

Waterproof Bayonet Lock Connector for 50A Power Supply

EM-W Series



Mated condition

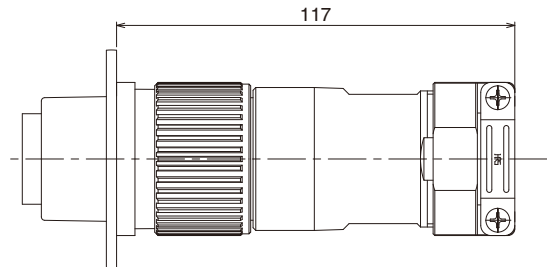


Fig.1

■ Features

1. High current 4 position connector (Three-phase power source + ground)

Compatible with 50A current 3-position connectors and cables. (For the relationship between ambient temperature and current, see the derating curve shown in Fig.2)

2. Easy crimp termination

Crimp contact is user-friendly and the easy-to-assemble design allows for uniform termination.

3. Uses a standard crimp tool

The crimp contacts can be terminated by using the JIS C 9711-compliant crimp tool.

4. Sequential ground contact

Sequential mating allows the ground contact to mate first. The ground contact touches the metal shell. (Receptacle)

5. Quick and secure bayonet lock

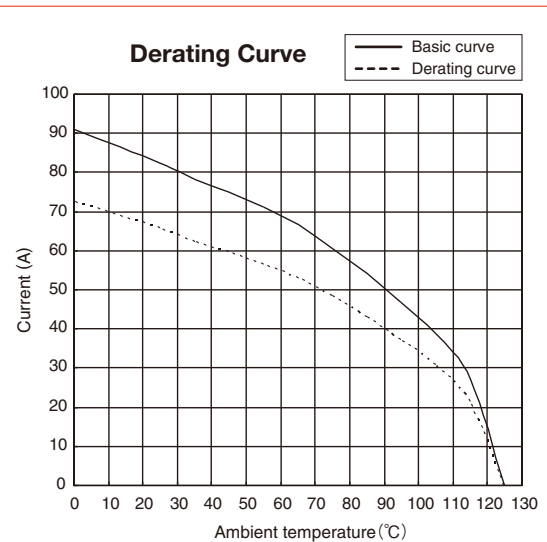
Easy to operate One-touch Bayonet lock.

6. Waterproof design

IP68 compliant water resistance in mated condition
IP68 : No water intrusion while submerged in 2m water depth for 14 days in mated condition

7. Safety Standard

TÜV certified



Measurement Condition :

3 contacts connected in series with 8mm² wire.
Measurement performed with the plug sealed for air tightness (waterproofness).

Comment : 50A current rating assumes the connector is used at maximum of 85°C ambient temperature. The actual current used should be determined individually based on the derating curve. The derating curve is not guaranteed and will change dependent on factors such as the cable used. The values in this diagram are not guaranteed, but should be used as reference values. Actual measurement may vary even when all the measurements are done under the same conditions.

Fig.2

■ Product Specifications

| | | | | |
|---------|---------------|--|-----------------------------|---------------|
| Ratings | Rated current | 50A (See the Derating Curve on page 1.) | Operating temperature range | -40 to +125°C |
| | Rated voltage | AC 250V, DC 250V | Storage temperature range | -10 to +60°C |

| Item | Specifications | Conditions |
|---------------------------------------|---|--|
| 1. Contact resistance | 1mΩ max. | Measured at DC 1A |
| 2. Insulation resistance | 5000MΩ min. | Measured at DC 500V |
| 3. Withstanding voltage | No flashover or breakdown | Apply AC 2210V for 1 minute. |
| 4. Vibration resistance | No electrical discontinuity of 10μs or more | 10 to 50 to 10Hz/cycle, half amplitude of 0.75mm, 5 minutes/cycle, 10 cycles in each of the three axial directions |
| 5. Shock resistance | No electrical discontinuity of 10μs or more | Acceleration : 490m/s ² , duration : 11ms, 3 directions, 3 cycles for each |
| 6. Mechanical operation | Contact resistance : 1mΩ max. | 500 times |
| 7. Temperature cycles | Insulation resistance : 5000MΩ min. | -55°C : 30 minutes → Room temperature : 2 to 3 minutes → +125°C 30 minutes → Room temperature : 2 to 3 minutes, 5 cycles |
| 8. Humidity resistance (Steady state) | Insulation resistance : 50MΩ min. (at high humidity) 500MΩ min. (dry environment) | Left at a temperature of 40°C and in humidity of 90 to 95% for 96 hours. |
| 9. Waterproofness | No water intrusion inside connector | Submerged in 1.8m water depth for 48 days in mated condition. |

