

# Plastic-Shelled Waterproof Connectors for Outdoor Use

## HR41 Series



### ■Features

#### 1. Weather-resistant and waterproof connectors for outdoor use

Lightweight, outdoor, waterproof connectors that utilize stout plastic shells that are also resistant to corrosive weather.

#### 2. Waterproof ability

With its IP68 rating, it is guaranteed to ensure a waterproof seal while in the mated state.

#### 3. Operator-friendly bayonet-locking system

Single action locking mechanism, its bayonet-lock makes it easier to complete the connection even in the dark.

#### 4. Field wire connection applicable

Wire crimping type is operator-friendly and has an easy-to-assemble structure suited for wire connecting work in the field.

#### 5. Compatible with general-purpose tools

Crimp terminals can be connected to wire using crimping tools in accordance with JIS C 9711.

#### 6. Specialized sequence structure

3-step sequence structure design for 5-pin plugs protects the system in case of hot plugging.

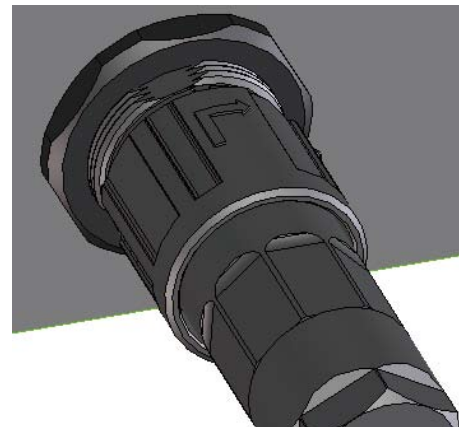
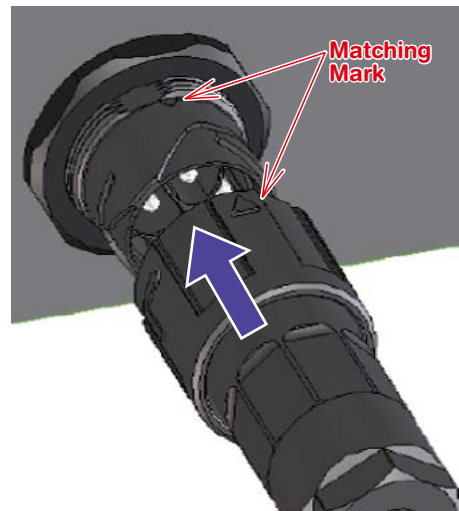
#### 7. Gold plated contacts

Gold plated terminal contacts provide a reliable connection.

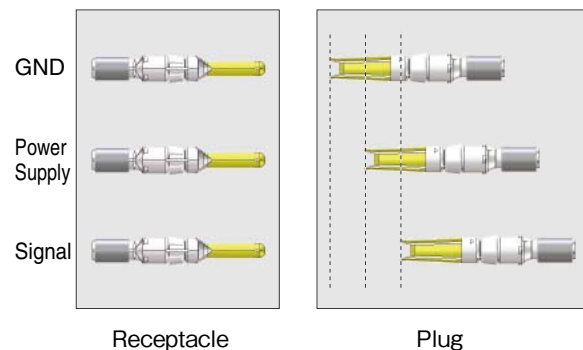
#### 8. Safety standards

Certifications pending on various safety standards.

### Bayonet Lock



### Sequence Structure (5-Pin)



Note\* Waterproof performance

IPx8: Immersion in water 2m deep for 14 days.

IPx7: Immersion in water 1m deep for 30 minutes.

## ■Product specification

|        |               |                                                    |                           |              |
|--------|---------------|----------------------------------------------------|---------------------------|--------------|
| Rating | Rated current | 3-pin: 20A<br>5-pin: 10A                           | Service temperature range | -40℃ to +85℃ |
|        | Rated voltage | 3-pin: AC 400V, DC 400V<br>5-pin: AC 600V, DC 400V | Storage temperature range | -10℃ to +60℃ |

