

# Common Precautions for Connectors

## Safety Precautions

### ● Connecting and disconnecting connectors

- Do not touch the contacts or pins of the connector when connecting or disconnecting the connector with the power on, or after the connector has been disconnected.  
Also, do not touch live pins with wet hands. Actions of the sort can result in electric shock.

### ● Wiring and mounting work

- Do not connect wires with the power on. Actions of the sort can result in electric shock.
- Connect and solder wires as explained in "**Safety Precautions**" of the specific product.  
Use of incompletely connected or soldered wires when the power is on can burn products due to overheating.
- Do not touch contacts with hands and do not attach insulation, as this can lead to faulty contact, etc.

### ● Impacts to products

- Do not drop or disassemble products.  
Actions of the sort not only can impair performance but also result in damage, electric shock and burning.

### ● Use of tools

- Use the connector tools provided by OMRON to connect wires and mount products, rather than general-purpose tools such as vices and pliers.  
Improper tools not only can impair performance but also result in damage, electric shock and burning.
- Perform connecting and mounting work as explained in the instructions of the specific tool.  
Use of incompletely connected wires or mounted products when the power is on can burn products due to overheating.
- Do not drop or disassemble tools. Not only can actions of the sort impair specified connection work but also use of incompletely connected wires or mounted products when the power is on can burn products due to overheating.

## Precautions for Correct Use

### ■ Use of connectors

- In actual use, connectors can incur unexpected accidents that are unimaginable in calculation work.  
For this reason, testing within all practical means is necessary.
- Unless otherwise specified, ratings and performance values shown in this catalog are given for standard test conditions (temperature +15 to +35°C, 25 to 75 %RH, air pressure 86 to 106 kPa). Check performance of the actual unit installed on the working environment under the same condition as in actual use.
- Reference data shown in this catalog is a figure of the actual measurements sampled from production lines. Values are not guaranteed.
- Ratings and performance values shown in this catalog are given for standalone tests and are not guaranteed under compounded conditions.

### ■ Selecting the proper connector

- Select a connector suited for the conditions of use, i.e., rated current, physical environment, mating part, number of pins, etc.
- Applicable wiring varies according to the type of connector, therefore check the wiring applicable to the selected product before use.
- The recommended board thickness for solder DIP terminals is set according to pin length.  
Use a printed circuit board of a thickness recommended by OMRON. Use of unrecommended boards can result in faulty soldering.

### ■ Electrical matters

#### ● Rated current

The rated current is set according to temperature rise characteristics.

- With DIN connectors, the rated current can be applied to all pins as long as the operating temperature (-55 to +125°C) per pin for a rated current of 2 A is not exceeded.
- For MIL connectors, flowing current and the number of wires are determined according to current/temperature rise characteristics data (C-196).

As indicated above, the rated current is defined differently for each connector, therefore examine applications adequately before selection and use.

# Common Precautions for Connectors

## ■ Mechanical matters

### ● Connecting and disconnecting connectors

- Keep connectors horizontal or vertical, when connecting and disconnecting.  
Twisting the connector can result in damage or faulty contact.
- Insert connectors fully to sockets when connecting.
- The number of connections/disconnections is specific to speed.  
If inserted or removed at a very fast speed, the connector is subjected to shock that can affect performance.  
Moreover, durability depends on handling even when within speed and frequency tolerances, therefore test connectors in advance.
- Do not hold the connector by the wires when disconnecting.  
Actions of the sort can disconnect or break wires.

### ● After connecting wires

- Do not pull on connected wires with more than the necessary force.  
Pulling with excessive force can damage connectors, or disconnect or break wires.

## ■ Installation matters

### ● Soldering conditions

- The recommended soldering conditions differ according to product, therefore refer to "Safety Precautions" of the specific product for details.  
Contact your dealer about soldering under unrecommended conditions.

### ● Coating flux

- Note that flux can wick up to contacts because of capillary effect depending on the amount of flux coated.  
Special processing is available to prevent flux wicking with products, therefore contact your OMRON sales representative for details.

**Note:** Do not brush on flux from the underside of the board, as this can result in an increased amount of flux and subsequently flux wicking.

### ● Use of multiple connectors

- When daisy-chaining multiple boards, mating issues can occur because of connector pitch slip.  
Show adequate consideration for the accuracy between board patterns, etc.

### ● Immobilizing boards for connector mating

- If boards are immobilized solely by connectors, cracking can occur in solder bonds because of stress. Use screws, spacers or other means to immobilize boards without loading connectors.

### ● Fixing connectors to boards

- Riveting connectors to boards can damage the housing, therefore check pins or screws are recommended to fix connectors to boards.
- Tightening screws with excessive torque can cause faulty contact, faulty mating, etc., therefore control tightening to the specified torque.

### ● Wiring

- If the customer wants to wire connectors after they have been fitted with wires, do not apply the normal load to wires when wiring.

### ● Use of check pins

- In general, check pins serve to temporarily anchor connectors to boards before mounting and to ensure sufficient strength after mounting.
- Check pins are generally mounted on boards all at the same time, but retaining strength is not guaranteed if used only to immobilize the board or used without mounting.

### ● Processing dimensions for printed circuit boards

- Strictly adhere to printed circuit board processing dimensions when designing boards. Improper dimensions can result in faulty connections when mounting connectors on boards and faulty mating after mounting.

## ■ Working environment, storage environment and disposal

### ● Operating temperature range

- The operating temperature adds the temperature rise component when power is on to the Ambient operating temperature.  
$$\text{Ambient operating temperature} + \text{Temperature rise} = \text{Operating temperature}$$
  
Therefore, show consideration so that the operating temperature does not exceed the maximum of the ambient operating temperature and the temperature rise component when power is on.

### ● Storage

- Store connectors where not exposed to dust and humidity.  
Also, keep connectors away from sources of ammonia gas, sulfidizing gases, etc.

### ● Disposal

- Dispose of connectors as industrial waste. Do not dispose of connectors as general waste. Also, do not bury, dump in rivers or sea areas, or otherwise dispose of connectors in ways that pollute the environment.

• Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.  
• Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

**Note: Do not use this document to operate the Unit.**