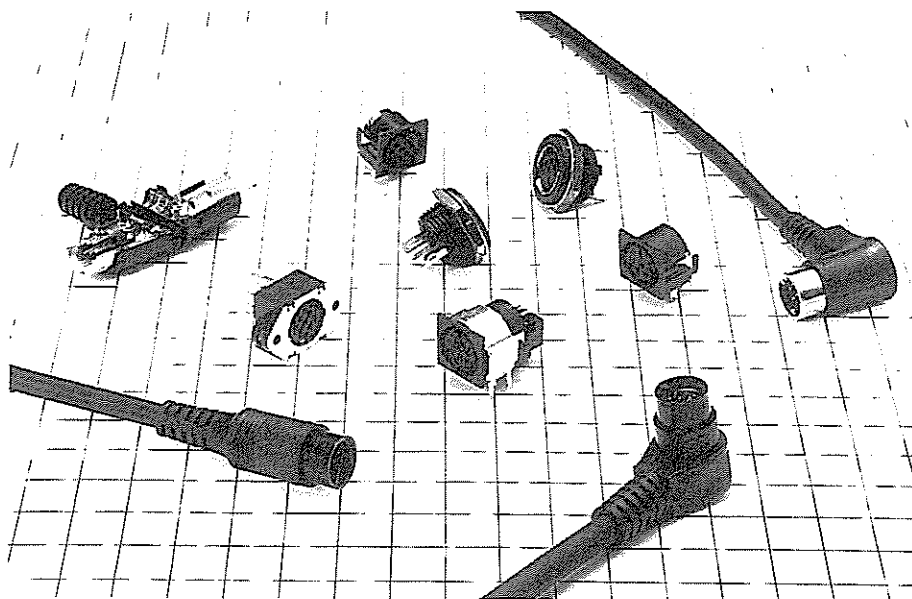


# HR12 SERIES      MINIATURE CIRCULAR DIN TYPE CONNECTOR

## Scope

The HR12 is a high-density plastic type miniature connector with built-in shielding mechanism that is designed for OA equipment such as personal computers, word processors, and cellular telephones.

The standard terminals of the HR12 connector are tin-plated (only 10-contact terminals are gold-plated) and the connectors are finished in black.



## Features

1. Matte Finish gives a good appearance and aids in plug/unplug operation.
2. Full Shielding on Plug and Receptacle.
3. PUSH/PULL Locking System.
4. Right Angle Plug/Cord Assembly can be molded for Right or Left orientation.
5. Strain Relief is molded to main body for extra holding.
6. PLUG is available with ... Straight or Right Angle Configuration.  
RECEPTACLE is available with ... Straight, Right Angle and Crimp to Wire.
7. Standard Color is Black. Easily available optional colors are Ivory and Grey. Contact HIROSE for other colors.

## Applications

OA equipment, Video equipment, Sound facilities, Radio communications equipment, Mobile telephone equipment

and other electronic devices and equipment.

## Material and Finish

| Part                  | Material                                                                                                   | Finish                                                   |
|-----------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Molding and Insulator | Soft vinylchloride (UL94-0) and Polypropylene (UL94V-0)<br>PBT resin (UL94V-0) and Polycarbonate (UL94V-1) | —                                                        |
|                       | Brass, and Zinc alloy                                                                                      | Tin plating and Nickel plating                           |
| Male pin              | Copper alloy                                                                                               | Tin plating or selective gold plating and silver plating |
| Female pin            | Phosphor bronze                                                                                            | Tin plating or selective gold plating and silver plating |

Remarks: 1. Silver plated treatment for pin, shall be applied 20 pins connector only.  
2. Pin connector for 10 pins and 4 pins are applied partly gold plating.

## Standard Cable Specifications

| No. of pin            | 4                      | 5                      | 8                                     |                        |
|-----------------------|------------------------|------------------------|---------------------------------------|------------------------|
| Outer dia.            | φ5.5                   | φ4.8                   | φ4.8                                  | φ4.8                   |
| Conductor             | 4-conductor (shielded) | 5-conductor (shielded) | Multiple 8-conductor (shielded)       | 8-conductor (shielded) |
| Composition conductor | 17/φ0.16(AWG#22)       | 7/φ0.127(AWG#28)       | 7/φ0.127(AWG#28)<br>11/φ0.16 (AWG#26) | 7/φ0.127(AWG#28)       |
| UL STYLE              | 2990                   | 2990                   | 2990                                  | 2990 or 2789           |

| No. of pin            | 10                      |                         |                                   | 20                      |                                     |
|-----------------------|-------------------------|-------------------------|-----------------------------------|-------------------------|-------------------------------------|
| Outer dia.            | φ4.8                    | φ5.6                    | φ5.5                              | φ6                      | φ6                                  |
| Conductor             | 10-conductor (shielded) | 10-conductor (shielded) | 8-conductor + Shielded cables (2) | 16-conductor (shielded) | Multiple 20-conductor (shielded)    |
| Composition conductor | 7/φ0.127(AWG#28)        | 7/φ0.127(AWG#28)        | 30/φ0.08, with Tetron thread      | 7/φ0.127(AWG#28)        | 7/φ0.127(AWG#28)<br>7/φ0.1 (AWG#30) |
| UL STYLE              | 2844                    | 2990                    | —                                 | 2990                    | 2990                                |

## Ordering Information

### Cable Plug

HR12 A — 10 L A A 8 P C A 300 A

- (1) Model
- (2) Terminal connector provided or not
- (3) Shell size
- (4) Connector form
- (5) Cable removal direction
- (6) Types of connector
- (7) Indicates the number of contacts
- (8) Type of terminal
- (9) Shape of cable
- (10) Type of cable
- (11) Cable length
- (12) Shape of cable end

## ● Plug (Mounting type) and Receptacle    ● Attachment

**HR12 - 10 R C - 8 SDL**

- (1) Model
- (3) Shell size
- (4) Connector form
- (6) Types of connector
- (7) Indicates the number of contacts
- (8) Type of terminal

**HR12 - 10 R - SP**

- (1) Model
- (3) Shell size
- (4) Connector form
- (13) Types of accessories

### (1) Model:

Denotes series name.

HR212 is a heavy-duty shield type.

### (2) Indication of terminal connector provided or not:

For models with connectors on both sides, different signs are used depending on the type of connector on one side.

### (3) Shell size:

Indicates the outside diameter of the plug mating part.

### (4) Connector form:

Connector forms are classified as follows:

P: Straight plug

LP or L: Right angle

R: Receptacle

### (5) Cable removal directions for a right angle plug are classified as follows:

A: The cable removal direction is on the right with the guide facing upward viewed from the mating part.

B: The cable removal direction is on the left with the guide facing upward viewed from the mating part.

### (6) Types of connector

A connector with two or more varieties is classified by A, B, C, .....

### (7) Indicates number of contacts.

### (8) Type of terminal:

Classifies the type of terminals as follows:

The plug has only male terminals, and the receptacle has only female terminals.

P: Male terminal

PC: Crimp male terminal (assembly type plug)

SC: Crimp female terminal

SD: Straight dip female terminal

SDL: Right angle dip female terminal

### (9) Shape of cable:

Shapes of cables connected to the plug are classified as follows:

C: Curled cord

S: Straight cord

### (10) Type of cable

Cables connected to the plug are identified by A, B, C, ..... when they are different in construction and number of cores.

### (11) Cable length

Indicates the length in mm of the cable connected to the plug.

Curled cord length: Length of curled part

Straight cable length: Cable length

### (12) Shape of cable end

Plugs with cables of the same shape but different in cable end dimensions and finishing are identified by A, B, C, .....

### (13) Types of accessories:

Accessories are identified as follows:

SP: Stopper plate

S: Spacer

**Note 1.** Unless otherwise specified, terminals are tin-plated in black. If you desire different plating, please specify in advance. As exceptions, however, 10-contact terminals are selectively gold-plated and 20-contact terminals will be silver-plated.

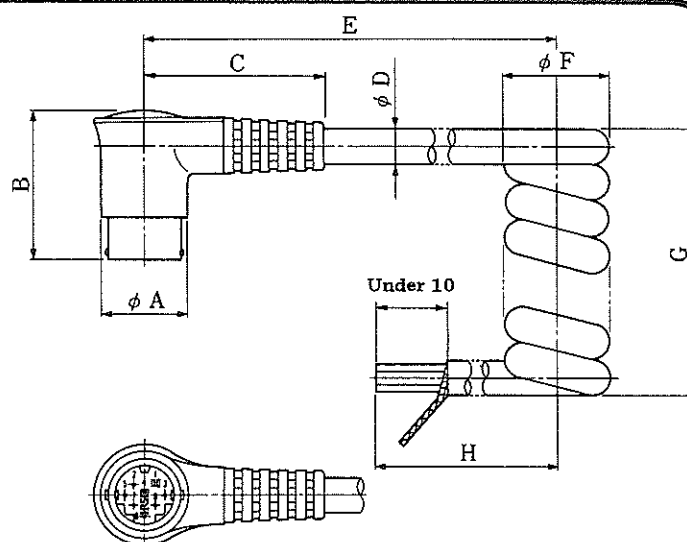
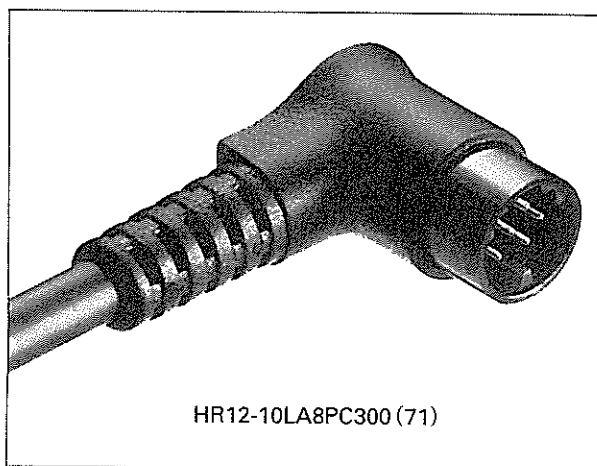
**2.** Please indicate specifications such as cable length, terminal dimensions, and terminal processing when you order connectors with specifications different from the standards.

