The W1 Connector® Family is a complete coaxial connector system with mode-free performance to 110 GHz. Based on the 1.00 mm coaxial connector front side interface as specified by IEEE Std 287, the W1 Connector is well suited for high frequency applications ranging from components to systems and instrumentation.

Visit www.anritsu.com for the latest information including installation instructions, outline drawings, and RoHS compliance status.

**W1 Connector® features**
- Excellent RF performance to 110 GHz
- 50 Ω impedance
- Low VSWR
- Industry Standard 1 mm Interface

**Connector Launchers**
The W1 Connector® launcher family includes both male and female W1 Connectors. The W1 Connector® has an air dielectric interface similar to K and V connectors. The center conductor is supported by Anritsu’s proprietary low-loss high temperature support bead on one end and a glass bead (W1-102F and W1-102M) or a Teflon bead (W1-105F and W1-105M) on the other end. The use of the high temperature support bead allows the connector to be subjected to temperature ranges up to 200°C for a short period. The center conductor extends outside of the connector and allows the user to make a direct pin overlap connection to the microwave circuit. The threads on the backside of the W1 Connector® allow the user to install the W1 Connector® by screwing it into the housing wall. Since Anritsu’s proprietary low-loss high temperature plastic bead is used, the user can solder the connector which has the glass bead into the housing to achieve a hermetic connection.

**Flange Mount Connector**
W1 two-hole Flange Mount female Connector is also available. The center conductor of the connector is supported by a PPO® bead on the front-end and by a Teflon bead on the back end. The center conductor extends outside the connector, allowing for a direct pin overlap connection to the microwave circuit.

**Cable Connector**
Both the male and female cable connectors are available. Typical return loss at 110 GHz for finished cables exceeds 16 dB (1.35 SWR).

**Tools**
- **01-504, W1-6 mm**
  - Torque Wrench
- **01-506, W1-7 mm**
  - Torque Wrench
- **01-505, W1-6-7 mm**
  - Open end Wrench

**Connectors**
- **W1-101M**
  - W1 Male In-line Cable Connector, DC-110 GHz
- **W1-101F**
  - W1 Female In-line Cable Connector, DC-110 GHz
- **W1-102M, W1-105M**
  - W1 Male Sparkplug Connector, DC-110 GHz

For further information about these products and more, contact us at 1-800-Anritsu or visit www.us.anritsu.com
**WI CONNECTOR®**

DC to 110 GHz

- **W1-102F, W1-105F**
  - W1 Female Sparkplug Connector, DC-110 GHz
- **W1-103F**
  - W1 Female Flange Connector, DC-110 GHz
- **W047-2**
  - Semi-rigid coaxial cable, 1.52 m length of 1.19 mm semi-rigid cable for W1-101 series connector

### Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Frequency</td>
<td>DC to 110 GHz</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td>0.70 dB typical</td>
</tr>
<tr>
<td>Return Loss</td>
<td>1.38 to 110 GHz typical</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>&gt;200 MΩ</td>
</tr>
<tr>
<td>Center Conductor Contact Resistance</td>
<td>6 mΩ typical</td>
</tr>
<tr>
<td>Maximum Power CW</td>
<td>6 W</td>
</tr>
<tr>
<td>Frontside Pin Depth</td>
<td>0 to 0.076 mm maximum</td>
</tr>
<tr>
<td>Backside Pin Protrusion</td>
<td>0.33 mm typical for W1-102F, W1-102M, W1-105F, W1-105M, 0.61 mm typical for W1-103F</td>
</tr>
<tr>
<td>Torque Coupling Nut</td>
<td>4 in-lb maximum</td>
</tr>
<tr>
<td>Torque W1 Connector Installation</td>
<td>5 in-lb maximum</td>
</tr>
<tr>
<td>Hermeticity (W1-102F, W1-102M)</td>
<td>1 x 10^-1 std cc He/sec at atmosphere differential</td>
</tr>
</tbody>
</table>

