Title of Document:	HANDLING MANUAL	Issue No. CHM-1-2239	Rev. 1
Customer:		Issue date: December 19, 2006	
Title subject:	FM Connector (SMT Type)	Revision date: June 25, 2020	

This manual describes important and required points of handling about FM Connector (SMT Type).
Be sure to read this manual thoroughly before using FM connector.

C O N T E N T S

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1. Model Number and Part Name

(1) Model number

Part name	Model No.
FM connector (SMT Type)	※FM-1.0 (*1)P- (*2)- (*3) (LF)(SN)

Note1: Number of circuits is indicated in ※

Note2: "*1" stands for connector type.
B: Top entry type
S: Side entry type

Note3: "*2" stands for lead protruding length.
Blank: Standard type
1.9: 1.9mm type

Note4: "*3" stands for plating specification.
Blank: Tin-plated ot tin/copper alloy-plated
G: Gold-plated

Note 5: Identification marking "(LF)(SN)" stands for lead-free product.

(2) Part name

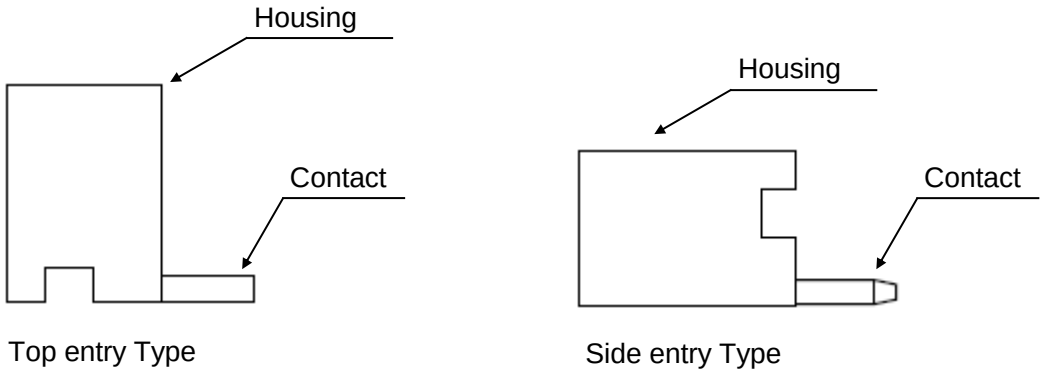


Fig.1: Each part name (Connector)

2. Storage

2.1 Connector storage

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.
After unpacking, return products in the original package to store.

2.2 Storage of the processed connectors

Not leaving the processed connectors 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 FFC･FPC

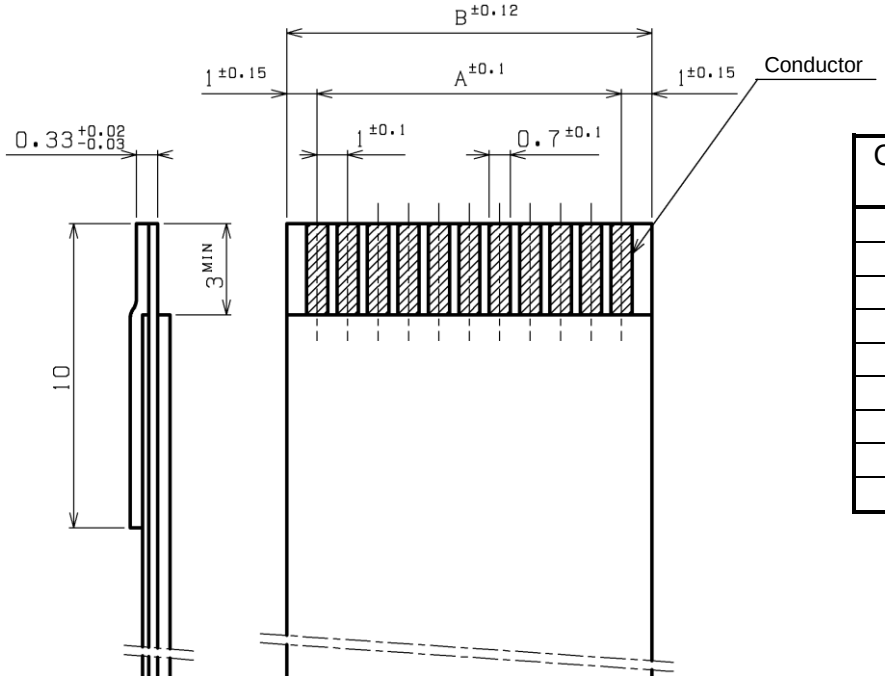
Item	Rated value
Applicable FFC･FPC	Lead: Tin-plated flat copper conductor Lead pitch: 1.0 mm Lead width: 0.7 mm Mating part thickness: 0.33 + 0.02/-0.03 mm

Note$_4$: Dimensions of FFC･FPC greatly affect to the contacting reliability with connector.
Conform the dimensions of FFC･FPC with those of applicable ones described in Fig.2.

