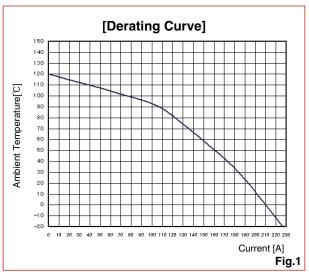
# 125Amp, High-Current, Waterproof Connector

### **EV Series**





#### ■Features

### 1. High Current Capacity Rated up to 125 Amps.

#### 2. Waterproof Structure

The EV series is IP67 water resistant in unmated state (when EV1-62RA-3SB, EV1-62RA-2SB is used). It is IP68/X9K water resistant in mated. The use of special rubber component for the internal seals enhance oil and water resistance.

### 3. Standard Tool for Contact Assembly

Contacts can be crimped using readily available JIS standard tools (JIS C 9711).

#### 4. Downsizing

Staggered panel flange design saves space.

### 5. Lightweight

The shell is constructed of an aluminum alloy material enabling it to be lightweight.

#### 6. Multi-Point Contact Spring

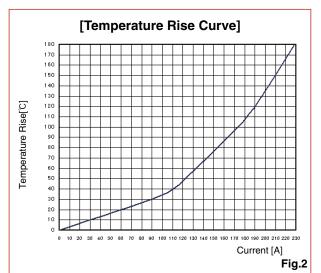
Highly reliable contact structure allows for a high current capability, guards against vibration to the contact and decreases contact resistance.

#### 7. Shield Design

The metal shell enhances EMI shielding.

### 8. Touchproof

Contact and connector design protects against accidental electrical shock using IEC 60601 test procedure.



#### **Measurement Condition**

The plug has three contacts where 20 mm<sup>2</sup> electric wires are connected and then covered with a corrugated housing. Measurement was taken by connecting copper bus bars of 3 mm x 12 mm to the three contacts of the receptacle and wiring in series.

#### Remarks

Derating curve and temperature rise curve changes slightly by a given cable that is being used and slight variations occur under the same conditions. Therefore, the values indicated above are reference values and not guaranteed values.

## **■**Product Specifications

Datin	latings	Current rating	125A (max. 180A *1) (Per cable specification and derating curve)	Operating Temperature	-40 to +150℃ (Including temperature rise by conduction)
n	Ratings	Voltage rating	AC 460 V, DC 650 V	Storage Temperature Range	-10 to +60°C

Note1: Under the assumption that it is used at normal temperature (20°C±15°C).

Items	Specifications	Conditions
1. Contact resistance	0.5 mΩ or less	Measured at DC 1 A
2. Insulation resistance	1000 MΩ or greater	Measured at DC 500 V
3. Withstanding voltage	No flashover or breakdown	AC 2000 V for 1 min.
4. Vibration resistance	No electric outage of 10 $\mu$ s or greater	JIS D 1601, Type 3D - Grade 110
5. Shock	No electric outage of 10 $\mu$ s or greater	Acceleration 490 m/s², sustained period 11 ms,Sine wave tests were conducted a total of 18 times, three times each in 6 directions.
6. Temperature cycle	1 m $\Omega$ or less Insulation resistance: 100 M $\Omega$ or greater	Left for a total of 5 cycles of the following: -40°C: 30 mins. → Normal temperature: 2-3 min. → 150°C: 30 mins. → Normal temperature: 2-3 mins.
7. Humidity resistance	Insulation resistance: 10 MΩ or greater (when highly humid) 100 MΩ or greater (when dry)	Left for 96 hours at temperature 40°C and humidity 95%.
8. Water proof	IP68 IPX9K	

