6 Connection Between IE-V850E-MC and IE-703114-MC-EM1

The procedure for connecting the IE-V850E-MC and IE-703114-MC-EM1 is shown below.

Caution Be careful not to break or bend the connector pins.

- (1) Remove the cover (bottom) of the IE-V850E-MC pod.
- (2) Set the PGA socket lever of the IE-703114-MC-EM1 board to the OPEN position shown in Figure 1-3.
- (3) Connect the IE-703114-MC-EM1 to the PGA socket at the back of the pod (see Figure 1-4).
Align the IE-V850E-MC and IE-703114-MC-EM1 horizontally.
A spacer can be mounted to fix the pod.
- (4) Set the PGA socket lever of the IE-703114-MC-EM1 board to the CLOSE position shown in Figure 1-3.
- (5) Fix the pod cover (bottom) to the bottom of the IE-703114-MC-EM1 using the nylon rivets provided with the IE-V850E-MC.

Figure 1-2. Connection of IE-V850E-MC and IE-703114-MC-EM1

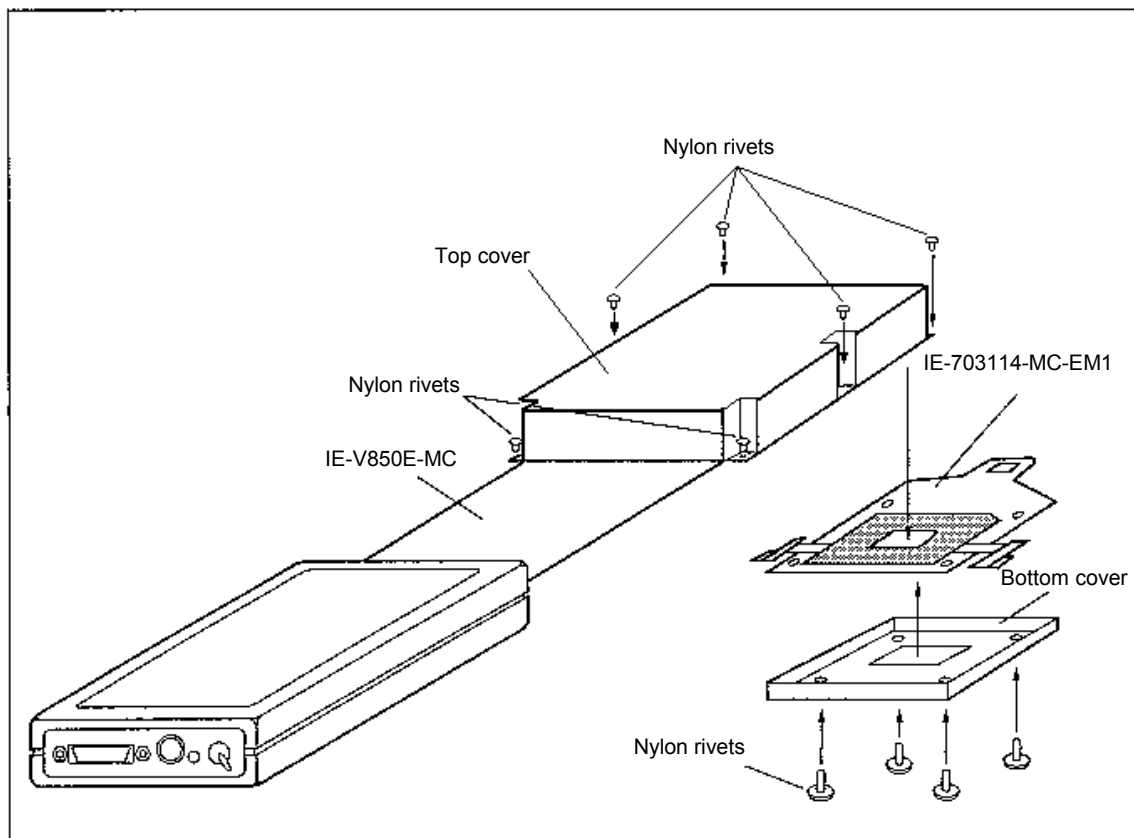


Figure 1-3. IE-703114-MC-EM1 PGA Socket Lever

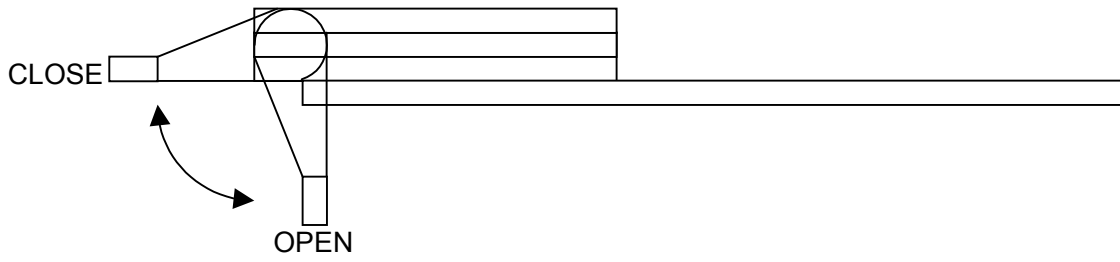
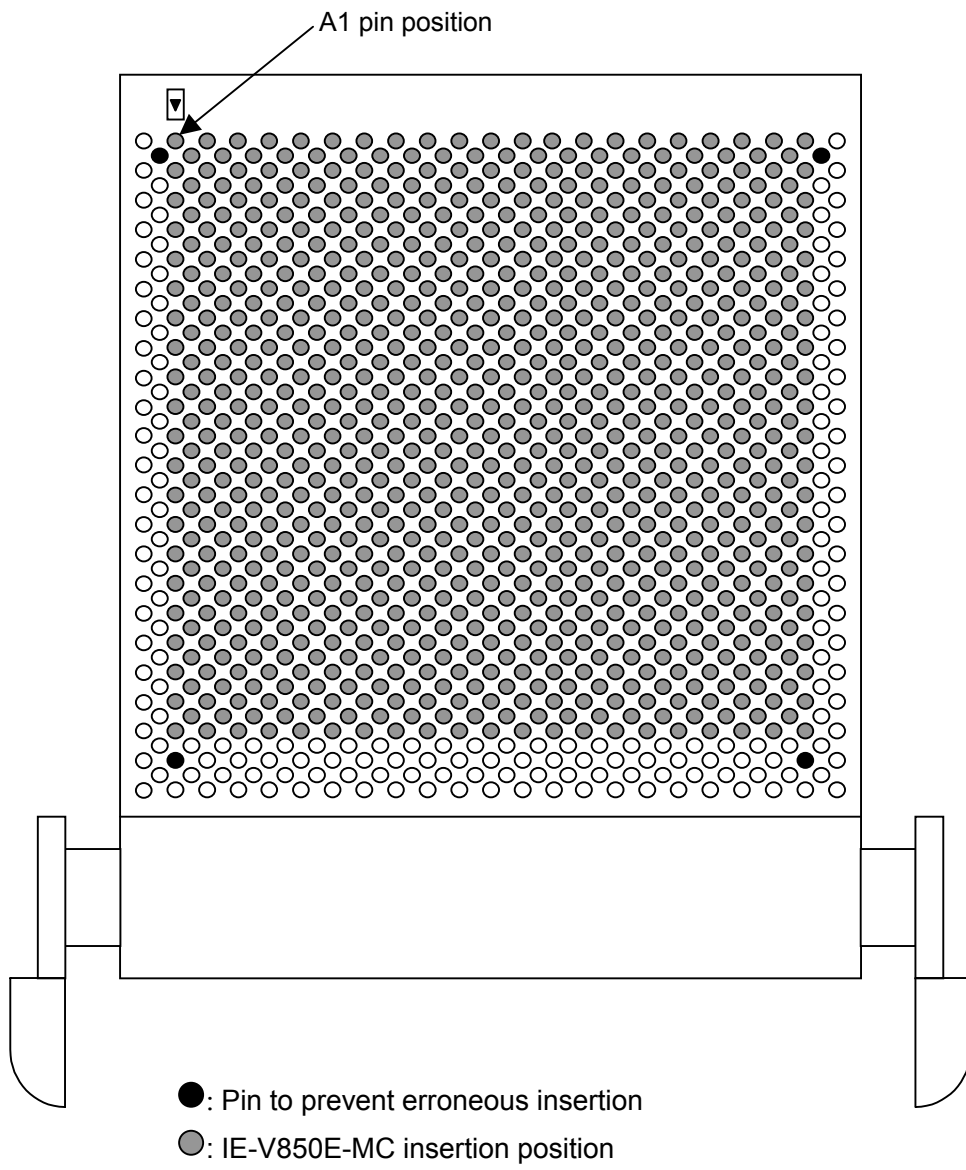


