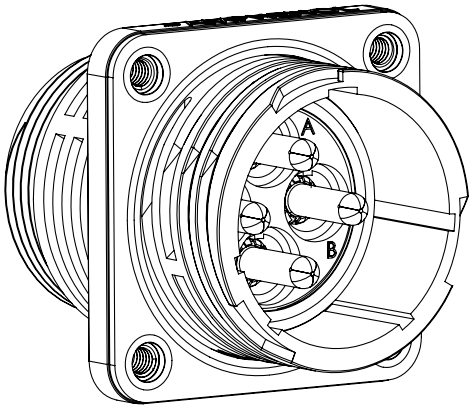
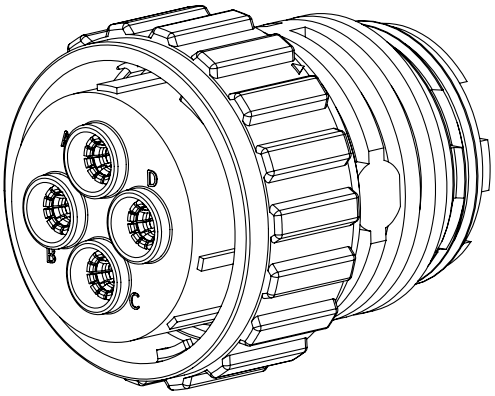
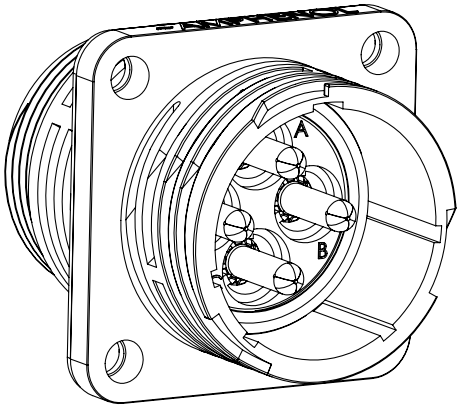
# APC series product installation (18-4)



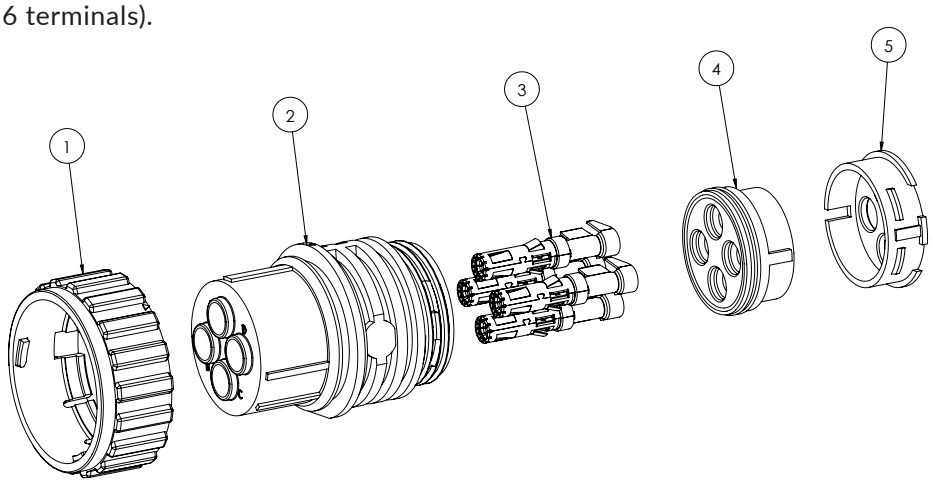

| Revision | Date | Position | Description | Owner |
|---|---|---|---|---|
| A | 2022/12/16 | N/A | Initial release | Andy Zhang |

# Contects

# 1: Product composition

Note:Terminals need to be purchased separately and are not included in the connector part number. The number of terminals varies according to the insert arrangement : 18-4 (4 terminals), 18-11 (5 terminals), and 18-15 (16 terminals).

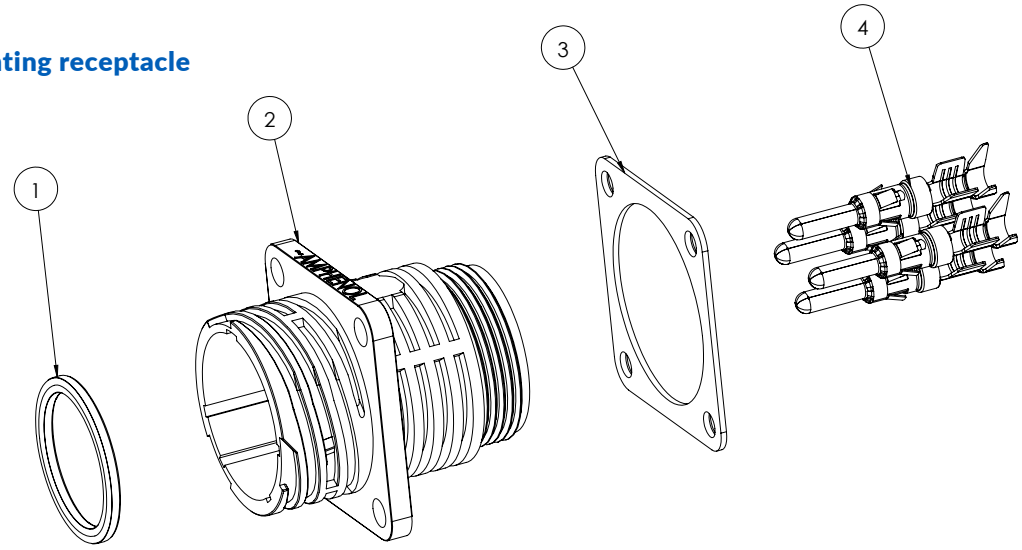
## Plug




| NO. | Description | QTY. |
|---|---|---|
| 1 | Coupling nut | 1 |
| 2 | Housing | 1 |
| 3 | #10 contact | 4 |

| NO. | Description | QTY. |
|---|---|---|
| 4 | Grommet | 1 |
| 5 | Cover | 1 |
| / | / | / |

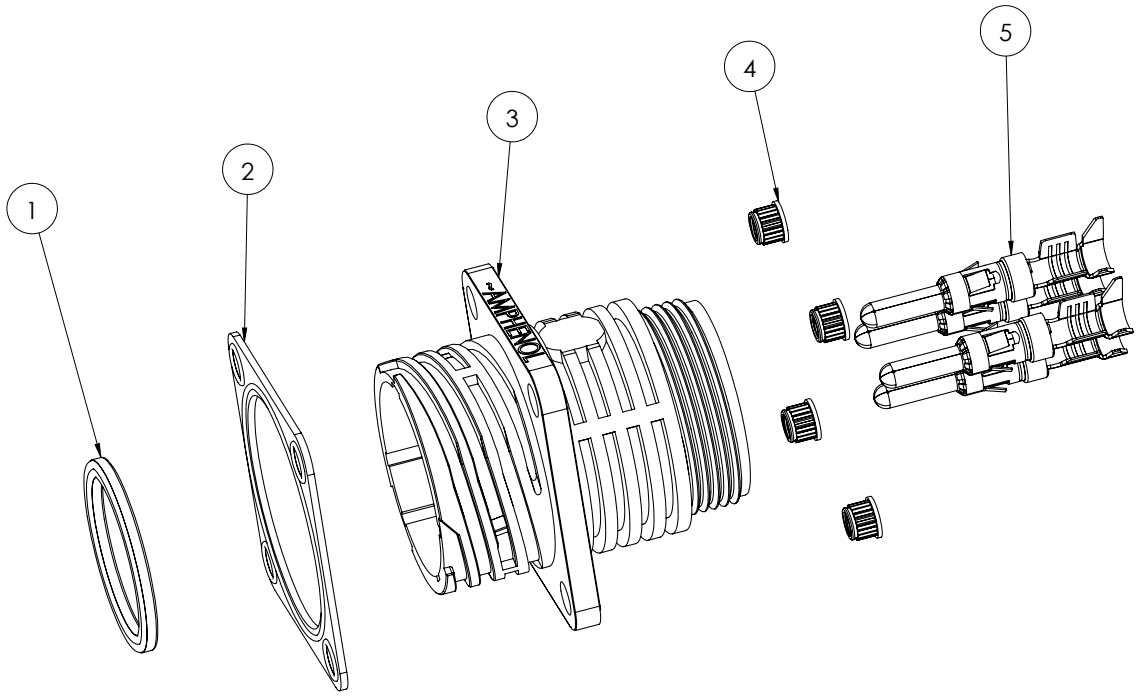
## Front mounting receptacle




| NO. | Description | QTY. |
|---|---|---|
| 1 | Coupling nut | 1 |
| 2 | Housing | 1 |

| NO. | Description | QTY. |
|---|---|---|
| 3 | Gasket | 1 |
| 4 | #10 contact | 4 |

## Rear mounting receptacle




| NO. | Description | QTY. |
|---|---|---|
| 1 | Sealing ring | 1 |
| 2 | Gasket | 1 |
| 3 | Housing | 1 |

| NO. | Description | QTY. |
|---|---|---|
| 4 | Nut | 4 |
| 5 | #10 contact | 4 |
| / | / | / |

# 2: Product assembly

**Step 1: Stripping wire**

As shown in Figure 1 and Table 1, strip the wire, and ensure that the cut surface of the insulation layer is smooth, the wire is not damaged, and the cut surface of the wire is flush.

Table 1

| Contact size | A |
|---|---|
| 10 | 6.0±0.4 |
| 12 | 6.0±0.4 |
| 16 | 4.8±0.4 |

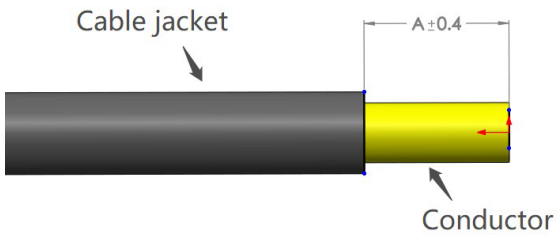



Figure 1

**Step 2: Crimping contacts**

Use the automatic crimp tool or manual crimp tool to crimp the terminal. The crimp width and height diameter of the terminal on the insulation layer shall not be larger than the aperture of the connector shell, as shown in Figure 2. (18-4 hole diameter 5.7mm, 18-11 hole diameter 4.5mm, 18-16 hole diameter 3.35mm)

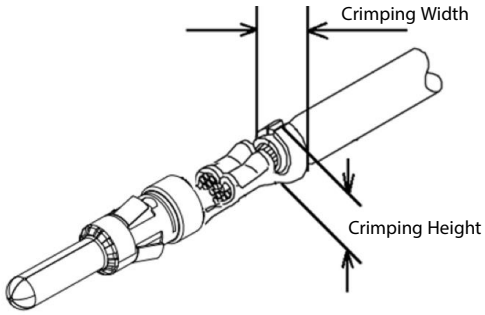



Figure 2

# 2: Product assembly continue

**Step 3: Check after crimping**

Check appearance and pulling force after crimping terminals. The appearance must not be deformed. For details, see IPC620. The pulling force should be measured according to the tension value corresponding to the actual wire diameter, which should not be lower than the requirement of tension value in Table 2.

