Electrode Holder
**BF-□(R)/BS-1(T)**

Complete Lineup for Use in High-temperature, High-pressure Environments or Where Exposed to Chemicals

- The BF-1 is ideal for liquids with low specific resistance, such as wastewater.
- The BF-□(R) is used when a strong mounting is required.
- The BS-1 is used when high-temperature, high-pressure resistant is required.
- The BS-1T is used when corrosion resistance is required.

⚠️ Refer to Safety Precautions for Electrodes and Electrode Holders.

### Ordering Information

**Electrode Holders**

<table>
<thead>
<tr>
<th>Application</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid with low specific resistance&lt;br&gt;For 1-pole electrode</td>
<td>BF-1</td>
</tr>
<tr>
<td>When sturdy mounting is required&lt;br&gt;For 3-pole electrode&lt;br&gt;For 3-pole electrode (2-wire)&lt;br&gt;For 5-pole electrode&lt;br&gt;For 5-pole electrode (2-wire)</td>
<td>BF-3&lt;br&gt;BF-3R&lt;br&gt;BF-5&lt;br&gt;BF-5R</td>
</tr>
<tr>
<td>Applications where resistance to high-temperature, high-pressure is required&lt;br&gt;For 1-pole electrodes, 250°C, 1.96 MPa</td>
<td>BS-1&lt;br&gt;BS-1S&lt;br&gt;BS-1S-1&lt;br&gt;BS-1S2</td>
</tr>
<tr>
<td>High-pressure application where resistance to corrosion is required&lt;br&gt;For 1-pole electrode, SUS304 981 kPa&lt;br&gt;For 1-pole electrode, SUS316 981 kPa&lt;br&gt;For 1-pole electrode, Titanium 981 kPa&lt;br&gt;For 1-pole electrode, HAS B 981 kPa&lt;br&gt;For 1-pole electrode, HAS C 981 kPa</td>
<td>BS-1T SUS304&lt;br&gt;BS-1T SUS316&lt;br&gt;BS-1T TITANIUM&lt;br&gt;BS-1T HAS B&lt;br&gt;BS-1T HAS C</td>
</tr>
</tbody>
</table>

**Accessories (Order Separately)**

<table>
<thead>
<tr>
<th>Application</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protective Cover (For PS-□S and BF-3/4/5)</td>
<td>F03-11</td>
</tr>
<tr>
<td>Protective Cover (For BS-1 and BS-1S)</td>
<td>F03-19</td>
</tr>
<tr>
<td>M18 Nut (For BS-1)</td>
<td>F03-17</td>
</tr>
<tr>
<td>M18 Nut (For BS-1T)</td>
<td>F03-18</td>
</tr>
</tbody>
</table>

Note: Refer to Installing an Electrode Holder on a Tank under Level Controller Installation in the Technical Guide for Level Controllers for information on Level Controller installation. Refer to PS-□S(R) Electrode Holder Accessories (Order Separately) for dimensions.

### Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
<th>BF-1</th>
<th>BF-3 (R) (See note 1.)</th>
<th>BF-5 (R) (See note 1.)</th>
<th>BS-1</th>
<th>BS-1T</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Electrodes</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Insulator material</td>
<td>PPS resin (Metallic section is SUS.)</td>
<td>Fluorocarbon polymer (FPA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>100 MΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>Electrode section: −10 to 150°C (with no icing)&lt;br&gt;Terminal section: −10 to 70°C (with no icing or condensation)</td>
<td>250°C max.</td>
<td>180°C max.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating pressure</td>
<td>Atmospheric pressure</td>
<td>1.96 MPa (See note 2.)</td>
<td>981 kPa (See note 2.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applications</td>
<td>Liquids with low specific resistance, such as wastewater and cloudy water</td>
<td>General applications for purified water and wastewater</td>
<td>Boiler water level detection or high-temperature tanks</td>
<td>Acid or alkaline solution level detection</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. Two-wire Electrode Holders (R models) have a built-in resistance of 6.8 kΩ. They should be used with the Two-wire 61F Controllers.
2. There must be a sufficient ambient temperature in a high-pressure environment to prevent vapor leakage. Use the Electrode Holder according to the following pressure-temperature curve.
**Appearance**

**BF-1**
- Tightening torque: 2.25 N·m
- Heat resistance: 70°C
- Heat resistance: 150°C

**BF-3(R)**
- Tightening torque: 2.25 N·m
- Heat resistance: 70°C
- Heat resistance: 150°C

**BF-5(R)**
- Maximum terminal tightening torque: 107.3 N·cm
- Material at clamping section: iron (standard) SUS304 and SUS316 are also available.

