

October 29, 2019

Smart, Low-Cost & High-Performance GPS/GNSS & Low-Noise Rubidium Source

GNSSource™ -2500

Smart GPS/GNSS & Low-Noise Rubidium Reference Source
SmarTiming+® 1ns-Resolution Disciplining Technology Inside



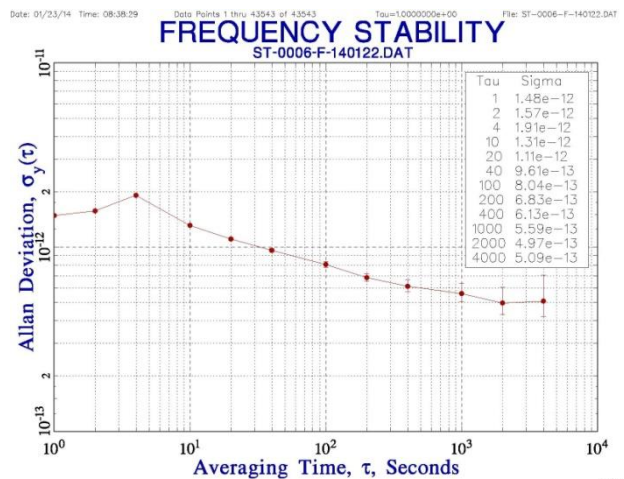
The GNSSource is a low-cost, high-performance GPS/GNSS primary reference source. It integrates a smart, low-noise Rubidium LNRClok-1500 and a GPS/GNSS receiver. It uses the GPS/GNSS SmarTiming+® technology, disciplining the Rb LNRClok with an auto-adaptive loop time constant of 1,000 to 100,000 seconds, depending on the GPS/GNSS signal quality, at cutting-edge 1ns resolution. It's designed for cross-industry applications, where high stability and timekeeping features is a driving requirement.



Features

- Integrated GPS/GNSS receiver & low-noise Rb LNRClok
- Integrated GPS/GNSS disciplinable Rb LNRClok function, using SmarTiming+® technology at 1ns resolution
- Output Frequencies (8x 10MHz / 8x 1PPS or 16x 10 MHz)
- Integrated smart auto calibration
- Internal Bit Alarm
- RS232 standard interface (9600 b/s)
- Windows 7, XP software application
- GPS antenna types (patch or rooftop)
- Power supply voltage (AC input 100-240 VAC / 50-60Hz)
- Compact 1U rack mountable chassis

Typical Short Term Stability



APPLICATIONS

Synchronization | Timing | Reference/Test Source | Time/Frequency Source

SPECIFICATIONS

ELECTRICAL

Spec		GNSSource-2500	
Reference module	Standard	Options	
RFOUT Frequency Number of Output	10MHz 8x backplane 1x faceplate	10.23MHz 16x backplane 1x faceplate (ordering code: 16RF)	
PPSOUT Functionality Number of Output	1PPS See SMARTIMING+ 8x backplane 1x faceplate	1PPS See SMARTIMING+ (ordering code: 16RF) 1x faceplate	
Short Term Stability		(ordering code: S)	
1s	2E-11	3E-12	
10s	6E-12	3E-12	
100s	2E-12	1E-12	
Phase Noise (dBc/Hz) (RFOUT: 10 MHz)		(ordering code: LN)	(ordering code: ULN)
1Hz	-90	-100	-103
10Hz	-110	-126	-133*
100Hz	-135	-145	-153*
1kHz	-145	-155	-155
10kHz	-150	-155	-158
*: subject to export control			
Aging (Measured after 3 months of continuous operation)	< 5E-11 / month (typical: 3E-11 / month)		
Frequency Retrace Off/On (In stable temperature, gravity, pressure and magnetic field conditions)	< 5E-11 24 hr / 1 hr		
RFOUT Levels	Output Sine wave, 0.5 Vrms (±10% / 50 Ω), 1x faceplate **Sine wave, 1.0 Vrms (±10% / 50 Ω), 8x backplane (** ordering code: 16RF 16x) Impedance 50 Ω ±20% Harmonics < -25dBc Spurious f ₀ ± 100kHz (SYNTH Off) < -80dBc		
GPS Antenna Connector	SMA		

SMARTIMING+® FUNCTIONALITY

Spec		GNSSource-2500
Disciplining module		Standard
PPSOUT Output level		1PPS CMOS 0-5V (+ 20 mA sink/source)
Pulse width (PW) or duty cycle		User settable, 0 to 1s in 133ns/step
PPSOUT to PPSREF Sync Error In Sync mode		< 50 ns No GPS PPSRef noise, ± 1°C temp fluctuations
PPSOUT to PPSREF (DE) Programmable delay (In Track mode)		0 to 1 s in 66 ns steps
PPSOUT Holdover Time Stability		Within ± 2°C 1 μs/24 hr
Smart Loop Time Constant Phase/Frequency User settable		Auto-adaptive 1000 to 100,000 sec User settable Sync/Track mode ** Selected by RS232 interface ** Sync: phase/time alignment; Track: frequency alignment