Table 2

| Conductor | | Pulling force | |
|---|---|---|---|
| AWB | $mm^2$ | Pounds | N |
| 20AWG | 0.519 $mm^2$ | 13 | 57.9 |
| 18AWG | 0.823 $mm^2$ | 20 | 89.0 |
| 16AWG | 1.31 $mm^2$ | 30 | 133.5 |
| 14AWG | 2.08 $mm^2$ | 50 | 222.5 |
| 12AWG | 3.31 $mm^2$ | 70 | 311.5 |
| 10AWG | 5.261 $mm^2$ | 80 | 356.0 |

**Step 4: Install contacts**

As shown in Figure 3, insert the crimped terminal and cable from the end of the connector according to the holes required by the customer. If you hear a click, the terminal is installed in place. Gently pull the cable and ensure that the terminals are properly installed.

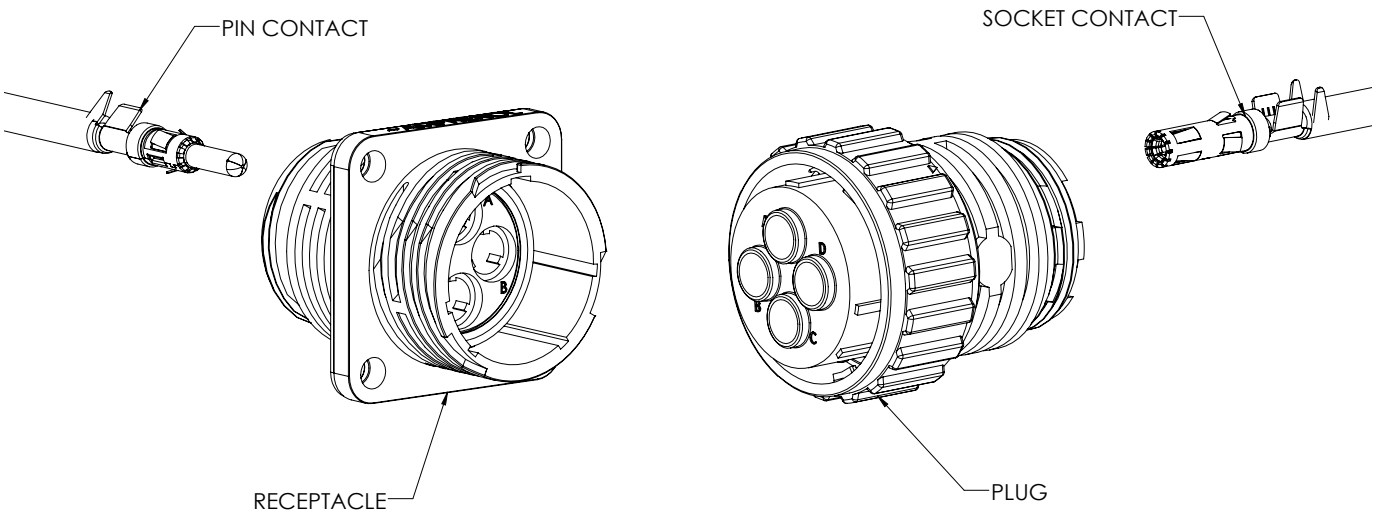



Figure 3

# 2: Product assembly continue

**Step 5: Install receptacle**

As shown in Figure 4, install the receptacle on the panel. Please select the appropriate size of the panel (as shown in Figure 5). The screw holes in the rear panel are through holes, and the screw holes in the front panel are threaded holes.

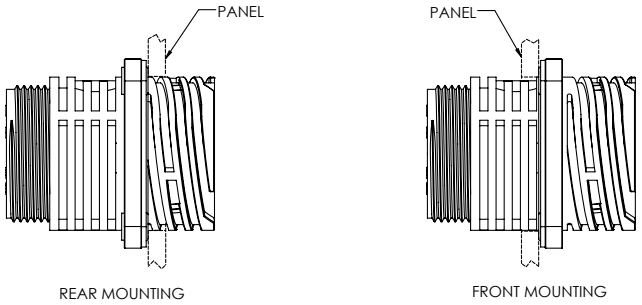
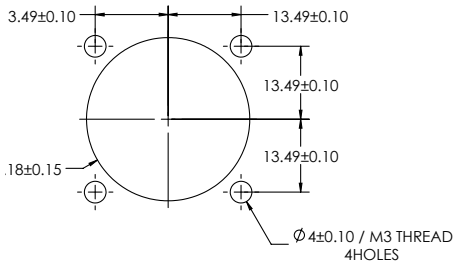



Figure 4




Size 18 Receptacle Panel cut-out (Rear-mounting/front-mounting)

Figure 5

**Step 6: Mating plug and receptacle**

Align the keys on the plug and receptacle and tighten the connecting nuts on the plugs to align them. When plug and receptacle are mated well, the triangle identifier on the coupling nut will align with the triangle identifier on the plug housing, as shown in Figure 6.

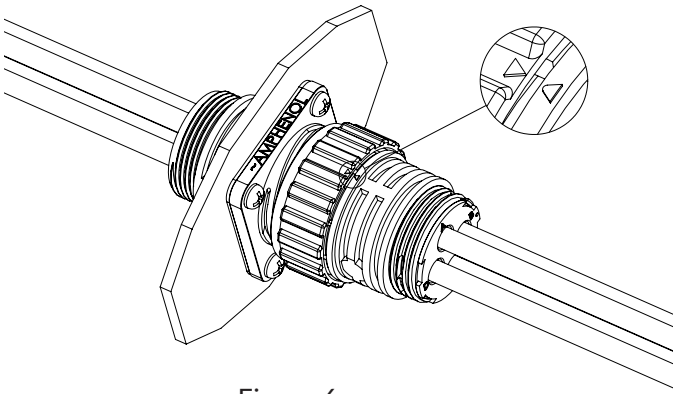
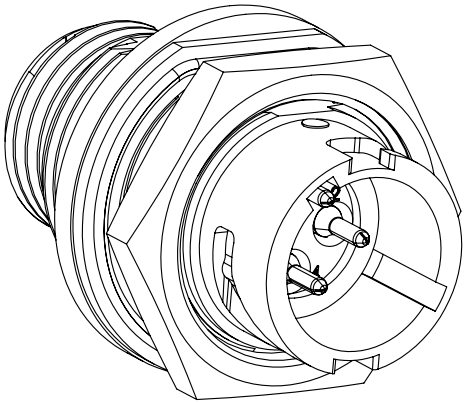
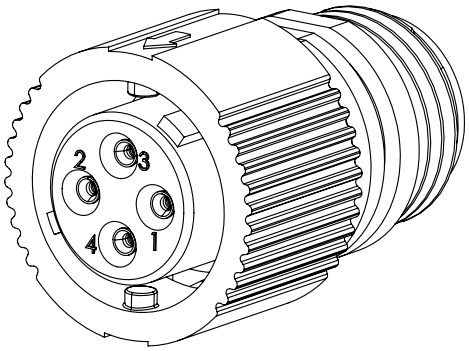
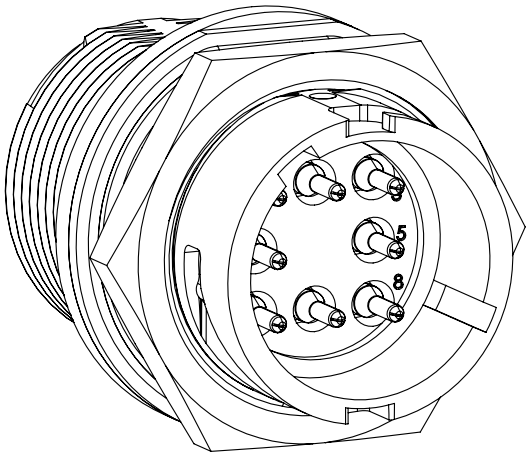


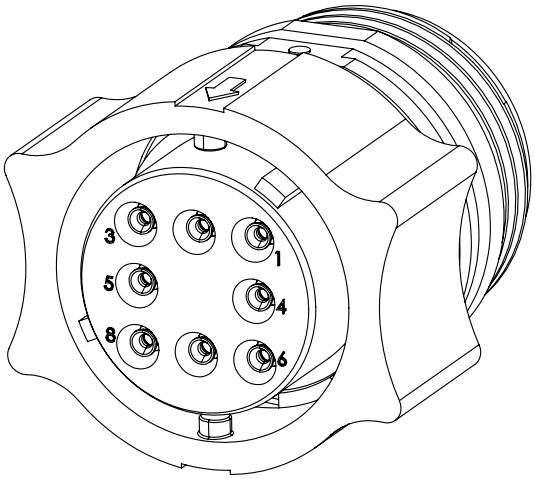

Figure 6

# Mini APC series product installation



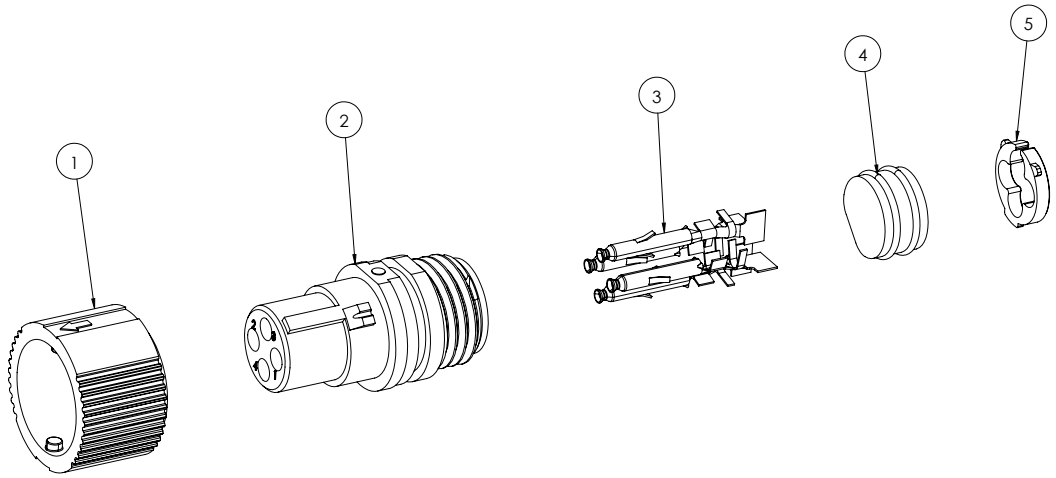

| Revision | Date | Position | Description | Owner |
|---|---|---|---|---|
| A | 2022/11/14 | N/A | Initial release | Andy Zhang |
| B | 2022/12/26 | N/A | Update figures and add checking force after crimping | Andy Zhang |

# Contects

# 1: Product composition

Note:Terminals need to be purchased separately and are not included in the connector part number.
The number of terminals varies according to the insert arrangement :
18-4 (4 terminals), 18-11 (5 terminals), and 18-15 (16 terminals).