Figure 1-4. IE-V850E-MC Insertion Position



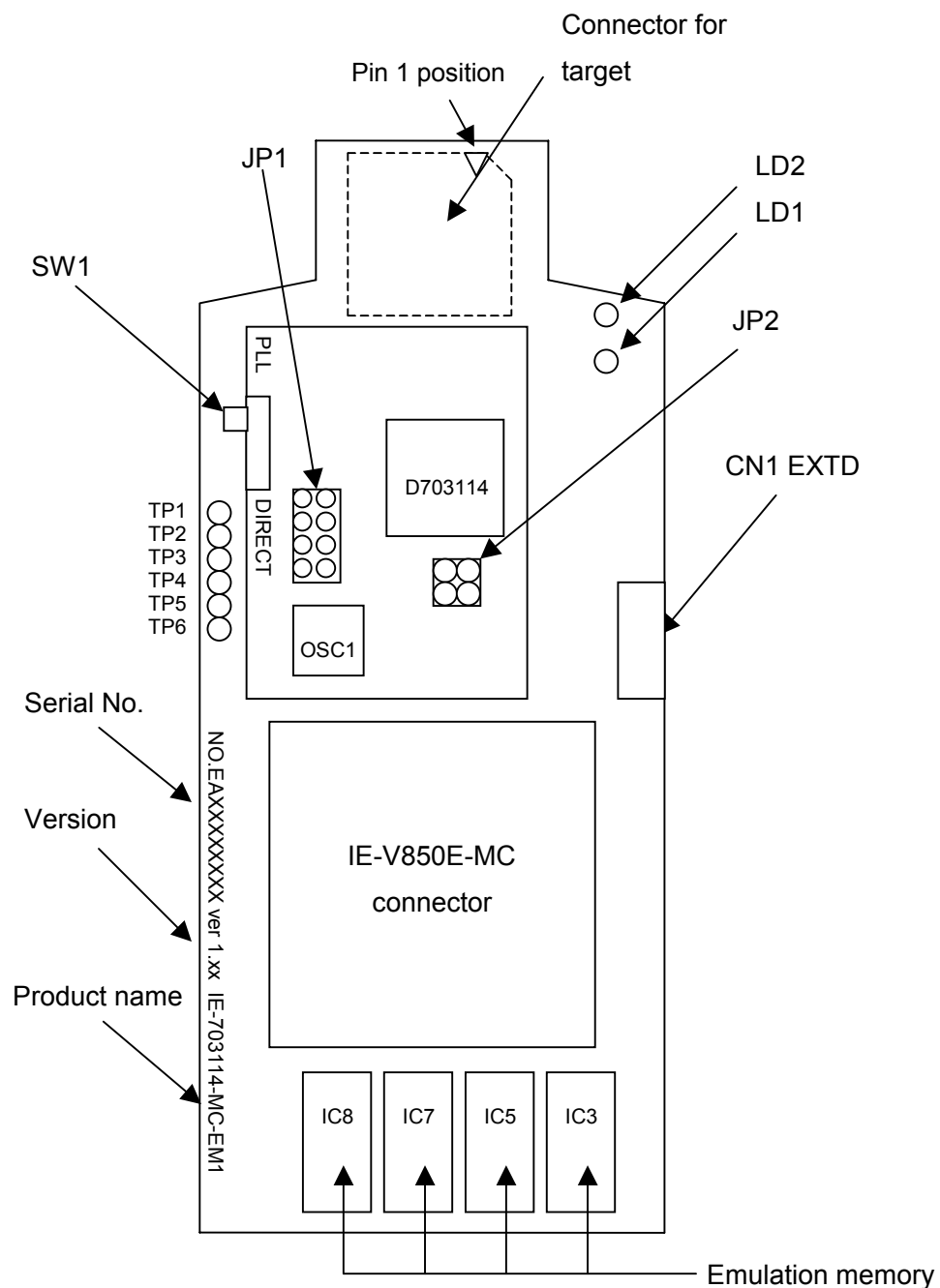
CHAPTER 2 NAMES AND FUNCTIONS OF COMPONENTS

This chapter explains the names and functions of the IE-703114-MC-EM1 components and the settings for the switches.

Refer to the **IE-V850E-MC, IE-V850E-MC-A User's Manual (U14487E)** for details of the pod, the jumpers, and the switch positions.

2.1 Names and Functions of IE-703114-MC-EM1 Components

Figure 2-1. IE-703114-MC-EM1 Top View



(1) Test pins (TP1 to TP6)

These pins are used to connect an external logic probe when it is necessary for the DMA cycle or refresh cycle to remain in the tracer or for a break to be inserted.

- TP1: GND
- TP2: Test pin for shipment test
- TP3: DMAAK0
- TP4: DMAAK1
- TP5: DMAAK2
- TP6: DMAAK3

(1) SW1

This is a switch to switch the clock mode. (Refer to **2.2 Clock Settings** for details).

