### APPLICATION SPECIFICATION

**Pico-Clasp 1.00MM PITCH WIRE TO BOARD**

#### DUAL TYPE

<table>
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<tr>
<th>HARNESS SIDE</th>
<th>Product Name</th>
<th>Part Number</th>
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<tr>
<td></td>
<td>RECEPTACLE HOUSING</td>
<td>501189 series</td>
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<td></td>
<td>RECEPTACLE TERMINAL</td>
<td>501193**00</td>
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<tr>
<td></td>
<td>APPLICABLE WIRE（※）</td>
<td>AWG#28～32</td>
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<td>APPLICABLE CRIMP DIE MODEL No.（※）</td>
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<th>S/T TYPE</th>
<th>R/A TYPE</th>
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<td>203566 series</td>
<td>203567 series</td>
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※ Refer to CS-501193-001 for further details.

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**Before using**

- Read this manual before using connectors.
- Keep this manual handy for later reference.
- The displays and illustrations shown in this manual may differ from the actual products by printings.
- The contents of this manual are subject to change without notice.
- Please contact us if you have any concerns related to this manual.

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**REVISED**

168346
17/11/27
KYAMADA02

**DATE:**

2016/04/12

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**DOCUMENT NUMBER:**

5011890000

**DOC. TYPE:**

PS

**DOC. PART:**

A01

**CUSTOMER:**

GENERAL

**SHEET:**

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### [2.Instructions]

#### 2-1. Product exterior

1. There is no influence on this product performance though the black spots or bubbles etc. may be confirmed with its plastic part, and the color may be different (discoloration by secular change etc.).
2. Slide marks may sometimes appear in plating parts of this product, however, there is no impact on its function.
3. Resin and terminal plating may have some changes in color under reflow condition, however, there is no negative impact on its function.
4. Connectors may be damaged by applying force in the machines. Check before using.

#### 2-2. Applicable wire and crimping tooling

1. Please contact us since our guarantee is void when a product is used with wires out of application ranges specified in the product specifications.
2. Our guarantee is void when a product is used with a tooling which is not specified by Molex.
3. The recommended electric wires are tin plating. Check separately about the use of other electric wires.

#### 2-3. Storage before harness and the surface mount process

1. Keep a product under our packing condition, normal temperature and humidity avoiding direct sunlight. Any damages and changes in color may cause material deterioration.
2. Keep a product without any external forces during storage. This may cause jammed or changes in shape.
3. Take note to prevent shocks or dropping products during handling. This also may cause damages or changes in shape.
4. First-in first-out method of stocks is recommended.
5. Keep a product in original packaging before using.
6. A product should be inspected its appearance and solder performance before using if it is expired the duration of our recommended use.
2-4. Harness process and surface mount process instruction.

1. Confirm if a product, crimping machine, crimping condition and its applicable wire are equal to our product drawing as well as crimping specifications before using.

2. Beware of unintended damages caused by dust, debris or foreign objects before using a product. It may cause the unsatisfied result of the insertion performance to the housing and electric performance.

3. Do not touch terminals with your bare hand.

4. Do not pull a terminal by force when it is twisted or tangled before or after crimping. It may cause damages.

5. Do not apply any forces to products, terminals or harnesses etc. Products may be damaged and cause malfunction as connectors.

6. Do not expose products and harness half-finished goods to the following conditions.
   - Dust
   - Corrosive material
   - Corrosive gas
   - High temperature and high humidity
   - Direct sunlight

   The conditions mentioned above may cause poor contact, the corrosion of terminals, insulation performance and the deterioration of housing. Keep products in a box.

7. Do not add any loads to connectors and harness half-finished goods during production, packaging, transportation or storage. It may cause damages and result in poor performance.

8. When pulling the electric wires of harness half-finished goods, the contact defect may be caused by adding loads to contacts, crimping parts and lock parts. When performing the guidance wiring of the electric wires, do not apply excessive forces that a connector cannot be pulled.

