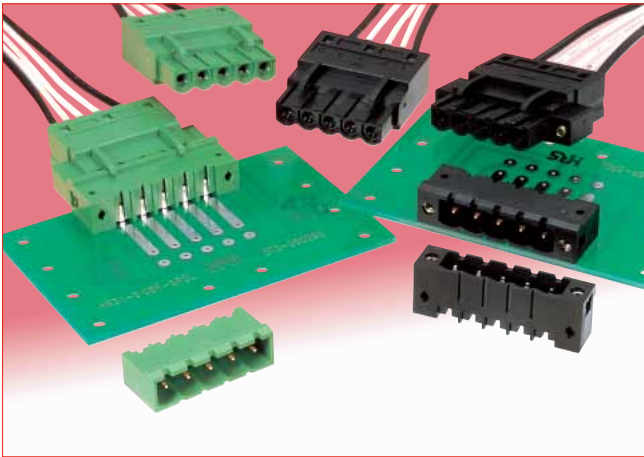


Interface Connectors for Factory Automation Network

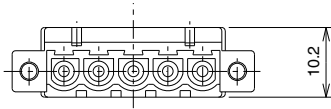
HR31 Series

Complies with DeviceNet requirements

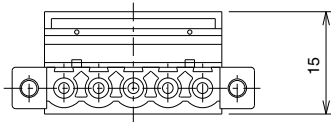


Comparison of plug heights

●Hirose HR31



●Other manufacturer's product



■ Features

1. DeviceNet Compliant

Conforms to requirements of Factory Automation Network DeviceNet standards.
Hirose products are distinct from products of made others, as described below.

| Feature | Made by others | Hirose HR31 |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Reduced number of termination operations | Crimped to commercially available cap connectors, inserted into housing and fastened by screw. (*) | Crimped and connected to terminal then fastened simply by inserting into housing. |
| High density mounting | Plug height : 15 mm | Plug height is 10.2 mm, allowing use of less space when mounting several connectors |
| Prevention of connection errors | Contact positions not identified. | Permanently identified contact positions |
| Number of required operations to secure receptacle assembly to the board | Connectors are attached by screws from the opposite side. | No need for screws, built-in locking pin secures connector to the board |

*Although it is possible to terminate discrete cables with screws and not use a pin contact, however, there is the potential issue and concern for long-term reliability and problems. Therefore, most users prefer to use crimp contacts.

2. Screw-lock style

The screw lock style connector features secure mating and a higher locking force retention.

3. Snap-lock Style

The snap lock plug features a structure that creates a tactile click during mating.

4. Commercially available tools may be used

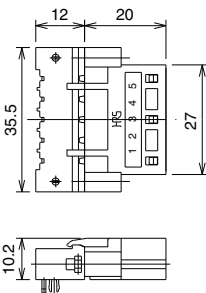
Use crimp tools conforming to JIS C 9711 standards.
Terminated contacts can be removed using 1 mm dia. steel pin. and re-inserted.

5. Protected contacts

When installed, the crimped contacts are protected completely by the plug housing. This design eliminates the risk of damaging the contacts.

Total space occupied by mated assemblies

With screw lock



Product Specification

| | | | | |
|--------------------------------------|----------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------|
| Rating | Current rating | 12A (2.5mm ² wire) 10A (1.5mm ² wire) | Operating temperature range | -40℃ to +100℃ |
| | Voltage rating | 250V AC, 350V DC | Storage temperature range | -40℃ to +85℃ |
| Item | | Specification | Conditions | |
| 1.Contact resistance | | 5 mΩ max. | 1A DC | |
| 2.Insulation resistance | | 1000 MΩ min. | 500 V DC | |
| 3.Withstanding voltage | | No flashover or insulation breakdown | 2000V AC/one minute | |
| 4.Impulse withstanding voltage | | No flashover or insulation breakdown | Standard waveform of 4KV, positive/negative, 3 times each | |
| 5.Vibration | | No electrical discontinuity of 10 μs or more | Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 5 min. in each of the 3 directions, 10 cycles each | |
| 6.Durability (insertion/ withdrawal) | | Contact resistance: 10 mΩ max. | 1000 cycles | |
| 7.Temperature cycle | | Insulation resistance: 1000 MΩ min. | Temperature: -40℃ / Room temperature to +100℃ / Room temperature Time: 30 / 10 to 15 / 30 / 10 to 15 (Minutes) 5 cycles | |
| 8.Humidity | | Insulation resistance: 10 MΩ min. (Humidity state) 100 MΩ min. (Dry state) | 96 hours at temperature of 40℃ and humidity of 90% to 95% | |

