

NO.	ETAD-E3264-00
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PS3 Series Guideline



HRS

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1 Introduction

1.1 Purpose of use guideline

The precautions on equipment design and works etc. for using PS3 series made by HIROSE ELECTRIC CO., LTD. are described on the guideline shown below. Please reference it.

Pictures and illustrations shown in the guideline vary depending on the product because those of our company's representative product are used.

The information in the guideline may be changed without notice.

2 Product Information

2.1 Product Number Structure

Refer to the chart below when determining the product specifications from the product number.

■ Connector




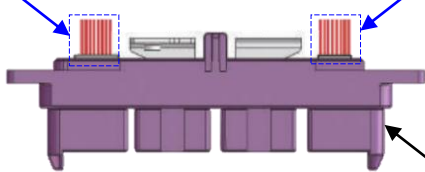


PS3 - 2 U S / 12 S / 16 S
① ② ③ ④ ⑤ ⑥ ⑤ ⑥

■ Dust Cap

PS3 - 2 U - DC
① ② ③ ⑦

①Series Name	PS3	⑤No. of Signal Contacts (per block)	12 : 12pins 16 : 16pins
②No. of Power Contacts	2 : 2pins	⑥Signal Contact Gender	P : Male Contact S : Female Contact
③Current Capacity of Power Contact	U : 150A		
④Power Contact Gender	P : Male Contact S : Female Contact	⑦Dust Cap	DC : Used for power supply part

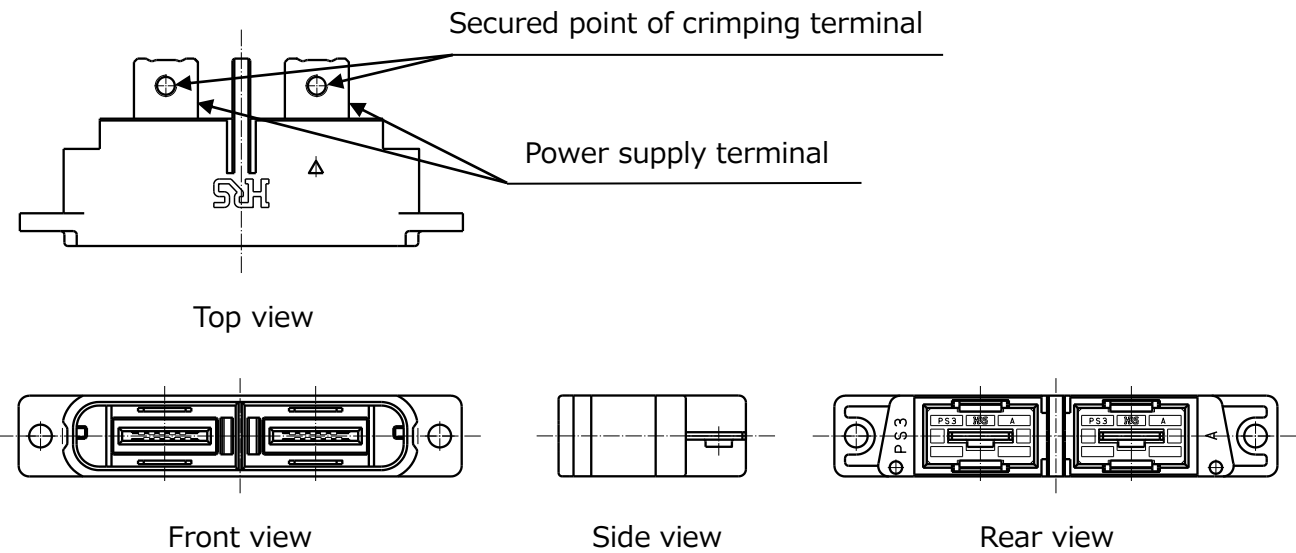
2.2 Series Classification Overview

Classification			Product name	Features
Connector unit	Power Type	Plug	PS3-2US 	1. Rated up to 210A*1 with 50sq wire 2. Unique blade contact design enables slim size and mounting to standard 1U rack 3. Floating screw allows · 2mm floating mating 4. Cable connection to power contact is done by screw fixation 5. Finger protection meeting IP2X requirements and contributes to operators' safety. (Female contact side only) 6. Applicable wire: 14-50sq (WL1, WL2) 7. Dust cap is available. 8. UL, C-UL, TÜV certified*2These are applied to Signal Hybrid Type.
		Receptacle	PS3-2UP 	
	Signal Hybrid Type	Plug	PS3-2US/12S/16S 	The above applies equally to Signal Hybrid Type. Signal part for Signal Hybrid Type is <u>GT8E series</u> (sold separately). <Combination List> Plug : PS3-2US/12S/16S └─ ①GT8E-12DS-HU + GT8E-2022SCF(Gold Plating) ②GT8E-16DS-HU + GT8E-2022SCF(Gold Plating) Receptacle : PS3-2UP/12P/16P └─ ①GT8E-12DS-HU + GT8E-2022SCF(Gold Plating) ②GT8E-16DS-HU + GT8E-2022SCF(Gold Plating) <div><p>Example) PS3-2UP/12P/16P</p><div><div>②GT8E-16DS-HU + GT8E-2022SCF(Gold Plating)</div><div>①GT8E-12DS-HU + GT8E-2022SCF(Gold Plating)</div><p>PS3-2UP/12P/16P</p></div></div>
		Receptacle	PS3-2UP/12P/16P 	
Dust cap			PS3-2U-DC 	This dust cap can be used for power supply part of receptacle and plug.

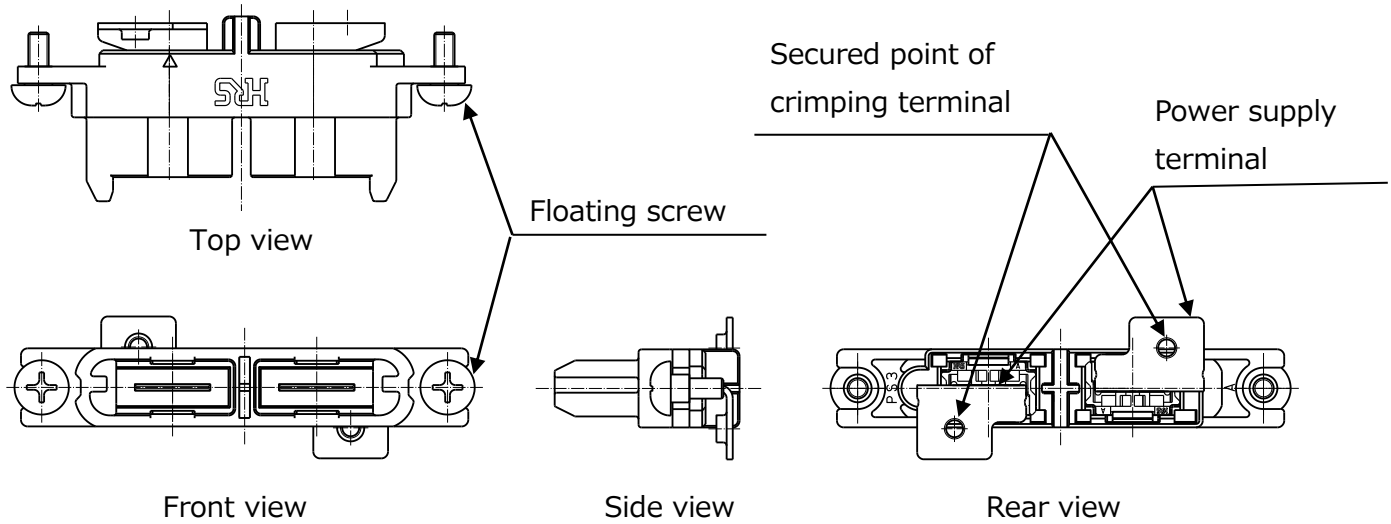
2.3 Name of each part of connector

For the name of each part of connector used in this guideline, refer to the figures shown below.

Connector on battery side



Connector on system side



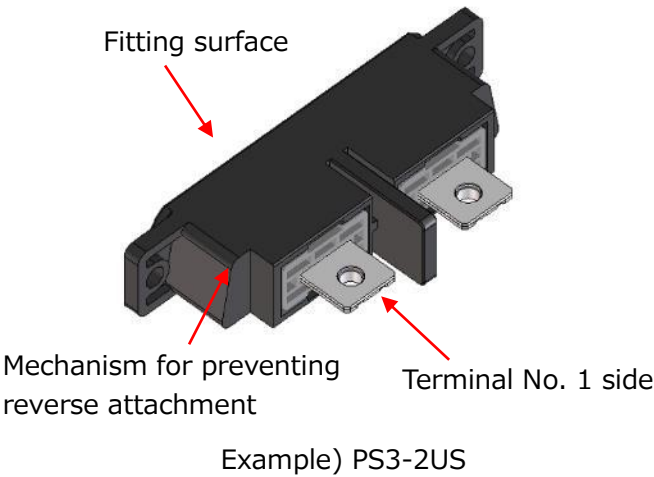
3 Precautions on equipment design

3.1 Layout of cut-out of panel

For the layout of cut-out of panel to which connectors are attached, there are panel on battery side and panel on system side.