(3) JP1

This is a jumper switch to switch the clock source. (Refer to **2.2 Clock Settings** for details).

(4) JP2

This is a jumper switch to switch the power supply. (Refer to **2.4 Power Supply Setting** for details).

(5) CN1

This is used to connect the external logic probe (included).

(6) LD1 (CKSEL: green)

LED Status	When Used as Stand-Alone Unit	When Used with Target System Connected
Lit	SW1 = DIRECT	The CKSEL signal from the target system is high
Extinguished	SW1 = PLL	The CKSEL signal from the target system is low

(7) LD2 (RUN: yellow)

LED Status	Emulator Status
Lit	User program is under execution
Extinguished	User program is stopped

(8) IE-V850E-MC connector

This is used to connect the IE-V850E-MC.

(9) Connector for target

This is used to connect the target system or extension probe.

(10) Emulation memory

This is the substitute memory for the memory on the target system or memory-mapped I/O.

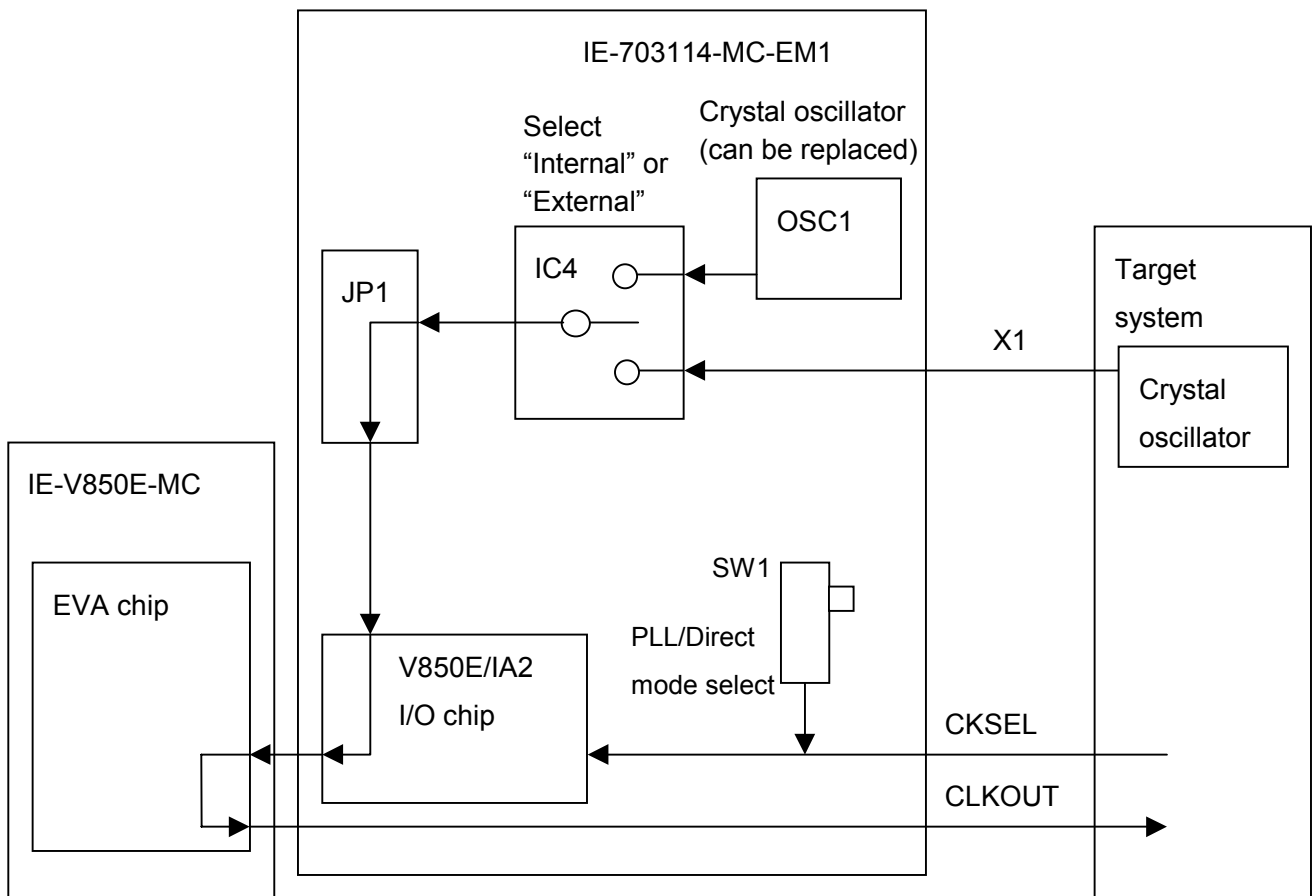
2.2 Clock Settings

2.2.1 Overview of clock settings

The following three clock setting methods are available. Refer to **2.2.2 Clock setting method** for details.

