

**DSU-FR EMULATOR  
LQFP-100P HEADER TYPE 3  
MB2197-162  
OPERATION MANUAL**

## PREFACE

Thank you for purchasing the LQFP-100P header type 3 (MB2197-162) for the DSU-FR emulator. This optional product for the DSU-FR emulator PGA-299P adapter (MB2197-160) is used to connect the DSU-FR20/30 emulator (MB2197-01) or DSU-FR emulator (MB2198-01) to a user system that uses MB91F128 or other FR \*1 series MCUs of the LQFP-100P \*2.

This manual explains the handling of the LQFP-100P header type 3 (MB2197-162) for the DSU-FR emulator.

Consult the Sales Department or the Support Department of Fujitsu Limited for mass production MCUs and evaluation MCUs.

\*1 : FR is the abbreviation used for FUJITSU RISC CONTROLLER, which is a Fujitsu product.

\*2 : Package code: FPT-100P-M05

### ■ Handling and use

The handling and use of this product and notes regarding safety are included in the hardware manuals of the DSU-FR20/30 emulator or the DSU-FR emulator.

Follow the instructions in the manual " DSU-FR20/30 EMULATOR MB2197-01 HARDWARE MANUAL ", " DSU-FR EMULATOR MB2198-01 HARDWARE MANUAL " or " DSU-FR EMULATOR PGA-299P ADAPTER MB2197-160 HARDWARE MANUAL " for the use of this product.

### ■ Caution of the products described in this document

The following precautions apply to the product described in this manual.



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

<b>Cuts</b>	This product has parts with sharp points that are exposed. Do not touch edge of the product with your bare hands.
<b>Damage</b>	When connect the header board to the user system, correctly position the index mark on the NQPACK mounted on the user system with the index mark on the header board, otherwise the emulator system and user system might be damaged.
<b>Damage</b>	When mounting a mass production MCU, correctly position pin 1, otherwise the mass production MCU and user system might be damaged.

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## 1. Checking the Delivered Product

Before using the LQFP-100P header type 3, confirm that the following components are included in the box:

- LQFP-100P header type 3 \* : 1
- NQPACK100SD-ND (manufactured by Tokyo Eletech Corporation) : 1
- HQPACK100SD (manufactured by Tokyo Eletech Corporation) : 1
- Header board mounting screws : 4
- Operation manual (in Japanese) : 1
- Operation manual (in English, this manual) : 1

\* : Referred to as "header board".

## 2. Handling Precautions

The header board is precision-manufactured to improve dimensional accuracy and to ensure reliable contact. The header is therefore sensitive to mechanical shock. To ensure correct use of the header in the proper environment, observe the following points regarding its insertion and removal:

- Do not append any stress to NQPACK100SD-ND on user system during connecting the header board.

### 3. Notes on Designing

#### ■ Restrictions of PC board for the user system

Once the header board is connected to the user system, the heights of parts mounted in the space around the NQPACK100SD-ND are restricted.

The PC board of the user system must be designed with due consideration given to this restriction (Figure 1).

