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FUJITSU

AN07-00149-3E

FR Famil y FR80
32-BIT MICROCONTROLLER
MB91625/635/640/660/665series

Setup Guide

MB2198-700-E

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Revision History

Revision	Date	Descriptions
1.0	December 4, 2007	Initial release
2.0	March 21, 2008	Revised conforming to MB91660 series
3.0	May 24, 2010	Revised conforming to MB91625/665 series

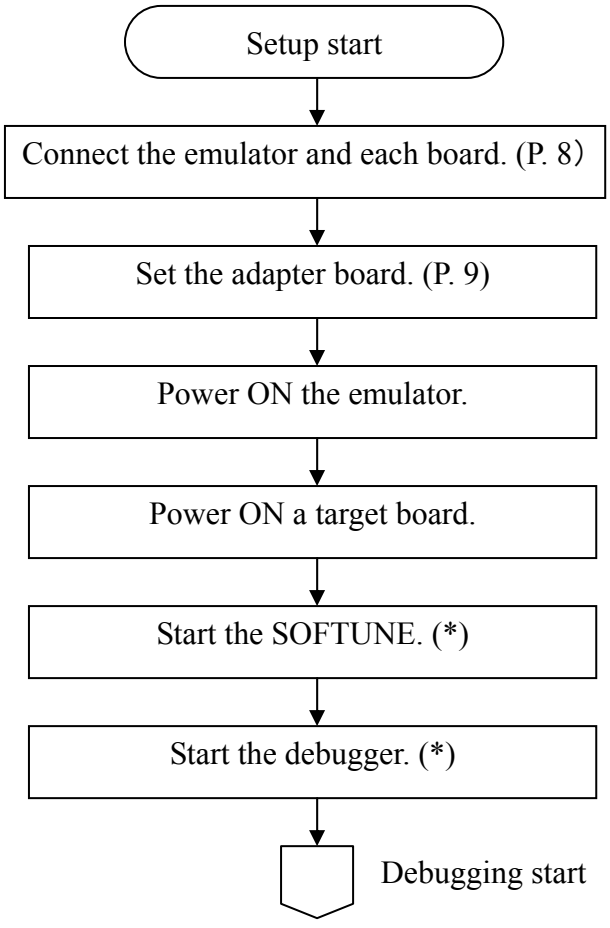
Table of Contents

1 Introduction

This guide describes the configuration of debugging environment and the setup procedures of Fujitsu 32-bit Microcontroller MB91625 / 635 / 640 / 660 / 665 series. In addition, it provides cautions to use the debugging environment of MB91625 / 635 / 640 / 660 / 665 series.

2 Setup Procedures

Figure 2-1 shows the flow of setup procedures for debugging environment of MB91625 / 635 / 640 / 660 / 665 series. The following sections describe the connection of emulator and each board, and setting procedures and operation of the adaptor board. For start procedures of SOFTUNE and the debugger, see SOFTUNE Setup Guide.

