



Title of Document: HANDLING MANUAL		Issue No. CHM-1-2607	Rev. 1
Customer:		Issue date: August 7, 2017	
Title subject:	FHSY Connector (Reverse Type, Gold Plating, Halogen-Free)	Revision date: January 18, 2023	

This manual describes important and required points of handling about the FHSY connector (gold plating, halogen-free)

Be sure to read this manual thoroughly before using the FHSY connector and request your staff to observe the points strictly in using.

C O N T E N T S

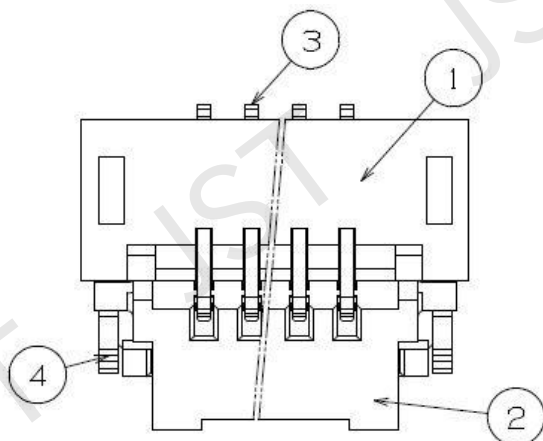
	Page
1. Structure and Name	2
1-1 Each part name	2
1-2 Model number	2
2. Storage	2
2-1 Storing the connector	2
2-2 Storing the processed products	2
3. Applicable FPC	3
4. PC Board Pattern Layout	4
5. Handling Precautions	5
5-1 How to insert and extract FPC	5
5-1-1 Opening the cover housing	5
5-1-2 Inserting FPC to close the cover	5
5-1-3 Extracting FPC	6
5-2 Inserting and releasing FPC	7
5-3 Handling of FPC after mounting the connector on PC board	8
5-4 Soldering points	9
5-4-1 Reflow soldering method	9
5-4-2 Metal mask thickness	10
5-4-3 Soldering iron method	10
6. Other Precautions	10

Prepared by: <i>Y. Takahashi</i>	Checked by: <i>J. Kajimoto</i>	Reviewed by: <i>K. Murata</i>	Approved by: <i>T. Fujiwara</i>
-------------------------------------	-----------------------------------	----------------------------------	------------------------------------

1. Structure and Name

1-1 Each part name

Each part name of the connector is as follows.



- ① Socket housing
- ② Cover housing
(Hereinafter referred to as cover)
- ③ Contact
- ④ Solder tab

1-2 Model number

Part name		Model No.
FHSY connector	Taping product	04FHSY-RSM1-GAN-TB(HF)(NN)
	Loose piece product	04FHSY-RSM1-GAN(HF)(NN)

Note₁: "(HF)" denotes lead-free and halogen-free products.

2. Storage

2-1 Storing the connector

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), dusty place and 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.