9. Do not damage receptacle crimping housing and crimping terminals intentionally. Product performance can be affected by the condition.

10. Use products within the day once you open the package. Moisture absorption or drying may cause the deterioration of materials by surrounding environments. When you cannot use them up, seal the bag again and keep them in a box.

11. Be aware to prevent injury by products’ edges such as metal parts when handling connectors.

12. To avoid injury, be careful when handling papers between terminals and metal carriers on reels.

13. Our evaluation is with the use of standard rigid PCB. When products are used on flexible printed circuits (FPC), check them in advance.

14. Solder all terminal departments and nail parts. Non-soldered parts may cause defects.

15. In the case of changing our recommended board pattern size or design, please contact us in advance since those changes may cause defects.

16. Do not apply loads to connectors. For example, carrying the PCB when a connector is mated may cause damages.

17. Do not stack PCB after connectors have soldered to PCB.

18. Follow the conditions of specifications, when mounting a connector with a soldering iron. For any conditions exceeding specifications, the connector may be damaged.
19. When using a solder iron, do not use excessive solder and flux. It may cause poor contact performance by solder wicking and flux wicking.

20. There may be changes in color of the resin part and twisting in the terminal plating parts depending on flow conditions, but it does not degrade product performance.

21. Do not coil electric wires around housing or gaps of housing lock during harness processing and packaging of harness products. In addition, do not pull electric wires by force when electric wires have coiled themselves around housing and gaps of housing lock. If a wire becomes tangled, it may cause terminal damages. Do not apply loads to housing lock when removing wires.

2-5. Use in the machinery.

1. Vibration of an electric wire or printed circuit board due to machinery vibration or rotation must be prevented damages to connectors at contact area. Contact failures due to abrasion may be caused. Fix electric wires and printed circuit boards in the machinery and manage to hold resonances.

2. Do not fix only printed circuit boards when using connectors. It must be fixed or supported by other measurements.

3. Do not touch terminals and fitting nails before and after mounting on a board.

4. Insert and pull connectors along fixed axis. The diagonal insertion and pulling may cause damages to connectors.

5. After mating, do not intentionally apply forces to span or rotate connectors. Such force may cause damages to connectors or solder cracking.

6. If electric wires are pulled after mating connectors, it may damage contacts or crimping areas or the lock areas and result in contact failures. When performing the guidance wiring of electric wires, keep the wires loose to avoid applying excessive force to connectors.

7. When pulling connectors, hold wires softly and remove the lock securely by entire fingers.

8. Plastic lances may be damaged after removing crimping terminals. Use a new crimping housing when repairing connectors.


1. Use products in the range of rating and standard of product specifications.
   PS-501190-00*, PS-501571-001, 2035640000-PS PS000, 2035650000-PS PS000

2. This product is not designed for usage in "hot-swap" applications where a power is on.

3. Confirm that machinery design standards are satisfied before using connectors.

4. To prevent short circuits, do not allow connectors to contact with any metal objects.

5. Do not divide to use several circuits over the rating current per 1PIN.
2-7. Use of product

1. This product is not designed and produced for the machinery to be used under the condition involving human lives or system use. If you use it in special use such as medical, aerospace or nuclear power etc., please contact us before using.

2. Please contact us before using if you use it for automobile and ship etc. (We will investigate if it can be applied under a specific condition).

3. Avoid using the product in outdoors or under similar environments.
3. Names of each part & explanation

3-1. Receptacle crimping terminal : 501193**00.

Show Reel condition

※ Refer to sales drawing for product form and its dimensions. : 5011930000 PSD000

—APPLICABLE WIRE AND APPLICABLE CRIMP DIE MODEL—

<table>
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<tr>
<th>Part Number</th>
<th>WIRE SIZE</th>
<th>CONDUCTOR SPEC.</th>
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<td>501193**00</td>
<td>AWG#28~32</td>
<td>TINNED COPPER WIRE</td>
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※ Refer to sales drawing for product form and its dimensions. : 5011930000 PSD000
3-2. Receptacle housing : 501189 series

Receptacle Housing (501189 series)

Positive Lock
Lock structure to prevent slipping out accidentally after mating
Release lock motion is needed.

