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1. Introduction

1.1 Guideline Objectives

When using the TJA Series manufactured by HIROSE ELECTRIC CO., LTD., please refer to the guidelines on equipment design and cautions for installation, etc.

Please note that the photos and illustrations shown are representative examples and there might be differences depending on the product.

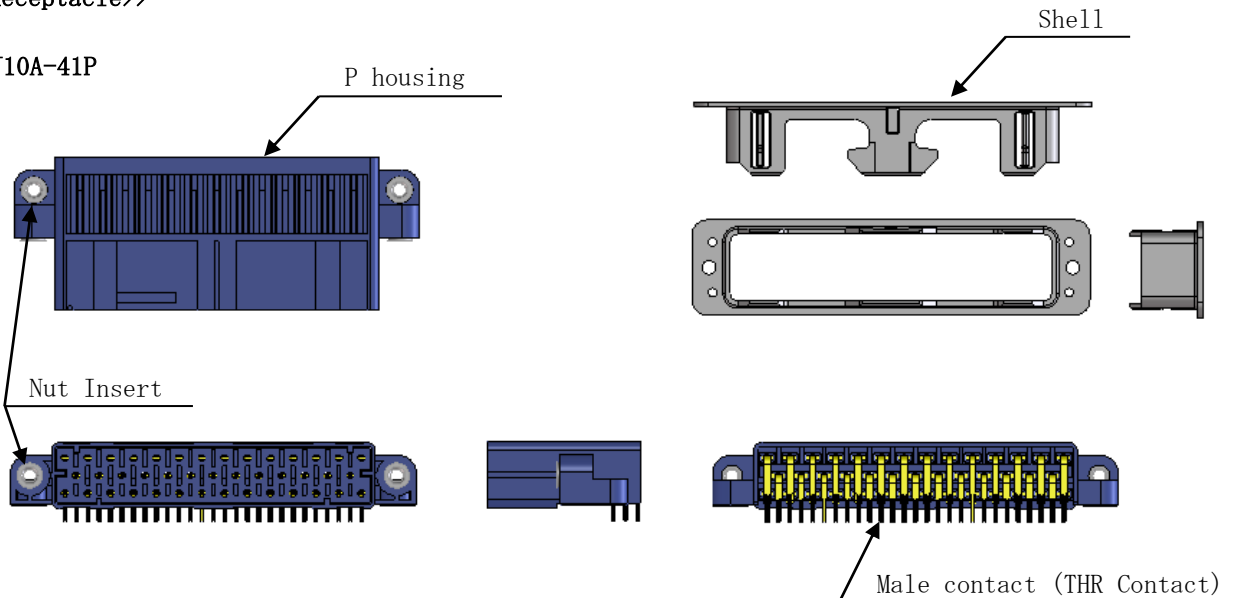
The guideline information is subject to change without prior notice.

1.2 Names of Connector Components

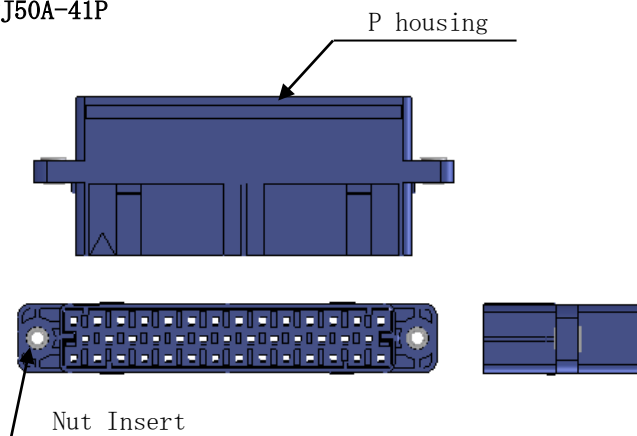
Refer to the following figure for the names of the connector parts used in this guideline.

<<Receptacle>>

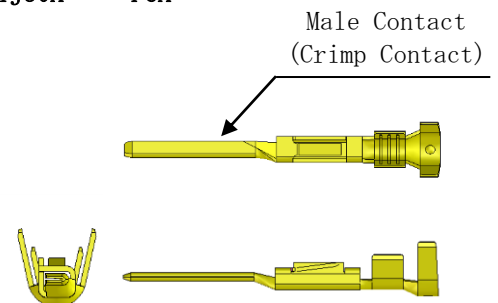
TJ10A-41P



TJ50A-41P



TJ50A-****PCA



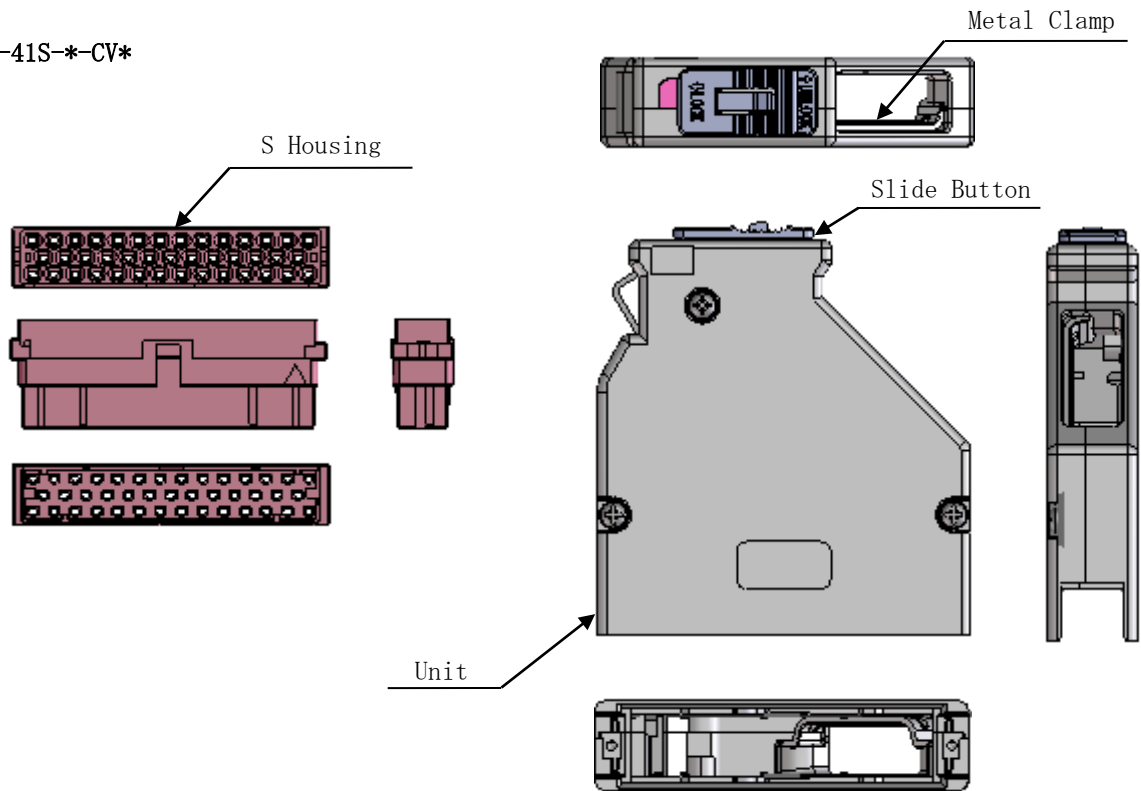


HIROSE ELECTRIC CO.,LTD.

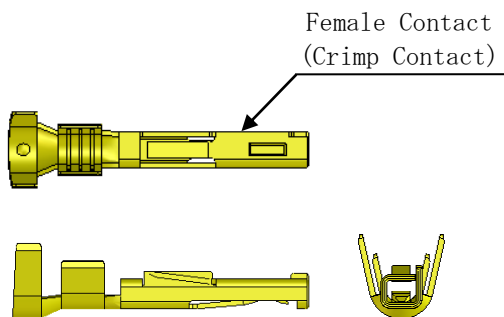
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<<Plug>>

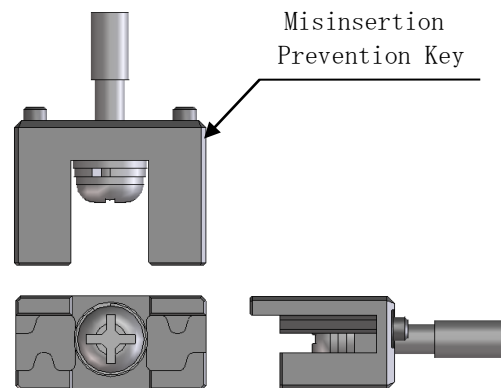
TJ50A-41S-*-CV*



TJ50A-****SCA

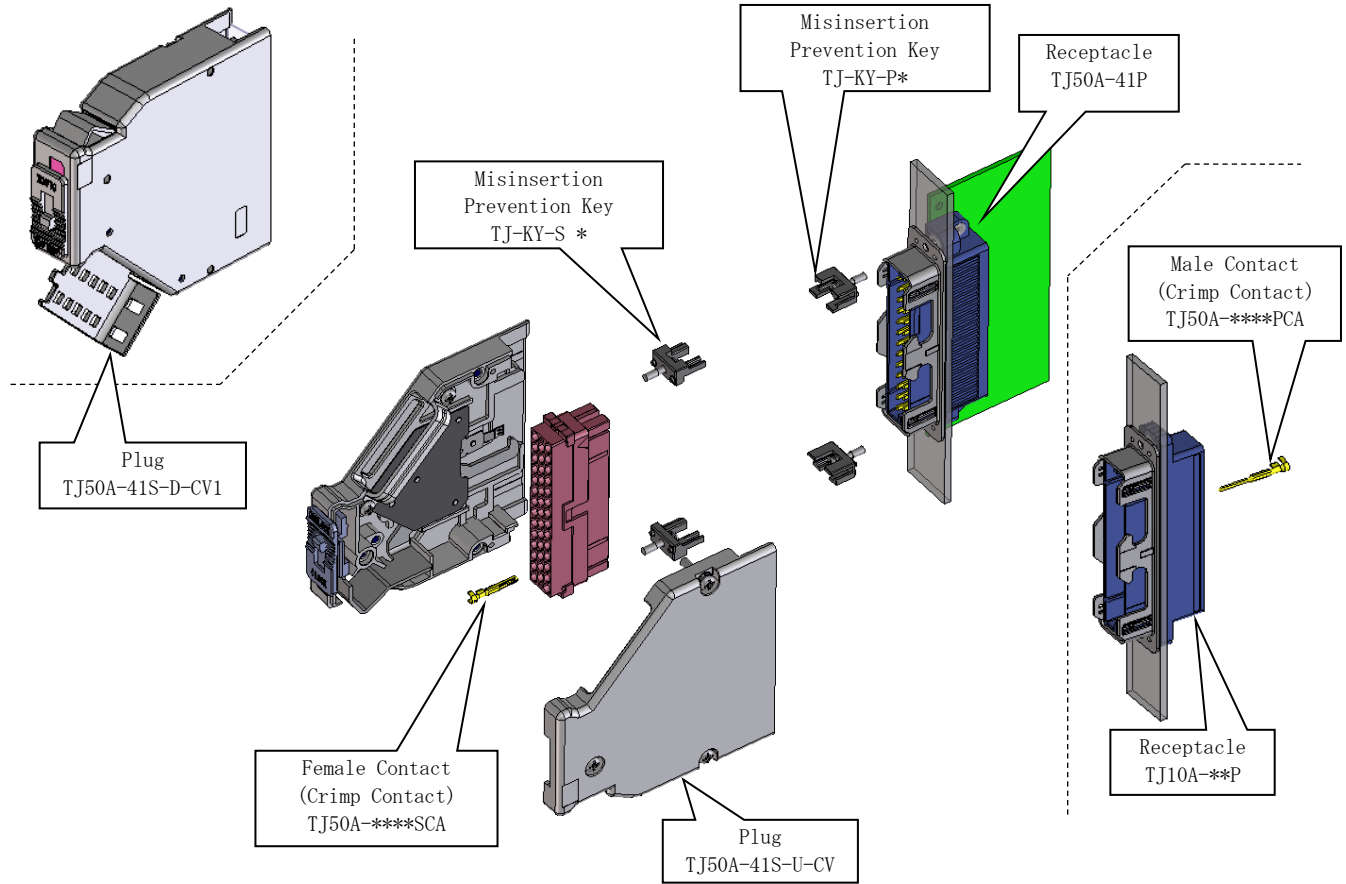


TJ-KY-**



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1.3 Product Composition Overview



