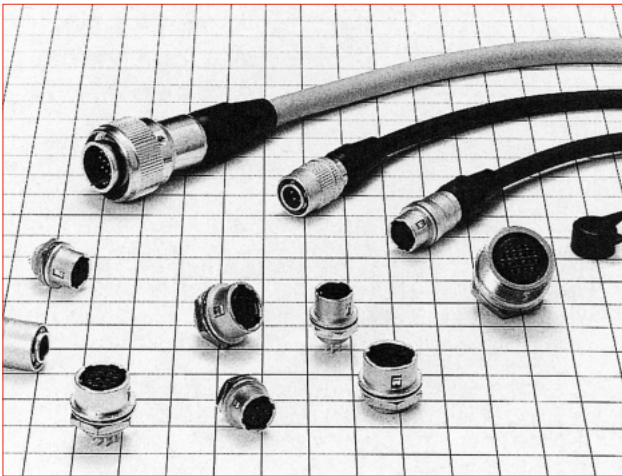


# High performance miniature circular connectors

## HR10 Series



### ■ Features

#### 1. A simple, yet highly reliable design for compact, high density applications

Although small in size, the HR10 series are full featured connectors with a well integrated design.

#### 2. Extremely easy mating/unmating operations

Easy to operate, the single-action push-pull lock structure allows for quick and efficient locking and unlocking.

### ■ Product Specifications

| Ratings | Shell size | No. of contacts | Rated current |
|---------|------------|-----------------|---------------|
|         | 7          | 4               | 2A            |
|         |            | 5               |               |
|         |            | 6               |               |
| 10      | 10<br>12   | 2A              |               |
| 13      | 20         | 2A              |               |

| Ratings | Shell size | No. of contacts | Rated voltage                                      |
|---------|------------|-----------------|--|
|         | 7          | 4               | AC150V, DC200V<br>AC100V, DC140V<br>AC100V, DC140V |
|         |            | 5               |  |
|         |            | 6               |  |
| 10      | 10<br>12   | AC100V, DC140V  |  |
| 13      | 20         | AC100V, DC140V  |  |

| Ratings | Operation temperature range | -25 to +85°C |
|---------|-----------------------------|--------------|
|         | Storage temperature range   | -10 to +60°C |

| Items                    | Specifications                                    | Conditions   |
|--------------------------|---|--|
| 1. Contact resistance    | 10mΩ min.   | Measured at DC 1A  |
| 2. Insulation resistance | 1,000MΩ min.                                      | Measured at DC 100V  |
| 3. Withstanding voltage  | No flashover or dielectric breakdown.             | AC 300V for one minute, 4 contacts : AC 500V for 1 minute  |
| 4. Vibration resistance  | No electrical discontinuity of 10μs or greater    | 10 to 55Hz/cycle, amplitude : 0.75mm, 3 axis directions, for 2 hours each  |
| 5. Shock resistance      | No electrical discontinuity of 10μs or greater    | Acceleration : 490m/s <sup>2</sup> , duration : 11ms 3 directions, 3 times each  |
| 6. Mating Cycles         | Contact resistance : 15mΩ min.                    | 1,000 times  |
| 7. Temperature cycle     | Insulation resistance : 1,000MΩ min.              | -55°C : 30minutes→Normal temperature : 10 to 15 minutes→<br>85°C : 30minutes→Normal temperature :<br>10 to 15minutes, left for 5 cycles. |
| 8. Humidity resistance   | 5MΩ min. (at high humidity)<br>50MΩ min. (at dry) | Temperature : 40°C, relative humidity : 90 to 95%,<br>left for 96 hours  |

## Materials / Finish

| Items     | Material                   | Finish  | Remarks     |
|-----------|----------------------------|---|-------------|
| Exterior  | Zinc alloy, brass          | Matte finished nickel plating                 | —————       |
| Insulator | Polyamide resin, PBT resin | —————   | Blue, Black |
| Contact   | Copper alloy               | HR10 : Gold plating<br>HR10A : Silver plating | —————       |

## Product Number Structure

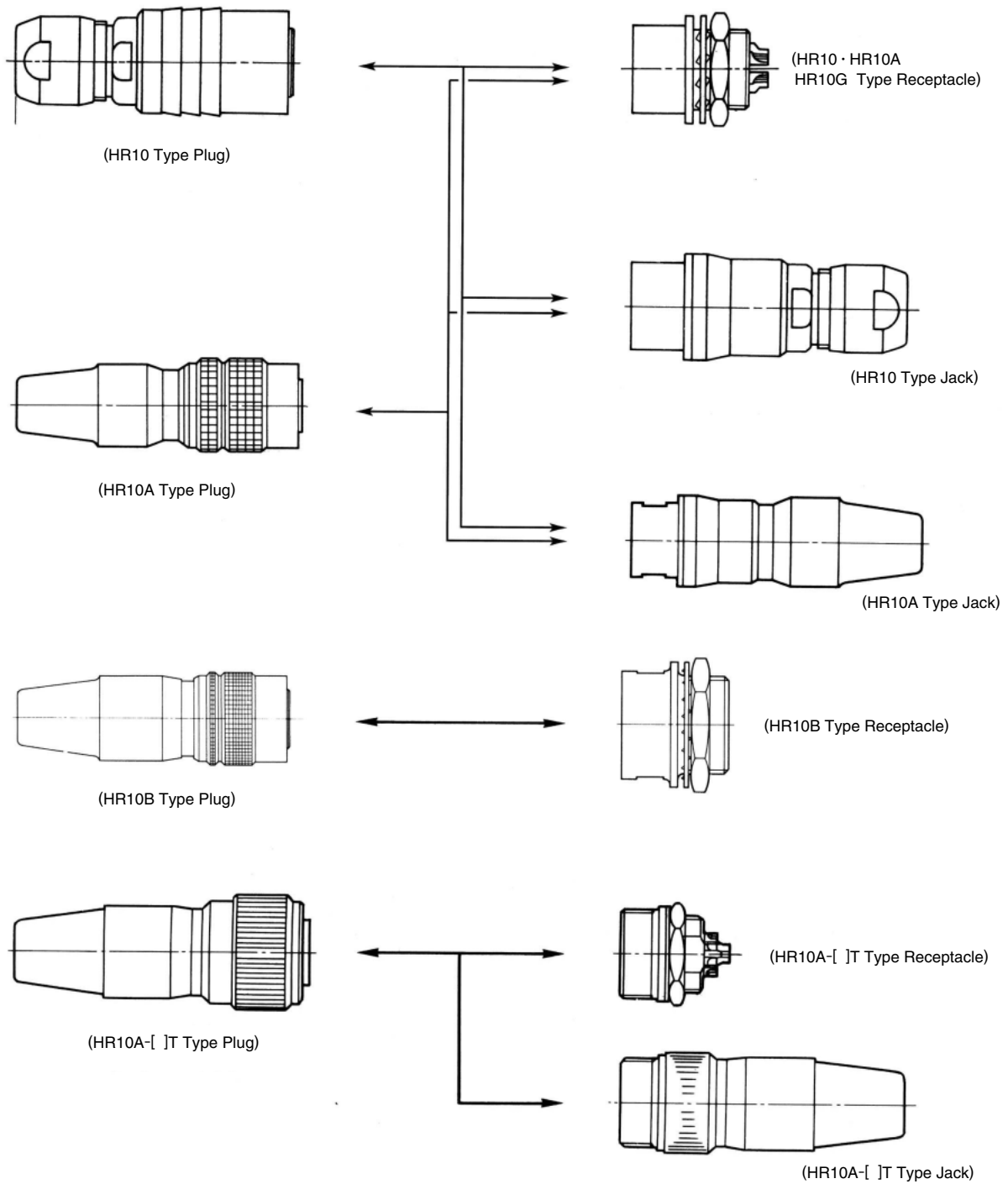
Refer to the chart below when determining the product specifications from the product number.  
Please select from the product numbers listed in this catalog when placing orders.

**HR10A - 7 P - 3 P C (\*\*)**

①
②
③
④
⑤
⑥
⑦

|   |
|---|
| <p>① Model name : Indicates the HR10A Series. The part type is identified as follows.<br/>                     HR10A : Lower cost type<br/>                     HR10G : Shield type<br/>                     HR10B : Coaxial contact type</p> |
| <p>② Shell size : The shell size is the outer shell diameter or the mating interface end of the plug.</p>   |
| <p>③ Shell type<br/>                     P : Plug<br/>                     R : Receptacle<br/>                     J : Jack</p>   |
| <p>④ Number of contacts</p>   |
| <p>⑤ Contact form<br/>                     P : Male contact<br/>                     S : Female contact</p>   |
| <p>⑥ Contact termination method:<br/>                     None : Solder termination<br/>                     C : Crimp termination</p>  |
| <p>⑦ Other specifications : A two-digit character is added to indicate other specifications as needed.</p>  |

## ◆ Diagrams of Connectors in Combination



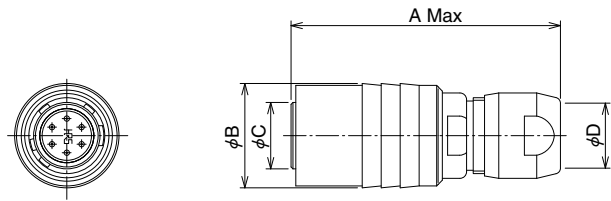
**Notes**

- 1 : When using a plug with male terminal, be sure to use a receptacle or jack fitted with female terminal.
- 2 : Standard finish of the terminal is gold plating for the HR10, and silver plating for the HR10A and HR10G.  
Be sure to use male and female connectors of the same plating.