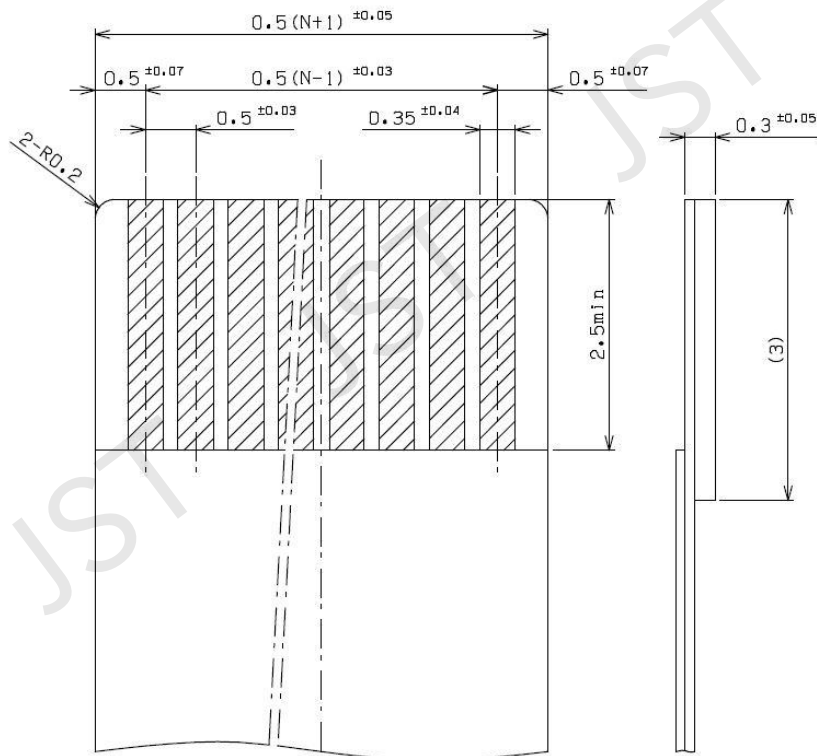
2-2 Storing the processed products

Not leaving the processed products 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.

3. Applicable FPC

- ① The dimensions of FFC greatly affect the contacting reliability with the connector.
Follow the dimensions of applicable FFC shown in the drawing.
- ② Especially, narrow pitch connectors like this connector have a high possibility to come off the contact point due to warpage, deformation, slant insertion, insufficient insertion and so on of FFC.
In order to reduce these risks, manage that the important dimensions such as conductor width, length, pitch, FFC total width, position misalignment between conductors and FFC width shall meet the given tolerances, considering the variations of those dimensions.
- ③ Remember to confirm the applicability of the connector with the FFC used, before using.
FFC, which applicability is not confirmed, might not be able to guarantee the performance.
- ④ The blanking shall be conducted from the conductor side toward the reinforcing plate side.
The material of the reinforcing plate should be polyimide and that of the adhesive should be thermosetting.

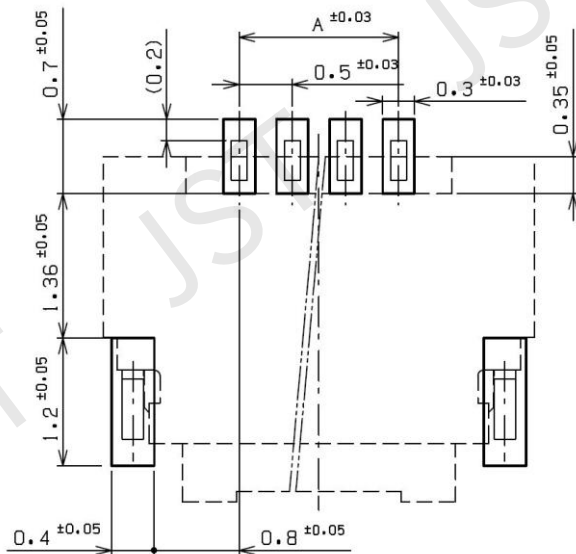
Item	Specification
Applicable FPC (Connector approval drawing & See the above.)	Conductor: Gold plating (Electroplating as plating method) Conductor pitch: 0.5 mm Conductor width: 0.35 mm Thickness at contact point: 0.3 ± 0.05 mm Material of reinforcing plate: Polyimide Adhesive: Thermosetting adhesive



UNIT: mm
N: Circuit No.

4. PC Board Pattern Layout

The following PC board pattern layout (viewed from the connector mounting side) is recommended.