| Item                                     | Specification                                                                                           | Condition                                                                                                |
|------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 1. Contact resistance                    | 2mΩ or lower                                                                                            | Measure at DC 1A                                                                                         |
| 2. Insulation resistance                 | 5,000MΩ or higher                                                                                       | Measure at DC 500V                                                                                       |
| 3. Voltage resistance                    | No flashover or breakdown                                                                               | 3-pin: AC 4,260V × 1 min<br>5-pin: AC 2,200V × 1 min                                                     |
| 4. Vibration resistance                  | No temporary electric interruption for 10μs or longer                                                   | Frequency 10-500-10Hz/cycle<br>Half amplitude 0.75mm, 5 min/cycle<br>10 cycles each in 3 axis directions |
| 5. Impact resistance                     | No temporary electric interruption for 10μs or longer                                                   | Acceleration 490m/s <sup>2</sup> , duration 11ms,<br>3 cycles each in 3 axis directions                  |
| 6. Repeated motions                      | Contact resistance 4mΩ or lower                                                                         | 50 cycles of repeated motions                                                                            |
| 7. Temperature cycle                     | Insulation resistance 5,000MΩ or higher                                                                 | -55℃ × 30 min → room temp. × 2-3 min → 85℃ × 30 min → room temp. × 2-3 min × 5 cycles                    |
| 8. Salt water spray                      | No functional problem                                                                                   | Exposure to 5% salt water spray × 1,000 hours in a mated condition                                       |
| 9. Humidity resistance (in steady state) | Insulation resistance:<br>50MΩ or higher (at high temperatures),<br>500MΩ or higher (in dry conditions) | Temperature 40℃, Humidity 90-95%RH × 96 hours                                                            |
| 10. Water pressure resistance            | No water seepage into the connector                                                                     | Immersed in water 2m deep for 14 days in a mated condition                                               |

## ■Materials

| Item           | Material                   | Treatment             | Remarks |
|----------------|----------------------------|-----------------------|---------|
| Insulator      | Polyamide resin, PBT resin | —                     | UL94V-0 |
| Terminal       | Copper alloy               | Partially gold plated | —       |
| O-ring, gasket | Silicon rubber             | —                     | —       |

## ■Product Number Structure

Type codes imbedded in a part number will tell you about the product specifications.

### ●Connectors

**HR41 - 25 W B P A - 3 S C (\*\*)**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

### ●Crimp terminals

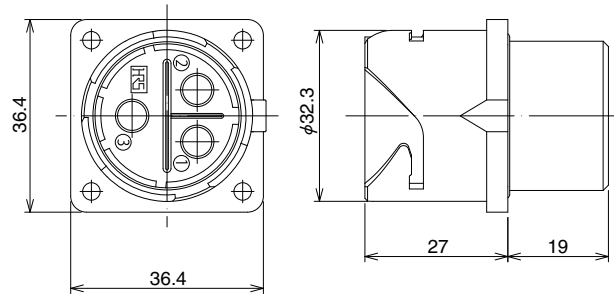
**HR41 - S C - 1 2 1 (\*\*)**

① ⑧ ⑨ ⑪ ⑫ ⑬ ⑩

|                                                    |                                                                                            |
|----------------------------------------------------|--------------------------------------------------------------------------------------------|
| ① Series name: HR41                                | ⑧ Terminal shape S: female terminal,<br>P: male terminal                                   |
| ② Shell size: 25                                   | ⑨ Terminal connection type C: crimping                                                     |
| ③ Special property W: waterproof type              | ⑩ List additional specifications following (01), (02)...                                   |
| ④ Lock mechanism B: bayonet lock                   | ⑪ Terminal form 1: pin terminal                                                            |
| ⑤ Shell type P: plug,<br>R: receptacle,<br>J: jack | ⑫ Shape 2: distinguish between different terminal<br>shapes in the same size by 1, 2, 3... |
| ⑥ Serial code                                      | ⑬ Plating on contacts 1: gold plating                                                      |
| ⑦ Pole No.: 3, 5                                   |                                                                                            |

### ■ 3-Pin Type

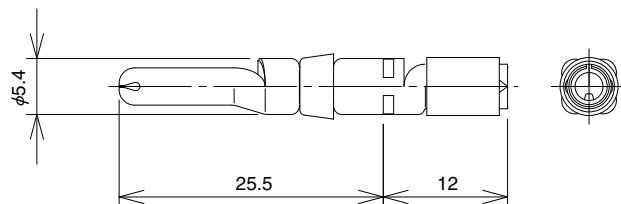
#### ● Receptacle (Screw-fastened Type)



| Product No.    | HRS No.      | Pole No. |
|----------------|--------------|----------|
| HR41-25WBR-3PC | CL141-0006-0 | 0        |

\*Note: The above product can be mated with male terminals.