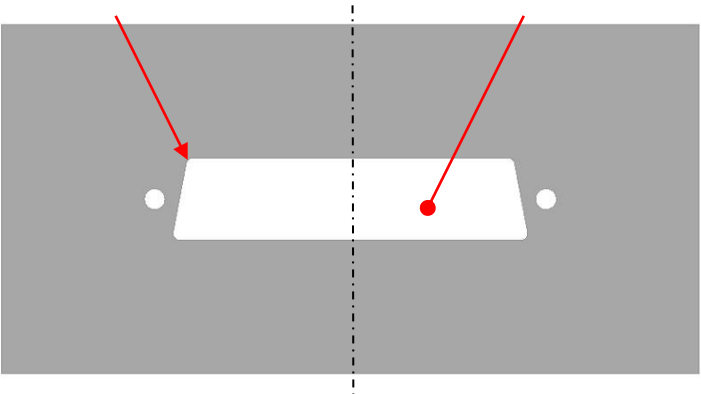
For the panel cut-out dimension, refer to the delivery specification because it affects the mechanism that prevents reverse attachment of connector, floating, clearance and creepage distance for safety standard. If you want to change the panel cut-out dimension, please consult with our company's sales contact.

<Battery side>



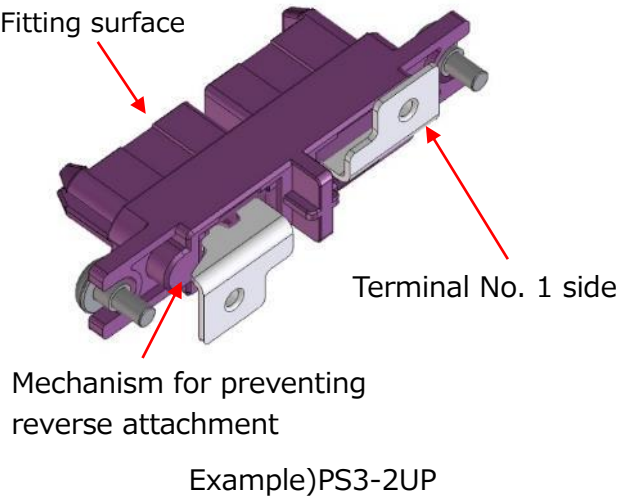
Mechanism for preventing reverse attachment

Terminal No. 1



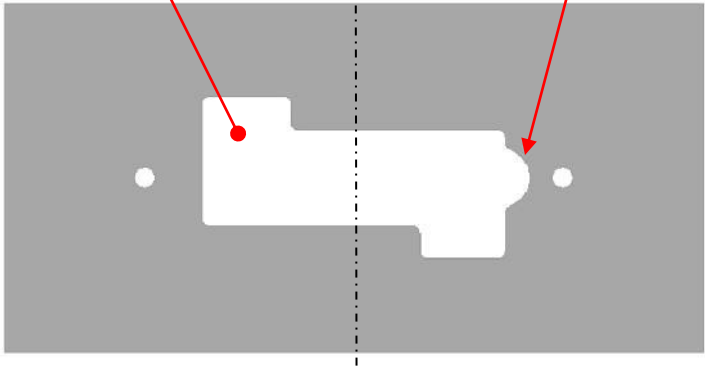
Example) Panel for PS3-2US
(View seen from fitting surface side of connector)

<System side>



Terminal No. 1 side

Mechanism for preventing reverse attachment

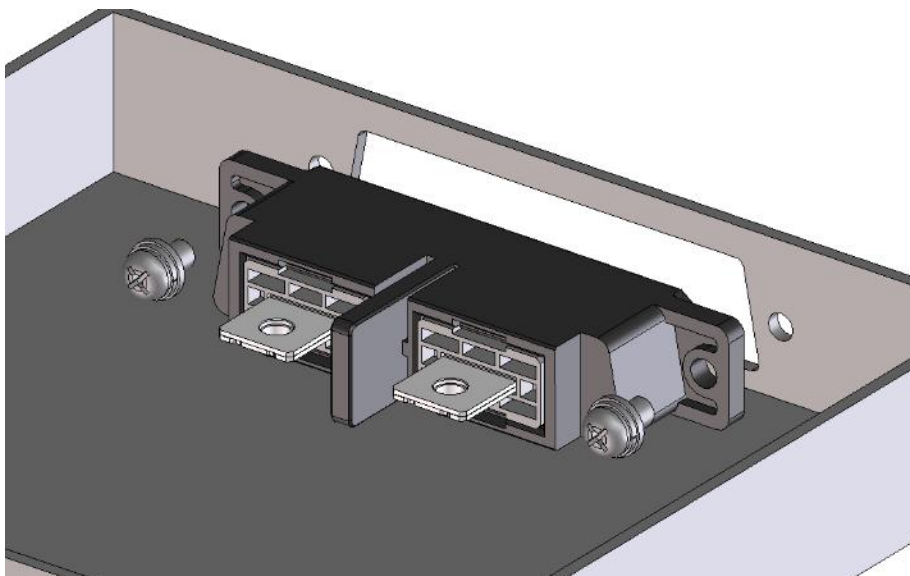
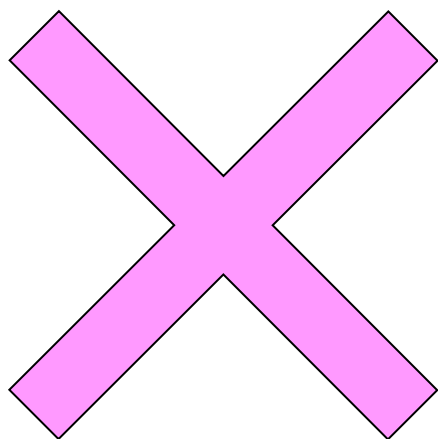
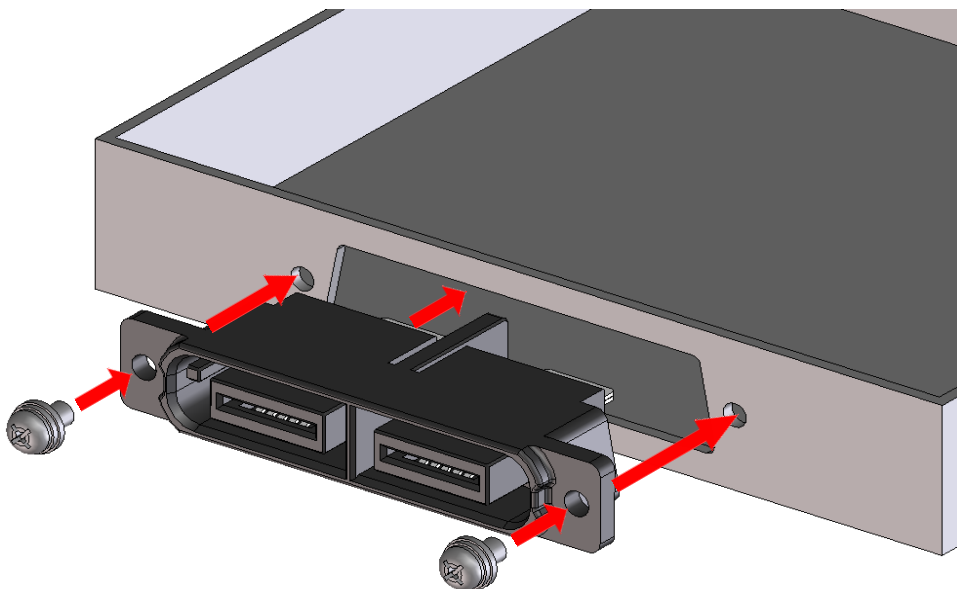
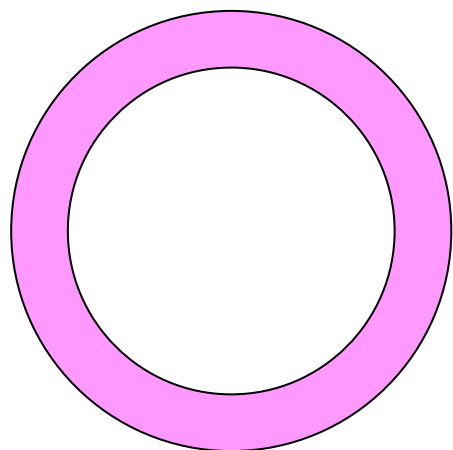