Mold lance
Fastener with terminal lance

Wire
(AWG#28~#32)

Lock release position
The position which pushes a lock

※ Refer to sales drawing for product form and its dimensions. : SD-501189-00*
3-3. Header Assembly : 501190 series (STRAIGHT TYPE)

Cover tape
Positive Lock Mating lock part.
Housing
Terminal Electrical mating part
Nail Soldering part
※ Refer to sales drawing for product form and its dimensions.
: SD-501190-00*, 2035642017-SD PSD000, 2035652017-SD PSD000

3-4. Header Assembly : 501571 series (RIGHT ANGLE TYPE)

Housing
Positive Lock Mating lock part.
Terminal Electrical mating part
Nail Soldering part
※ Refer to sales drawing for product form and its dimensions.
: SD-501571-00*, 2035662007-SD PSD000, 2035672007-SD PSD000
【4. Confirmation of terminal crimping process】

4-1. Appearance before crimping.
Make sure that there is no deformation of crimping terminals and no crush of contact boxes before crimping. If you find that terminals are tangled, do not remove them forcibly. Refer to sales drawing (SD-501193-003) for product form and its dimensions.

4-2. Appearance after crimping.
Confirmation items and crimping failure after crimping are shown as follows. Refer to CS-501193-001 for specified crimping height, pulling test and applicable wire specifications.

① No visible damage on terminal.
② No visible damage or deformation on spring contact area.
③ All wire strands are in conductor barrel.
④ The insulator part of electric wire is in the intermediate position of wire barrel and insulation barrel.
⑤ No damage on terminal lance.
⑥ No damage on appearance (Dirt / foreign objects).

4-3. Crimping failure.
Beware of the crimping failure as shown below. It may affect the insertion to housing as well as product functions.

① Bend up
It may deteriorate the insertion to housing and terminal retention force and cause contact failures.

No Good
① **Bend down**
It may deteriorate the insertion to housing and terminal retention force and cause contact failures.

![No Good](image1)

③ **Twist**
It may deteriorate the insertion to housing and terminal retention force and cause contact failures.

![Good](image2)

![No Good](image3)
§ Rolling
It may deteriorate the insertion to housing and terminal retention force and cause contact failures.

§ Crush and deformation of contact area and contact box
It may deteriorate the insertion to housing and terminal retention force and cause contact failures.

§ Extrusion of wire in conductor barrel
It may deteriorate the insertion to housing and cause contact failures.
⑦ **Crimping position: if it is too front**
It may cause breaking wire, deterioration of wire crimping strength and disconnection by crimping insulator.

![Crimping position: too front](image)

No Good

⑧ **Crimping position: if it is too back**
It may cause deterioration of wire crimping strength and disconnection if not have enough crimping margin.

![Crimping position: too back](image)

No Good

As wire Insulation is not crimped completely, wire insulation falls off easily when the wire is pulled.

⑨ **Deformation of terminal lance**
Terminal locks become insufficient and cause the lowering of terminal retention force.

![Deformation of terminal lance](image)

No Good

Deformation (Crush)
[5. Bond of wire after crimping and packaging]

Check for damaged terminals and wire insulation when bundling wires.  
Check for a quantity per a packing box.  
Do not overpack crimping wires in a box as there is a risk of damaging terminals.

**Instructions**

※When bundling wires, beware not to apply excessive force to terminals.

※When packing bundled harnesses processed products in a packing box, put products alternately not to be applied to connectors over a long time by piling up.
   (cross shape) in a fitting box. (Fig.5-2)

※Use buffer materials on the bottom and top of a packing box.
   To avoid applying force to connector over a long time by stacking wires, use buffer materials. (Fig.5-2)
【6. Method of crimping terminal mounting to Receptacle Housing (harness process)】

Repair procedures and instructions (※) for crimping terminals are shown as follows:

6-1. Crimping terminal mounting

① Hold receptacle housing to pinch right and left side.

