

# Metal Shell Circular Connectors

## HS Series



### ■ Introduction

- The HS series is generally called “metal connector”, and is the most widely used standard multi-pin circular connector.
- Being sturdy and simple in construction, the HS connectors are stable mechanically and electrically and are employed by NTT and set manufacturers as standard parts.

### ■ Material

| Part            | Material                 | Finish        |
|-----------------|--------------------------|---------------|
| Shell           | Copper compound metal    | Nickel plated |
| Insulator       | Synthetic resin          | —————         |
| Male contacts   | Brass                    | Nickel plated |
| Female contacts | Brass or phosphor bronze |               |

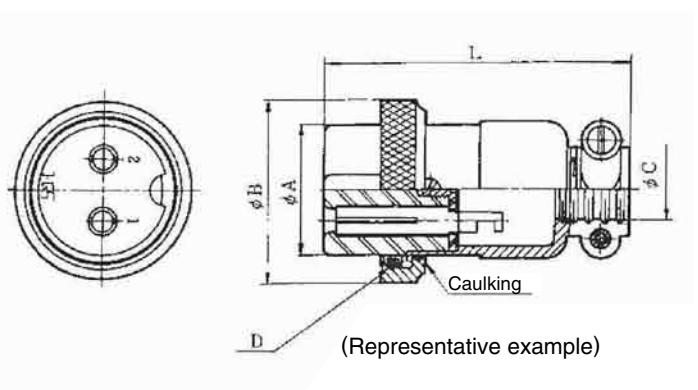
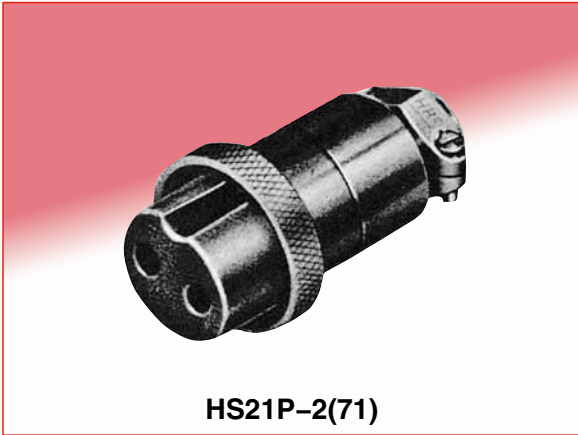
### ■ Ordering information

**HS 21 P A - 2 A**

① ② ③ ④ ⑤ ⑥

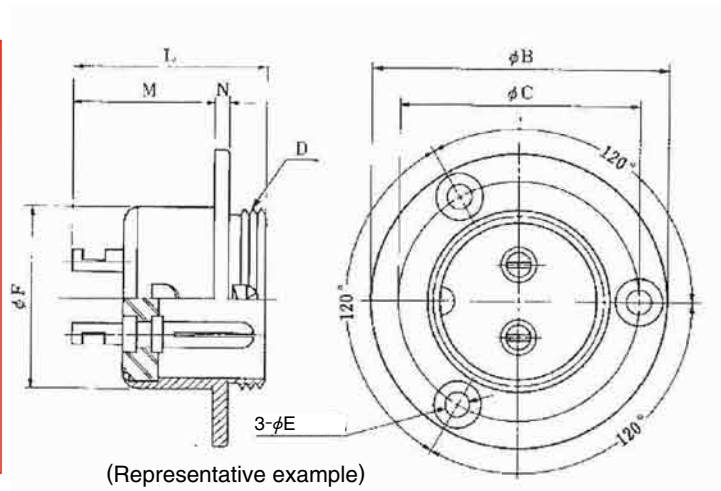
|   |
|---|
| ① Model name: HS stands for HIROSE STANDARD.  |
| ② Shell size: The shell size is expressed as the outside diameter of the plug fitting section (insulator) with seven types: 12, 14, 16, 21, 25, 28 and 35.              |
| ③ Shell type: The shell is classified into the following types.<br>P : Plug<br>R : Receptacle<br>J : Jack<br>RC : Receptacle cap  |
| ④ Shell model change mark: Each time the shell undergoes a model change, it is marked as A, B or C.   |
| ⑤ Number of contacts  |
| ⑥ Contact arrangement change mark: When the contact fitting section or contact arrangement undergoes a change, it is marked as A, B, C....after the number of contacts. |