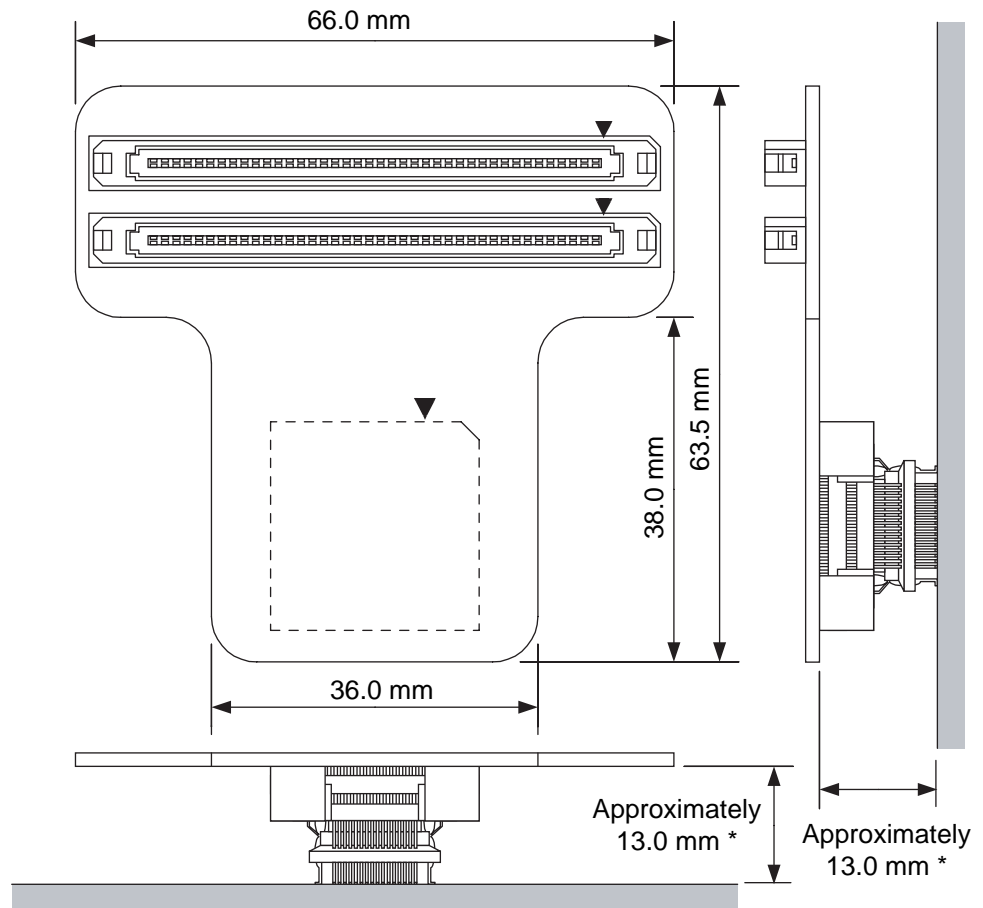


Figure 1 Header board dimensions

\* : The height differs slightly depending on how the header board and the NQPACK100SD-ND are engaged.

■ **MCU footprint design notes**

Figure 2 shows the recommended dimensions of the NQPACK100SD-ND footprint mounted on the PC board of the user system. The PC board of the user system must be designed with due consideration given to this footprint as well as to the mass production MCU.