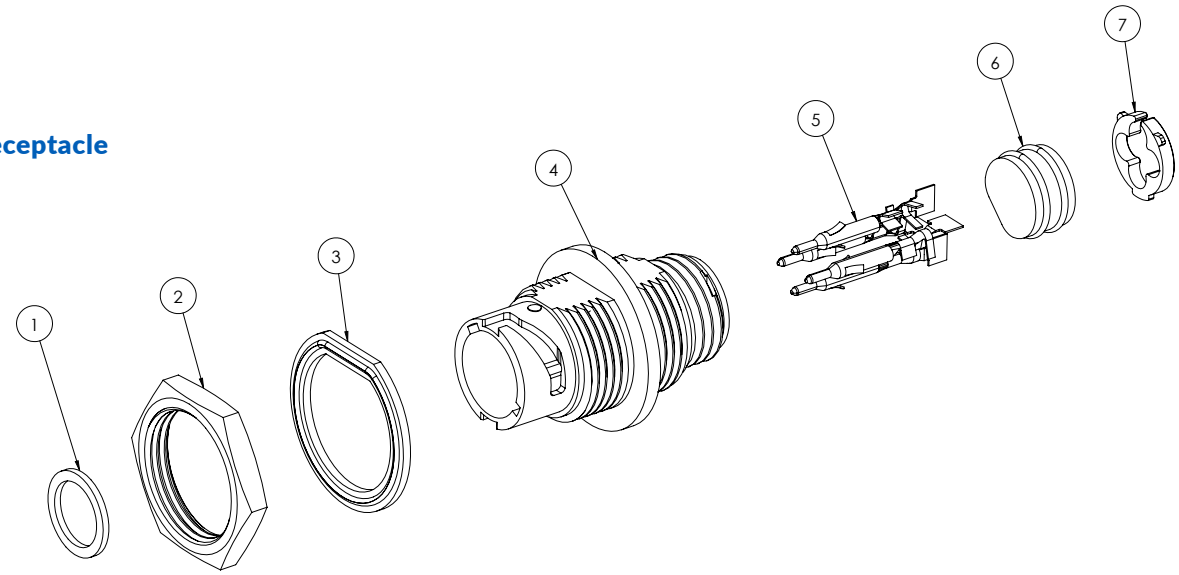
## Plug




| NO. | Description | QTY. |
|---|---|---|
| 1 | Coupling nut | 1 |
| 2 | Housing | 1 |
| 3 | Contact | 4 |

| NO. | Description | QTY. |
|---|---|---|
| 4 | Grommet | 1 |
| 5 | Cover | 1 |
| / | / | / |

## Receptacle




| NO. | Description | QTY. |
|---|---|---|
| 1 | Coupling nut | 1 |
| 2 | Housing | 1 |
| 3 | Gasket | 1 |
| 4 | Housing | 1 |

| NO. | Description | QTY. |
|---|---|---|
| 5 | Contacts | 4 |
| 6 | Grommet | 1 |
| 7 | Cover | 1 |
| / | / | / |

# 2: Product assembly

**Step 1: Stripping wire**

As shown in Figure 1, cut the wire. During cutting, ensure that the cut surface of the insulation layer is smooth, the wire is not damaged, and the cut surface of the wire is flush.

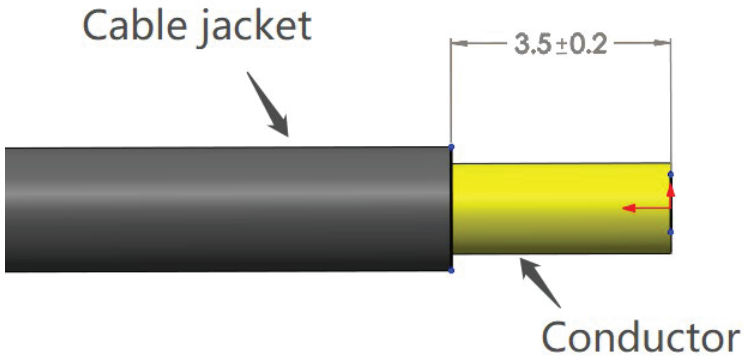



Figure 1

**Step 2: Crimping contact**

Use the automatic crimping tool or manual crimping tool to crimp the terminal. The width and height of the terminal on the insulation layer cannot be greater than 2.6mm, as shown in Figure 2.

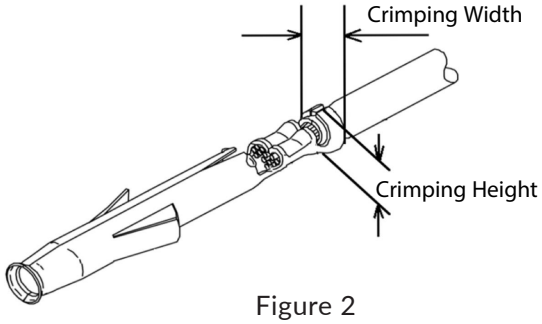



Figure 2

**Step 3: Check after crimping**

Check appearance and pulling force after crimping terminals. The appearance must not be deformed. For details, see IPC620. The pulling force should be measured according to the tension value corresponding to the actual wire diameter, which should not be lower than the requirement of tension value in Table 1.

Table 1

| Conductor | | Pulling force | |
|---|---|---|---|
| AWG | $mm^2$ | Pounds | N |
| 22 AWG | 0.324 $mm^2$ | 8 | 35.6 |
| 20 AWG | 0.519 $mm^2$ | 13 | 57.9 |
| 18 AWG | 0.823 $mm^2$ | 20 | 89.0 |

# 2: Product assembly continues

**Step 4: Install contacts**

As shown in Figure 3, insert the crimped terminal and cable from the end of the connector according to the holes required by the customer. If you hear a click, the terminal is installed in place. Gently pull the cable and ensure that the terminals are properly installed.

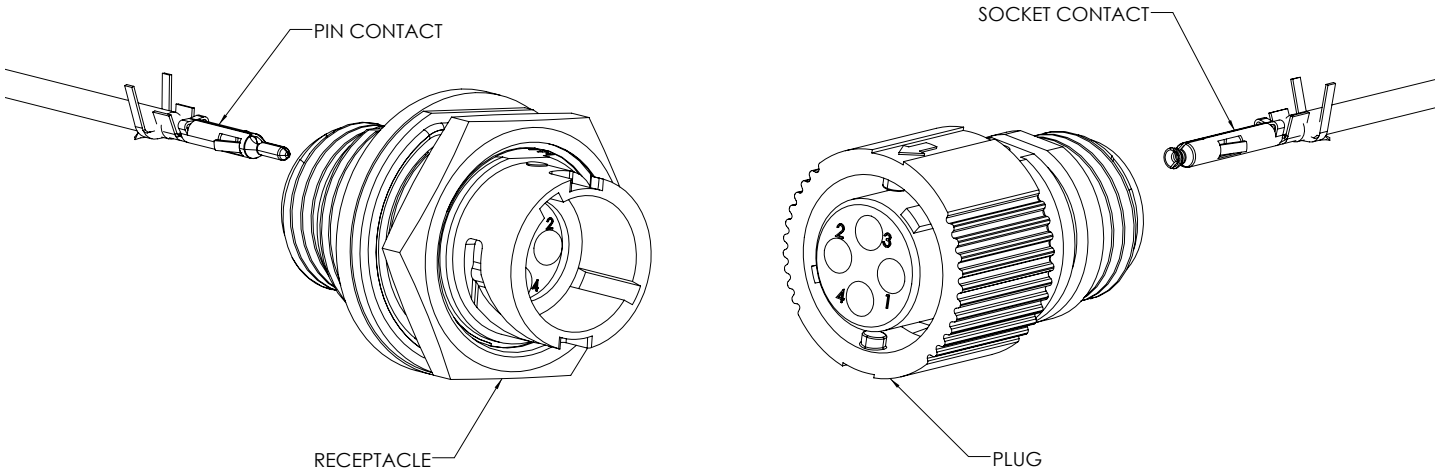



Figure 3

**Step 5: Install receptacle**

As shown in Figure 4, install the socket onto the panel, taking care to select a suitable panel size (as shown in Figure 5) to avoid installation errors or product failure.

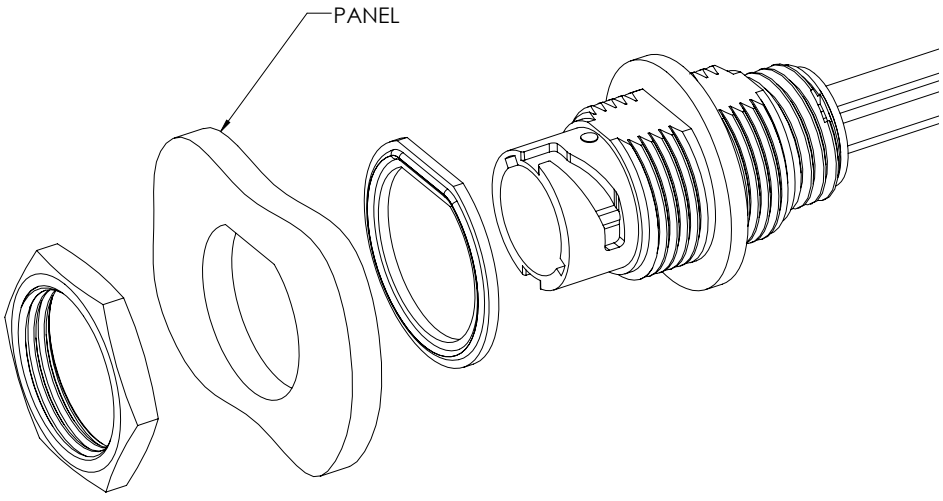
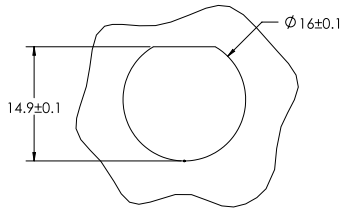
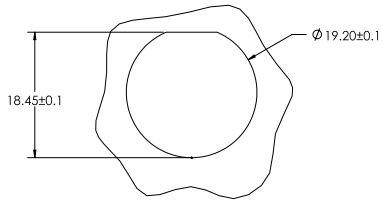



Figure 4




Size 8 Receptacle Panel Cut-out




Size 11 Receptacle Panel Cut-out

Figure 5

# 2: Product assembly continues

**Step 6: Mating plug and receptacle**

As shown in Figure 6, reset the plug first, align the arrow on the connecting nut with the mark on the plug housing, there will be an audible feedback when the reset is successful; Align the alignment marks on the plug and receptacle so that the terminals and connectors are not damaged when mating the plug and receptacle.