■ Plug



| HRS No.       | Part No.      | φA   | φB   | φC  | D       | L    |
|---------------|---------------|------|------|-----|---------|------|
| 101-0002-0 71 | HS12P-2(71)   | 12   | 18   | 7   | M15.5×1 | 38   |
| 101-0013-7 71 | HS14P-2(71)   | 13.5 | 21.5 | 8.5 | M19×1   | 43   |
| 101-0030-6 71 | HS16P-2(71)   | 15.5 |      |     |         |      |
| 101-0031-9 71 | HS16P-3(71)   |      |      |     |         |      |
| 101-0034-7 71 | HS16P-4(71)   |      |      |     |         |      |
| 101-0275-3 71 | HS16P-5(71)   | 21   | 28   | 10  | M25×1   | 50   |
| 101-0053-1 71 | HS21P-2(71)   |      |      |     |         |      |
| 101-0060-7 71 | HS21P-3(71)   |      |      |     |         |      |
| 101-0066-3 71 | HS21P-4(71)   |      |      |     |         |      |
| 101-0669-1 71 | HS21P-5(71)   |      |      |     |         |      |
| 101-0074-1 71 | HS21P-6(71)   |      |      |     |         |      |
| 101-0075-4 71 | HS21P-7(71)   |      |      |     |         |      |
| 101-0076-7 71 | HS21P-8(71)   |      |      |     |         |      |
| 101-0369-5 71 | HS21P-10(71)  | 25   | 32   | 16  | M29×1   | 49   |
| 101-0115-7 71 | HS25P-2(71)   |      |      |     |         |      |
| 101-0117-2 71 | HS25P-3(71)   |      |      |     |         |      |
| 101-0122-2 71 | HS25P-6(71)   |      |      |     |         |      |
| 101-0128-9 71 | HS25P-8(71)   |      |      |     |         |      |
| 101-0129-1 71 | HS25P-10(71)  | 28   | 38   | 16  | M34×1   | 64.5 |
| 101-0154-9 71 | HS28P-4(71)   |      |      |     |         |      |
| 101-0158-0 71 | HS28P-8(71)   |      |      |     |         |      |
| 101-0187-8 71 | HS35PB-16(71) | 35   | 46   | 19  | M41×1   | 71.5 |
| 101-0189-3 71 | HS35PB-20(71) |      |      |     |         |      |