Example) Panel for PS3-2UP
(View seen from fitting surface side of connector)

3.2 Positional relationship between connector and panel

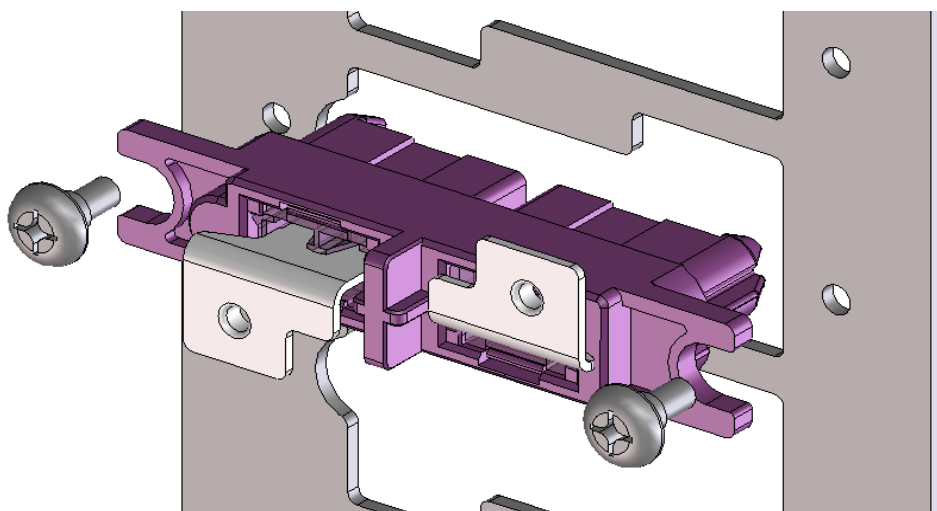
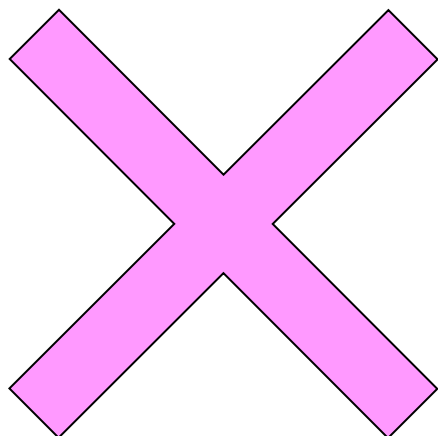
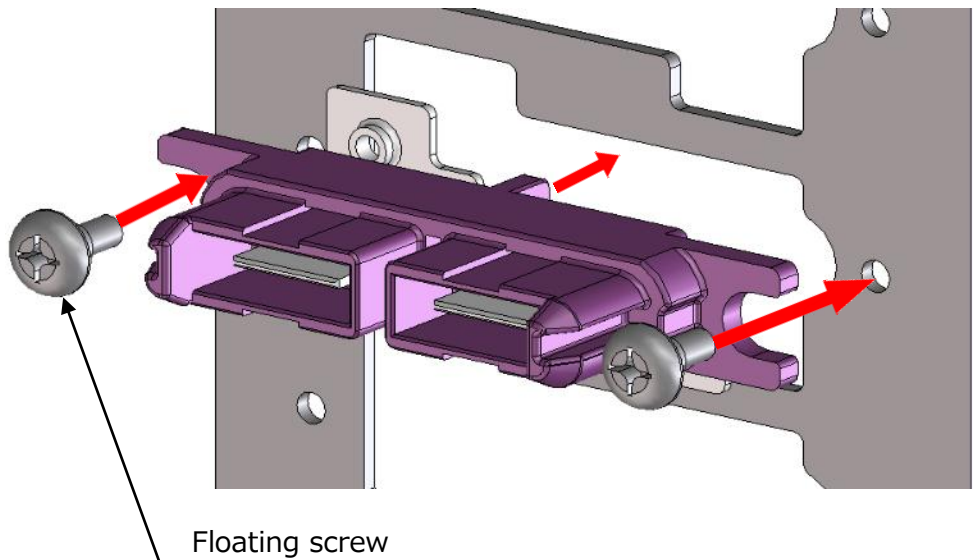
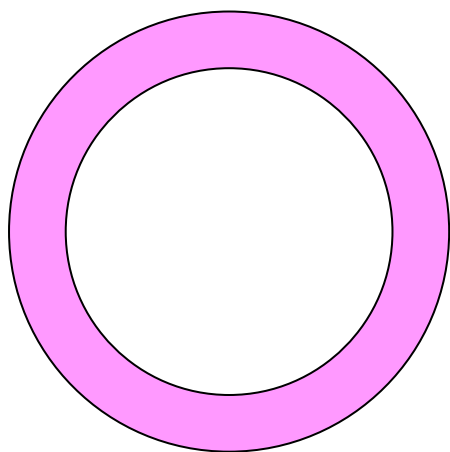
<Battery side>

Attach the connector from front surface of panel.



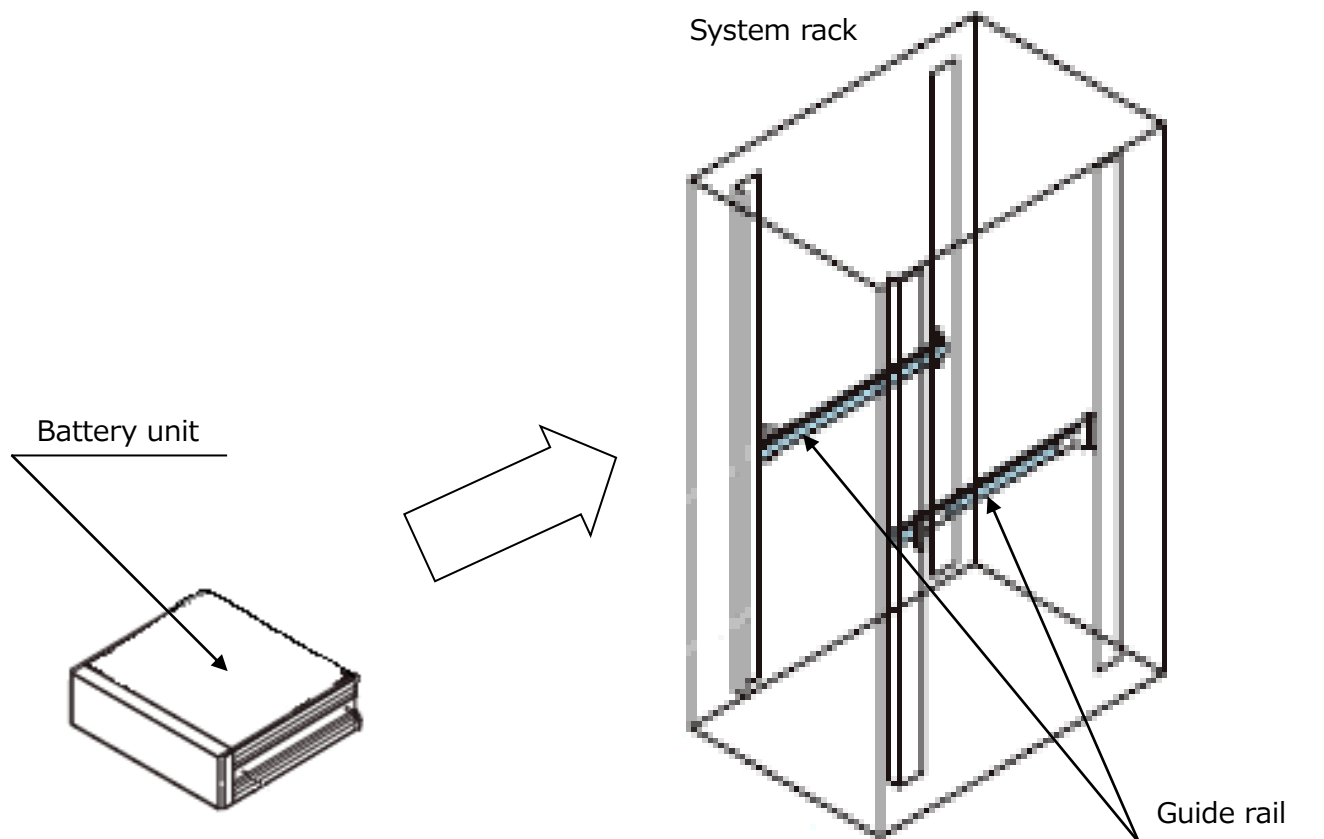
<System side>

Attach the connector from front surface of panel.