When you hear a click, the plug and receptacle are mated well.

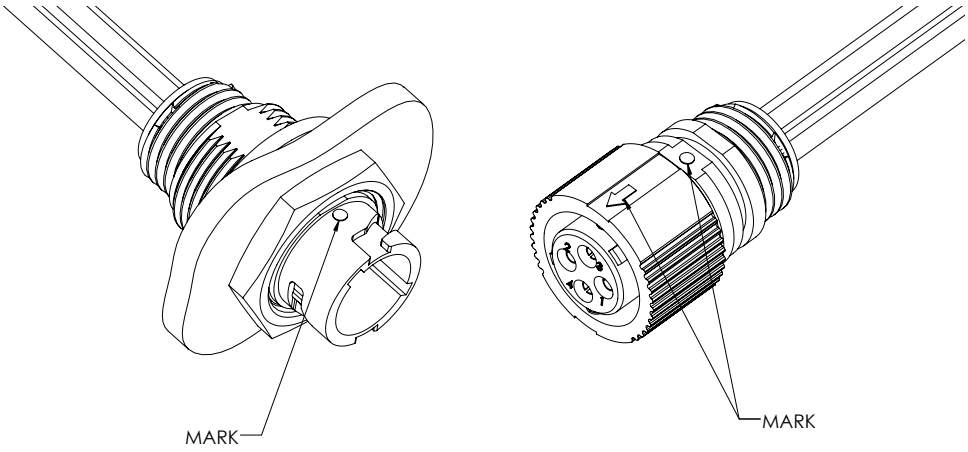
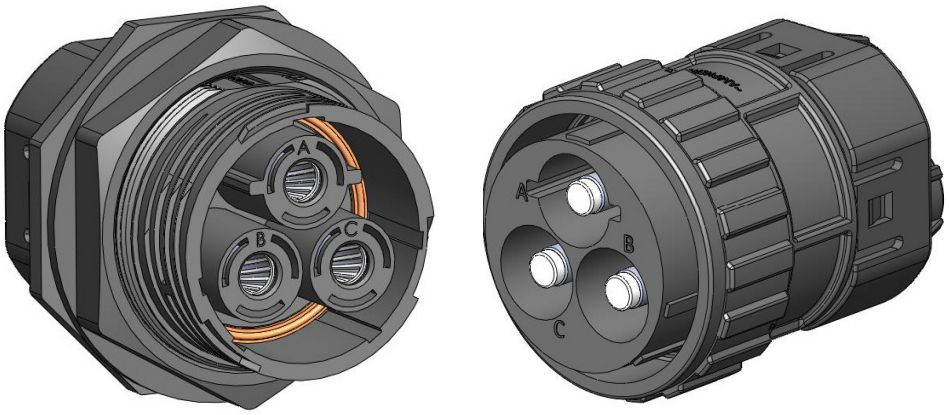



Figure 6

# APC series product installation (24-3)




**Prepared by:** Andy Zhang

**Reviewed by:** Foster Peng

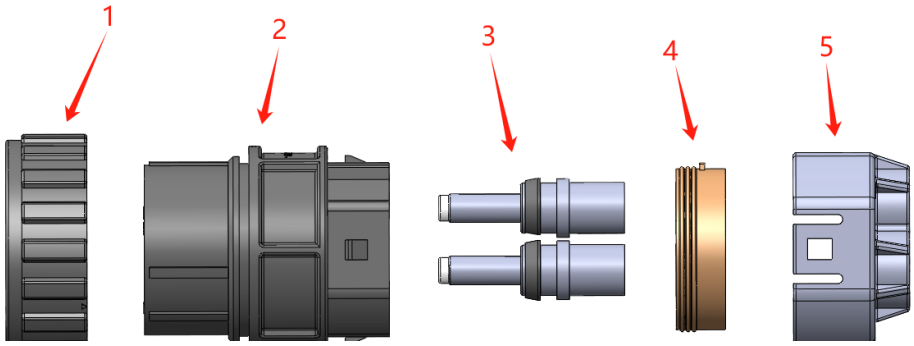
**Approved by:** Ran Xiao

# Contents

# 1. Product composition

Note: Terminals need to be purchased separately and are not included in the connector material number.

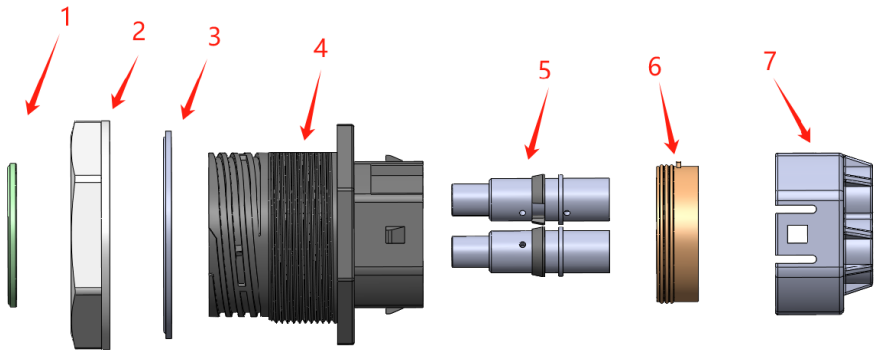
### Plug




| No. | Description | QTY. |
|---|---|---|
| 1 | Coupling Nut | 1 |
| 2 | Housing | 1 |
| 3 | #4 Contacts | 3 |

| No. | Description | QTY. |
|---|---|---|
| 4 | Grommet | 1 |
| 5 | Cover | 1 |
| / | / | / |

### Receptacle




| No. | Description | QTY. |
|---|---|---|
| 1 | Sealing Nut | 1 |
| 2 | Nut | 1 |
| 3 | Gasket | 1 |
| 4 | Housing | 1 |

| No. | Description | QTY. |
|---|---|---|
| 5 | Contacts | 3 |
| 6 | Grommet | 1 |
| 7 | Cover | 1 |
| / | / | - |

# 1. Product Assembly

## (1) Assembly Preparation

As shown in Figure 1, pass the cable sequentially through the cover and the grommet. Note that the correct installation requires the boss of the grommet and the boss of the cover to be oriented as shown in Figure 2. Otherwise, the cover may not be able to assemble with the connector housing during subsequent installation. Alternatively, correct installation can be confirmed by checking whether the boss of the cable seal is aligned with the "A" hole, as shown in Figure 3. (Note: The assembly preparation steps for plugs and receptacles are identical.)

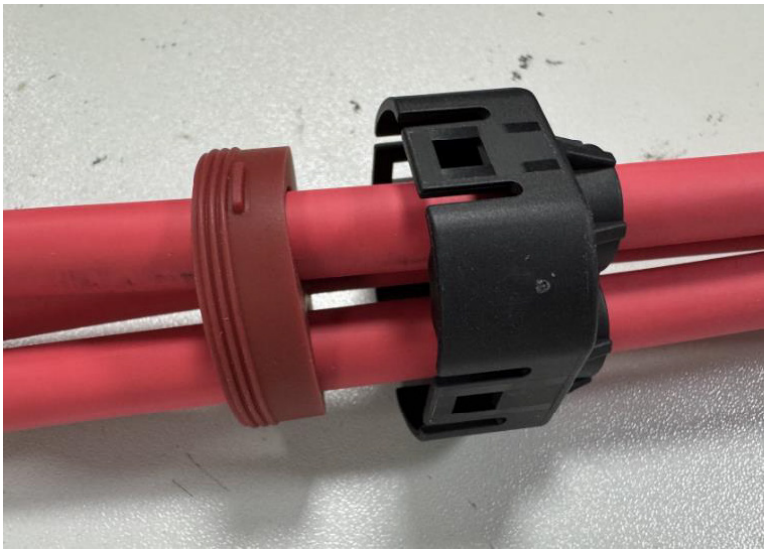


Figure 1

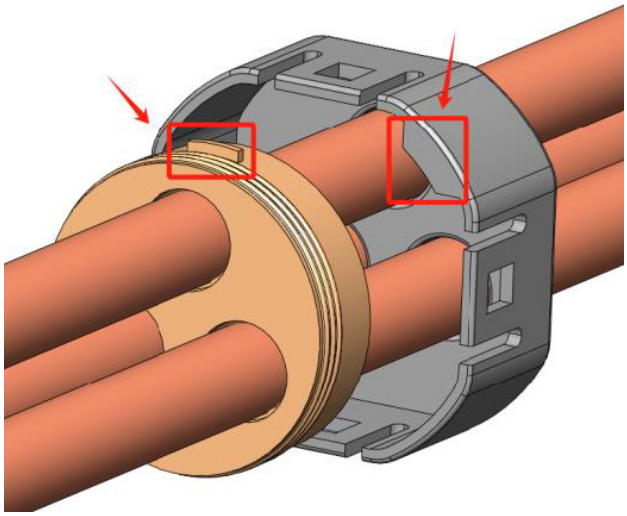


Figure 2

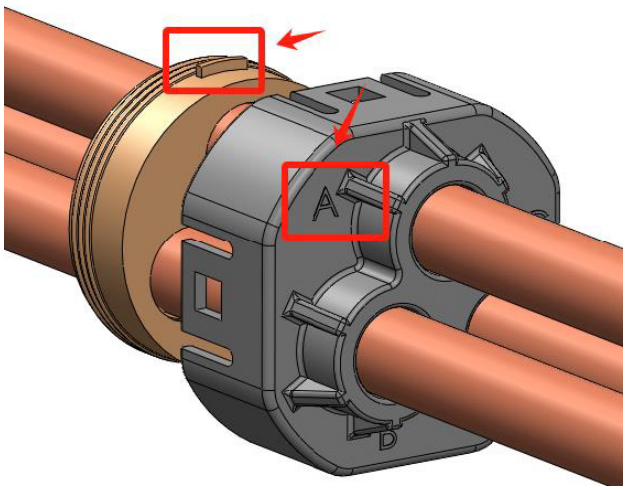



Figure 3

## (2) Stripping Cable

As shown in Figure 4 & Table 1, cut the cable. Ensure that the insulation layer is cut cleanly and evenly, the conductors remain undamaged, and the end faces of the conductors are flush. Refer to IPC620 Class3, the cable core is cut and stop proceed to the next step.