■ Receptacle



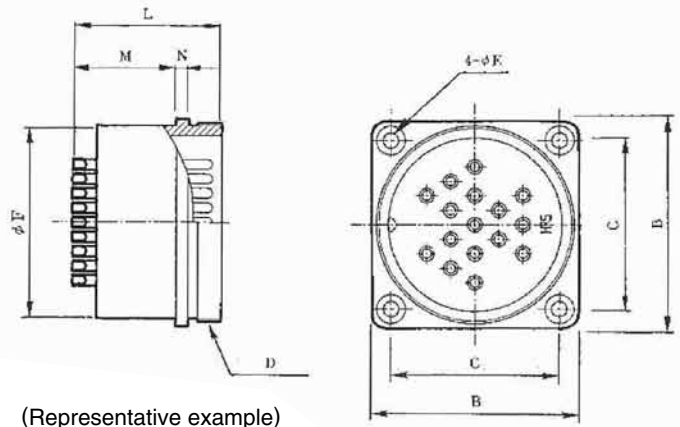
| HRS No.       | Part No.     | $\phi B$ | $\phi C$ | D       | $\phi E$ | $\phi F$ | L    | M    | N   |
|---------------|--------------|----------|----------|---------|----------|----------|------|------|-----|
| 101-0007-4 71 | HS12R-2(71)  | 23       | 19       | M15.5x1 | 2.1*     | 14       | 22.5 | 16   | 1.5 |
| 101-0016-5 71 | HS14R-2(71)  |          |          |         |          | 16.5     |      |      |     |
| 101-0040-0 71 | HS16R-2(71)  |          |          |         |          | 19       |      |      |     |
| 101-0041-2 71 | HS16R-3(71)  | 32       | 25.5     | M19x1   | 3.2      | 19       | 23   | 19.5 | 2   |
| 101-0042-5 71 | HS16R-4(71)  |          |          |         |          |          |      |      |     |
| 101-0448-0 71 | HS16R-5(71)  |          |          |         |          |          |      |      |     |
| 101-0084-5 71 | HS21R-2(71)  |          |          |         |          |          |      |      |     |
| 101-0089-9 71 | HS21R-3(71)  |          |          |         |          |          |      |      |     |
| 101-0091-0 71 | HS21R-4(71)  | 41       | 33       | M25x1   | 3.2      | 25       | 26.5 | 17.5 | 2   |
| 101-0093-6 71 | HS21R-5(71)  |          |          |         |          |          |      |      |     |
| 101-0095-1 71 | HS21R-6(71)  |          |          |         |          |          |      |      |     |
| 101-0096-4 71 | HS21R-7(71)  |          |          |         |          |          |      |      |     |
| 101-0097-7 71 | HS21R-8(71)  |          |          |         |          |          |      |      |     |
| 101-0370-4 71 | HS21R-10(71) |          |          |         |          |          |      |      |     |
| 101-0130-0 71 | HS25R-2(71)  | 46       | 37       | M29x1   | 3.2      | 29       | 26.5 | 19.5 | 2   |
| 101-0131-3 71 | HS25R-3(71)  |          |          |         |          |          |      |      |     |
| 101-0135-4 71 | HS25R-6(71)  |          |          |         |          |          |      |      |     |
| 101-0137-0 71 | HS25R-8(71)  |          |          |         |          |          |      |      |     |
| 101-0138-2 71 | HS25R-10(71) |          |          |         |          |          |      |      |     |
| 101-0163-0 71 | HS28R-4(71)  | 51       | 43       | M34x1   | 3.2      | 32       | 26.5 | 19   | 2   |
| 101-0166-8 71 | HS28R-8(71)  |          |          |         |          |          |      |      |     |

Note: 1.6φ flat head screw is recommended for mounting.

■ Receptacle



HS35RA-16(71)



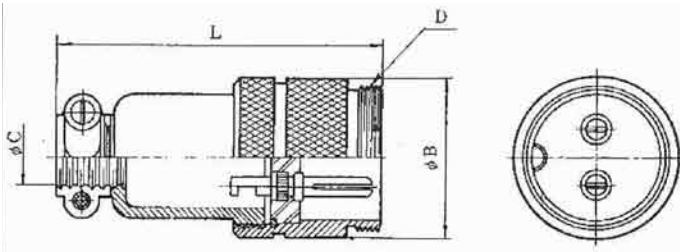
(Representative example)

| HRS No.       | Part No.      | B  | C  | D     | φE  | φF | L  | M    | N   |
|---------------|---------------|----|----|-------|-----|----|----|------|-----|
| 101-0200-4 71 | HS35RA-16(71) | 43 | 35 | M41×1 | 3.2 | 40 | 31 | 21.5 | 2.5 |
| 101-0201-7 71 | HS35RA-20(71) |    |    |       |     |    |    |      |     |

■ Jack



HS21J-2(71)