| Product Code | Product name | Type | Parts |
|------------------|-----------------|-----------------------------|---|
| CL0236-3100-8-00 | TJ10A-41P | Receptacle | PCB type 41 pin |
| CL0236-3118-3-00 | TJ10A-28P | | PCB type 28 pin |
| CL0236-3117-0-00 | TJ50A-41P | | In-line type |
| CL0236-3101-0-00 | TJ50A-41S-U-CV | Plug | Standard clamp metal, upward type |
| CL0236-3102-3-00 | TJ50A-41S-D-CV | | Standard clamp metal, downward type |
| CL0236-3119-6-00 | TJ50A-41S-U-CV1 | | Clamp metal for cable tie fixing, upward type |
| CL0236-3120-5-00 | TJ50A-41S-D-CV1 | | Clamp metal for cable tie fixing, downward type |
| CL0236-3103-6-00 | TJ50A-1618SCA | Crimp Contact | 16 to 18 AWG Female contact for plug |
| CL0236-3104-9-00 | TJ50A-2022SCA | | 20 to 22 AWG Female contact for plug |
| CL0236-3105-1-00 | TJ50A-1618PCA | | 16 to 18 AWG Male contact for receptacle |
| CL0236-3106-4-00 | TJ50A-2022PCA | | 20 to 22 AWG Male contact for receptacle |
| CL0236-3107-7-00 | TJ-KY-PA | Misinsertion Prevention Key | PA type |
| CL0236-3108-0-00 | TJ-KY-PB | | PB type |
| CL0236-3109-2-00 | TJ-KY-PC | | PC type |
| CL0236-3110-1-00 | TJ-KY-PD | | PD type |
| CL0236-3111-4-00 | TJ-KY-PE | | PE type |
| CL0236-3112-7-00 | TJ-KY-SA | | SA type |
| CL0236-3113-0-00 | TJ-KY-SB | | SB type |
| CL0236-3114-2-00 | TJ-KY-SC | | SC type |
| CL0236-3115-5-00 | TJ-KY-SD | | SD type |
| CL0236-3116-8-00 | TJ-KY-SE | | SE type |

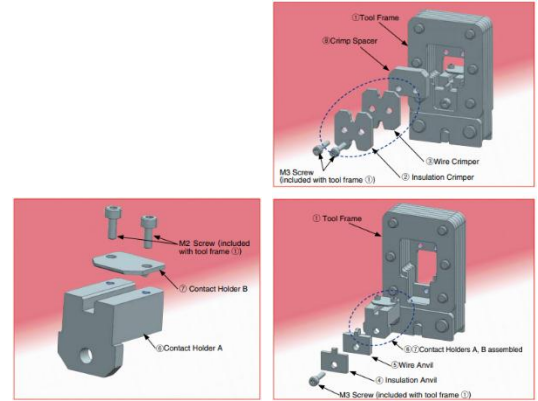
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1.4 Tool Lists

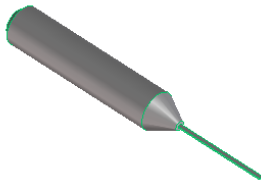
●Hand Tool Frame
【HT 702】



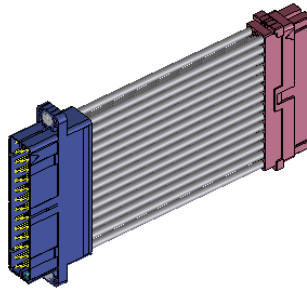
●Hand Tool Unit
【TJ50A-1618A, TJ50A-2022A】



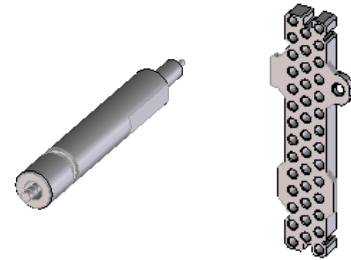
●Contact Extraction Tool
【PQ50S/RE-MD】



●Harness for Conductivity Confirmation
【TJ50A-41PS-100 (30)】



●Pin-push Inspection Tool
【TJ50A/IN-MD】 【TJ50A/INCR-MD】

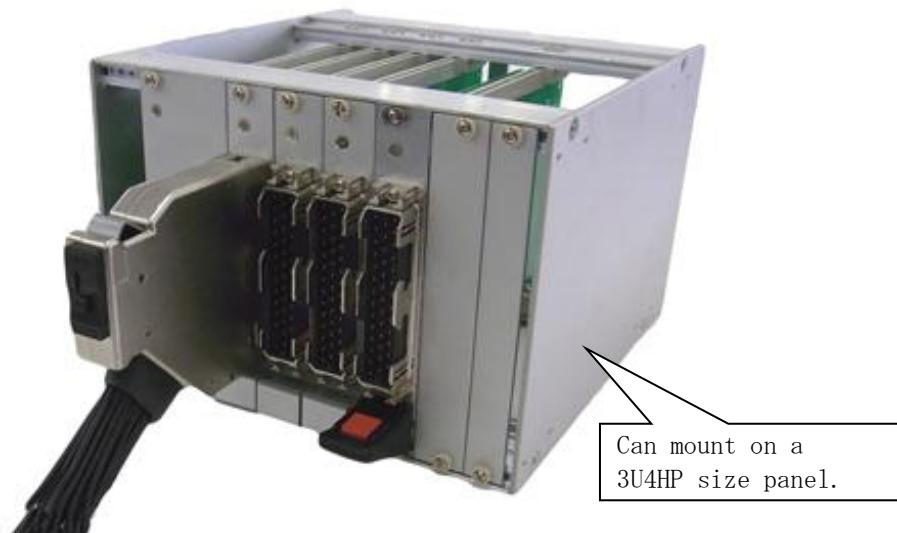


| Product Code | Product Name | Type | Parts |
|------------------|---------------------|--|---------------------------------|
| CL0250-1001-1-00 | HT702 | Hand Tool Frame | Frame body |
| CL0250-1023-4-00 | TJ50A-1618-A | Hand Tool Unit For 16 to 18 AWG | Unit set |
| CL0250-1023-4-61 | TJ50A-1618-A (61) | | Insulation crimper |
| CL0250-1023-4-62 | TJ50A-1618-A (62) | | Wire crimper |
| CL0250-1023-4-63 | TJ50A-1618-A (63) | | Insulation anvil |
| CL0250-1023-4-64 | TJ50A-1618-A (64) | | Wire anvil |
| CL0250-1023-4-65 | TJ50A-1618-A (65) | | Contact holder A |
| CL0250-1023-4-66 | TJ50A-1618-A (66) | | Contact holder B/C |
| CL0250-1023-4-67 | TJ50A-1618-A (67) | | Crimp spacer |
| CL0250-1024-7-00 | TJ50A-2022-A | Hand Tool Unit For 20 to 22 AWG | Unit set |
| CL0250-1024-7-61 | TJ50A-2022-A (61) | | Insulation crimper |
| CL0250-1024-7-62 | TJ50A-2022-A (62) | | Wire crimper |
| CL0250-1024-7-63 | TJ50A-2022-A (63) | | Insulation anvil |
| CL0250-1024-7-64 | TJ50A-2022-A (64) | | Wire anvil |
| CL0250-1024-7-65 | TJ50A-2022-A (65) | | Contact holder A |
| CL0250-1024-7-66 | TJ50A-2022-A (66) | | Contact holder B/C |
| CL0250-1024-7-67 | TJ50A-2022-A (67) | | Crimp spacer |
| CL0902-2202-2-00 | PQ50S/RE-MD | Contact Extraction Tool | - |
| CL0236-3121-8-30 | TJ50A-41PS-100 (30) | Harness for Conductivity Confirmation | - |
| CL0902-2203-5-00 | TJ50A/IN-MD | Pin-push | For plug, receptacle inspection |
| CL0902-2204-8-00 | TJ50A/INCR-MD | Inspection Tool | Plate for receptacle inspection |

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1.5 Usage Examples

The TJA Series has a compact design that supports a VME-standard rack and a 3U4HP size panel. It can be used for inspection equipment and train control devices, etc.



●Railway Vehicle Equipment



Inverter, auxiliary power unit,
train control device, etc.

●19inch Electronics Rack



Inspection equipment, network equipment, etc.

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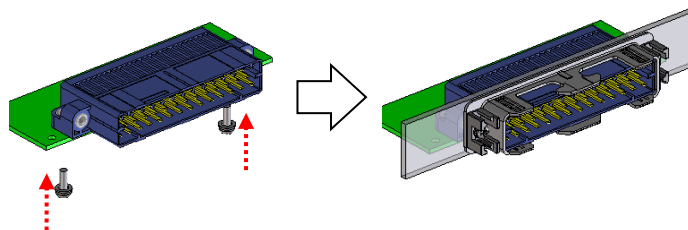
2. Equipment Design Requirements and Cautions

2.1 Receptacle Selection

The receptacle is available in both PCB and in-line types. Please select according to your usage.

<<PCB type>>

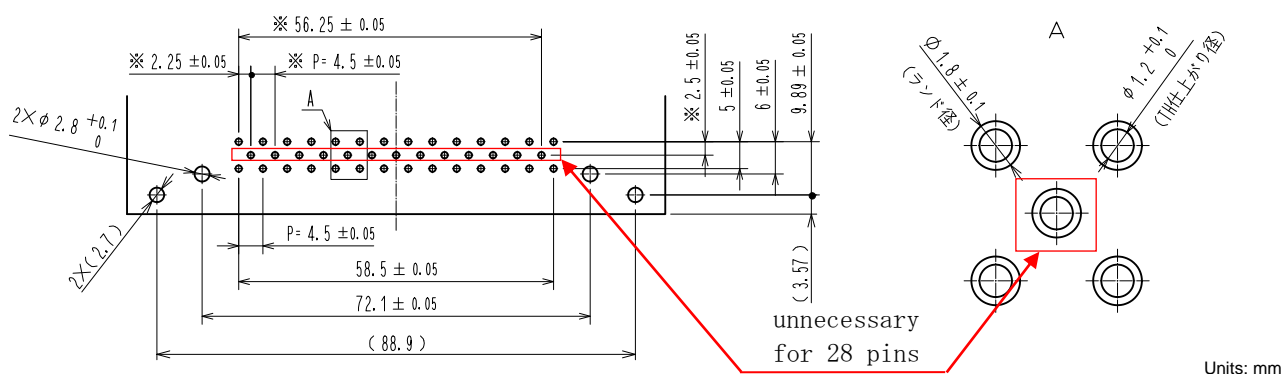
After tightening the screws to the board, do reflow soldering.



Refer to the following for the board pattern.

For dimensions in (), please apply dimensions of IEC60297-3, DIN41494 and IEEE1101 Euroboard standards.

The figure shows 41pins pattern below. For 28pins, the portion framed in red(※dimensions) is not required.

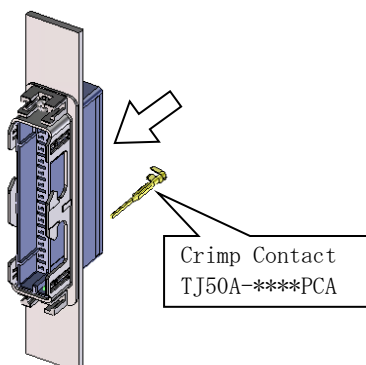


When used as a rated current of 4A, a land width that supports 4A is required.

