Simple Assembly In-Line Power Connectors for up to 160A

EF1 Series

■ Features

1. Simplified assembly
   The crimp contact itself becomes the connector in a few simple steps by crimping the contact directly to the power cable and then inserting it into the housing.

2. Quick, snap in lock
   Its snap-in structure reduces assembly costs due to its simplicity and ability to reduce wiring steps. This connector does not need screws like traditional terminal block connectors.

3. 160A rated current capacity when using 38mm² cable
   Supports 5.5, 8, 14, and 22mm² cables by utilizing a sleeve to convert the conductor diameter to 38mm².

4. Multiple mounting options
   Attached to a DIN rail or secured to a panel, this connector is versatile enough to be used in a wide range of mounting applications.

5. Simplified crimp terminations
   No special tools are required.

6. Equipped with guide keys
   Guide keys are used to prevent incorrect wiring.

7. Pending TÜV, UL certifications
   Testing is underway to get this series qualified for various safety standards.

8. RoHS compliant
   All materials and substances used to produce this product comply with the RoHS compliant standards.

■ Product Specifications

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Contact Resistance</td>
<td>0.5mΩ max</td>
<td>Measured with DC 1A</td>
</tr>
<tr>
<td>2. Insulation Resistance</td>
<td>1,000MΩ min</td>
<td>Measured with DC 500V</td>
</tr>
<tr>
<td>3. Withstanding Voltage</td>
<td>No flashover or breakdown</td>
<td>AC 3310V for 1 minute</td>
</tr>
<tr>
<td>4. Durability</td>
<td>1) Contact Resistance : 1mΩ max 2) Inserting and Extracting Force : 150N max</td>
<td>30 mating cycles</td>
</tr>
<tr>
<td>5. Temperature Cycles</td>
<td>Insulation Resistance : 1,000MΩ min</td>
<td>-55°C : 30 minutes → Room temperature : 2 to 3 minutes → 105°C : 30 minutes → Room temperature : 2 to 3 minutes 5 cycles</td>
</tr>
<tr>
<td>6. Salt Water Spray</td>
<td>Should not have functional problems</td>
<td>5% concentration of salt water, left for 48 hours</td>
</tr>
<tr>
<td>7. Humidity resistance (steady state)</td>
<td>Insulation Resistance : 10MΩ min (in high humidity) 100MΩ min (dry)</td>
<td>Temperature 40°C, humidity 90 to 95%, 96 hours</td>
</tr>
</tbody>
</table>

Note: Operating temperature range includes the temperature rise by current carrying.

In cases where the application will demand a high level of reliability, such as automotive, please contact a company representative for further information.
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[Reference] Derating curve and temperature rise curve

Note 1: The derating curve is derived from the basic curve multiplied by the derating factor of 0.8.
Note 2: The value of rated current varies with the ambient temperature. It is recommended to use the product within the derating curve zone.
When using a UL or TÜV approved product, please use the product within the specified range as well as the derating curve area.
Note 3: The measurement method of the derating curve and temperature rise curve is shown below.
  • Test specimen: This product, unused prior to testing.
  • Test cable conductor cross sectional area: 2 AWG (38mm²)
  • Test condition: Power supplied while the specimen is in a stationary state and then measured.

■Material / Finish

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
<th>Finish</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulator</td>
<td>PBT resin</td>
<td>Black or Red or Blue</td>
<td>UL94V-0</td>
</tr>
<tr>
<td>Contact Spring</td>
<td>Copper alloy</td>
<td>Tin plated</td>
<td></td>
</tr>
<tr>
<td>Contact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleeve</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

■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  
**EF1 - 38 R A - 1 S C A (**)**

1 Series Name: EF1
2 Contact Size: 38 = 38-5 size contact
3 Connector Type:
  P = Plug
  R = Receptacle
  None = Sleeve
4 Serial Symbol
5 No. of Contacts: 1

● Sleeve  
**EF1 - 38 - 22 (**)**

1 Contact Structure:
  S = Spring contact side
  P = Non-spring contact side
2 Contact Termination Method: C = Crimp termination
3 Mating Guide Display: 4 different keying options available from A to D
4 Other specification differences are noted with (01), (02)... to distinguish certain variations.
5 Supported Cables
  22 = Supports an equivalent cable with 22mm² conductor cross section area
  14 = Supports an equivalent cable with 14mm² conductor cross section area
  8 = Supports an equivalent cable with 5.5 and 8mm² conductor cross section area