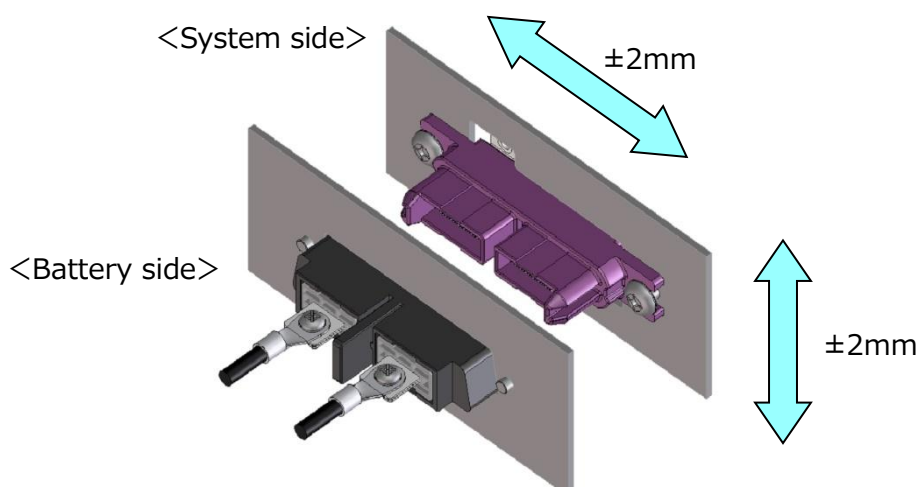


3.3 Precautions on rack design considering floating

When you insert the battery unit in the rack by sliding it, use a guide rail or other item Preventing the battery unit from being inserted at a tilt.



The floating amount of connector on system side is $\pm 2\text{mm}$.



3.4 Notes on recommended cable, crimping terminal, and screws

The recommended cable, recommended crimping terminal, and recommended screws at the power supply terminal connection part are shown below.

For screws and crimping terminal to be attached to the power supply terminal, use the recommended items. If you use other items, please consult with our company's sales contact.

* Our company's temperature rise test is carried out using our company's recommended cable.

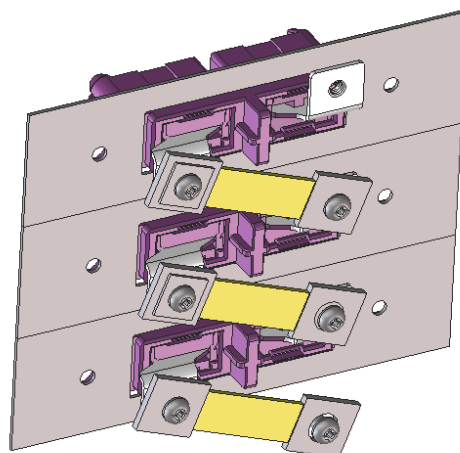
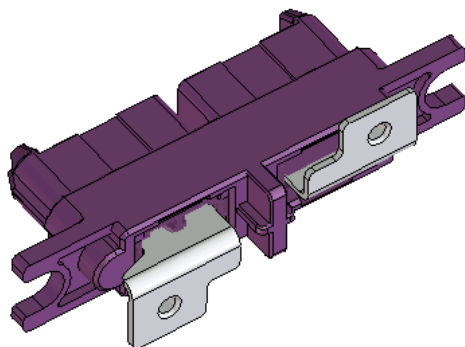
For supporting 100A	Recommended cable	1. MLFC 14 sq made by Hitachi Metals, Ltd. 2. MLFC 22 sq made by Hitachi Metals, Ltd. 3. Flexible electric wire with terminal hole 22 sq (32/61/0.12)
	Recommended crimping terminal	1. JIS C 2805 R14-6 2. JIS C 2805 R22-6
For supporting 125A	Recommended cable	MLFC 38 sq made by Hitachi Metals, Ltd.
	Recommended crimping terminal	R38-6S made by NICHIFU Co., Ltd.
For supporting 150A	Recommended cable	MLFC 50 sq made by Hitachi Metals, Ltd.
	Recommended crimping terminal	R60-6S made by NICHIFU Co., Ltd.

* Recommended screw: JIS B 1188 M6 12 spring washer + polished circular washer-embedded + cross recessed head machine screw

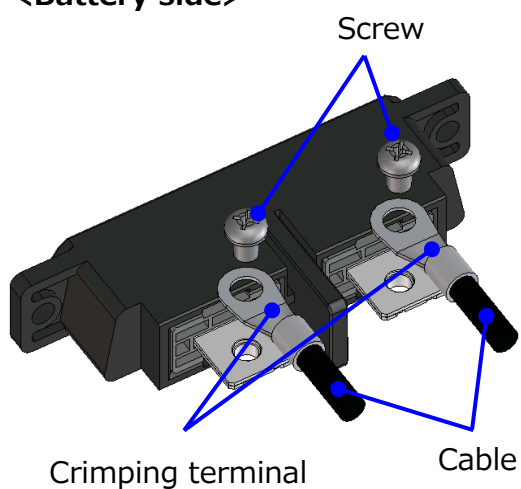
* Recommended tightening torque: 2.5 to 5.2 N·m

◆Power supply terminal Image of 100A type

<System side>

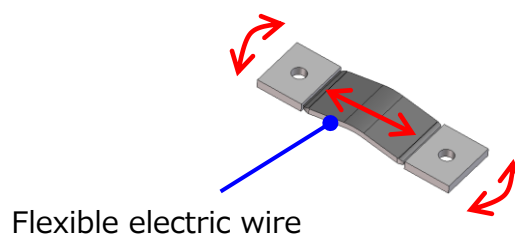


<Battery side>



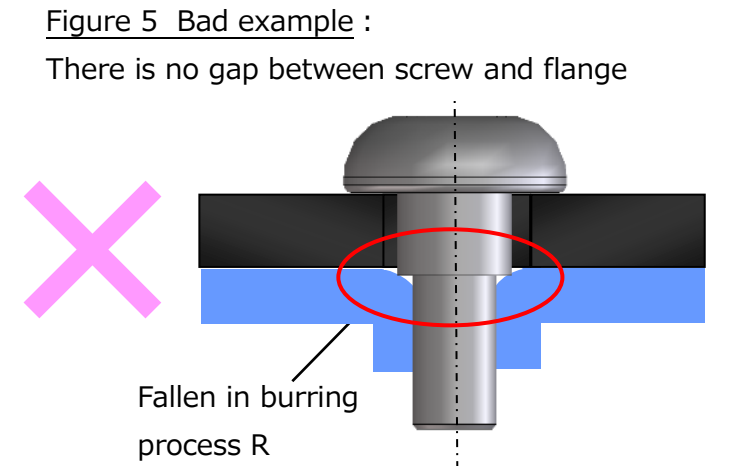
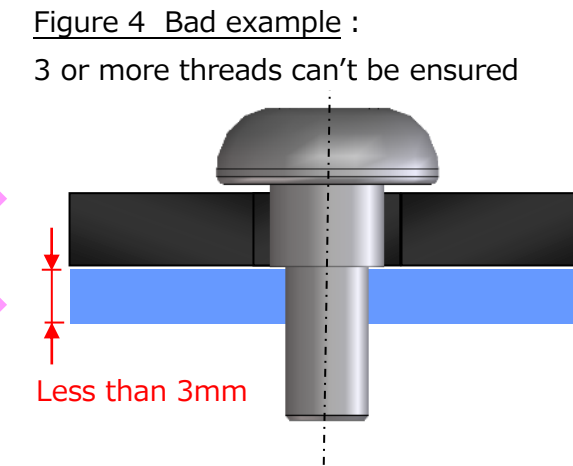
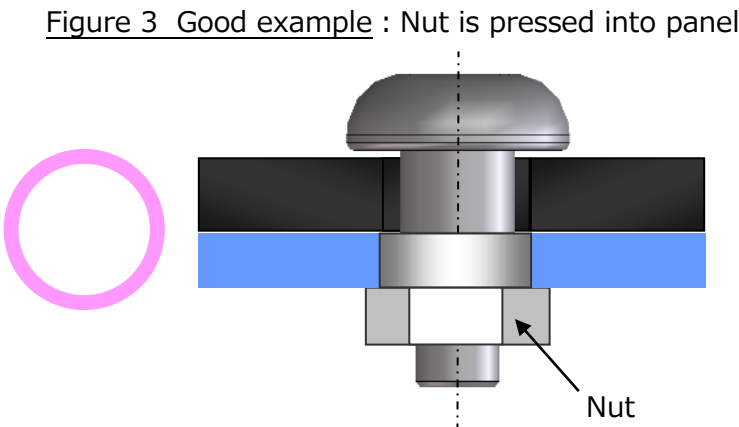
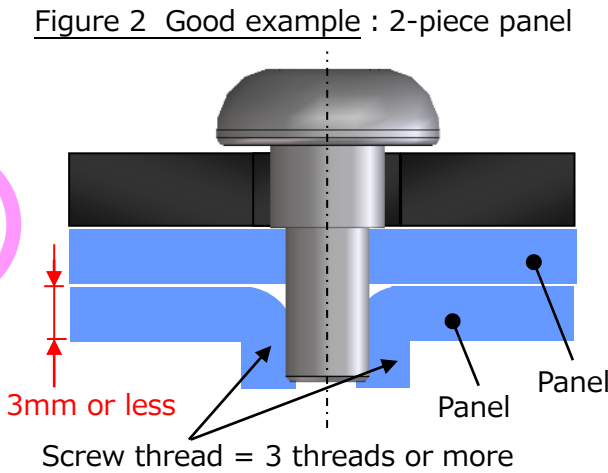
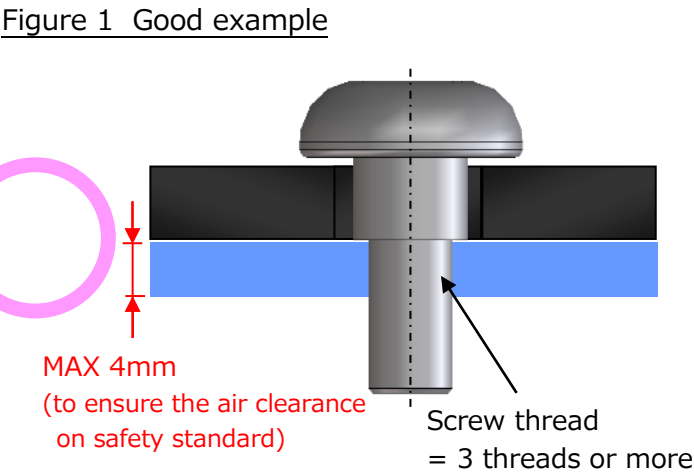
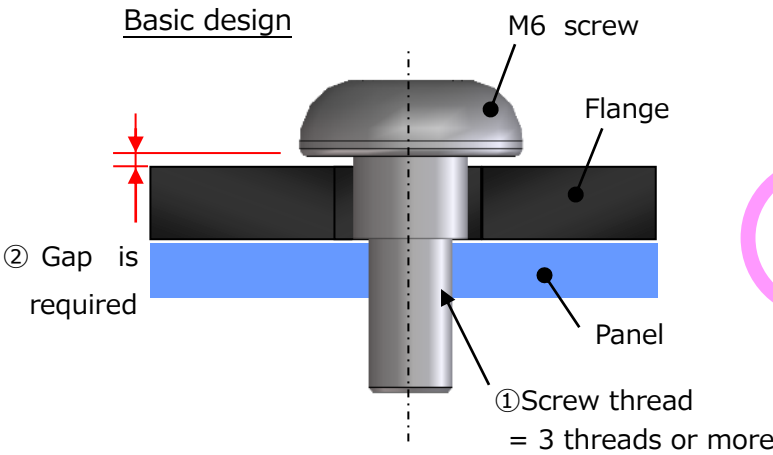
* In case of connection with a hard cable, the floating property may be damaged depending on the mounting pitch of connector. Select a cable carefully.