**BS-1**
- Heat resistance: 150°C
- Material at clamping section: iron (standard) SUS304 and SUS316 are also available.

**BS-1T**
- SUS
- HAS
- Titanium

<table>
<thead>
<tr>
<th>Model</th>
<th>Material at tightening section</th>
<th>Screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS-1</td>
<td>Iron</td>
<td>M18 P = 1.5</td>
</tr>
<tr>
<td>BS-1S</td>
<td>SUS304</td>
<td>M18 P = 1.5</td>
</tr>
<tr>
<td>BS-1S-1</td>
<td>SUS304</td>
<td>PT1/2</td>
</tr>
<tr>
<td>BS-1S2</td>
<td>SUS316</td>
<td>M18 P = 1.5</td>
</tr>
</tbody>
</table>

3. Clamp screws are not provided for HAS B, HAS C, or titanium Electrode Holders. When placing an order, specify the type of material from the following five: SUS304, SUS316, HAS B, HAS C, or Titanium.

**Accessories Required for Connecting Electrodes to the BF-□(R) (Order Separately)**

**Electrode Shorter than 1 m**

- The following items are required for each pole.
  - 1 × F03-01 Electrode
  - 1 × F03-03 Lock Nut

- The Electrode can be cut anywhere to a desired control level.

**Electrode Longer than 1 m**

- The following items are required for every additional meter of electrode for each pole.
  - 1 × F03-01 Electrode
  - 1 × F03-02 Connecting Nut
  - 2 × F03-03 Lock Nuts

- Use F03-14 1P Separators to prevent the electrodes from touching each another.

**Note:**
1. The spring washer comes with the lock nut.
   Contact your OMRON representative to purchase a replacement if the spring washer wears out or is lost.
2. Refer to F03-□ for details on Electrodes, Connecting Nuts, Lock Nuts, and Separators.
## Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

### BF-1

![BF-1 Diagram](image1)

- **Weight:** approx. 75 g

### BF-3(R) and BF-5(R)

![BF-3(R) and BF-5(R) Diagram](image2)

- **Weight:**
  - BF-3: approx. 210 g
  - BF-3R: approx. 215 g
  - BF-5: approx. 360 g
  - BF-5R: approx. 365 g

### BS-1S

![BS-1S Diagram](image3)

- **Weight:** approx. 70 g

### BS-1

![BS-1 Diagram](image4)

- **Mounting Holes:**
  - Two, M5 x 25 mounting screws
  - Two, 6-dia. holes

### BS-1S, BS-1S-1, BS-1S2

![BS-1S, BS-1S-1, BS-1S2 Diagram](image5)

- **Mounting Holes:**
  - M18 P = 1.5 (fine screw thread)

### BS-1S and BS-1S-1

- **Weight:**
  - BS-1S: approx. 75 g
  - BS-1S-1: approx. 215 g

### BS-1S2

- **Weight:**
  - BS-1S2: approx. 215 g

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<table>
<thead>
<tr>
<th>BS-1S</th>
<th>BS-1S-1</th>
<th>BS-1S2</th>
</tr>
</thead>
<tbody>
<tr>
<td>M18 P=1.5</td>
<td>Taper pipe thread</td>
<td>M18 P=1.5</td>
</tr>
<tr>
<td>PT1/2</td>
<td>JIS B 0203</td>
<td></td>
</tr>
</tbody>
</table>
**Safety Precautions**

Refer to *Safety Precautions for All Level Controllers.*

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**Material**
- SUS304
- SUS316
- Titanium
- HAS B
- HAS C

**Weight**
- Approx. 55 g
- Approx. 55 g
- Approx. 45 g
- Approx. 65 g
- Approx. 60 g

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All of the clamping section is made of fluororesin.

If it is not necessary to seal the tank inside and outside, the Electrode can be secured with F03-18 Nuts. (Refer to page 1.)

The material of the Connecting Nuts is the same as the material of the BS-1T. Connecting Nuts made of HAS B, HAS C, or titanium, however, do not have the screw or screw hole labeled 2-M4 in the figure.

The section shown with dotted lines is sold separately.

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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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