Phase Locked Oscillators

FEATURES:
- Several Stability Options
- High Power Models Available
- Several Spectral Purity Options
- Available from 2 to 140.0 GHz
- Miniaturized Lightweight Assembly

APPLICATIONS:
- Frequency Synthesizers
- Frequency Upconverters
- Local oscillators for mixers

DESCRIPTION:
Cernexwave’s CPO series miniature phase-locked source provides a high stability, spectrally pure millimeter wave signal. To ensure high performance, a low noise, high-Q varactor-tuned oscillator is phase-locked to a precision crystal reference. Through the use of state-of-the-art millimeter wave component integration and beam-lead diode technology, the RF portion has been drastically reduced in size over conventional waveguide methods. The sophisticated millimeter wave components of the source, coupled with the advanced electronic design of the loop system, enable high performance to be achieved with miniaturized packaging. A variety of options are possible in the selection of the crystal reference. Crystals are available that offer low noise, superior aging, and improved temperature stability. Cernexwave will assist in the selection of the appropriate crystal. When an output frequency in excess of approximately 50 GHz is required, an additional stage is used for this series. This stage consists of a doubler or tripler for output frequencies in the 60 to 140 GHz range. In addition, the multiplier stage may have to be followed with an injection-locked Gunn oscillator depending on the power level required at these frequencies. Cernex will provide any additional stages necessary to produce the specified output frequency and power level.

SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Operating Specifications</th>
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</thead>
<tbody>
<tr>
<td>Operating Frequency</td>
<td>4.0 - 14 GHz</td>
</tr>
<tr>
<td>Mechanical Tuning Range</td>
<td>2-3% Typ.</td>
</tr>
<tr>
<td>Output Power</td>
<td>+14 dBm Min.</td>
</tr>
<tr>
<td>Output Power Variation: Over 0 to 60°C</td>
<td>±0.6dB Max.</td>
</tr>
<tr>
<td>Output Power Variation: Over -30 to +70°C</td>
<td>+1.0/-1.3dB Max.</td>
</tr>
<tr>
<td>Load VSWR (Max.)</td>
<td>3:1</td>
</tr>
<tr>
<td>Phase Noise @10GHz</td>
<td>-110 dBc/Hz @100 kHz</td>
</tr>
<tr>
<td>Reference Input Frequency</td>
<td>10,40-130MHz</td>
</tr>
<tr>
<td>Reference Input Power</td>
<td>0±4dBm</td>
</tr>
<tr>
<td>2nd Harmonic</td>
<td>-20dBc</td>
</tr>
<tr>
<td>Spurious</td>
<td>-80dBc</td>
</tr>
<tr>
<td>Bias</td>
<td>+15±1 or +12±1 VDC, 100 mA Typ.</td>
</tr>
</tbody>
</table>

OTHER FREQUENCIES ARE ALSO AVAILABLE.
### Phase Locked Oscillators

<table>
<thead>
<tr>
<th>Waveguide Band</th>
<th>X</th>
<th>Ku</th>
<th>K</th>
<th>Ka</th>
<th>Q</th>
<th>U</th>
<th>V</th>
<th>E</th>
<th>W</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range (GHz)</td>
<td>8.2 to 12.4</td>
<td>12.4 to 18</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>
<td>90 to 140</td>
</tr>
<tr>
<td>Power Output (mW)</td>
<td>10</td>
<td>50</td>
<td>100</td>
<td>500</td>
<td>10</td>
<td>50</td>
<td>100</td>
<td>200</td>
<td>10</td>
<td>50</td>
</tr>
</tbody>
</table>

**HOW TO ORDER:**

Specify Model Number: CPO – FF PP RF -- XX

- **CPO**
- **FF**
- **PP**
- **RF**
- **XX**

Center Frequency

“E” for External; “I” for Internal Reference

Output Power

To be determined by the Factory Reserve

**Example:** To order a 22GHz PLO with output power of 15dbm in external reference, specify CPO2215E-XX

CERNEXWAVE RESERVE THE RIGHT TO CHANGE THE SPECIFICATIONS WITHOUT NOTICE