

# High-Performance Compact Circular Connectors

## HR22 Series



### ■ Overview

The HR22 Series are 20-pin compact circular connectors developed as an interface between machine tool motors and operation panels, with a screw coupling type locking mechanism to prevent unlocking due to motor vibration, and are available in either waterproof or non-waterproof types.

### ■ Features

#### 1. Available in waterproof and non-waterproof types.

Engaged waterproof type connectors are free from water penetration for 48 hours at a depth of 1.8 meters.

#### 2. Anti-loosening locking mechanism.

The locking mechanism has an anti-loosening spring in a screw coupling.

#### 3. Two types of termination

Available in two wiring styles for wider selection: Crimp type and soldering.

#### 4. Easy receptacle mounting

A receptacle may be mounted quickly on a panel by tightening a nut.

#### 5. Available with wire protection

This type of connector has a shell with a cordbushing for increased cable curvature and protection against wire breakage when bending the wire.

#### 6. High-density design

The maximum plug dia. is 21mm for higher density of a 20-pin type connector.

HR22 Series High-Performance Compact Circular Connectors

Materials

| Part            | Material                           | Finish         |
|-----------------|------------------------------------|----------------|
| Shell           | Zinc alloy and Brass               | Nickel plating |
| Insulator       | PBT                                | (Black)        |
| Male terminal   | Brass/Phosphor bronze              | Silver plating |
| Female terminal | Beryllium copper / Phosphor bronze | Silver plating |

Ordering information

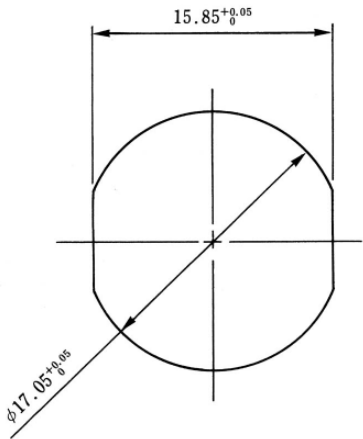
Please determine the specific product. If listed needed, please select and order the product No.

HR22 - 12 W T P A - 20 SC (\*\*)

1 2 3 4 5 6 7 8 9

|                                                                                          |                                                                                                                                                                                      |                                                                                                                           |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| 1 Series name: HR22                                                                      | 5 Shell type<br>P: Plug<br>J: Jack<br>R: Receptacle                                                                                                                                  | 7 Number of pins                                                                                                          |
| 2 Shell size: This number indicates the outer dia. of the shell of the plug mating part. | 6 Shell shape<br>Each time alternation is made to the shell shape, the symbol changes such as A,B,C,D,E and so forth. Characters C,J,P and R are not used to avoid misunderstanding. | 8 Pin style<br>P: Male pin PC: Crimp type male pin<br>S: Female pin SC: Crimp type female pin                             |
| 3 W: Waterproof<br>Blank: Non-waterproof                                                 |                                                                                                                                                                                      | 9 Other specifications:<br>2 numerical digits will be added when there is a specifications change other than shown 1 to 8 |
| 4 Locking mechanism<br>T: Screw coupling type                                            |                                                                                                                                                                                      |                                                                                                                           |

Panel mounting dimensions



Panel thickness t : 1 to 3mm

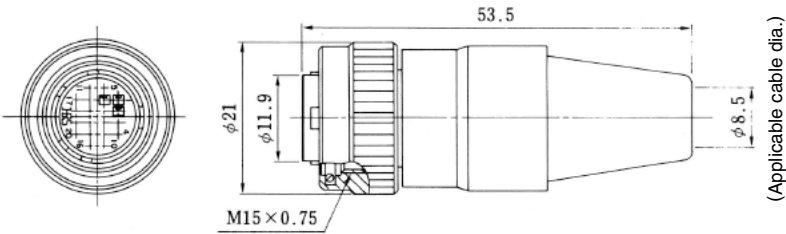
Pin allocation and major functions

|                       |                          |
|-----------------------|--------------------------|
| Pin allocation        |                          |
| Number of pins        | 20                       |
| Withstand voltage     | AC300V for 1 minute      |
| Current capacity      | 2A                       |
| Insulation resistance | 1000MΩ or more at DC100V |
| Contact resistance    | 20mΩ or less             |
| Solder pot inner dia. | φ0.8                     |

Notes:

- 1.The above figure shows the pin allocation viewed from the engagement side.
- 2.The above withstand voltage shows the test voltage.
- 3.The above current capacity shows value per pin.
- 4.The above contact resistance shows value measured at 1A DC.

