Direct Reading Attenuators

Bulletin No. CAR

FEATURES

- Rugged waveguide configuration
- Full band operation
- 0 to 50 dB attenuation range
- High accuracy

APPLICATIONS

- Test benches
- Instrumentation
- Calibration

DESCRIPTION

CAR series direct reading attenuators are offered for the frequency range of 18 to 110 GHz in seven waveguide bands. The attenuators are constructed with a precision rotary resistive vane in a circular waveguide. Therefore, they are frequency independent. The attenuators offer a high degree of repeatability and accuracy over whole attenuation range for the full waveguide band operation. The attenuation value is read directly from the helical drum scale. These attenuators are the ideal devices when precision measurement, such as output power, gain, insertion loss, isolation, coupling and return loss is required.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Waveguide Band</th>
<th>K</th>
<th>Ka</th>
<th>Q</th>
<th>U</th>
<th>V</th>
<th>E</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Number</td>
<td>CAR-4250</td>
<td>CAR-2850</td>
<td>CAR-2250</td>
<td>CAR-1950</td>
<td>CAR-1550</td>
<td>CAR-1250</td>
<td>CAR-1050</td>
</tr>
<tr>
<td>Frequency Range (GHz)</td>
<td>18 to 26.5</td>
<td>26.5 to 40</td>
<td>33 to 50</td>
<td>40 to 60</td>
<td>50 to 75</td>
<td>60 to 90</td>
<td>75 to 110</td>
</tr>
<tr>
<td>Waveguide Size</td>
<td>WR-42</td>
<td>WR-28</td>
<td>WR-22</td>
<td>WR-19</td>
<td>WR-15</td>
<td>WR-12</td>
<td>WR-10</td>
</tr>
<tr>
<td>Insertion Loss (dB)</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
<td>0.8</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td>Attenuation (dB)</td>
<td>0 to 50</td>
<td>0 to 50</td>
<td>0 to 50</td>
<td>0 to 50</td>
<td>0 to 50</td>
<td>0 to 50</td>
<td>0 to 50</td>
</tr>
<tr>
<td>Accuracy (Max)</td>
<td>0.1 dB or 2% which ever is greater.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return Loss (dB)</td>
<td>20</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Power Handling (W)</td>
<td>1.0</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Power Rating (Maximum)</td>
<td>0.6</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Insertion Length (Inches)</td>
<td>8.5</td>
<td>6.9</td>
<td>6.3</td>
<td>5.8</td>
<td>4.5</td>
<td>4.5</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Note:
1. The attenuation range is above the insertion loss value;
2. The maximum attenuation setting is up to 60 dB;
3. Other waveguide bands are available upon request.
Direct Reading Attenuators

**FEATURES**
- Rugged waveguide configuration
- Full band operation
- 0 to 50 dB attenuation range
- High accuracy
- Test benches
- Instrumentation
- Calibrations

**APPLICATIONS**
CAR series direct reading attenuators are offered for the frequency range of 18 to 110 GHz in seven waveguide bands. They are constructed with a precision rotary resistive vane in a circular waveguide. Therefore, they are frequency independent. The attenuators offer a high degree of repeatability and accuracy over the full waveguide band operation. The attenuation value is read directly from the helical drum scale. These attenuators are the ideal devices when precision measurement, such as output power, gain, insertion loss, isolation, coupling and return loss, is required.

**DESCRIPTION**

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>BAND</th>
<th>W, E &amp; V</th>
<th>U, Q &amp; Kα</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L</strong></td>
<td>2.50</td>
<td>3.50</td>
<td>4.00</td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions are in inches**

**BULLETIN NO. CAR**

- **CAR Series Waveguide Bands**
  - K, Ka, Q, U, V, E, W
- **Model Numbers**
  - CAR-4250
  - CAR-2850
  - CAR-2250
  - CAR-1950
  - CAR-1550
  - CAR-1250
  - CAR-1050
- **Frequency Range (GHz)**
  - 18 to 26.5
  - 26.5 to 40
  - 33 to 50
  - 40 to 60
  - 50 to 75
  - 60 to 90
  - 75 to 110
- **Waveguide Sizes**
  - WR-42
  - WR-28
  - WR-22
  - WR-19
  - WR-15
  - WR-12
  - WR-10
- **Insertion Loss (dB)**
  - 2
  - 0.5
  - 0.5
  - 0.6
  - 0.6
  - 0.8
  - 0.8
  - 1.0
- **Attenuation (dB)**
  - 0 to 50
  - 0 to 50
  - 0 to 50
  - 0 to 50
  - 0 to 50
  - 0 to 50
  - 0 to 50
- **Accuracy (Max)**
  - 0.1 dB or 2% which ever is greater.
- **Return Loss (dB)**
  - 20
  - 23
  - 23
  - 23
  - 20
  - 20
  - 20
- **Power Handling (W)**
  - 1.0
  - 0.5
  - 0.5
  - 0.5
  - 0.4
  - 0.3
  - 0.3
- **Power Rating (Maximum)**
  - 0.6
  - 0.6
  - 0.5
  - 0.5
  - 0.4
  - 0.3
  - 0.3
- **Insertion Length (Inches)**
  - 8.5
  - 6.9
  - 6.3
  - 5.8
  - 4.5
  - 4.5
  - 4.5

**Note:**
1. The attenuation range is above the insertion loss value;
2. The maximum attenuation setting is up to 60 dB;
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**Dimensions are in inches**

The flange pattern shown is for illustration purpose. Refer to Technical Reference Section for flange pattern details. The outline drawings shown are standard versions. Contact factory for your specific package requirements.