EndRun TECHNOLOGIES
"Smarter Timing Solutions"

Disciplined Oscillator *Options*

For Network Time Servers

KEY BENEFITS

- Extended Stratum 1 Performance
- Improved Holdover Accuracy

All EndRun Time Servers can be configured with optional disciplined oscillators which permit extended Stratum 1 timing performance. The drift of the oscillator is what causes the time server to gradually move away from "perfect time" if the synchronization signal (GPS or CDMA) is lost. The length of time that an oscillator can hold perfect time once the signal is lost is called the holdover period. The slower the drift rate of the oscillator then the longer the holdover period and the longer your time server can continue to serve Stratum 1 time to your network. Your oscillator decision should be based on how long you want your time server to deliver Stratum 1 time after any unexpected signal loss.

In GPS applications, temporary signal loss could be caused by sub-optimal GPS antenna installations in windows, or on rooftops in urban canyons. Antenna damage from vandalism or lightning could also interrupt GPS reception. In CDMA applications, signal loss could be due to marginal, sporadic CDMA reception or base station outages.

The standard time servers are provided with a Temperature-Compensated Oscillator (TCXO) which drifts at the rate of 10 milliseconds/day. This will allow your time server to serve accurate Stratum 1 time for a full 24 hours after signal loss. *This is the best holdover performance for any time server on the market with a TCXO.* An oscillator upgrade is indicated when your application requires a longer holdover period than 24 hours.

OCXO Option

The Medium-Stability OCXO (MS-OCXO) permits your time server to deliver Stratum 1 time to your network for 35 days following the loss of a synchronization signal. It provides three orders-of-magnitude improvement in temperature stability relative to the TCXO and a further reduction in ageing.

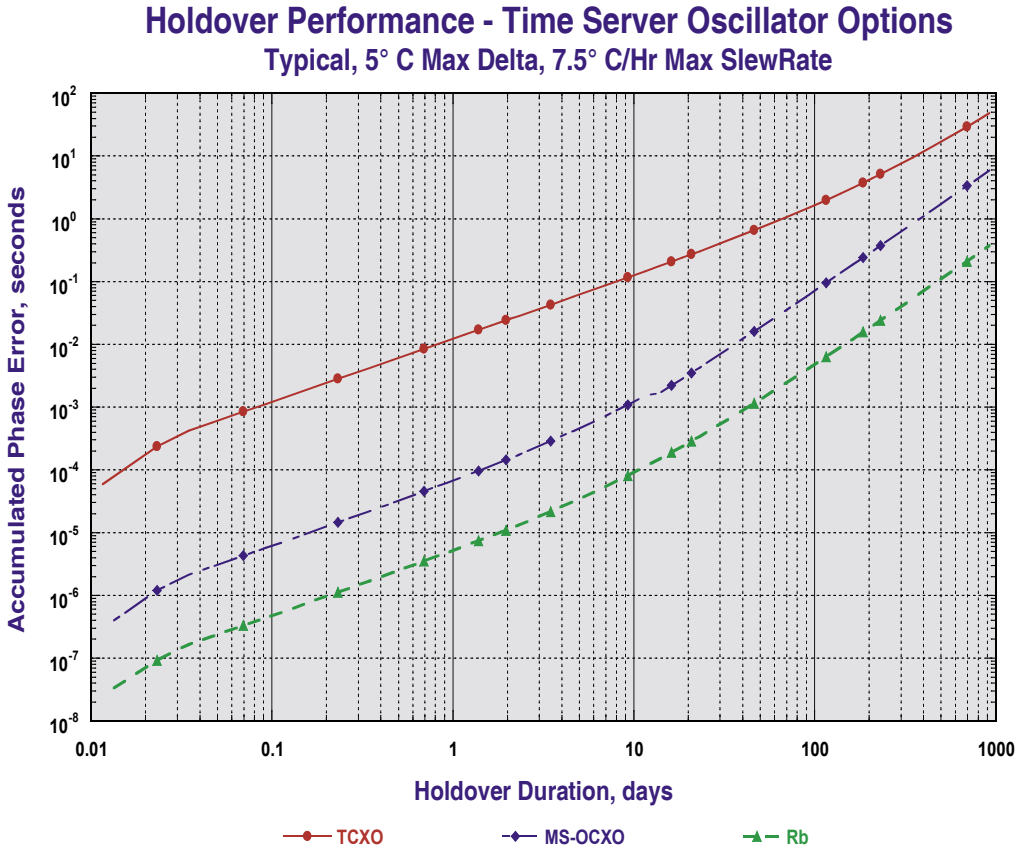
Compact Rubidium Option

If you need the ultimate in long-term holdover performance a Rubidium option is the right choice. This oscillator will permit your time server to deliver Stratum 1 time to your network for a period of 140 days following the loss of a synchronization signal. Relative to the OCXO, the temperature stability of the standard Rubidium option is improved by a factor of 4 and its long-term ageing is reduced by more than an order of magnitude.

Oscillator Options - Summary Performance Data

	TCXO	MS-OCXO	Rubidium
Product Type	Unison, Tempus LX	Unison, Tempus LX	Tempus LX
Stratum 1 Holdover Period	24 Hours	35 Days	140 Days
Accumulated Time Error for 1st Day	10 millisecs	80 microsecs	5 microsecs
Temp Stability	2.5×10^{-6}	4×10^{-9}	1×10^{-9}
Temp. Range °C	-20 to +70	0 to +70	-20 to +70
Ageing Rate/Year	1×10^{-6}	3×10^{-8}	1×10^{-9}
Allan Deviation @ 1 sec	1×10^{-9}	7×10^{-12}	2×10^{-11}

Disciplined Oscillator Options



EndRun TECHNOLOGIES
"Smarter Timing Solutions"

Santa Rosa, CA, USA
1-877-749-3878 or 707-573-8633
sales@endruntechnologies.com
www.endruntechnologies.com