

FPC Connectors

Technical Information

Precautions

■ Correct Use

All Models

Operation

- Make sure that the FPC has been inserted correctly. If the FPC is inserted incorrectly from the customer's design specification, the pin number will not match and it may damage the contacts or cause malfunction of the equipment.
- Insert the FPC fully to the back of the connector. Not doing so may cause a loss of contact reliability.
- When inserting or drawing out the FPC, applying pressure from up and down, left and right, or at an angle may cause the FPC contacts to be damaged or detached, which may result in contact failure.
- Do not lock or unlock the slider with excessive force. The connector may be damaged, and cause contact failure.
- Do not use the connector of which the slider has once come off.
- When inserting and drawing out the FPC, make sure that the slider has been unlocked first.
- Using the FPC in the following ways may damage the FPC, change the shape of the contacts, or result in contact failure.
 1. Drawing out the FPC when the slider is still locked.
 2. Drawing out the FPC by pulling it up and down or from left to right or twisting it sideways.

Designing

- When mounting the connector to the FPC, design the FPC so that extreme peel force should not be applied directly on to the connector. If the FPC bends near the connector, or if the FPC is used with extreme peel force directly on to the connector, it may cause a contact loss.
- If the connector-mounted FPC is installed at a location or in any equipment that will subject the FPC to continuous shake or movement, secure the FPC or take any countermeasure against FPC disconnection from the connector.
- Use FPCs that conform to the appropriate specifications and size as stated by OMRON. When using a different FPC, or an FFC, contact OMRON.
- Use the same metal for the FPC plating and the connector plating.
- "Whiskers" may protrude from the FPC film of some lead-free FPCs. Be careful when using these units.
- Ensure a metal mask thickness of $t = 0.12$ to 0.15 mm. The recommended metal mask open area is 90% of the printed circuit board mating dimensions given in the dimensions diagrams.

Mounting

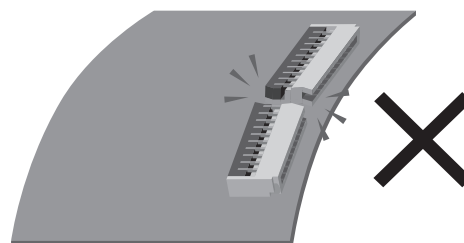
- Do not mount (reflow or manual soldering) the connector to PCB with FPC inserted in the connector. Doing so may result in contact failure.
- The reflow conditions are as stated in OMRON's specifications and guidelines. These conditions, however, depend on the type of solder, the manufacturer, the amount of solder, the size of the circuit board, and the other mounting materials.
- When mounting the connector by manual soldering, observe the following precautions to ensure contact reliability.
 1. Conditions for manual soldering: $350 \pm 10^\circ\text{C}$ 3 ± 1 sec
 2. Do not apply an excessive amount of solder. Excessive solder will cause the flux to rise.
 3. Do not apply the soldering iron to the mount attachments using force. Doing so may cause the connectors to change shape.
 4. Do not apply the soldering iron to any parts of the connector other than the mount attachments. Doing so may cause the connector to change shape.

Board Mounting

- Be careful of board warping. The connector flatness is 0.1 mm max. A large amount of warping, however, may result in soldering faults.
- Do not apply excessive force on the connector before mounting it. The connector may be damaged, resulting in faulty contacts. Do not insert the FPC and lock the slider before mounting the connector.
- Be careful not to apply an excessive load on the board when performing the following actions. The connector may be damaged, resulting in faulty contacts.
 1. Dividing multi-cavity boards.
 2. Securing a board with screws.

Storage

1. Do not store the connectors in locations subject to dust or high humidity.
2. Do not store the connectors in locations close to sources of gasses such ammonia gas or sulfide gas.



Backlock Models

Operation

- Do not lock the slider without an FPC inserted.
Locking the slider without an FPC inserted will decrease the space between upper and lower contacts and cause high insertion force.
- When locking the slider, apply pressure with your fingertips to both sides of the slider, then depress the slider until it becomes parallel with the PCB. Failing to lock the slider properly may result in contact failure.
- Do not apply force horizontally to the PCB when locking the slider. The connector may be damaged, resulting in faulty contacts.
- When unlocking the slider, place your fingers on either side or on the entire slider and slowly lift the slider up and away.
Do not engage the slider past its initial location during the unlocking process. The connector may be damaged, resulting in faulty contacts.

