FUJITSU SEMICONDUCTOR
SUPPORT SYSTEM

SS01-44007-1E

F²MC®-16LX

LQFP-120P DAUGHTER BOARD

MB2031-20

OPERATION MANUAL

FUJITSU

PREFACE

Thank you for purchasing the MB2031-20 (F^2MC*[1]-16LX series LQFP-120P*[2] USB daughter board (hereinafter called the daughter board)).
This product is an optional MB2031-01 tool connected to the MB2031-01 (USB evaluation board).
This product is compatible with the following MCUs: F^2MC-16LX MB903303 Series (LQFP-120P).
This manual explains how to use the MB2031-20. Before using the MB2031-20, be sure to read this manual.

*1: F^2MC is the abbreviation of FUJITSU Flexible Microcontroller.
*2: The applicable package is the FPT-120P-M05.

■ Caution of the products described in this document

Cautions in the following correspond to the products described in this document.

CAUTION

The wrong use of a device will give an injury and may cause malfunction on customers system.

Cuts	This product has parts with sharp points that are exposed. Do not touch edge of the product with your bare hands.
Damage	The method and environment for using this daughter board must conform to the MB2031-01 specifications, otherwise the daughter board and user system are damaged.
Damage	Before setting a mode, be sure to power off all related systems, otherwise the MCU and user system are damaged.
Damage	Before setting the analog pins, be sure to power off all related systems, otherwise the MCU and user system are damaged.
Damage	Before mounting the MCU, be sure to power off all related systems, otherwise the MCU and user system are damaged.
Damage	Before connecting the USB evaluation board, be sure to power off all related systems, otherwise the USB evaluation board and user system are damaged.

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1. Checking the Delivered Product

Before using the daughter board, confirm that all of the parts and user's guides listed below are included in the shipment.

- LQFP-120P USB daughter board: 1
- HQPACK120SE* (IC Socket cover): 1
- HQPACK fixing screws (M2 x 6mm, Supplied with HQPACK120SE): 4
- User’s guide (Japanese), (English, this manual): 1

*: This is IC Socket cover of mounting the mass-produced MCU (hereinafter called HQPACK).

2. Handling Precautions

The daughter board is precision-manufactured to improve dimensional accuracy and to ensure reliable contact. The daughter board is therefore sensitive to mechanical shock, and must be handled carefully. To ensure correct use in the appropriate environment, use the products only as instructed in Section 3, "Using This Daughter Board".

3. Using This Daughter Board

■ Setting an MCU mode

- The mode setting short plug (S2) on the daughter board is used to set the operation mode (MD0 - MD2 pin) of the MCU mounted on the daughter board.
- To set the pin to High, move the short plug to the VCC side.
- To set the pin to Low, move the short plug to the GND side.
- For details on how to set the operation mode of the mounted MCU, refer to the MCU hardware manual.

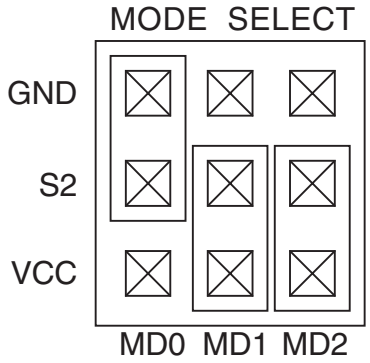

Figure 1 Mode settings

■ Setting the analog power supply pins

The short plug (S1) for analog power supply pin setting on the daughter board is used for switching analog power supply pins (AVCC/AVRH/AVSS).
For the information on the analog power supply pins of the MCU, refer to the MCU hardware manual.

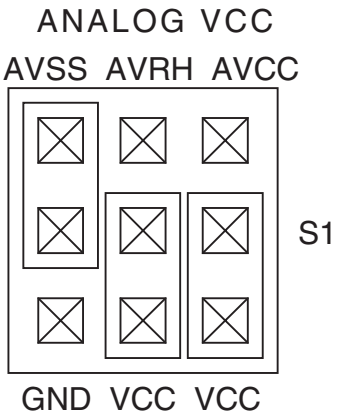

Figure 2 Analog power supply setting

4. Mountings Mass-production MCU

■ Mounting

To mount the mass production MCU to user's system without an emulator, use an accessory socket cover (HQPACK120SE).