Table 1

| Contact Size | Strip Length "A" |
|---|---|
| 4 | 12±0.4 |

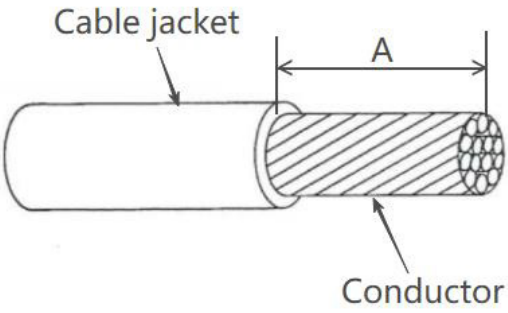


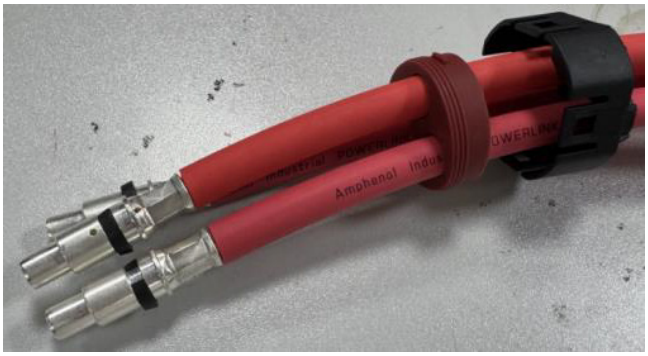

Figure 4

## (3) Crimping Contact

Insert the trimmed cable conductor into the contact until it is fully flush against the cable insulation. Crimp the contact using a crimping machine, ensuring that the conductor is visible through the inspection hole of the contact. The cable specifications and recommended crimping parameters are as follows.

Note: The recommended conductor crimping dimensions are for reference only. Customers shall adjust the crimping dimensions based on the cable specifications and crimping tools used, validated through crimping verification tests.

| Cable Size | Recommended conductor crimping dimensions for reference (Crimping height H - Crimping width W) | Recommended minimum pulling force after crimping |
|---|---|---|
| 25mm² | 7.0±0.1mm | 600N |



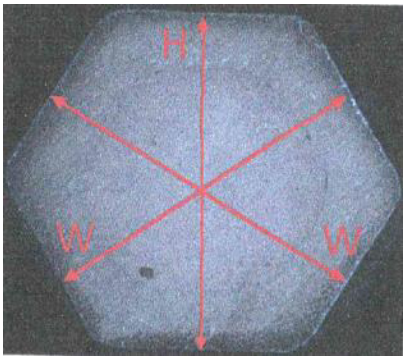



Figure 5

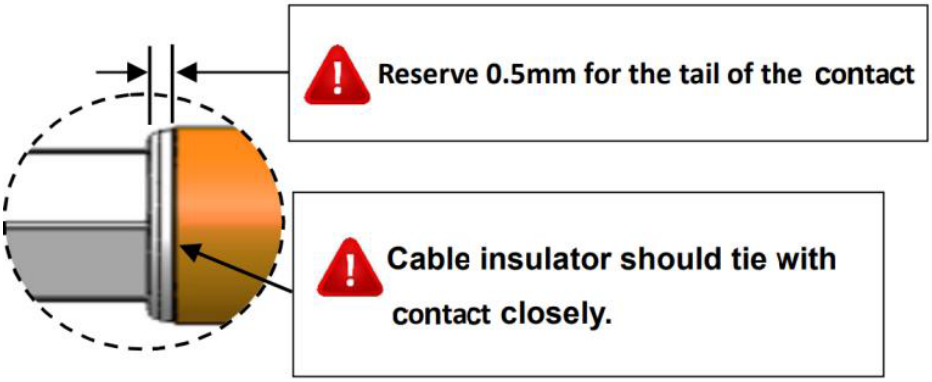



Figure 6

## (4) Install Contact

As shown in Figure 7, insert the cables with crimped contacts into the corresponding holes in the order indicated by the housing hole markings. Ensure that the boss of the grommet with the groove of the housing in the same direction when installing the contacts.

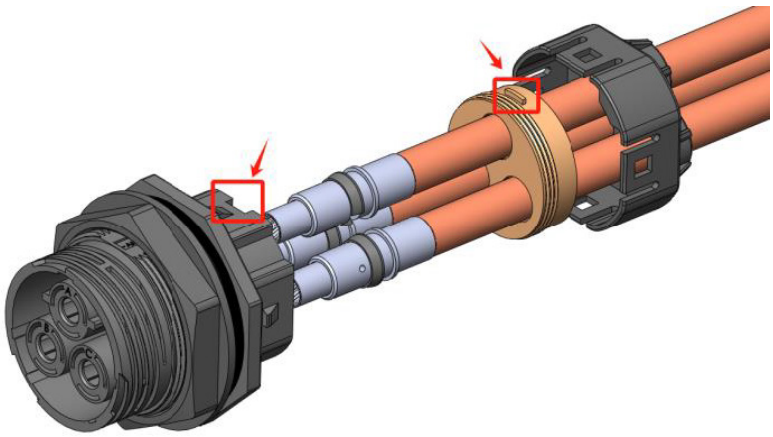


Figure 7

After inserting the contact into the housing, a clicking sound indicates that the contact is properly seated. Gently pull the cable to ensure there is no significant retraction of the contact, confirming it is securely locked in place. Then, install the grommet and the cover into the housing in sequence (see Figure 8), making sure that all four clips of the cover are fully engaged.

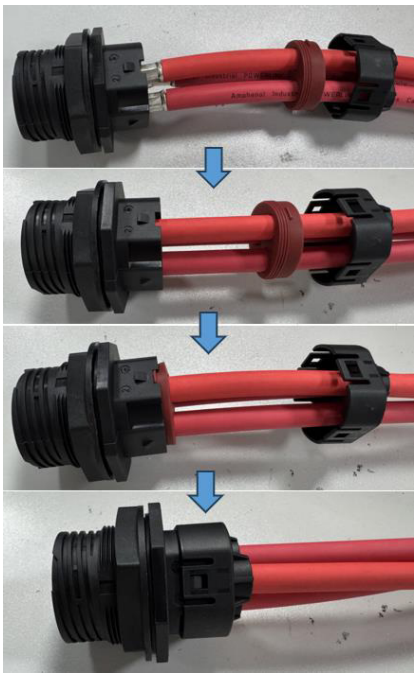


Figure 8

## (5) Install Receptacle

As shown in Figure 9, install the receptacle onto the equipment panel, ensuring the appropriate backplate size is selected (see Figure 10). The receptacle adopts a rear-mounting method. Please note that the ribbed side of the sealing gasket must face the mounting panel. The installation torque for the hex nut is 7.4~8.4 N.m.

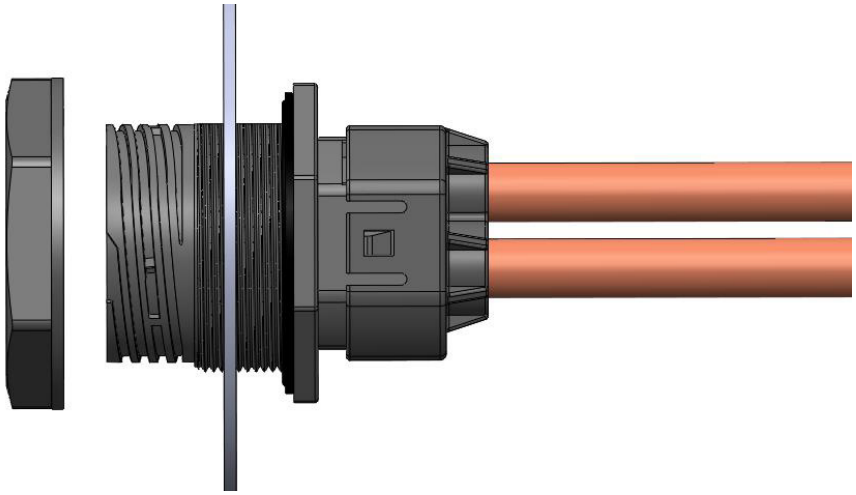


Figure 9

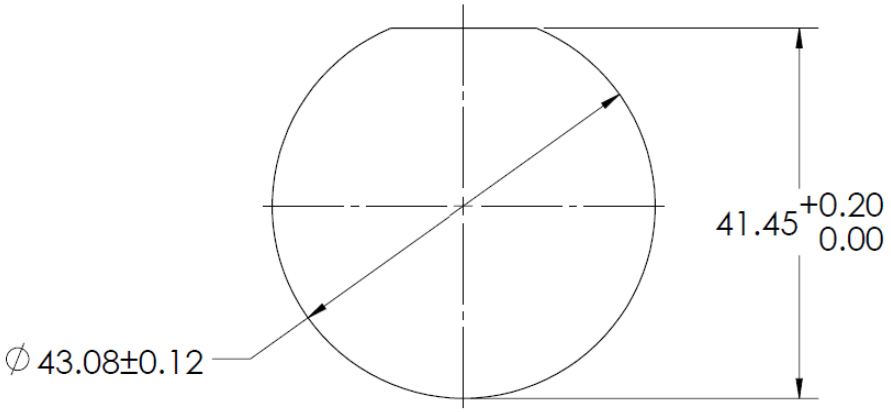



Figure 10, Receptacle Panel Cut-Out

## (6) Mating, Separating Plug and Receptacle

When mating the plug and receptacle, align the key and keyway on the plug and receptacle, then push the plug toward the receptacle and tighten the coupling nut on the plug clockwise to complete the mating. When a distinct click is felt, the plug and receptacle are properly mated. At this point, the triangular mark on the coupling nut should be roughly aligned with the circular mark on the plug housing, as shown in Figure 11.

To separate the plug and receptacle, rotate the coupling nut on the plug counterclockwise to disengage them, as shown in Figure 12.

