The FS725 integrates a rubidium oscillator (SRS model PRS10), a low-noise AC power supply, and distribution amplifiers in a compact, half-width 2U chassis. It provides stable and reliable performance with an estimated 20 year aging of less than $5 \times 10^{-9}$, and a demonstrated rubidium oscillator MTBF of over 200,000 hours. The FS725 is an ideal instrument for calibration and R&D laboratories, or any application requiring a precision frequency standard.

There are two 10 MHz and one 5 MHz outputs with exceptionally low phase noise ($-130 \text{ dBc/Hz at 10 Hz offset}$) and one second Allan variance ($<2 \times 10^{-11}$). The FS725 can be phase-locked to an external 1 pps reference (like GPS) providing Stratum 1 performance. A 1 pps output is also provided that has less than 1 ns of jitter, and may be set with 1 ns resolution.

Up to three internal distribution modules can be added to the FS725. Each module has four 10 MHz outputs, one 5 MHz output, and one 1 pps output, all with the same low phase noise, harmonic distortion and jitter.

An RS-232 interface allows direct communication with the rubidium oscillator. Using the provided Windows software, you can easily monitor and control 1 pps timing, and determine the instrument’s operational status.

There are two alarm relays that indicate the status of the rubidium oscillator lock state and synchronization to an external 1 pps input. The relays are SPDT, providing both normally-open and normally-closed contacts.
Output

Output frequencies 10MHz sine, 5MHz sine, 10µs wide 1pps pulse
Amplitude 0.5 Vrms, ±10%
1pps pulse amplitude 2.5 V into 50Ω, 5 V into High-Z loads
Phase noise (SSB)
-130 dBc/Hz (10Hz)
-140 dBc/Hz (100Hz)
-150 dBc/Hz (1kHz)
-155 dBc/Hz (10kHz)

10MHz outputs Two 50Ω isolated sine outputs
5MHz output One 50Ω sine output
1pps output One 50Ω pulse output
Optional outputs Each option board provides four 10MHz, one 5MHz, and one 1pps outputs. Up to 3 boards can be installed.

Alarm relays
Max. current, 3 A. SPDT, normally open or normally closed. May be wired in parallel with other relays to “wire-or” a single alarm.

Rb lock
Relay status matches the front-panel “Locked” LED.

1pps
Relay status matches the front-panel “1pps sync” LED.

RS-232
9-pin connector configured as DCE, 9600 baud. Windows RbMon software is provided.

Environmental

Operating temperature +10°C to +40°C
Temperature stability Δf/f < ±1 × 10^-10 (+10°C to +40°C)
Storage temperature –55°C to +85°C
Magnetic field Δf/f < 2 × 10^-9 (1 Gauss field reversal)
Relative humidity 95% (non-condensing)

General

AC power 90 to 132 VAC or 175 to 264 VAC, 47 to 63 Hz, 50 W
Dimensions, weight 8.5” x 3.5” x 13” (WHL), 9 lbs.
Warranty One year parts and labor on defects in materials and workmanship

Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS725</td>
<td>Benchtop Rb frequency standard</td>
<td>$3195</td>
</tr>
<tr>
<td>Option 01</td>
<td>Distribution amplifier (6 outputs)</td>
<td>$495</td>
</tr>
<tr>
<td>Option 02</td>
<td>Distribution amplifier (12 outputs)</td>
<td>$995</td>
</tr>
<tr>
<td>Option 03</td>
<td>Distribution amplifier (18 outputs)</td>
<td>$1495</td>
</tr>
<tr>
<td>O725RMD</td>
<td>Double rack mount kit</td>
<td>$100</td>
</tr>
<tr>
<td>O725RMS</td>
<td>Single rack mount kit</td>
<td>$100</td>
</tr>
</tbody>
</table>

FS725 rear panel (with Opt. 03)