[Derating Curve] (Ambient Temperature [°C] vs. Current [A])
## Receptacle (DIN rail mount type)

![Receptacle (DIN rail mount type)](image)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>HRS No.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF1-38R-1SCA(20)</td>
<td>142-0001-3 20</td>
<td></td>
</tr>
<tr>
<td>EF1-38R-1SCB(20)</td>
<td>142-0009-5 20</td>
<td></td>
</tr>
<tr>
<td>EF1-38R-1SCC(20)</td>
<td>142-0011-7 20</td>
<td></td>
</tr>
<tr>
<td>EF1-38R-1SCD(20)</td>
<td>142-0013-2 20</td>
<td></td>
</tr>
</tbody>
</table>

## Receptacle (panel mount type)

![Receptacle (panel mount type)](image)

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<tr>
<th>Part No.</th>
<th>HRS No.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF1-38RA-1SCA(20)</td>
<td>142-0003-9 20</td>
<td></td>
</tr>
<tr>
<td>EF1-38RA-1SCB(20)</td>
<td>142-0004-1 20</td>
<td></td>
</tr>
<tr>
<td>EF1-38RA-1SCC(20)</td>
<td>142-0015-8 20</td>
<td></td>
</tr>
<tr>
<td>EF1-38RA-1SCD(20)</td>
<td>142-0016-0 20</td>
<td>Color : Red</td>
</tr>
<tr>
<td>EF1-38RA-1SCD(30)</td>
<td>142-0016-0 30</td>
<td>Color : Red</td>
</tr>
</tbody>
</table>

## Plug

![Plug](image)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>HRS No.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF1-38P-1PCA</td>
<td>142-0002-6 00</td>
<td></td>
</tr>
<tr>
<td>EF1-38P-1PAC(10)</td>
<td>142-0002-6 10</td>
<td>Color : Red</td>
</tr>
<tr>
<td>EF1-38P-1PCB</td>
<td>142-0005-4 00</td>
<td></td>
</tr>
<tr>
<td>EF1-38P-1PCC</td>
<td>142-0010-4 00</td>
<td></td>
</tr>
<tr>
<td>EF1-38P-1PCD</td>
<td>142-0012-0 00</td>
<td></td>
</tr>
</tbody>
</table>
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Sleeve

![Sleeve Image]

- **Part No.**
  - EF1-38-22
  - EF1-38-8
  - EF1-38-14

- **HRS No.**
  - 142-0006-7
  - 142-0007-0
  - 142-0008-2

- **Conductor cross section area of applicable electric wires**
  - 22mm²
  - 8mm², 5.5mm²
  - 14mm²

- **Rated Current**
  - 94A

Tools

- **Recommended Crimp Tools**
  - **HT111/9H-60**
  - **HT112/REC-150F**

- **Tool/Jig**
  - Manual hydraulic type crimp tool
  - Electric hydraulic type crimp tool

- **Part No.**
  - HT111/9H-60
  - HT112/REC-150F

- **HRS No.**
  - 902-1515-2
  - 902-1516-5

- **Remarks**
  - Equivalent product: 9H-60 made by IZUMI Product Company
  - Equivalent product: REC-150F made by IZUMI Product Company

Panel Cut-Out Dimensions

- **Single Mounting**
  - 12
  - φ0.2

- **Multiple Mounting**
  - 15.55
  - 7.8

Safety Precautions

⚠️ **Warning**
- Do not touch the exposed conductor while it is energized, failing to follow this warning may cause an electric shock and injury.
- The power should be in the OFF position when inserting or extracting this connector.
- After mating this connector, perform a light pull on the cable to ensure that it has been correctly mated and the locking process will hold it in place. If it is not mated correctly, then the cable will be removed. An incomplete mate can cause disconnection, contact failure and a significant danger threat.

⚠️ **Caution**
- This connector was designed to be used in a stable and stationary environment, do not try to operate this connector where vibrations will occur.
- Please only use Hirose approved contacts, using unapproved contacts can result in a lowering of the product’s performance and cause a serious accident. Please contact your local Hirose representative for additional information.