GPS / GNSS ANTENNA

Spec		GNSSource-2500	
	Standard	(Option code GPS) : using LEA-6T receiver (Option code GNSS): using LEA-M8T receiver allowing Beidou , Galileo etc...	
Antenna Types		(ordering code: RA) Rooftop antenna kit Included	
Lightning Surge Protector Cable Length	Patch antenna kit Not applicable ≥ 5 m / 16.4'	(ordering code: CA) 5+15m / 16.4' + 49'	
Antenna mounting bracket	Not applicable	(ordering code: BRA)	

POWER

Spec		GNSSource-2500
		Standard
Power Supply		AC input 100-240 VAC
Power Input Fluctuation		±10% of nominal supply voltage (230V~)
Input Frequency		50 – 60 HZ
Power Consumption @25°C		< 25W after warm-up
Current		1.5 – 0.65A
Connector Type		IEC plug

ENVIRONMENT

Spec		GNSSource-2500
		Standard
Operating Temperature		0 to 40°C (Relative humidity: 10-85%)
Storage		-25 to 55°C
Transportation		-25 to 70°C
Max Altitude		10'000 Ft

PHYSICAL

Spec		GNSSource-2500	
	Standard	Option	
Size		445 x 300 x 44 mm (1U) / 17.52 x 11.81 x 1.73 in.	
Weight		2.2 kg / 4.85 lbs	
Mounting	Tabletop feet	19" rack mountable ears (ordering code: E)	

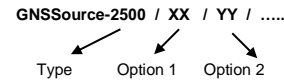
SYSTEM SUPPLY

Type		GNSSource-2500	
1x		GNSSource-2500	
1x		GPS patch antenna kit (with option code RA : Rooftop antenna kit)	
1x		Cables SUB-D male/female for PC serial COM	
2x		19" rack mountable ears or tabletop feet (option E)	
1x		iSyncMgr application, user manual & spec	
1x	Euro Power Cable Standard	US Power Cable (ordering code: US) China Power Cable (ordering code: CN) Swiss Power Cable (ordering code: CH) Indian Power Cable (ordering code: IN)	

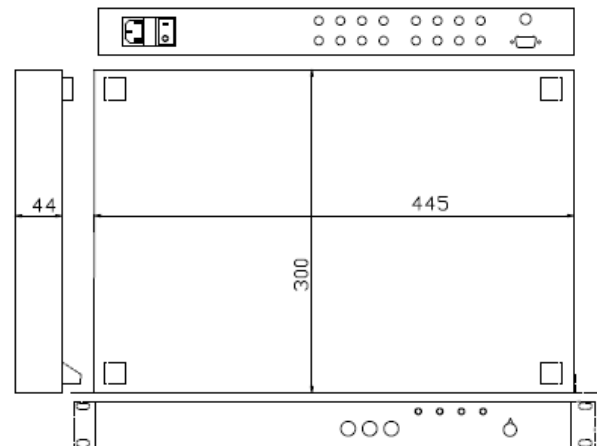
SOFTWARE UPGRADES

GNSSource-2500	
Download the latest software upgrades at www.spectratime.com	

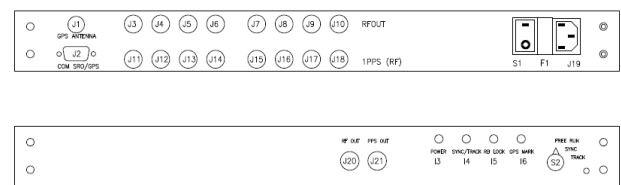
ORDERING INSTRUCTIONS



MECHANICAL LAYOUT



I/O INTERFACES



Back Panel

N°	Type	Definition	I/O
J1	SMA	GPS antenna connection	I
J2	SUB-D9-F	Serial communication RS232 Pin 2 Tx/D / Pin 3 Rx/D / Pin 5 GND	I/O
J3- J10	SMA	8x 10MHz sine reference outputs	O
J11-J18	SMA	8x 1PPS outputs (16x 10 MHz sine reference outputs with option code 16RF)	O
J19	IEC PLUG	Power connection	I
S1	SWITCH	On/Off switch	-
F1	FUSE	Primary power Supply fuse T3.15A	-

Front Panel

N°	Type	Definition	I/O
J20	BNC	10MHz sine reference output	O
J21	BNC	1PPS output	O
I3	Green LED	Power indicator	-
I4	Green LED	Sync or Track mode enabled	-
I5	Red LED	Rubidium clock locked alarm	-
I6	Green LED	1PPS GPS applied	-
S2	SWITCH	Free run, Sync or track selection switch	-