CFS10B: 10 MHz OXCO Frequency Reference

Key Features

- **10 MHz Output, +10 dBm**
- **Oven Controlled Crystal Oscillator**
- **Very Low Phase Noise. -168 dBc/Hz floor.**
- **Low Aging of 2 x 10^{-10} / day**
- **High Thermal Stability of 1 x 10^{-8} (0 to 50 °C)**
- **Low 1 second Allan Deviation of <5 x 10^{-13} (Opt)**
- **19″ Rack mount Case**

Optional Features

- **Optional 5 or 10 isolated sinewave outputs**
- **Option frequency range from 1 to 100 MHz**
- **Optional increase output level to +19 dBm**
- **Different OXCO options**
- **Option redundancy**
- **Option 12 VDC back up power supply**
- **Optional 2nd Input automatically switched in**

General Description

The CFS10B is a 10 MHz frequency reference which offers excellent performance for virtually any frequency or timing application. It is ideal for instrumentation and communication systems which require a precise frequency reference. The CFS10B is supplied in a 19” rack mount case and is powered from a 100 to 240 VAC supply (usable 90 – 260 VAC).

A number of options allow the CFS10B to be customized to meet specific requirements. Aging, phase noise, thermal stability and operating temperature can all be separately specified, so you only need to pay for the performance you require. The standard frequency is 10 MHz, but any frequency from 1 to 100 MHz can be supplied as an option.

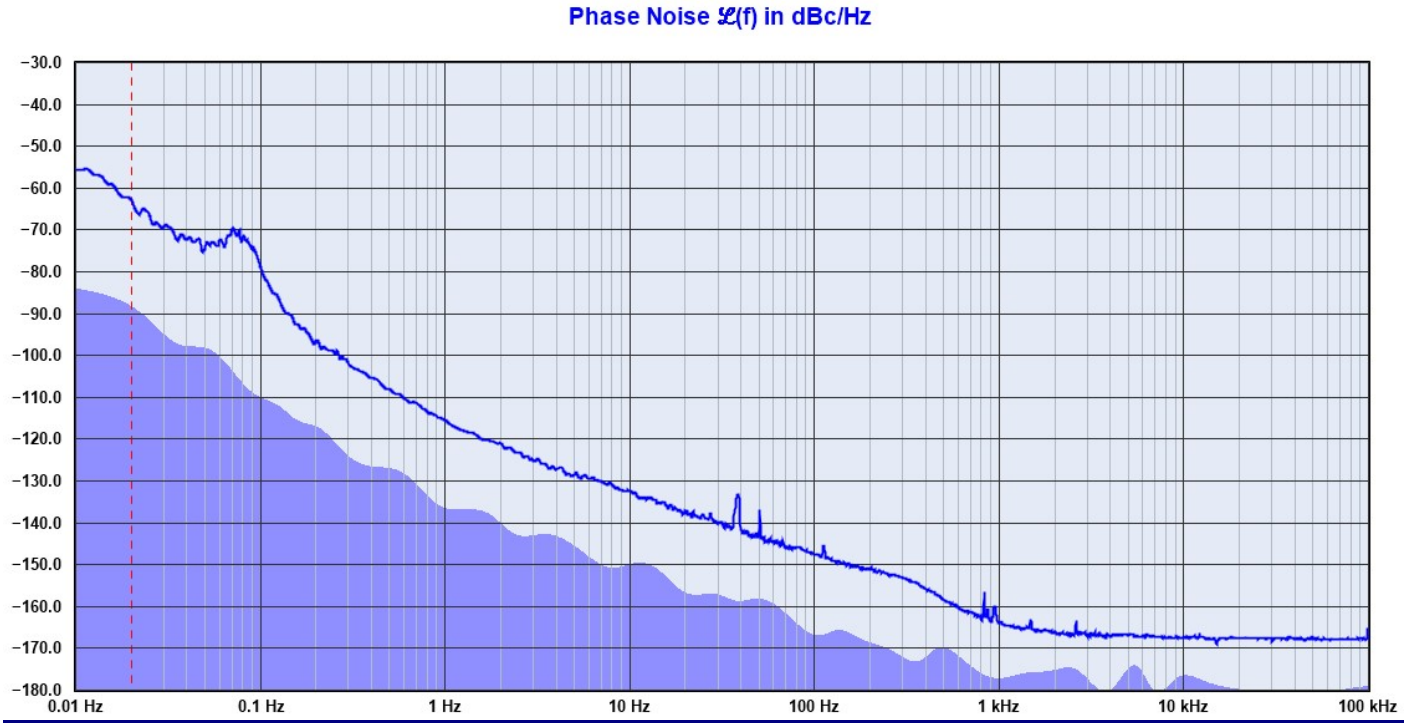
Applications

The CFS10B is being used by leading UK and USA telecommunications companies to synchronize their automatic satellite communication system. The CFS10B is also used by leading GSM Cellular service providers etc.