## TYPE HR12

The HR12 is a high-density plastic type miniature connector with built-in shielding mechanism that is designed for OA equipment such as personal computers, word processors, and cellular telephones.

The standard terminals of the HR12 connector are tin-plated (only 10-contact terminals are gold-plated) and the connectors are finished in black.

### Right Angle Plug

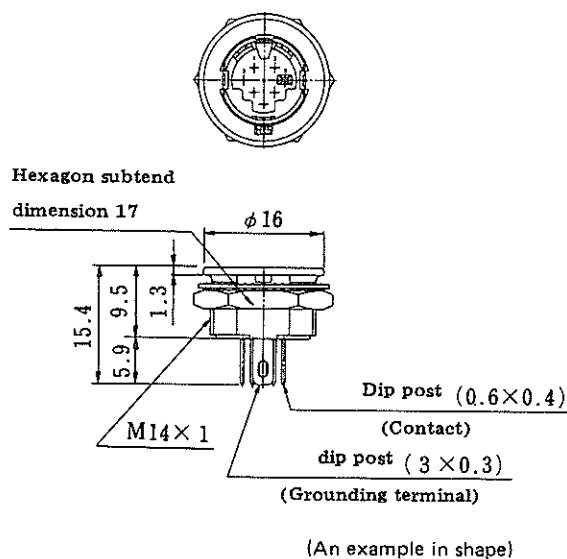
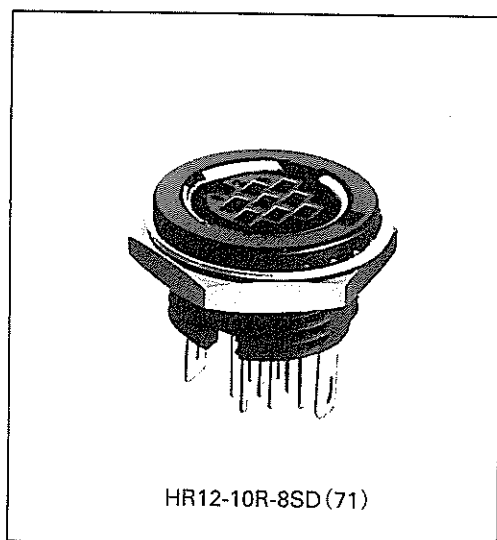


(An example in shape)

| HRS No.       | Part No.                | No. of pin | $\phi A$ | B    | C  | $\phi D$ | E   | $\phi F$ | G   | H   | Weight    | No. of conductors of cable | Remarks                               | RoHS |
|---------------|-------------------------|------------|----------|------|----|----------|-----|----------|-----|-----|-----------|----------------------------|---------------------------------------|------|
| 112-0001-1-71 | HR12-10LA5PCD300 (71)   | 5          | 12       | 21   | 26 | 4.8      | 700 | 15       | 300 | 100 | About 94g | 5-conductor (shielded)     | Curled cord                           | ○    |
| 112-0003-7-71 | HR12-10LA8PC300 (71)    | 8          | 12       | 21   | 26 | 4.8      | 700 | 15       | 300 | 100 | About 94g | 8-conductor (shielded)     | Curled cord                           |      |
| 112-0084-9-71 | HR12-10LB10PCAE300 (71) | 10         | 12       | 21.5 | 26 | 5.5      | 45  | 17.5     | 300 | 120 | About 80g | 10-conductor (shielded)    | Curled cord<br>Terminal gold plated   |      |
| 112-0064-1-71 | HR12-10LB10PSL1200 (71) | 10         | 12       | 21.5 | 26 | 5.5      | —   | —        | —   | —   | About 80g | 8-conductor (shielded)     | Straight cord<br>Terminal gold plated |      |
| 112-0031-2-71 | HR12-10LB10PSV1190 (71) | 10         | 12       | 21.5 | 26 | 5.5      | —   | —        | —   | —   | About 80g | 10-conductor (shielded)    | Straight cord<br>Terminal gold plated |      |



## Receptacle(Straight Dip Type)



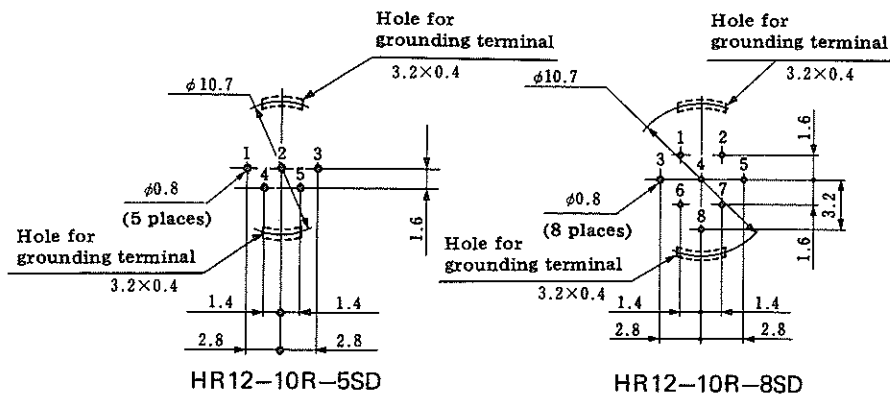
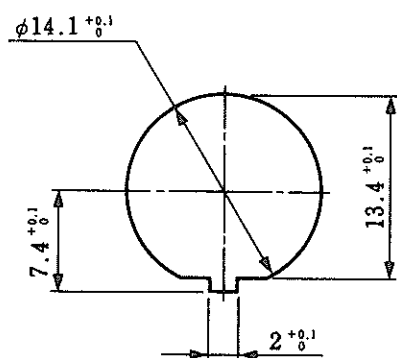
| HRS No.       | Part No.         | No. of pins | Weight   | RoHS |
|---------------|------------------|-------------|----------|------|
| 112-0502-7-71 | HR12-10R-5SD(71) | 5           | About 4g |      |
| 112-0505-5-71 | HR12-10R-8SD(71) | 8           | About 4g | ○    |

Remark: Refer to following diagram for panel mounting dimensions and dip post arrangement dimensions.

## Panel mounting dimensions

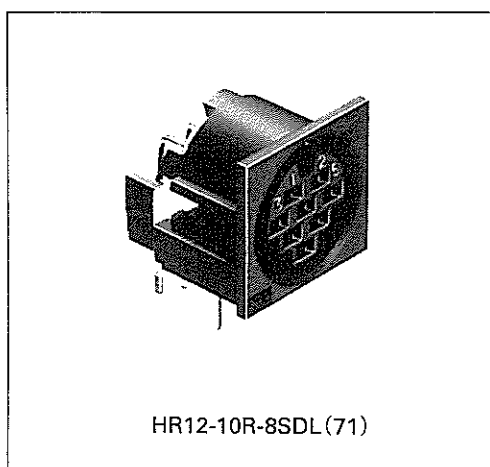
## Receptacle Dip Post

(Panel thickness 1 ~ 4.7)

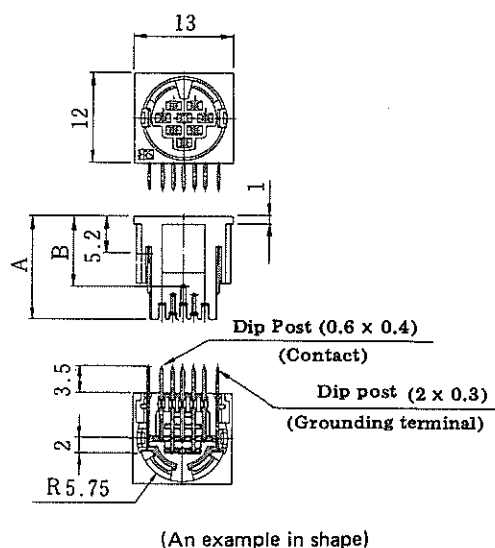


Remark: Dimensional tolerance of  $\pm 0.05\text{mm}$  is recommended for the board arrangement.

## Receptacle (Right Angle Dip)



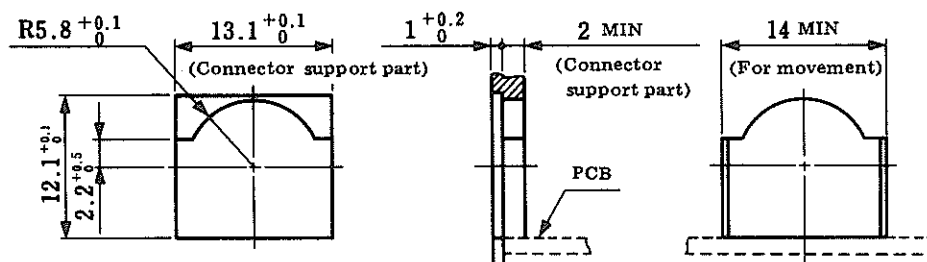
Note: Use this receptacle by pressing the connector outside as shown in the panel mounting hole dimension drawing below. If the conditions such as panel shape do not allow you to, use the accompanying stopper plate HR12-10R-SP(71)(CL112-0507-0-71) to press the receptacle.



| HRS No.       | Part No.            | No. of pins | A    | B    | Weight  | Remarks                     | RoHS |
|---------------|---------------------|-------------|------|------|---------|-----------------------------|------|
| 112-0503-0-71 | HR12-10R-5SDL (71)  | 5           | 13   | 10.5 | About2g | —                           | ○    |
| 112-0506-8-71 | HR12-10R-8SDL (71)  | 8           | 13.8 | 9.3  | About2g | —                           |      |
| 112-0514-6-71 | HR12-10RC-8SDL (71) | 8           | 13.8 | 9.3  | About3g | Equipped with stopper plate |      |

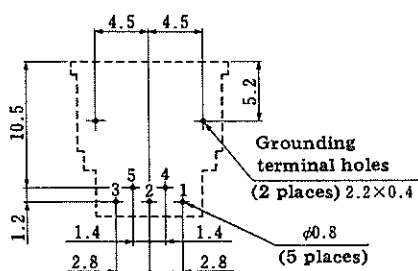
Remark : For dip post arrangement see below figure

## Panel mounting dimensions

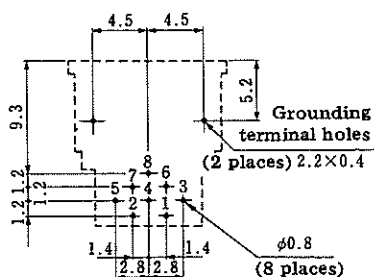


Note: Pay attention that this dimension is not available for 10 pins.