1. To mount the mass production MCU on the user system, match the first pin (▲) (see Figure 3) on the NQPACK120SE (hereinafter called NQPACK) mounted on the user system with the first pin on the mass-produced MCU.
2. Confirm that the MCU is securely mounted on the NQPACK, insert HQPACK with aligning the direction of the NQPACK and that of the HQPACK as shown in Figure 4.
3. Insert a screw for fixing HQPACK in each of four screw holes and tighten the screws diagonally.
   Tightening the screws too tight might result in a defective contact.

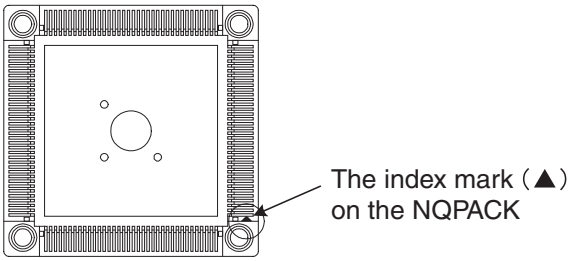

Figure 3 The index mark no the NQPACK

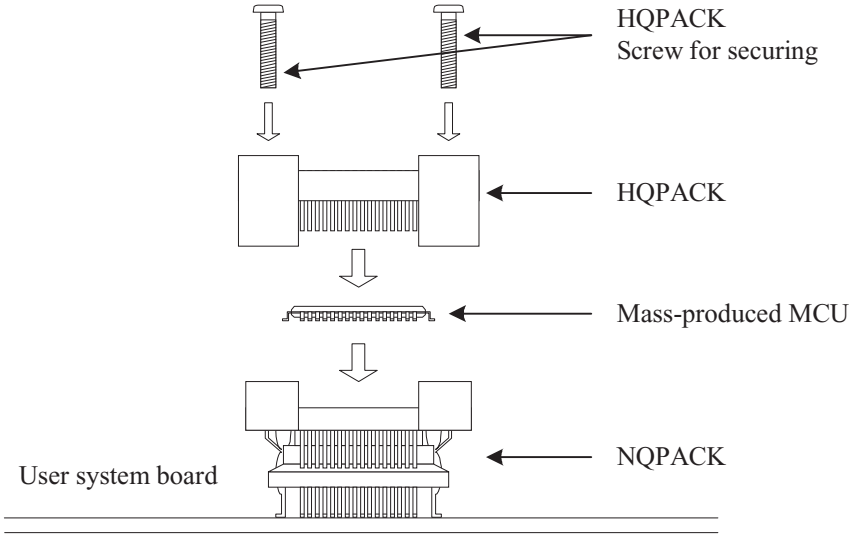

Figure 4 Mounting the mass-produced MCU

NOTE : Do not connect a probe header when mounting the MCU.

5. Connecting the USB evaluation board

■ Connection

To connect the USB evaluation board to the daughter board, attach the daughter I/F connector on the USB evaluation board to the main I/F connector on the daughter board.
The daughter I/F connector has silk-screened symbols A, B1, and B2. The main I/F connector has silk-screened symbols A and B.
Connect silk-screened symbols A and B1 of the daughter I/F connector correctly to silk-screened symbols A and B of the main I/F connector.