Phase Noise and Allan Deviation plots of Ultra Low Phase Noise Option

There are various oscillator options available for the CFS10B, depending upon phase noise and Allan Deviation requirements.

Below are two plots from option 03 which is a ultra-low phase noise option.



Options

Various options are available for the CFS10B, including:

- Option 01. This option adds five additional sinewave outputs. Each output has 90 dB channel to channel isolation and 130 dB back to front isolation. Thus the oscillator inside the CFS10B is fully protected against any load changes or short circuits applied to the outputs.
- Option 02 is similar to above but adds ten additional outputs.
- Option 03 and 03D add low phase noise oscillators.

- Option 05 adds internal re-chargeable batteries. When the AC supply is connected, the batteries are charged. When the AC power is removed, the unit immediately switches to the internal batteries giving one hour of operation.
- Option 06 adds an external input. This option must also have option 01 or 02 fitted. This option provides an external reference. The output signals are derived from this external reference when it is connected. Without the external reference, the unit automatically switches over to the internal reference.
- Option 06B is similar to option 06, but also does not include switchover. The user must manually connect the external or internal references. Also a 27 dB amplifier is also included for general use.
- Option 07 DC backup. If the AC power source is lost, the unit immediately switches to the external DC backup source without any interruption of output.
- Option 08 changes the frequency. E.g. option 08A changes frequency to 100 MHz. Option 08B changes the frequency to 5 MHz. Option 08C changes frequency to 20 MHz.
- Option 09 changes the output level, either higher or lower. The actual output level is specified at ordering time.
- Option 10 is redundancy. Two units operate in parallel for high reliability systems
- Special. If an option is required that is not listed here, contact us for a quote to include it.

Miscellaneous Information

The CFS10B is a highly reliable unit. It is housed in a fully screened aluminum 19 inch case aluminum case and operates from a 100 - 240 VAC supply. The CFS10B is CE marked for sale within the EU.

Specification Parameter	CFS10B Specification					
Frequency	10.000000 MHz (optional frequency 1 to 100 MHz)					
Output level	+10 dBm into 50 Ω (0 to >+10 dBm adjustable when option 01 or 02 is installed)					
Number of Outputs	1 (standard), 5 (option 01), 10 (option 02)					
Output Waveform / 2nd Harmonic	Sinewave. Harmonics -45 dBc (standard unit), -50 dBc (option 06B), -48 dBc (option 08C)					
Other Harmonics / Spurious	-60 dBc / -80 dBc (typically < -100 dBc)					
Phase Match between outputs (typical)	< 2 ns (Sine 1 - 5, or Sine 6 -10), < 5 ns (Sine 1 - 10). Option < 350 ps (Sine 1 -10)					
Accuracy at shipment	± 2.5 x 10^{-8}					
Frequency Stability (0 to 50 °C)	± 2 x 10^{-8} standard, ± 2 x 10^{-9} for option 03 (with a 1 x 10^{-10} /°C maximum slope for opt 03)					
Re-Trace or warm-up (option 03)	Typically 5 minutes from cold to 1 x 10^{-8} accuracy					
Aging (per day after 30 days use)	< 5 x 10^{-10} (standard unit), < 2 x 10^{-10} (Option 03), < 5 x 10^{-9} (Option 08C)					
Allan Deviation (1s typical)	< 1.5 x 10^{-12} (standard), < 5 x 10^{-13} (opt 03), < 1 x 10^{-10} (20 MHz).					
Phase Noise (dBc/Hz) (Typical)	@ 1 Hz	@ 10 Hz	@ 100 Hz	@ 1 kHz	@ 10 kHz	@ 100 kHz
Standard Unit	-95	-130	-140	-152	-154	-155
Option 03 (10 MHz)	-115	-145	-160	-164	-166	-167
Option 03D (10 MHz)	-119	-146	-164	-168	-170	-170
Option 03E (10 MHz)	-103	-131	-150	-159	-161	-161
Option 08B (5 MHz)	-116	-143	-156	-165	-166	-167
Option 08C (20 MHz))	-80	-110	-140	-150	-152	-155
Power (AC)	100 to 240 VAC (useable 90-260 VAC)					
Size / Weight	483 mm x 280 mm x 44 mm. Width x Depth x Height. Weight 3 kg (standard unit)					
Ambient Operating Temperature	0°C to +50 °C					

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