## ■ HR10 type

HR10 type connectors, use a gold plated contact as the standard plating specification. Silver plating is used on the contacts for other series such as HR10A and HR10G. To avoid mixing gold and silver contacts, please be sure to confirm the plating specification when using HR10 type connectors with HR10A or HR10G connectors.

### ● Plug

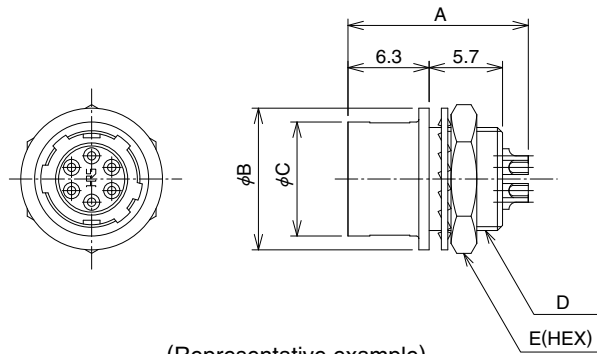


(Representative example)

Unit : mm

| Part No.         | HRS No.       | No. of Contacts | A    | φB | φC  | φD  | Weight |
|------------------|---------------|-----------------|------|----|-----|-----|--------|
| HR10-7P-4P(73)   | 110-0021-6 73 | 4               | 28.5 | 11 | 7   | 5.2 | 8g     |
| HR10-7P-4S(73)   | 110-0022-9 73 |                 |      |    |     |     |        |
| HR10-7P-6P(73)   | 110-0023-1 73 | 6               | 28.5 | 11 | 7   | 5.2 | 8g     |
| HR10-7P-6S(73)   | 110-0024-4 73 |                 |      |    |     |     |        |
| HR10-10P-12P(73) | 110-0025-7 73 | 12              | 32.5 | 14 | 9.5 | 7.2 | 15g    |
| HR10-10P-12S(73) | 110-0026-0 73 |                 |      |    |     |     |        |

### ● Receptacle



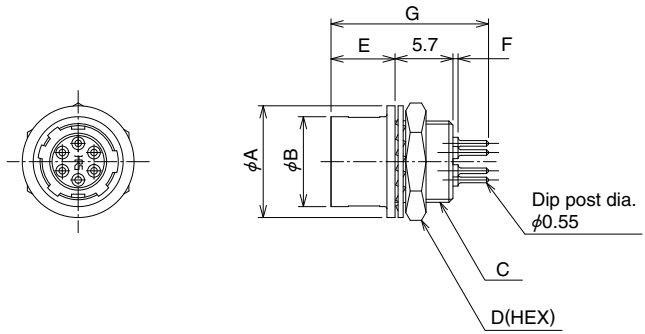
(Representative example)

Unit : mm

| Part No.         | HRS No.       | No. of Contacts | A  | φB | φC   | D        | E  | Weight |
|------------------|---------------|-----------------|----|----|------|----------|----|--------|
| HR10-7R-4S(73)   | 110-0031-0 73 | 4               | 14 | 11 | 8.85 | M8×0.5   | 10 | 3.5g   |
| HR10-7R-4P(73)   | 110-0032-2 73 |                 |    |    |      |          |    |        |
| HR10-7R-6S(73)   | 110-0033-5 73 | 6               | 14 | 11 | 8.85 | M8×0.5   | 10 | 3.5g   |
| HR10-7R-6P(73)   | 110-0034-8 73 |                 |    |    |      |          |    |        |
| HR10-10R-12S(73) | 110-0035-0 73 | 12              | 16 | 14 | 11.9 | M11×0.75 | 13 | 6g     |
| HR10-10R-12P(73) | 110-0036-3 73 |                 |    |    |      |          |    |        |

Remarks : For mounting holes, see page 20.

● Receptacle (PCB dip type)



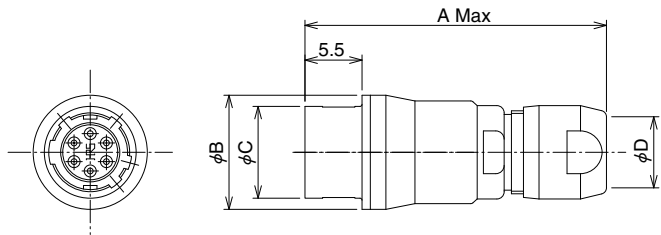
(Representative example)

Unit : mm

| Part No.          | HRS No.       | No. of Contacts | φA | φB   | C        | D  | E   | F   | G    | Weight |
|-------------------|---------------|-----------------|----|------|----------|----|-----|-----|------|--------|
| HR10-7R-4SA(73)   | 110-0059-9 73 | 4               | 11 | 8.85 | M8×0.5   | 10 | 6.3 | 0.5 | 15.5 | 3g     |
| HR10-7R-6SA(73)   | 110-0050-4 73 | 6               |    |      |          |    |     |     |      |        |
| HR10-7R-6PA(73)   | 110-0061-0 73 | 12              | 14 | 11.9 | M11×0.75 | 13 |     |     |      | 5g     |
| HR10-10R-12SA(73) | 110-0049-5 73 |                 |    |      |          |    |     |     |      |        |
| HR10-10R-12PA(73) | 110-0055-8 73 |                 |    |      |          |    |     |     |      |        |

Remarks : 1. For mounting holes, see page 20.  
2. For dip post arrangement, see page 16.

● Jack



(Representative example)

Unit : mm

| Part No.         | HRS No.       | No. of Contacts | A    | φB | φC   | φD  | Weight |
|------------------|---------------|-----------------|------|----|------|-----|--------|
| HR10-7J-4S(73)   | 110-0027-2 73 | 4               | 28.5 | 11 | 8.85 | 5.2 | 7g     |
| HR10-7J-4P(73)   | 110-0028-5 73 |                 |      |    |      |     |        |
| HR10-7J-6S(73)   | 110-0029-8 73 | 6               | 32.5 | 14 | 11.9 | 7.2 | 14g    |
| HR10-7J-6P(73)   | 110-0030-7 73 |                 |      |    |      |     |        |
| HR10-10J-12S(73) | 110-0037-6 73 | 12              | 32.5 | 14 | 11.9 | 7.2 | 14g    |
| HR10-10J-12P(73) | 110-0038-9 73 |                 |      |    |      |     |        |

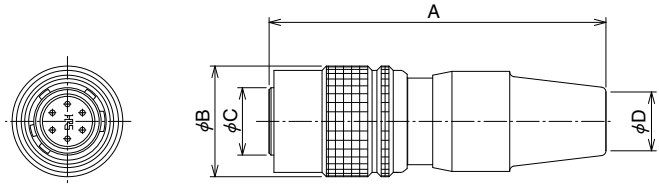
## HR10A·10G Types

HR10A connectors are a lower-cost version, yet still provide a high "Value Add" while preserving the superior characteristics of the HR10 connectors. Cable clamps are crimped using a special crimping tool, and the shells have a rubber boot which provides a flexible design that helps to prevent cable twisting.

The HR10G connector is a shielded type connector which has an internal contacting structure between the plug shell and receptacle shell.

Contacts in both HR10A and 10G connectors are silver plated as standard.