Designing

- When designing the board, be sure to allow locking and operating space for the slider.

Mounting

- Do not perform reflow or manual soldering with the FPC inserted in the connector and the slider in the locked position. Doing so may result in contact failure.

Front locking Models

Operation

- When unlocking the slider, use your fingernail to rotate and lift the slider. The slider cannot be opened to an angle of more than 125 degrees. Do not apply force on the slider beyond that point. The connector may be damaged, resulting in faulty contacts.

When locking the slider, apply pressure with your fingertips to the center of the slider, then twist the slider until it comes away from the unit. Failing to lock the slider properly may result in contact failure.

Slide locking Models

Operation

- When locking the slider, apply pressure to both sides or the entire slider, then push the slider all the way in.

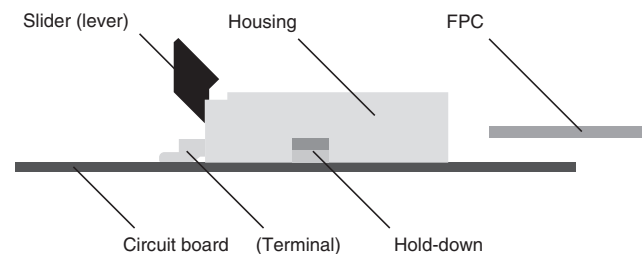
Not doing so may result in contact failure.

Designing

- When designing the board, be sure to allow unlocking and operating space for the slider.

Operating the XF Rotary Backlock

■ FPC Connector Parts

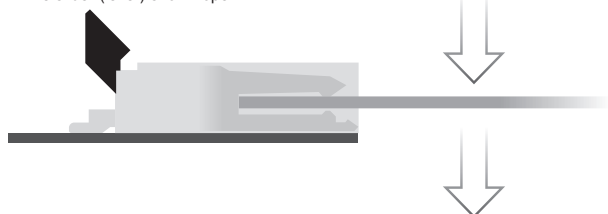


■ Handling Methods For Inserting the FPC

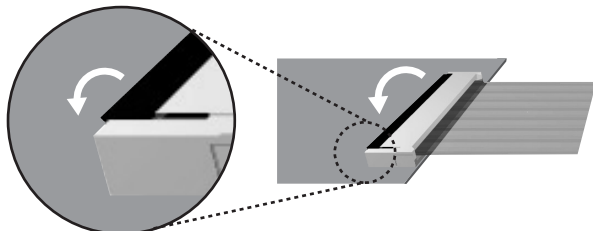
1. Insert the FPC fully to the back of the connector.



The slider (lever) shown open



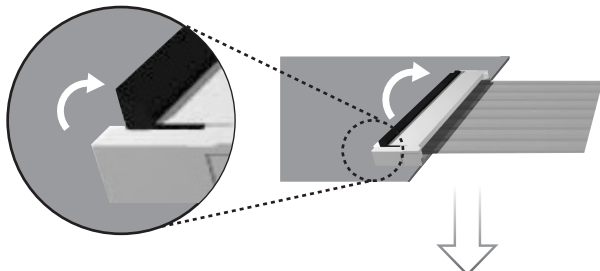
2. Activate the slider (lever) and lock the FPC in place.



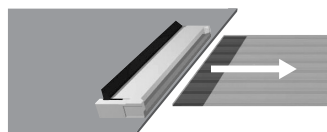
The slider (lever) shown locked

For Removing the FPC

1. Move the slider (lever) upwards to disengage the locking mechanism.



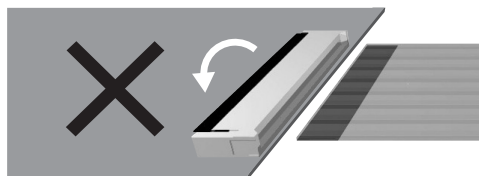
2. Once the lock has been disengaged, pull the FPC out.