If the floating cannot be realized easily, a flexible electric wire with flexibility is recommended.



3.5 Precautions on floating screw securing part

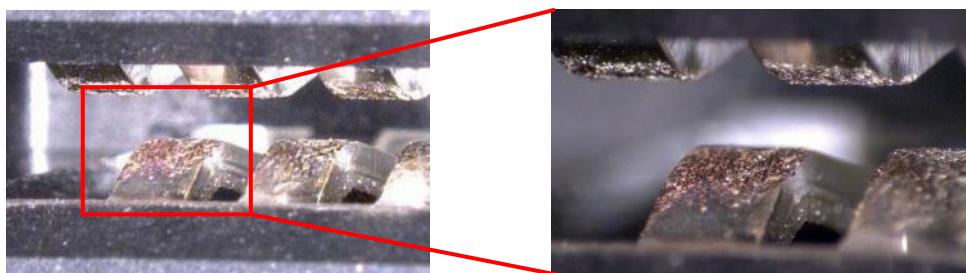
For the panel at floating screw part, ensure the design that can fulfill the following.
Because the panel may not meet the conditions depending on the panel thickness and processing method, design the panel referencing Figures 1 to 3 (good example), 4 to 5 (bad example) shown below.



3.6 Hot swapping

As the power supply terminal of this product does not support hot swapping, it cannot be used for blocking the power supply.

If difference of potential is generated between batteries and hot swapping (low voltage, low current) is caused, please consult with our company's sales contact.

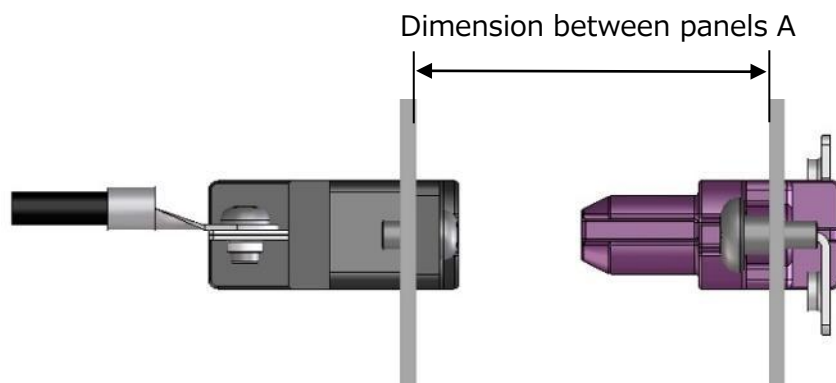
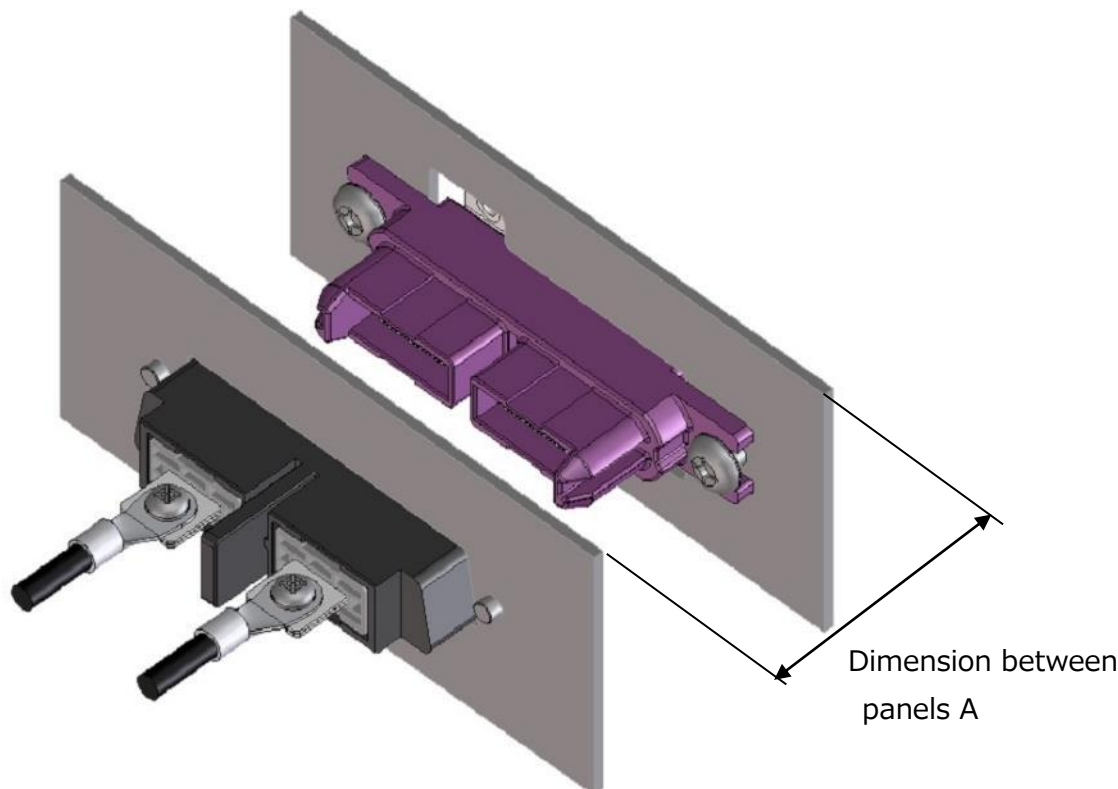


If hot swapping is caused, a defect such as burning of terminal and meltdown of resin will be caused.

Example) PS3 series power supply female terminal after hot swapping

3.7 Dimension between panels

The dimension between panels related to fitting of connector is shown in the table below.
If the panels are designed out of dimension range, conduction failure or damage of connector may be caused.