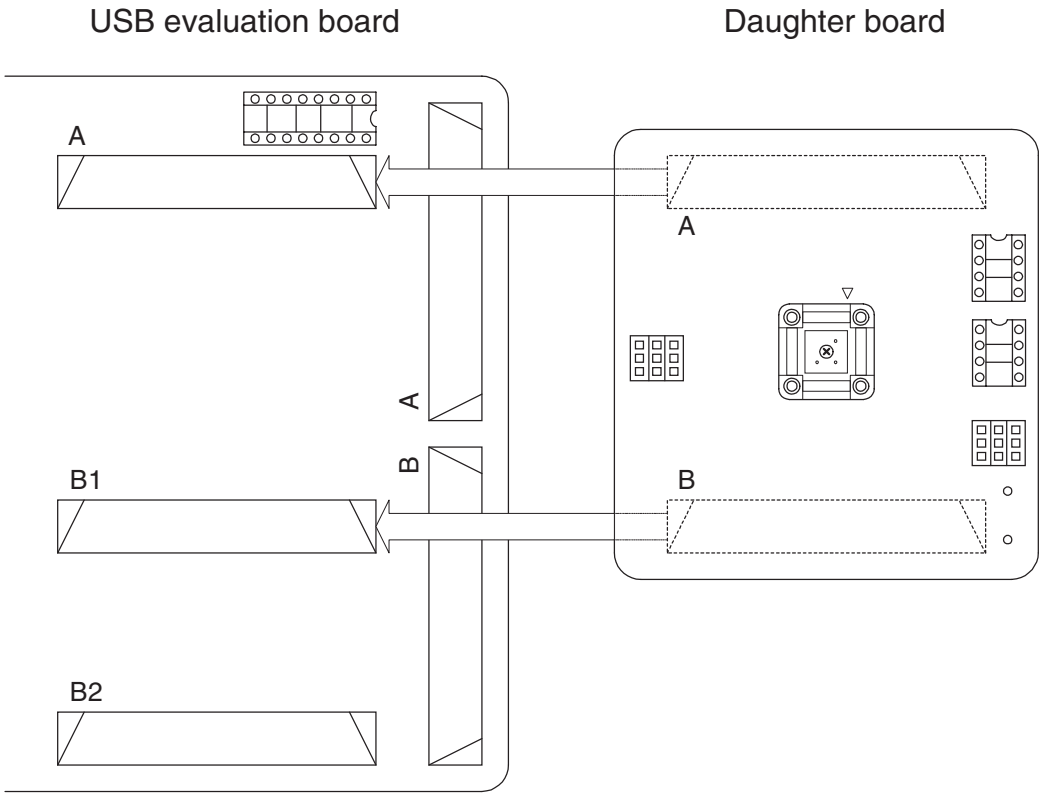

Figure 5 USB evaluation board connection

6. Connector Pin Assignment

Table 1 lists the correspondence between the function pins of the MCU and USB evaluation board. Table 2 lists the correspondence between the general I/F connector pins of the MCU and USB evaluation board.

Table 1 Connector pin assignment

MCU		USB evaluation board	
Pin No.	MB9033X Pin name	Short plug side A Connection destination function (Pin name)	Short plug side B Connection destination function (Pin name)
86	P55/HAKX	USB-HUB(D4-)	FIFO(Q7)
85	P54/HRQ	USB-HUB(D4+)	FIFO(Q6)
84	P53/WRHX	USB-HUB(D3-)	FIFO(Q5)
83	P52/WRLX	USB-HUB(D3+)	FIFO(Q4)
82	P51/RDX	USB-HUB(D2-)	FIFO(Q3)
81	P50/ALE	USB-HUB(D2+)	FIFO(Q2)
77	HVM	USB-HUB(D1-)	FIFO(Q1)
78	HVP	USB-HUB(D1+)	FIFO(Q0)
21	P60/INT0	USB-LED(HUB-SUSP)	FIFO(xFL/xRT)
20	P47/A15/SCK1	USB-LED(SUSP)	FIFO(xFF)
19	P46/A14/SOT1	USB-LED(LINK)	FIFO(xEF)
7	P36/A06	RS-232C(DR/RX EN)	FIFO(xR)
6	P35/A05	RS-232C(DSR)	FIFO(xW)
1	P30/A00/TIN1	RS-232C(RTS)	FIFO(D7)
11	P42/A10/SIN0	RS-232C(RD)	FIFO(D6)
12	P43/A11/SOT0	RS-232C(TD)	FIFO(D5)
17	P44/A12/SCK0	NC	FIFO(D4)
94	P01/AD01/D01	USB-HUB(Power4 EN)	FIFO(D3)
93	P00/AD00/D00	USB-HUB(Power3 EN)	FIFO(D2)
92	P57/CLK	USB-HUB(Power2 EN)	FIFO(D1)
91	P56/RDY	USB-HUB(Power1 EN)	FIFO(D0)
5	P34/A04	RS-232C(RI)	NC
4	P33/A03/TOT2	RS-232C(CTS)	NC
3	P32/A02/TIN2	RS-232C(DCD)	NC
18	P45/A13/SIN1	USB-HUB (Power monitor 4 0C)	NC
10	P41/A09/TOT0	USB-HUB (Power monitor 3 0C)	NC
9	P40/A08/TIN0	USB-HUB (Power monitor 2 0C)	NC
8	P37/A07	USB-HUB (Power monitor 1 0C)	NC
2	P31/A01/TOT1	RS-232C(DTR)	NC

Note : “NC” indicates that the pin is not connected.