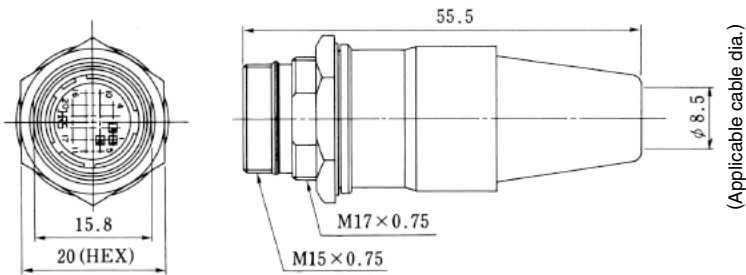
■Plug (Crimp type)



(An example in shape)

| HRS No.       | Part No.            |
|---------------|---------------------|
| 122-0010-0-73 | HR22-12TPD-20SC(73) |
| 122-0018-1-73 | HR22-12TPD-20PC(73) |

■Jack (Crimp type)

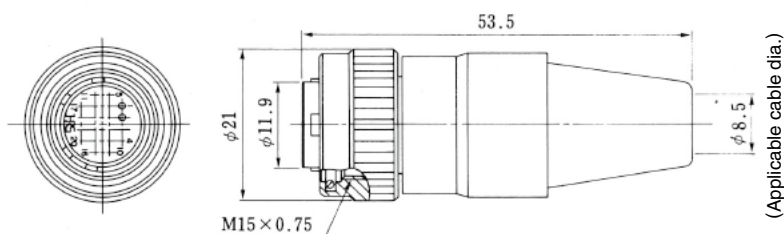


(An example in shape)

| HRS No.       | Part No.            |
|---------------|---------------------|
| 122-0019-4-73 | HR22-12TJD-20PC(73) |

## HR22 Series High-Performance Compact Circular Connectors

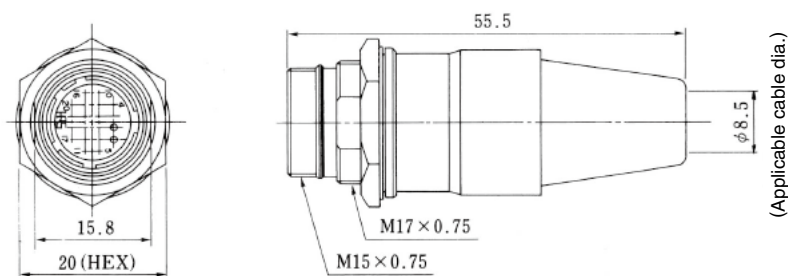
### ■ Plug (Solder type)



(An example in shape)

| HRS No.       | Part No.           |
|---------------|--------------------|
| 122-0011-2-73 | HR22-12TPD-20S(73) |
| 122-0012-5-73 | HR22-12TPD-20P(73) |

### ■ Jack (Solder type)

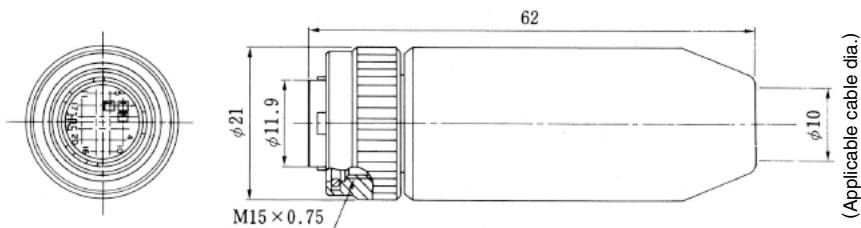


(An example in shape)

| HRS No.       | Part No.           |
|---------------|--------------------|
| 122-0022-9-73 | HR22-12TJD-20P(73) |
| 122-0023-1-73 | HR22-12TJD-20S(73) |