② Hold a cable in the position about 10mm away from the crimp-end with a finger softly.

Instructions

※ If you hold a wire in a long distance from a terminal, wires will be easily bent and it may be difficult to insert.
※ Distance value depends on wire gauge, UL, etc. Check a wire before using if it is appropriate.

③ Hold terminal lance part toward the center of receptacle housing and insert terminal slowly and straightly till the tip of terminal touches housing (with force of max. 4.9N). (Fig.6-1)

Fig. 6-1
Instructions

※ If crimping height and width are too big, it may cause of terminal insertion failure. Follow the instructed crimping height. (Refer to crimping specifications CS-501193-001)

※ Stop your work if you are not sure for hooking directions or angles. After checking there are any damages of a terminal or a receptacle housing, you can insert it again. If any damages are found, do not use the terminal and the receptacle housing.

※ Be aware with the direction of terminal when inserting to receptacle housing. (Fig.6-2,6-3) Also be aware whether the terminal is not upside down, not having an angle or not rotating max. 5 degrees against receptacle housing. This may cause of terminal deformations or damages to receptacle housing.

---

Fig.6-2 Right inserting direction

Fig.6-3 Inappropriate inserting direction

- Mold lance
- Terminal lance
- UPSIDE DOWN DIRECTION
- OBlique DIRECTION
- Rotation direction (Ex.: 5°)
4. After inserting a terminal, confirm whether terminals are not pulled out from receptacle housing by pulling wires softly (with a force upward of 1N) (Confirmation with excessive tension may break a connector.)

5. After inserting all terminals, confirm the position of terminal lance from the window of receptacle mold lance. If they are inserted correctly, terminal lance is at the position where terminal lance rode up mold lance properly. You can confirm clearance by shaking them axially softly. (Fig.6-4)

Instructions
※ If terminal is inserted incompletely, terminal lance is not locked with mold lance and then a terminal cannot be retained.

※ In the area of incomplete insertion (see Fig.6-5), terminal lance is the most transformed. As if a terminal is re-inserted in this condition of harness, mold lance is transformed and not moving back to correct position, and then the retention force may be decreased. Be aware to change a new terminal in this case.
⑥ When checking after harness processing, avoid bending wire excessively or using with tension. This may cause contact failures since force is applied to terminal crimping parts or receptacle housing lance parts.

⑦ When having a conduction check, use only for applicable mating connector. This may cause contact failures for terminal transformations etc. if not.

6-2. Crimping terminal repair

When you pull crimping terminals inserted once, lift mold lance using a needle and pull it out. However, mold lance is transformed when lifting. The transformation will extremely decrease the strength so the terminal may come off easily from housing even if you insert it again. Be aware to change the receptacle housing to a new one when you repair crimping terminal. Use an appropriate magnifying glass, and repair with caution.

※ Avoid pulling off a terminal by force.
※ When repairing, be aware not to deform or scratch terminal lance.

![Fig.6-6 Pulling method of crimping terminal](image)
【7. Bond of harness】

When banding after harness processing, be aware with the following points.

① Bundle wires at point of over 50mm away from a connector and uniformize the force applied to each wire. (Fig.7-1)

② Do not apply force to the only one wire (or a few specific wires) in the harness. (Fig.7-2)

![Fig.7-1 A harness is bundled properly](image)

Good

A force is equally applied to each wire.

![Fig.7-2 A harness is bundled improperly](image)

No Good

A force is applied to the only one wire (or a few specific wires)

Instructions

※When a harness is tangled each other, do not pull them by force. It may cause damages to connectors when excessive force is applied to terminals, and a terminal pulls off from a connector.

※ Do not drop products or hit them against other objects.
【8. Harness packaging】

Procedures and instructions (※) are shown below when packing harness processed products.