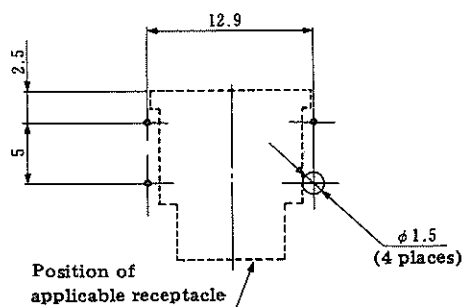
## Receptacle dip post arrangement



HR12-10R-5SDL(71)



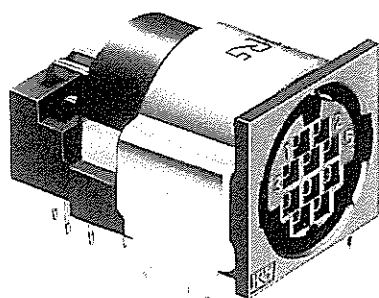
HR12-10R-8SDL(71)



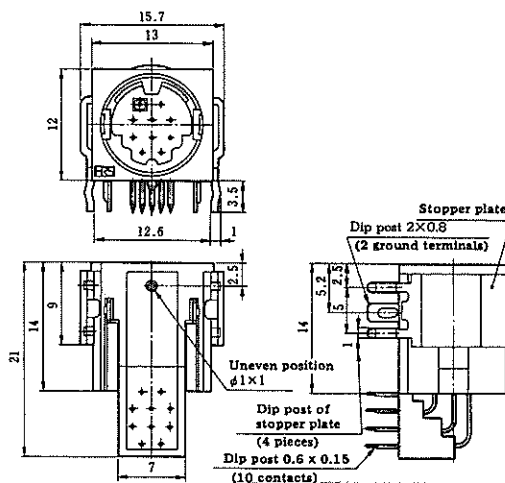
HR12-10R-SP(71)(Stopper plate)  
(Applicable PCB thickness range 1~2)

Remark: Dimensional tolerance of  $\pm 0.05\text{mm}$  is recommended for the board arrangement.

## Receptacle (Right Angle Dip)

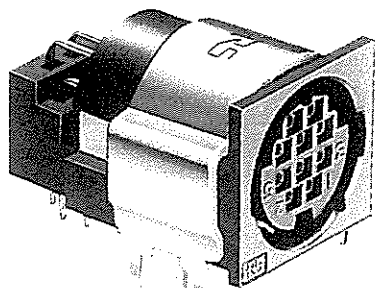


HR12-10RC-10SDL (73)

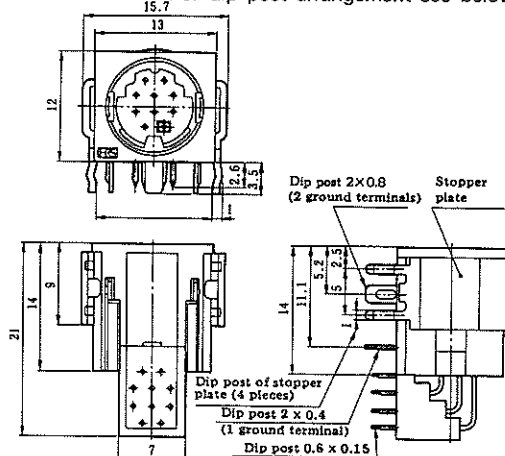


| HRS No.       | Part No.             | No. of pins | Weight   | Remarks                                                 | RoHS |
|---------------|----------------------|-------------|----------|---------------------------------------------------------|------|
| 112-0511-8-73 | HR12-10RC-10SDL (73) | 10          | About 6g | Colour : Black<br>Stopper plate<br>Terminal gold plated | ○    |

Remark : For dip post arrangement see below figure



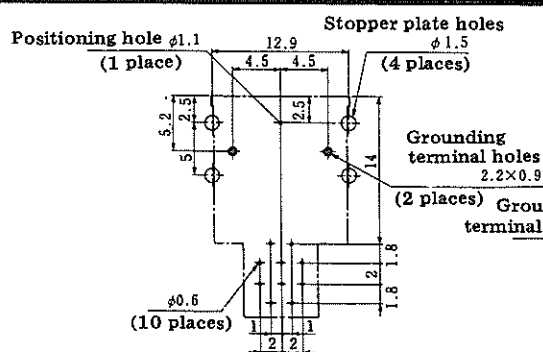
HR12-10RD-10SDL (73)



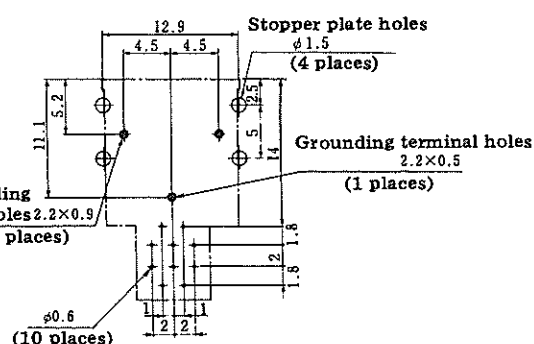
| HRS No.       | Part No.             | No. of pins | Weight   | Remarks                                                 | RoHS |
|---------------|----------------------|-------------|----------|---------------------------------------------------------|------|
| 112-0512-0-73 | HR12-10RD-10SDL (73) | 10          | About 6g | Colour : Black<br>Stopper plate<br>Terminal gold plated | ○    |

Remark : For dip post arrangement see below figure

## Receptacle dip post arrangement



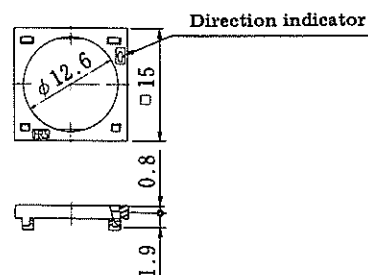
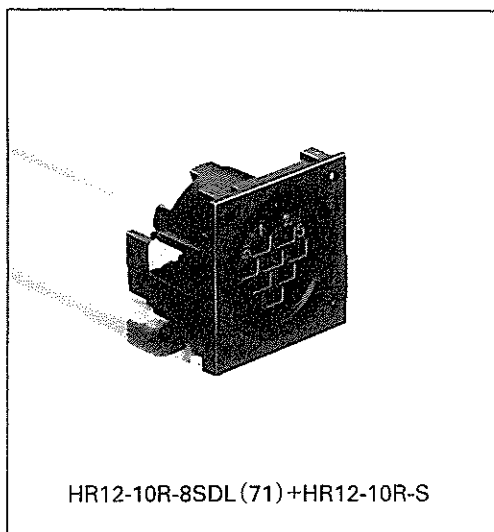
HR12-10RC-10SDL(73)



HR12-10RD-10SDL(73)

Remark: Dimensional tolerance of  $\pm 0.05\text{mm}$  is recommended for the board arrangement.

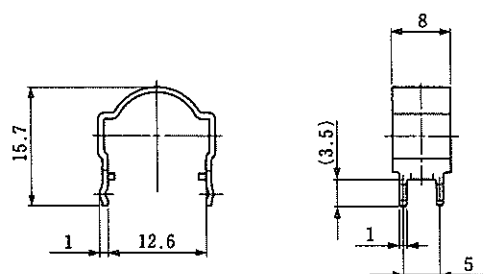
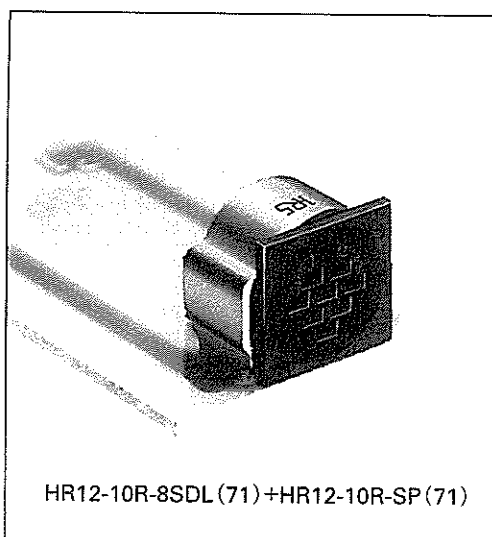
## Spacer



| HRS No.    | Part No.   | Applicable connector | Weight   | RoHS |
|------------|------------|----------------------|----------|------|
| 112-0508-3 | HR12-10R-S | HR12-10R-※SDL        | About 1g | ○    |

Remark: The \* mark shows the number of pins.

## Stopper Plate



| HRS No.       | Part No.         | Applicable connector | Applicable PCB thickness | Weight   | RoHS |
|---------------|------------------|----------------------|--------------------------|----------|------|
| 112-0507-0-71 | HR12-10R-SP (71) | HR12-10R-※SDL        | t : 1~2                  | About 1g | ○    |

Remarks: 1. The \* mark shows the number of pins.  
 2. For dip post arrangement, see page 105.