However, there is a risk that the pattern of the adjacent contacts may interfere with each other. Please do not place the multi-layer PCB or the contacts for 4A current flow adjacent to each other.

<<In-line Type>>

The crimp contact connected to the cable can be inserted into the housing.

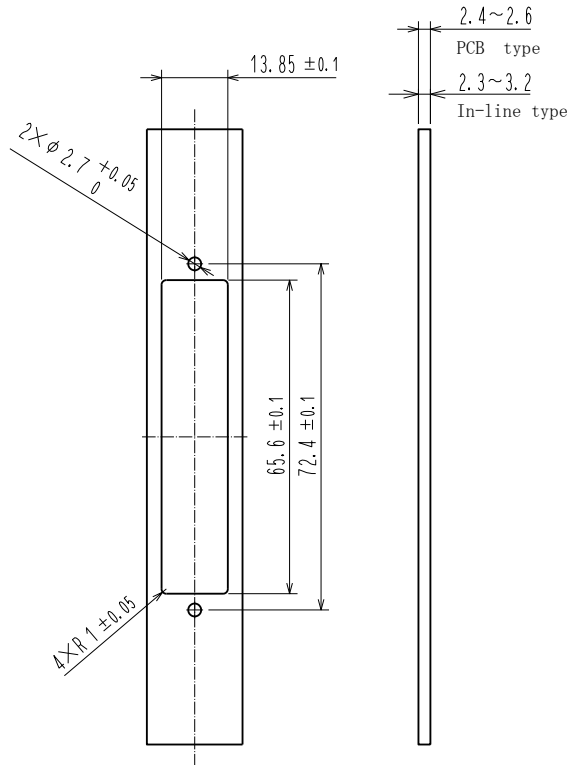


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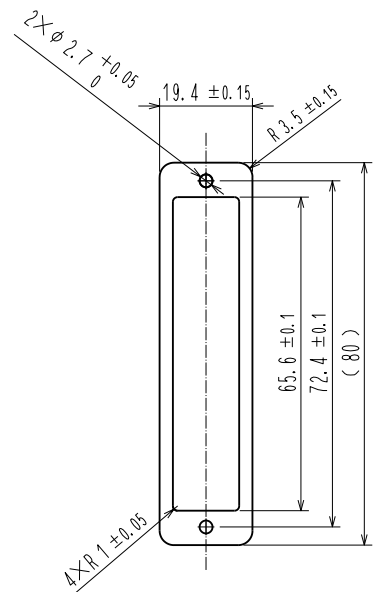
2.2 Panel Cutout

The panel cutout dimensions for installing the receptacle to the panel are shown below.
(It is sized to fit on the 3U4HP panel of the VME rack)

< Recommended Panel Dimensions >



< Recommended Spacer Dimensions >



Units: mm

Note that the panel thickness varies depending on the type.

| Type | Product Name | Recommended Panel Thickness (mm) * |
|--------------|--------------|------------------------------------|
| PCB type | TJ10A-**P | 2.4 to 2.6 |
| In-line type | TJ50A-41P | 2.3 to 3.2 |

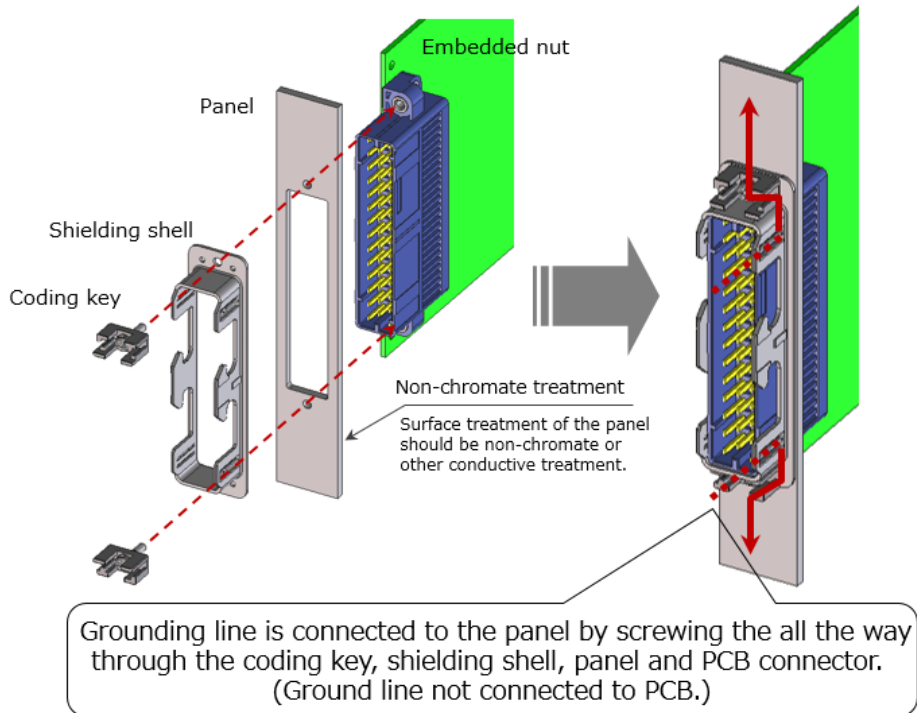
*If the panel thickness is less than recommended, adjust the thickness with a spacer.

Please do not use panels thicker than recommended as it will shorted the mating length and cause contact to become unstable.

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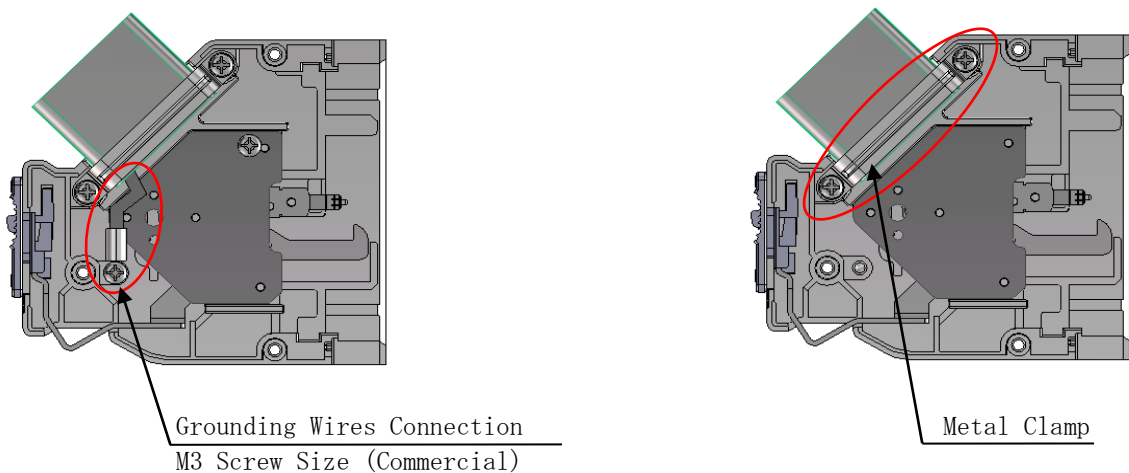
2.3 EMC Prevention

If EMC/EMI prevention is required, use a conductive treatment such as non-chromate for the surface treatment of the panel.



For reliable grounding on the plug side, connect the ground wire to the unit with a ring terminal, or connect the braided shield to the clamp metal.

<Connect the ground wire to the unit with a ring terminal> <Connect braided shield to metal clamp>



If you want to protect loose wires from EMC, use commercial EMC protection materials such as braided shields or shielding gaskets.

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2.4 Compatible Cables and Crimp Contacts

Applicable cables are shown in the table below.

(For the product evaluation of this product, Hitachi Metals cable HF-WV0 with the following dimensions is used.)

| Conductor Size Cross-Sectional Area (mm ²) | Coating Outer Diameter (mm) | Crimp Contact |
|--|--------------------------------|--------------------------------|
| 1.25 | 3.2 | TJ50A-1618PCA TJ50A-1618SCA |
| 0.75 | 2.8 | |
| 0.5 | 2.6 | TJ50A-2022PCA TJ50A-2022SCA |
| 0.3 | 1.3 | |

<<Crimp Tools>>

If you need a set: Please purchase the frame and unit (die set) according to the compatible contact.

If you already have a set: Please purchase a unit or a die separately based on the compatible contact.

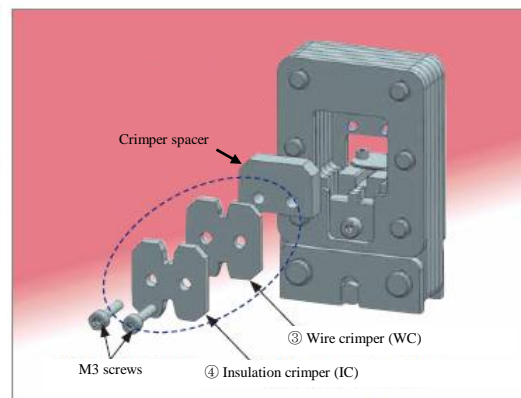
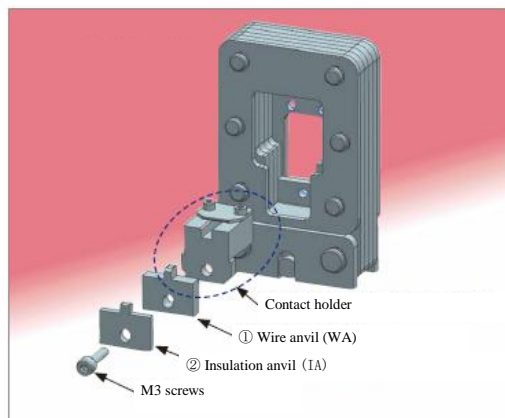
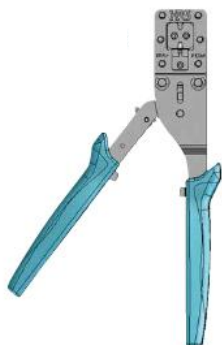
| Conductor Size Cross- Sectional Area (mm ²) | Coating Outer Diameter (mm) | Unit (Die Set) (WA+IA+WC+IC) | Die Types | | | | Compatible Contact |
|--|-----------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| | | | ①WA | ②IA | ③WC | ④IC | |
| 1.25 | 3.2 | TJ50A-1618-A CL0250-1023-4-00 | CL0250- 1023-4-64 286651 | CL0250- 1023-4-63 286650 | CL0250- 1023-4-62 286649 | CL0250- 1023-4-61 286648 | TJ50A-1618PCA TJ50A-1618SCA |
| 0.75 | 2.8 | | | | | | |
| 0.5 | 2.6 | TJ50A-2022-A CL0250-1024-7-00 | CL0250- 1024-7-64 286657 | CL0250- 1024-7-63 286656 | CL0250- 1024-7-62 286655 | CL0250- 1024-7-61 286654 | TJ50A-2022PCA TJ50A-2022SCA |
| 0.3 | 1.3 | | | | | | |

※The 6-digit number for a single die is the recognition number written on the die.

Frame

HT702

CL0250-1001-1



This crimp tool is for recommended cables. Please contact us if you wish to use a cable with dimensions other than what is listed above.

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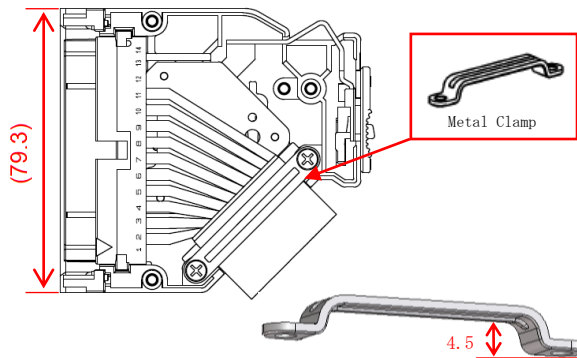
2.5 Plug Selection

The appropriate plug selection depends on the type of cable to be used and the cabling direction. Please check the following and select the plug accordingly.

