DSU-FR EMULATOR

LQFP-100P HEADER TYPE 4

MB2198-126-E

OPERATION MANUAL

FUJITSU

PREFACE

Thank you for purchasing the LQFP-100P[*1] header type 4 (MB2198-126-E) for the DSU-FR[*2] emulator.

The LQFP-100P header type 4 is used to connect the DSU-FR emulator (MB2198-01-E)[*3] to a user system. That uses FUJITSU FR family microcontroller MB91260 series (LQFP-100P).

This manual explains the handling of the LQFP-100P header type 4 for the DSU-FR emulator. Before using the MB2198-126-E, be sure to read this manual.

Please contact the sales or support representative for details on the mass production and evaluation MCU models that can be used with this product.

*1 : The lead pitch of PACKAGE (FPT-100P-M05) is 0.5mm and the body size is 14mm × 14mm. Using the product safely.

*2 : FR, the abbreviation of FUJITSU RISC controller, is a line of products of FUJITSU MICRO-ELECTRONICS LIMITED.

*3 : Referred to as the "emulator".

■ Handling and use

The handling and use of this product and notes regarding safety are included in the operation manual of the DSU-FR emulator.

Follow the instructions in "DSU-FR EMULATOR MB2198-01-E OPERATION MANUAL" for the use of this product.

■ European RoHS compliance

Products with a -E suffix on the part number are European RoHS compliant products.

■ Notice on this document

All information included in this document is current as of the date it is issued. Such information is subject to change without any prior notice.

Please confirm the latest relevant information with the sales representatives.

■ Caution of the product described in this document

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

⚠ CAUTION	Indicates a feature that, if not used correctly, may result in minor or moderate injuries, and which may cause the customer system to malfunction.

Cuts	This product has parts with sharp points that are exposed. Do not touch edge of the product with your bare hands.
Damage	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.
Damage	When mounting a mass production MCU, correctly position pin 1, otherwise the mass production MCU and user system might be damaged.

1. Checking the Delivered Product

Before using the DSU-FR LQFP-100P header type 4, confirm that the following components are included in the box:

- LQFP-100P header type 4[*1]   : 1
- Screws for securing header board (M2 × 10mm, 0.4mm pitch)   : 4
- Washer   : 4
- NQPACK100SD-ND[*2]   : 1
- HQPACK100SD[*3]   : 1
- Operation manual (Japanese version)   : 1
- Operation manual (English version, this manual)   : 1

*1 : Referred to as "header board". Header board is mounted on YQPACK100SD-4W (Tokyo Eletech Corporation), referred to as "YQPACK".

*2 : IC socket manufactured by Tokyo Eletech Corporation, referred to as "NQPACK", and supplied with a special screwdriver and 3 guide pins. A socket offering higher reliability, NQPACK100SD-ND-SL (Tokyo Eletech Corporation) (sold separately), can be used by making an IC socket mounting hole on the user system board. For more information, contact Tokyo Eletech Corporation.

*3 : IC Socket cover manufactured by Tokyo Eletech Corporation, referred to as "HQPACK", with 4 screws for securing HQPACK (M2 × 6mm, 0.4mm pitch).

This product is used as an adapter unit by combining with an optional "DSU-FR EMULATOR PGA-401P ADAPTER TYPE 2)" (sold separately).
Please contact the sales or support representative for details on the adapter that can be used with this product.

2. Handling Precautions

The adapter unit 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:

- To avoid placing stress on the NQPACK mounted on the user system board during connecting the adapter unit.

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 header board are restricted.