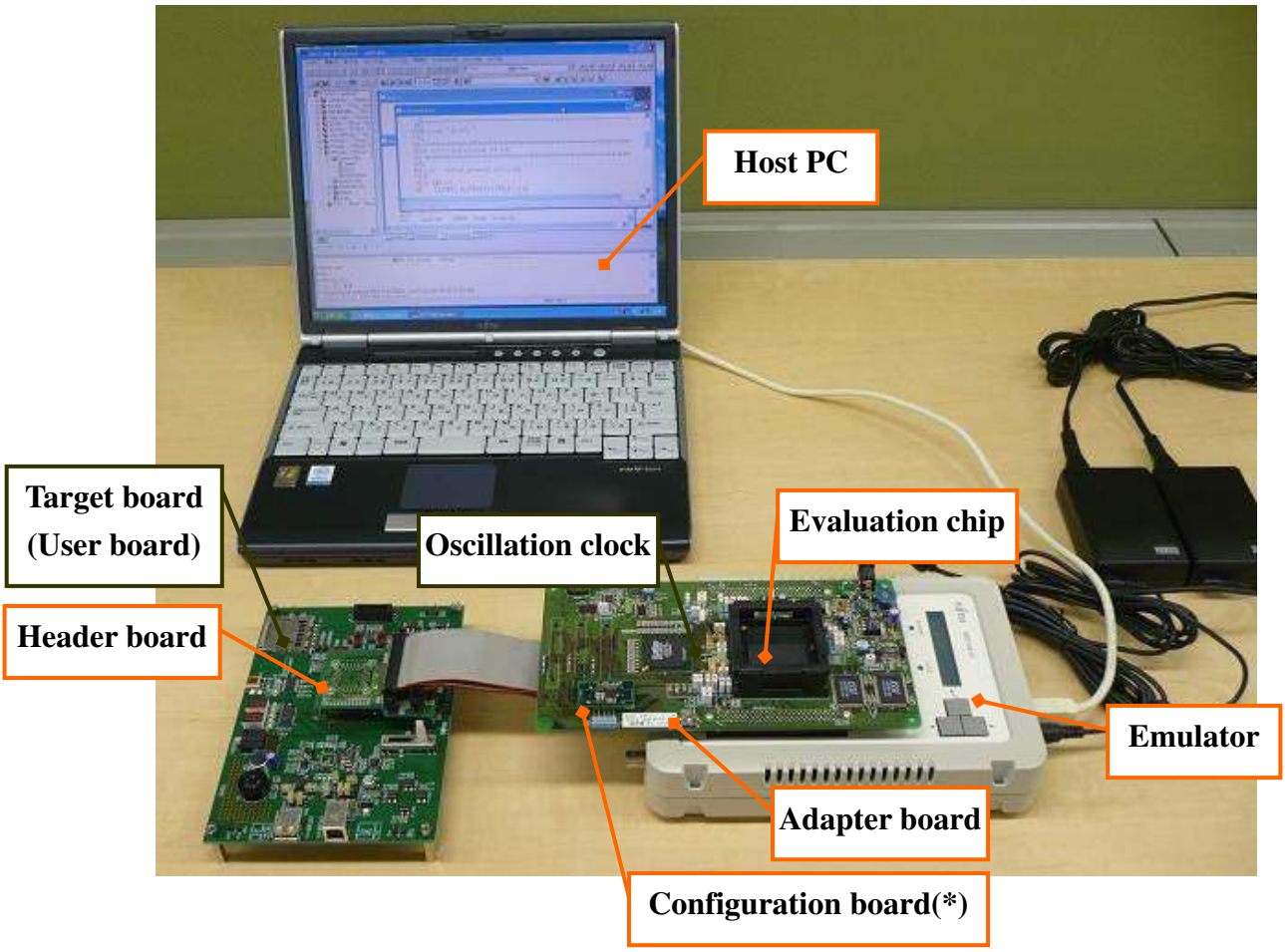


* See SOFTUNE Setup Guide

Figure 2-1 Flow of Setup Procedures

3 Hardware Configuration

Figure 3-1 shows the configuration for debugging environment of MB91625 / 635 / 640 / 660 / 665 series. It consists of the host PC, the emulator (MB2198-01-E), the evaluation chip (MB91V650), the adapter board (MB2198-700-E), the configuration board *1 (MB2198-790-01-E), the header board, and the target board (user board). It is necessary to set up the integrated development environment SOFTUNE for the host PC. (For its setup procedures, see SOFTUNE First Step Guide.) Prepare the appropriate type of the header board that supports a chip and a package to be used. Table 3-1 shows types of header boards to support each of chip and package. In addition, it is necessary to implement the socket (NQPACK) on the target board (user board) to connect the header board.



*1: The configuration board (MB2198-790-01-E) is included in the adapter board (MB2198-700-E).

Figure 3-1 Configuration of Debugging Environment

Table 3-1 Configuration of Debugging Environment for Each Product

Product to be evaluated	Evaluation chip	Emulator	Adapter board + Configuration board	Header board	Remarks
MB91625 series	MB91V650	MB2198-01-E	MB2198-700-E + MB2198-790-01-E	MB2198-704-E	Package: LQFP-100
MB91635 series				MB2198-702-E	Package: LQFP-144
MB91640 series				MB2198-703-E	Package: LQFP-176
MB91660 series				MB2198-701-E	Package: LQFP-120
MB91665 series				MB2198-705-E	Package: LQFP-48
				MB2198-706-E	Package: LQFP-64

* In addition to the above, it is necessary to prepare the target board (user board) and the oscillation clock (crystal oscillator) separately.