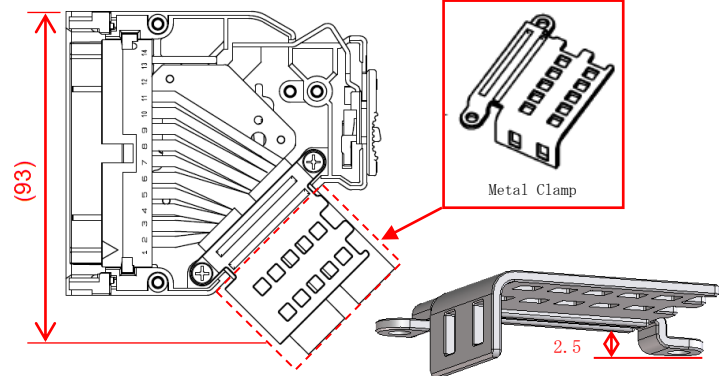
| Metal Clamp | Upward Cabling | Downward Cabling |
|-------------|-----------------|------------------|
| Standard | TJ50A-41S-U-CV | TJ50A-41S-D-CV |
| Cable Tie | TJ50A-41S-U-CV1 | TJ50A-41S-D-CV1 |

<<Metal Clamp Design>>

Standard Type
TJ50A-41S-U-CV



Type Secured by Cable Tie
TJ50A-41S-U-CV1



CV Clamp metal : Fits inside the unit

CV1 Clamp metal : Protrudes from unit

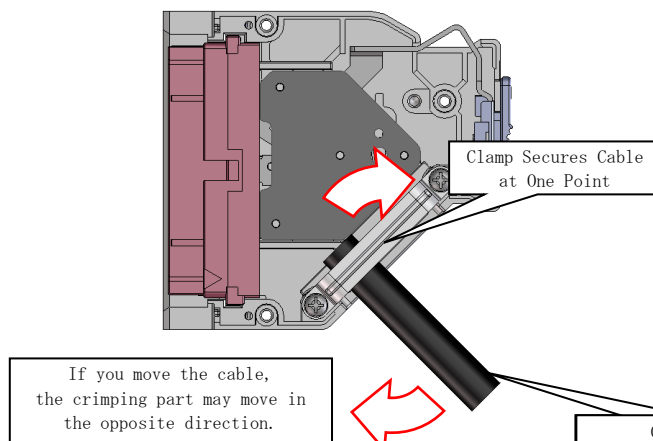
Using cable ties can reduce cable shaking (see Section 3.4)

Since the unit is exposed to the outside, be careful not to interfere with other products. The width of the CV is 79.3 mm and the width of CV1 is 93 mm.

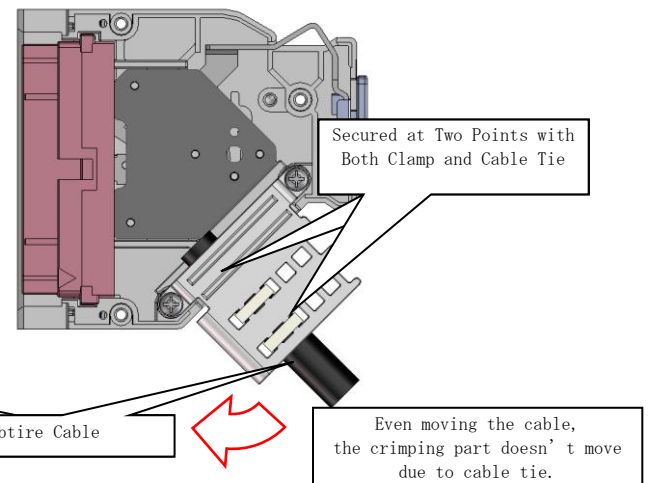
When using a cabtire cable, we recommend CV1 which can be fixed at two points.

This is because it is difficult to bend the cable when it is moved, so the cable may rotate around the center of the clamp if there is only one fixing point and apply a load to the crimping part.

<<One Fixing Point on CV>>



<<Two Fixing Points on CV1>>



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In addition, the metal clamp height differs from stated dimensions and the number of cables that can be stored is different.

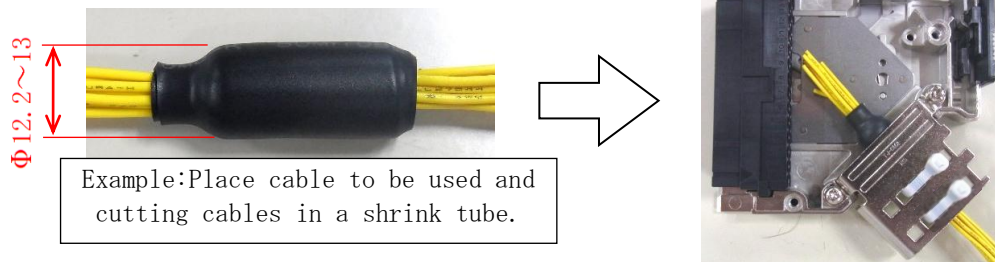
Refer to the table below. (It depends on the cable you use, so please check the actual product.)

| Type of Clamp | Loose Line ($\phi 3.2$) | Cabtire Cable ($\phi 9.6$) |
|---------------|---------------------------|------------------------------|
| CV clamp | 41 pins | — |
| CV1 clamp | 31 pins | 3 |

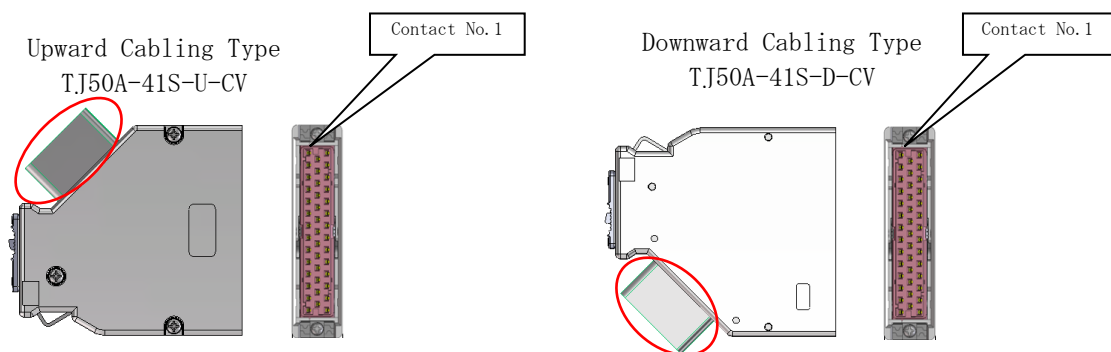
The tensile strength of the cable may be under 98 N depending on the diameter of the cable used, the material and composition of the sheath, the number of pins, etc.

Therefore, adjust the cable diameter with a shrink tube or copper tape.

Example: When fixing 10 cables with a wire size of 26 AWG and outer diameter of insulator $\Phi 1.3$, put the cable for use, cutting cables and other intervening materials into the shrink tube and make the overall thickness $\Phi 12.2$ to 13.0.



<<Cable Direction>>



Depending on the plug, the cabling direction is either upward or downward.

One plug does not support both directions, so please be careful when choosing the connector.

(The VME standard determines the position of the contact number, so be careful when conforming to the standard.)

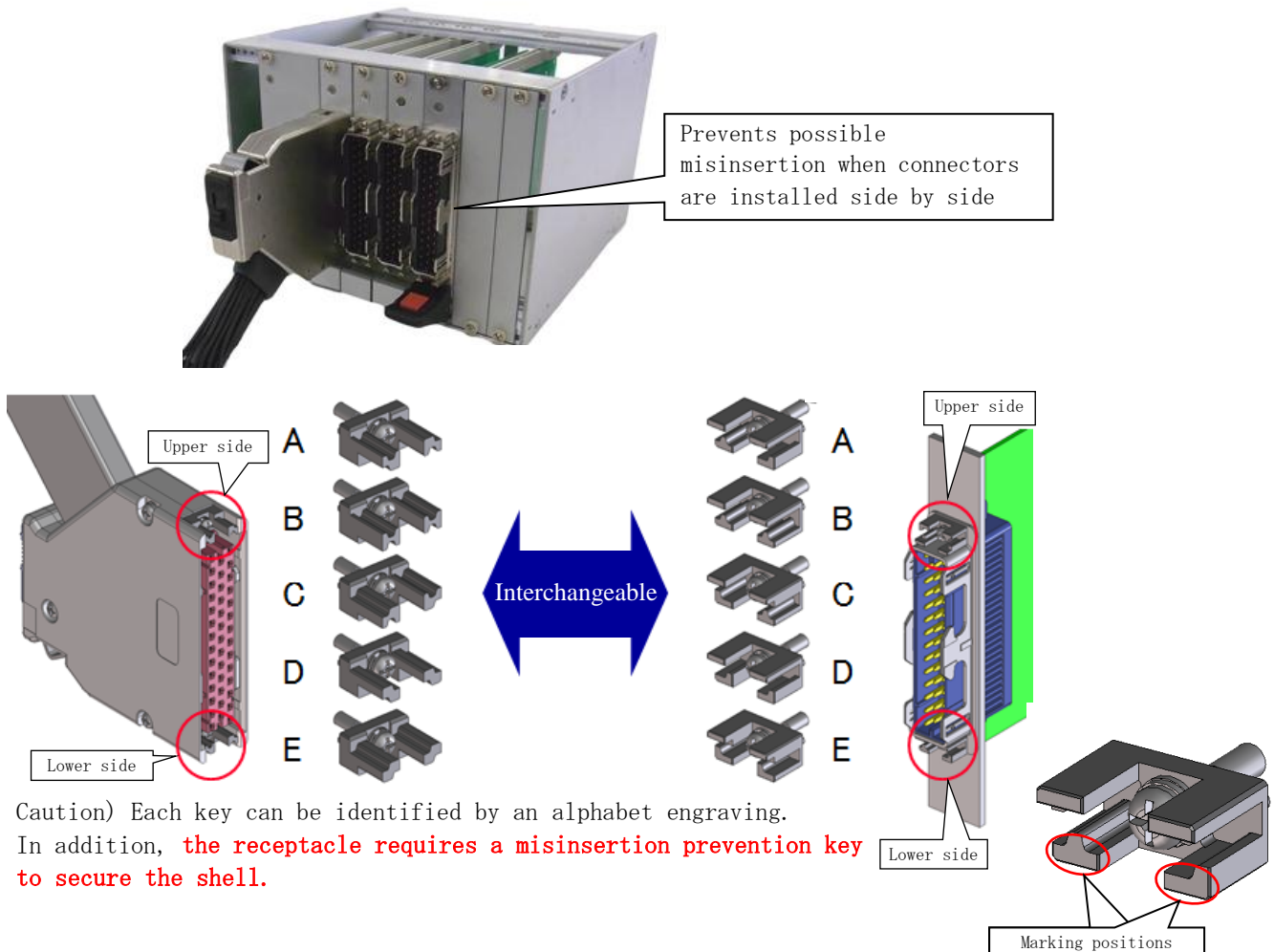
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2.6 Misinsertion Prevention Key

The misinsertion prevention key prevents misinsertion even when used multiple adjacent connectors as shown below.

There are up to 100 different combinations of misinsertion prevention keys.

P and S keys can be attached to both plugs and receptacles.



Caution) Each key can be identified by an alphabet engraving.

In addition, **the receptacle requires a misinsertion prevention key to secure the shell.**

<<Combination examples>>

When using more than the following combinations, use different parts for the upper and lower sides.

(Example: Upper side TJ-KY-PA, Lower side TJ-KY-PB, etc.)