UNIT: mm

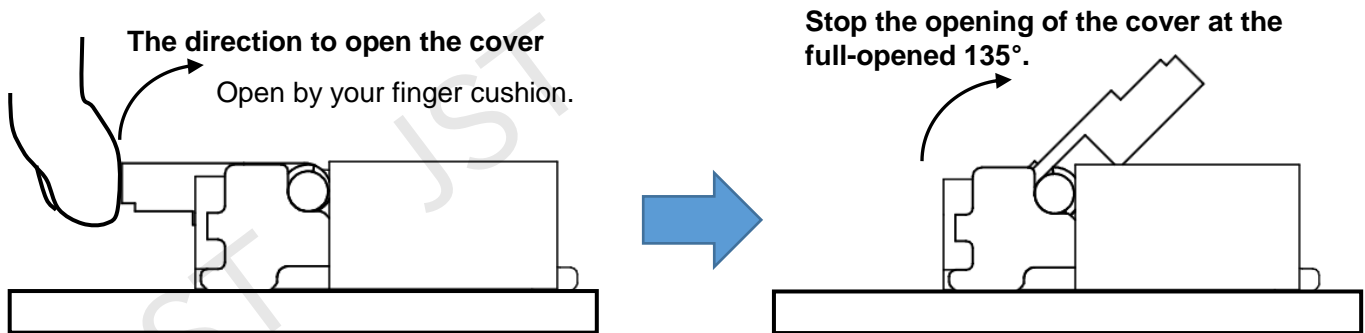
A: 0.5× (circuit number-1)

5. Handling Precautions



5-1 How to insert and extract FPC

5-1-1 Opening the cover

Raise the cover center by your finger cushion and open it slowly.

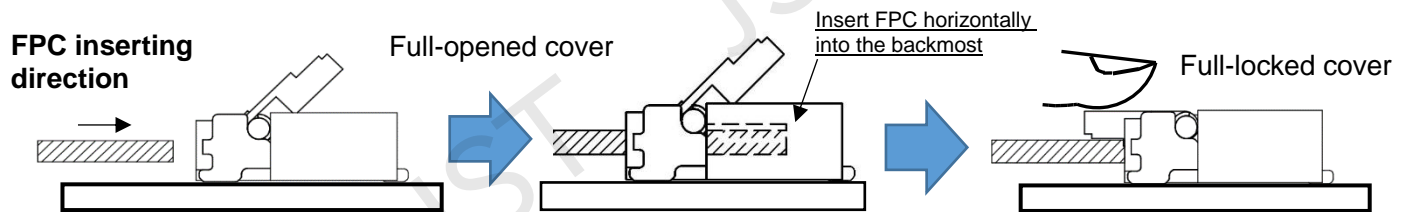




Points to be noted

-  Do not apply a large load to the connector opening direction when opening the cover. Do not stand your fingernail to operate it, because the cover may be broken.
-  The cover housing opens to 135° at the maximum. Do not apply an excessive load from the top direction to open it further, because the cover may be broken.

5-1-2 Inserting FPC to close the cover

With the cover opened fully, turn FPC contact part down, inserting FPC horizontally on the same axis as the connector until it strikes the connector inner wall. Then, slowly close the cover with pushing the cover center by your finger cushion.