- (1) Use the crystal oscillator that is already mounted on the IE-703114-MC-EM1 as an internal clock
- (2) Replace the crystal oscillator that is already mounted on the IE-703114-MC-EM1 with a different oscillator and use that as an internal clock
- (3) Use the crystal oscillator on the target system as an external clock

Figure 2-2. Overview of Clock Settings

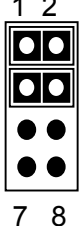

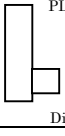
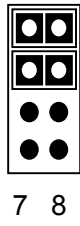

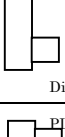
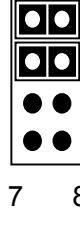




Caution Input a square waveform to X1 when using an external clock.
The board does not operate when a crystal or ceramic resonator is used.

2.2.2 Clock setting method

The hardware settings corresponding to the clock settings are listed below.

Table 2-1. Hardware Settings Corresponding to Clock Settings

Type of Clock Used	Selection of Clock Source ^{Note 1}	OSC1 Crystal Oscillator	JP1 Setting	Clock Mode	SW1	CKSEL Pin ^{Note 2}
Crystal oscillator already mounted on IE-703114-MC-EM1 used as internal clock	Internal	Factory setting (4.000 MHz)		PLL		Low-level input
				Direct		High-level input
Crystal oscillator already mounted on IE-703114-MC-EM1 replaced with different oscillator used as internal clock	Internal	Replaced		PLL		Low-level input
				Direct		High-level input
Crystal oscillator on target system used as external clock	External	Whether or not to mount a crystal oscillator can be selected		PLL		Low-level input
				Direct		High-level input

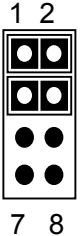
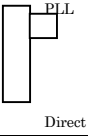
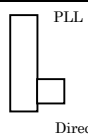
Notes 1. Select the clock source in the clock source selection area in the Configuration dialog box of the debugger.

2. The input setting to the CKSEL pin is applicable only when CKSEL is connected to the target system. Leave CKSEL open if only the emulator is operating. The operation is set by SW1.

Caution Settings other than those above are prohibited.

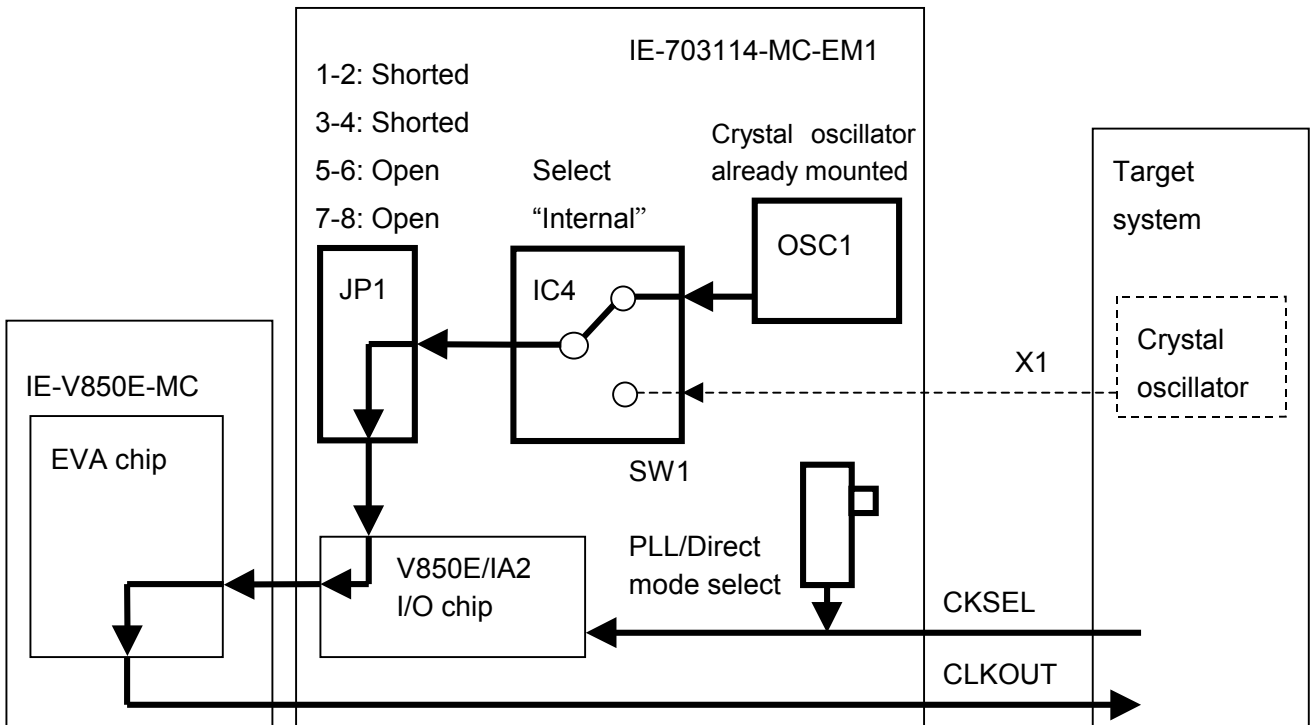
- (1) Use the crystal oscillator that is already mounted on the IE-703114-MC-EM1 as an internal clock
 - <1> Mount the 4.000 MHz crystal oscillator mounted at shipment in the OSC1 socket of the IE-703114-MC-EM1 (default setting).
 - <2> Set JP1 as shown in the following table (default setting).
 - <3> Set the SW1 and CKSEL pins as shown in the following table in accordance with the clock mode used.
 - <4> When the integrated debugger (ID850) is activated, select "Internal" in the clock source selection area in the Configuration dialog box (selection of the clock in the emulator).