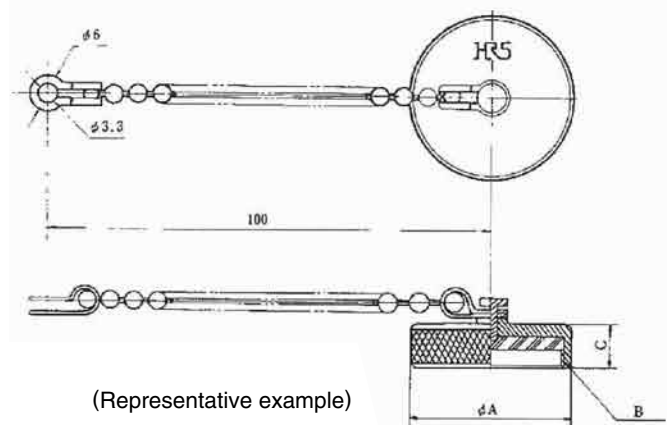
(Representative example)

| HRS No.       | Part No.    | φB   | φC  | D       | L    |
|---------------|-------------|------|-----|---------|------|
| 101-0010-9 71 | HS12J-2(71) | 18   | 7   | M15.5×1 | 44.5 |
| 101-0047-9 71 | HS16J-2(71) | 21.5 | 8.5 | M19×1   | 50   |
| 101-0048-1 71 | HS16J-3(71) |      |     |         |      |
| 101-0049-4 71 | HS16J-4(71) |      |     |         |      |
| 101-0416-3 71 | HS16J-5(71) | 28   | 10  | M25×1   | 57   |
| 101-0104-0 71 | HS21J-2(71) |      |     |         |      |
| 101-0107-9 71 | HS21J-5(71) |      |     |         |      |

■ Cap for Receptacle



HS21RC(72)




(Representative example)


| HRS No.       | Part No.   | φA   | B       | C |
|---------------|------------|------|---------|---|
| 101-0011-1 72 | HS12RC(72) | 18   | M15.5×1 | 7 |
| 101-0027-1 72 | HS14RC(72) | 21.5 | M19×1   |   |
| 101-0109-4 72 | HS21RC(72) | 28   | M25×1   |   |



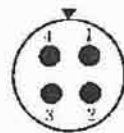
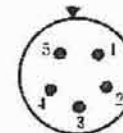
| HRS No.       | Part No.   | φA | B     | C |
|---------------|------------|----|-------|---|
| 101-0148-6 72 | HS25RC(72) | 32 | M29×1 | 7 |
| 101-0174-6 72 | HS28RC(72) | 38 | M34×1 |   |
| 101-0207-3 72 | HS35RC(72) | 46 | M41×1 |   |

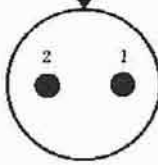
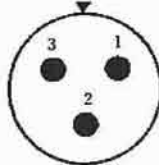
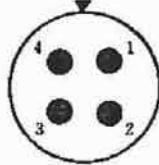
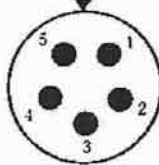
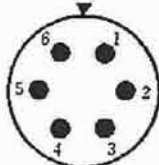
Note: Part No. HS14RC is possible to use as cap of size 16.

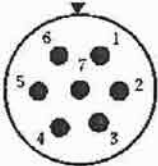
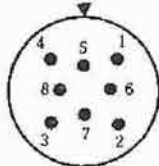
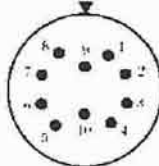
## ◆ Terminal Arrangement

|                       |   |
|-----------------------|---|
| Shell size            |  |
| 12                    |   |
| No. of contacts       | 2   |
| Withstanding voltage  | AC 1000V a minute   |
| Current rating        | 7A  |
| Insulation resistance | 1000 MΩ MIN.  |
| Contact resistance    | 5 mΩ MAX.   |
| Solder cup dia.       | φ1.5  |

|                       |  |
|-----------------------|--|
| Shell size            |  |
| 14                    |  |
| No. of contacts       | 2  |
| Withstanding voltage  | AC 1000V a minute  |
| Current rating        | 7A   |
| Insulation resistance | 1000 MΩ MIN.   |
| Contact resistance    | 5 mΩ MAX.  |
| Solder cup dia.       | φ1.5   |