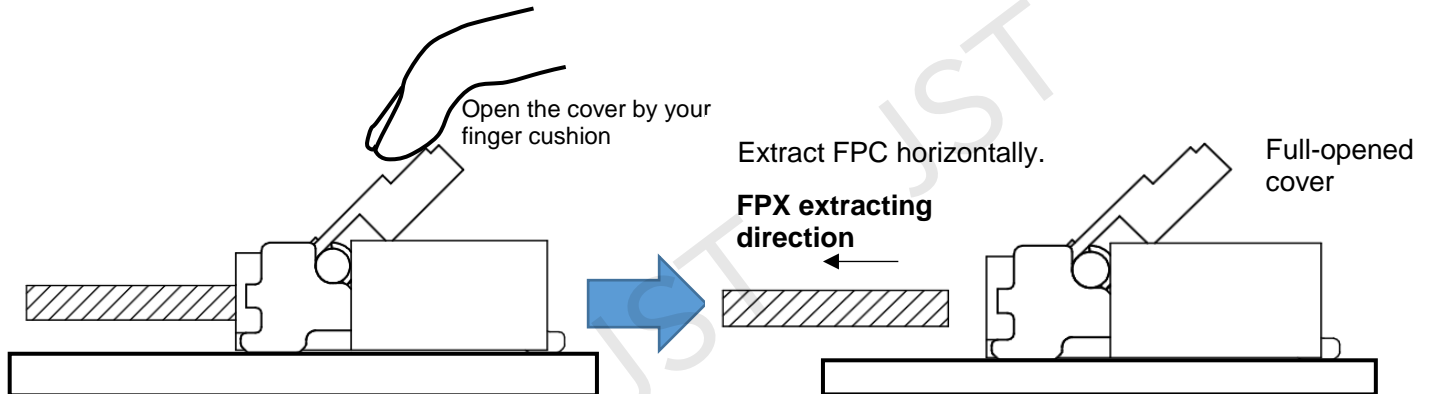
Points to be noted

-  Do not insert FPC without opening the cover fully, because the cover may be broken.
-  Insert FPC until it strikes the connector inner wall or close the cover fully after inserting FPC to prevent performance defect.

5-1-3 Extracting FPC

Raise the cover upward. (As FPC is inserted in the connector, open the cover like hooking from the top surface by your finger.)

After the cover is fully open (at 135°), extract FPC horizontally on the same axis as the connector.

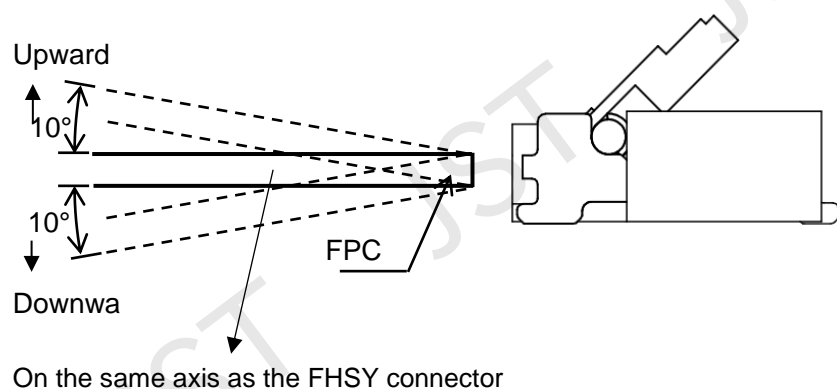
Points to be noted

- Do not apply a large load to the cover after being fully opened, because the cover may be broken.

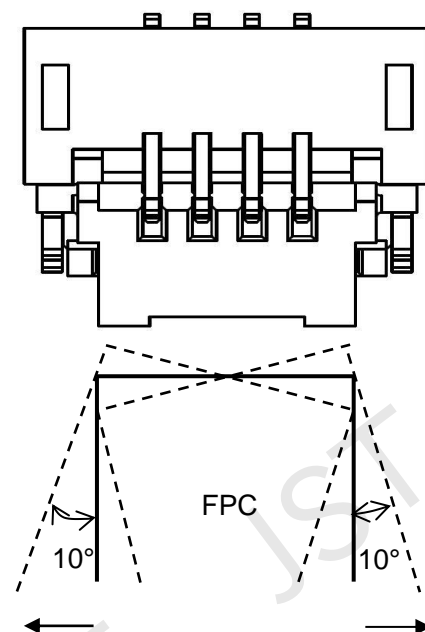
5-2 Inserting and releasing FPC

Conduct the insertion and withdrawal operation of FPC with the connector on the same axis.

When the operation on the same axis is difficult, do it swiftly within 10 degrees to each up and down and right and left direction.



FPC operation angle
 (Within 10° to each up and down
 and right and left direction)



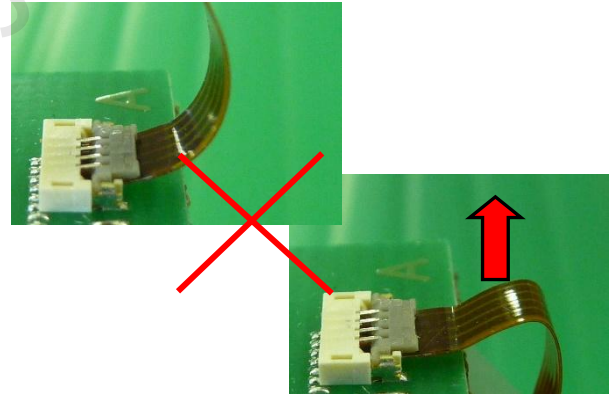
5-3 Handling of FPC after mounting the connector on PC board

Be careful for handling of FPC as shown in the figure below.