• Simultaneous use 5 sets or less

| Combinations | Receptacle (Top) | Receptacle (Bottom) | Plug (Top) | Plug (Bottom) |
|--------------|------------------|---------------------|------------|---------------|
| 1 | TJ-KY-PA | TJ-KY-PA | TJ-KY-SA | TJ-KY-SA |
| 2 | TJ-KY-PB | TJ-KY-PB | TJ-KY-SB | TJ-KY-SB |
| 3 | TJ-KY-PC | TJ-KY-PC | TJ-KY-SC | TJ-KY-SC |
| 4 | TJ-KY-PD | TJ-KY-PD | TJ-KY-SD | TJ-KY-SD |
| 5 | TJ-KY-PE | TJ-KY-PE | TJ-KY-SE | TJ-KY-SE |

• Simultaneous use 10 sets or less

| Combinations | Receptacle (Top) | Receptacle (Bottom) | Plug (Top) | Plug (Bottom) |
|--------------|------------------|---------------------|------------|---------------|
| 1 | TJ-KY-PA | TJ-KY-PA | TJ-KY-SA | TJ-KY-SA |
| 2 | TJ-KY-PB | TJ-KY-PB | TJ-KY-SB | TJ-KY-SB |
| 3 | TJ-KY-PC | TJ-KY-PC | TJ-KY-SC | TJ-KY-SC |
| 4 | TJ-KY-PD | TJ-KY-PD | TJ-KY-SD | TJ-KY-SD |
| 5 | TJ-KY-PE | TJ-KY-PE | TJ-KY-SE | TJ-KY-SE |
| 6 | TJ-KY-SA | TJ-KY-SA | TJ-KY-PA | TJ-KY-PA |
| 7 | TJ-KY-SB | TJ-KY-SB | TJ-KY-PB | TJ-KY-PB |
| 8 | TJ-KY-SC | TJ-KY-SC | TJ-KY-PC | TJ-KY-PC |
| 9 | TJ-KY-SD | TJ-KY-SD | TJ-KY-PD | TJ-KY-PD |
| 10 | TJ-KY-SE | TJ-KY-SE | TJ-KY-PE | TJ-KY-PE |



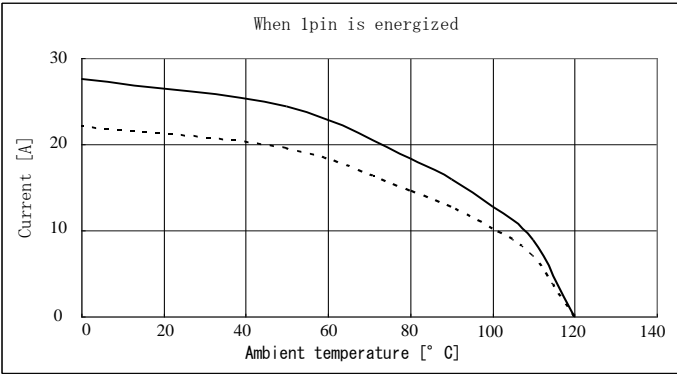
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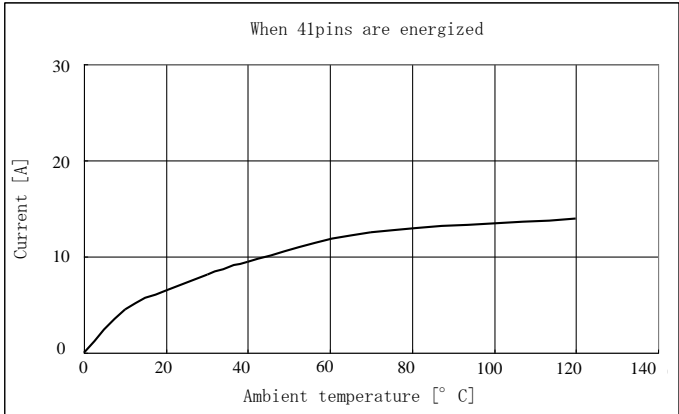
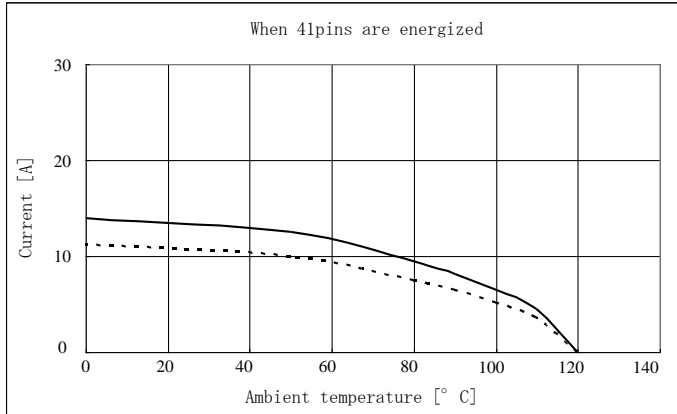
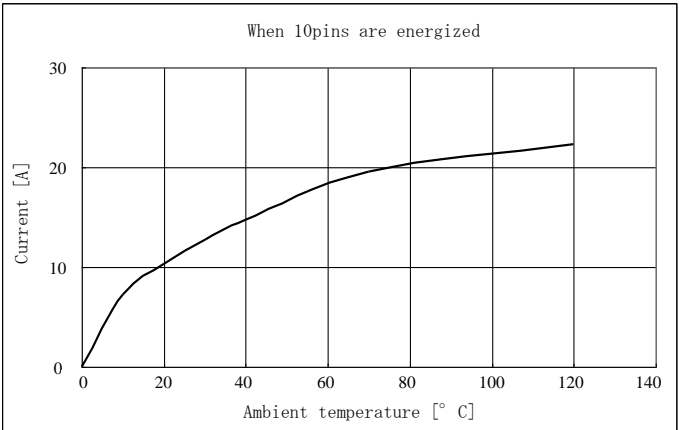
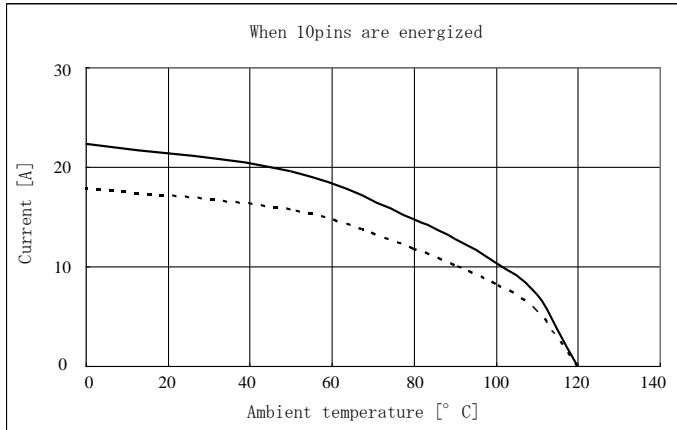
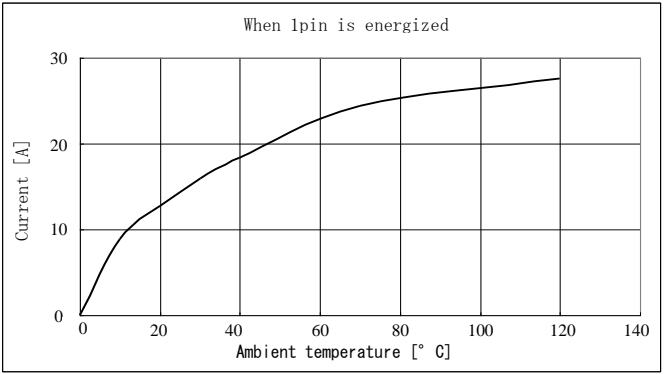
2.7 Temperature Rise Curve

Refer to the following derating curve and temperature rise curve when using with a current value of 4A or more. Note that the measured values below are the results when using 18 AWG cable.

Derating Curve



Temperature Rise Curve



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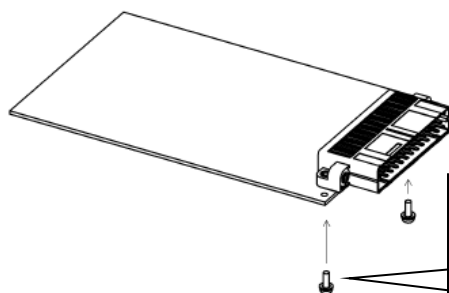
3. Usage Precautions

3.1 Receptacle Installation Procedure

< Mounting Adjacent Panels >

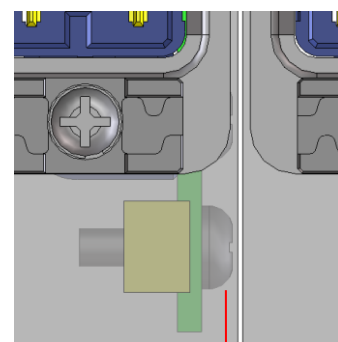
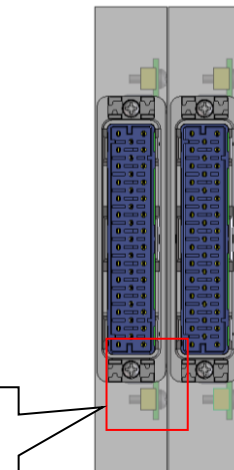
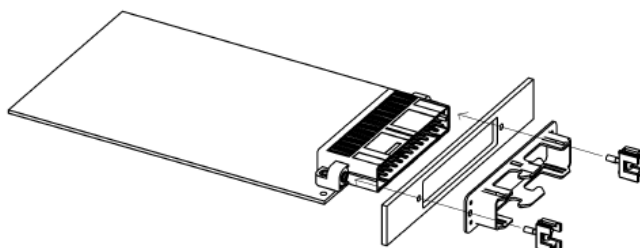
<<PCB Type>>

1. After fixing the connector body to the PCB with M2.5 screws (commercially available), solder the contacts.
(Recommended tightening torque 0.36 ± 0.07 N·m)



Please prepare commercially available screws. Make sure to select screws that do not protrude from the panel so that the screw head does not interfere with the adjacent panel.

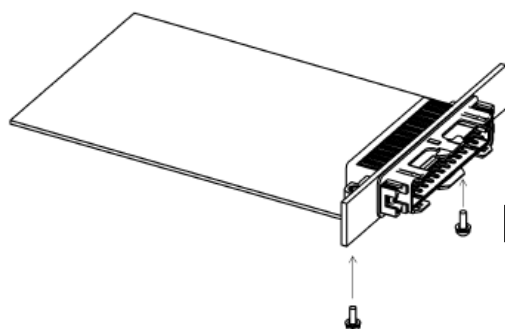
2. Insert and screw the panel, shell, and key into the connector body.
(Recommended tightening torque 0.36 ± 0.07 N·m)



Recommended 2.4 mm or less

(PCB Thickness of 1.6 mm)

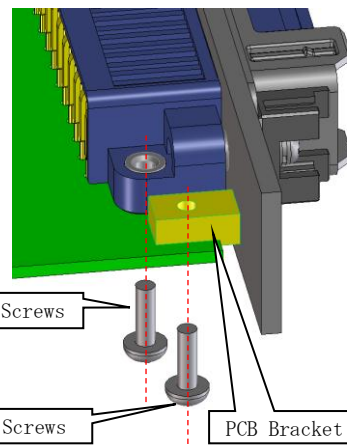
3. Screw the panel to the PCB.
Please fix it to the PCB using the board mounting bracket (*).
In addition, if the board and the panel are secured first, conductivity between the connector and the back side of the panel may not be guaranteed.
*Contact the panel manufacturer regarding PCB brackets.