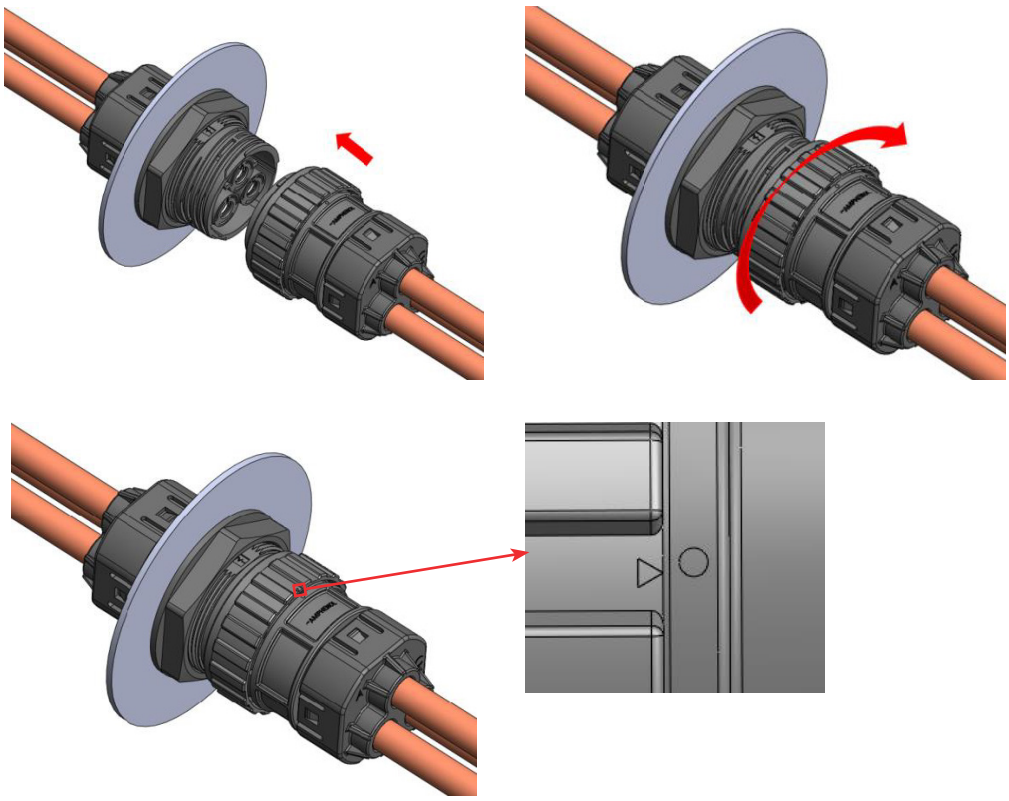


Figure 11

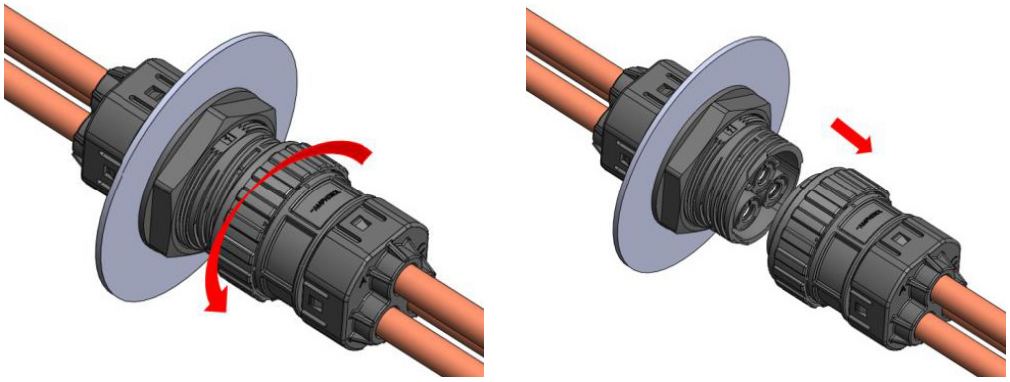


Figure 12

Note: If the plug is tilted to the receptacle and mating, it may cause damage to the connector (Figure 13).

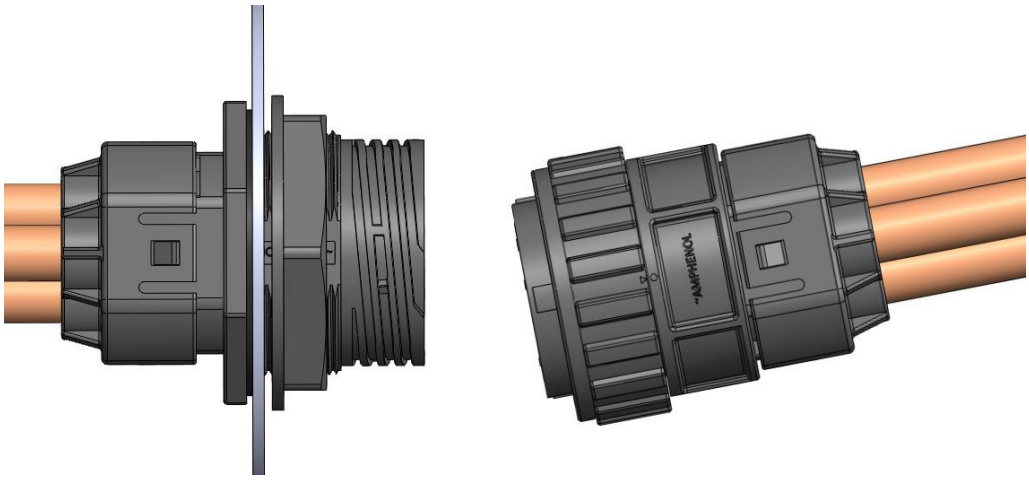



Figure 13

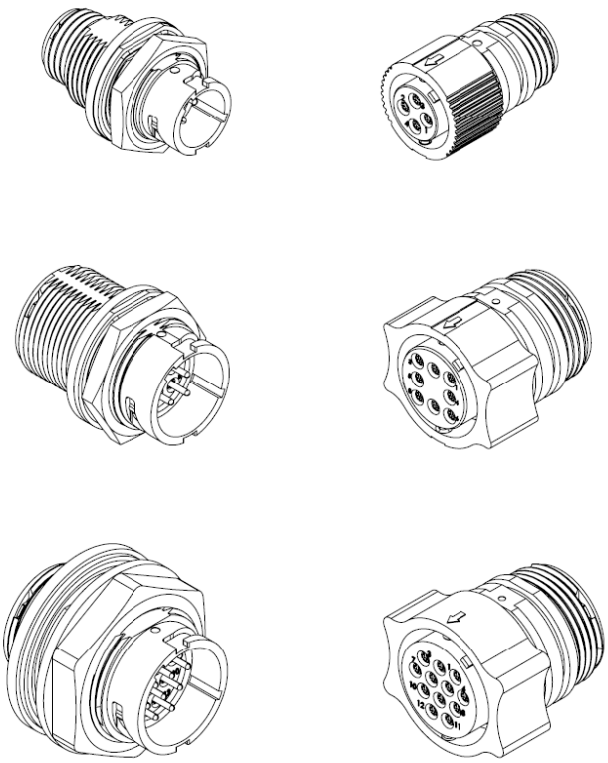
# 3. Appendix

N/A

# 4. Document change record

| 版本 | 日期 | 位置 | 描述 | 编制者 |
|---|---|---|---|---|
| A | 2025/10/9 | N/A | Initial Release | Andy Zhang |

# Mini APC Series Product Installation



**Prepared by:** Andy Zhang

**Reviewed by:** Foster Peng

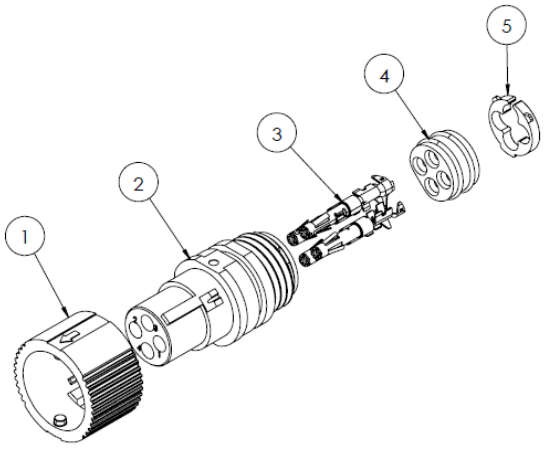
**Approved by:** Ran Xiao

# Contents

# 1. Product composition

Note: Terminals need to be purchased separately and are not included in the connector material number. The number of terminals varies according to the insert arrangement : 8-4 (4 pins), 11-8 (8 pins), 11-9 (9 pins) and 12-12 (12 pins).

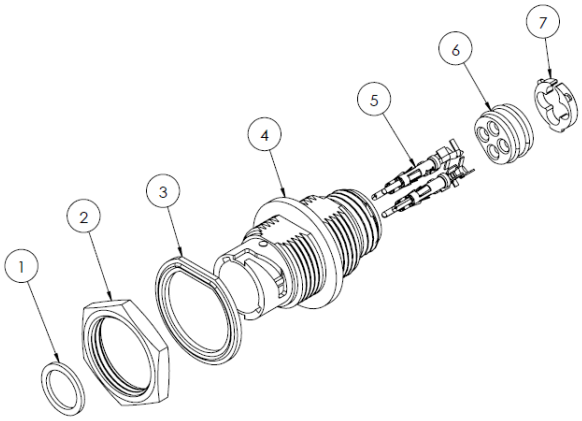
**Plug**




| No. | Description | QTY. |
|---|---|---|
| 1 | Coupling Nut | 1 |
| 2 | Housing | 1 |
| 3 | Contacts | See note |

| No. | Description | QTY. |
|---|---|---|
| 4 | Grommet | 1 |
| 5 | Cover | 1 |
| / | / | / |

**Receptacle**




| No. | Description | QTY. |
|---|---|---|
| 1 | Sealing Ring | 1 |
| 2 | Nut | 1 |
| 3 | Gasket | 1 |
| 4 | Housing | 1 |

| No. | Description | QTY. |
|---|---|---|
| 5 | Contacts | See note |
| 6 | Grommet | 1 |
| 7 | Cover | 1 |
| / | / | - |

# 2. Product Assembly

## (1) Stripping Cable

As shown in Figure 1, cut the cable. During cutting, ensure that the cut surface of the insulation layer is smooth, the cable is not damaged, and the cut surface of the cable is flush.
Refer to IPC620 Class3, the cable core is cut and stop proceed to the next step.

| Contact size | Strip length “A” |
|---|---|
| 20 | 3.7±0.2 |

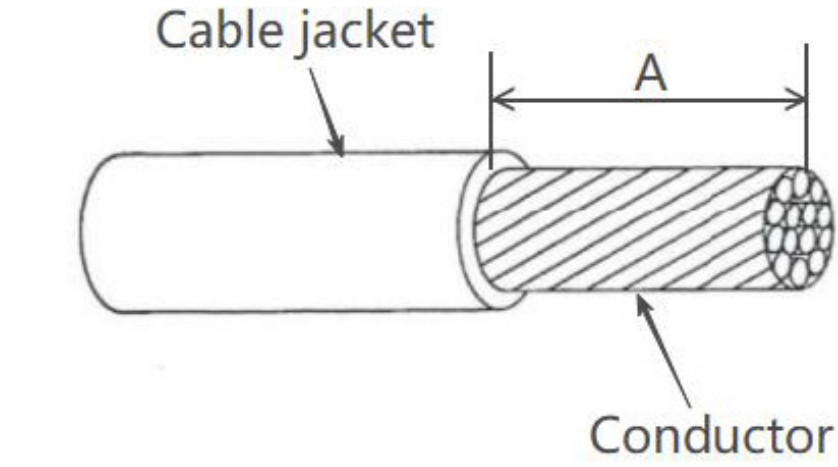



Figure 1

## (2) Crimping Contact

The recommended cable is 22 to 18AWG. The recommended cable outer diameter is 1.3 to 2.1mm. Use the automatic crimping tool or manual crimping tool to crimp the contact. Recommended conductor crimping dimensions, please refer to Table 2.

The crimping width and height diameter of the contact on the insulation layer shall not be larger than the aperture of the connector housing (2.6mm), as shown in Figure 2.