Table 2-2. Settings When Using Crystal Oscillator Already Mounted as Internal Clock

Type of Clock Used	Selection of Clock Source	OSC1 Crystal Oscillator	JP1 Setting	Clock Mode	SW1	CKSEL Pin ^{Note}
Crystal oscillator already mounted on IE-703114-MC-EM1 used as internal clock	Internal	Factory setting (4.000 MHz)		PLL		Low-level input
				Direct		High-level input

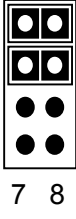
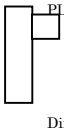
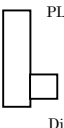
Note The input setting to the CKSEL pin is applicable only when CKSEL is connected to the target system. Leave CKSEL open if only the emulator is operating. The operation is set by SW1.

Figure 2-3. Overview of Settings When Mounted Internal Clock Is Used



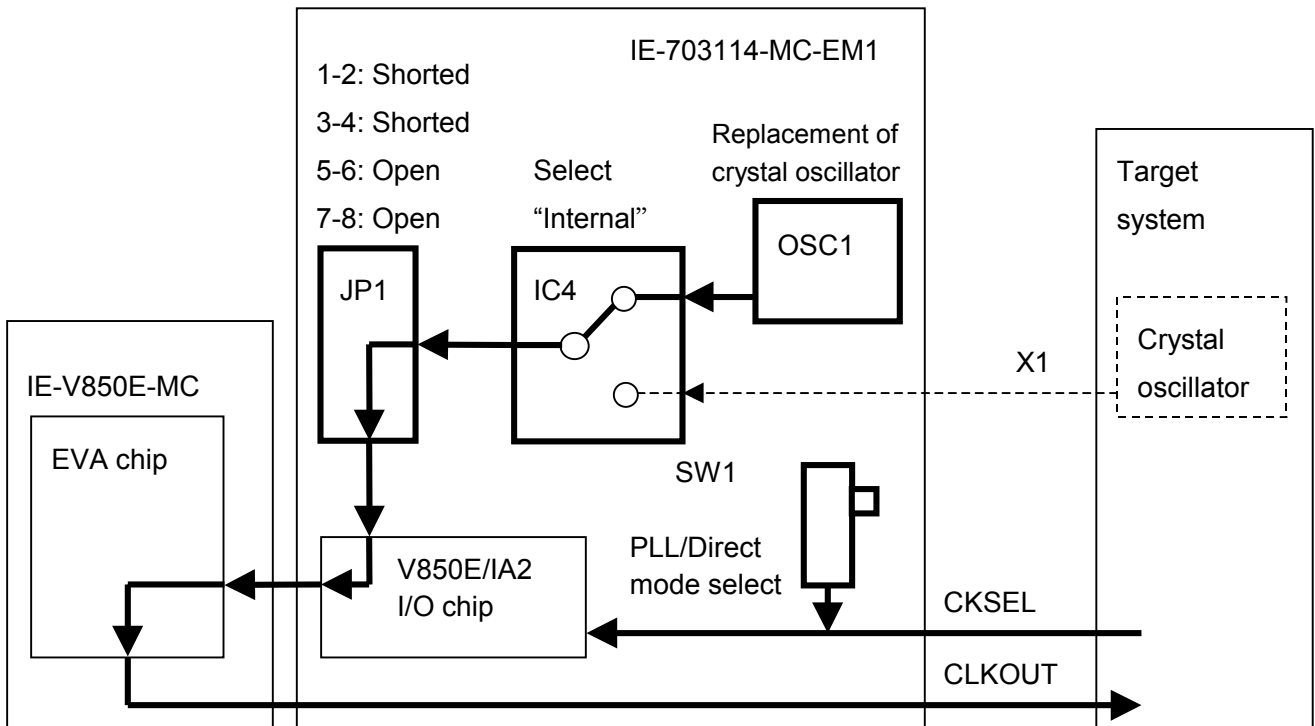
- (2) Replace the crystal oscillator that is already mounted on the IE-703114-MC-EM1 with a different oscillator and use that as an internal clock
 - <1> Remove the crystal oscillator (OSC1) that is already mounted on the option board and mount the oscillator to be used.
 - <2> Set JP1 as shown in the following table (default setting).
 - <3> Set the SW1 and CKSEL pins as shown in the following table in accordance with the clock mode used.
 - <4> Select "Internal" in the clock source selection area in the Configuration dialog box of the integrated debugger (ID850)

