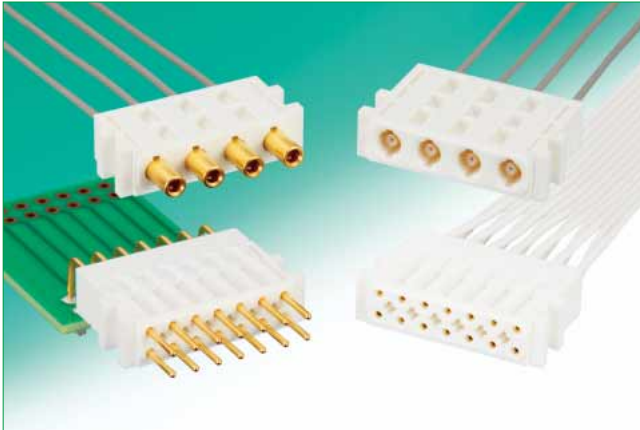


Non-magnetic, Long-Life Connector

MRF14 Series



Summary

The MRF14 Series is a non-magnetic long-life connector.

With excellent mating durability (60,000 cycles for both coaxial and signal contacts) it is a suitable interface connector suitable for use in a variety of MRI and testing equipment.

Features

<Both Coaxial and Signal>

- Non-magnetic
- Long life (60,000 times)
- Complaint with RoHS

<Coaxial>

1. Impedance Matching

High Frequency Characteristics : DC to 0.5GHz, V.S.W.R. 1.3 Max., 0.5 to 1GHz, V.S.W.R. 1.5 Max.

2. Small Diameter

Both the plug and jack have a small outer diameter of only $\phi 3.84\text{mm}$.

3. Plug-in Mating, Low Insertion and Removal Force

Plug-in mating for easy insertion and removal. Insertion force of 1.5N or less per pin and extraction force of 0.15N or more.

4. Applicable cable

Outer diameter $\phi 1.37$ flexible coaxial cable

5. Housing

4pin housing (Plug, Jack)

<Signal>

1. Small and light

Male (terminal) : $\phi 2.09\text{mm}$ outer diameter, 0.35g-0.62g weight per pin

Female (terminal) : $\phi 2.04\text{mm}$, 0.18g per pin for reducing the size and weight of the interface.