Unit : mm

Product name	Dimension between panels A
PS3-2US,PS3-2UP	24.2 to 26.2
PS3-2US/12S/16S,PS3-2UP/12P/16P	24.7 to 28.7

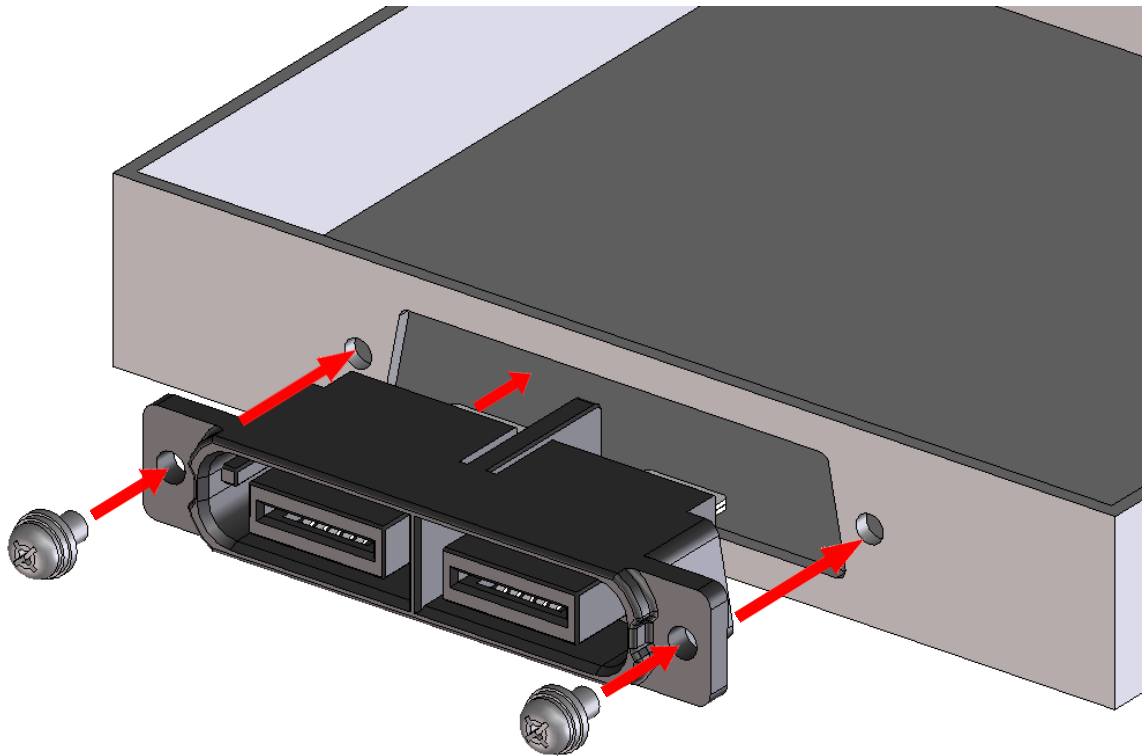
4 Precautions on work

4.1 Procedure for attaching a connector

<Battery side>

① Attachment of connector

Fix the connector from front surface of panel with screws.

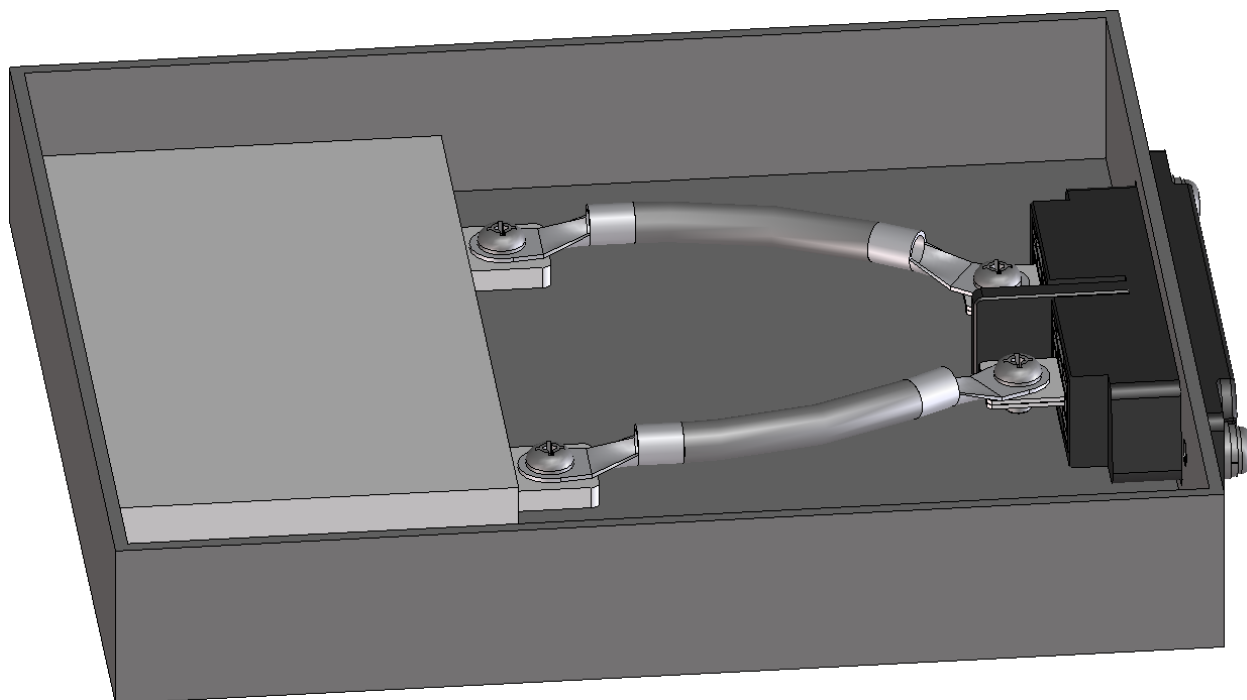


The recommended tightening torque is shown in the table below.

Product name	Recommended tightening torque
PS3-2US	2.5 to 5.2 N·m
PS3-2US/12S/16S	2.5 to 5.2 N·m

② Connection with battery cell

Connect cell and power supply terminal with bus bar or cable.



The recommended tightening torque is shown in the table below.

Product name	Recommended tightening torque
PS3-2US	2.5 to 5.2 N·m
PS3-2US/12S/16S	2.5 to 5.2 N·m