|                       |   |   |   |  |
|-----------------------|---|---|---|--|
| Shell size            |  |  |  |  |
| 16                    |   |   |   |  |
| No. of contacts       | 2   | 3   | 4   | 5  |
| Withstanding voltage  | AC 1000V a minute   |   |   |  |
| Current rating        | 7A  |   |   |  |
| Insulation resistance | 1000 MΩ MIN.  |   |   |  |
| Contact resistance    | 5 mΩ MAX.   |   |   |  |
| Solder cup dia.       | φ1.8  |   |   | φ1.5   |

|                       |   |   |   |  |   |
|-----------------------|---|---|---|--|---|
| Shell size            |  |  |  |  |  |
| 21                    |   |   |   |  |   |
| No. of contacts       | 2   | 3   | 4   | 5  | 6   |
| Withstanding voltage  | AC 1000V a minute   |   |   | AC 500V a minute   | AC 1000V a minute   |
| Current rating        | 10A   |   |   |  | 7A  |
| Insulation resistance | 1000 MΩ MIN.  |   |   |  |   |
| Contact resistance    | 5 mΩ MAX.   |   |   |  |   |
| Solder cup dia.       | φ2.0  |   |   |  | φ1.5  |

|                       |   |   |   |
|-----------------------|---|---|---|
| Shell size            |  |  |  |
| 21                    |   |   |   |
| No. of contacts       | 7   | 8   | 10  |
| Withstanding voltage  | AC 1000V a minute   |   |   |
| Current rating        | 7A  | 4A  | 3A  |
| Insulation resistance | 1000 MΩ MIN.  |   |   |
| Contact resistance    | 5 mΩ MAX.   |   |   |
| Solder cup dia.       | φ1.5  | φ1.2  | φ1.5  |

|                       |                   |   |   |   |
|-----------------------|-------------------|---|---|---|
| Shell size            |                   |   |   |   |
| 25                    |                   |   |   |   |
| No. of contacts       | 2                 | 3 | 6 | 8 |
| Withstanding voltage  | AC 1000V a minute |   |   |   |
| Current rating        | 10A               |   |   |   |
| Insulation resistance | 1000 MΩ MIN.      |   |   |   |
| Contact resistance    | 5 mΩ MAX.         |   |   |   |
| Solder cup dia.       | φ2.0              |   |   |   |

|                       |                   |                       |                        |      |
|-----------------------|-------------------|-----------------------|------------------------|------|
| Shell size            |                   | Shell size            |                        |      |
| 25                    |                   | 28                    |                        |      |
| No. of contacts       | 10                | No. of contacts       | 4                      | 8    |
| Withstanding voltage  | AC 1000V a minute | Withstanding voltage  | AC 1000V a minute      |      |
| Current rating        | 4A                | Current rating        | 7A                     | 10A  |
| Insulation resistance | 1000 MΩ MIN.      | Insulation resistance | 1000 MΩ MIN.           |      |
| Contact resistance    | 5 mΩ MAX.         | Contact resistance    | 5 mΩ MAX.              |      |
| Solder cup dia.       | φ1.2              | Solder cup dia.       | φ1.8(Receptacle: φ1.5) | φ2.0 |

|                       |                   |    |
|-----------------------|-------------------|----|
| Shell size            |                   |    |
| 35                    |                   |    |
| No. of contacts       | 16                | 20 |
| Withstanding voltage  | AC 1000V a minute |    |
| Current rating        | 4A                |    |
| Insulation resistance | 1000 MΩ MIN.      |    |
| Contact resistance    | 5 mΩ MAX.         |    |
| Solder cup dia.       | φ1.2              |    |

Note:

1. Contact arrangements are shown at the fitting section of Plug.
2. Insulation resistance is measured at DC 500V.
3. Contact resistance is measured at DC 1A.
4. Withstanding voltage is shown as test voltage, so that the preferable value for daily operation is about one-third of each figure.



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