### ● Plug (Solder type)

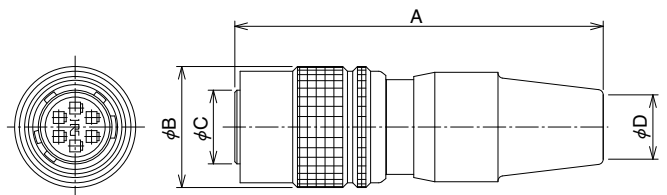


(Representative example)

Unit : mm

| Part No.          | HRS No.       | No. of Contacts | A  | φB   | φC  | φD  | Weight |
|-------------------|---------------|-----------------|----|------|-----|-----|--------|
| HR10A-7P-4P(73)   | 110-0301-2 73 | 4               | 35 | 11.5 | 7   | 5   | 9g     |
| HR10A-7P-4S(73)   | 110-0302-5 73 |                 |    |      |     |     |        |
| HR10A-7P-5P(73)   | 110-0318-5 73 | 5               |    |      |     |     |        |
| HR10A-7P-5S(73)   | 110-0319-8 73 |                 |    |      |     |     |        |
| HR10A-7P-6P(73)   | 110-0303-8 73 | 6               |    |      |     |     |        |
| HR10A-7P-6S(73)   | 110-0304-0 73 |                 |    |      |     |     |        |
| HR10A-10P-10P(73) | 110-0407-3 73 | 10              | 43 | 14.7 | 9.5 | 7   | 16g    |
| HR10A-10P-10S(73) | 110-0408-6 73 |                 |    |      |     |     |        |
| HR10A-10P-12P(73) | 110-0401-7 73 | 12              |    |      |     |     |        |
| HR10A-10P-12S(73) | 110-0402-0 73 |                 |    |      |     |     |        |
| HR10A-13P-20P(73) | 110-0713-0 73 | 20              | 59 | 19   | 13  | 37g |        |
| HR10A-13P-20S(73) | 110-0716-8 73 |                 |    |      |     |     |        |

### ● Plug(Crimp type)

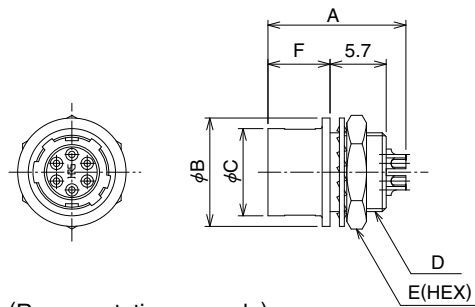


(Representative example)

Unit : mm

| Part No.           | HRS No.       | No. of Contacts | A  | φB   | φC | φD  | Weight |    |      |     |   |     |
|--------------------|---------------|-----------------|----|------|----|-----|--------|----|------|-----|---|-----|
| HR10A-7P-4PC(73)   | 110-0501-1 73 | 4               | 35 | 11.5 | 7  | 5   | 9g     |    |      |     |   |     |
| HR10A-7P-4SC(73)   | 110-0502-4 73 |                 |    |      |    |     |        |    |      |     |   |     |
| HR10A-7P-6PC(73)   | 110-0503-7 73 | 6               |    |      |    |     |        |    |      |     |   |     |
| HR10A-7P-6SC(73)   | 110-0504-0 73 |                 |    |      |    |     |        |    |      |     |   |     |
| HR10A-10P-10PC(73) | 110-0601-6 73 | 10              |    |      |    |     |        | 43 | 14.7 | 9.5 | 7 | 16g |
| HR10A-10P-10SC(73) | 110-0602-9 73 |                 |    |      |    |     |        |    |      |     |   |     |
| HR10A-10P-12PC(73) | 110-0603-1 73 | 12              |    |      |    |     |        |    |      |     |   |     |
| HR10A-10P-12SC(73) | 110-0604-4 73 |                 |    |      |    |     |        |    |      |     |   |     |
| HR10A-13P-20PC(73) | 110-0701-0 73 | 20              | 59 | 19   | 13 | 37g |        |    |      |     |   |     |
| HR10A-13P-20SC(73) | 110-0702-3 73 |                 |    |      |    |     |        |    |      |     |   |     |

● Receptacle (Solder type)



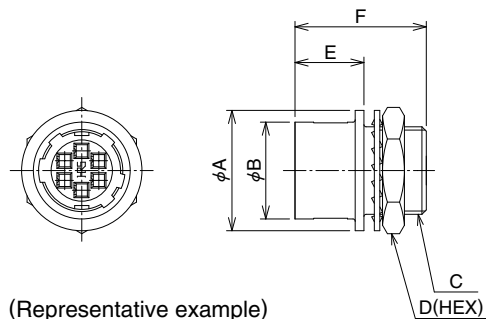
(Representative example)

Unit : mm

| Part No.          | HRS No.       | No. of Contacts | A    | φB | φC   | D      | E  | E   | Weight | Remarks     |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
|-------------------|---------------|-----------------|------|----|------|--------|----|-----|--------|-------------|------|----|------|----------|----|-----|----|--|----|----|------|----------|----|----|
| HR10A-7R-4S(73)   | 110-0305-3 73 | 4               | 14   | 11 | 8.85 | M8×0.5 | 10 | 6.3 | 3g     |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10A-7R-4P(73)   | 110-0306-6 73 |                 |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10A-7R-5S(73)   | 110-0320-7 73 | 5               |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10A-7R-5P(73)   | 110-0321-0 73 |                 |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10A-7R-6S(73)   | 110-0307-9 73 | 6               |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10A-7R-6P(73)   | 110-0308-1 73 |                 |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10A-10R-10S(71) | 110-0409-9 71 | 10              |      |    |      |        |    |     |        |             | 16   | 14 | 11.9 | M11×0.75 | 13 | 5g  |    |  |    |    |      |          |    |    |
| HR10A-10R-10P(73) | 110-0410-8 73 |                 |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10A-10R-12S(71) | 110-0403-2 71 | 12              |      |    |      |        |    |     |        |             | 19.2 | 18 | 15.4 | M14×0.75 | 17 | 9.3 | 8g |  |    |    |      |          |    |    |
| HR10A-10R-12P(73) | 110-0404-5 73 |                 |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10A-13R-20S(73) | 110-0714-2 73 | 20              | 20.2 |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10A-13R-20P(73) | 110-0715-5 73 |                 |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10G-7R-4S(73)   | 110-1601-1 73 | 4               | 14   | 11 | 8.85 | M8×0.5 | 10 | 6.3 | 3g     | Shield type |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10G-7R-4P(73)   | 110-1602-4 73 |                 |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10G-7R-6S(73)   | 110-1605-2 73 | 6               |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10G-7R-6P(73)   | 110-1606-5 73 |                 |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10G-10R-10S(71) | 110-1607-8 71 | 10              |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  | 16 | 14 | 11.9 | M11×0.75 | 13 | 5g |
| HR10G-10R-10P(73) | 110-1608-0 73 |                 |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |
| HR10G-10R-12S(71) | 110-1609-3 71 | 12              |      |    |      |        |    |     |        |             | 20.2 | 18 | 15.4 | M14×0.75 | 17 | 9.3 | 8g |  |    |    |      |          |    |    |
| HR10G-10R-12P(73) | 110-1610-2 73 |                 |      |    |      |        |    |     |        |             |      |    |      |          |    |     |    |  |    |    |      |          |    |    |

Remarks : For mounting holes, see page 20.

● Receptacle (Crimp type)



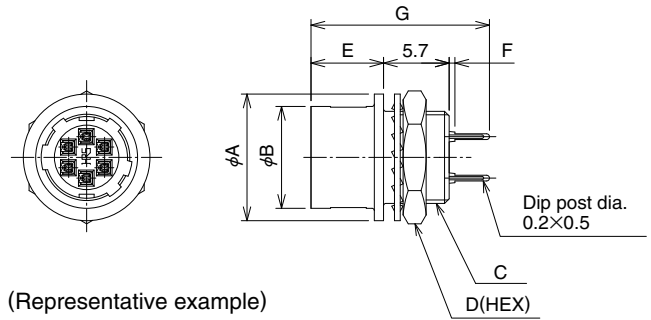
(Representative example)