We recommend handling FPC by keeping the length enough not to apply an upward direction to the connector.



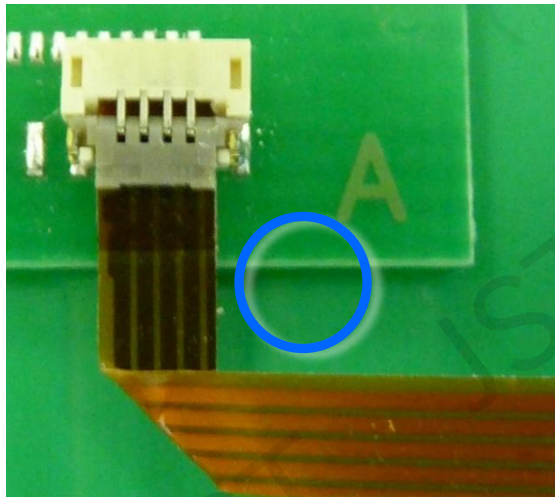
Upward handling FPC close to the connector may break the connector or FPC.



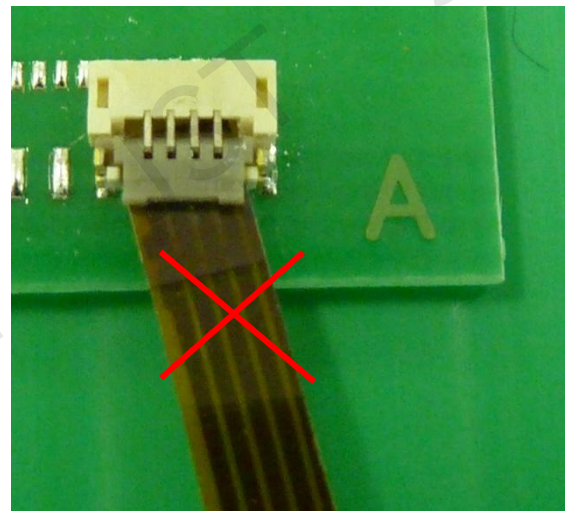
Handle FPC downwardly with care near the connector not to apply a load to an upward direction.



When handling FPC to lateral direction, do forming processing on it.



Do not apply a lateral force to FPC.

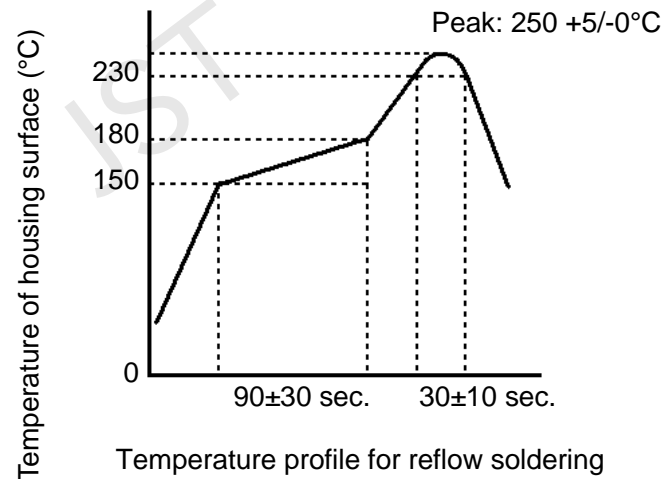


Give attention to using the connector at the place where FPC inserted in the connector moves by the mechanism of the rotating axis of devices or along with the operation of the moveable part, because poor contact may be caused due to fretting corrosion.

5-4 Soldering points

5-4-1 Reflow soldering method

We recommend reflow soldering at a lower temperature than the temperature profile shown below. 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.



