

# Waterproof Bayonet Lock Connector for 50A Power Supply

## EM-W Series



Mated condition

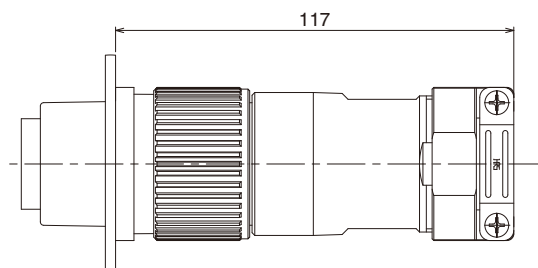


Fig.1

### ■ 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

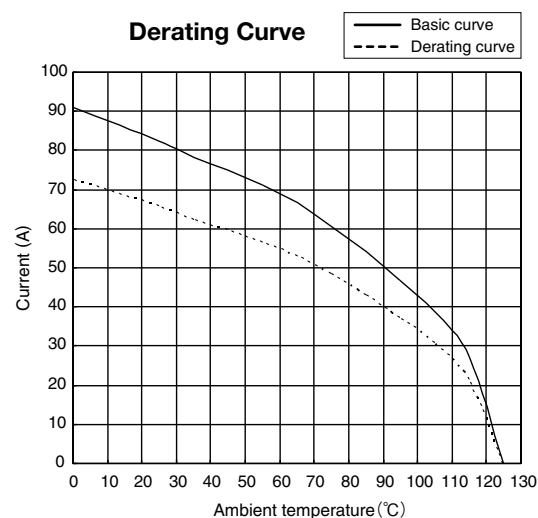
Easy to operate One-touch Bayonet lock.

#### 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 8mm<sup>2</sup> 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 <sup>2</sup> , 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

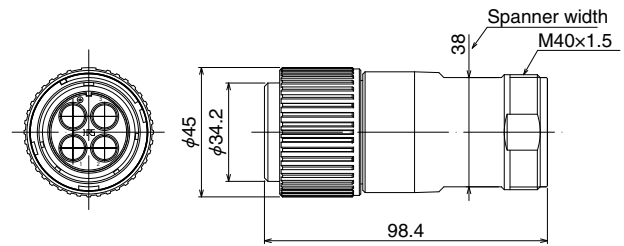
**EM - S C - 1 3 3 (\*\*)**

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	⑩ Applicable cable diameter
③ Specialty : W=Waterproof	⑪ Contact shape : 1=Loose piece contact
④ Lock mechanism : B=Bayonet lock	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.
⑤ Connector type : P=Plug R=Receptacle CC=Code clamp	⑬ Plating : 3=Tin plated
⑥ Number of contacts : 4	
⑦ Discrimination between contacts : S=Female contact P=Male contact	
⑧ Termination method : C=Crimp	

## ■ Plug

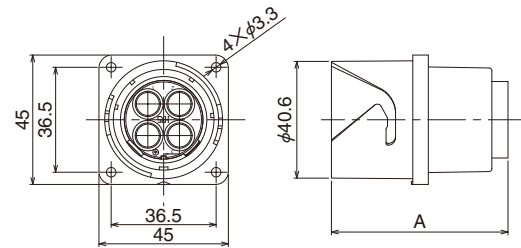
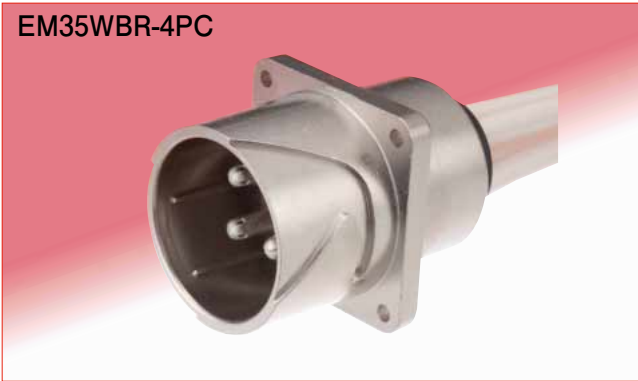
EM35WBP-4SC



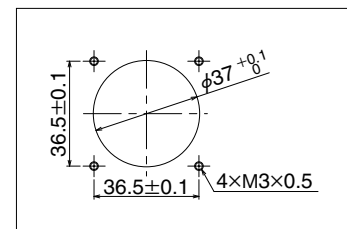
Part No.	HRS No.
EM35WBP-4SC	138-0008-3
EM35WBP-4PC	138-0013-3

## ■ Receptacle

EM35WBR-4PC



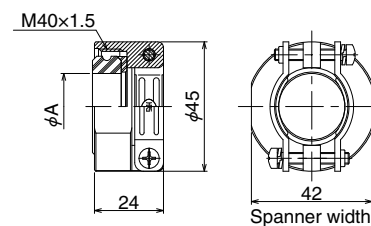
● Diagram indicating panel mounting slot dimension



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

## ■ Code clamp

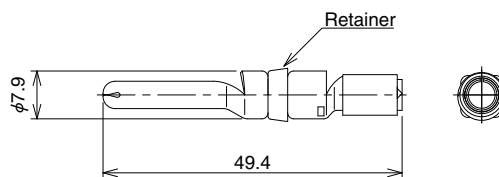
EM35WCC-23



Part No.	HRS No.	$\phi A$	Applicable cable diameter
EM35WCC-23	138-0007-0	23	$\phi 23 \pm 0.5$

## ◆ Crimp contact

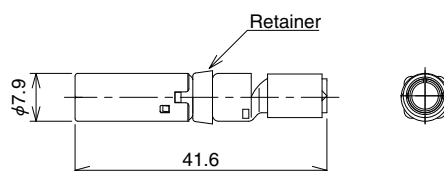
## ● Male contact



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 <sup>2</sup> (10 AWG equivalent) (2) Conductor outer dia. : Maximum of $\phi 3.1$ (3) Coating outer dia. : Maximum of $\phi 8.7$ (Applicable wire size shall satisfy all of conditions (1) to (3).)	Retainer : Black
	EM-PC-133	138-0019-0	(1) Conductor area : 8mm <sup>2</sup> (2) Conductor outer dia. : Maximum of $\phi 3.7$ (3) Coating outer dia. : Maximum of $\phi 8.7$ (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 <sup>2</sup> (10 AWG equivalent) (2) Conductor outer dia. : Maximum of $\phi 3.1$ (3) Coating outer dia. : Maximum of $\phi 8.7$ (Applicable wire size shall satisfy all of conditions (1) to (3).)	Retainer : Black
	EM-SC-133	138-0018-7	(1) Conductor area : 8mm <sup>2</sup> (2) Conductor outer dia. : Maximum of $\phi 3.7$ (3) Coating outer dia. : Maximum of $\phi 8.7$ (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

EM-8-TP



## ◆ 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.



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