■ Materials / Finish

| Item | Materials | Finish | Remarks |
|--------------------|----------------|--|---------|
| Outer shell | Aluminum alloy | Nickel plated | _____ |
| Insulator | PBT resin | _____ | UL94V-0 |
| Contact | Copper alloy | Tin plated (over nickel under plating) | _____ |
| Waterproof packing | Silicon rubber | _____ | _____ |

■ 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.

● Connector

EM 35 W B P - 4 S C ()**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

● Code clamp

EM 35 W CC - 23 ()**

① ② ③ ⑤ ⑩ ⑨

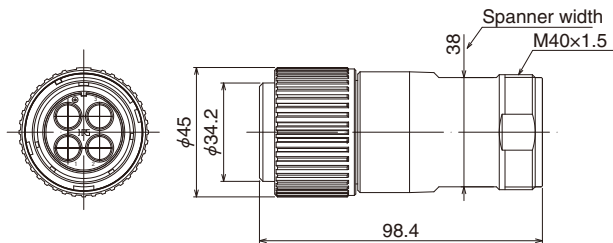
● Crimp contact

EM - S C - 1 3 3 ()**

① ⑦ ⑧ ⑪ ⑫ ⑬ ⑨

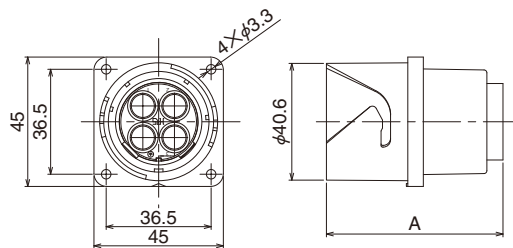
| | |
|--|--|
| ① Series name : EM | ⑨ Specifications : When different types of specifications are provided, attach (01), (02), ... for identification. |
| ② Shell size : 35 | |
| ③ Specialty : W=Waterproof | ⑩ Applicable cable diameter |
| ④ Lock mechanism : B=Bayonet lock | |
| ⑤ Connector type : P=Plug R=Receptacle CC=Code clamp | ⑪ Contact shape : 1=Loose piece contact |
| ⑥ Number of contacts : 4 | ⑫ Change in shape/gender : When contacts of the same size vary in shape/gender, discriminate them by attaching a serial number (1, 2, 3, ...) to each. |
| ⑦ Discrimination between contacts : S=Female contact P=Male contact | |
| ⑧ Termination method : C=Crimp | ⑬ Plating : 3=Tin plated |

■ Plug

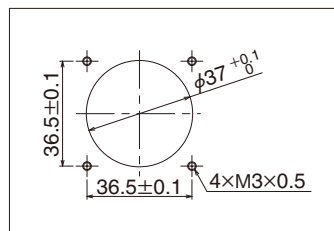


| Part No. | HRS No. |
|-------------|------------|
| EM35WBP-4SC | 138-0008-3 |
| EM35WBP-4PC | 138-0013-3 |

■ Receptacle

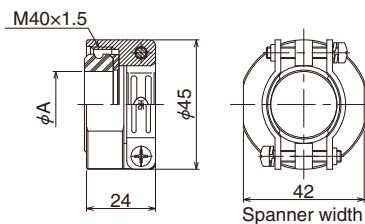


● Diagram indicating panel mounting slot dimension



| Part No. | HRS No. | A |
|-------------|------------|------|
| EM35WBR-4PC | 138-0009-6 | 61.4 |
| EM35WBR-4SC | 138-0014-6 | 55.8 |