4 Hardware Setup

The following describes the setup procedures of debugging environment for MB91625 / 635 / 640 / 660 / 665 series.

4.1 Setup of emulator and each board

Figure 4-1 shows connection between the emulator and each board. Connection should be made for each board, as shown in Figure 4-1. It is necessary to supply power to the emulator and the adapter board through the AC adapter attached. In addition, the evaluation chip (MB91V650) should be mounted on the adapter board.

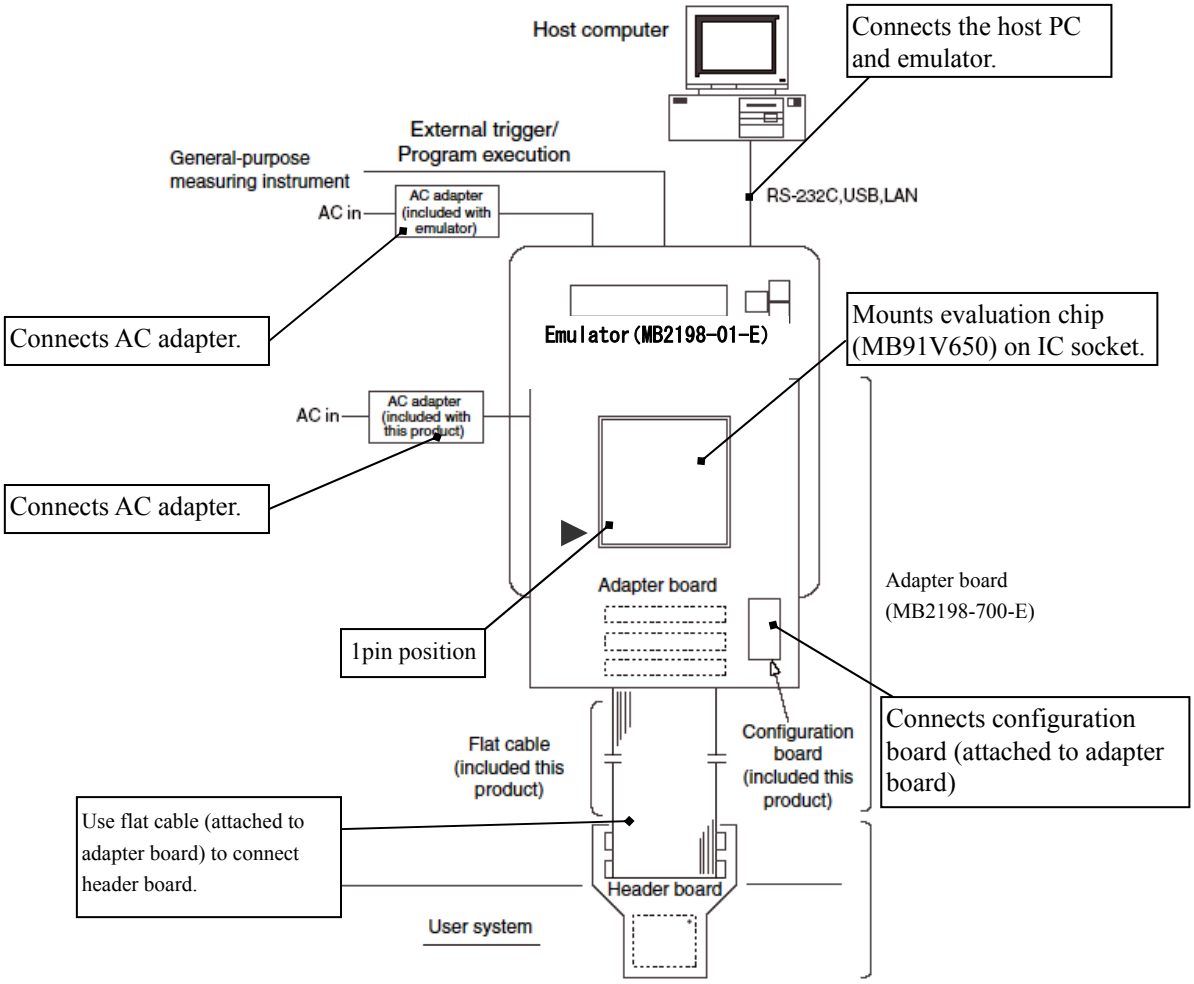


Figure 4-1 Connection between Emulator and Each Board

4.2 Jumper setting of adapter board

The adapter board has jumper pins and they need to be set in accordance with your usage. Figure 4-2 shows positions of jumper pins to be set on the adapter board. Tables 4-1 to 4-8 describe jumper settings of the adapter board. Meshed values (■)in Tables are recommended values for jumper pin settings. Set the jumper pins on the adapter board following Tables.