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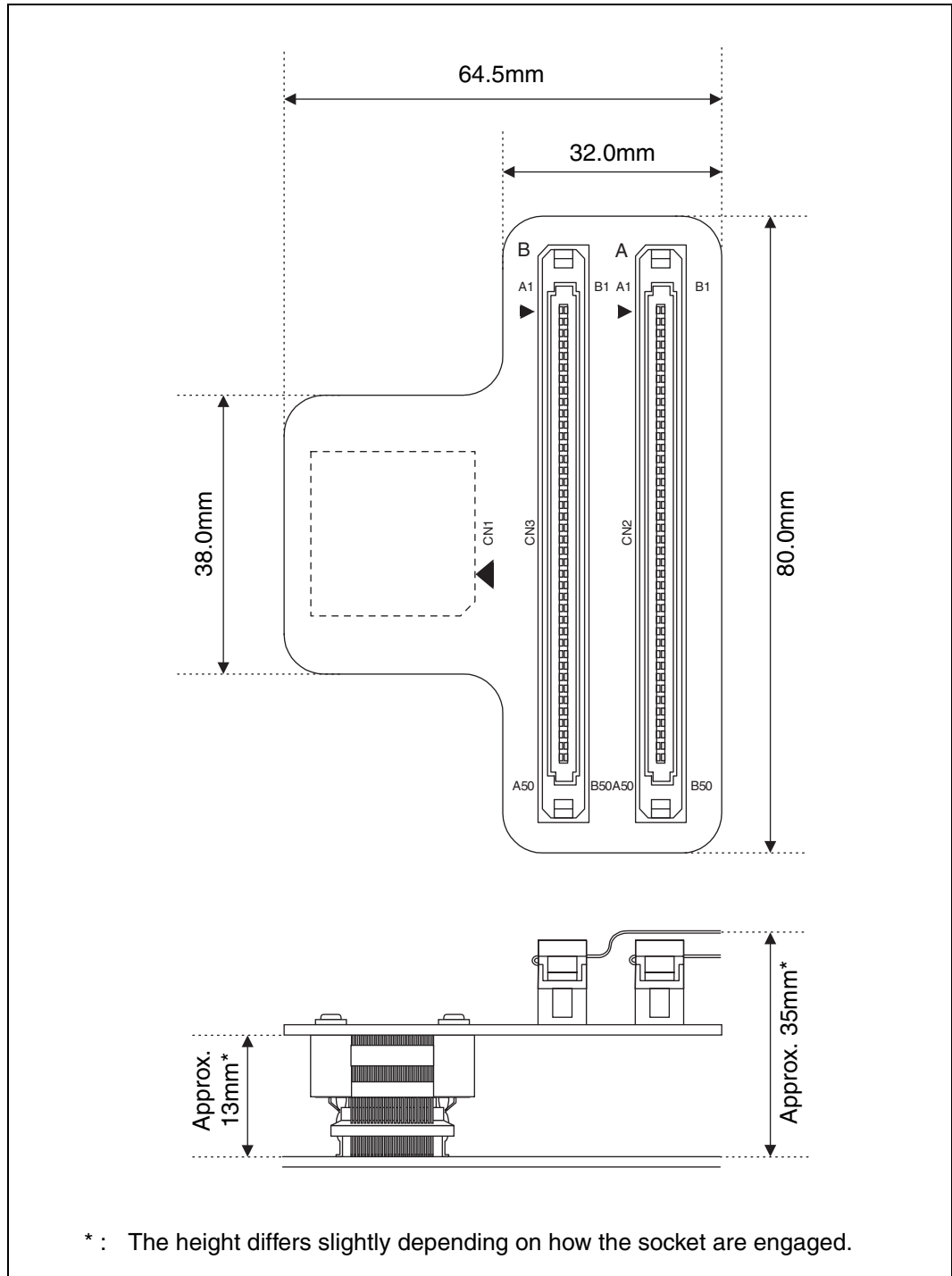
Figure 1 Header board dimensions

■ MCU footprint design notes

Figure 2 shows the recommended dimensions of the NQPACK 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.