Table 2-3. Settings When Replacing Clock Already Mounted

Type of Clock Used	Selection of Clock Source	OSC1 Crystal Oscillator	JP1 Setting	Clock Mode	SW1	CKSEL Pin ^{Note}
Crystal oscillator already mounted on IE-703114-MC-EM1 replaced with different oscillator used as internal clock	Internal	Replaced		PLL		Low-level input
				Direct		High-level input

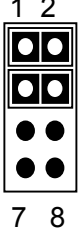
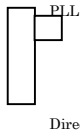
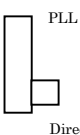
Note The input setting to the CKSEL pin is applicable only when CKSEL is connected to the target system. Leave CKSEL open if only the emulator is operating. The operation is set by SW1.

Figure 2-4. Overview of Settings When Replacement Internal Clock Is Used



- (3) Use the oscillator on the target system as an external clock
 - <1> Set JP1 as shown in the following table (default setting).
 - <2> Set the SW1 and CKSEL pins as shown in the following table in accordance with the clock mode used.
 - <3> Select "External" in the clock source selection area in the Configuration dialog box of the integrated debugger (ID850)

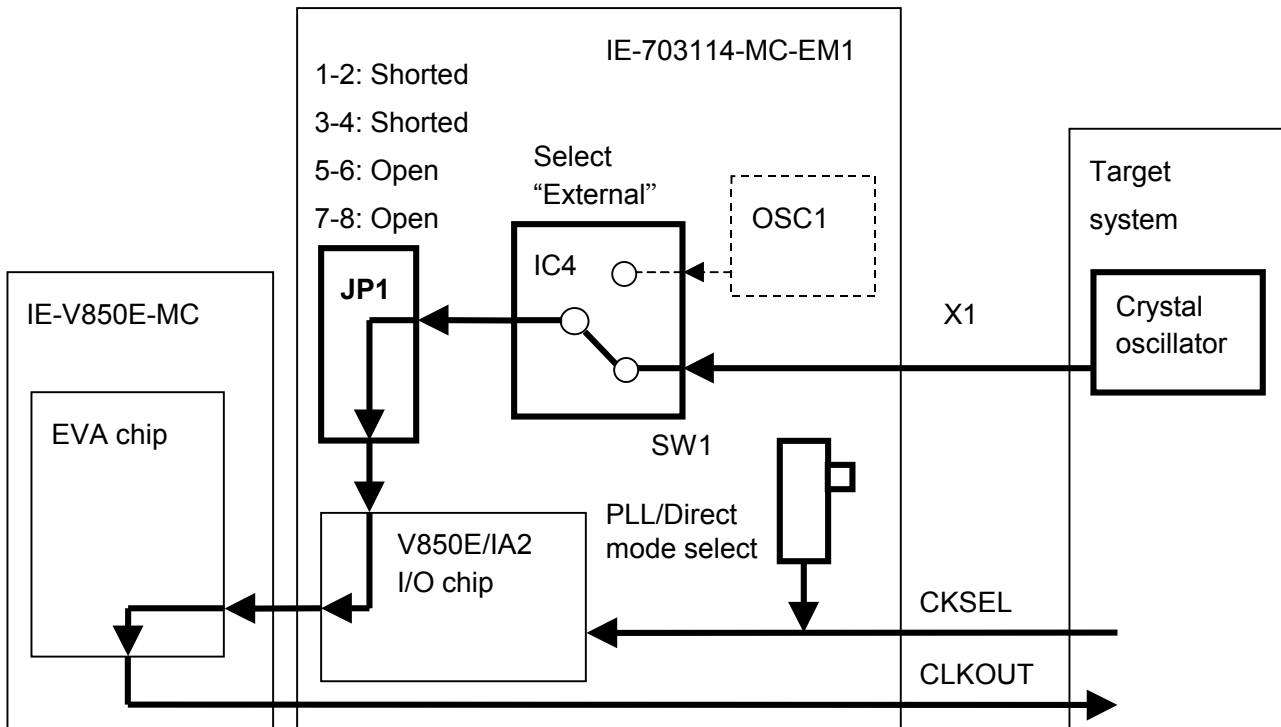
Table 2-4. Settings When Using External Clock on Target System