①Connector Mounting Screws

③Panel Mounting Screws

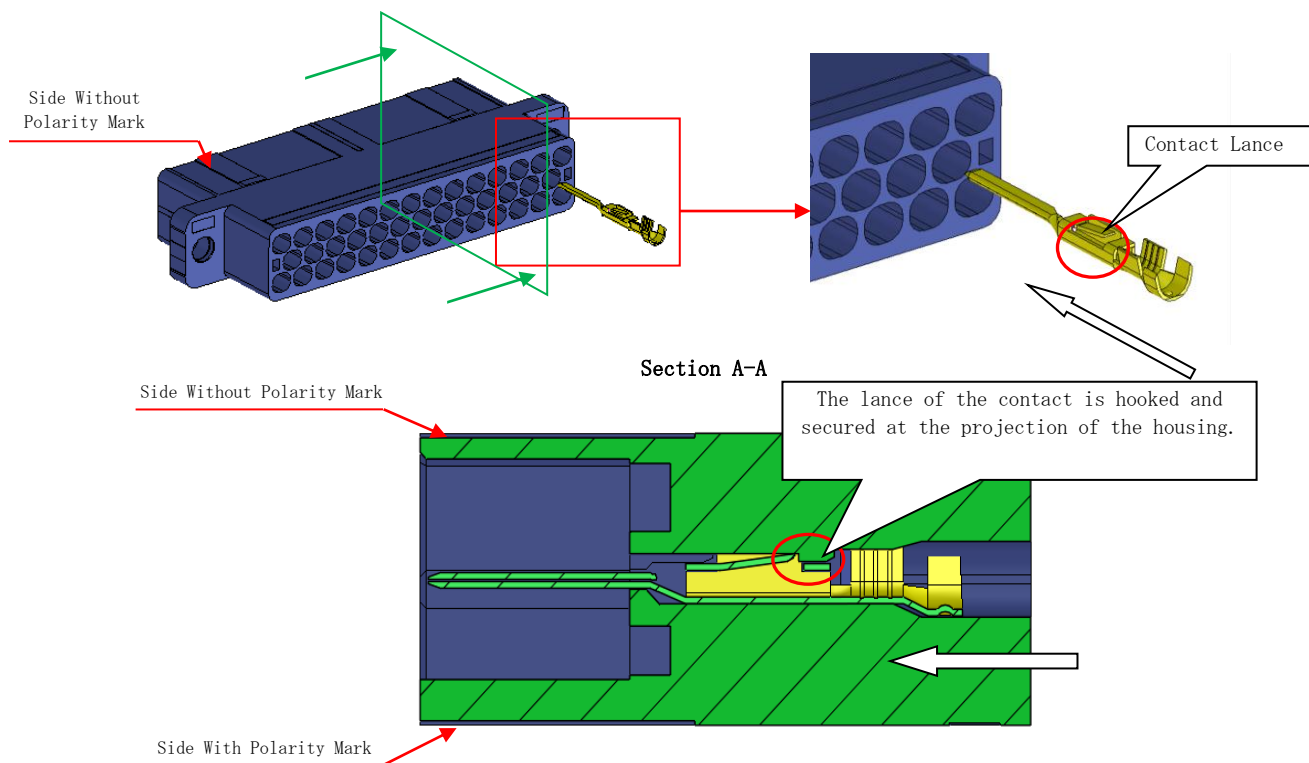
PCB Bracket



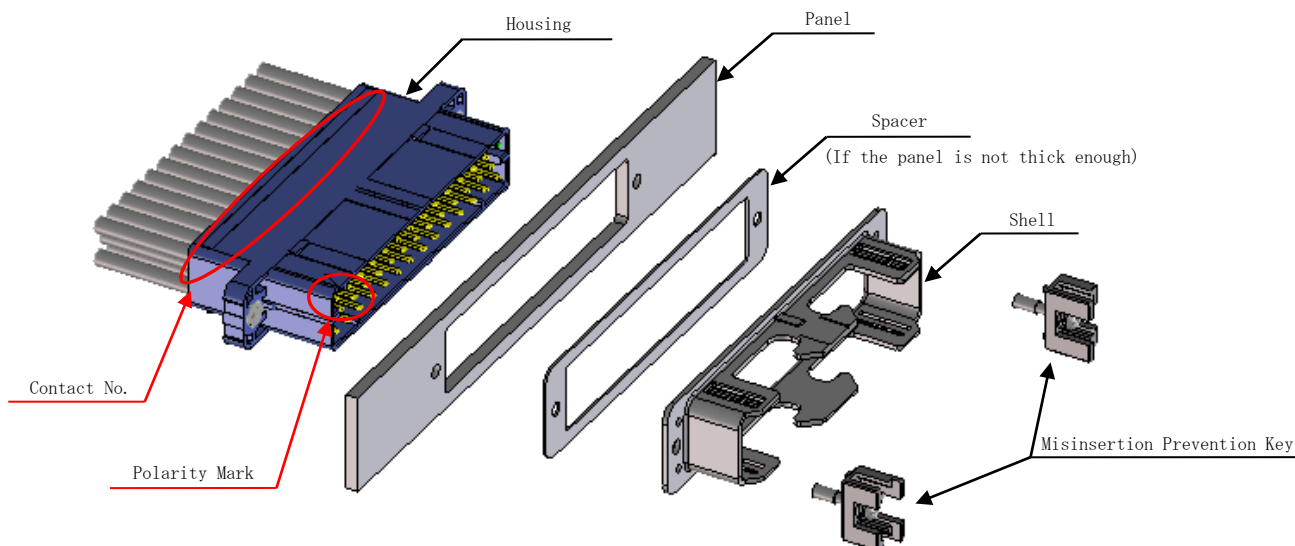
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<<In-line type>>

1. Insert the crimped male contact in the direction of the arrow until it reaches the inside of the housing. The contact lance is on the side without the housing polarity mark (Δ).



2. Put the panel, spacer (when panel thickness is insufficient), shell, misinsertion prevention key into the housing and secure with screws.
(Recommended tightening torque $0.36 \pm 0.07 \text{ N} \cdot \text{m}$)
Since the housing is structured to attach to the panel even when reversed by 180 degrees, install it to the panel in the intended direction, referring to the contact no. position and the polarity mark.
Panels and spacers are not provided. Please purchase them from panel manufacturers.

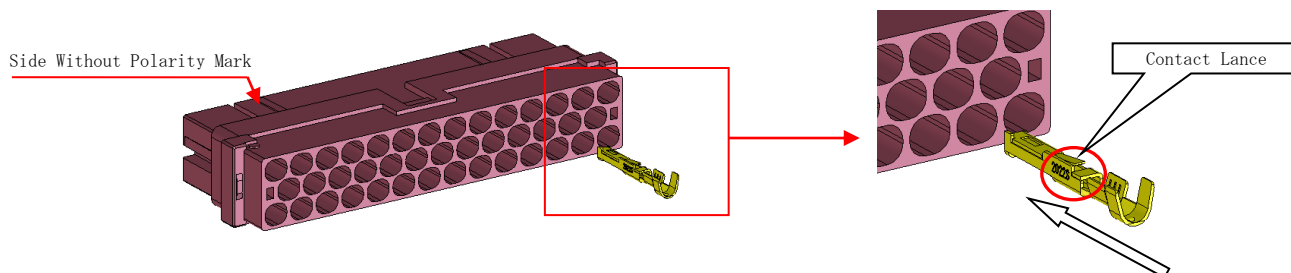


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| TITLE: | TJA Series Guideline | ETAD-E3232-00 Rev No. 0 |
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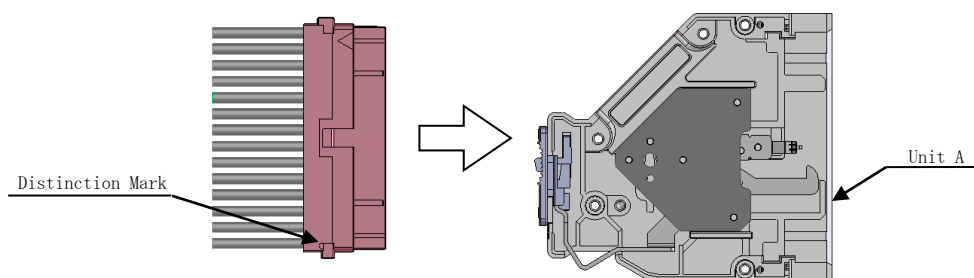
3.2 Plug Installation Procedures

<<Plug>>

1. Insert the crimped female contact in the direction of the arrow until it reaches the inside of the housing. The contact lance is on the side without the housing polarity mark (Δ).



2. Insert the S housing into Unit A in the direction where the distinction mark is visible. (It is designed so insertion to the other side is not possible.)

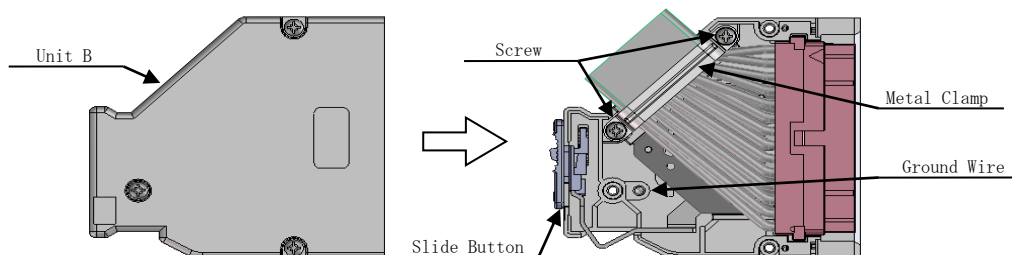


3. Attach the metal clamp to Unit A and tighten the cable. Make sure it is in the right position with the slide buttons as shown, then cover Unit B from above, and screw it in three places. (Recommended tightening torque $0.315 \pm 0.06 \text{ N}\cdot\text{m}$)

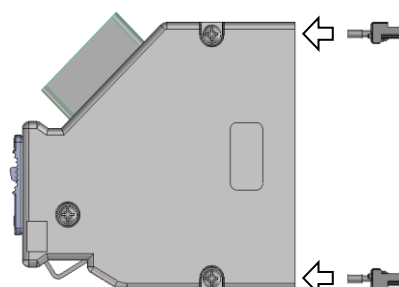
When using a metal clamp for ground connection, wrap a copper tape around the braid shield. And secure that part with a metal clamp. Depending on the type and number of wires, if the metal clamp and the copper tape do not contact with the product, adjust the thickness with plastic tape or copper tape.

For ground connection using a commercially available ring terminal, after crimping the ring terminal, secure it to the ground wire with a M3 screw.

(Recommended tightening torque $0.315 \pm 0.06 \text{ N}\cdot\text{m}$)



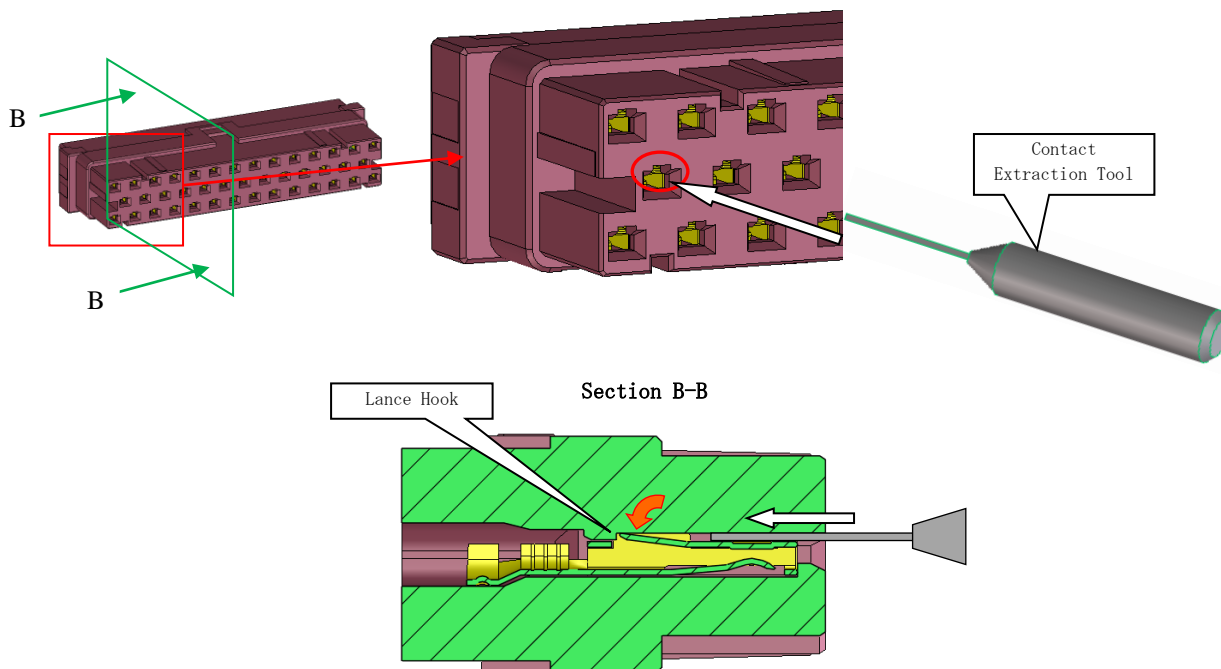
4. Insert the key(sold separately) into the plug body and tighten the screw. (Recommended tightening torque $0.18 \pm 0.03 \text{ N}\cdot\text{m}$)