For more information, contact the Tokyo Eletech Corporation.
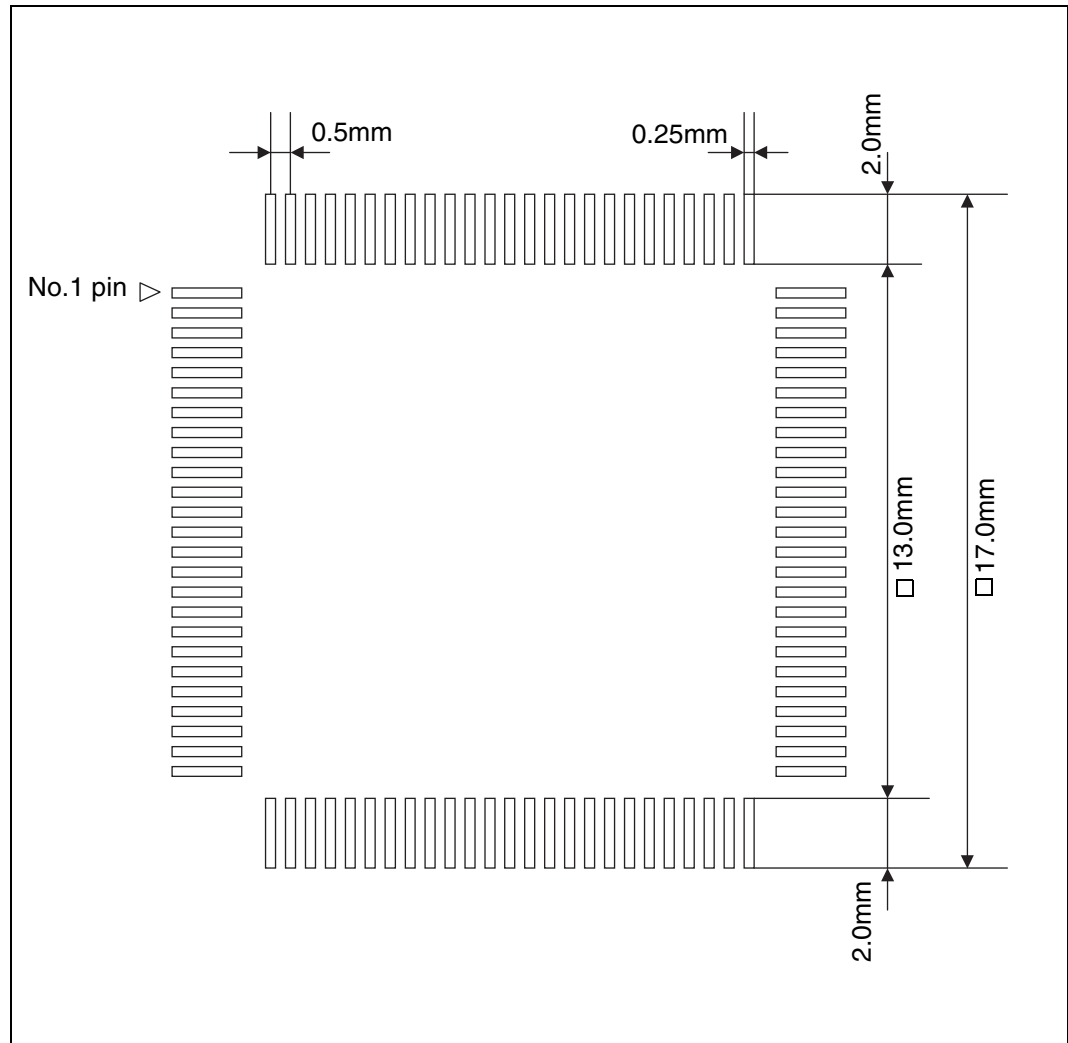
Figure 2 Recommended dimensions of the footprint for mounting the NQPACK

4. Procedure for Connecting the User System

Before using the LQFP-100P header type 4, mount the supplied NQPACK on the user system. The header board is used combining the adapter board (sold separately). To connect the header board to the adapter board, use the flat cable (2 lines) supplied by the adapter board. Refer to the operation manuals of the header board and each adapter unit about the way to connect.

■ Connecting

1. To connect the header board to the user system, match the index mark (▲) on the NQPACK mounted on the user system with the index mark (▲) on the header board and then insert it (see Figure 3). The pin of YQPACK is thin and easy to bent. Insert NQPACK after confirm that the pin of YQPACK is not bent.

2. Insert each screw for securing header board in each of the four drilled holes on the header board through a washer, and then first tighten the screws in opposing corners followed by the two remaining screws (see Figure 4) .
   To tighten the screws, use the special screwdriver supplied with the NQPACK to finally tighten the four screws in sequence. Tightening the screws too tight might result in a defective contact.

Figure 3 Index position

4

Figure 4 Header board connection

■ **Disconnection**

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

5. Mounting Mass Production MCUs

To mount a mass production MCU on the user system, use the supplied HQPACK (see Figure 5).

■ Mounting

1. To mount a mass production MCU on the user system, match the index mark (▲) on the NQ-PACK 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 NQPACK. Next, insert the HQPACK into a NQPACK.
   The pin of HQPACK is thin and easy to bent. Insert NQPACK after confirm that the pin of HQPACK is not bent.