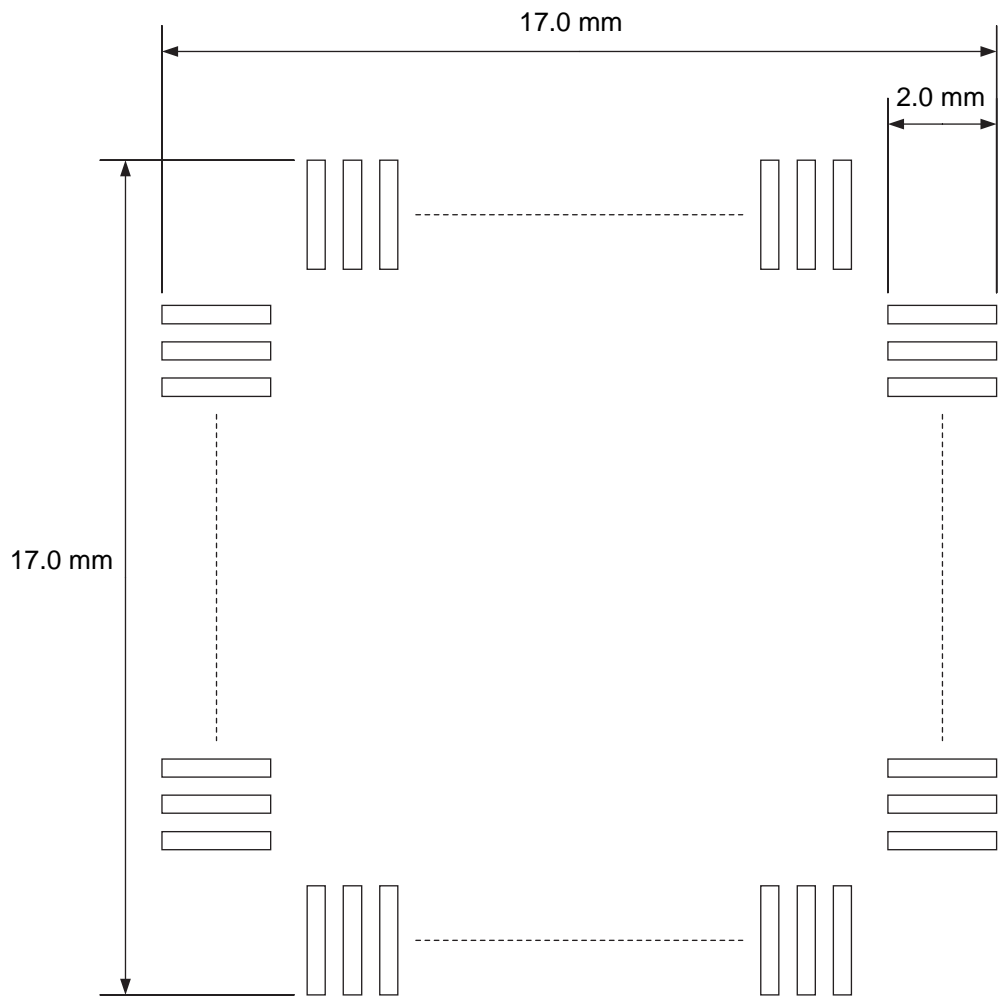


Figure 2 Recommended dimensions of the footprint for mounting the LQFP-100P IC socket

## 4. Procedure for Connecting the User System

### ■ Connection

Before using the header board, mount the supplied NQPACK100SD-ND on the user system. To connect the header board to the adapter unit, use the user I/F cable (2 lines) supplied by the adapter unit sold separately.

Refer to the hardware manuals of each adapter unit about the way to connect.

1. To connect the header board to the user system, match the index mark (only one corner is cut lineally) on the NQPACK100SD-ND mounted on the user system with the index mark (▼) on the header board, and then insert it (see Figure 3).
2. Insert each header board mounting screw for header board in each of the four tapped holes on the header board, and then first tighten the screws in opposing corners followed by the two remaining screws (see Figure 3).  
Tightening the screws too tight might result in a defective contact.
3. Connect the header board to the adapter board with the header interface cable.

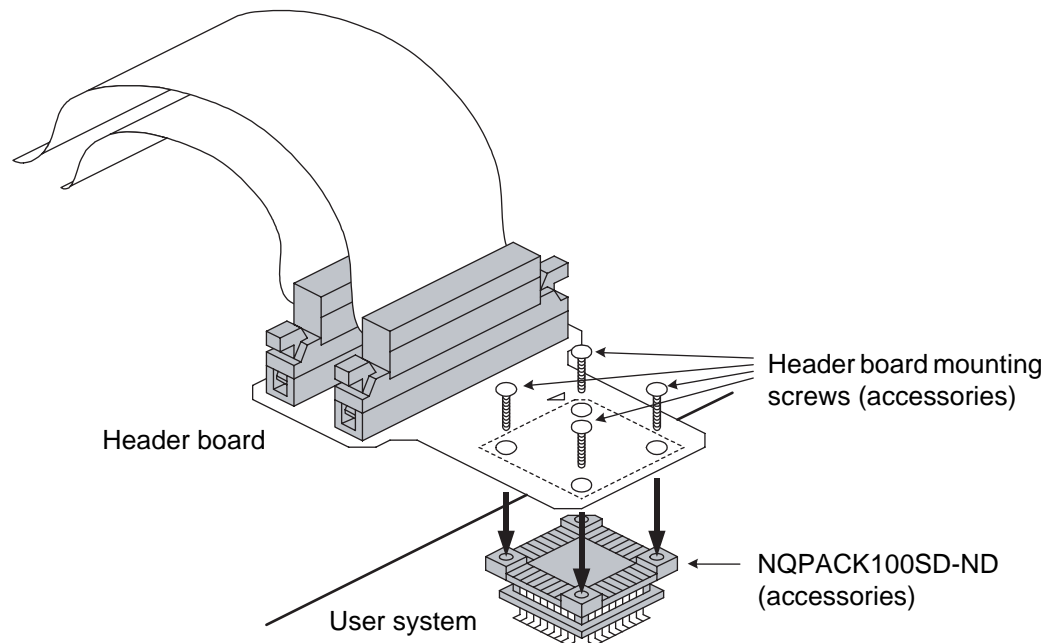


Figure 3 Header board connection to the user system

### ■ Disconnection

To disconnect the header board from the user system, remove all four screws, and then pull the header board straight out of the NQPACK100SD-ND.