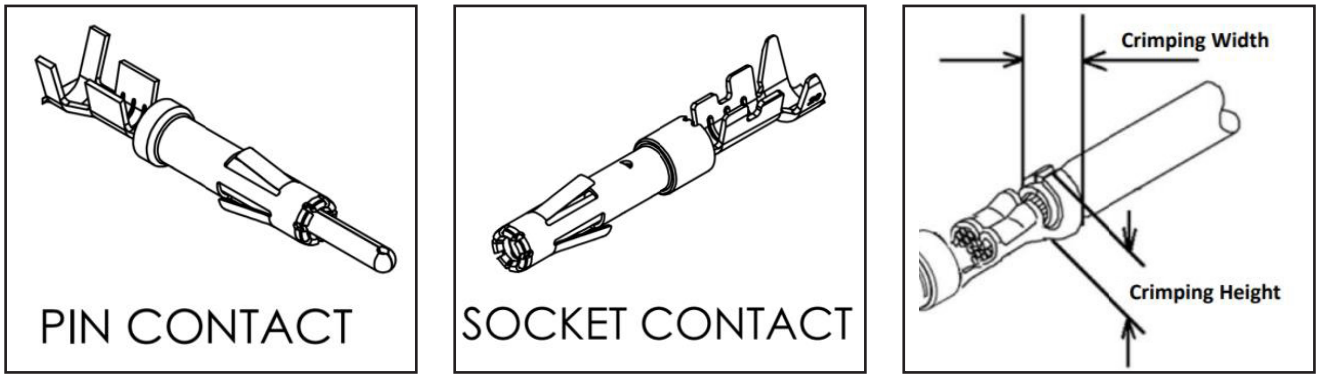



Figure 2

Table 2

| Cable size | Cable O.D. | Recommended conductor crimping dimensions for reference | | Recommended minimum pulling force after crimping |
|---|---|---|---|---|
| | | Crimping height "H" | Crimping width "W" | |
| 20AWG (UL1180 style) | 1.7mm REF | 1.25±0.1mm (Pin Contact) | 1.65±0.1mm (Pin Contact) | 57.9N |
| | | 1.25±0.1mm (Socket Contact) | 1.75±0.1mm (Socket Contact) | |

Note: The recommended conductor crimping dimensions are for reference only. Customers shall adjust the crimping dimensions based on the cable specifications and crimping tools used, validated through crimping verification tests.

## (3) Check after Crimping

Check appearance and pulling force after crimping contacts. The appearance must not be deformed. For details, see IPC620. The pulling force should be measured according to the tension value corresponding to the actual cable diameter, which should not be lower than the requirement of tension value in Table 3.

Table 3

| Conductor | | Pulling force | |
|---|---|---|---|
| AWG | $mm^2$ | Pounds | N |
| 22AWG | 0.324 $mm^2$ | 8 | 35.6 |
| 20AWG | 0.519 $mm^2$ | 13 | 57.9 |
| 18AWG | 0.823 $mm^2$ | 20 | 89.0 |

## (4) Install Contact

As shown in Figure 3, insert the crimped contact and cable from the end of the connector according to the holes required by the customer. If you hear a click, the contact is installed in place. Gently pull the cable and ensure that the contacts are properly installed.

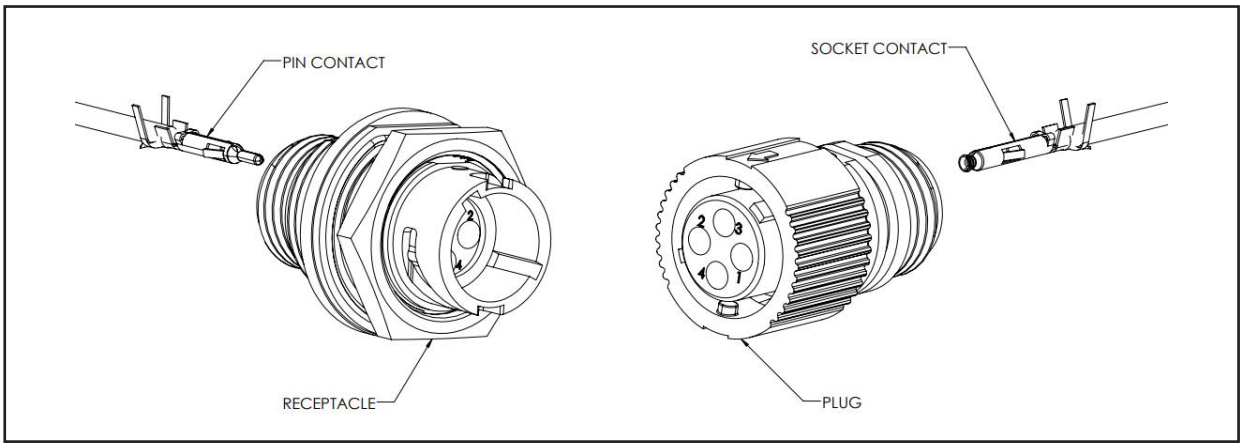



Figure 3

Note: Since the holes of the old version of the plug and receptacle end sealing grommet are blind holes, you can prick the blind hole with a wire or cone tool before assembling the contacts. Be careful not to scratch the sealing grommet and cause the seal to fail. The function of the blind hole of the sealing grommet is waterproof. When the customer is used, it only needs to prick the hole that needs to be used, and the hole that is not used does not need to be pricked. If the client requires air tightness to prevent blind holes from cracking due to high air pressure, use sealing plugs to seal unused holes, see Figure 4. (The new version of the sealing grommet is through the hole, reducing the steps of piercing the blind hole and reassembling, but the hole that is not used needs to be sealed with a sealing plug)


Figure 4

If the cable harness is soft and difficult to install during installation, use the recommended pin tool to assist the installation, as shown in Figure 5 and Figure 6.

Figure 5

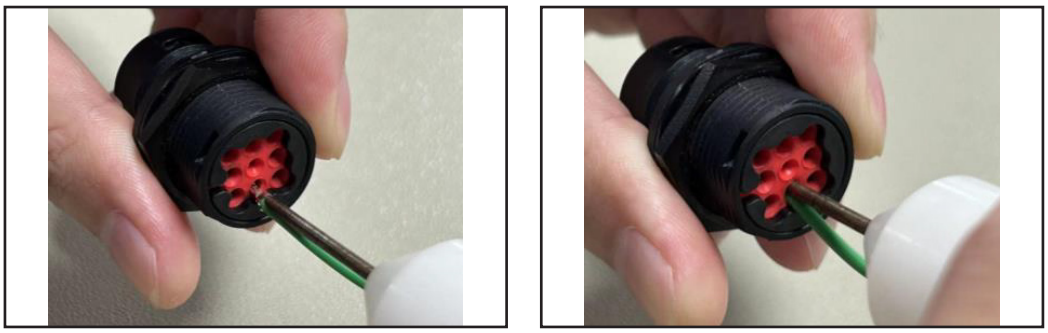


Figure 6

# (5) Install Receptacle

As shown in Figure 7(front mounting) and Figure 8 (rear mounting), install the receptacle onto the backplane, taking care to select a suitable cut-out dimension (as shown in Figure 9) to avoid installation errors or product failure. Note that the stiffened side of the sealing ring faces the direction of the mounting panel. Hex nut torque: 1.3~2.5N.m.

Size 12-12 only have front mounting type receptacle (Figure 7).

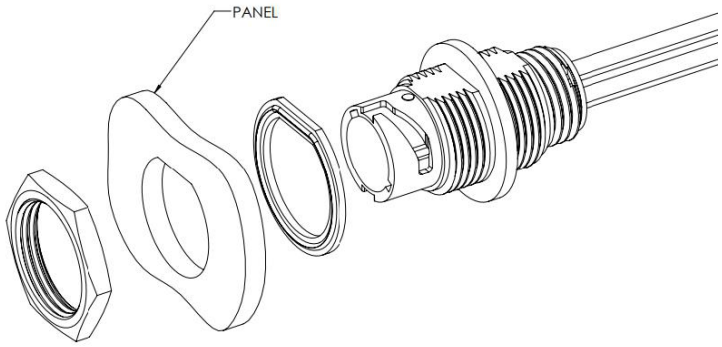



Figure 7

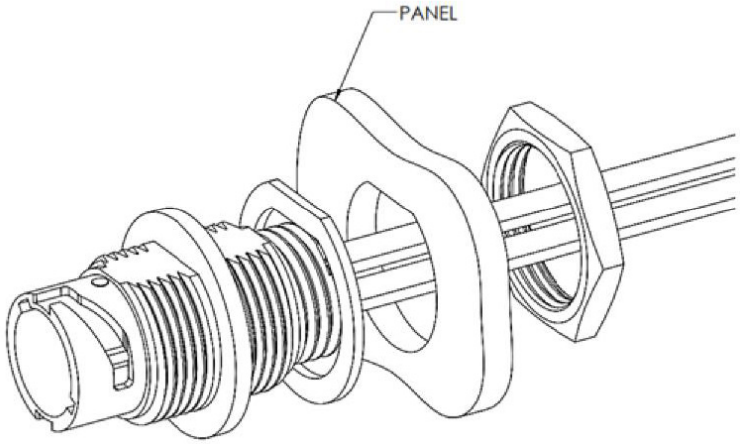
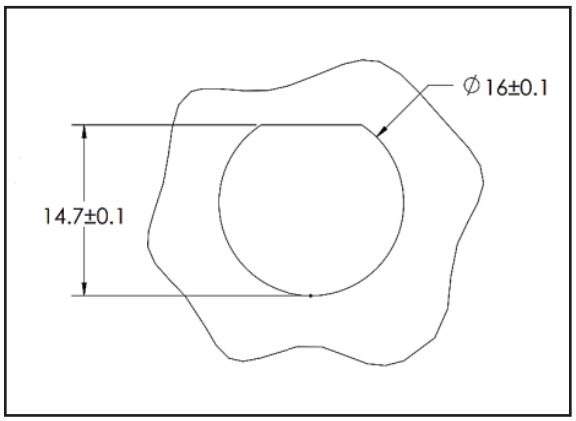
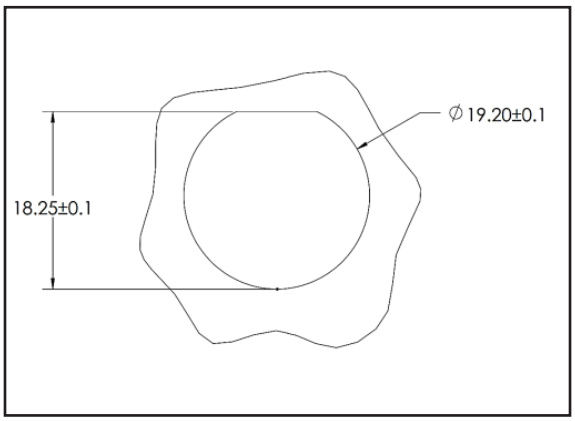


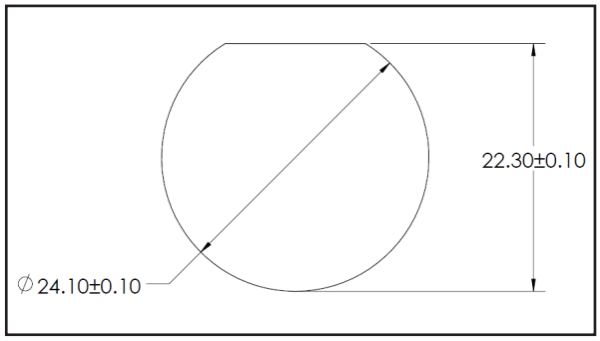

Figure 8




Size 8 Receptacle Panel Cut-out




Size 11 Receptacle Panel Cut-out




Size 12 Receptacle Panel Cut-out
Figure 12

## (6) Mating plug and receptacle

Before mating, make sure that the three white marks on the receptacle and plug housing are aligned, as shown in Figure 10. If the arrow on the coupling nut and the white mark on the plug housing are not aligned, reset the plug first, turn the coupling nut clockwise (facing the direction of the plug) until the white mark is aligned, and there will be a clicking sound when the reset is successful (see Figure 11).