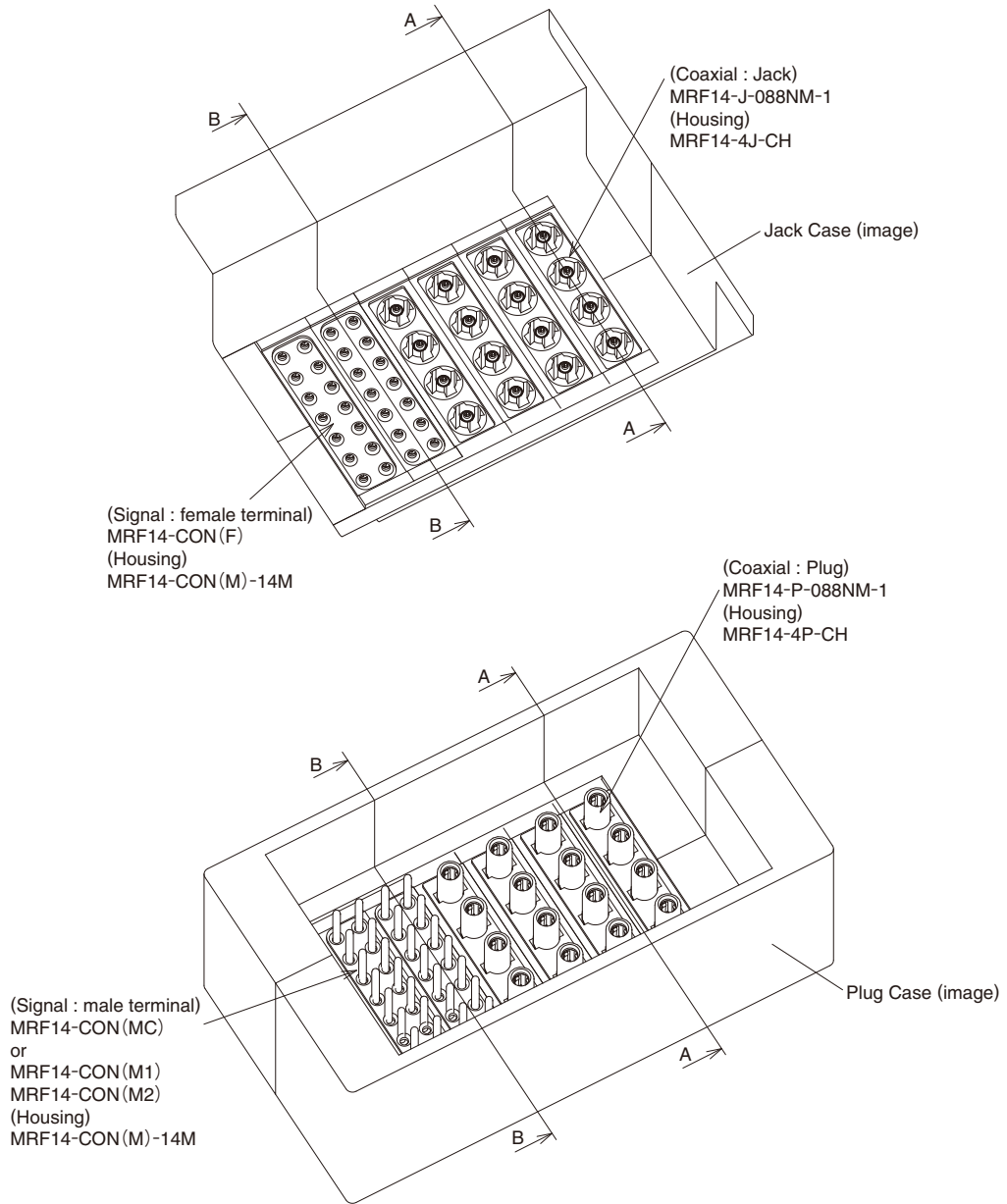
2. DIP type, Cable harness type

The male (terminal) is a Light angle DIP type, the female (terminal) is a cable harness type.

3. Housing

14 pin housing (same for male and female)