Materials

| Part | | Material | Finish | Remarks |
|---------------|---------------------|-----------------------------------------------------------|-------------------------------------------------------------|---------------------|
| Plug | Insulator | PBT | Color: Black or Green | UL94V-0 |
| | Screw | Steel | Nickel plating | —— |
| Crimp contact | Socket contact | Contact area: phosphor bronze Termination area: copper | Contact area: gold plating Termination area: tin plating | —— |
| Receptacle | Insulator | PBT | Color: Black or Green | UL94V-0 |
| | Male contact | Brass | Contact area: gold plating Termination are: gold plating | —— |
| | Nut | Steel | Nickel plating | —— |
| | Board retention pin | Phosphor bronze | Tin plating | Board retention pin |

Ordering information

Connector

HR31 - 5.08 P A - 5 S C (01)

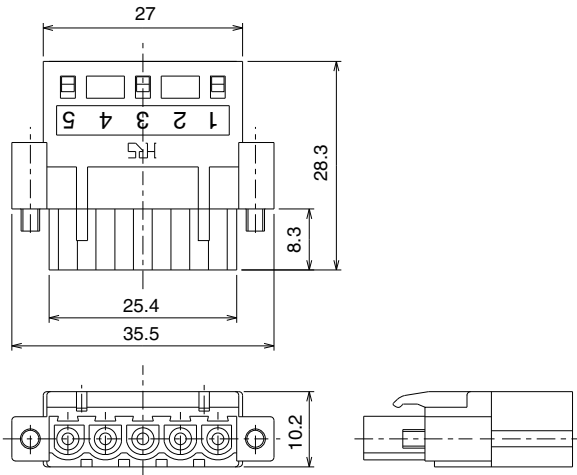
| | | | |
|----------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| ① Model name | HR31 | ⑦ Terminal type | C: Crimping DL: Right angle through hole type D: Straight through hole type |
| ② Contact pitch | 5.08mm | ⑧ Other specifications: A two-digit number such as (01) or (02) is added to indicate other specifications. | |
| ③ Connector type | P: Plug R: Receptacle | | |
| ④ Screw lock type | Blank: With screw A: Without screw | | |
| ⑤ Number of contacts | 5 | | |
| ⑥ Contact type | S: Female contact P: Male contact | | |

Crimp contact

HR31 - SC - 1 1 1 (01)

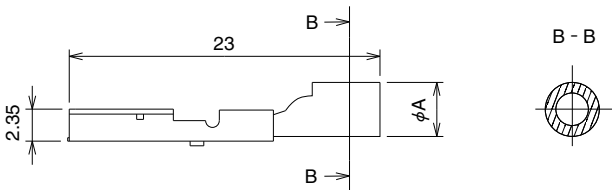
| | | | |
|--------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------|
| ⑨ Model name | HR31 | ⑬ Plating type | 1: Gold plating |
| ⑩ Contact type | SC: female contact | ⑭ Other specifications: A two-digit number such as (01) or (02) is added to indicate other specifications. | |
| ⑪ Contact packaging type | 1: loose contact | | |
| ⑫ Conductor cross area | 1: 1.04 to 2.63mm ² 2: 0.2 to 1.65mm ² | | |

■ Plug (with screw lock)



| Part No. | HRS No. | Weight | Color |
|--------------------|---------------|--------|-------|
| HR31-5.08P-5SC(72) | 131-0002-2 72 | 8g | Green |

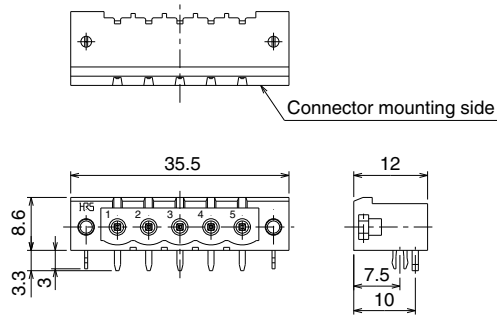
◆ Crimp contact



| Part No. | HRS No. | φA | Weight | Contact plating | Applicable conductor cross area (Note 2) |
|-----------------|---------------|-----|--------|-----------------|------------------------------------------|
| HR31-SC-111(71) | 131-0004-8 71 | 4 | 1g | Gold | 1.04 to 2.63mm ² |
| HR31-SC-121(71) | 131-0005-0 71 | 3.3 | | | 0.2 to 1.65mm ² |

Note 1: Packaging (100 pcs/pack)
Note 2: For a multi-strand conductors

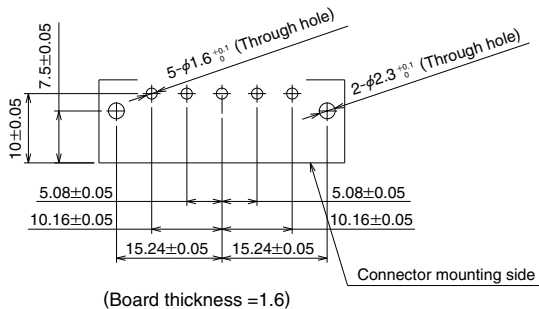
■ Receptacle (Right angle through hole type with screw lock)