1. Bundle the harness processed products. Band max. 20 harnesses in one bunch.

Instructions

※When bundling the harness, do not use a rubber band to avoid applying excessive force constantly. Band harness in the middle (at one point) with plastic string. Manage to protect a connector from shocks or loads by wrapping in each bunch of connectors with air packing. (Fig.8-1)

When some harnesses are banded, each connector contacts, and lock part may be loaded. In this case, the deformation of lock part may cause defective performance by being locked down all the time.

Fig.8-1 A bunch of harness
② Put banded harness into a packing box.
Figure below (Fig 8-2) is one of examples for recommended reference. Prevent to apply forces to connectors in a long-term loading when you use different packing methods for long harnesses.

Instructions
※When packing to bundle harness processed products in a packing box, follow the instructions and avoid applying excessive loads or forces to harnesses. (in a cross shape) (Fig.8-2①)

※Use air packing on the bottom of a packing box. Make sure to use air packing to prevent forces from applying to connectors for hours such as piling up packing boxes. (Fig.8-2②)

Fig.8-2 Packing condition
[9. Instructions when mating with HDR connector]

9-1. Recommended insertion method

Set a mating direction of receptacle housing (harness side) and plug housing (header side), and push both sides of receptacle housing to pitch direction (as shown with arrows) **until both connectors meet each other (complete mating position)**. After mating, confirm that locks are fastened completely.

Push and insert both sides of plug hsg.

- Insert straight (ST&RA TYPE)
- Insert with an angle (ST&RA TYPE)

※When mating, do not push positive lock of receptacle housing. It may cause damages to apply excessive loads since the lock part interferes and is prevented to work properly.

※Push receptacle housings and insert them straightly until they touch each other. If you cannot insert them smoothly, confirm whether there is no transformation of terminals and receptacle housings etc.
9-2. Recommended removal method

Hold wires all together softly. Use fingers to the lock of housing and push a bar releasing lock. After releasing lock completely, pull a receptacle housing slowly, axially and straightly. Avoid pulling them with an angle and roughly. It may cause damages to connectors.

Instructions

※ Do not pull to hold only a few specific wires. As excessive forces apply to specific terminals, it may cause damages to connectors, and terminals may slip out.

※ This product depends on a positive lock to prevent pulling connectors. In the case of releasing the lock incompletely, connectors may be damaged to pull them by force. When releasing lock, push a bar with fingers. If your finger nail is too long, it may touch a lock protection wall.
9-3. Wiring after mating

Instructions

※If you plan to pull wires in the machine, be aware to prevent applying forces to connectors directly such as having enough flexibility to wires. (Fig.9-3-1)

※When pulling wires in the machinery, do not use under the condition that wires are bent excessively and tensions are applied. It may cause to pull terminals out since forces are applied to terminal crimping zone or the terminal inserting portion of receptacle by wire tension. Especially, prevent forces to apply to only a few specific wires. (Fig.9-3-2)

※If forces are applied to one specific wire, the wire (crimping terminal) may be pulled off.

※Prevent to pull wires in over two directions when pulling wires in the machinery after mating. (Fig.9-3-3)

※Please contact us before using if you use in special wiring. (Fig9-3-2/9-3-3 etc.)

※Curve wires to prevent applying forces to terminals.

Curve wires to prevent applying forces to terminals.

Fig.9-3-1 Condition of keeping wires curved

Fig.9-3-2 Condition that wires are bent excessively or tension is applied
### Pico-Clasp 1.00MM PITCH WIRE TO BOARD DUAL TYPE APPLICATION SPECIFICATION

**Fig.9-3-3 Wiring toward over 2 directions**

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Pico-Clasp 1.00MM PITCH WIRE TO BOARD DUAL TYPE APPLICATION SPECIFICATION

**REVISE ON PC ONLY**

**B**

SEE SHEET 1 OF 26

**REV.**

**DESCRIPTION**

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**DOC. TYPE**

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**DOC. PART**

A01

**CUSTOMER**

GENERAL

**SHEET**

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