Note$_5$: As above dimensions and construction are general conditions, FFC･FPC to be actually used should be checked for applicability with connector.
FFC･FPC, which applicability is not confirmed, might not be able to guarantee the performance.

UNIT: mm

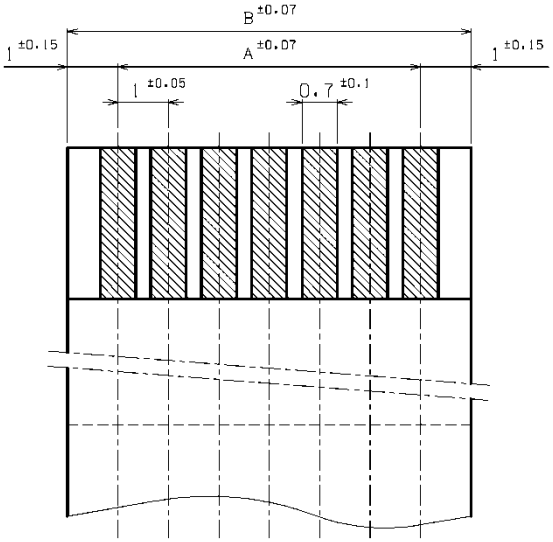
In case of FFC

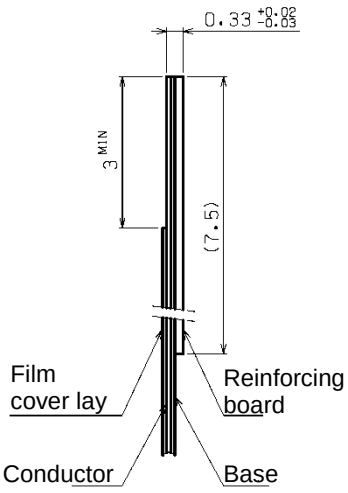


Circuit No.	Dimension	
	A	B
3	2.0	4.0
4	3.0	5.0
5	4.0	6.0
6	5.0	7.0
7	6.0	8.0
8	7.0	9.0
10	9.0	11.0
11	10.0	12.0
12	11.0	13.0

JST	Title subject: FM Connector (SMT Type)	No. CHM-1-2239

In case of FPC





Circuit No.	Dimension	
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6	5.0	7.0
7	6.0	8.0
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10	9.0	11.0
11	10.0	12.0
12	11.0	13.0

Specification: Recommended value of tin-plated product

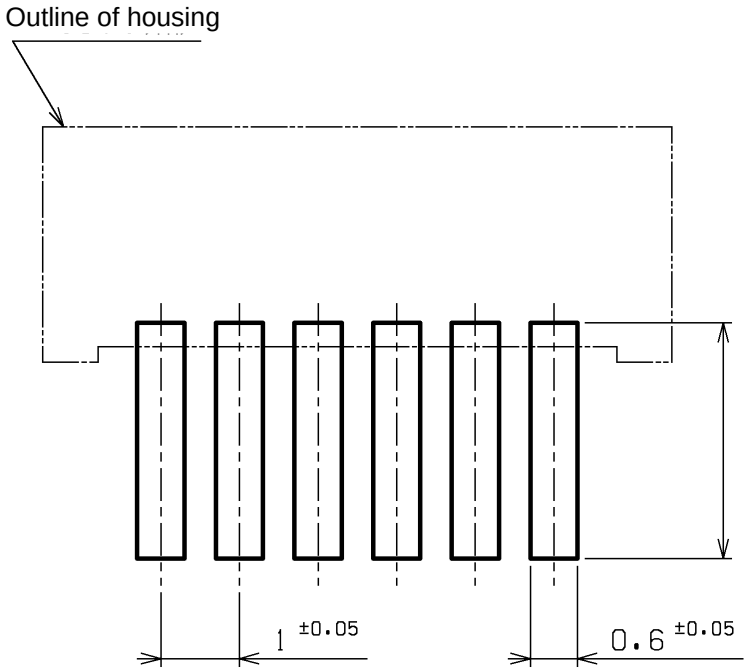
Base	Polyester	50µm
	or Polyimide	50µm
Conductor	Electrolytic copper foil	35µm
	Adhesive	25µm
	Tin-plated	2~8µm
Reinforcing board	Polyester	188µm
	Adhesive	50µm
Film cover lay		(25) µm