## Waterproof type

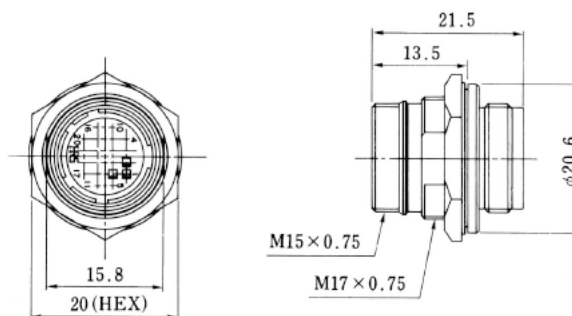
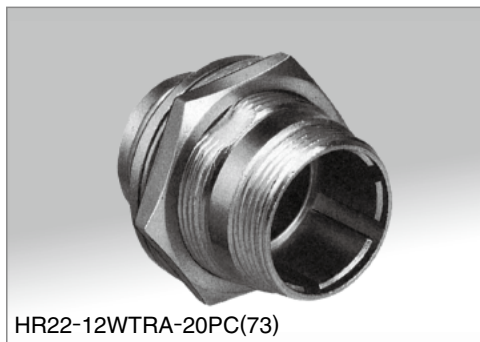
### ■ Plug (Crimp type)



(An example in shape)

| HRS No.       | Part No.             |
|---------------|----------------------|
| 122-0004-7-73 | HR22-12WTPA-20SC(73) |

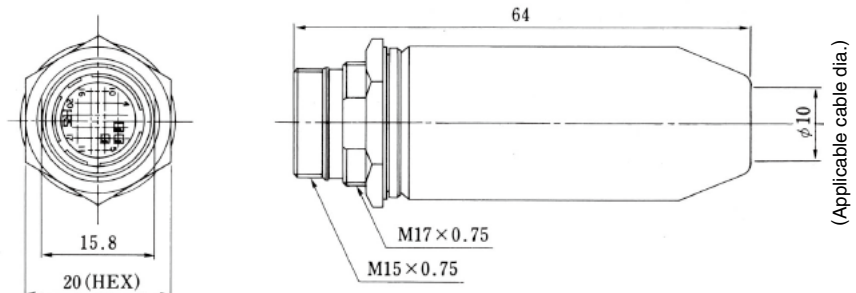
### ■ Receptacle (Crimp type)



(An example in shape)

| HRS No.       | Part No.             |
|---------------|----------------------|
| 122-0005-0-73 | HR22-12WTRA-20PC(73) |
| 122-0021-6-73 | HR22-12WTRA-20SC(73) |

### ■ Jack (Crimp type)

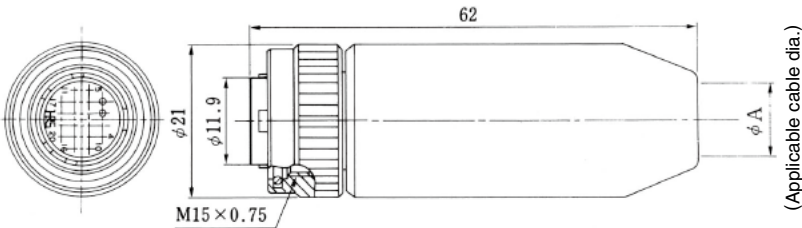


(An example in shape)

| HRS No.       | Part No.             |
|---------------|----------------------|
| 122-0006-2-73 | HR22-12WTJA-20PC(73) |

HR22 Series High-Performance Compact Circular Connectors

■Plug (Solder type)

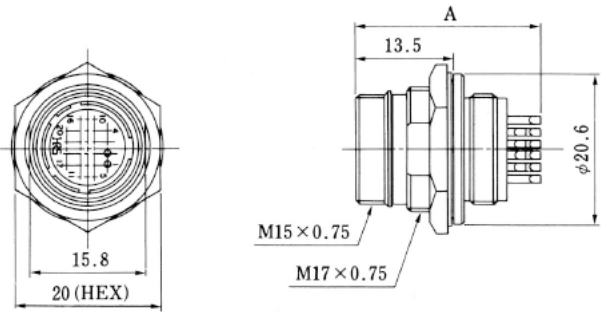


(An example in shape)