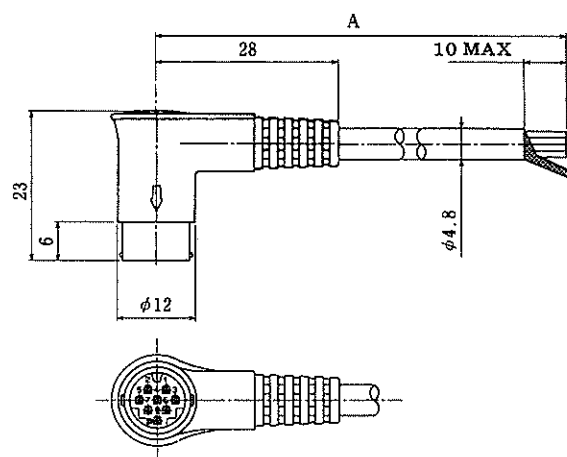
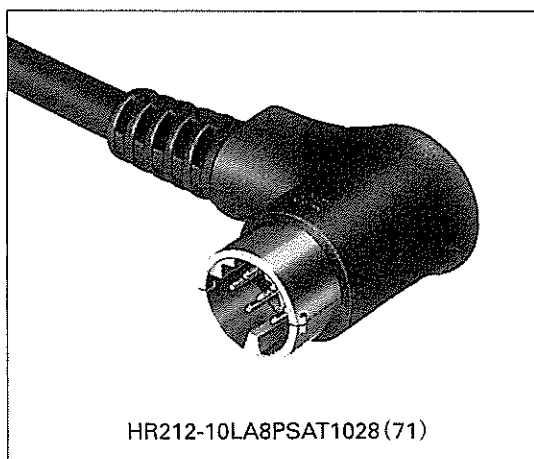
## MODEL HR12(20 CONTACTS), MODEL HR212

### Scope

Models HR12 (20 contacts) and HR212 connectors are enclosed with a metal shell for stronger shielding than the model HR12 connectors, which were for greater protection developed against jamming by electromagnetic waves.

Standard plating: Silver plating for the HR12 (20 contacts) and copper plating for the HR212 (gold plating for 10-contact models only). Standard finish: black.

### Right Angle Plug (with straight cable)

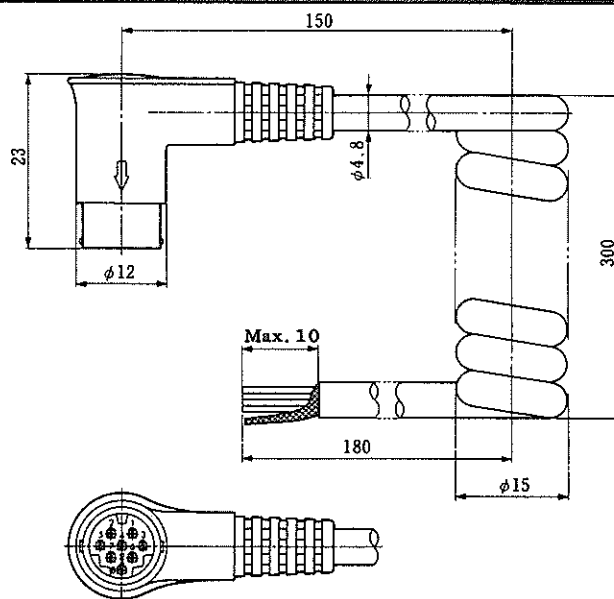
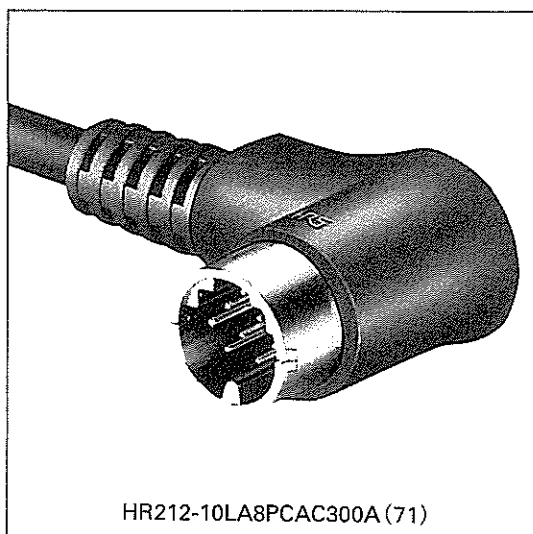


(An example in shape)

| HRS No.       | Part No.                 | No. of pins | A    | No. of cable cores | Remarks                                                | RoHS |
|---------------|--------------------------|-------------|------|--------------------|--------------------------------------------------------|------|
| 112-2120-1-71 | HR212-10LA8PSAT1028 (71) | 8           | 1028 | 8-cores(shielded)  | —                                                      | ○    |
| 112-2120-1-72 | HR212-10LA8PSAT1028 (72) | 8           | 1028 | 8-cores(shielded)  | Color : Black<br>Terminal : Tin plated                 |      |
| 112-2120-1-73 | HR212-10LA8PSAT1028 (73) | 8           | 1028 | 8-cores(shielded)  | Color : Sand beige<br>Terminal : Selective gold plated |      |
| 112-2121-4-71 | HR212-10LA8PSAT3028 (71) | 8           | 3028 | 8-cores(shielded)  | —                                                      |      |
| 112-2121-4-72 | HR212-10LA8PSAT3028 (72) | 8           | 3028 | 8-cores(shielded)  | Color : Black<br>Terminal : Selective gold plated      |      |
| 112-2121-4-73 | HR212-10LA8PSAT3028 (73) | 8           | 3028 | 8-cores(shielded)  | Color : Sand beige<br>Terminal : Selective gold plated |      |
| 112-2122-7-71 | HR212-10LA8PSAT5028 (71) | 8           | 5028 | 8-cores(shielded)  | —                                                      |      |
| 112-2122-7-72 | HR212-10LA8PSAT5028 (72) | 8           | 5028 | 8-cores(shielded)  | Color : Black<br>Terminal : Selective gold plated      |      |

Remark : Cable can be taken-out only in direction A.

## Right Angle Plug(with curled cord)



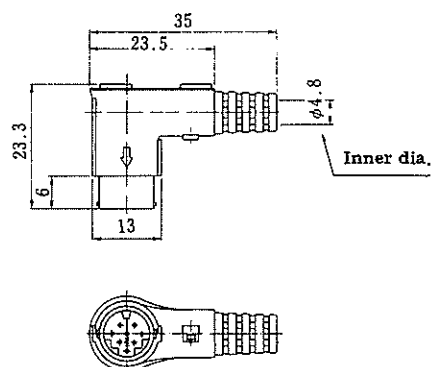
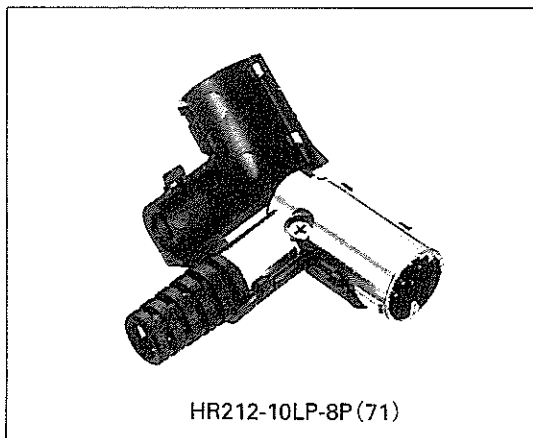
(An example in shape)

| HRS No.       | Part No.                 | No. of pins | No. of cable cores | RoHS |
|---------------|--------------------------|-------------|--------------------|------|
| 112-2107-3-71 | HR212-10LA8PCAC300A (71) | 8           | 8-cores(shielded)  | ○    |

Remark: Cable can be taken-out only in direction A.

## Right Angle plug(Assembly Type)

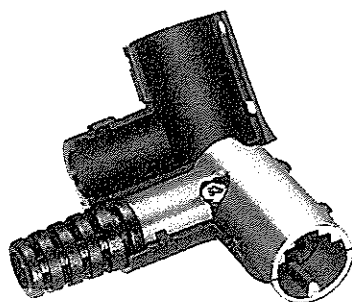
(Solder Type)



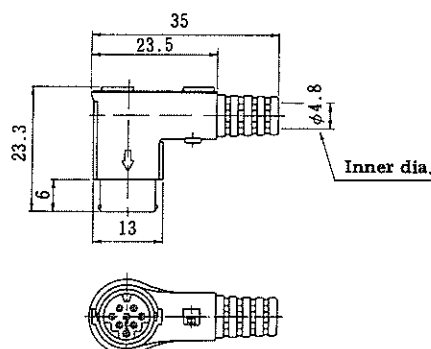
| HRS No.       | Part No.           | No. of pins | Remarks                                                | RoHS |
|---------------|--------------------|-------------|--------------------------------------------------------|------|
| 112-4002-6-71 | HR212-10LP-8P (71) | 8           |                                                        | ○    |
| 112-4002-6-73 | HR212-10LP-8P (73) | 8           | Color : Black<br>Terminal : Selective gold plated      |      |
| 112-4002-6-74 | HR212-10LP-8P (74) | 8           | Color : Sand beige<br>Terminal : Selective gold plated |      |

Remark: Cable can be taken-out only in direction A.

## (Crimp Type)



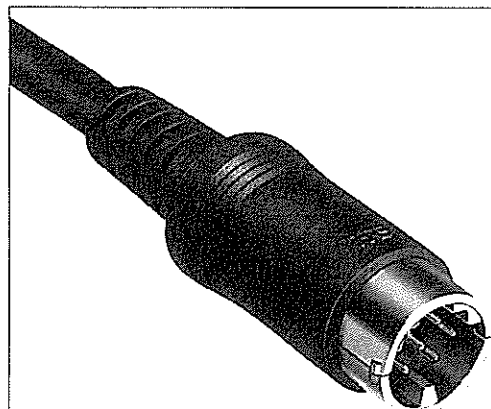
HR212-10LP-8PC(71)



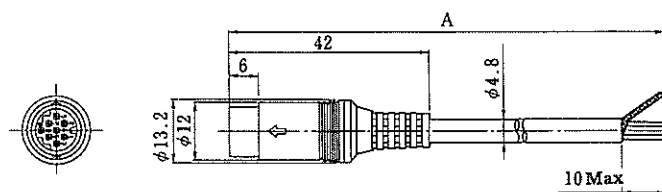
| HRS No.       | Part No.           | No. of pins | RoHS |
|---------------|--------------------|-------------|------|
| 112-4100-5-71 | HR212-10LP-5PC(71) | 5           | ○    |
| 112-4101-8-71 | HR212-10LP-8PC(71) | 8           |      |

Remark: Cable can be taken-out only in direction A.