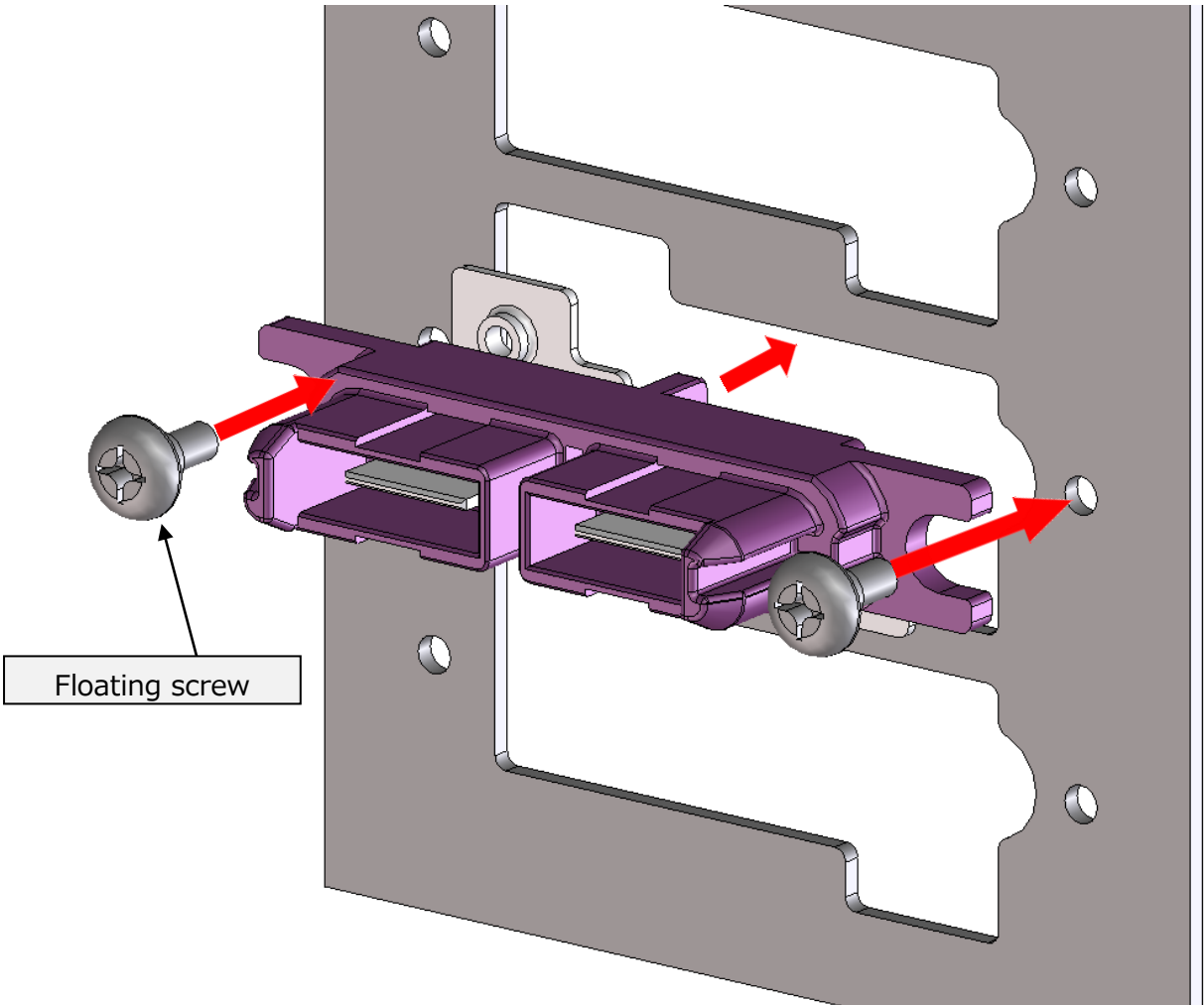
* CAUTION

- For the power cable, crimping terminal, and screws, refer to 3.4 (Recommended cable, crimping terminal, screws).
- Do not carry out the work when power cable, connector, power supply terminal are electrically charged or power is applied to them.
Otherwise, electric shock, injury, heat generation, or ignition may be caused.
- For tightening a screw, do not use an impact driver or impact wrench.
- If excessive tightening torque is applied, the connector may be damaged.
- After the screws are tightened, check crimping terminal and power supply terminal are tightened without gap.
- If you drop down a tool such as screwdriver in between terminals, short may be caused.
Carry out the work carefully.
- For the screw tightening part, do not apply thread-locking adhesive or potting agent.
Otherwise, conduction failure, heat generation, or ignition may be caused.

<System side>

① Attachment of connector

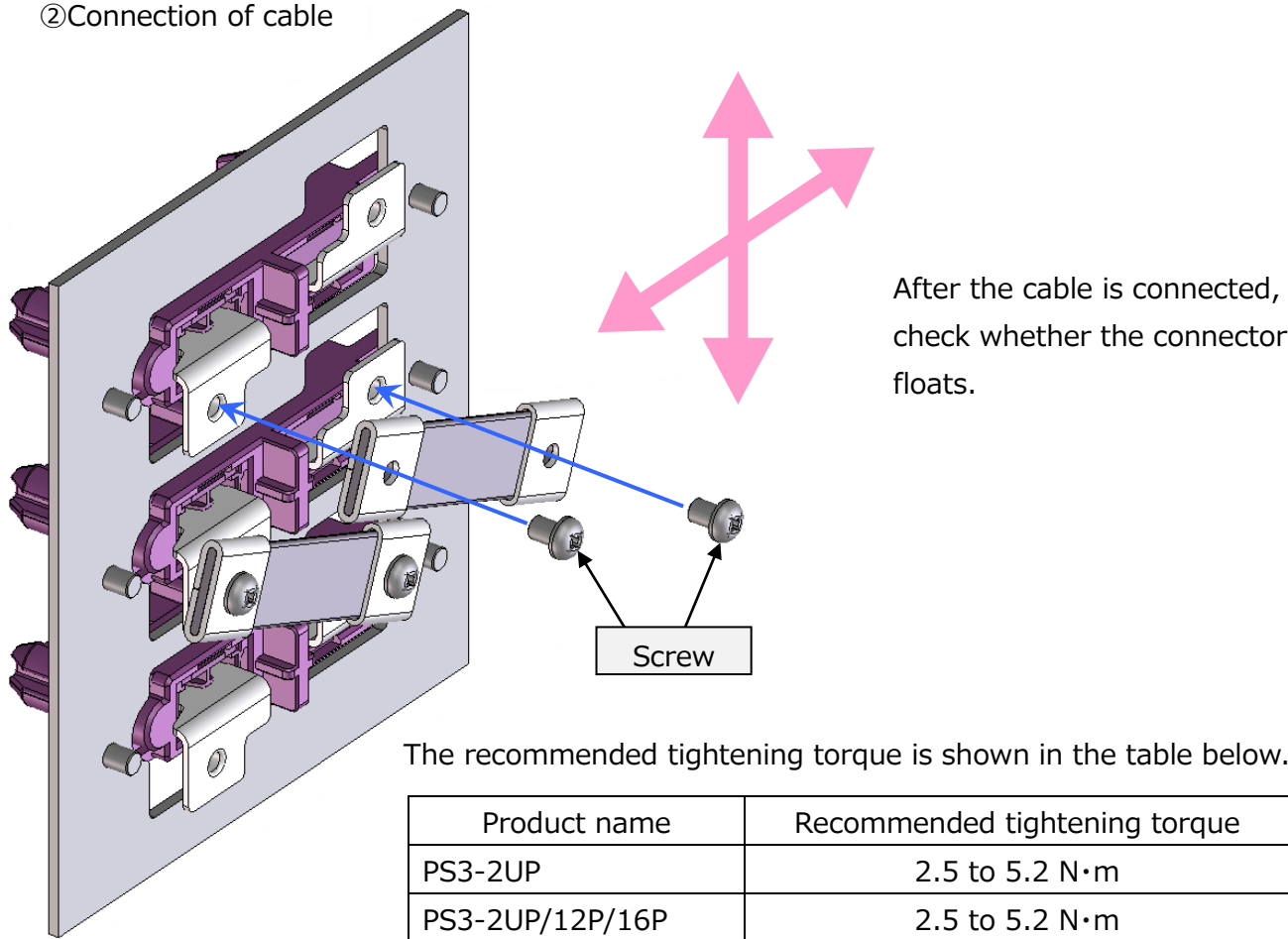
Attach the connector from front surface of panel with floating screws.



The recommended tightening torque is shown in the table below.

Product name	Recommended tightening torque
PS3-2UP	2.5 to 5.2 N·m
PS3-2UP/12P/16P	2.5 to 5.2 N·m

②Connection of cable



When you connect the adjacent connector on system side with a cable, secure two screws temporarily, and then adjust the angle and tighten the screws completely.