Unit : mm

| HRS No.       | Part No.            | $\phi A$   |
|---------------|---------------------|------------|
| 122-0015-3-73 | HR22-12WTPA-20S(73) | $\phi 10$  |
| 122-0026-0-73 | HR22-12WTPE-20S(73) | $\phi 9.2$ |

■Receptacle (Solder type)



(An example in shape)

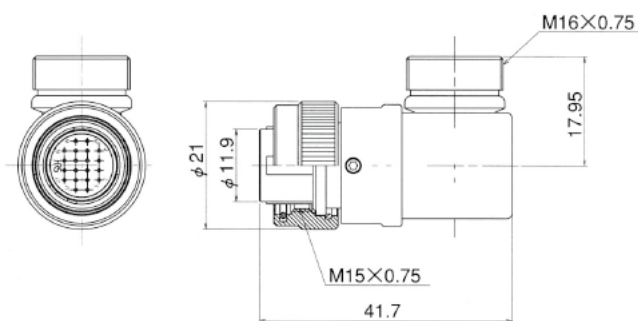
Unit : mm

| HRS No.       | Part No.            | A    |
|---------------|---------------------|------|
| 122-0013-8-73 | HR22-12WTRA-20P(73) | 25.5 |
| 122-0014-0-73 | HR22-12WTRA-20S(73) | 24   |

## Right angle plug (Solder type)



HR22-12WTLP-20P(73)



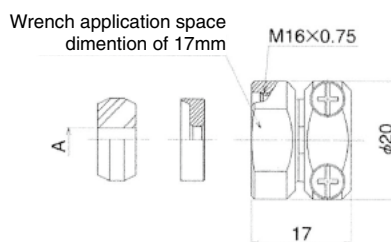
| HRS No.       | Part No.            | Weight |
|---------------|---------------------|--------|
| 122-0054-5-73 | HR22-12WTLP-20P(73) | 55g    |

## Cable clamp

### Screw tightening type



JR13WCC-10(72)



Shown one type

Unit : mm

| HRS No.       | Part No.      | A | Weight |
|---------------|---------------|---|--------|
| 114-2045-0-72 | JR13WCC-4(72) | 4 | 29g    |
| 114-2046-3-72 | JR13WCC-5(72) | 5 | 27g    |
| 114-2047-6-72 | JR13WCC-6(72) | 6 | 26g    |

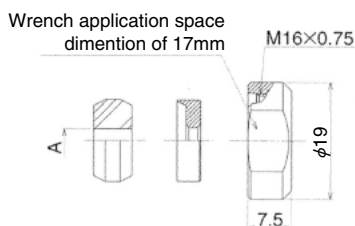
Unit : mm

| HRS No.       | Part No.       | A  | Weight |
|---------------|----------------|----|--------|
| 114-2048-9-72 | JR13WCC-7(72)  | 7  | 24g    |
| 114-2049-1-72 | JR13WCC-8(72)  | 8  | 23g    |
| 114-2050-0-72 | JR13WCC-9(72)  | 9  | 21g    |
| 114-2051-3-72 | JR13WCC-10(72) | 10 | 20g    |

### Without screw type



JR13WCC-10(72)



Shown one type

Unit : mm

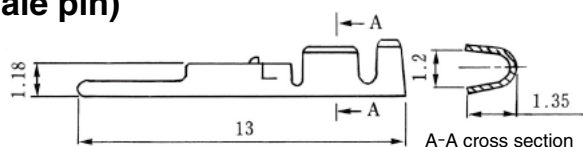
| HRS No.       | Part No.       | A | Weight |
|---------------|----------------|---|--------|
| 114-2069-9-72 | JR13WCCA-4(72) | 4 | 10g    |
| 114-2070-8-72 | JR13WCCA-5(72) | 5 | 10g    |
| 114-2071-0-72 | JR13WCCA-6(72) | 6 | 10g    |