Table 2 Pin assignments of general-purpose I/F connectors (continues on next page)

General-purpose I/F connector A	MCU		General-purpose I/F connector A	MCU	
Pin No.	Pin No.	Pin name	Pin No.	Pin No.	Pin name
A1	17	P44/A12/SCK0	B1	12	P43/A11/SOT0
A2	11	P42/A10/SIN0	B2	1	P30/A00/TIN1
A3	2	P31/A01/TOT1	B3	8	P37/A07
A4	9	P40/A08/TIN0	B4	10	P41/A09/TOT0
A5	18	P45/A13/SIN1	B5	3	P32/A02/TIN2
A6	4	P33/A03/TOT2	B6	5	P34/A04
A7	6	P35/A05	B7	-	-
A8	7	P36/A06	B8	19	P46/A14/SOT1
A9	20	P47/A15/SCK1	B9	21	P60/INT0
A10	90	RSTX	B10	22	P61/INT1
A11	23	P62/INT2/SIN	B11	108	X0
A12	107	X1	B12	-	-
A13	24	P63/INT3/SOT	B13	25	P64/INT4/SCK
A14	26	P65/INT5/PWC	B14	27	P66/INT6/SCL0
A15	28	P67/INT7/SDA0	B15	29	P90/SIN2
A16	30	P91/SOT2	B16	31	P92/SCK2
A17	32	P93/SIN3	B17	33	P94/SOT3
A18	34	P95/SCK3	B18	35	P96/ADTG/FRCK
A19	36	AVcc	B19	37	AVRH
A20	38	AVss	B20	39	P70/AN0
A21	40	P71/AN1	B21	41	P72/AN2
A22	42	P73/AN3	B22	43	P74/AN4
A23	44	P75/AN5	B23	45	P76/AN6
A24	46	P77/AN7	B24	48	P80/AN8
A25	49	P81/AN9	B25	50	P82/AN10
A26	51	P83/AN11	B26	52	P84/AN12
A27	53	P85/AN13	B27	54	P86/AN14
A28	-	-	B28	-	-
A29	-	-	B29	-	-
A30	-	-	B30	-	-

Table 2 Pin assignments of general-purpose I/F connectors (continued)

General-purpose I/F connector B	MCU		General-purpose I/F connector B	MCU	
Pin No.	Pin No.	Pin name	Pin No.	Pin No.	Pin name
A1	-	-	B1	-	-
A2	-	-	B2	-	-
A3	-	-	B3	-	-
A4	120	P27/A23/PPG3	B4	119	P26/A22/PPG2
A5	118	P25/A21/PPG1	B5	117	P24/A20/PPG0
A6	116	P23/A19	B6	115	P22/A18
A7	114	P21/A17	B7	113	P20/A16
A8	112	P17/AD15/D15	B8	111	P16/AD14/D14
A9	110	P15/AD13/D13	B9	109	P14/AD12/D12
A10	104	P13/AD11/D11	B10	103	P12/AD10/D10
A11	102	P11/AD09/D09	B11	101	P10/AD08/D08
A12	100	P07/AD07/D07	B12	99	P06/AD06/D06
A13	98	P05/AD05/D05	B13	97	P04/AD04/D04
A14	96	P03/AD03/D03	B14	95	P02/AD02/D02
A15	94	P01/AD01/D01	B15	93	P00/AD00/D00
A16	92	P57/CLK	B16	91	P56/RDY
A17	86	P55/HAKX	B17	85	P54/HRQ
A18	84	P53/WRHX	B18	83	P52/WRLX
A19	82	P51/RDX	B19	81	P50/ALE
A20	77	HVM	B20	78	HVP
A21	73	DVM	B21	74	DVP
A22	80	HCONX	B22	-	-
A23	70	PB6/PPG5	B23	69	PB5/PPG4
A24	68	PB4	B24	67	PB3/SDA2
A25	66	PB2/SCL2	B25	65	PB1/SDA1
A26	64	PB0/SCL1	B26	63	PA7/OUT3
A27	62	PA6/OUT2	B27	61	PA5/OUT1
A28	60	PA4/OUT0	B28	59	PA3/IN3
A29	58	PA2/IN2	B29	57	PA1/IN1
A30	56	PA0/IN0	B30	55	P87/AN15

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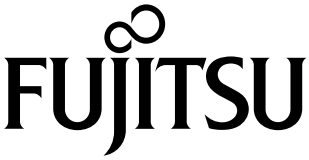
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