## Straight Plug(with straight cable)



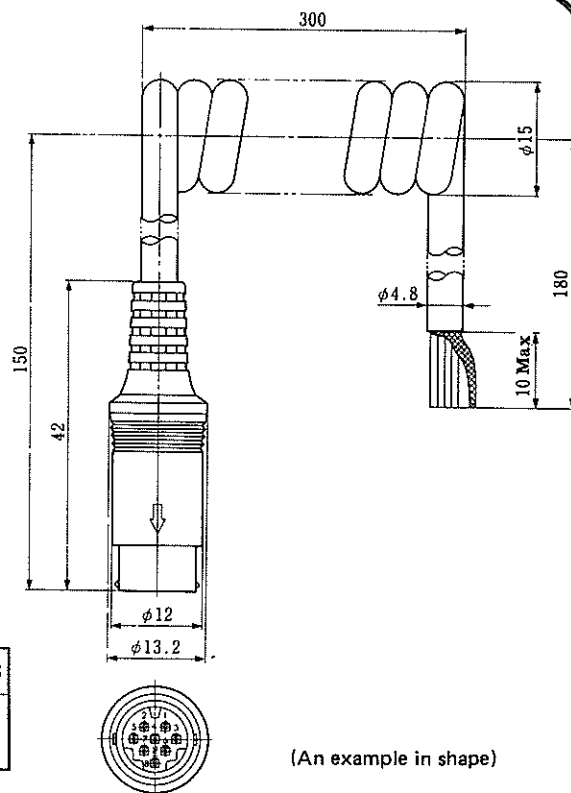
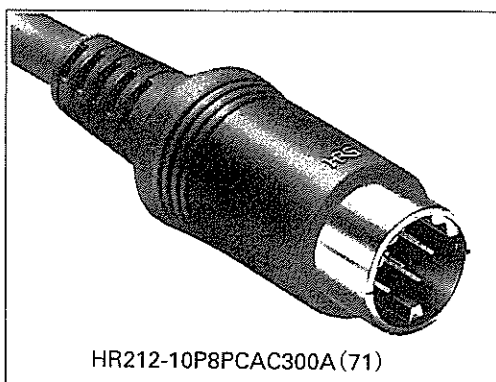
HR212-10P8PSAT1042(71)



(An example in shape)

| HRS No.       | Part No.               | No. of pins | A    | No. of cable cores | Remarks                                                | RoHS |
|---------------|------------------------|-------------|------|--------------------|--------------------------------------------------------|------|
| 112-2220-6-71 | HR212-10P8PSAT1042(71) | 8           | 1042 | 8-cores(shielded)  | —                                                      | ○    |
| 112-2220-6-72 | HR212-10P8PSAT1042(72) | 8           | 1042 | 8-cores(shielded)  | Color : Black<br>Terminal : Selective gold plated      |      |
| 112-2220-6-73 | HR212-10P8PSAT1042(73) | 8           | 1042 | 8-cores(shielded)  | Color : Sand beige<br>Terminal : Selective gold plated |      |
| 112-2221-9-71 | HR212-10P8PSAT3042(71) | 8           | 3042 | 8-cores(shielded)  | —                                                      |      |
| 112-2221-9-72 | HR212-10P8PSAT3042(72) | 8           | 3042 | 8-cores(shielded)  | Color : Black<br>Terminal : Selective gold plated      |      |
| 112-2221-9-73 | HR212-10P8PSAT3042(73) | 8           | 3042 | 8-cores(shielded)  | Color : Sand beige<br>Terminal : Tin plated            |      |
| 112-2221-9-74 | HR212-10P8PSAT3042(74) | 8           | 3042 | 8-cores(shielded)  | Color : Sand beige<br>Terminal : Selective gold plated |      |
| 112-2222-1-71 | HR212-10P8PSAT5042(71) | 8           | 5042 | 8-cores(shielded)  | —                                                      |      |
| 112-2222-1-72 | HR212-10P8PSAT5042(72) | 8           | 5042 | 8-cores(shielded)  | Color : Black<br>Terminal : Selective gold plated      |      |

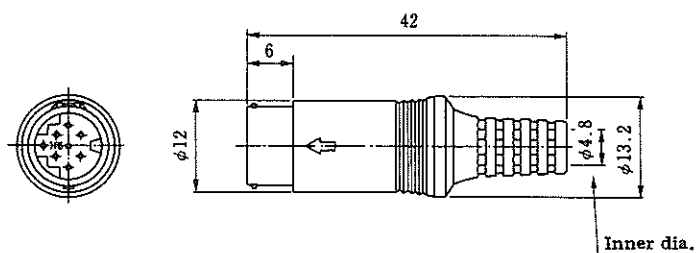
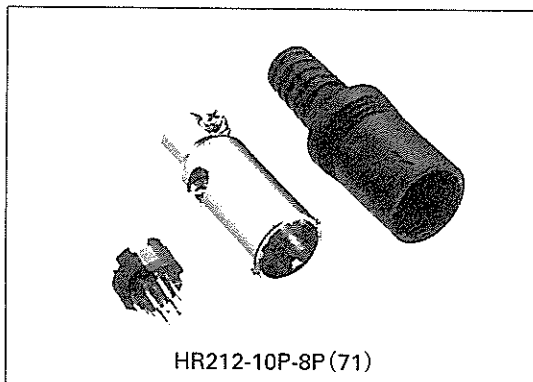
## Straight Plug(with curled cord)



| HRS No.       | Part No.               | No. of pins | No. of cable cores  | Remarks                          | RoHS |
|---------------|------------------------|-------------|---------------------|----------------------------------|------|
| 112-2205-2-71 | HR212-10P8PCAC300A(71) | 8           | 8-cores (shielded)  | —                                | ○    |
| 112-2211-5-71 | HR212-10P10PCBH300(71) | 10          | 10-cores (shielded) | Terminal : Selective gold plated |      |

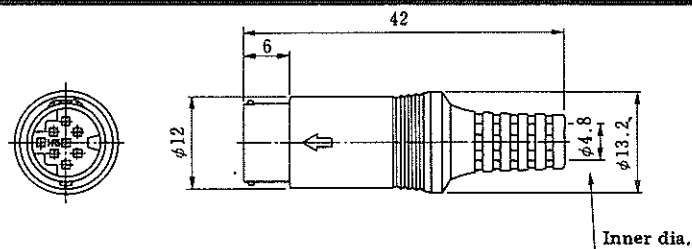
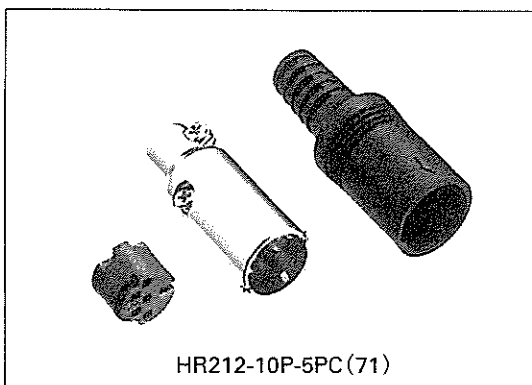
## Straight Plug(Assembly Type)

(Solder Type)



| HRS No.       | Part No.         | No. of pins | Remarks                                                | RoHS |
|---------------|------------------|-------------|--------------------------------------------------------|------|
| 112-4001-3-71 | HR212-10P-8P(71) | 8           | —                                                      | ○    |
| 112-4001-3-72 | HR212-10P-8P(72) | 8           | Color : Sand beige<br>Terminal : Tin plated            |      |
| 112-4001-3-73 | HR212-10P-8P(73) | 8           | Color : Black<br>Terminal : Selective gold plated      |      |
| 112-4001-3-74 | HR212-10P-8P(74) | 8           | Color : Sand beige<br>Terminal : Selective gold plated |      |

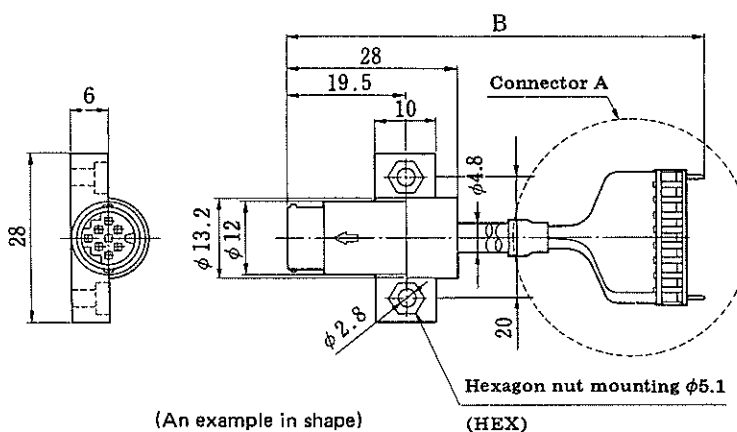
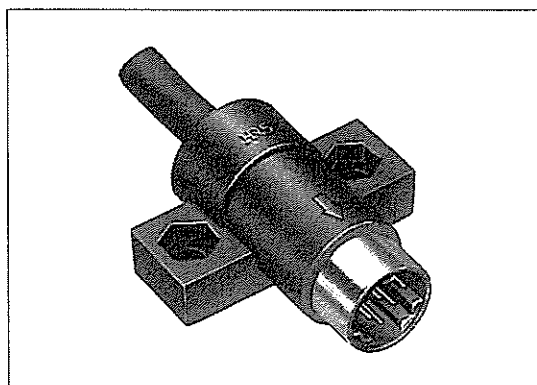
### (Crimp Type)



