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Title of Document:		HANDLING MANUAL	Issue No.      Rev.        CHM-1-2266      3
Customer:			Issue date: November 12, 2007
Title subject:	FHH Connector	. 6	Revision date: May 24, 2024

This manual describes important and required points of handling FHH connector safety (embossed-taping product). Be sure to read this manual thoroughly before using FHH connector.



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No.

# 1. Part Name

Each part name of the connector is as follows.



# 2. Model Number

The model number is shown by the combination of figures and letters as below.

Product name (Connector name)		Model number		
	Embossed taping product	∗∗FHH-SM1-GAN-TF (LF)(SN) ∗∗FHH-SM1-GAN (HF)		
	Loose piece product	**FHH-SM1-GAN (LF)(SN) **FHH-SM1-GAN (HF)		

Note<sub>1</sub>: 2-digit figures in (\*1) denote the circuit number.

e.g.: 30FHH-SM1-GAN-TF (LF)(SN) 30-circuit FHH connector double-sided contact type (embossed-taping product) Nickel-undercoated stripe gold-plating lead-free product

e.g.: 20FHH-SM1-GAN-TF(HF)

20-circuit FHH connector double-sided contact type (embossed-taping product) Nickel-undercoated stripe gold-plating halogen-free product

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#### 3. Storage

3-1 Storing the connectors

Recommended storage condition: Temperature: 5 - 35 °C, Relative humidity 60 % or less (Under packaging like the state of JST shipment)

Keep off direct sunlight, places exposing to such corrosive gas as industrial gas (generate from a stove and whatnot) and ammonia gas (generate from a toilet and whatnot) and dusty place. Also, keep the storage room from condensation.

Note that the resin molding part may break due to transportation and handling, such as processing and mating, under dry or low temperature condition. After unpacking, return the products in the original package to store.

3-2 Storing the crimped contacts

Not leaving the crimped contact to stand in a place exposed to high humidity and direct sunshine, and not placing them directly on the ground. Keep them in a clean storage room.

## 4. Applicable FPC

- ① The dimensions of an FPC greatly affect the contacting reliability with the connector. Conform the dimensions of an FPC with those of applicable ones described in the drawing attached to the specification.
- ② Especially, narrow pitch connectors have a high possibility to come off the contact point due to warpage, deformation, slant insertion, insufficient insertion and so on of an FPC. In order to reduce these risks, manage that the important dimensions such as conductor width, length, pitch, FPC total width, position misalignment between conductor and an FPC width shall meet the given tolerances, considering the variations of those dimensions.
- ③ Confirm the applicability of the connector with the FPC used, before using. FPC, which applicability is not confirmed, might not be able to guarantee the performance.
- The blanking of FPC shall be conducted from the conductor side to the reinforcing plate side. The material of the FPC reinforcing plate should be polyimide and thermosetting adhesive as adhesive agent.

Item	Ra	ted value
Applicable FPC: Gold-plated copper foil Refer to the product specification (T-1-2426) and the attached drawing (KRD-37708-3).	Conductor: Conductor pitch: Conductor width: Mating part thickness:	Gold-plated copper foil 0.5 mm 0.35 mm 0.30 ±0.03 mm

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# 5. PC Board Pattern Layout

The following PC board pattern layout is recommended. (N: Circuits No.)



# (5/9)JST CHM-1-2266 Title subject: FHH Connector No. Handling Precautions 6. 6-1 Inserting an FPC 1 Inserting an FPC into the connector Insert an FPC the until flange is caught with the housing. The flange fits in the housing.

Insert an FPC diagonally downward at an angle of approx.15 ~ 30 degrees into the FPC mating entrance of the mounted connector. After inserting the FPC, there is an audible clicking when the flange goes over the socket housing. Also, in case of inserting a flange-free FPC, insert it straight in the FPC mating entrance until stopping. Then, check visually that each kind of FPC is inserted straight into the connector.

Note<sub>2</sub>: Be sure to check visually that the flange is caught with the socket housing because there is a possibility that the mating is not being done without inserting an FPC fully even if the cover housing is closed.



Put your fingertip on the vicinity of the center to turn the cover housing down with an FPC inserted. At that time, close the cover housing so as not to move the FPC. In case the FPC moves or comes off the connector in closing the cover housing, open the cover housing again and re-insert it straight. After closing the cover housing, check that it is securely closed.



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- 6-2 Extracting an FPC
  - ① Opening the cover housing



Lift the cover housing by your fingertip and turn it up to unlock.

Note3: Open the cover housing with care not to deform the inside contact.

② Extracting an FPC from the connector



The cover housing is full-opened at the position of 90 degrees. At that state, extract an FPC diagonally upward from the connector at an angle of 15 ~30 degrees. In case of using a flanged FPC, do not extract it with closing the cover housing.

Note<sub>4</sub>: Ensure that the cover is opened fully, as pulling out the FPC without fully opening the cover leads to a vacant mating.

Pushing down the cover that opens fully with excessive force may result in cover breakage.

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6-3 Handling of an FPC after mounting the connector on PC board

Pay careful attention to handling an FPC as shown below.



Give attention to using the connector at the place where the FPC inserted in the connector moves by the mechanism of the rotating axis of devices or along with the operation of the moveable part, because poor contact may be caused due to fretting corrosion.

- 6-4 Other precautions
  - In particular, when operating the cover and how to handle an FPC, make sure you fully understand the handling methods described above.
  - ② Do not forcibly pull out the FPC with the cover closed after mating the FPC. Doing so may cause damage to the connector and FPC.
  - Due to the mating mechanism of this product, if the cover is closed on the connector alone before mounting, the contacts is lifted, which warps the socket housing. Soldering at that state causes deformation of the housing, resulting in poor soldering.
    The connectors that have had their covers closed before mounting have deformation on the socket housings, so they also should not be used.
  - ④ Do not close the cover housing with no FPC in the mounting state or extract the FPC forcibly with the cover closed because these operations bring out a vacant mating, and we cannot guarantee the connector's performance. Never use the connector on which a vacant mating has been done.

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- 7. Precautions for Soldering Operation
  - ① Solder iron method

Solder the connector mounted on a PC board by a soldering iron of 350°C quickly within 3 seconds, and check the appearance visually.

Note<sub>5</sub>: When using a soldering iron, be sure to solder the connector with the cover housing opened. Soldering with the cover housing closed lets the connector warp, leading to poor soldering.

- Note<sub>6</sub>: Do not push the iron tip on the connector contact lead part nor apply an abnormal force such as lateral load, because the connector may break. If done, dismount, replace the connector with the new one, and redo soldering. Do not reuse the dismounted connector.
- ② Reflow soldering method

We recommend reflow soldering at lower temperature than the temperature profile of reflow soldering described in item "Resistance to Soldering Heat" of the product specification. As the recommended reflow temperature condition varies depending on the materials, such as solder paste, solder the connector according to the condition of the material. When bridge trouble appears in process of reflow soldering and repair is conducted by hand, strictly conduct item 7  $\odot$  "Solder iron method."

③ Thickness of metal mask

We recommend the 100 to 120 $\mu$ m-thick metal mask. This is the recommended thickness of soldering coat when the blanking ratio of the metal mask is 100% to the PC board pad area. In case that the metal mask thickness is more than 120 $\mu$ m, adjust the amount (area) of soldering coat by making the opening area smaller than the PC board pad area.

(e.g.: In case that the metal mask thickness is 150µm, the area of the blanking part should be smaller.)