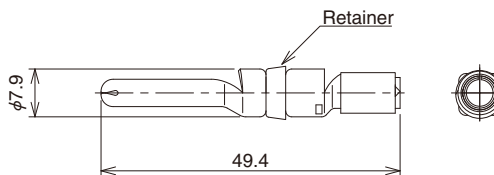
■ Code clamp



| Part No. | HRS No. | φA | Applicable cable diameter |
|------------|------------|----|---------------------------|
| EM35WCC-23 | 138-0007-0 | 23 | φ23±0.5 |

◆ **Crimp contact**

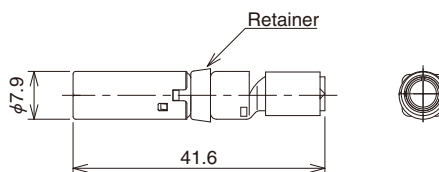
● **Male contact**



| Type | Part No. | HRS No. | Applicable wire size | Remarks |
|----------------------|---------------|---------------|---|------------------|
| Loose piece contacts | EM-PC-113(01) | 138-0011-8 01 | (1) Conductor area : 5.26 to 5.57mm ² (10 AWG equivalent) (2) Conductor outer dia. : Maximum of φ3.1 (3) Coating outer dia. : Maximum of φ8.7 (Applicable wire size shall satisfy all of conditions (1) to (3).) | Retainer : Black |
| | EM-PC-133 | 138-0019-0 | (1) Conductor area : 8mm ² (2) Conductor outer dia. : Maximum of φ3.7 (3) Coating outer dia. : Maximum of φ8.7 (Applicable wire size shall satisfy all of conditions (1) to (3).) | Retainer : White |

Note : This product is sold per packages (4 pcs).

● **Female contact**



| Type | Part No. | HRS No. | Applicable wire size | Remarks |
|----------------------|---------------|---------------|---|------------------|
| Loose piece contacts | EM-SC-113(01) | 138-0010-5 01 | (1) Conductor area : 5.26 to 5.57mm ² (10 AWG equivalent) (2) Conductor outer dia. : Maximum of φ3.1 (3) Coating outer dia. : Maximum of φ8.7 (Applicable wire size shall satisfy all of conditions (1) to (3).) | Retainer : Black |
| | EM-SC-133 | 138-0018-7 | (1) Conductor area : 8mm ² (2) Conductor outer dia. : Maximum of φ3.7 (3) Coating outer dia. : Maximum of φ8.7 (Applicable wire size shall satisfy all of conditions (1) to (3).) | Retainer : White |

Note : This product is sold per packages (4 pcs).

◆ **Tool**

| Type | Part No. | HRS No. | Applicable contact |
|----------------------|----------|------------|--|
| Manual crimp tools | Note 1 | — | EM-PC-133, EM-SC-133, EM-PC-113(01), EM-SC-113(01) |
| Contact removal tool | EM-8-TP | 150-0249-3 | EM-PC-133, EM-SC-133, EM-PC-113(01), EM-SC-113(01) |

Note 1 : About manual crimp tools

Applicable tool is JIS C 9711-compliant wire termination tool for interior wiring (commercially available).

Please use the recommend crimping tool as the performance may be affected by the type of the tool you are using.

● **Recommended crimp tools**

| Tool manufacturer | Part No. |
|---------------------------------|----------|
| Hozan Tool Industrial Co., Ltd. | P-75 |
| Lobtex Co., Ltd. | AK15A |
| Nichifu Co., Ltd. | NH1 |

● **Manual crimp tool (Example)**



● **Contact removal tool**



◆ **Notes on use of the connector**

1. Always power off and disconnect the power cord before performing this work.
2. To maintain the waterproofness and cable clamp strength at a desired level, use a cable having a diameter within the specified diameter range.
As the cable structure could also affect the performance, confirm the cable performance prior to actual use.
3. For procedure for use of harness, please contact our sales offices or service centers.



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

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