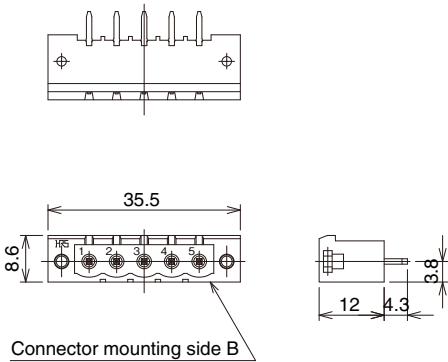
| Part No. | HRS No. | Weight | Color | Contact plating | Board retention pin |
|---------------------|---------------|--------|-------|-----------------|---------------------|
| HR31-5.08R-5PDL(72) | 131-0001-0 72 | 4g | Black | Gold | With |
| HR31-5.08R-5PDL(75) | 131-0001-0 75 | | Green | | |

◆ PCB mounting pattern

● With screw lock



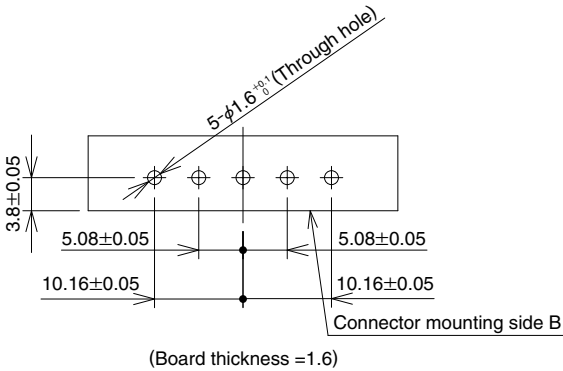
■ Receptacle (Straight through hole type with screw lock)



| Part No. | HRS No. | Weight | Color | Contact plating | Board retention pin |
|--------------------|---------------|--------|-------|-----------------|---------------------|
| HR31-5.08R-5PD(76) | 131-0003-5 76 | 4g | Green | Gold | Without |

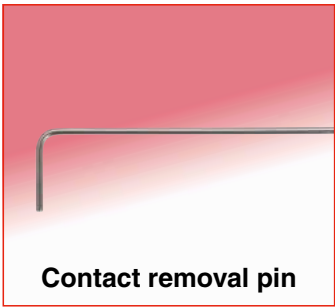
◆ PCB mounting pattern

● With screw lock



Tools

| Type | Part No. | HRS No. |
|---------------------|------------|------------|
| Manual crimp tool | HR31-TC-01 | 902-1512-4 |
| Contact removal pin | HR31-SC-TP | 150-0215-1 |

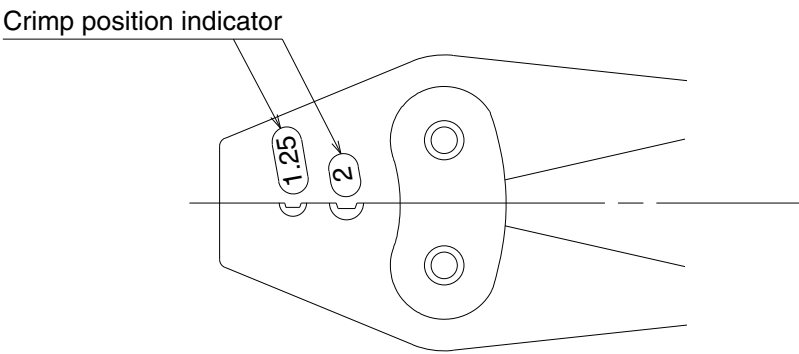


Tools application procedures

1. Manual contact crimp tool

The tool will terminate all specified crimp contacts. Placement of correct contact in corresponding crimp position on the tool is critical. The positions are clearly indicated on the tool as (2) and (1.25). The exposed conductor strip length is 5mm.