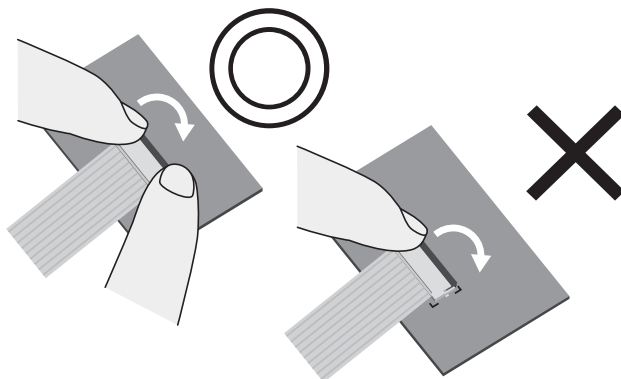
■ Precautions during Use

Operation

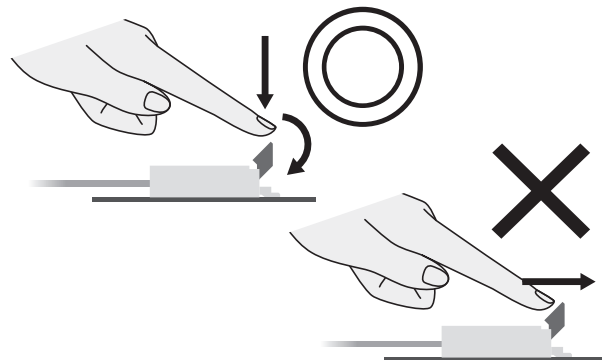
1. Do not lock the slider (lever) without an FPC inserted. Locking the slider (lever) without an FPC inserted will increase the force required to insert an FPC.



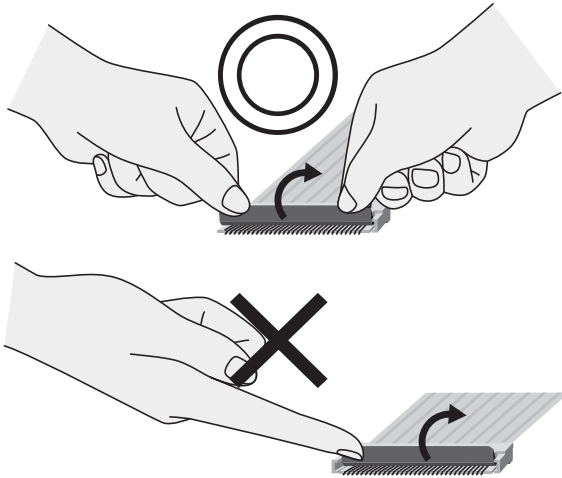
2. Do not lock or unlock the slider (lever) with excessive force. The connector may be damaged, resulting in faulty contacts. Do not use the slider (lever) again if it becomes detached.
3. When locking the slider (lever), apply pressure with your fingertips to both sides of the slider (lever) and then depress the slider (lever) until it becomes parallel with the PCB. Failing to lock the slider (lever) properly may result in contact failure.



Do not apply force horizontally to the PCB when locking the slider (lever). The connector may be damaged, resulting in faulty contacts.

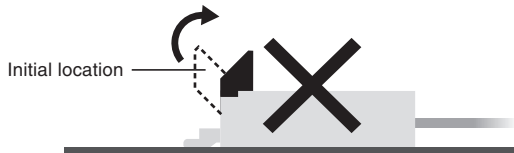


4. When unlocking the slider (lever), place your fingers on either side or the entire slider (lever) and slowly lift the slider (lever) up and away.



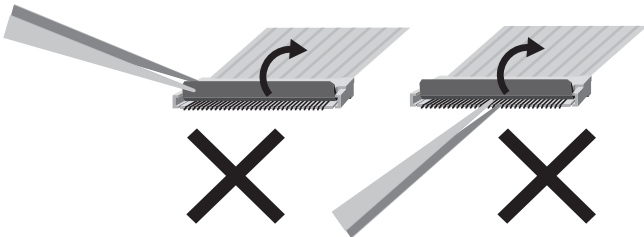
Do not engage the slider past its initial location during the unlocking process.

The connector may be damaged, resulting in faulty contacts.

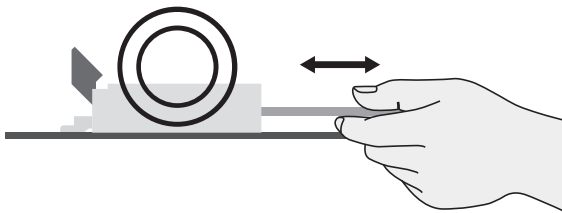


Performing the following action may cause the terminals to change shape or otherwise cause contact failures.

- Using tweezers to unlock the slider (lever).