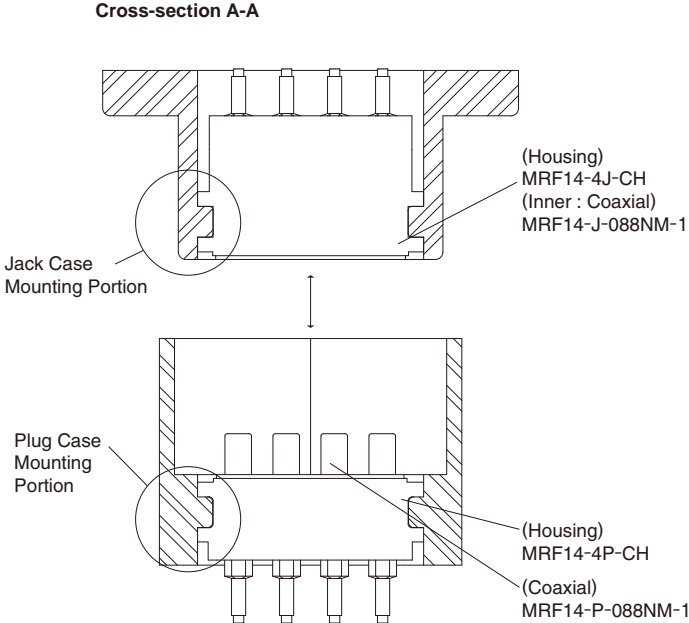
■ Mounted Connector Diagram



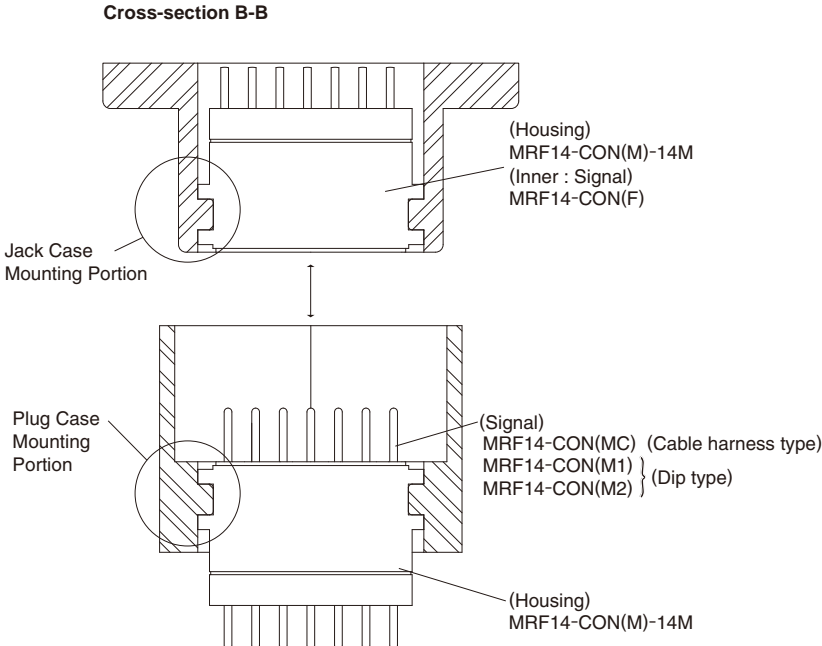
※ Lock and guide pin are purchased separately. Contact a Hirose sales representative for installation details and dimensions.

Functional Diagram

<Coaxial>



<Signal>



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■ Cable Type

| Part No. | Applicable Cable |
|-----------------|------------------------------|
| MRF14-P-088NM-1 | φ1.37 flexible coaxial cable |
| MRF14-J-088NM-1 | φ1.37 flexible coaxial cable |
| MRF14-CON (MC) | 24 AWG |
| MRF14-CON (F) | 24 AWG |

[Coaxial]

■ Product Specifications

| | | | | |
|---------|----------------------------------|------------|-----------------------|----------------|
| Ratings | Nominal Characteristic Impedance | 50Ω | Operating Temperature | -40°C to +85°C |
| | Frequency | DC to 1GHz | Operating Humidity | 90% RH or less |

| Item | Specifications | Conditions |
|---|---|---|
| 1. Contact Resistance | 30mΩ Max. (Center) 30mΩ Max. (Outer) | Measured at less than 100mA |
| 2. Insulation Resistance | 500MΩ Min. | Measured at 500V DC |
| 3. Withstanding Voltage | No flashover or breakdown | 500V AC for 1 min. |
| 4. V.S.W.R. | 1.3 Max. 1.5 Max. | DC to 0.5GHz 0.5 to 1GHz |
| 5. Retention Force of Female Contact | 0.05N Min. | Measured with φ0.4826 steel pin |
| 6. Total Insertion and Extraction Force | Insertion force 1.5N Max. Extraction force 0.15N Min. | Measured with applicable connector. |
| 7. Mating Cycles | Contact Resistance 60mΩ Max. (Center) 60mΩ Max. (Outer) No broken, cracked or loose parts. | 60,000 cycles |
| 8. Vibration Resistance | No electrical discontinuity for 1μs or more. No broken, cracked or loose parts. | Frequency 10 to 500Hz, Half Amplitude 0.75mm, Acceleration 98m/s ² 10 cycles in 3 axial directions |
| 9. Shock Resistance | No electrical discontinuity for 1μs or more. No broken, cracked or loose parts. | Acceleration 735m/s ² , Duration 6ms, Wave form half-sine wave, 3 times in 3 axial directions |
| 10. Damp Heat | Insulation Resistance 10MΩ Min. (in high humidity environment) Insulation Resistance 500MΩ Min. (in dry environment) No broken, cracked or loose parts. | Left at +40°C and 95% RH for 96 hours |
| 11. Temperature Cycles | No broken, cracked or loose parts. | Temperature : -55°C→20 to 35°C→+85°C→20 to 35°C Time : 30min. → 3min. → 30min. → 3min. Cycles : 5 |
| 12. Salt Spray | No considerable corrosion | Continuous 48 hour cycle in 5% salt water solution |

■ Materials / Finish

| Part | Material | Finish |
|-----------------------|------------------|-----------------------------|
| Shell | Phosphor Bronze | Gold plated |
| Center Female Contact | Beryllium Copper | Gold plated |
| Center Male Contact | Phosphor Bronze | Gold plated |
| Insulator | PTEE | ———— |
| Crimp Sleeve | Phosphor Bronze | Non-magnetic nickel plating |
| Heat Shrink Tube | Polyolefin | ———— |
| Housing | PBT | ———— |

Product Number Structure

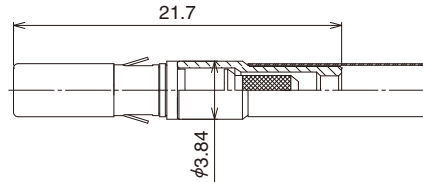
Refer to the chart below when determining the product specifications from the product number.
Please select from the product numbers listed in this catalog when placing orders.