### **■**Materials

Part		Materials	Treatment	Remarks
	Outer shell	Aluminum alloy	Nickel plated	_
	Insulator	Polyamide(black)	_	UL94V-0
Plug	Rubber sealant	Hydrogenated nitrile rubber	_	-
. iag	Gasket	Fluorosilicone rubber	_	
	Hexagonal bolt	Copper	Tervalent chromate filming	_
	Hexagonal bolt w/ hole	Сорреі	rervalent chromate illining	
	Insulator	Polyamide (black)	_	UL94V-0
	Female contact	Copper Alloy	Silver plated *2	_
	Contact spring	Copper Alloy	Silver plated *2	_
Receptacle	Rubber ring	Hydrogenated nitrile rubber	_	_
	(O ring)	(Fluorosilicone rubber)	_	
	Hexagonal bolt	Copper/Brass Tervalent chromate filming / Nickel		_
	Hexagonal nut	Brass	Nickel plated	
Male Contact	Contact	Copper alloy	Silver plated *2	_
iviale Contact	Сар	Polyamide (black)	_	UL94V-0

Note2: Silver-plated contacts can discolor by reacting to sulfur in the air (formation of silver sulfide coat), however, they can be used without any problem. Contact resistance may increase in an extremely rare case. If it has increased significantly, please check contact resistance before use.

### **■**Structure of Product Number

●Plug

$$\frac{EV}{1} \frac{1}{2} - \frac{62}{6} \frac{P}{4} \frac{*}{5} - \frac{3}{6} \frac{P}{6} \frac{C}{6} \frac{(**)}{9}$$

Receptacle

$$\frac{EV}{0} \frac{1}{2} - \frac{62}{3} \frac{R}{0} \frac{*}{5} - \frac{3}{3} \frac{S}{0} \frac{B}{0} \frac{(**)}{0}$$

●Male Contact

$$\frac{EV}{1} \frac{1}{2} - \frac{P}{0} \frac{C}{3} \frac{*}{3} - \frac{1}{10} \frac{1}{10} \frac{2}{10} \frac{(**)}{9}$$

- 1 Model Name: EV Series
- 2 Series Number: 1
- 3 Shell Size: The shell size shows the case width of the plug's mating area or outer
- 4 Type of Shell: P: Straight plug

R: Straight receptacle

Symbol for Body Form Type and Applicable Cable Range Type:

A: Single unit waterproof receptacle

1: Notched

- 6 Number of Contacts: Number of contacts is indicated.
- Ontact Polarity: P: Male Contact

S: Female Contact

8 Cable Termination Method: None: Solder termination

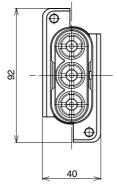
B: Termination by screw clamping

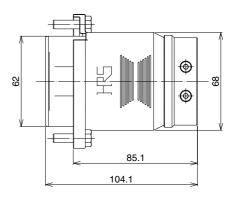
C: Crimp Termination

- Other Specifications: Two-digit figures will be added if changes other than the above are made in the specifications.
- Contact Type: 1: Loose piece contacts
- 1 Contact Form, Size: Serial numbers (1,2,3, ...) will be changed.
- Plating Specification: 2: Silver plated

# **■Plug**



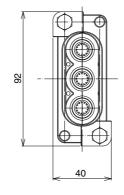


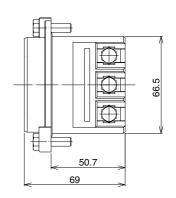


Part No.	HRS No.	No. of contacts	Packaging
EV1-62P-3PC	139-0001-0 00	3	1
EV1-62P-2PC	139-0007-7 00	2	1

## **■**Receptacle



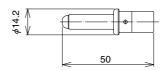




Part No.	HRS No.	No. of contacts	Waterproofing	Packaging
EV1-62R-3SB	139-0002-3 00	3	Waterproof in mated state	1
EV1-62RA-3SB	139-0003-6 00	3	Waterproof as single unit	1
EV1-62RA-2SB	139-0008-0 00	2	Waterproof as single unit	1

### **■**Male Contacts

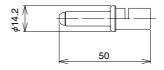




Part No.	HRS No.	Packaging	
EV1-PC-112 *3	139-0004-9 00	3 pcs/pack	
EV1-PC-112 (01)*3	139-0004-9 01	2 pcs/pack	

Note3: EV1-PC-112, EV1-PC-112(01) is the recommended contact when using the electric oil pressure crimping tool.