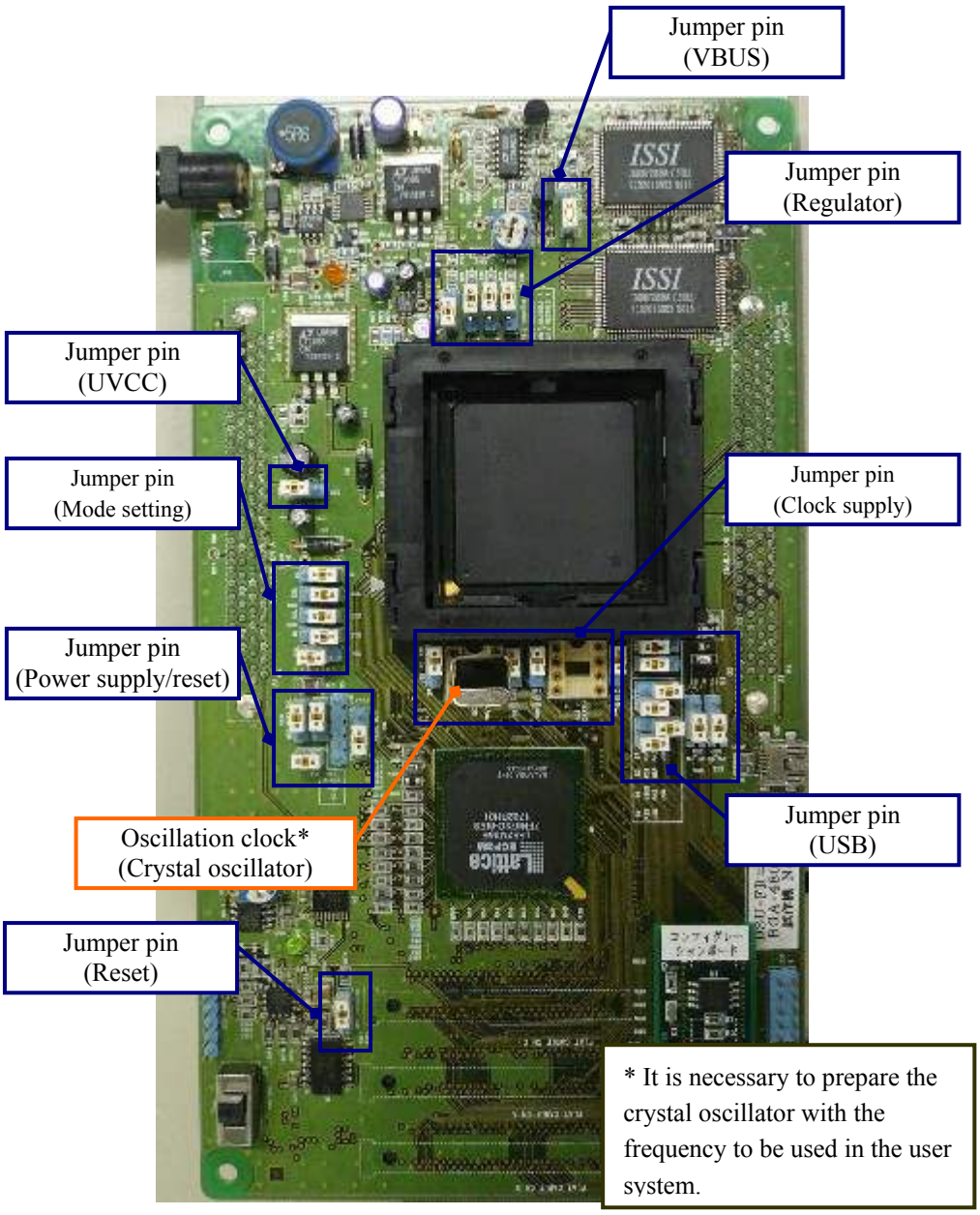


Figure 4-2 Jumper Pin Positions on Adapter Board

Table 4-1 Jumper Setting on Adapter Board (VBUS)

Jumper	Setting	Description
S22 (VBUS)	+5V (initial value)	Connects +5V to VBUS pin of USB connector on the adapter board.
	PORT	Connects PH3 pin of Evaluation MCU to VBUS pin of USB connector on the adapter board.

Table 4-2 Jumper Setting on Adapter Board (Regulator)

Jumper	Setting	Description
S12 (EHBUSEN)	0 (initial value)	Fixes EHBUSEN pin of Evaluation MCU（MB91V650） to “Low”.
	1	Fixes EHBUSEN pin of Evaluation MCU（MB91V650） to “Hi”.
S15 (REGSEL0)	0	Fixes REGSEL0 pin of Evaluation MCU（MB91V650） to “Low”.
	1 (initial value)	Fixes REGSEL0 pin of Evaluation MCU（MB91V650） to “Hi”.
S16 (REGSEL1)	0	Fixes REGSEL1 pin of Evaluation MCU（MB91V650） to “Low”.
	1 (initial value)	Fixes REGSEL1 pin of Evaluation MCU（MB91V650） to “Hi”.
S17 (REGSEL2)	0	Fixes REGSEL2 pin of Evaluation MCU（MB91V650） to “Low”.
	1 (initial value)	Fixes REGSEL2 pin of Evaluation MCU（MB91V650） to “Hi”.

Table 4-3 Jumper Setting on Adapter Board (UVCC)

Jumper	Setting	Description