## 5. Mounting Mass Production MCUs

### ■ Mounting

After mounting a mass production MCU on the user system, use the supplied HQPACK100SD (see Figure 4).

1. To mount a mass production MCU on the user system, match the index mark (only one corner is cut lineally) on the NQPACK100SD-ND mounted on the user system with the index mark (●) on the mass production MCU.
2. Confirm that the mass production MCU is correctly mounted on the NQPACK100SD-ND. Next, insert the HQPACK100SD into a NQPACK100SD-ND, match the index mark (only one corner is cut lineally) on the NQPACK100SD-ND with the index mark on the mass production MCU. The pin of HQPACK100SD is thin and easy to bend. Insert NQPACK100SD-ND after confirm that the pin of HQPACK100SD is not bent.
3. Insert each screw for securing in each of four tapped holes on the HQPACK100SD, and then first tighten the screws in opposing corners followed by the two remaining screws. Tightening the screws too tight might result in a defective contact.

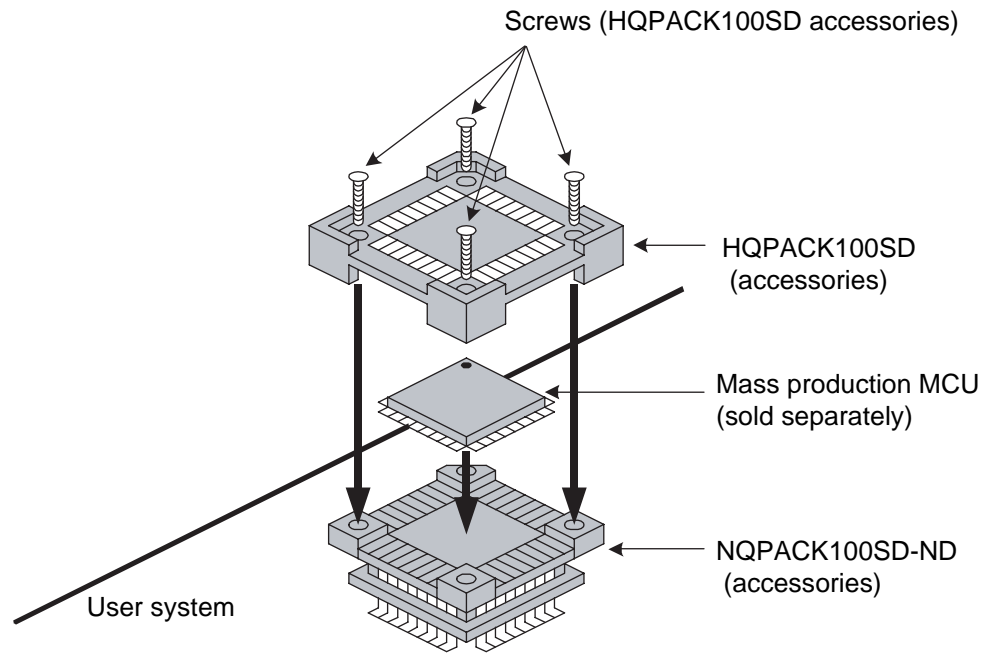


Figure 4 Mounting a mass production MCU

### ■ Disconnection

To disconnect the HQPACK100SD, remove all four screws, and then pull the header board straight out of the NQPACK100SD-ND.

## 6. Environmental specification

The environmental specification of this product is shown in Table 1.

Table 1 Environmental specification

Item	Temperature	Relative humidity
Operation	0 °C to 40 °C	30% to 80% (without condensation)
Storage	-20 °C to 70 °C	20% to 90% (without condensation)

SS01-71016-2E

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