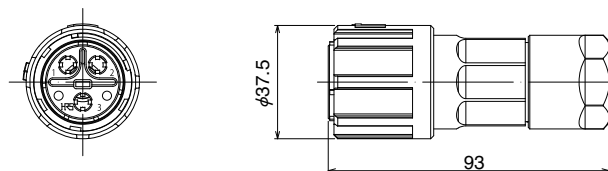
#### ● Male terminals



| Type         | Product No.     | HRS No.         | Thickness of gold plating on contacts | Applicable wires<br>(to satisfy the requirements 1, 2, 3)                                                                                                      |
|--------------|-----------------|-----------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pin terminal | HR41-PC-111     | CL141-0002-0    | 0.2 $\mu$ m                           | 1) Conductor cross sectional area: 3.3-5.5mm <sup>2</sup><br>2) Conductor diameter: 3.1mm or smaller<br>3) Covered wire diameter: 6mm or smaller (AWG #10-#12) |
|              | HR41-PC-111(01) | CL141-0002-0-01 | 0.76 $\mu$ m                          |                                                                                                                                                                |
|              | HR41-PC-121     | CL141-0004-5    | 0.2 $\mu$ m                           | 1) Conductor cross sectional area: 1.3-2.5mm <sup>2</sup><br>2) Conductor diameter: 2.0mm or smaller<br>3) Covered wire diameter: 6mm or smaller (AWG #14-#16) |
|              | HR41-PC-121(01) | CL141-0004-5-01 | 0.76 $\mu$ m                          |                                                                                                                                                                |

\*One pack contains 3 connectors.

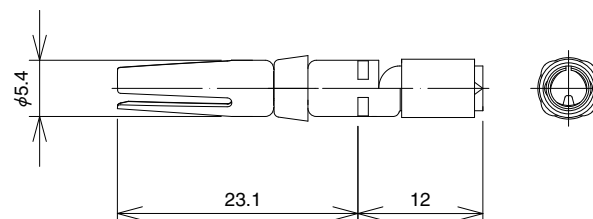
## ●Plug



| Product No.     | HRS No.      | Pole No. | Applicable cable    | Remarks |
|-----------------|--------------|----------|---------------------|---------|
| HR41-25WBPD-3SC | CL141-0023-0 | 3        | $\phi 9.0 \pm 0.6$  | —       |
| HR41-25WBPE-3SC | CL141-0024-2 | 3        | $\phi 10.1 \pm 0.6$ | —       |
| HR41-25WBPF-3SC | CL141-0026-8 | 3        | $\phi 13.5 \pm 0.7$ | —       |

\*Note: The above products can be mated with female terminals.

## ●Female terminals



| Type         | Product No.     | HRS No.         | Thickness of gold plating on contacts | Applicable wires<br>(to satisfy the requirements 1, 2, 3)                                                                                                      |
|--------------|-----------------|-----------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pin terminal | HR41-SC-111     | CL141-0001-7    | 0.2 $\mu$ m                           | 1) Conductor cross sectional area: 3.3-5.5mm <sup>2</sup><br>2) Conductor diameter: 3.1mm or smaller<br>3) Covered wire diameter: 6mm or smaller (AWG #10-#12) |
|              | HR41-SC-111(01) | CL141-0001-7-01 | 0.76 $\mu$ m                          |                                                                                                                                                                |
|              | HR41-SC-121     | CL141-0003-2    | 0.2 $\mu$ m                           | 1) Conductor cross sectional area: 1.3-2.5mm <sup>2</sup><br>2) Conductor diameter: 2.0mm or smaller<br>3) Covered wire diameter: 6mm or smaller (AWG #14-#16) |
|              | HR41-SC-121(01) | CL141-0003-2-01 | 0.76 $\mu$ m                          |                                                                                                                                                                |
|              | HR41-SC-141     | CL141-0008-6    | 0.2 $\mu$ m                           | 1) Conductor cross sectional area: 5.5-6.5mm <sup>2</sup><br>2) Conductor diameter: 3.4mm or smaller<br>3) Covered wire diameter: 6mm or smaller (AWG #10)     |
|              | HR41-SC-141(01) | CL141-0008-6-01 | 0.76 $\mu$ m                          |                                                                                                                                                                |

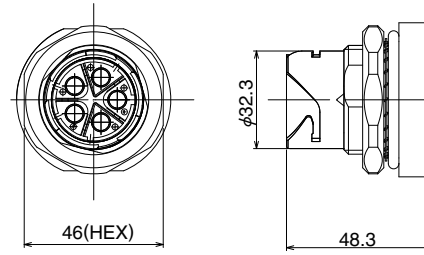
\*One pack contains 3 connectors.

\*\*Note: HR41-SC-151 has a different terminal structure than the following connectors, HR41-SC-111, HR41-SC-121, and HR41-SC-141.

Please pay attention to the combined use of these connectors.

## ■ 5-Pin Type

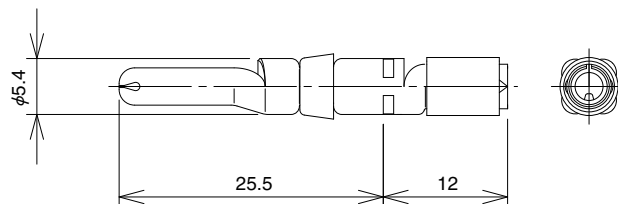
### ● Nut-fastened back mount type



| Product No.     | HRS No.      | Pole No. |
|-----------------|--------------|----------|
| HR41-25WBRA-5PC | CL141-0010-8 | 5        |

\*Note: The above product can be mated with male terminals.