Unit : mm

| Part No.           | HRS No.       | No. of Contacts | φA | φB   | C      | D  | E   | F    | Weight | Remarks     |      |          |    |     |    |      |
|--------------------|---------------|-----------------|----|------|--------|----|-----|------|--------|-------------|------|----------|----|-----|----|------|
| HR10A-7R-4SC(73)   | 110-0506-5 73 | 4               | 11 | 8.85 | M8×0.5 | 10 | 6.3 | 12   | 3g     |             |      |          |    |     |    |      |
| HR10A-7R-4PC(73)   | 110-0505-2 73 |                 |    |      |        |    |     | 12.2 |        |             |      |          |    |     |    |      |
| HR10A-7R-6SC(73)   | 110-0508-0 73 | 6               |    |      |        |    |     | 12   |        |             |      |          |    |     |    |      |
| HR10A-7R-6PC(73)   | 110-0507-8 73 |                 |    |      |        |    |     |      |        |             | 12.2 |          |    |     |    |      |
| HR10A-10R-10SC(71) | 110-0606-0 71 | 10              |    |      |        |    |     | 14   |        |             | 11.9 | M11×0.75 | 13 | 12  | 5g |      |
| HR10A-10R-10PC(71) | 110-0605-7 71 |                 |    |      |        |    |     |      |        |             |      |          |    |     |    | 12.2 |
| HR10A-10R-12SC(71) | 110-0608-5 71 | 12              |    |      |        |    |     | 12   |        |             |      |          |    |     |    |      |
| HR10A-10R-12PC(71) | 110-0607-2 71 |                 |    |      |        |    |     |      |        |             | 12.2 |          |    |     |    |      |
| HR10A-13R-20SC(73) | 110-0703-6 73 | 20              |    |      |        |    |     | 18   |        |             | 15.4 | M14×0.75 | 17 | 9.3 | 15 | 8g   |
| HR10A-13R-20PC(73) | 110-0704-9 73 |                 |    |      |        |    |     |      |        |             |      |          |    |     |    |      |
| HR10G-7R-4SC(73)   | 110-1701-6 73 | 4               | 11 | 8.85 | M8×0.5 | 10 | 6.3 | 12   | 3g     | Shield type |      |          |    |     |    |      |
| HR10G-7R-4PC(73)   | 110-1702-9 73 |                 |    |      |        |    |     | 12.2 |        |             |      |          |    |     |    |      |
| HR10G-7R-6SC(73)   | 110-1705-7 73 | 6               |    |      |        |    |     | 12   |        |             |      |          |    |     |    |      |
| HR10G-7R-6PC(73)   | 110-1706-0 73 |                 |    |      |        |    |     |      |        |             | 12.2 |          |    |     |    |      |
| HR10G-10R-10SC(71) | 110-1707-2 71 | 10              |    |      |        |    |     | 14   |        |             | 11.9 | M11×0.75 | 13 | 12  | 5g |      |
| HR10G-10R-10PC(71) | 110-1708-5 71 |                 |    |      |        |    |     |      |        |             |      |          |    |     |    | 12.2 |
| HR10G-10R-12SC(71) | 110-1709-8 71 | 12              |    |      |        |    |     | 12   |        |             |      |          |    |     |    |      |
| HR10G-10R-12PC(71) | 110-1710-7 71 |                 |    |      |        |    |     |      |        |             | 12.2 |          |    |     |    |      |
| HR10G-13R-20SC(73) | 110-1711-0 73 | 20              |    |      |        |    |     | 18   |        |             | 15.4 | M14×0.75 | 17 | 9.3 | 15 | 8g   |
| HR10G-13R-20PC(73) | 110-1712-2 73 |                 |    |      |        |    |     |      |        |             |      |          |    |     |    |      |

Remarks : For mounting holes, see page 20.

● Receptacle (Dip type)

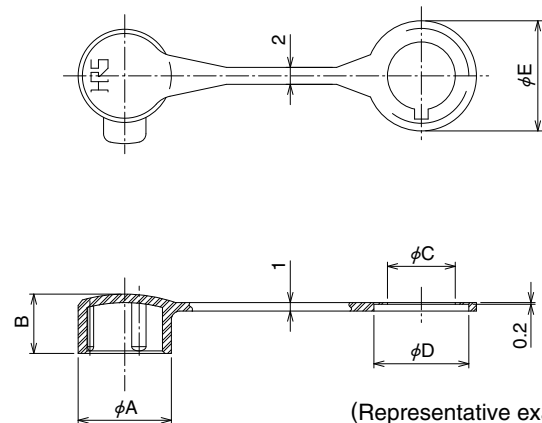
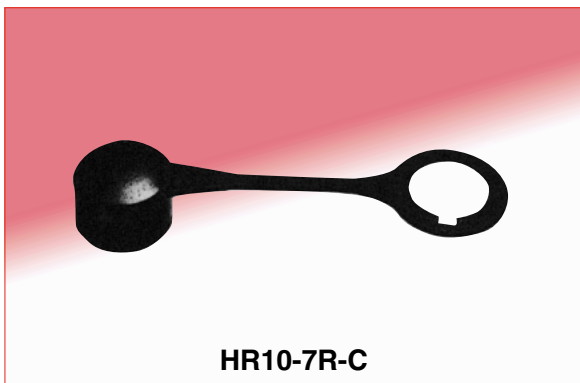


Unit : mm

| Part No.           | HRS No.       | No. of Contacts | φA | φB   | C        | D  | E   | F   | G    | Weight | Remarks     |
|--------------------|---------------|-----------------|----|------|----------|----|-----|-----|------|--------|-------------|
| HR10A-7R-4SB(73)   | 110-0314-4 73 | 4               | 11 | 8.85 | M8x0.5   | 10 | 6.3 | 0.5 | 15.6 | 3g     | Shield type |
| HR10A-7R-4PB(73)   | 110-0315-7 73 |                 |    |      |          |    |     |     |      |        |             |
| HR10A-7R-5SB(73)   | 110-0322-2 73 | 5               | 11 | 8.85 | M8x0.5   | 10 | 6.3 | 0.5 | 15.6 | 3g     |             |
| HR10A-7R-6SB(73)   | 110-0316-0 73 |                 |    |      |          |    |     |     |      |        |             |
| HR10A-7R-6PB(73)   | 110-0317-2 73 | 6               | 11 | 8.85 | M8x0.5   | 10 | 6.3 | 0.5 | 15.6 | 3g     |             |
| HR10A-10R-10SB(71) | 110-0413-6 71 |                 |    |      |          |    |     |     |      |        |             |
| HR10A-10R-10PB(71) | 110-0414-9 71 | 10              | 14 | 11.9 | M11x0.75 | 13 | 6.3 | 0.5 | 15.6 | 5g     |             |
| HR10A-10R-12SB(71) | 110-0415-1 71 |                 |    |      |          |    |     |     |      |        |             |
| HR10A-10R-12PB(71) | 110-0416-4 71 | 12              | 14 | 11.9 | M11x0.75 | 13 | 6.3 | 0.5 | 15.6 | 5g     |             |
| HR10A-13R-20SB(73) | 110-0707-7 73 |                 |    |      |          |    |     |     |      |        |             |
| HR10A-13R-20PB(73) | 110-0708-0 73 | 20              | 18 | 15.4 | M14x0.75 | 17 | 9.3 | 0   | 17.8 | 8g     |             |
| HR10G-7R-4SB(73)   | 110-1801-0 73 |                 |    |      |          |    |     |     |      |        |             |
| HR10G-7R-4PB(73)   | 110-1802-3 73 | 4               | 11 | 8.85 | M8x0.5   | 10 | 6.3 | 0.5 | 15.6 | 3g     |             |
| HR10G-7R-6SB(73)   | 110-1805-1 73 |                 |    |      |          |    |     |     |      |        |             |
| HR10G-7R-6PB(73)   | 110-1806-4 73 | 6               | 11 | 8.85 | M8x0.5   | 10 | 6.3 | 0.5 | 15.6 | 3g     |             |
| HR10G-10R-10SB(71) | 110-1807-7 71 |                 |    |      |          |    |     |     |      |        |             |
| HR10G-10R-10PB(71) | 110-1808-0 71 | 10              | 14 | 11.9 | M11x0.75 | 13 | 6.3 | 0.5 | 15.6 | 5g     |             |
| HR10G-10R-12SB(71) | 110-1809-2 71 |                 |    |      |          |    |     |     |      |        |             |
| HR10G-10R-12PB(71) | 110-1810-1 71 | 12              | 14 | 11.9 | M11x0.75 | 13 | 6.3 | 0.5 | 15.6 | 5g     |             |
| HR10G-13R-20SB(73) | 110-1811-4 73 |                 |    |      |          |    |     |     |      |        |             |
| HR10G-13R-20PB(73) | 110-1812-7 73 | 20              | 18 | 15.4 | M14x0.75 | 17 | 9.3 | 0   | 17.8 | 8g     |             |

Remarks : 1. For mounting holes, see page 20.  
2. For dip post arrangement, see page 16.

● Dust cap

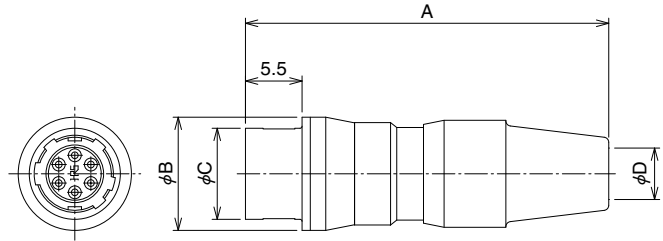


Unit : mm

| Part No.    | HRS No.       | φA   | B    | φC   | φD   | φE |
|-------------|---------------|------|------|------|------|----|
| HR10-7R-C   | 110-0058-6 00 | 11   | 7    | 8    | 11.2 | 13 |
| HR10-10R-C  | 110-0052-0 00 | 14   | 8.5  | 10.8 | 14.1 | 15 |
| HR10A-13R-C | 110-0452-8 00 | 17.5 | 11.5 | 14   | 18.1 | 19 |



● Jack (Solder type)

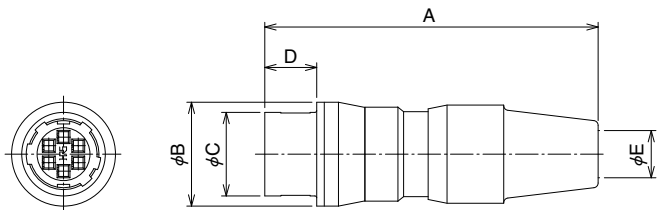


(Representative example)