(An example in shape)

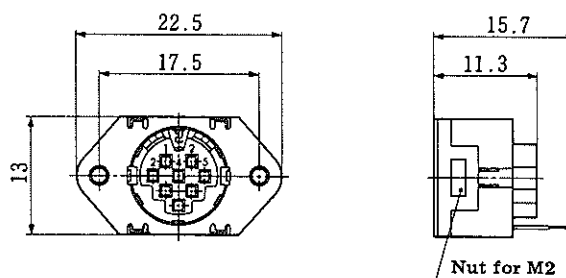
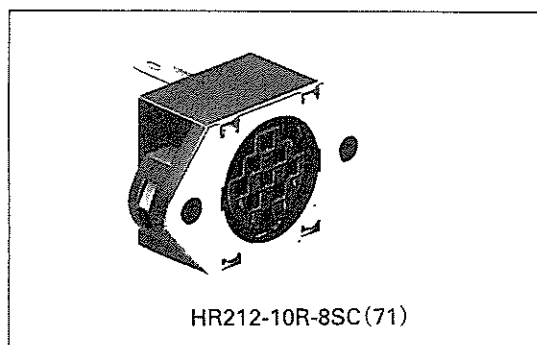
| HRS No.       | Part No.           | No. of pins | Remarks            | RoHS |
|---------------|--------------------|-------------|--------------------|------|
| 112-4050-9-71 | HR212-10P-5PC(71)  | 5           | —                  | ○    |
| 112-4051-1-71 | HR212-10P-8PC(71)  | 8           | —                  |      |
| 112-4051-1-72 | HR212-10P-8PC(72)  | 8           | Color : Sand beige |      |
| 112-4052-4-71 | HR212-10P-10PC(71) | 10          | —                  |      |
| 112-4052-4-72 | HR212-10P-10PC(72) | 10          | Color : Sand beige |      |

### Plug Receptacle(with straight cable)



| HRS No.       | Part No.               | No. of pins | connector A | B    | No. of cable cores | Remarks                                                | RoHS |
|---------------|------------------------|-------------|-------------|------|--------------------|--------------------------------------------------------|------|
| 112-2425-9-71 | HR212G-10PB8PSAT82(71) | 8           | DF2         | 90.2 | 8-cores(shielded)  | Color : Sand beige<br>Terminal : Selective gold plated | ○    |

### Receptacle (Crimp Type)

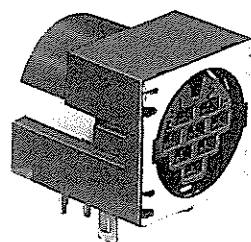


(An example in shape)

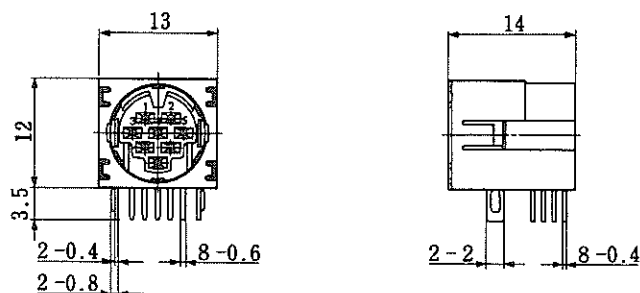
| HRS No.       | Part No.          | No. of pins | Remarks            | RoHS |
|---------------|-------------------|-------------|--------------------|------|
| 112-2001-2-71 | HR212-10R-8SC(71) | 8           | —                  | ○    |
| 112-2001-2-72 | HR212-10R-8SC(72) | 8           | Color : Sand beige |      |



## Receptacle(Right Angle Dip Type)

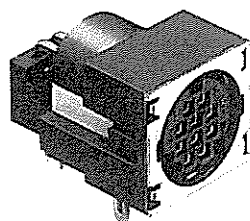


HR212-10RA-8SDL (74)

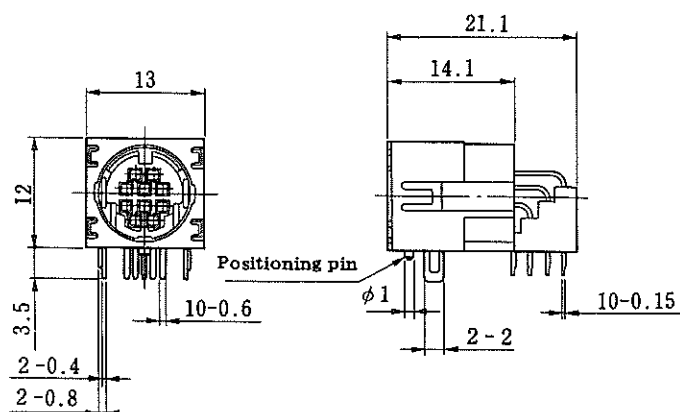


| HRS No.       | Part No.             | No. of pins | Remarks                                                | RoHS |
|---------------|----------------------|-------------|--------------------------------------------------------|------|
| 112-2004-0-74 | HR212-10RA-8SDL (74) | 8           | Color : Sand beige<br>Terminal : Tin plated            | ○    |
| 112-2004-0-72 | HR212-10RA-8SDL (72) | 8           | Color : Sand beige<br>Terminal : Selective gold plated |      |
| 112-2004-0-73 | HR212-10RA-8SDL (73) | 8           | Color : Black<br>Terminal : Selective gold plated      |      |

Remark: For dip post arrangement, see below figure.



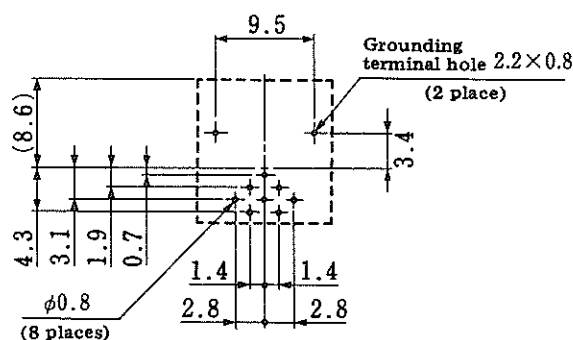
HR212-10RC-10SDL (74)



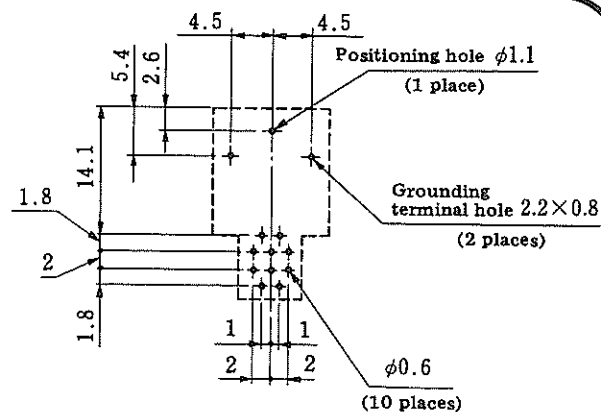
| HRS No.       | Part No.              | No. of pins | Remarks                                           | RoHS |
|---------------|-----------------------|-------------|---------------------------------------------------|------|
| 112-2009-4-74 | HR212-10RC-10SDL (74) | 10          | Color : Black<br>Terminal : Selective gold plated | ○    |

Remark: For dip post arrangement, see below figure.

## Receptacle Dip Post Layout



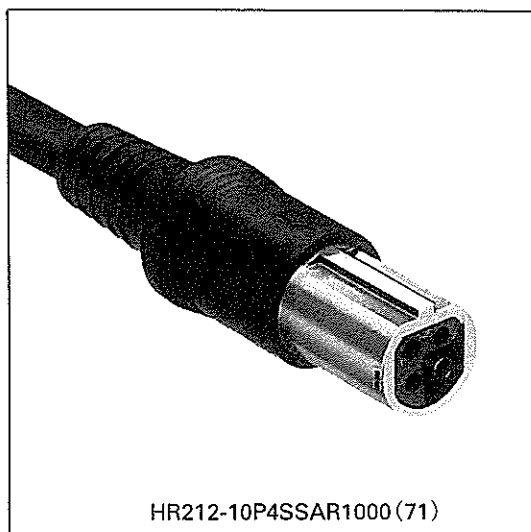
HR212-10RA-8SDL



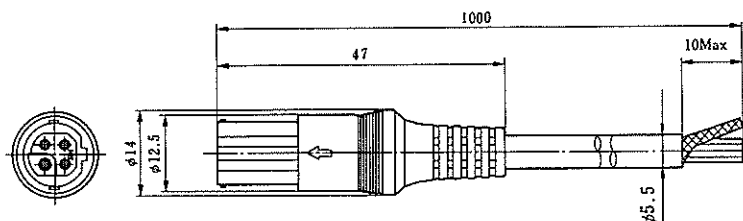
HR212-10RC-10SDL

Remark: Dimensional tolerance of  $\pm 0.05\text{mm}$  is recommended for the board arrangement.