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3.3 Crimp Contact Repair Method

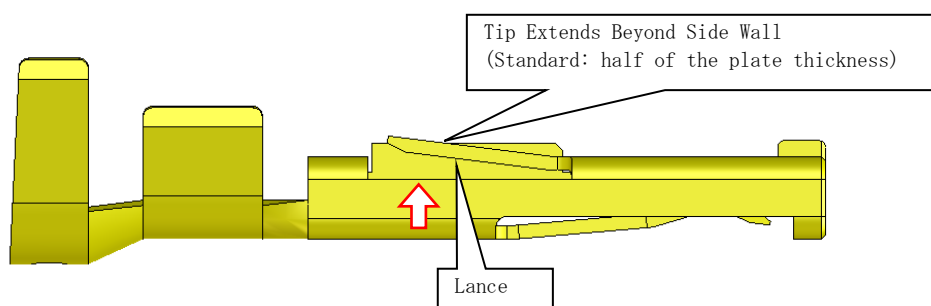
Use the PQ50S/RE-MD tool shown below for contact extraction.
Insert the tool into the area indicated by the white arrow,
and remove it by lowering the contact lance
(In-line type crimp contacts can also be removed in the same way.)



Insert the tool until it reaches the back and gently pull the cable.
If it does not come off even if you pull it lightly, the lance is not released,
so please try again.
If you pull it forcefully, the lance hook part of the housing will be damaged.

Once pulled out, the contact lance lowers, and it may not be hooked even if it is inserted into the housing.

When reusing, raise the lance to the position shown in the figure below with a pin.
(Lance can only be modified once.)



The housing lance hook where the contact was once pulled out may be chipped off.
If you want to use the contact after inserting it again, please check Section 4.2 "Contact Assembly Confirmation" and check whether the contact is secured.

In addition, when the contact is removed without using a tool, the lance hook may be shaved down significantly. Please change the case for a new one.

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3.4 Cable Clamping Method

To accommodate a variety of cables, a large space for clamping the cables is needed. Therefore, the cable may not be secured depending on the cable diameter, sheath material and composition, the number of pins, etc. Adjust the thickness with a shrink tube or copper tape so that the cable can be secured.

※Recommended cable tensile strength: 98 N

The metal clamp of CV1 can be reinforced with a cable tie as indicated below.

When a load is applied to the cable, optionally fix the cable to the metal clamp with a cable tie. The cable tie is not provided, so please prepare it.

Image of cable tie fastening

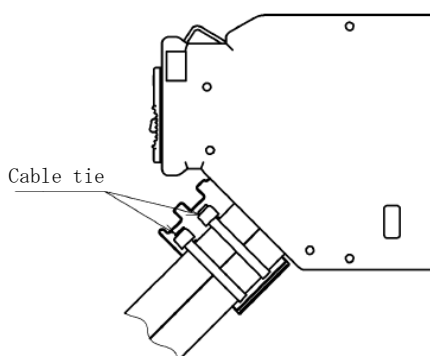
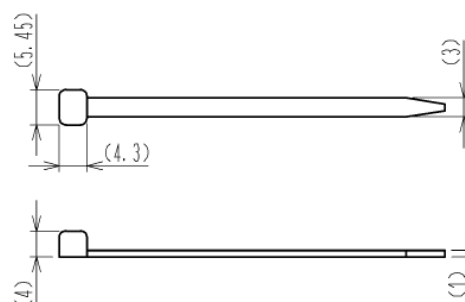
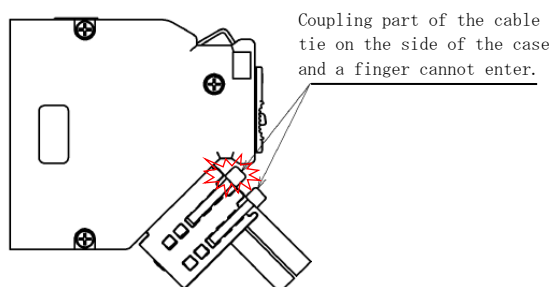


Image of cable tie size

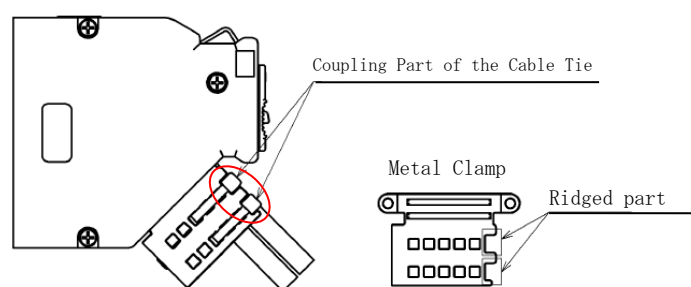


Depending on the position of the coupling part of the cable tie, it may be difficult to grip the connector body. In that case, fix it so that the coupling part of the cable tie contacts the ridged part of the metal clamp.

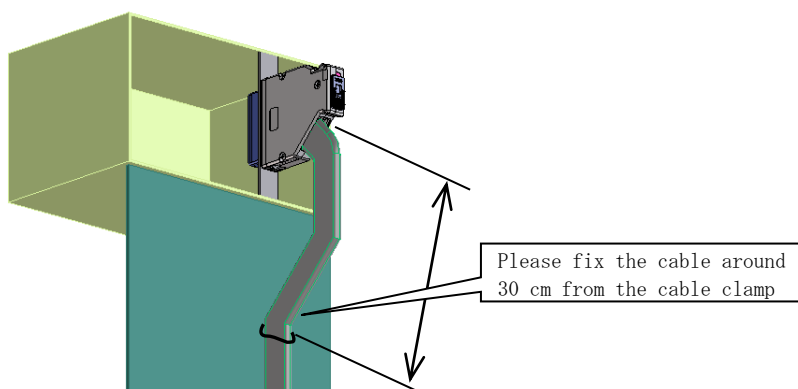
Cable tie fastening part : Position
Difficult to Grip Connector Body



Cable tie fastening part : Ridged Part Position



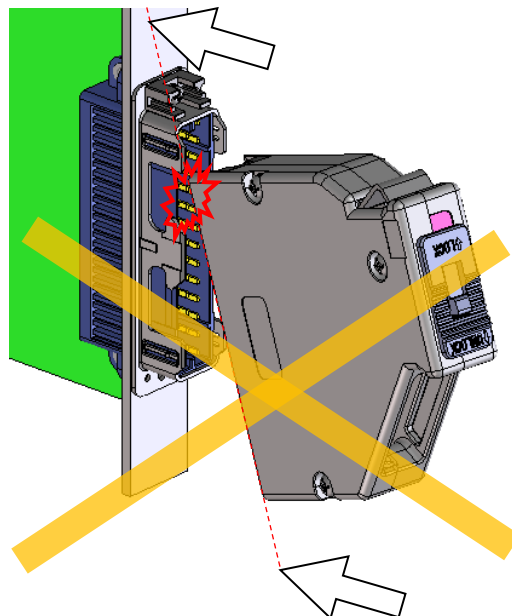
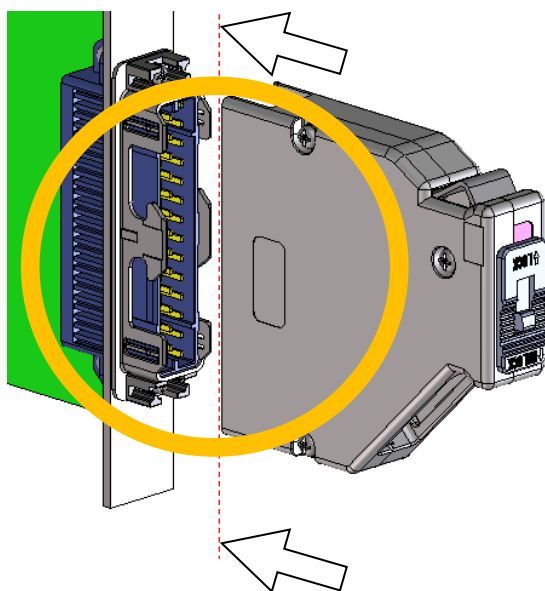
In addition, please secure the cable to the wall or floor in an environment where vibration is applied. If the cable is fixed within 25 cm from the cable clamp and there is no slack, the connector cannot be inserted or removed, so please fix it around 30 cm from the clamp.



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3.5 Mating and Locking Method

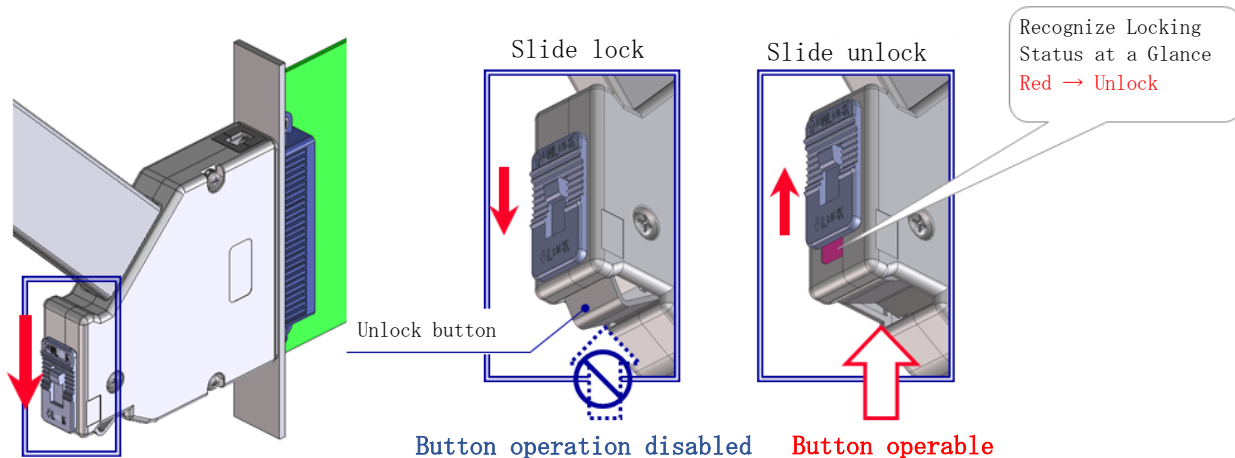
When mating the plug with the receptacle, insert the plug straight until it locks. If you accidentally hit the corner of the plug against the receptacle's contact, you may deform the contact.



To prevent accidental mating, there is a slide button for locking the cover case of the plug. After locking, the unlock button can be fixed by operating the slide button as shown below.

The locking state can be checked at a glance with the red color under the slide unlock. (You cannot use the unlock button when the red color is not visible.)

By returning the slide button, the unlock button can be operated.