Unit : mm

| HRS No.       | Part No.        | A  | Weight |
|---------------|-----------------|----|--------|
| 114-2072-3-72 | JR13WCCA-7(72)  | 7  | 9g     |
| 114-2073-6-72 | JR13WCCA-8(72)  | 8  | 9g     |
| 114-2074-9-72 | JR13WCCA-9(72)  | 9  | 8g     |
| 114-2075-1-72 | JR13WCCA-10(72) | 10 | 8g     |

## HR22 Series High-Performance Compact Circular Connectors

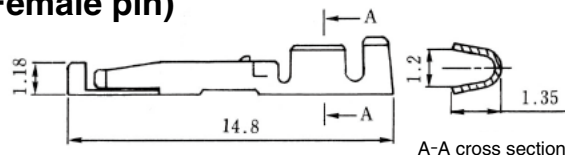
### ■Contact (Male pin)



| HRS No.       | Part No.    | Packaging            | Applicable cable |
|---------------|-------------|----------------------|------------------|
| 122-0017-9-00 | HR22-PC-122 | 100 pcs. per bag     | AWG#24 ~ 28      |
| 122-0009-0-00 | HR22-PC-222 | 10,000 pcs. per reel | AWG#24 ~ 28      |

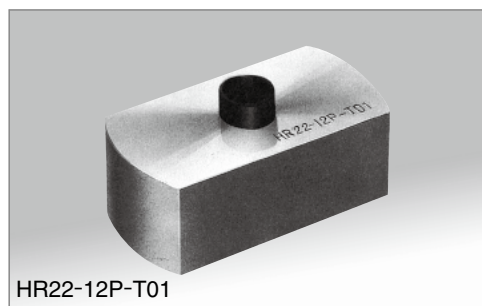
Notes 1: Use a cable having an insulator outer dia. of 1.15 mm or less.

### (Female pin)



| HRS No.       | Part No.    | Packaging            | Applicable cable |
|---------------|-------------|----------------------|------------------|
| 122-0016-6-00 | HR22-SC-122 | 100 pcs. per bag     | AWG#24 ~ 28      |
| 122-0008-8-00 | HR22-SC-222 | 10,000 pcs. per reel | AWG#24 ~ 28      |

### ■Wiring tool



A connector may be assembled and disassembled easily using the assembly tool shown left.

| HRS No.       | Part No.     | Applicable connector      |
|---------------|--------------|---------------------------|
| 150-0075-4-00 | HR22-12P-T01 | HR22-12WTPA<br>HR22-12TPD |

### ■Applicable tools

Unit : mm

| Type                | Item                            | HRS No.       | Part No.      | Applicable terminal        | Applicable wire |
|---------------------|---------------------------------|---------------|---------------|----------------------------|-----------------|
| Manual              | Manual crimping tool            | 150-0200-4-00 | HR22-TA2428HC | HR22-PC-122<br>HR22-SC-122 | AWG#24~28       |
| Automatic           | Automatic crimping machine body | 901-0005-4    | CM-105        | —                          | —               |
|                     | Applicator                      | 901-2023-7    | AP105-HR22-2  | HR22-PC-122<br>HR22-SC-122 | AWG#24~28       |
| Cable crimping tool |                                 | 150-0058-5-00 | HR10A-TC-04   | —                          | φ8.5(Note)      |
| Extractor           |                                 | 150-0039-0-00 | RP6-SC-TP     | —                          | —               |

Note: Cable crimping tools are not used for connecting waterproof connectors.



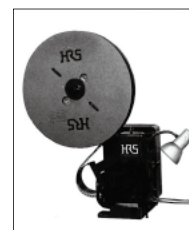
Manual crimping tool



Pull-out tool



Cable crimping tool



Automatic crimping machine CM-105

### ◆Precautions

1. Switch off the power of the circuit before disconnecting or plugging-in the connectors.
2. Use connectors with socket contacts at the power side of the circuit.
3. Make sure that the coupling is in completely cocked position.
4. The cable pull and twisting strength and other characteristics may differ, depending on the cable structure. Please confirm before the use.



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