Unit : mm

| Part No.          | HRS No.       | No. of Contacts | A    | φB | φC   | φD | Weight |      |    |      |   |     |
|-------------------|---------------|-----------------|------|----|------|----|--------|------|----|------|---|-----|
| HR10A-7J-4S(73)   | 110-0309-4 73 | 4               | 35.3 | 11 | 8.85 | 5  | 9g     |      |    |      |   |     |
| HR10A-7J-4P(73)   | 110-0310-3 73 |                 |      |    |      |    |        |      |    |      |   |     |
| HR10A-7J-6S(73)   | 110-0311-6 73 | 6               |      |    |      |    |        |      |    |      |   |     |
| HR10A-7J-6P(73)   | 110-0312-9 73 |                 |      |    |      |    |        |      |    |      |   |     |
| HR10A-10J-10S(73) | 110-0411-0 73 | 10              |      |    |      |    |        | 43.5 | 14 | 11.9 | 7 | 16g |
| HR10A-10J-10P(73) | 110-0412-3 73 |                 |      |    |      |    |        |      |    |      |   |     |
| HR10A-10J-12S(73) | 110-0405-8 73 | 12              |      |    |      |    |        |      |    |      |   |     |
| HR10A-10J-12P(73) | 110-0406-0 73 |                 |      |    |      |    |        |      |    |      |   |     |

● Jack (Crimp type)



(Representative example)

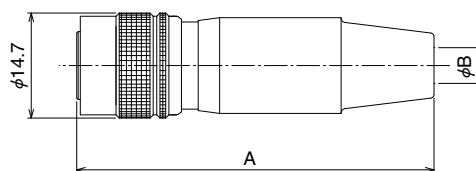
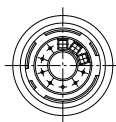
Unit : mm

| Part No.           | HRS No.       | No. of Contacts | A    | φB | φC   | D   | φE | Weight |
|--------------------|---------------|-----------------|------|----|------|-----|----|--------|
| HR10A-7J-4SC(73)   | 110-0510-2 73 | 4               | 35.3 | 11 | 8.85 | 5.5 | 5  | 9g     |
| HR10A-7J-6SC(73)   | 110-0512-8 73 | 6               |      |    |      |     |    |        |
| HR10A-10J-10SC(73) | 110-0610-7 73 | 10              | 43.5 | 14 | 11.9 |     | 7  | 16g    |
| HR10A-10J-12SC(73) | 110-0612-2 73 | 12              |      |    |      |     |    |        |
| HR10A-13J-20SC(73) | 110-0705-1 73 | 20              | 58.5 | 18 | 15.4 | 8.5 |    | 37g    |
| HR10A-13J-20PC(73) | 110-0706-4 73 |                 |      |    |      |     |    |        |

## ■ HR10B Type Connector

The HR10B connector combines 10 signal lines and one coaxial contact in the standard number 10 shell. Performance specifications for the coaxial contacts are on the 11 page.

### ● Plug

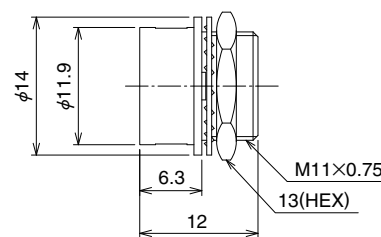
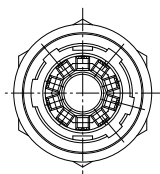


(Representative example)

Unit : mm

| Part No.            | HRS No.       | A  | φB | Applicable coaxial contact |
|---------------------|---------------|----|----|----------------------------|
| HR10B-10P-10PC(73)  | 110-0901-0 73 | 50 | 5  | HR10B-2.5CJ(73)            |
| HR10B-10PA-10PC(73) | 110-0906-3 73 | 43 | 7  |                            |

### ● Receptacle



(Representative example)

Unit : mm

| Part No.           | HRS No.       | Applicable coaxial contact |
|--------------------|---------------|----------------------------|
| HR10B-10R-10SC(71) | 110-0902-2 71 | HR10B-2.5CP(73)            |

Remarks : For mounting holes, see page 20.

## Coaxial contacts

The coaxial contacts shown here are for use with the HR10B connector. These contacts have locking barbs and are inserted from the rear of connector. Please use the following information to select the correct terminals.

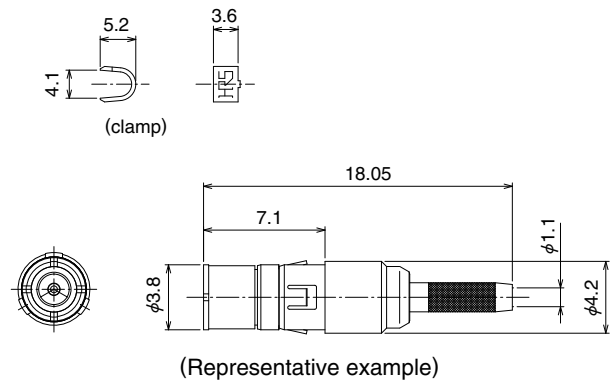
## Materials / Finish

| Part       | Material            | Finish       |
|------------|---------------------|--------------|
| Plug shell | Brass               | Gold plating |
| Jack shell |                     |              |
| Insulator  | Tetrafluoride resin |              |
| Male pin   | Phosphor bronze     | Gold plating |
| Female pin | Beryllium copper    |              |

## Performance

| Description           | Test data  |
|-----------------------|--|
| Impedance             | 50Ω  |
| Insulation resistance | 1000MΩ or more at DC250V                           |
| Contact resistance    | Center 6.5mΩ or less and outer 4mΩ or less at DC1A |
| Withstanding voltage  | AC250V r.m.s for 1minute                           |
| V.S.W.R               | 1.3 or less for 0 to 1000MHz                       |
| Pull force            | 4.9N (500gf) or more                               |

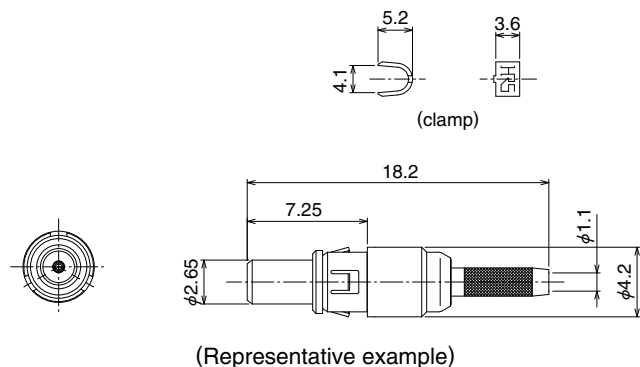
### ● Plug



Unit : mm

| Part No.        | HRS No.       | Applicable cable             | Applicable connector |
|-----------------|---------------|------------------------------|----------------------|
| HR10B-2.5CP(73) | 110-0904-8 73 | 0.8D-QEW-CW(By Fjikura wire) | HR10B-10R-10SC(71)   |

### ● Jack



Unit : mm

| Part No.        | HRS No.       | Applicable cable             | Applicable connector |
|-----------------|---------------|------------------------------|----------------------|
| HR10B-2.5CJ(73) | 110-0903-5 73 | 0.8D-QEW-CW(By Fjikura wire) | HR10B-10P-10PC(73)   |

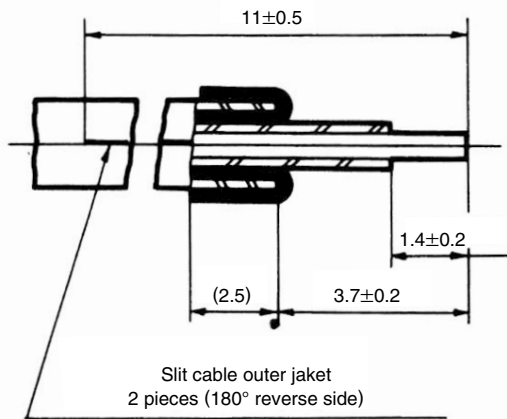
## ◆ Cable connecting methods

HR10B-2.5CP(73)

HR10B-2.5CJ(73)

### 1. Cable end treatment

Fig.1



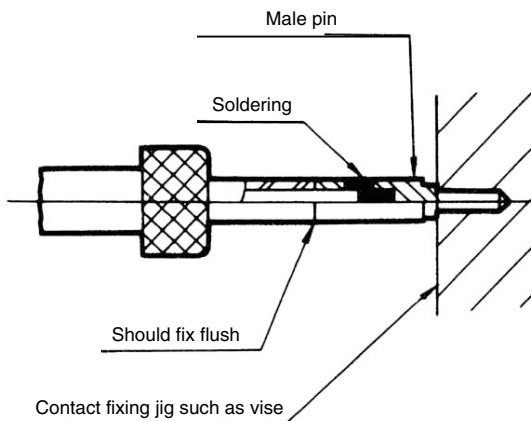
1. Dimensions for cable end treatment are shown in Fig 1.