MRF14 - [] - **088 NM** - **1**

① ② ③

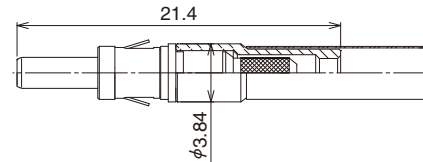
| |
|--|
| ① Series Name : MRF14 |
| ② Connector Type P : Straight Plug J : Straight Jack |
| ③ Applicable Cable 088 : ϕ 1.37 Flexible Coaxial Cable |

Straight Plug



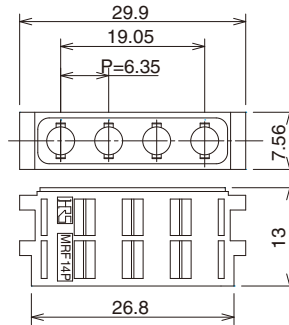
| Part No. | HRS No. | RoHS |
|-----------------|------------|------|
| MRF14-P-088NM-1 | 313-0714-8 | ○ |

Straight Jack



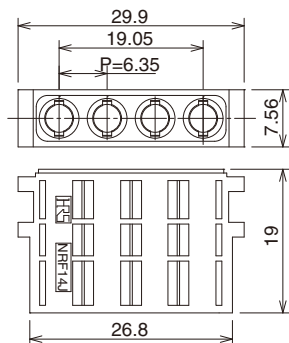
| Part No. | HRS No. | RoHS |
|-----------------|------------|------|
| MRF14-J-088NM-1 | 313-0715-0 | ○ |

Housing (4pos., for plug)



| Part No. | HRS No. | RoHS |
|-------------|------------|------|
| MRF14-4P-CH | 313-0707-2 | ○ |

Housing (4pos., for jack)



| Part No. | HRS No. | RoHS |
|-------------|------------|------|
| MRF14-4J-CH | 313-0708-5 | ○ |

[Signal]

■ Product Specifications

| | | | |
|---------------|---------|-----------------------|----------------|
| Rated Voltage | 500V AC | Operating Temperature | -40°C to +85°C |
| Rated Current | 2A DC | Operating Humidity | 90% RH or less |

| Item | Specifications | Conditions |
|--------------------------------------|--|--|
| 1. Contact Resistance | 30mΩ Max. | Measured at less than 100mA |
| 2. Insulation Resistance (※) | 500MΩ Min. | Measured at 500V DC |
| 3. Withstanding Voltage (※) | No flashover or breakdown | 1,500V AC for 1 min. |
| 4. Retention Force of Female Contact | 0.02N Min. | Measured with applicable connector |
| 5. Mating Cycles | Contact Resistance 60mΩ Max. No broken, cracked or loose parts | 60,000 cycles |
| 6. Vibration Resistance | No electrical discontinuity for 1μs or more. No broken, cracked or loose parts | Frequency 10 to 500Hz, Half Amplitude 0.75mm, Acceleration 98m/s ² 10 cycles in 3 axial directions |
| 7. Shock Resistance | No electrical discontinuity for 1μs or more. No broken, cracked or loose parts. | Acceleration 735m/s ² , Duration 6ms, Wave form half-sine wave, 3 times in 3 axial directions |
| 8. Damp Heat | Insulation Resistance 10MΩ Min. (in high humidity environment) Insulation Resistance 500MΩ Min. (in dry environment) No broken, cracked or loose parts | Left at +40°C and 95% RH for 96 hours |
| 9. Temperature Cycle | No broken, cracked or loose parts | Temperature : -40°C→20 to 35°C→+85°C→20 to 35°C Time : 30min. → 3min. → 30min. → 3min. Cycles : 5 |
| 10. Salt Spray | No considerable corrosion | Continuous 48 hour cycle in 5% salt water solution |

※Measured when mounted in housing.