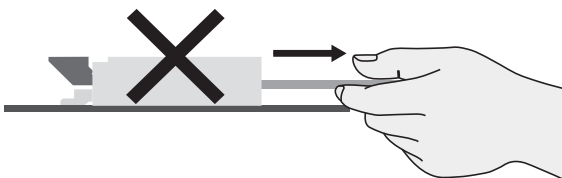


5. When inserting and drawing out the FPC, be sure to check that the slider (lever) has been unlocked first.

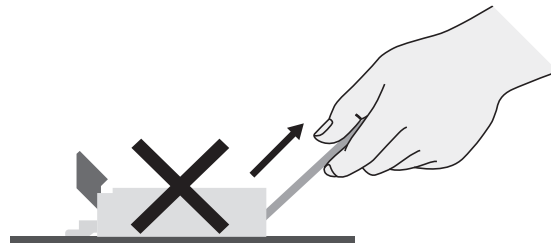


Using the FPC in the following ways may damage the FPC, change the shape of the contacts, or result in contact failure.

- Drawing out the FPC when the slider (lever) is still locked.



- Drawing out the FPC by pulling it up and down or from left to right or twisting it sideways.



6. Make sure that the FPC has been inserted correctly.

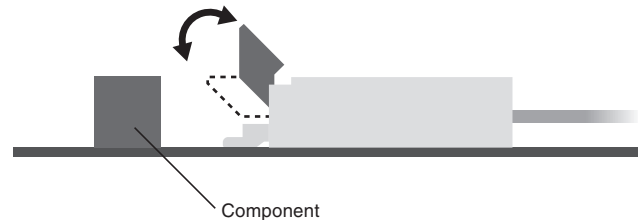
If the FPC is inserted incorrectly from the customer's design specification, the pin number will not match and it may damage the contacts or cause malfunction of the equipment.

Mounting

1. Do not perform reflow or manual soldering with the FPC inserted in the connector and the slider (lever) in the locked position. Doing so may result in contact failure.
2. The reflow conditions are as stated in OMRON's specifications and guidelines. These conditions, however, depend on the type of solder, the manufacturer, the amount of solder, the size of the circuit board, and the other mounting materials.

Designing

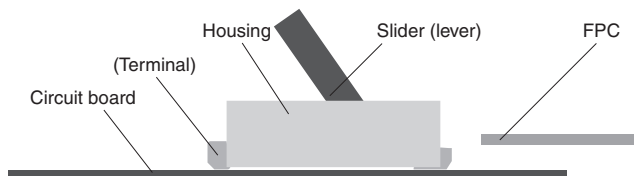
1. Design the FPC so that extreme peel force should not be applied directly on to the connector. If the FPC bends near the connector, or if the FPC is used with extreme peel force directly on to the connector, it may cause a contact loss.
2. If the FPC is installed at a location or in any equipment that will subject the FPC to continuous shake or movement, secure the FPC.
3. Use FPCs that conform to the appropriate specifications and size as stated by OMRON. When using a different FPC, or an FFC, contact OMRON.
4. Use the same metal for the FPC plating and the connector plating.
5. "Whiskers" may protrude from the FPC film of some lead-free FPCs. Be careful when using these units.
6. When designing the board, be sure to allow locking and operating space for the slider (lever).



7. Make sure that the metal mask thickness is within the appropriate specifications and size as stated by OMRON. The recommended metal mask open area is 90% of the printed circuit board mating dimensions given in the dimensions diagrams.

Operating the XF Rotary Frontlock

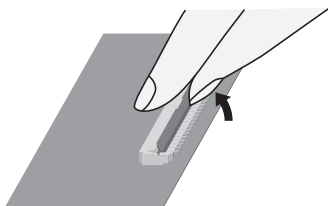
■ FPC Connector Parts



■ Handling Methods

For Inserting the FPC

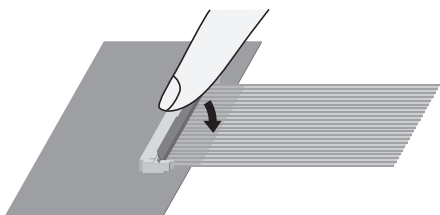
1. When unlocking the slider, use your fingernail to rotate and lift the slider.