### Materials

- **W1-101F**
  - Outer Conductor: Passivated Stainless Steel
  - Center Conductor: Beryllium-copper, gold plated over nickel per M4-G-45204C
  - Coupling Nut: Passivated Stainless Steel
  - Lock Screw: Passivated Stainless Steel
- **W1-101M**
  - Outer Conductor: Passivated Stainless Steel
  - Center Conductor: Beryllium-copper, gold plated over nickel per M4-G-45204C
  - Coupling Nut: Passivated Stainless Steel
  - Lock Screw: Passivated Stainless Steel
- **W1-102F**
  - Outer Conductor: Beryllium-copper, gold plated over nickel per M4-G-45204C
  - Center Conductor: Beryllium-copper, gold plated over nickel per M4-G-45204C
  - Coupling Nut: Passivated Stainless Steel
  - Glass Bead Center Pin: Kovar, gold plated over nickel per M4-G-45204C
  - Glass Bead Outer Conductor: Kovar, gold plated over nickel per M4-G-45204C
  - Glass Bead Dielectric: Corning 7070 Glass
  - Plastic Bead Dielectric: Proprietary
- **W1-102M**
  - Outer Conductor: Passivated stainless steel
  - Center Conductor: Beryllium-copper, gold plated over nickel per M4-G-45204C
  - Coupling Nut: Passivated Stainless Steel
  - Glass Bead Center Pin: Kovar, gold plated over nickel per M4-G-45204C
  - Glass Bead Outer Conductor: Kovar, gold plated over nickel per M4-G-45204C
  - Glass Bead Dielectric: Corning 7070 Glass
  - Plastic Bead Dielectric: Proprietary
- **W1-103F**
  - Outer Conductor: Passivated stainless steel
  - Center Conductor: Beryllium-copper, gold plated over nickel per M4-G-45204C
  - Coupling Nut: Passivated Stainless Steel
  - Plastic Support Bead dielectric: Polypehylene Oxide Noryl
- **W1-105F**
  - Outer Conductor: Passivated stainless steel
  - Center Conductor: Beryllium-copper, gold plated over nickel per M4-G-45204C
  - Coupling Nut: Passivated Stainless Steel
  - Plastic Support Bead dielectric: Proprietary
- **W1-105M**
  - Outer Conductor: Passivated stainless steel
  - Center Conductor: Beryllium-copper, gold plated over nickel per M4-G-45204C
  - Coupling Nut: Passivated Stainless Steel
  - Plastic Support Bead dielectric: Proprietary

### Ordering Information

Please specify model/order number, name, and quantity when ordering.

<table>
<thead>
<tr>
<th>Model/Order No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1-103F</td>
<td>W1 Male In-line Cable Connector, DC-110 GHz</td>
</tr>
<tr>
<td>W1-101M</td>
<td>W1 Female In-line Cable Connector, DC-110 GHz</td>
</tr>
<tr>
<td>W1-101F</td>
<td>W1 Female Sparkplug Connector, Hermetic, DC-110 GHz</td>
</tr>
<tr>
<td>W1-102F</td>
<td>W1 Female Sparkplug Connector, Hermetic, DC-110 GHz</td>
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<tr>
<td>W1-102M</td>
<td>W1 Male Sparkplug Connector, Hermetic, DC-110 GHz</td>
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<td>W1 Male Sparkplug Connector, DC-110 GHz</td>
</tr>
<tr>
<td>W047-2</td>
<td>Semi-rigid Coaxial Cable</td>
</tr>
</tbody>
</table>

### Environmental Information

Tests are performed per MIL-STD-202F.

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>0° to +55°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-54° to +125°C for W1-102F, W1-102M, W1-105F, W1-105M, -54° to +45°C for W1-103F</td>
</tr>
<tr>
<td>Humidity</td>
<td>25% to 40% and 25° to 125°C, method 107G, condition B</td>
</tr>
<tr>
<td>Shock</td>
<td>100g peak sawtooth, method 213, test condition 1</td>
</tr>
<tr>
<td>Vibration</td>
<td>Sinewave: 10 Hz to 2000 Hz, 0.06” DA, method 204, test condition D</td>
</tr>
<tr>
<td>Salt Spray</td>
<td>5% concentration for 48 hours, method 101D, condition B</td>
</tr>
<tr>
<td>Dielectric Withstanding Voltage</td>
<td>500 Vac RMS, 60 seconds, method 301</td>
</tr>
</tbody>
</table>

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