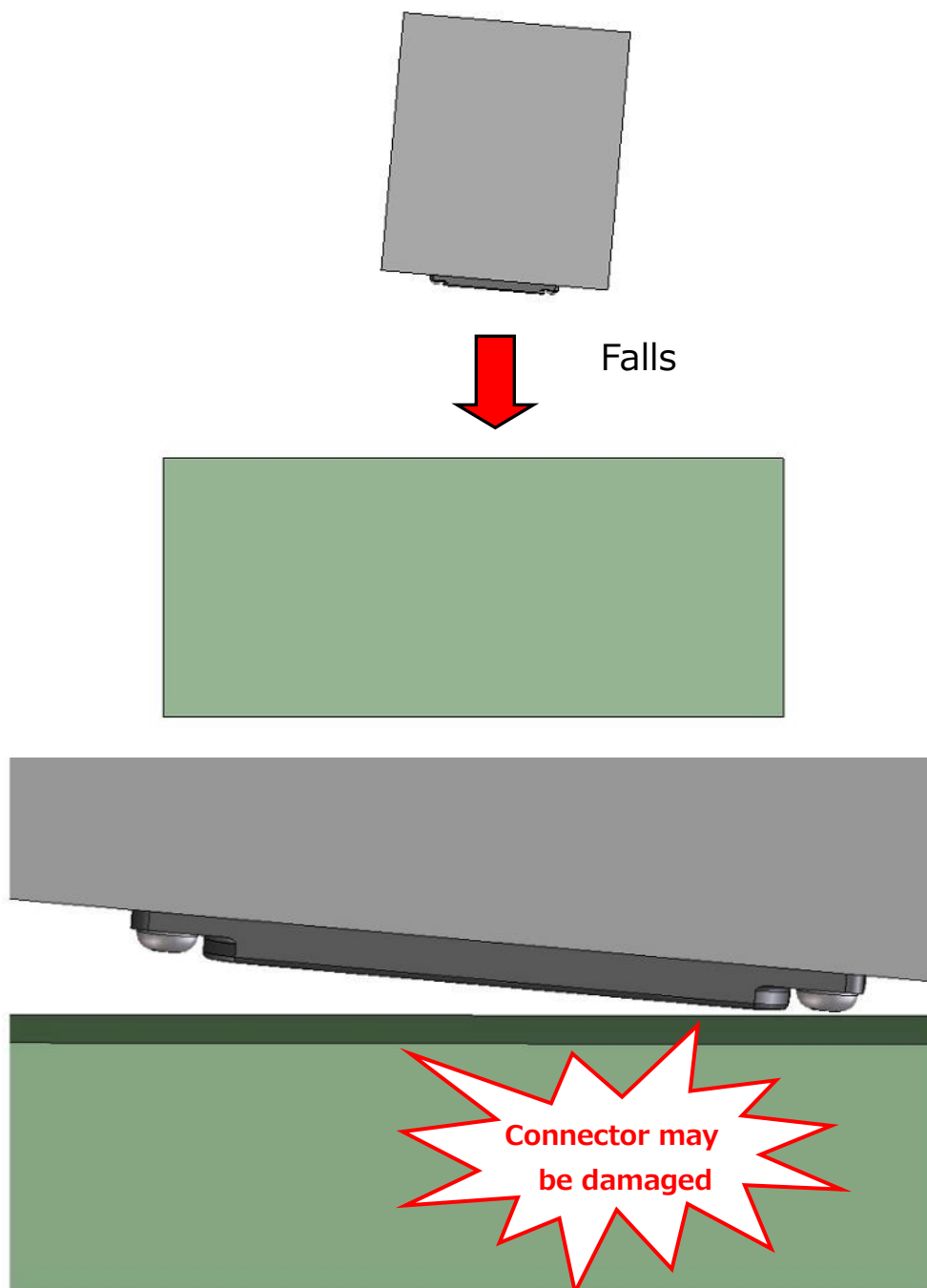


* CAUTION

- For power cable, crimping terminal, and screws, refer to 3.4 (Recommended cable, crimping terminal, screws).
- Do not carry out the work when power cable, connector, power supply terminal are electrically charged or power is applied to them.
- Otherwise, electric shock, injury, heat generation, or ignition may be caused.
- For tightening a screw, do not use an impact driver or impact wrench.
- If excessive tightening torque is applied, the connector may be damaged.
- After the screws are tightened, check screws, parts on which screws are secured, and power supply terminal are tightened without gap.
- For the screw tightening part, do not apply thread-locking adhesive or potting agent.
- Otherwise, conduction failure, heat generation, or ignition may be caused.

4.2 Handling of battery unit

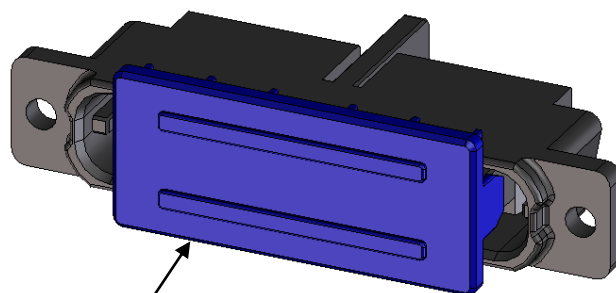
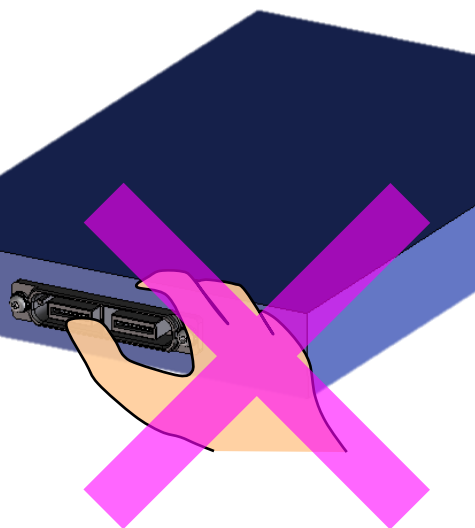
The battery unit is very heavy. If you drop it down by mistake, the connector part will directly contact the floor etc. and it may be damaged. Handle it carefully.



4.3 Dangerous sections

<Battery side>

For this product, finger protection structure is ensured, however, if you touch the power supply terminal using a thin tool etc., you may get electric shock. Handle it carefully.

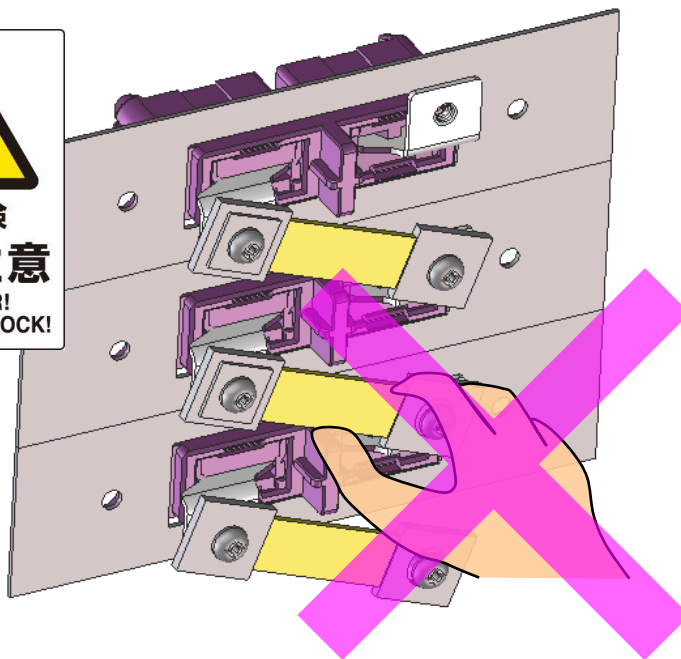


Dust cap PS3-2U-DC

Dust cap PS3-2U-DC, which can be used both of battery side and system side, is also prepared.

<System side>

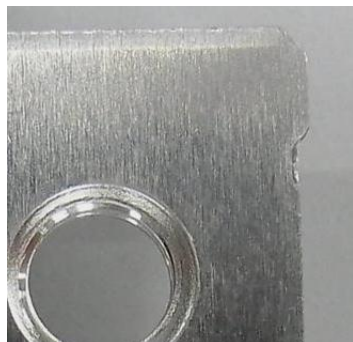
On the panel surface, the power supply terminal is exposed and you may get electric shock. Handle it carefully.



5 Other precautions

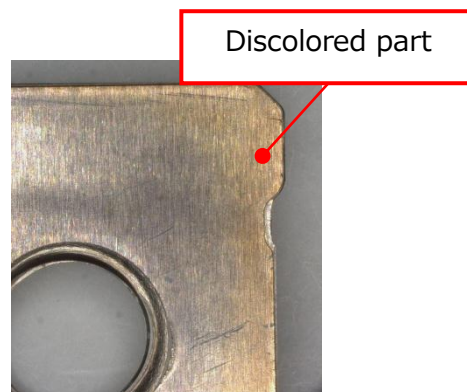
5.1 Discoloration of silver plating

As silver plating is used for power supply terminal, it reacts with sulfide in air and is discolored to blackish brown, however, there is no problem on the performance.



Example 1)

Initial phase: PS3 power supply female terminal



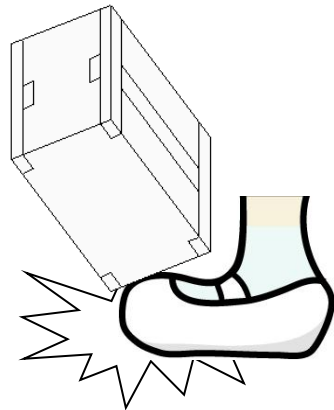
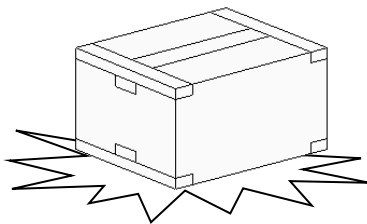
Example 2)

In 96 hours after sulfidizing gas test
PS3 power supply female terminal

5.2 Handling of connector

The connector is heavy load. Be careful about handling while it is packed and injury due to falling etc.

If it falls (80cm or higher) while it is packed, the connector may be damaged. If you use it, check the connector is not damaged sufficiently. If the connector single unit falls, the connector may be damaged. Avoid using the connector.



Product name	Weight of product single unit (kg)	Product weight per box (kg)	Packed quantity per box
PS3-2US	0.09	3.6	40 pieces/box
PS3-2UP	0.11	4.4	40 pieces/box
PS3-2US/12S/16S	0.13	5.4	40 pieces/box
PS3-2UP/12P/16P	0.16	6.3	40 pieces/box
PS3-2U-DC	0.016	6.5	400 pieces (max.)/box

6 Revision History

Written	HK.SAITO	20230719
Charged	KIM JAEHYEON	20230921
Checked	KG.OKITA	20230921
Approved	TU.TANIGUCHI	20230921