JST	Title subject: FM Connector (SMT Type)	No. CHM-1-2239

4. PC Board Pattern Layout

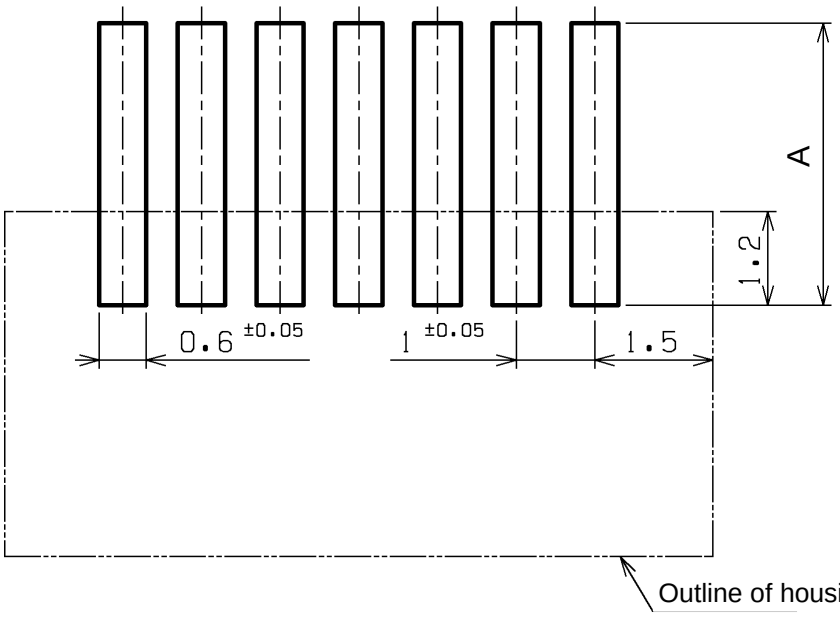
The following PC board pattern layout is recommended.

① Top entry type



Type	Dimension ”A”
Standard type	3.0

② Side entry type



Type	Dimension ”A”
Standard type	4.6
-1.9	3.6

※Tolerances are non-cumulative for all centers.

Fig.3: PC board pattern layout

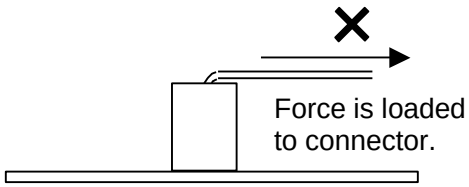
5. Handling Precautions

5.1 Inserting and releasing FFC･FPC

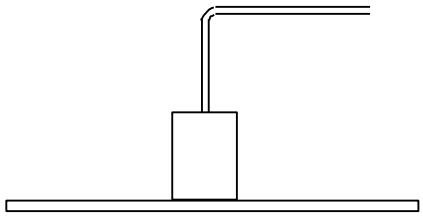
Inserting and releasing operations with FM connector and FFC･FPC shall be conducted on the same axis.
As this connector features miniaturization, reinforcements aren't installed.
Do the inserting and releasing operation with care not to pry.

6. Handling of FFC･FPC after Mounting on PC Board

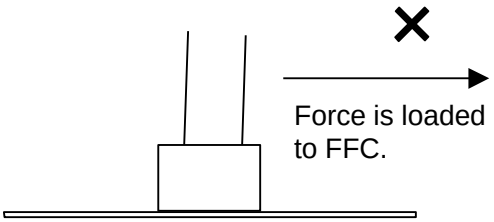
When inserted FFC･FPC is handled, provide sufficient FFC･FPC length so that force is not loaded to FM connector, because such loading may cause damage and discontinuity of connector.



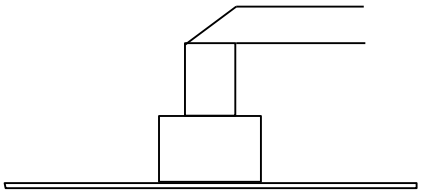
※FFC･FPC length is not sufficient to handle.



※FFC･FPC length is sufficient to handle.



※Force is loaded to FFC･FPC.



※Forming processing is conducted to FFC･FPC not so as to load force to the connector.

In the case that load is applied to mating part of connector and FFC･FPC due to operation of rotation part of device, etc. when using connector, such condition may cause defective contacting at connector mating part due to abrasion.
In such case, some treatment such as fixing FFC･FPC around mating part should be conducted.

7. Precautions for Soldering Operation

7.1 Soldering iron method

Solder a connector mounted on PC board using a soldering iron with temperature of 350°C at the tip of soldering iron quickly within 3 seconds, and check appearance visually.
When soldering, strictly conduct the following points.

Do not press soldering iron tip on connector contact lead part nor apply abnormal force such as lateral load, etc. If done, dismount and exchange connector, and conduct soldering again.
Do not reuse dismounted connector.

7.2 Reflow soldering method

Soldering by following the less temperature profile of reflow soldering, which is mentioned in Product Specification as item of “Resistance to soldering heat”, is recommended.
As recommended reflow temperature condition varies depending on solder paste to be used, follow each condition.

When bridge trouble appears in process of reflow soldering method and modification is conducted by hand, strictly conduct item 7.1 “Soldering iron method.”

8. Other Precautions

As adhesion of foreign matters such as seasoning, fruit juice, detergent, etc. may cause defective continuity and defective soldering. Pay careful attention and if stained, never use the stained connector.