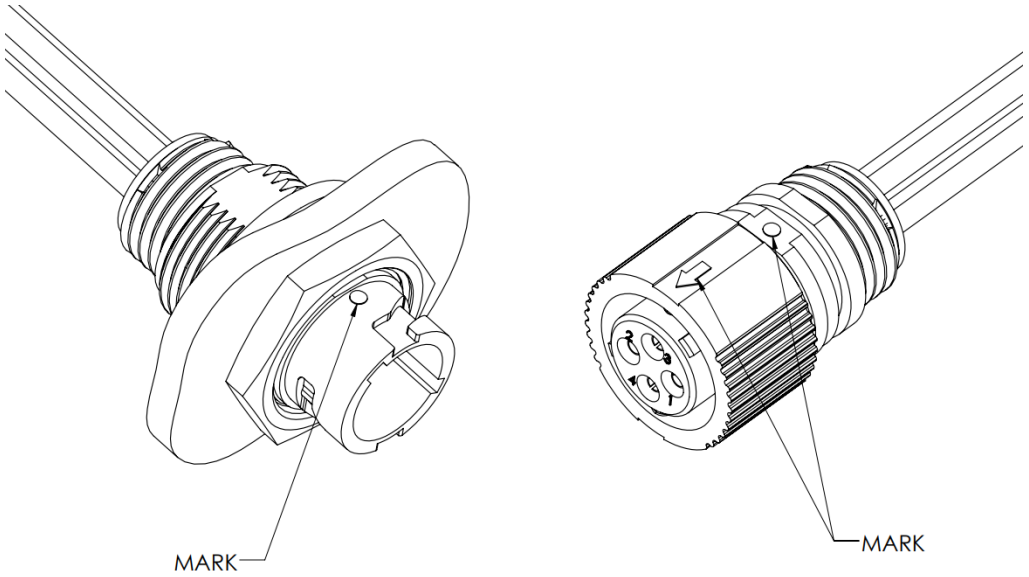



Figure 10

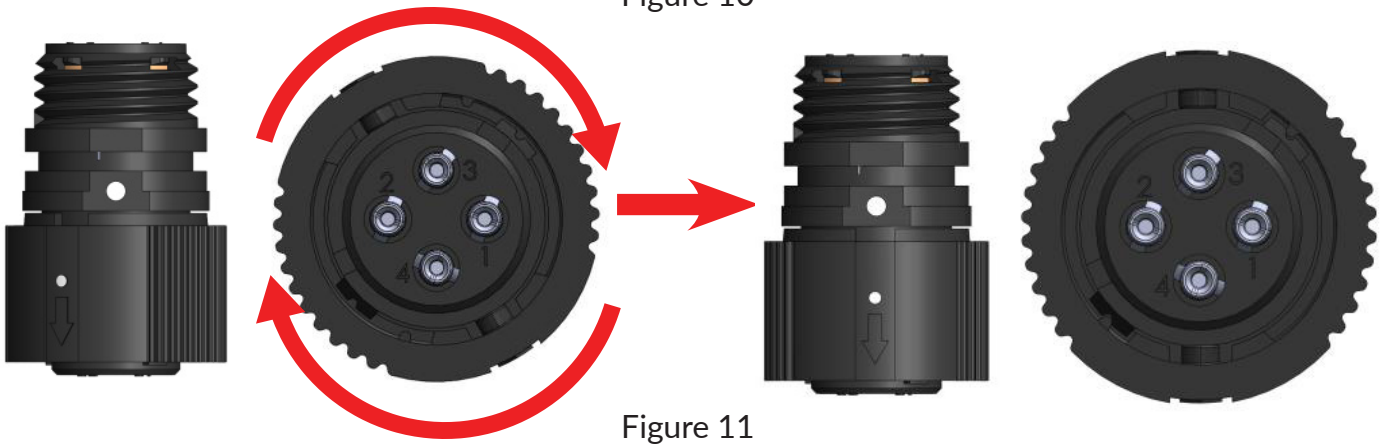



Figure 11

Align the alignment marks on the plug and receptacle (Figure 12) so that the contacts and connectors are not damaged when mating the plug and receptacle. Rotate the coupling nut clockwise along the keyway on the receptacle about 90 degrees (as seen from the end of the plug). When a click is felt, the plug and receptacle are mated (Figure 13).

Figure 12

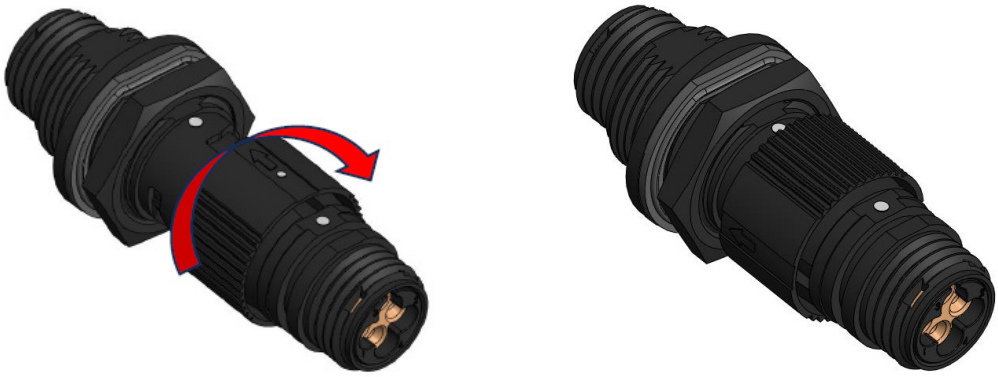


Figure 13

Note: If the plug and receptacle are not reset first, or the plug is tilted to the receptacle and mating, it may cause damage to the connector (Figure 14).

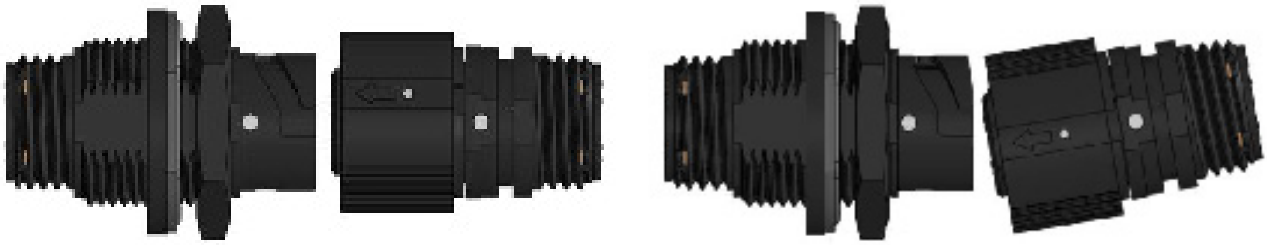


Figure 14

## (7) Seperating Plug and Receptacle

Turn the plug counterclockwise to turn the coupling nut about 90 degrees (watching from the direction of the plug tail). When you feel a click, the plug is reset to the initial state. At this time, pull out the plug to complete the separation (Figure 15).

Note: If the plug has not been screwed to the initial state (no click is heard), strong separation of the connector at this time may cause connector damage.

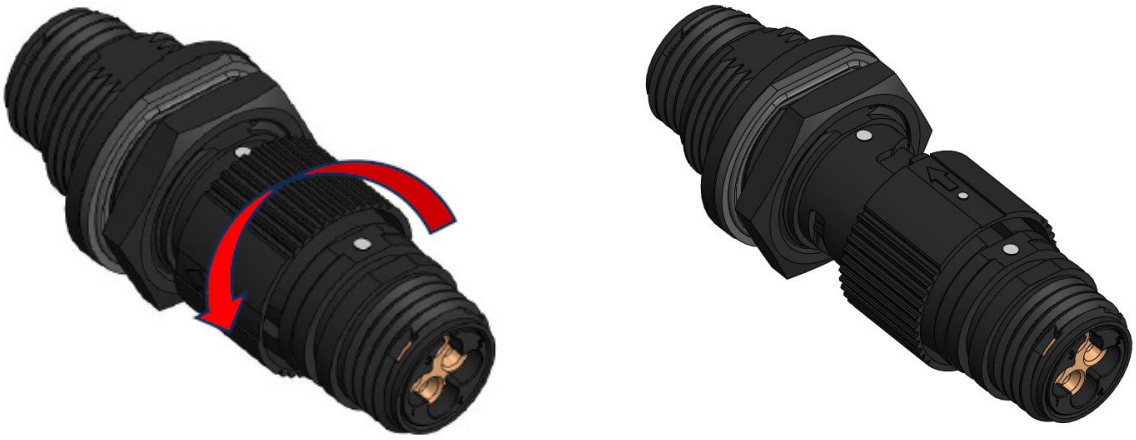


Figure 15

## (3) Appendix

N/A

## (4) Document Change Record

| Rev. | Date | Position | Description | Owner |
|---|---|---|---|---|
| A | 2022/11/14 | N/A | Initial release | Andy Zhang |
| B | 2022/12/26 | N/A | Update figures and add checking force after crimping | Andy Zhang |
| C | 2023/5/31 | N/A | Update the panel cut-out | Andy Zhang |
| D | 2023/6/28 | Page 5 | Added the description of the connector front mounting | Andy Zhang |
| E | 2023/10/12 | Page 4 | Added the description of piercing blind holes before assembling contacts to facilitate subsequent contact installation | Andy Zhang |
| F | 2023/10/16 | N/A | Supplementary description | Andy Zhang |
| G | 2024/1/16 | Page 6, 7, 8 | Add plug and receptacle mating details | Andy Zhang |
| H | ~~2024/4/20~~ | ~~Page 4~~ | ~~Increase the amount of alcohol soaked before assembling the female contact to effectively reduce the risk of introducing rubber debris into the terminal contact position~~ | Andy Zhang |
| I | 2024/11/28 | Page 4 | Added description of new through-hole sealing grommet | Andy Zhang |
| J | 2025/9/26 | N/A | Add mini APC series size 12 information | Andy Zhang |