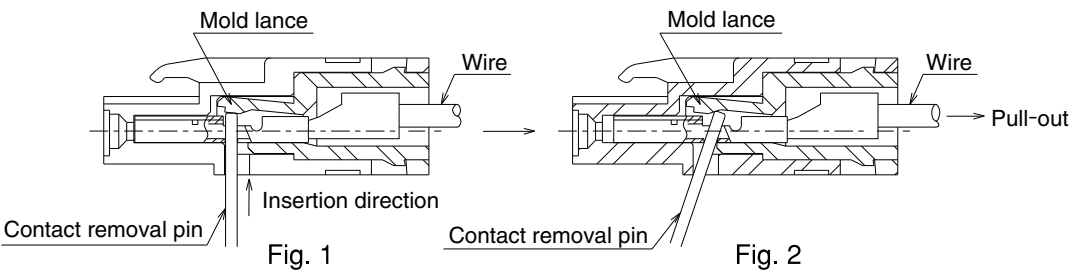
| Crimp position indicator | Applicable crimp contact |
|--------------------------|--------------------------|
| 2 | HR31-SC-111 |
| 1.25 | HR31-SC-121 |



2. Contact removal/extraction

Wiring errors can be corrected by removing the crimp contacts using the extraction tool and the following procedure.

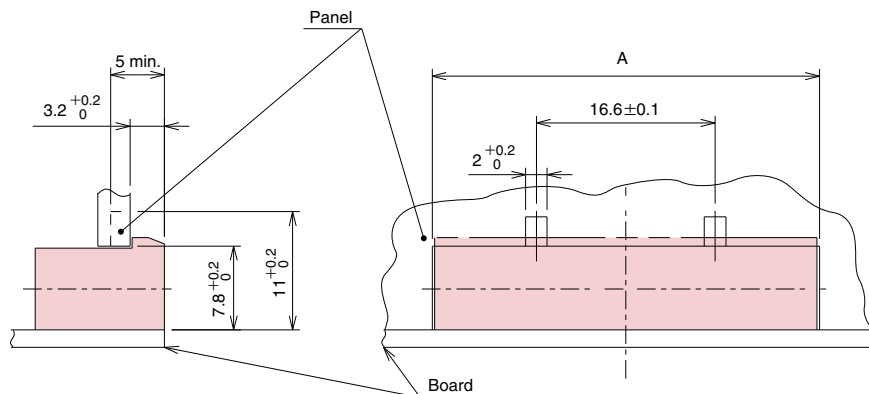
- 1) Insert the extraction tool from the underside of connector and apply pressure onto the mold lance. (Fig.1)
- 2) While pressing on the mold lance, angle the extraction tool and release the disconnection prevention mechanism on the crimping contact. (Fig.2)
- 3) Remove the extraction tool.
- 4) Pull the wire rearward to disconnect and remove the contact.



◆ Usage Precautions

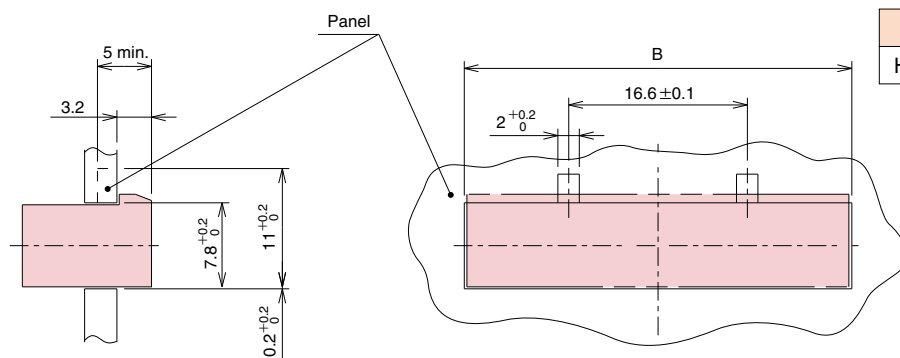
1. To prevent damage, align receptacle with the panel and board in such a way that it is not subject to excess loads.

1.1 Recommended mounting panel dimensions (right angle through hole type)



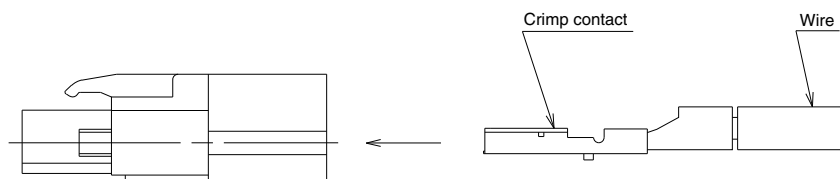
| Part No. | A |
|---------------------|---------------------------------|
| HR31-5.08R-5PDL(**) | 36 ^{+0.2} ₀ |

1.2 Recommended mounting panel dimensions (straight through hole type)



| Part No. | B |
|--------------------|---------------------------------|
| HR31-5.08R-5PD(**) | 36 ^{+0.2} ₀ |

2. Insert the crimp contact into the plug in the direction shown below.



3. Use a number 0 cross drive bit to tighten the screw lock's screw.
4. Assure that the circuit's power is off when mating and un-mating connectors.



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>

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