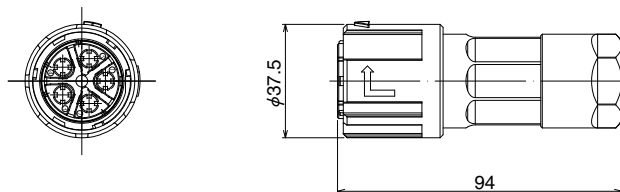
### ● Male terminal



| Type         | Product No. | HRS No.      | Thickness of gold plating on contacts | Applicable wires<br>(to satisfy the requirements 1, 2, 3)                                                                                                      |
|--------------|-------------|--------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pin terminal | HR41-PC-151 | CL141-0012-3 | 0.2μm                                 | 1) Conductor cross sectional area: 0.75-2.5mm <sup>2</sup><br>2) Conductor diameter: 2.4mm or smaller<br>3) Covered wire diameter: 6mm or smaller (AWG#14-#18) |

\*One pack contains 5 connectors.

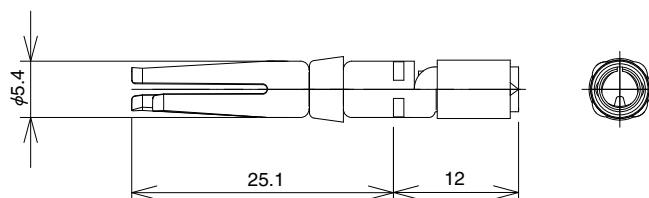
## ● Plug



| Product No.    | HRS No.      | Pole No. | Applicable cable  | Remarks         |
|----------------|--------------|----------|-------------------|-----------------|
| HR41-25WBP-5SC | CL141-0009-9 | 5        | $\phi 11 \pm 0.3$ | 3-step sequence |

\*Note: The above product can be mated with female terminals.

## ● Female terminal



| Type         | Product No. | HRS No.      | Thickness of gold plating on contacts | Applicable wires<br>(to satisfy the requirements 1, 2, 3)                                                                                                       |
|--------------|-------------|--------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pin terminal | HR41-SC-151 | CL141-0011-0 | 0.2 $\mu$ m                           | 1) Conductor cross sectional area: 0.75-2.5mm <sup>2</sup><br>2) Conductor diameter: 2.4mm or smaller<br>3) Covered wire diameter: 6mm or smaller (AWG #14-#18) |

\*One pack contains 5 connectors.

\*\*Note: HR41-SC-151 has a different terminal structure than the following connectors, HR41-SC-111, HR41-SC-121, and HR41-SC-141.  
Please pay attention to the combined use of these connectors.

## ■ Tool

| Type                     | Product name | HRS No.      |
|--------------------------|--------------|--------------|
| Terminal extracting tool | HR41-TP      | CL150-0256-9 |



### ● Recommended crimping tools

#### ◆ Manual-type crimping tools

| Tool maker                      | Product No. |
|---------------------------------|-------------|
| Hozan Tool Industrial Co., Ltd. | P-75        |
| LOBTEX Co., Ltd.                | AK15A       |
| NICHIFU Co., Ltd.               | NH11        |



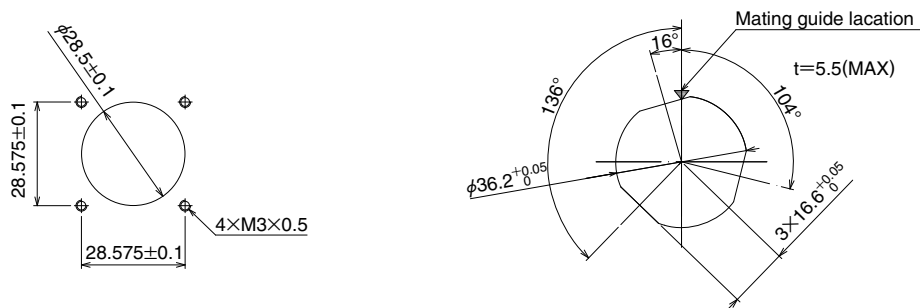
#### ◆ Air-type crimping tool

| Tool maker             | Product No.                 |
|------------------------|-----------------------------|
| Izumi Products Company | AC-5N.D.<br>Dies: No.1 head |



\*Note: Please maintain your crimping tools in accordance with the manufacturer's instruction manuals.

## ■ Dimensional drawing for receptacle panel mounting holes





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