## Straight Plug

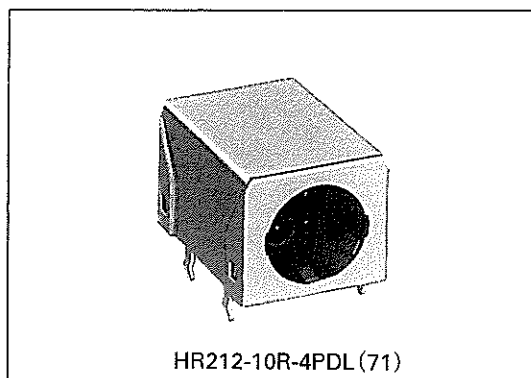


HR212-10P4SSAR1000 (71)

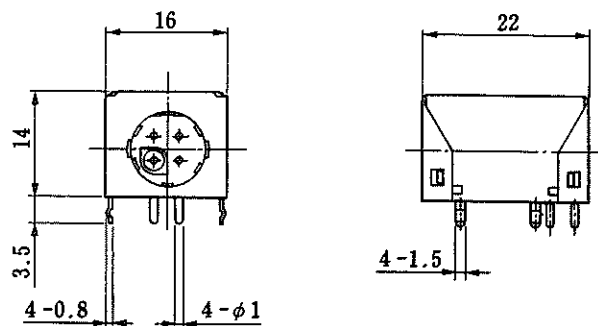


| HRS No.       | Part No.                | No. of pins | No. of cable cores | Remarks                                                  | RoHS |
|---------------|-------------------------|-------------|--------------------|----------------------------------------------------------|------|
| 112-5000-6-71 | HR212-10P4SSAR1000 (71) | 4           | 4-cores(shielded)  | Color : Black<br>With sequence<br>Terminal : Gold plated | ○    |

## Receptacle (Right Angle Dip Type)

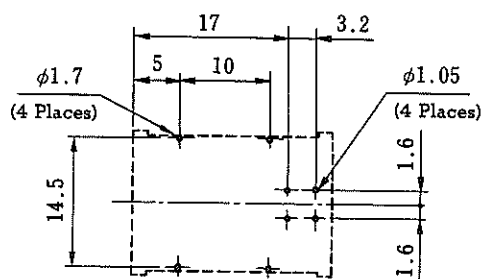


HR212-10R-4PDL (71)



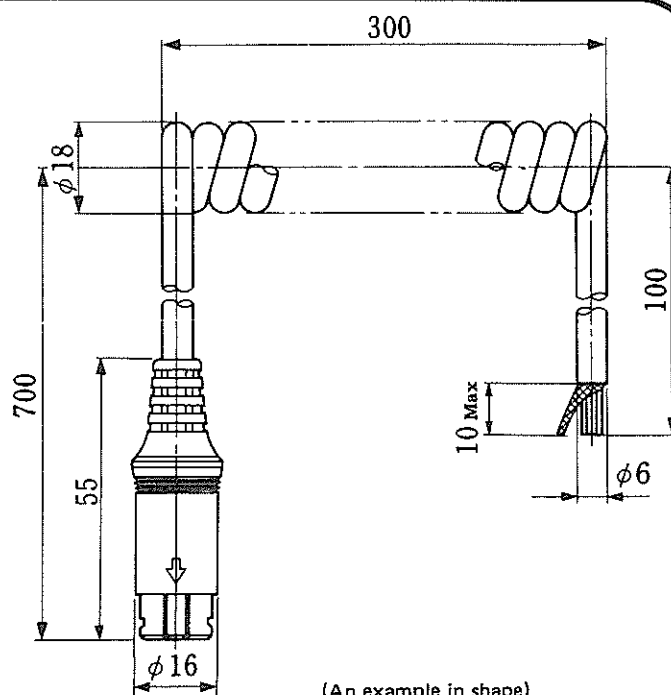
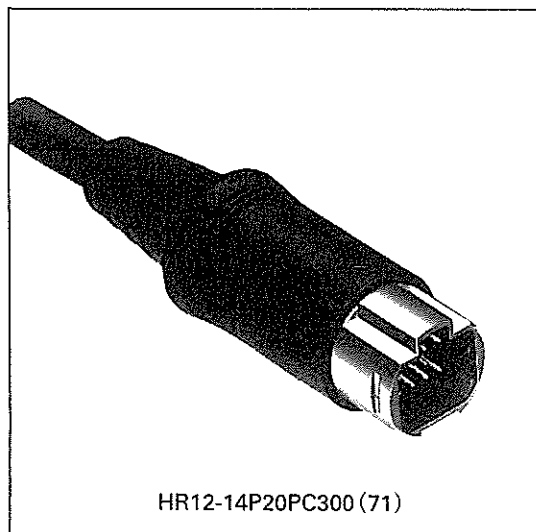
(Dip Post Layout)

| HRS No.       | Part No.            | No. of pins | Remarks                | RoHS |
|---------------|---------------------|-------------|------------------------|------|
| 112-5100-0-71 | HR212-10R-4PDL (71) | 4           | Terminal : Gold plated | ○    |



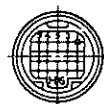
Remark: Dimensional tolerance of  $\pm 0.05\text{mm}$  is recommended for the board arrangement.

## Straight Plug

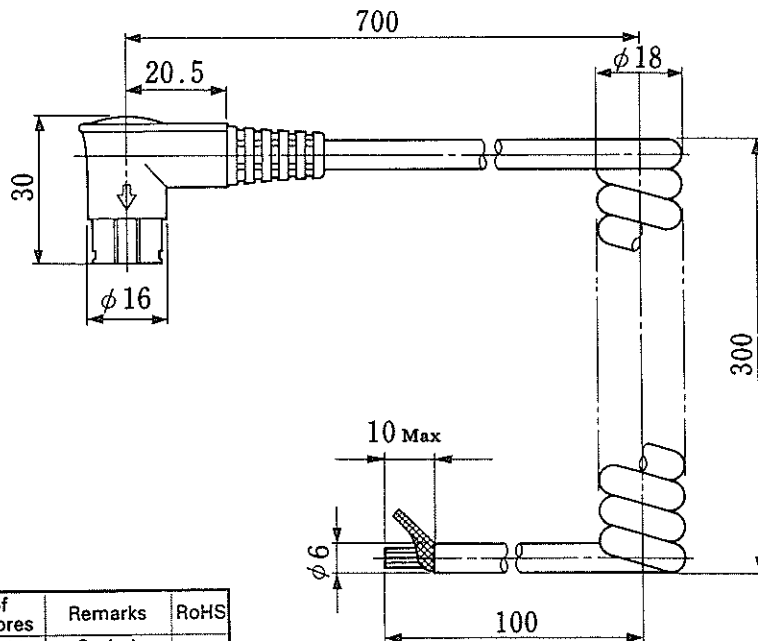
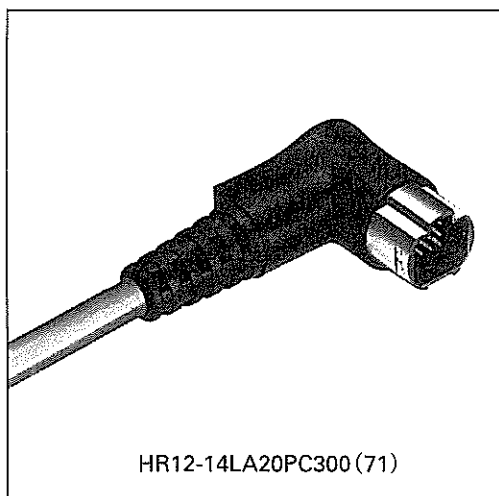


(An example in shape)

| HRS No.       | Part No.               | No. of pins | Weight     | No. of cable cores  | Remarks       | RoHS |
|---------------|------------------------|-------------|------------|---------------------|---------------|------|
| 112-1101-1-71 | HR12-14P20PC300 (71)   | 20          | About 166g | 20-cores (shielded) | Curled cord   | ○    |
| 112-1106-5-72 | HR12-14P20PSB1100 (72) | 20          | About 79g  | 16-cores (shielded) | Straight cord | ○    |

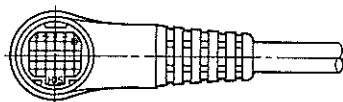


## Right Angle Plug



| HRS No.       | Part No.              | No. of pins | Weight     | No. of cable cores  | Remarks     | RoHS |
|---------------|-----------------------|-------------|------------|---------------------|-------------|------|
| 112-1001-7-71 | HR12-14LA20PC300 (71) | 20          | About 166g | 20-cores (shielded) | Curled cord | ○    |

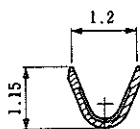
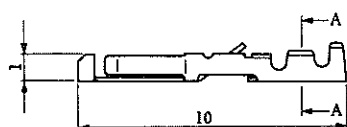
Remark: The cable should be taken out in the direction of "a" only.





## Contact

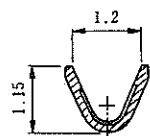
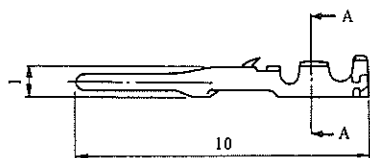
### Female Contact



Section A-A

| Type          | HRS No.    | Part No.    | Plating              | Applicable wire | RoHS |
|---------------|------------|-------------|----------------------|-----------------|------|
| Loose contact | 112-0410-0 | HR12-SC-111 | Partial gold plating | AWG # 26~ # 30  | ○    |
|               | 112-0411-3 | HR12-SC-112 | Silver plating       | AWG # 26~ # 30  |      |
|               | 112-0412-6 | HR12-SC-113 | Tin plating          | AWG # 26~ # 30  |      |
| Chain contact | 112-0407-6 | HR12-SC-211 | Partial gold plating | AWG # 26~ # 30  |      |
|               | 112-0408-9 | HR12-SC-212 | Silver plating       | AWG # 26~ # 30  |      |
|               | 112-0409-1 | HR12-SC-213 | Tin plating          | AWG # 26~ # 30  |      |

### Male Contact



Section A-A

| Type          | HRS No.       | Part No.         | Plating              | Applicable wire | RoHS |
|---------------|---------------|------------------|----------------------|-----------------|------|
| Loose contact | 110-0515-6    | HR10-PC-111      | Partial gold plating | AWG # 26~ # 30  | ○    |
|               | 110-0519-7-71 | HR10-PC-113 (71) | Tin plating          | AWG # 26~ # 30  |      |
| Chain contact | 110-0516-9    | HR10-PC-211      | Partial gold plating | AWG # 26~ # 30  |      |
|               | 110-0520-6-71 | HR10-PC-213 (71) | Tin plating          | AWG # 26~ # 30  |      |

- Note 1. Use cables with cable covering outer dia.  $\phi$ 1mm or less.  
2. Loose terminals are offered in a package containing 100 pieces.  
Strip terminals are offered by reel containing 10,000 pieces.