3. Insert each screw for securing HQPACK in each of four drilled holes on the HQPACK, and then first tighten the screws in opposing corners followed by the two remaining screws.
   To tighten the screws, use the special screwdriver supplied with the NQPACK to finally tighten the four screws in sequence. Tightening the screws too tight might result in a defective contact.
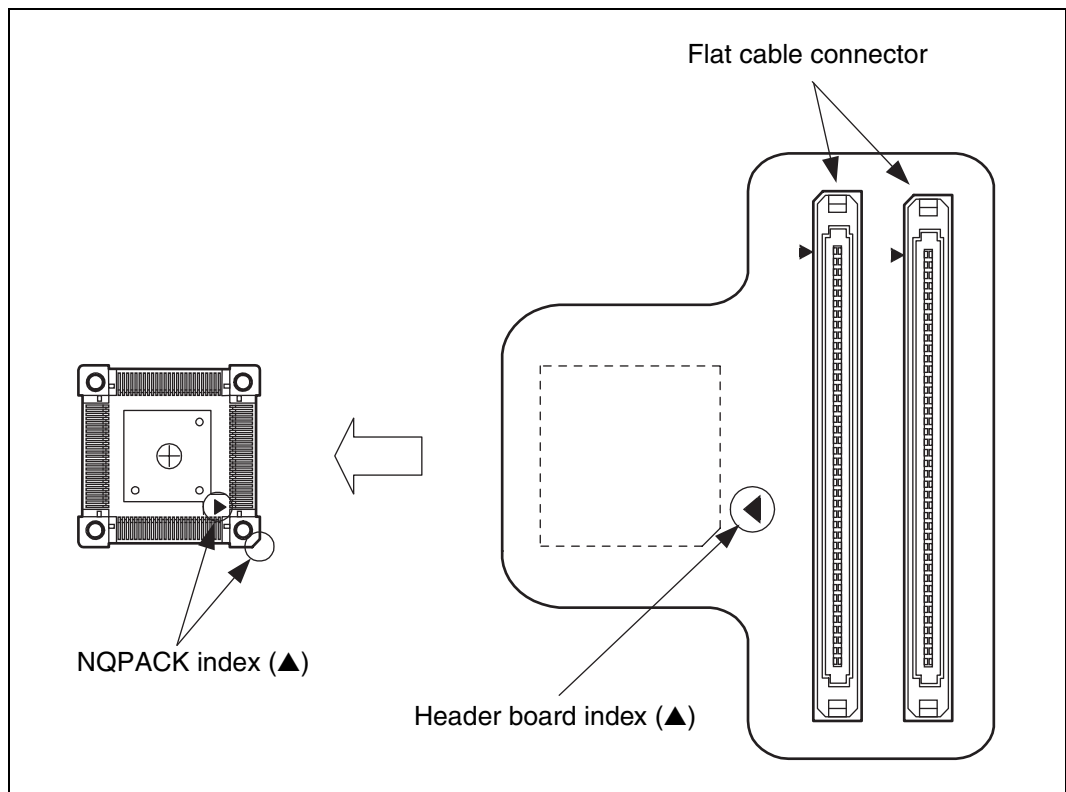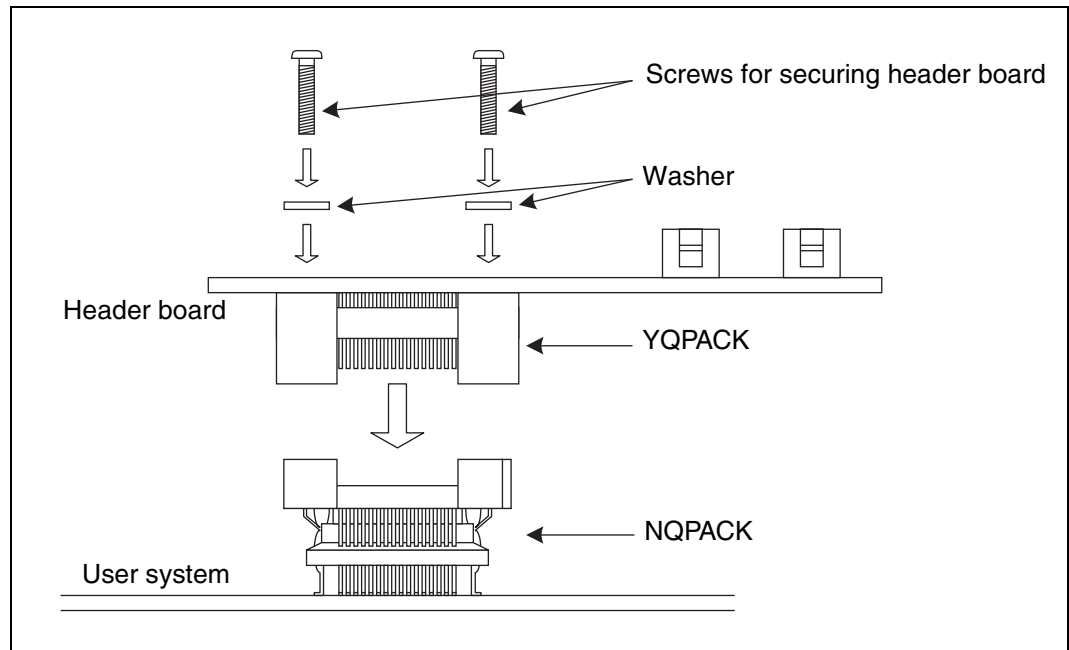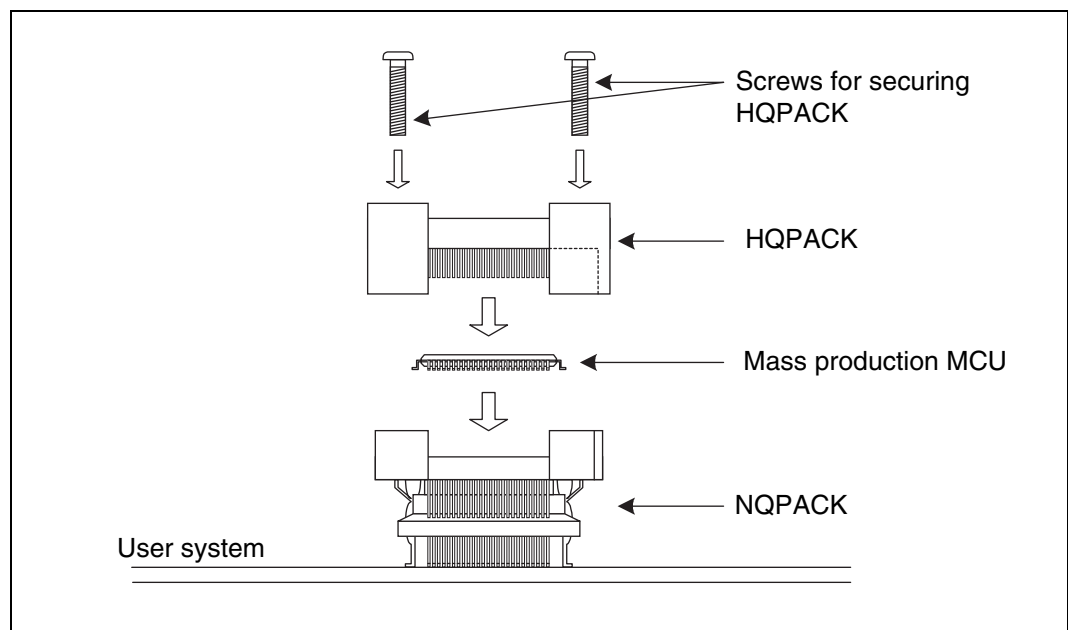