2. Termination is described below.

- (1) Strip cable outer jacket as indicated.
- (2) Slit outer jacket on both sides per Fig.1.
- (3) Fold back outer cover.
- (4) Remove insulator from cable.

### 2. Soldering male pin to cable center conductor

Fig.2

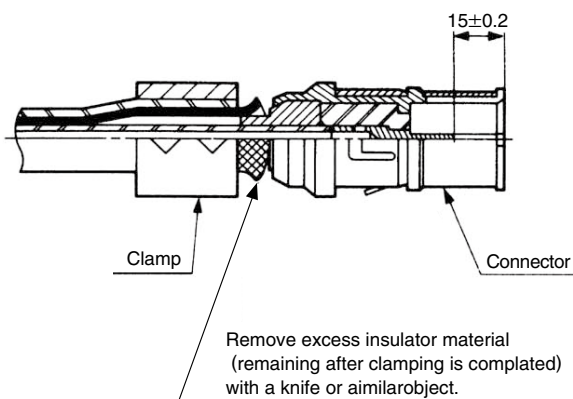


1. Solder male pin to cable center conductor as indicated in Fig.2.

- (1) Pre-solder the solder pot of pin with  $\phi 0.5$ mm string solder.
- (2) Male pin should fit flush against the cable insulator as shown.
- (3) Remove any excess solder from the pin with a knife. This surface must be smooth.
- (4) A properly soldered terminal will yield 500gf when stretched.

### 3. Crimping cable outer conductor

Fig.3



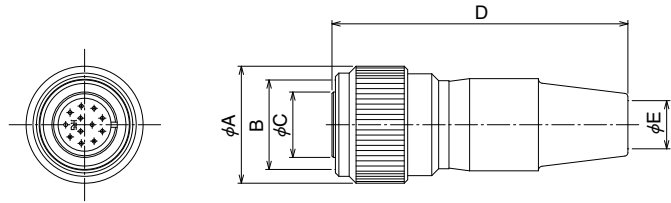
1. Insert the cable into the connector and make sure to push it all the way in. To confirm that the cable is fully inserted, make sure that the depth is  $1.5 \pm 0.2$ mm by measuring from the end of the connector to the tip of the male contact by using a vernier calipers or other suitable measuring device.

2. Use the HR10-TC-01 tool to crimp the metal fitting to the cable.

## ■ HR10A-( )T Type (Threaded Coupling Type)

HR10A-( )T connector is a new product having a threaded coupling locking mechanism. Electric performance is same as HR10 and HR10A push-pull locking type connectors.

### ● Plug (Solder type)



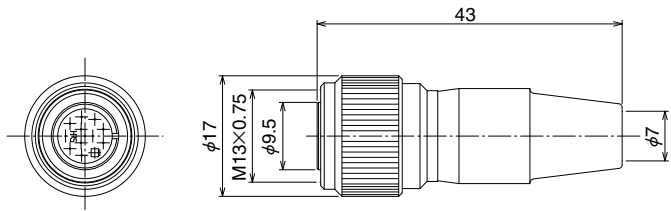
(Representative example)

Unit : mm

| Part No.            | HRS No.       | No. of Contacts | $\phi A$ | B        | $\phi C$ | D    | $\phi E$ | Remarks      |
|---------------------|---------------|-----------------|----------|----------|----------|------|----------|--------------|
| HR10A-7TP-6P(73)    | 110-0331-3 73 | 6               | 12       | M10×0.75 | 7        | 35   | 5        | Gold plating |
| HR10A-7TP-6P(74)    | 110-0331-3 74 |                 |          |          |          |      |          |              |
| HR10A-10TP-12P(73)  | 110-0432-0 73 | 12              | 17       | M13×0.75 | 9.5      | 43   | 7        |              |
| HR10A-10TPA-12S(73) | 110-0446-5 73 |                 |          |          |          |      |          |              |
| HR10A-10WTP-12P(73) | 110-1101-9 73 |                 | 15       | M12×0.75 |          | 45.8 | 6.5      | *            |
| HR10A-10WTP-12S(73) | 110-1106-2 73 |                 |          |          |          |      |          |              |
| HR10A-13TPD-20P(73) | 110-1015-9 73 | 20              | 20       | M17×1    | 13       | 56.5 | 7        |              |

\*Waterproof plug need resin filling inside when connector assembly.  
When mated, the connector against water penetration.

### ● Plug (Crimp type)

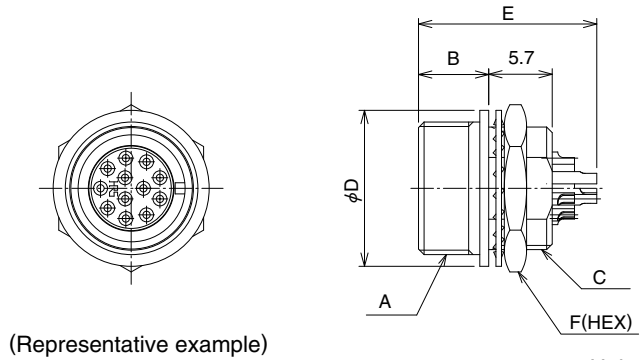


(Representative example)

Unit : mm

| Part No.            | HRS No.       | No. of Contacts |
|---------------------|---------------|-----------------|
| HR10A-10TP-12PC(73) | 110-0455-6 73 | 12              |

● Receptacle (Solder type)

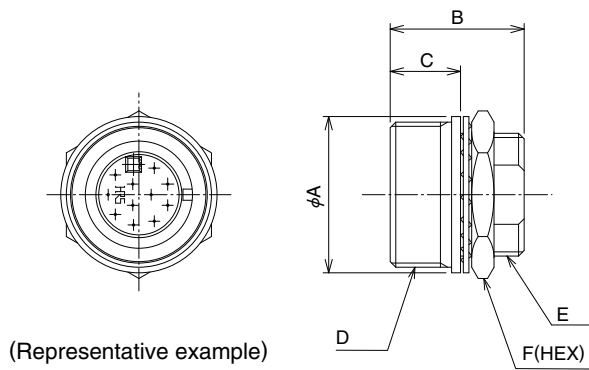


Unit : mm

| Part No.            | HRS No.       | No. of Contacts | A        | B          | C        | φD | E  | F  | Remarks      |
|---------------------|---------------|-----------------|----------|------------|----------|----|----|----|--------------|
| HR10-7TR-6S(73)     | 110-0089-0 73 | 6               | M10×0.75 | 6.3        | M8×0.5   | 11 | 14 | 10 | Gold plating |
| HR10A-10TR-12S(73)  | 110-0453-0 73 | 12              | M13×0.75 |            | M11×0.75 | 14 | 16 | 13 |              |
| HR10A-10WTR-12S(73) | 110-1104-7 73 |                 | M12×0.75 | M10.5×0.75 |          |    |    |    |              |

Remarks : For mounting hole, see page 15(10TR,10WTR) 20(7TR).

● Receptacle (Crimp type)

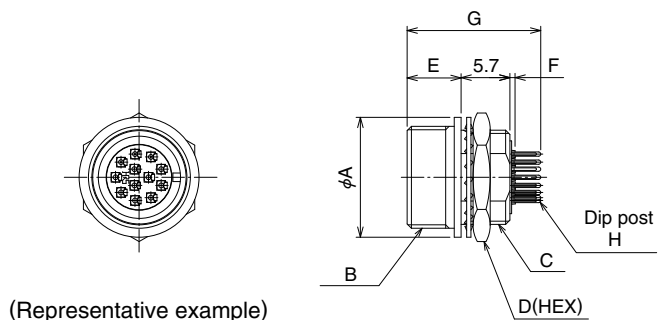


Unit : mm

| Part No.            | HRS No.       | No. of Contacts | φA | B  | C   | D        | E        | F  |
|---------------------|---------------|-----------------|----|----|-----|----------|----------|----|
| HR10A-10TR-12SC(73) | 110-0456-9 73 | 12              | 14 | 12 | 6.3 | M13×0.75 | M11×0.75 | 13 |
| HR10A-13TR-20SC(73) | 110-1002-7 73 | 20              | 18 | 15 | 9.3 | M17×1    | M14×0.75 | 17 |

Remarks : For mounting hole, see page 15

● Receptacle (Dip type)

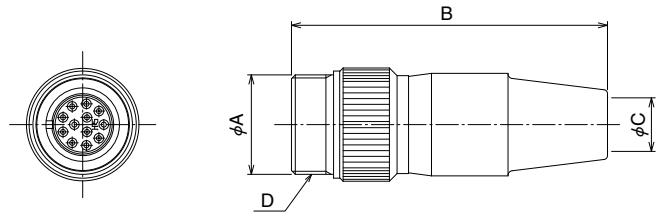


Unit : mm

| Part No.             | HRS No.       | No. of Contacts | φA | B        | C        | D  | E   | F   | G    | H       |      |
|----------------------|---------------|-----------------|----|----------|----------|----|-----|-----|------|---------|------|
| HR10A-7TR-6SA(73)    | 110-0330-0 73 | 6               | 11 | M10×0.75 | M8×0.5   | 10 |     |     | 15.5 | φ0.55   |      |
| HR10A-10TR-12SB(73)  | 110-0433-3 73 | 12              | 14 | M13×0.75 | M11×0.75 | 13 | 6.3 | 0.5 | 15.6 | 0.2×0.5 |      |
| HR10A-10TR-12PB(73)  | 110-0457-1 73 |                 |    |          |          |    |     |     |      |         | 15.5 |
| HR10A-10TR-12PE(73)  | 110-0445-2 73 |                 |    |          |          |    |     |     |      |         | 14   |
| HR10A-10WTR-12SB(73) | 110-1102-1 73 |                 |    |          |          |    |     |     |      |         | 15.6 |
| HR10A-13TR-20SB(73)  | 110-1014-6 73 |                 |    |          |          |    |     |     |      |         | 17.8 |
|                      |               | 20              | 18 | M17×1    | M14×0.75 | 17 | 9.3 | 0   |      |         |      |

Remarks : 1.For mounting holes, see page 15. However, 7TR size shell be referred to page 20 on the shell size 7.  
2.For dip post arrangement, see page 16.