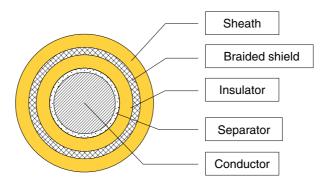
Part No.	HRS No.	Packaging	
EV1-PC1-112 *4	139-0005-1 00	3 pcs/pack	
EV1-PC1-112(01) *4	139-0005-1 01	2 pcs/pack	

Note4: EV1-PC1-112, EV1-PC1-112(01) is the recommended contact when using the manual oil pressure crimping tool.

## ◆Plug: Recommended Cable Specifications and Manufacturer

Recommended El	ectric Cable Manufacturer	Product Name (Part No.)	
Hitac	hi Cable, Ltd.	Shielded Cable for Electric Car 150°C rating: A-LFF-SB	
	Items	Unit	Specifications
Nun	nber of wires	-	1
	Nominal cross-section area	mm <sup>2</sup>	20 mm <sup>2</sup>
Conductor	Composition	# of wires/mm	19/13/0.32TA (*5)
	Outer diameter	mm	6.5 mm
Separ	Separator thickness		0.05 mm
Insulator	Standard thickness	mm	1.1 mm
Ilisulatoi	Outer diameter	mm	8.55-9.05 mm
Braided shield	Composition	Strands/Wires mm	8/24/0.18TA (*5)
	Braid thickness	mm	0.45 mm
Sheath	Sheath Standard thickness		1.0 mm
Outer diam	eter in finished state	mm	11.25-11.75 mm

Note5: TA indicates a tin plated soft copper wire.



## ♠ Receptacle: Recommended Sizes of Copper Bus Bar and Round Bare Crimp Connector

	Width [mm]	Thickness [mm]
Copper Bus Bar	16 max.	3-4
Round Bare Crimp Connector (*6)(Size 22 is recommended)	16 max.	1.8

Note6: When connecting with a round, bare crimp contact, please use a plain washer (for M6 [outer diameter φ 16≦, thickness 1.6]). Assemble the plain washer between the round bare crimp contact and the hexagonal bolt, not between the round bare crimp contact and the contact. When using a copper-tube crimp contact instead of a round bare crimp contact, use the one with the maximum width of 16 mm and the thickness of 3.6 mm. In this case, no plain washer is required.

## ◆Applicable Tool/Jig

Tool/Jig	Product No.	HRS No.	Remarks
Contact extraction tool	EV1-PC-TP	150-0251-5 00 ——	
Manual oil pressure crimping tool *7	HT111 / 9H-60	902-1515-2 00	Equivalent model : 9H-60 manufactured by Izumi Product Co.
Electric oil pressure crimping tool *7	HT112/REC-150F	902-1516-5 00	Equivalent model : REC-150F manufactured by Izumi Product Co.

Note7: Applicable tools are JIS C 9711 Compression Tools for Wire Connectors of Interior Wiring (JIS general tools). As crimping performance varies by tool, please use the recommended tool.

### **◆**Contact Extraction Tool



## **●** Manual Oil Pressure Crimping Tool

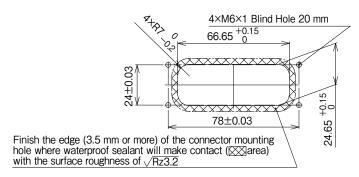






### ◆Panel cut out Dimensions for Plug and Receptacle

#### **Recommended Panel cut out Dimensions**



Remarks: The dimensions of the panel mounting hole are the dimensions when seen from the plug mating side.

#### PRECAUTIONS

- 1. Always make sure to turn the power off before inserting or extracting the connectors.
- 2. Always check the condition of the connectors and terminals for damage or debris before mating.
- 3. Use of non-recommended wire can affect the performance. Only use the recommended cables to maintain waterproof performance, shielding performance and cable crimping strength.
- 4. Please contact a Hirose sales representative for the harnessing procedure.



# 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

http://www.hirose-connectors.com

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