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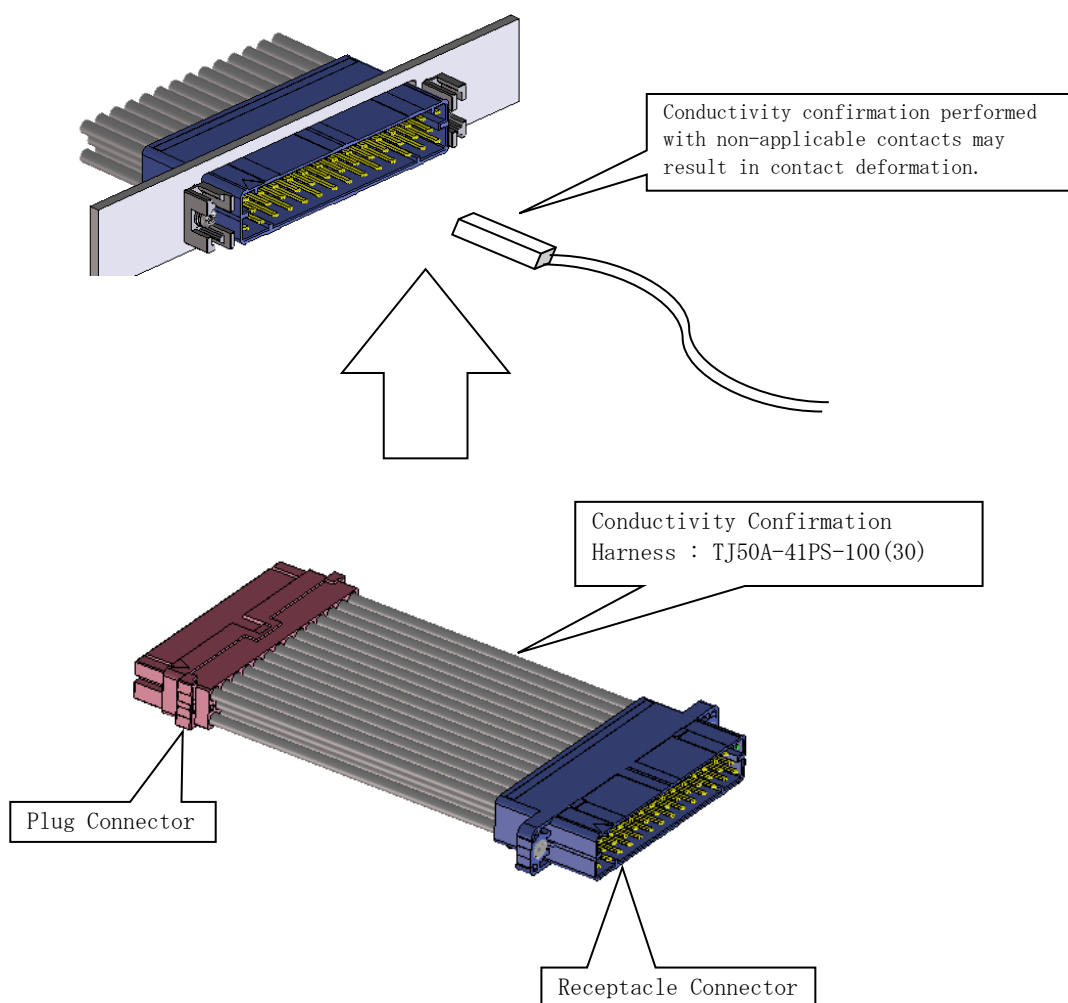
4. Other Notes

4.1 Conductivity Confirmation Method

While commercially available probes are used for conductivity inspection, using non-applicable contacts may result in unintended deformation of the contact.

By using harness TJ50A-41PS-100(30) for conductivity confirmation, inspection can be performed with the contact of the TJA Series, the original mating partner, preventing deformation of mass-produced products.

Put the harness between the product to be inspected (TJA connector) and the customer's probe.



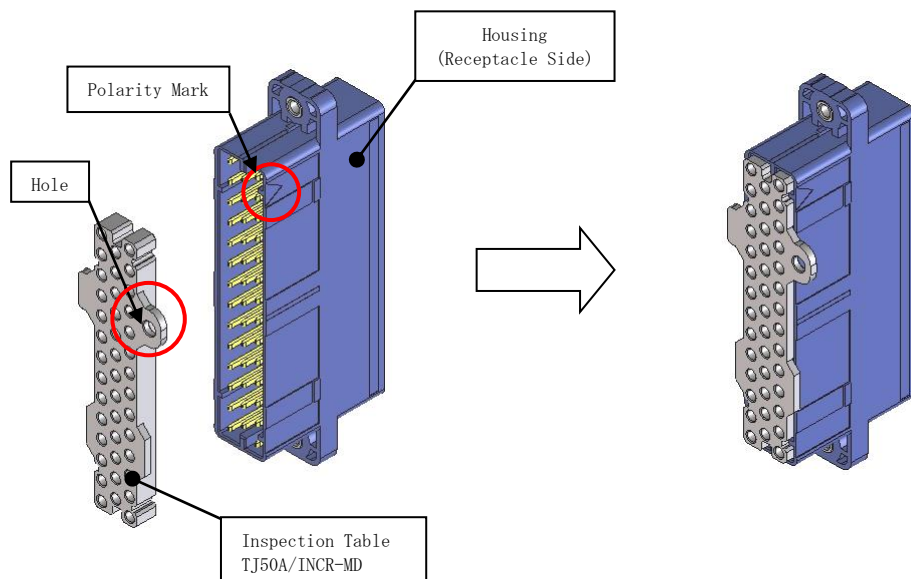
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4.2 Contact Assembly Confirmation Method

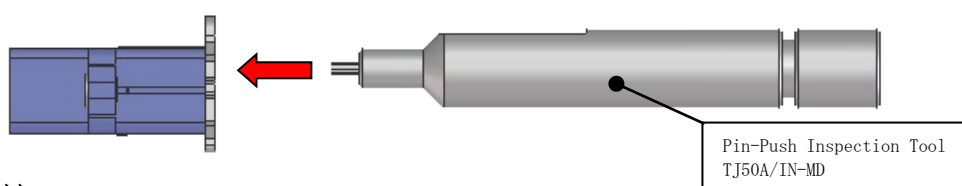
You can use the pin-push inspection tool (TJ50A/IN-MD) and inspection table (TJ50A/INCR-MD) to check the contact assembly of both the receptacle side (in-line type) and plug side.

<<Receptacle (In-line type)>>

1. Align the polarity mark of the receptacle which has crimp contacts inserted with the hole of inspection table. Set as shown below.
(This inspection table can be used even after installed to the panel.)

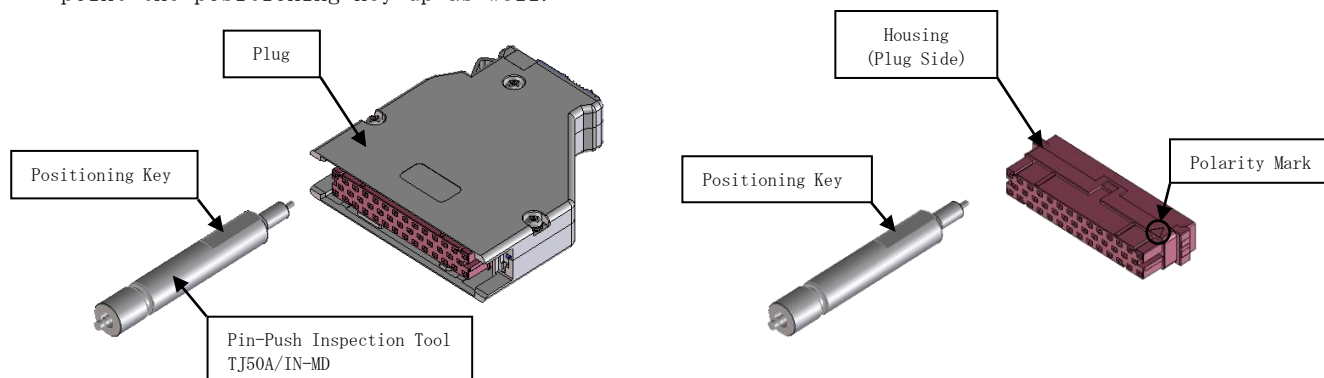


2. Insert the tip of the inspection tool straight into the hole of the inspection table as shown below. Unlike the plug side inspection (Ref. ATAD-E3065), the receptacle side inspection allows insertion of the inspection tool tip in any direction.
(The inspection tool is used for both the plug side and the receptacle side.)



<<Plug>>

1. Set the inspection tool in the direction shown below for the plug or housing with crimp contacts inserted. In this case, if the side with the polarity mark (No.1 contact side) is up, point the positioning key up as well.

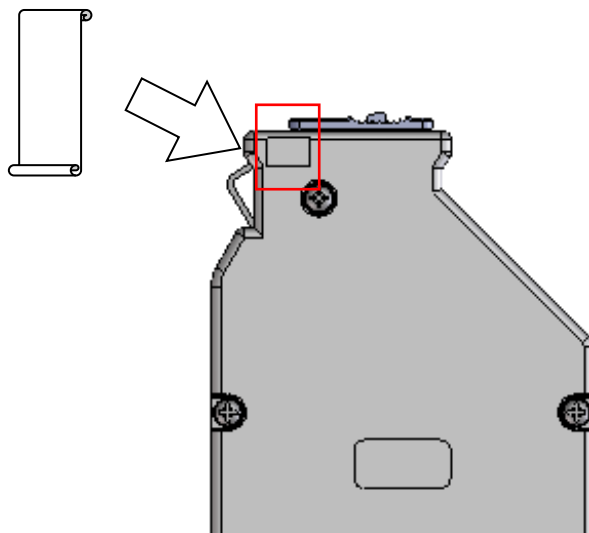


※If you turn it in the opposite direction, it is difficult to inspect thoroughly.

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4.3 Tape for Checking Locking Status

When attaching the tape for checking that the lock has not been released to the slide button, use the square part on the side of the lock lever (below) as a reference.



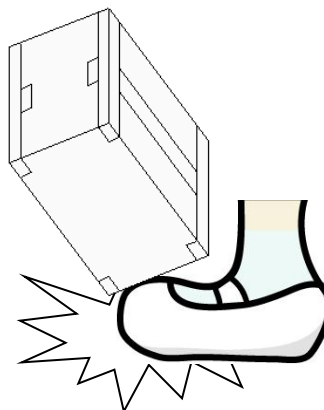
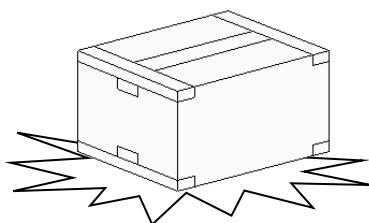


HIROSE ELECTRIC CO.,LTD.

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4.4 Connector and Packaging Handling

Since the connector is heavy, please be careful when handling it in the packaged state so no injuries result from dropping it. The connector may be damaged if dropped (80cm or more). Please make sure that the connector is not damaged before use. If dropped, the connector may be damaged. In that case, refrain from using that connector.



| Product Name | Unit Weight (g) | Weight per Box (g) | Quantity per Box |
|-----------------|-----------------|--------------------|------------------|
| TJ10A-41P | 39.5 | 2844.0 | 72 Pieces/box |
| TJ10A-28P | 24.8 | 1785.6 | 72 Pieces/box |
| TJ50A-41P | 31.0 | 2232.0 | 72 Pieces/box |
| TJ50A-41S-*-CV | 125.1 | 2251.8 | 18 Pieces/box |
| TJ50A-41S-*-CV1 | 136.9 | 2464.2 | 18 Pieces/box |
| TJ50A-*****CA | 0.3 | 30.0 | 100 Pieces/box |
| TJ-KY-P* | 2.5 | 125.0 | 50 Pieces/box |
| TJ-KY-S* | 3.1 | 155.0 | 50 Pieces/box |

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TJA Series Usage Guidelines Revisions Table

| Revision | Date | Comments |
|----------|----------|-----------------|
| 0 | 2021/7/2 | Initial release |