● Jack (Solder type)



(Representative example)

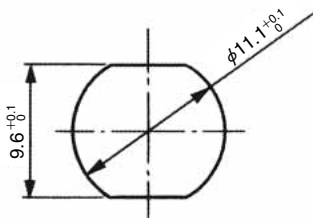
Unit : mm

| Part No.            | HRS No.       | No. of Contacts | φA   | B    | φC  | D        | Remarks |
|---------------------|---------------|-----------------|------|------|-----|----------|---------|
| HR10A-10TJ-12S(73)  | 110-0436-1 73 | 12              | 14.7 | 41.3 | 7   | M13×0.75 |         |
| HR10A-10TJ-12P(73)  | 110-0459-7 73 |                 |      |      |     |          |         |
| HR10A-10WTJ-12S(73) | 110-1103-4 73 |                 | 14   | 46.5 | 6.5 | M12×0.75 |         |

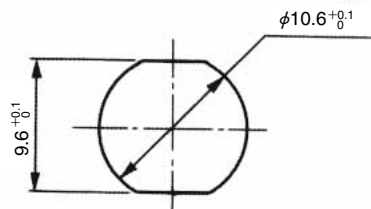
\*Waterproof jack need resin filling inside when connector assembly.  
When mated, the connector against water penetration.

◆ Panel mounting hole dimensions (Screw coupling)

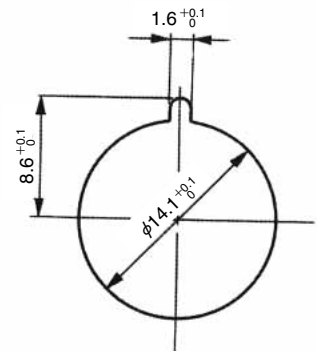
The mounting hole dimensions shown below are for connectors to be tightened by a hexagonal nut from the back of the panel. The dimensions below apply only to the HR10A-( )T and not the 7TR. For the dimensions of connectors of other types, see page 20.



Type HR10A-10TR  
(Panel thickness 1 to 2mm)



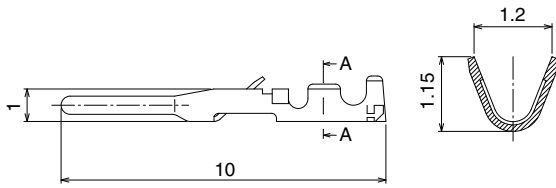
Type HR10A-10WTR  
(Panel thickness 1 to 2mm)



Type HR10A-13TR  
(Panel thickness 1 to 1.5mm)

## ◆ Contact

### ● Male contact

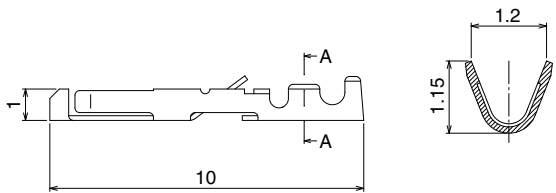


Unit : mm

| Type          | Part No.    | HRS No.    | Type of plating      | Applicable cable |
|---------------|-------------|------------|----------------------|------------------|
| Loose contact | HR10-PC-111 | 110-0515 6 | Partial gold plating | 26 to 30 AWG     |
|               | HR10-PC-112 | 110-0513 0 | Silver plating       |                  |
| Reel contact  | HR10-PC-211 | 110-0516 9 | Partial gold plating |                  |
|               | HR10-PC-212 | 110-0514 3 | Silver plating       |                  |

Remarks : 1. Use cables with a coating outside diameter of 1mm or less.  
2. Loose piece terminal are available in packs. Each pack contains 100 terminals. Strip terminals are available in reels. Each reel contains 10,000 terminals.

### ● Female contact

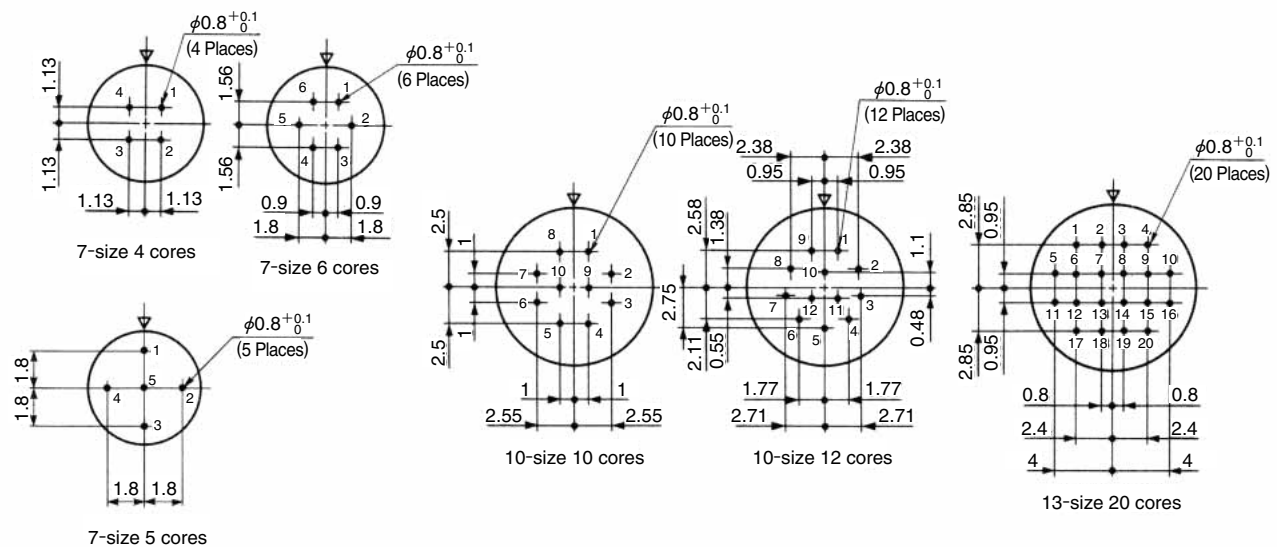


Unit : mm

| Type          | Part No.    | HRS No.    | Type of plating      | Applicable cable |
|---------------|-------------|------------|----------------------|------------------|
| Loose contact | HR12-SC-111 | 112-0410 0 | Partial gold plating | 26 to 30 AWG     |
|               | HR12-SC-112 | 112-0411 3 | Silver plating       |                  |
| Reel contact  | HR12-SC-211 | 112-0407 6 | Partial gold plating |                  |
|               | HR12-SC-212 | 112-0408 9 | Silver plating       |                  |

Remarks : 1. Use cables with a coating outside diameter of 1mm or less.  
2. Loose piece terminal are available in packs. Each pack contains 100 terminals. Strip terminals are available in reels. Each reel contains 10,000 terminals.

## ◆ Receptacle dip post arrangement dimensions



Remarks : 1. The above figures are views from the mating side and pin inserts from the wiring-connection side.  
2. Dimensional tolerance of  $\pm 0.05$  is recommended for the board arrangement.



