6688 & 6689
High Stability Frequency Standards

DATA SHEET

- Rubidium or high stability oven frequency reference standard
- Distribution amplifiers for 5x10 MHz and 1x5 MHz outputs as standard
- Optional 10x10 MHz outputs
- 0.001 ppm aging in 10 years (Rubidium)
- Ideal for telecommunication test systems and calibration laboratories

The Pendulum Frequency References; model 6689 with a Rubidium clock and model 6688 with a high-stability oven-controlled crystal oscillator, are designed for use in test systems, where a very high stability frequency reference is required and where multiple instruments or testers need to be supplied. The Frequency References are also suited in calibration laboratories for calibrating various instrumentation, like frequency counters and synthesizers. The 6689 Rubidium Reference can be used as a primary lab reference, ensuring a frequency drift due to aging of less than 0.001 ppm during 10 years.

Technical Specifications: CNT-90XL

**Frequency Stability**

<table>
<thead>
<tr>
<th>Stability</th>
<th>6688 (Oven)</th>
<th>6689 (Rubidium)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging/month</td>
<td>3x10^{-9}</td>
<td>5x10^{-11}</td>
</tr>
<tr>
<td>Aging/year; aging/10 years</td>
<td>2x10^{-9} (1 year)</td>
<td>1x10^{-9} (10 years)</td>
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<tr>
<td>Temperature (0 to +50°C)</td>
<td>2.5x10^{-9}</td>
<td>3x10^{-10}</td>
</tr>
<tr>
<td>Short term (Root Allan variance) Warm up (at +25°C)</td>
<td>5x10^{-12} t = 1s 5x10^{-12} t = 1s 10 min to 5x10^{-9}</td>
<td>1x10^{-11} t = 10 s 3x10^{-11} t = 15 5.4 min to lock 11 min to 4x10^{-10}</td>
</tr>
</tbody>
</table>

**General Specifications**

**Environmental Data**

- **Temperature:** 0°C to +50°C (operating), -40°C to +70°C (storage)
- **Safety:** Compliant to EN 61010-1, Cat II, pollution degree 2, CE
- **EMI:** Compliant to EN 55011 ISM group, class B and EN 50082-2, CE

**Power Consumption (90 to 264 V, 47 to 63 Hz)**

- **6688:**< 20 W at warm-up, < 7W continuous operation
- **6689:**< 70 W at warm-up, < 30 W continuous operation

**Mechanical Data**

- **Width x Height x Depth:** 315 x 86 x 395 mm (12.4 x 3.4 x 15.6 in)
- **Weight:** Net 4.8 kg (10.6 lb) Shipping 7.8 kg (17.2 lb)

**Built-In Options**

- **Option 70:** 5 extra 10 MHz outputs

**Ordering Information**

- **6688/011:** Crystal oven standard model; 5x 10 MHz and 1x 5 MHz outputs
- **6688/021:** Crystal oven incl. option 70; 10x 10 MHz and 1x 5 MHz outputs
- **6689/011:** Rubidium standard model; 5x 10 MHz and 1x 5 MHz outputs
- **6689/021:** Rubidium incl. option 70; 10x 10 MHz and 1x 5 MHz outputs

**Included with instrument:**

- Operators manual, Calibration certificate

**Optional Accessories**

- **Option 22:** 19" rack mount kit
- **Option 27:** Carrying case

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