## Applicable tools

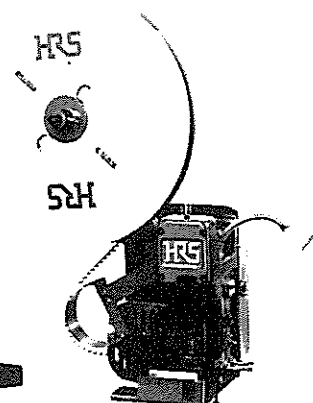
| Type            | Item                            | HRS No.    | Part No.     | Applicable terminal                            | Applicable wire |
|-----------------|---------------------------------|------------|--------------|------------------------------------------------|-----------------|
| Manual          | Manual crimping tool            | 150-0052-9 | HR12-SC-TC   | HR10-PC-111<br>113 (71)                        | AWG # 26~ # 30  |
|                 |                                 |            |              | HR12-SC-111<br>112<br>113                      |                 |
| Automatic       | Automatic crimping machine body | 901-0005-4 | CM-105       | —                                              | —               |
|                 | Applicator                      | 901-2015-9 | AP105-HR12-1 | HR10-PC-211<br>213 (71)                        | AWG # 26~ # 30  |
| Extraction tool |                                 | 150-0050-3 | HR12-SC-TP   | HR12-SC-111<br>112<br>113<br>211<br>212<br>213 | —               |
|                 |                                 | 150-0039-0 | RP6-SC-TP    | HR10-PC-111<br>113 (71)<br>211<br>213 (71)     | —               |



(HR12-SC-TC)  
Hand Crimp Tool



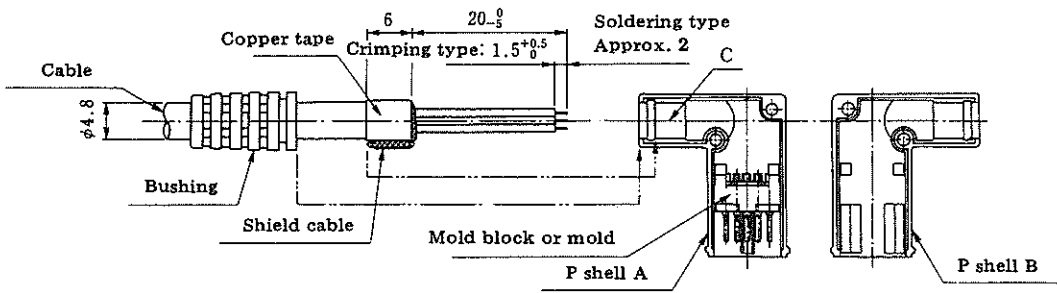
(HR12-SC-TP) (RP6-SC-TP)  
Extraction Tool

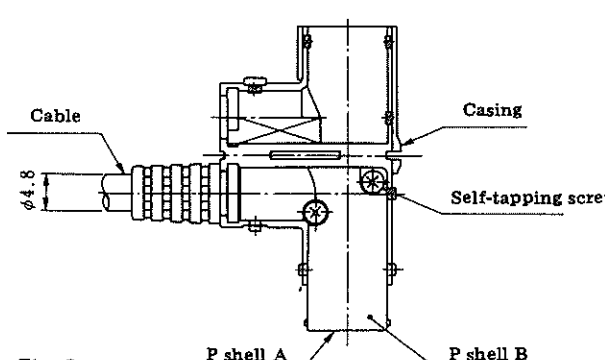
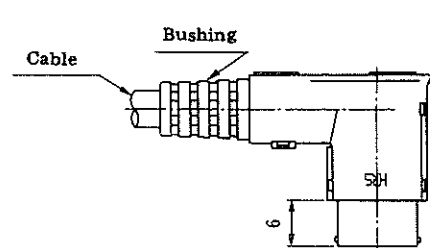
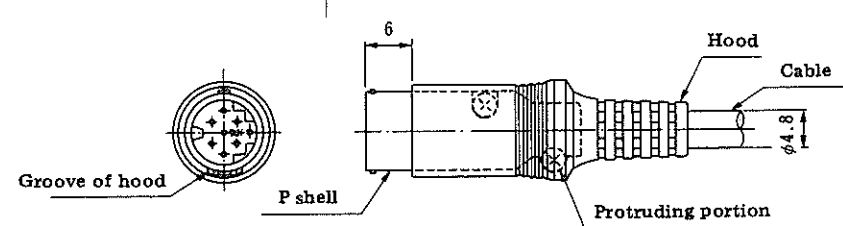
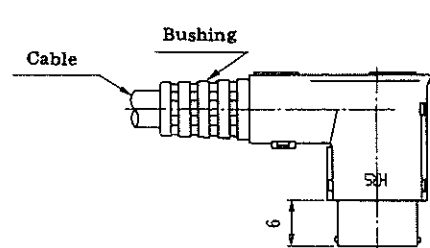


Auto Crimp Tool CM-105

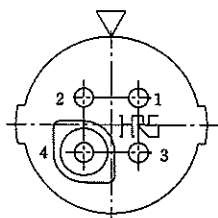
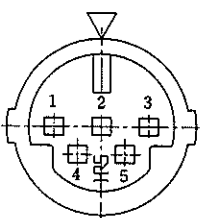
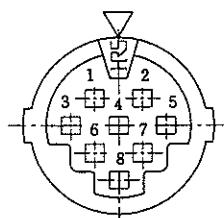
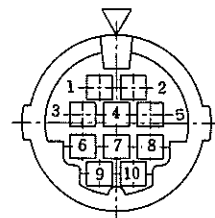
## Cable Connecting Procedures

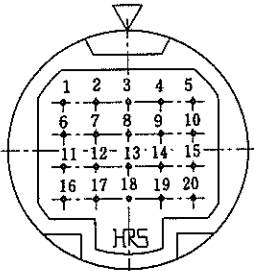
### • Works Process

|   | Right-angle Plug                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Straight Plug                                                |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| 1 | Use cables of finished dia. 4.8mm and nominal conductor cross section of 0.129mm <sup>2</sup> (AWG#26) and under.<br>(Inner dia. of solder pot of soldering terminal is $\phi 0.7$ mm.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                              |
| 2 | Insert bushing over cable as shown in Fig. 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Install hood over cable. Figure of straight type is omitted. |
| 3 |  <p style="text-align: center;">Fig. 1</p> <p>Make cable end treatment to the dimensions shown in Fig. 1. For shield cable, an example of cable end treatment is given below.</p> <ol style="list-style-type: none"> <li>(1) Firmly wrap the cable sheath end with copper tape 6mm wide, 16mm long and 85<math>\mu</math>m thick (overall thickness including adhesive).</li> <li>(2) Bundle up the shield cables, and tight twist. (Twist at least three turns over 6mm in length from the cable sheath tip)</li> <li>(3) Cut the shield cables at 6<math>\begin{smallmatrix} 0 \\ -1 \end{smallmatrix}</math>mm from the cable sheath tip, and fold back as shown in Fig. 1.</li> </ol> |                                                              |
| 4 | <p>(Soldering Type)<br/>Solder cables to mold block into which terminals are assembled.</p> <p>(Crimping Type)<br/>Use applicable tool (HR12-SC-TC or CM-105) to crimp connect cables to applicable crimping terminals, then insert crimped terminals into mold and fix them to complete the mold block.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                              |
| 5 | Assemble mold block having cables connected to location P shell A as shown in Fig. 1. Carefully note that mold block and P shell A have directional polarization.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                              |
| 6 | Assemble bundled shield cables so that they are positioned at the center (C section) of cable outlet of P shell A as shown in Fig. 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                              |

|    | Right-angle Plug                                                                                                                                                                                                                                                                                                                                             | Straight Plug                                                                                                                                                                                                          |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7  | <p>Install P shell B over P shell A as shown in Fig. 2 and avoid catching of internal cables. Use the M2 self-tapping screws supplied (shape of screw head is phillip #0 for precision machinery) to secure from the direction of P shell B (2 places).</p>  <p>Fig. 2</p> |                                                                                                                                                                                                                        |
| 8  | <p>Move bushing to the end face of P shell, and put P shell and bushing into the casing as shown in Fig. 2.</p>  <p>Fig. 3</p>                                                                                                                                            | <p>With groove of hood and protruding portion of P shell aligned, install hood over P shell as shown in Fig. 4.</p>  <p>Fig. 4</p> |
| 9  | <p>Install casing over P shell as shown in Fig. 4.</p>  <p>Fig. 3</p>                                                                                                                                                                                                     |                                                                                                                                                                                                                        |
| 10 | <p>Now assembling is completed.</p>                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                        |

## Terminal Arrangement and Performance

| Shell size            | 10 sizes                                                                          |                                                                                   |                                                                                    |                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Terminal arrangement  |  |  |  |  |
| No. of contacts       | 4                                                                                 | 5                                                                                 | 8                                                                                  | 10                                                                                  |
| Withstand voltage     | 300VAC for 1 minute                                                               | 300VAC for 1 minute                                                               |                                                                                    |                                                                                     |
| Rated current         | 5A                                                                                | 1A                                                                                |                                                                                    |                                                                                     |
| Insulation resistance | 200MΩ or less at 250VDC                                                           | 200MΩ or more at 250VDC                                                           |                                                                                    |                                                                                     |
| Contact resistance    | 30mΩ or less (excluding cable conductor resistance)                               |                                                                                   |                                                                                    |                                                                                     |

| Shell size            | 14 size                                                                             |
|-----------------------|-------------------------------------------------------------------------------------|
| Terminal arrangement  |  |
| No. of contacts       | 20                                                                                  |
| Withstand voltage     | 300VAC for 1 minute                                                                 |
| Rated current         | 1A                                                                                  |
| Insulation resistance | 200m $\Omega$ or more at 250VDC                                                     |
| Contact resistance    | 30m $\Omega$ or less (excluding cable conductor resistance)                         |

Remarks: 1. The above figures show the receptacle pin inserts as viewed from the mating side.  
2. Withstand voltage shows the testing voltage.  
3. Contact resistance is as measured at 1ADC.