S26 (VCC)	USR (initial value)	Connects UVCC pin of Evaluation MCU（MB91V650） to the power supply of the user system.
	EML	Connects UVCC pin of Evaluation MCU（MB91V650） to the power supply of the emulator.

Table 4-4 Jumper Setting on Adapter Board (Mode setting)

Jumper	Setting	Description
S27	LOW (initial value)	Fixes MD1 pin of Evaluation MCU（MB91V650） to “Low “(*).
	HI	Fixes MD1 pin of Evaluation MCU（MB91V650） to “Hi” (*).
S29 (MD1)	USR (initial value)	Connects MD1 pin of Evaluation MCU（MB91V650） to the user system.
	EML	Handles MD1 pin of Evaluation MCU（MB91V650） on the adapter board.
S30 (MD0)	USR (initial value)	Connects MD0 pin of Evaluation MCU（MB91V650） to the user system.
	EML	Handles MD0 pin of Evaluation MCU（MB91V650） on the adapter board.
S28	LOW (initial value)	Fixes MD0 pin of Evaluation MCU（MB91V650） to “Low “(*)
	HI	Fixes MD0 pin of Evaluation MCU（MB91V650） to “Hi “(*)
S14 (C)	USR	Connects C pin of Evaluation MCU（MB91V650） to the user system.
	EML (initial value)	Connects C pin of Evaluation MCU（MB91V650） to the capacitor (0.1μF and 10μF in parallel) on the adapter board.

(*) If MD pin is handled on the adapter board.