Figure 5 Mounting a mass production MCU

■ Disconnection

To remove the HQPACK, remove all four screws, and pull out the HQPACK vertically.

6. Connector Pin Assignment

The header board connects the signals of the evaluation MCU mounted on the adapter board via the flat cable connectors (two) on the header board according to pin information (the same assignments as YQPACK) about the production MCU.

For details on the production MCU's pin information, refer to the datasheet or hardware manual for the relevant MCU.

■ Pin Assignment

Tables 1 and 2 list the pin assignments among the flat cable connector, the evaluation MCU on the adapter board, and the production MCU.

For details on the names of signal conductors of the evaluation MCU, refer to the operation manual for the emulator or adapter board.

Comments in the tables are given below.

*1 : Connected to the I/O power supply of the evaluation MCU.

*2 : Connected to the I/O power supply (Vcc) of the production MCU. The connection pin numbers are 15, 47, 65 and 90.

*3 : Connected to the internal power supply of the evaluation MCU.

*4 : Connected to the internal power supply (C) of the production MCU. The connection pin numbers is 17.

*5 : Connected to the ground of the evaluation MCU.

*6 : Connected to the ground (Vss) of the production MCU. The connection pin numbers are 16, 48, 66 and 91.

" – ": Unconnected pin (left open).

Table 1 Pin assignment of the flat cable connector A

Connector pin numbers	Evaluation MCU pin numbers	Production MCU pin numbers	Connector pin numbers	Evaluation MCU pin numbers	Production MCU pin numbers
A1	*5	*6	B1	*5	*6
A2	135	64	B2	84	67
A3	301	68	B3	192	69
A4	191	70	B4	35	–
A5	349	–	B5	131	33
A6	296	38	B6	242	32
A7	186	35	B7	245	46
A8	188	45	B8	297	44
A9	244	43	B9	346	42
A10	187	41	B10	345	40
A11	243	39	B11	*5	*6
A12	83	–	B12	300	–
A13	*3	*4	B13	248	–
A14	249	62	B14	193	63
A15	*5	*6	B15	85	61
A16	302	–	B16	36	–
A17	136	–	B17	303	–
A18	37	60	B18	86	–
A19	138	59	B19	*5	*6
A20	250	57	B20	351	58
A21	195	–	B21	137	–
A22	38	–	B22	194	–
A23	*5	*6	B23	*3	*4
A24	*1	*2	B24	87	56
A25	209	–	B25	51	–
A26	252	54	B26	251	55
A27	39	53	B27	*5	*6
A28	40	51	B28	304	52
A29	139	49	B29	88	50
A30	41	–	B30	305	–
A31	*5	*6	B31	89	–
A32	140	27	B32	196	28
A33	42	25	B33	253	26
A34	306	24	B34	*3	*4
A35	197	23	B35	*5	*6
A36	141	21	B36	90	22
A37	76	–	B37	202	96
A38	310	97	B38	201	98
A39	*5	*6	B39	357	99
A40	257	100	B40	144	1
A41	309	2	B41	256	3
A42	200	4	B42	356	5
A43	308	6	B43	*5	*6
A44	92	7	B44	44	8
A45	255	9	B45	143	10
A46	199	11	B46	307	12
A47	91	13	B47	*3	*4
A48	254	18	B48	142	14
A49	198	20	B49	43	19
A50	*5	*6	B50	*5	*6

Table 1 Pin assignment of the flat cable connector B

Connector pin numbers	Evaluation MCU pin numbers	Production MCU pin numbers	Connector pin numbers	Evaluation MCU pin numbers	Production MCU pin numbers
A1	*5	*6	B1	*5	*6
A2	−	−	B2	50	−
A3	4	−	B3	315	−
A4	208	−	B4	98	−
A5	153	−	B5	182	71
A6	127	−	B6	239	−
A7	*5	*6	B7	31	−
A8	293	−	B8	183	−
A9	78	−	B9	128	−
A10	184	−	B10	32	−
A11	240	−	B11	*5	*6
A12	129	−	B12	79	−
A13	294	−	B13	185	29
A14	130	30	B14	241	31
A15	*5	*6	B15	97	−
A16	80	36	B16	295	37
A17	*1	*2	B17	344	34
A18	298	−	B18	132	−
A19	189	−	B19	*5	*6
A20	246	−	B20	348	−
A21	299	−	B21	133	−
A22	81	−	B22	*1	*2
A23	*5	*6	B23	247	−
A24	190	−	B24	34	−
A25	134	−	B25	82	−
A26	*1	*2	B26	29	93
A27	291	92	B27	*5	*6
A28	258	95	B28	146	94
A29	203	89	B29	259	88
A30	93	87	B30	147	86
A31	*5	*6	B31	204	85
A32	312	84	B32	260	83
A33	94	82	B33	45	81
A34	205	80	B34	148	79
A35	1	78	B35	*5	*6
A36	*1	*2	B36	95	77
A37	46	76	B37	126	75
A38	292	74	B38	30	73
A39	*5	*6	B39	77	72
A40	206	−	B40	261	−
A41	47	−	B41	313	−
A42	2	−	B42	149	−
A43	150	−	B43	*5	*6
A44	262	−	B44	48	−
A45	96	−	B45	151	−
A46	207	−	B46	49	−
A47	*5	*6	B47	3	−
A48	263	−	B48	*1	*2
A49	264	−	B49	−	−
A50	*5	*6	B50	*5	*6

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