2. Securely insert the FPC so that it is perpendicular to the connector and horizontal to the connector.

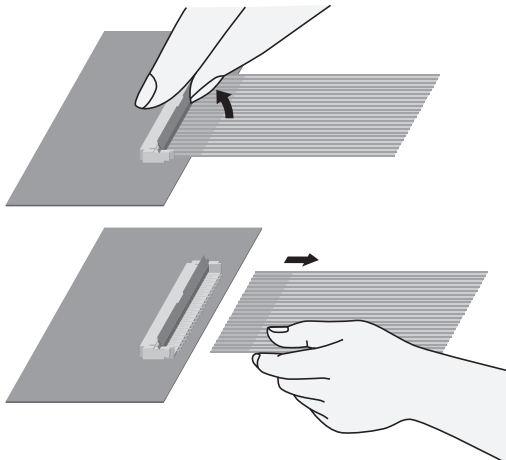


3. When locking the slider, apply pressure with your fingertips to the center of the slider, then twist the slider until it comes away from the unit.



For Removing the FPC

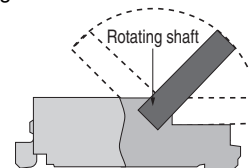
1. Unlock the slider by pushing it up, then remove the FPC.



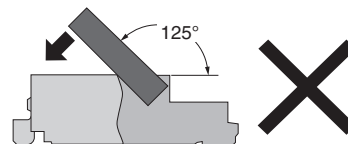
■ Precautions during Use

Operation

1. The slider mechanism rotates around a rotary shaft. Operate the slider in a rotating movement.

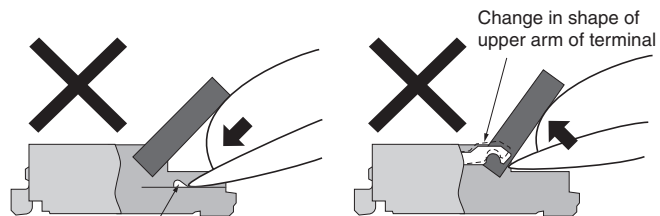


2. The slider cannot be opened to an angle of more than 125 degrees. Do not apply force on the slider beyond that point. The connector may be damaged, resulting in faulty contacts. Do not use the connector of which the slider has once come off.



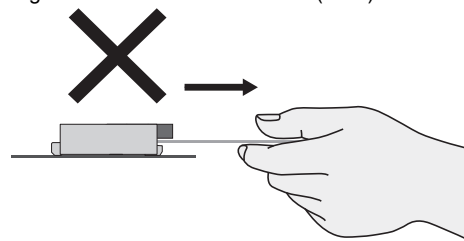
3. Lock and unlock the slider using the center of the slider. Using the end of the slider may result in incomplete locking, damage, or contact failure.

4. As shown in the following figure, do not touch the terminals with your fingernail or fingers if using the slider without the FPC inserted. Doing so may cause the terminals to change shape and result in contact failure.

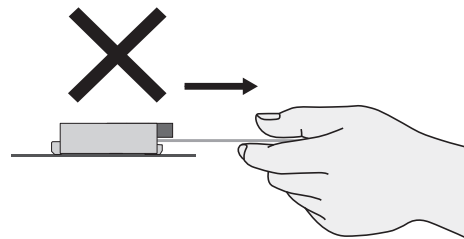


5. Using the FPC in the follow ways may damage the FPC, change the shape of the contacts, or result in contact failure.

- Drawing out the FPC when the slider (lever) is still locked.



- Drawing out the FPC by pulling it up and down or from left to right or twisting it sideways.



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1. Do not perform reflow or manual soldering with the FPC inserted in the connector. Doing so may result in contact failure.
2. The reflow conditions are as stated in OMRON's specifications and guidelines. These conditions, however, depend on the type of solder, the manufacturer, the amount of solder, the size of the circuit board, and the other mounting materials.

Designing

1. Design the FPC so that extreme peel force should not be applied directly on to the connector. If the FPC bends near the connector, or if the FPC is used with extreme peel force directly on to the connector, it may cause a contact loss.
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3. Use FPCs that conform to the appropriate specifications and size as stated by OMRON. When using a different FPC, or an FFC, contact OMRON.
4. Use the same metal for the FPC plating and the connector plating.
5. "Whiskers" may protrude from the FPC film of some lead-free FPCs. Be careful when using these units.
6. Make sure that the metal mask thickness is within the appropriate specifications and size as stated by OMRON. The recommended metal mask open area is 90% of the printed circuit board mating dimensions given in the dimensions diagrams.



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ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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