

Rubidium™ MG362x1A Signal Generator

Atomic Clock Stability Frequency Source

Introduction

Metrology and calibration labs, satellite earth stations, backhaul communication links, university research, and many defense applications need very stable and accurate frequency references to which other signal generators can be locked. The Rubidium signal generator provides two options that users can choose to obtain atomic clock stability, which is an order of magnitude better than a typical OCXO.

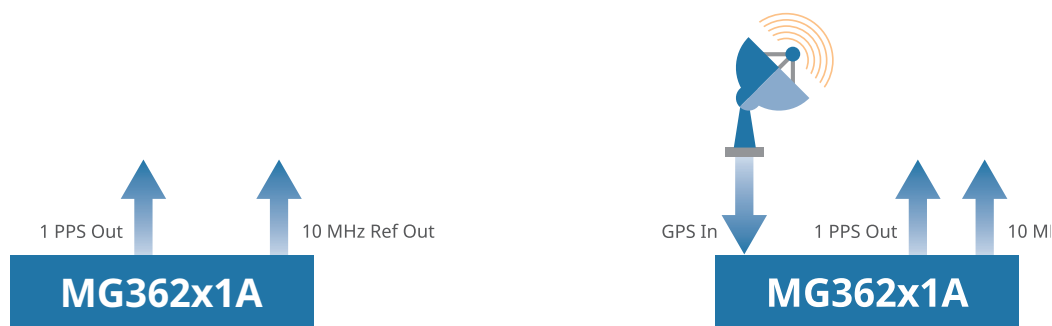
The Rubidium signal generator has an option to include the GNSS/GPS receiver (Option 66) in the instrument, which locks to the satellite signal, decodes the 1 PPS reference clock, and disciplines the internal OCXO to the decoded reference. Clocks on GNSS/GPS satellites are ultimately traceable to national frequency standards. For example, the clock on GPS satellites are referenced to the United States Naval Observatory (USNO) that is traceable to the NIST US national standard.

Atomic frequency stability is also provided through a rubidium frequency reference (Option 56). This option will benefit defense users who need very high frequency stability without being dependent on an external reference such as that derived from a GNSS/GPS satellite signal for security and reliability reasons. The Rubidium signal generator features a high quality rubidium reference that provides excellent mid- and long-term frequency stability with T&M grade phase noise performance.

For both options of atomic clock stability, the Rubidium signal generator can output a 1 PPS reference clock signal to lock other Rubidium signal generators. Alternatively, it can provide a 10 MHz OCXO reference that is being disciplined by GNSS/GPS or a rubidium clock as output, which can then be used to lock another Rubidium signal generator.

Stable and Accurate Atomic Frequency Reference

Reference	Aging Rate	Stability	Accuracy
OCXO	Not Good	Short term: Good Long term: Not good	Not Good
Rubidium (Option 56)	Very Good	Short term: Good Long term: Very good	Very Good
GNSS/GPS (Option 66)	Very Good	Short term: Acceptable Long term: Very Good	Very Good



Sig Gen with Ultra Stability time base –Rb (Option 56)

Sig Gen with GNSS/GPS Atomic Clock Receiver (Option 66)