5-4-2 Metal mask thickness

We recommend using 0.10 to 0.12 mm-thick metal masks which area of the blanking part is 100% same as pattern size on PC boards.

In case that the metal mask thickness is more than 0.12 mm, adjust the amount (area) of soldering coat by making the opening area smaller than the PC board pad area.

JST	Title subject: FHSY Connector (Reverse Type, Gold Plating, Halogen-Free)	No. CHM-1-2607
------------	--	----------------

5-4-3 Soldering 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.

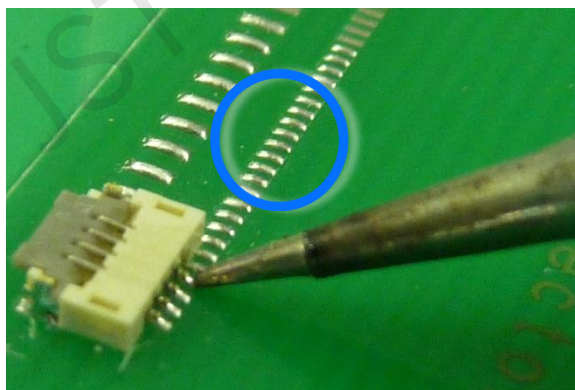
We request you to observe the following notes.

When soldering, do not push the iron tip on the connector contact lead part nor apply an abnormal force such as lateral load. If done, dismount and replace the connector with the new one, and redo soldering.

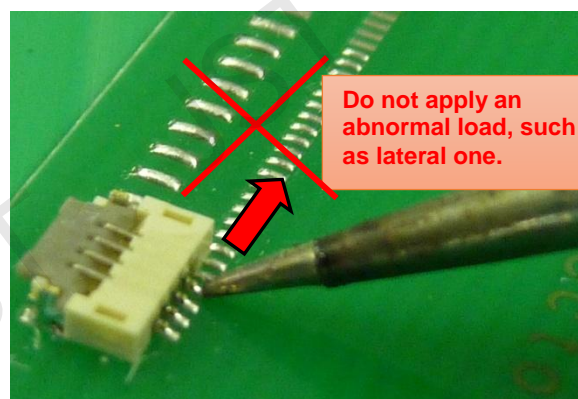
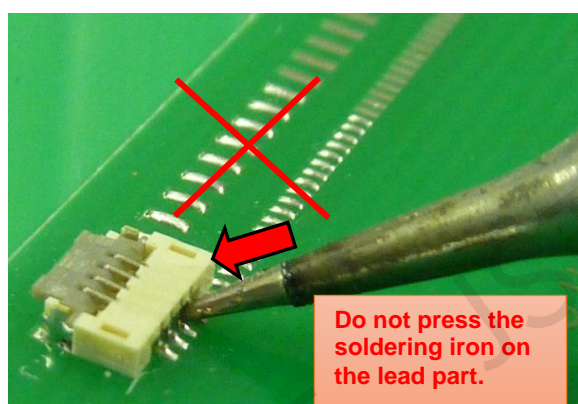
Do not reuse the dismantled connector.

When you repair soldering, handle with care, paying attention to the following points.

Using the soldering iron of 350 °C, touch the iron tip on the lead end of the specimen mounted on a PC board (within 3 seconds) and remove the connector.



Do not press the soldering iron on the lead part or do not apply an abnormal load, such as lateral one.



6. Other Precautions

- ① The FHSY connector is for ultra-low profile (the connector height: 0.9 mm) and narrow space; each component of the connector is very delicately manufactured. Especially when the cover housing is operated or a FPC is handled, be sure to read through the said handling way.
- ② Do not extract a FPC by force while the cover housing is closed after the insertion. Such handling may cause the breakage of the connector and FPC.
- ③ Do not stain the connector with household goods, such as oils, detergent, seasoning and fruit juice because electrical discontinuity, rust and the like may be caused.
If stained, never use the stained contact.
Never spray fume insecticide in the place where the processed connectors are stored.