◆ **Tools**

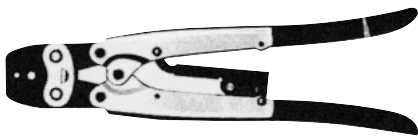
| Type                | Item                            | Part No.        | HRS No.    | Applicable terminal                      | Applicable cable                      |
|---------------------|---------------------------------|-----------------|------------|--|---------------------------------------|
| Manual              | Manual crimping tool            | HT802/HR12-SC-1 | 150-0400-3 | HR10-PC-112                              | 26 to 30AWG                           |
|                     |                                 |                 |            | HR12-SC-112                              |                                       |
| Automatic           | Automatic crimping machine body | CM-105C         | 901-0001-0 | —————                                    | —————                                 |
|                     | Applicator                      | AP105-HR12-1    | 901-2015-9 | HR10-PC-211<br>212<br>HR12-SC-211<br>212 | 26 to 30AWG                           |
| Cable crimping tool |                                 | HR10-TC-01      | 150-0036-2 | —————                                    | (HR10B-2.5CP(73),<br>HR10B-2.5CJ(73)) |
|                     |                                 | HR10A-TC-02     | 150-0041-2 |  | $\phi 5, \phi 7$                      |
| Extractor           |                                 | HR12-SC-TP      | 150-0050-3 | HR12-SC-112<br>HR12-SC-212               | —————                                 |
|                     |                                 | RP6-SC-TP       | 150-0039-0 | HR10-PC-112<br>HR10-PC-212               |                                       |
|                     |                                 | HR10B-TP        | 150-0061-0 | HR10B-2.5CP(73)<br>HR10B-2.5CJ(73)       |                                       |



(HT802/HR12-SC-1)  
Hand Crimp Tool



(HR12-SC-TP)



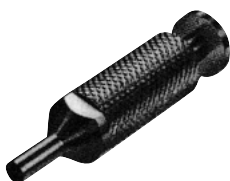
(HR10A-TC-02)  
Hand Cable Crimp Tool



(RP6-SC-TP)  
Extraction Tool



Auto Crimp Tool CM-105C



(HR10B-TP)  
Coaxial Contact Removal Tool

## ◆ How to use a connector

|            | 1.Inserting   | 2.Withdrawing   |
|------------|---|---|
| HR10 TYPE  |   |   |
| HR10A TYPE |   |   |
|            | <p>Hold the plug at point A, align the plug guide with the receptacle guide, and push the plug straight. The plug will mate with the receptacle smoothly.</p> | <p>Hold the plug connection sleeve B and pull the sleeve straight. The plug will come off easily.</p> |

## ◆ Connecting tools

When terminating the wires, use the jigs noted below for easy assembly / disassembly of the connector parts.



| Part No.     | HRS No.    | Applicable connector |
|--------------|------------|----------------------|
| HR10-7P-T01  | 150-0009-0 | HR10-7P              |
| HR10-10P-T02 | 150-0010-9 | HR10-10P             |
| HR10-7J-T03  | 150-0011-1 | HR10-7J              |
| HR10-10J-T04 | 150-0012-4 | HR10-10J             |
| HR10-13P-T05 | 150-0059-8 | HR10-13P             |
| HR10-13J-T06 | 150-0060-7 | HR10-13J             |

### ◆ Cable assembly procedure on plug side

This applies also to the jack side assembly procedure.

No special procedure is given here for the receptacle side because no special procedure is necessary.

HR10 TYPE

HR10A TYPE

| Size | HR10 | HR10A |
|------|------|-------|
| 7    | 8    | 7.5   |
| 10   | 11   | 9.5   |
| 13   | —    | 13    |

| Size | Dimension C for HR10 | Dimension D for HR10A |            |
|------|----------------------|-----------------------|------------|
|      |                      | Solder type           | Crimp type |
| 7    | 5.5 or less          | 10                    | 15 to 20   |
| 10   | 7 or less            | 16                    |            |
| 13   | —                    | 25                    |            |

| Size | Tightening force |
|------|------------------|
| 7    | 1.5N·m(15kg·cm)  |
| 10   | 2N·m(20kg·cm)    |
| 13   |                  |

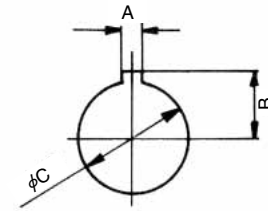
|   | HR10 TYPE  | HR10A TYPE  |
|---|--|---|
| 1 | Use cables with a nominal sectional area of 0.129mm <sup>2</sup> (26 AWG) at the finish outside diameters applicable for each size.  |   |
| 2 | After processing the cable ends according to the dimensions in the above drawings, fit the parts to the cable as shown in the drawings.  |   |
| 3 | (solder type)<br>Insert the P shell unit into the assembly tool stand and solder it.<br>(crimp type)<br>After crimping the appropriate crimp terminal to the cable core, insert the crimp terminal into the terminal hole in the P shell unit.   | Fit the parts to the cable in the following order:<br>tightener, clamp washer, and plug body. |
| 4 | Assemble the connector in the following steps.<br>1. Screw the plug body into the thread in the P shell unit with the tightening force shown in Table 1 using a torque wrench with a fixed torque.<br>Before tightening the plug body, slacken part C so that no load is applied to the soldered wires.<br>2. Apply the clamp washer to the bifurcated part of the plug body, and then tighten the tightener until surface B touches the plug body surface A.<br>Note : In order to prevent looseing, please apply an adhesive at the thread of plug body. | Fit the parts to the cable in the following order:<br>cord bushing and plug body.             |
| 5 | This completes the work.   |   |

For any question on using the plugs, contact our sales or engineering department.

### ◆ Recommended Mounting Hole

Mounting hole dimension shown here is tight by hexagon nut from back side.

| Shell size      | 7 size                           | 10 size                           | 13 size                           |
|-----------------|----------------------------------|-----------------------------------|-----------------------------------|
| Map mark        |                                  |                                   |                                   |
| A               | 1.6 <sup>+0.1</sup> <sub>0</sub> | 2.6 <sup>+0.1</sup> <sub>0</sub>  |                                   |
| B               | 5.1 <sup>+0.1</sup> <sub>0</sub> | 6.6 <sup>+0.1</sup> <sub>0</sub>  | 8.6 <sup>+0.1</sup> <sub>0</sub>  |
| C               | 8.1 <sup>+0.1</sup> <sub>0</sub> | 11.1 <sup>+0.1</sup> <sub>0</sub> | 14.1 <sup>+0.1</sup> <sub>0</sub> |
| Panel thickness | 0.7 to 2                         |                                   | 0.8 to 1.5                        |



### ◆ Contact Arrangement

| Shell size             | 7 size              |                     |   | 10 size |    |
|------------------------|---------------------|---------------------|---|---------|----|
| Contact arrangement    |                     |                     |   |         |    |
| No. of contacts        | 4                   | 5                   | 6 | 10      | 12 |
| Withstanding voltage   | AC500V for a minute | AC300V for a minute |   |         |    |
| Current rating         | 2A                  |                     |   |         |    |
| Insulation resistance  | MIN 1,000MΩ         |                     |   |         |    |
| Contact resistance     | MAX 10mΩ            |                     |   |         |    |
| Solder pot inside dia. | φ0.8                |                     |   |         |    |

| Shell size             | 10 size             | 13 size  |
|------------------------|---------------------|----------|
| Contact arrangement    |                     |          |
| No. of contacts        | 10+coaxial contact  | 20       |
| Withstanding voltage   | AC300V for a minute |          |
| Current rating         | 2A                  |          |
| Insulation resistance  | MIN 1,000MΩ         |          |
| Contact resistance     | MAX 30mΩ            | MAX 10mΩ |
| Solder pot inside dia. | —                   | φ0.8     |

Notes 1. The contact arrangement shown here is the mating surface of socket insert assembled.

2. The withstanding voltage shown here is test voltage value.

3. The insulation resistance value is measured at DC100V.

4. The contact resistance value is measured at DC1A.

## ◆ Precautions

1. Switch off the power of the circuit before disconnecting or plugging-in the connector.
2. Use a connector with socket contacts at the power side of the circuit.
3. Make sure that the coupling is in completely locked position.
4. Cable clamping, cable rotation, and other forces may vary with the cable construction. Please make sure that your cable is suitable for use with these connectors before usage and production.
5. This product series uses silver plated contacts. Silver reacts easily to exposure to sulfur gas so the below conditions may cause tarnishing.
  - Dusty environments
  - Area with a high concentration area of gases such as sulfur dioxide gas, hydrogen sulfide gas, nitrogen dioxide gas and so on.  
Example; In close proximity to factory exhaust, automotive emissions, etc.
  - Close to heaters, or in other areas marked by extreme temperature differences or high humidity.
  - Close to rubber products includes rubber adhesives.

The Electrical connection is not affected by tarnishing on a silver surface due to the wiping effect of the contact pins.

### Storage

Packing state; Packed in original packing or equivalent container

Temperature -10 to +60°C

Humidity 85% Max

(It is recommended that the product be stored in an area of normal level of temperature and humidity, and free of any temperature fluctuation)

Please use this products within 6 months of delivery.

(After 6 month, please check the solderability before use)

“Storage” means long-term storage of the unused products in sealed packaging, prior to assembly to PCB.



## HIROSE ELECTRIC CO.,LTD.

2-6-3,Nakagawa Chuoh,Tsuzuki-Ku,Yokohama-Shi 224-8540,JAPAN

TEL: +81-45-620-3526 Fax: +81-45-591-3726

<http://www.hirose.com>

<http://www.hirose-connectors.com>