Type of Clock Used	Selection of Clock Source	OSC1 Crystal Oscillator	JP1 Setting	Clock Mode	SW1	CKSEL Pin ^{Note}
Oscillator on target system used as external clock	External	Whether to mount a crystal oscillator or not can be selected		PLL		Low-level input
				Direct		High-level input

Note The input setting to the CKSEL pin is applicable only when CKSEL is connected to the target system. Leave CKSEL open if only the emulator is operating. The operation is set by SW1.

Caution Input a square waveform to X1 when using an external clock.
 The board does not operate when a crystal or ceramic resonator is used.

Figure 2-5. Overview of Settings When Using Crystal Oscillator on Target System as External Clock



2.3 Operating Modes

The IE-703114-MC-EM1 supports single-chip mode and ROMless mode, like the V850E/IA2. How to set each mode is shown below.

Select either of the following settings in accordance with the mode to be used in the Mask Setting field in the Configuration dialog box when the integrated debugger (ID850) is activated.

To operate in ROMless mode: Select Mode00

To operate in single-chip mode: Select Mode02

Caution If the emulator is operated in ROMless mode without being connected to the target system, be sure to map the emulation memory from address 0H.

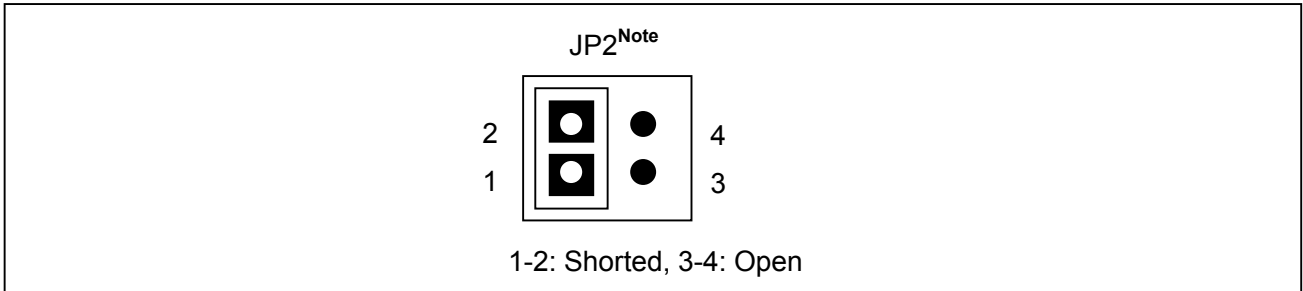
Note that the MODE pin cannot be emulated because the IE-703114-MC-EM1 controls the input level of the MODE pin using the pin mask function of the debugger.

See V850E/IA2 Hardware User's Manual (U14492E) for details of the pin setting on the target system.

2.4 Power Supply Setting

The power supply is set with JP2. In the IE-703114-MC-EM1, by setting JP2 as shown below, it is possible to automatically select whether to use the power supply on the IE-V850E-MC side from which power to the I/O chip (D703114) on the emulation board is supplied, or to use the power supply of the target board by detecting the target board power supply.

Caution The emulator may be destroyed if the JP2 setting is incorrect.



Note Settings other than those above are prohibited.

CHAPTER 3 FACTORY SETTINGS

(1) JP1 (Settings other than those below are prohibited)

Pin 1-2: Shorted

Pin 3-4: Shorted

Pin 5-6: Open

Pin 7-8: Open

(2) JP2

Pin 1-2: Shorted

Pin 3-4: Open

(3) SW1

Set to PLL mode

(4) OSC1

A 4 MHz crystal oscillator is mounted.

The frequency can be varied by replacing the crystal oscillator.