Table 4-5 Jumper Setting on Adapter Board (Power supply/reset)

Jumper	Setting	Description
S20 (INITX)	USR	Supplies INITX signal from the user system to INITX pin of Evaluation MCU（MB91V650）.
	EML (initial value)	Supplies the reset signal from the emulator to INITX pin of Evaluation MCU（MB91V650）.
S21 (TRSTX)	USR	Supplies INITX signal from the user system to TRSTX pin of Evaluation MCU（MB91V650）.
	EML (initial value)	Supplies the reset signal from the emulator to TRSTX pin of Evaluation MCU（MB91V650）.
S13 (SCVCC)	Short (initial value)	Connects SCVCC pin of Evaluation MCU（MB91V650） to the power supply pin.
	Open	Separates SCVCC pin of Evaluation MCU（MB91V650） from the power supply pin (allowing such measurement devices as voltmeter to be connected).
S19 (VCCIO6/7)	+3.3V (initial value)	Selects 3.3 V of the drive power supply when connecting FPGA pin to the user system.
	VCCA	Selects VCCA of the drive power supply when connecting FPGA pin to the user system.

Table 4-6 Jumper Setting on Adapter Board (Power supply/reset)

Jumper	Setting	Description
S31 (UINITX)	USR (initial value)	Supplies INITX signal from the user system to UNITX pin of Evaluation MCU (MB91V650).
	EML	Supplies the reset signal from the emulator to UNITX pin of Evaluation MCU (MB91V650).

Table 4-7 Jumper Setting on Adapter Board (USB)

Jumper	Setting	Description
S1	Short (initial value)	Connects P33 pin of Evaluation MCU (MB91V650) to the user system.
	Open	Not connects P33 pin of Evaluation MCU (MB91V650) to the user system.
S9 (PH3)	VBUS	Connects PH3 pin of Evaluation MCU (MB91V650) to USB connector (VBUS pin) on the adapter board.
	USR (initial value)	Connects PH3 pin of Evaluation MCU (MB91V650) to the user system.
S2	Short (initial value)	Connects P32 pin of Evaluation MCU (MB91V650) to the user system.
	Open	Not connects P32 pin of Evaluation MCU (MB91V650) to the user system.
S7 (PH2)	PUC	Connects PH2 pin of Evaluation MCU (MB91V650) to USB connector (UDP pin) on the adapter board.
	USR (initial value)	Connects PH2 pin of Evaluation MCU (MB91V650) to the user system.
S5 (UDM)	USR (initial value)	Connects UDM pin of Evaluation MCU (MB91V650) to the user system.
	EML	Connects UDM pin of Evaluation MCU (MB91V650) to USB connector on the adapter board.
S4 (UDP)	USR (initial value)	Connects UDP pin of Evaluation MCU (MB91V650) to the user system.
	EML	Connects UDP pin of Evaluation MCU (MB91V650) to USB connector on the adapter board.
S23 (UDP)	PD_EN (initial value)	Connect 15KΩ pull-down resistance to UDM pin (2nd pin) of USB connector on the adapter board.

	PD_DIS	Not connect 15KΩ pull-down resistance to UDM pin (2nd pin) of USB connector on the adapter board.
S24 (UDM)	PD_EN (initial value)	Connect 15KΩ pull-down resistance to UDP pin (2nd pin) of USB connector on the adapter board.
	PD_DIS	Not connect 15 KΩ pull-down resistance to UDP pin (2nd pin) of USB connector on the adapter board.

Table 4-8 Jumper Setting on Adapter Board (Clock supply)

Jumper	Setting	Description
S6 (X0)	USR (initial value)	Connects X0 pin of Evaluation MCU (MB91V650) to the user system.
	EML	Connects X0 pin of Evaluation MCU (MB91V650) to the oscillation IC socket on the adapter board.
S8 (X1)	USR (initial value)	Connects X1 pin of Evaluation MCU (MB91V650) to the user system.
	EML	Connects X1 pin of Evaluation MCU (MB91V650)to the oscillation IC socket on the adapter board.
S10 (X1A)	USR (initial value)	Connects X0A pin of Evaluation MCU (MB91V650) to the user system.
	EML	Connects X0A pin of Evaluation MCU (MB91V650) to the oscillation IC socket on the adapter board.
S11 (X0A)	USR (initial value)	Connects X1A pin of Evaluation MCU (MB91V650) to the user system.
	EML	Connects X1A pin of Evaluation MCU(MB91V650) to the oscillation IC socket on the adapter board.