■ Materials / Finish

| Part | Material | Finish |
|----------------|-------------------------------------|-------------|
| Terminal | Beryllium Copper | Gold plated |
| Outer Shell | Phosphor Bronze | Gold plated |
| Male Contact | Beryllium Copper or Phosphor Bronze | Gold plated |
| Female Contact | Beryllium Copper | Gold plated |
| Housing | PBT | — |

■ 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.

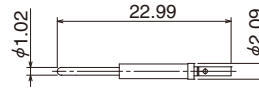
MRF14 - CON (Γ J)

① ② ③

| |
|---|
| ① Series Name : MRF14 |
| ② CON : Signal Connector |
| ③ Connector Type MC : Male (Cable Harness type) M1, M2 : Male (DIP type) F : Female (Cable Harness type) |
| Applicable Cable 24 AWG |

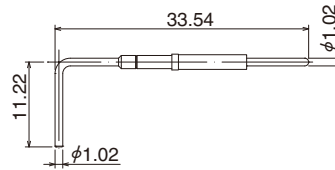
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■ Male Contact (Cable Harness Type)

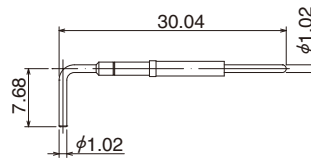


| Part No. | HRS No. | RoHS |
|---------------|------------|------|
| MRF14-CON(MC) | 313-0716-3 | ○ |

■ Male Contact (DIP Type)

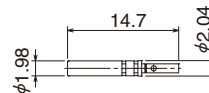


| Part No. | HRS No. | RoHS |
|---------------|------------|------|
| MRF14-CON(M1) | 313-0710-7 | ○ |



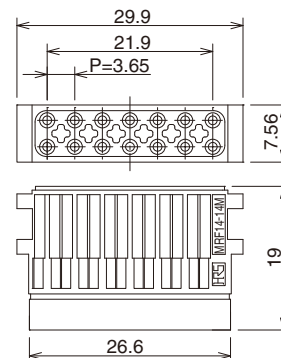
| Part No. | HRS No. | RoHS |
|---------------|------------|------|
| MRF14-CON(M2) | 313-0711-0 | ○ |

■ Female Contact (Cable Harness Type)



| Part No. | HRS No. | RoHS |
|--------------|------------|------|
| MRF14-CON(F) | 313-0709-8 | ○ |

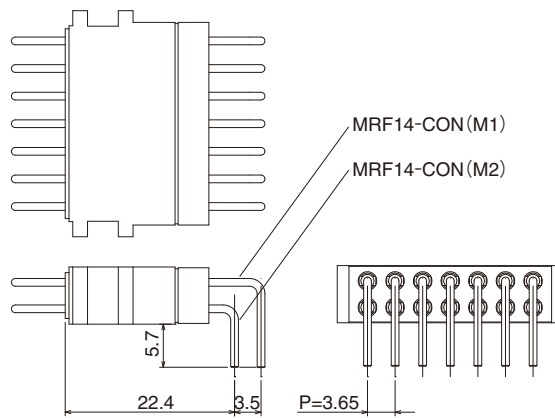
■ Housing (14pos., Same for both male and female contacts)



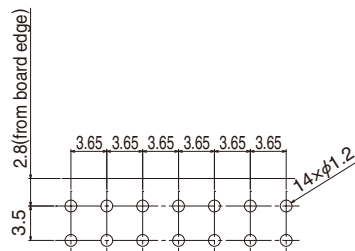
| Part No. | HRS No. | RoHS |
|------------------|------------|------|
| MRF14-CON(M)-14M | 313-0706-0 | ○ |

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◆ Male Contact (DIP Type) Mounted in Housing



◆ Board Hole Dimensions (Male Contact DIP Type)



◆ Applicable Tool

| Item | Part No. | Applicable Connector |
|---------------------|-----------------|----------------------|
| Cable Crimping Tool | HT702/MRF14-088 | MRF14-P-088NM-1 |
| | | MRF14-J-088NM-1 |
| | HT901/MRF14-CON | MRF14-CON (MC) |
| | | MRF14-CON (F) |



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