

November 13, 2014

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.

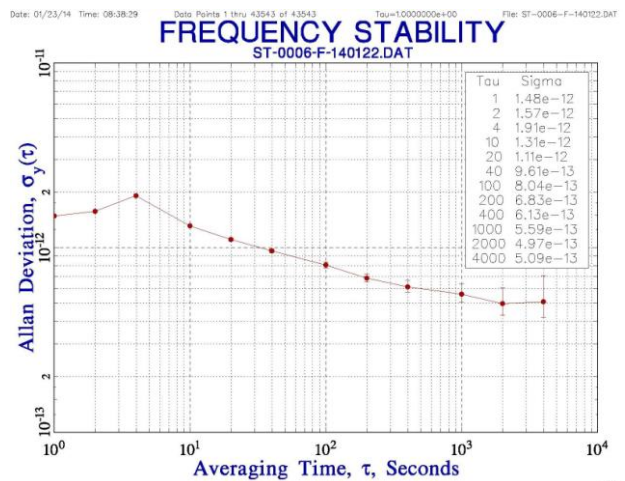


Features

- 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 85-264VAC / 47-63Hz)
- 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	10MHz 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	1E-11
10s	6E-12	3E-12
100s	2E-12	1E-12
Phase Noise (dBc/Hz) (RFOUT: 10 MHz)		(ordering code: LN)
1Hz	-90	-100
10Hz	-110	-130
100Hz	-135	-145
1kHz	-145	-155
10kHz	-150	-155
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	Sine wave, 0.5 Vrms ($\pm 10\%$ / 50 Ω), 1x faceplate **Sine wave, 1.0 Vrms ($\pm 10\%$ / 50 Ω), 8x backplane (** ordering code: 16RF 16x)	
Output		
Impedance	50 Ω $\pm 20\%$ < -25dBc < -80dBc	
Harmonics		
Spurious $f_0 \pm 100kHz$ (SYNTH Off)		
GPS Antenna Connector	SMA	

SMARTIMING+® FUNCTIONALITY

Spec	GNSSource-2500	
Disciplining module	Standard	
PPSOUT Output level Pulse width (PW) or duty cycle	1PPS CMOS 0-5V (+ 20 mA sink/source) User settable, 0 to 1s in 133ns/step	
PPSOUT to PPSREF Sync Error In Sync mode	< 50 ns No GPS PPSRef noise, $\pm 1^\circ\text{C}$ temp fluctuations	
PPSOUT to PPSREF (DE) Programmable delay (In Track mode)	0 to 1 s in 133 ns steps	
PPSOUT Holdover Time Stability	Within $\pm 2^\circ\text{C}$ 1 $\mu\text{s}/24$ 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 ANTENNA

Spec	GNSSource-2500	
Antenna Types	Standard	Option
Lightning Surge Protector Cable Length	Patch antenna kit Not applicable ≥ 5 m / 16.4'	(ordering code: RA) Rooftop antenna kit Included (ordering code: CA) 5+15m / 16.4' + 49'
Antenna mounting bracket	Not applicable	(ordering code: BRA)

POWER

Spec	GNSSource-2500	
Power Supply	Standard	
Power Input Fluctuation	$\pm 10\%$ of nominal supply voltage (230V-)	
Input Frequency	47 – 63 HZ	
Power Consumption @25°C	< 25W after warm-up	
Connector Type	IEC plug	

ENVIRONMENT

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

PHYSICAL

Spec	GNSSource-2500	
Size	Standard	Option
Weight	445 x 300 x 44 mm (1U) / 17.52 x11.81x1.73 in.	
Mounting	Tabletop feet	19" rack mountable ears (ordering code: E)

SYSTEM SUPPLY

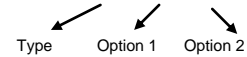
Type	GNSSource-2500	
1x	GNSSource-2500	
1x	GPS patch antenna kit (with option code RA : Rooftop antenna kit)	
1x	Cables SUB-D male/female for PC serial COM	
2x	19" rack mountable ears or tabletop feet (option E)	
1x	iSyncMgr application, user manual & spec	
1x	Euro Power Cable Standard	US Power Cable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

SOFTWARE UPGRADES

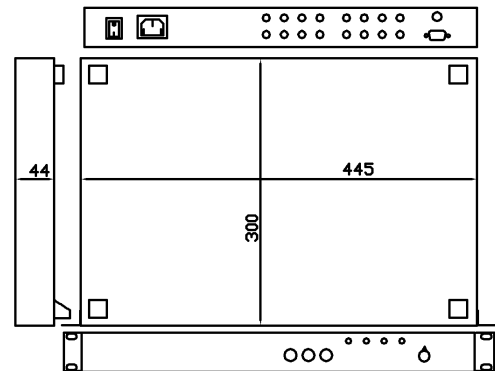
GNSSource-2500	
Download the latest software upgrades at www.spectratime.com	

ORDERING INSTRUCTIONS

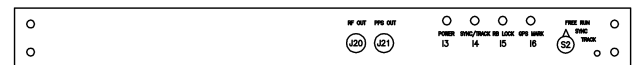
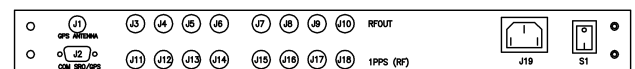
GNSSource-2500 / XX / YY /



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	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	-

Front Panel

N°	Type	Definition	I/O
J20	BNC	10MHz sine reference output	O
J21	BNC	1PPS output	O
J3	Green LED	Power indicator	-
J4	Green LED	Sync or Track mode enabled	-
J5	Red LED	Rubidium clock locked alarm	-
J6	Green LED	1PPS GPS applied	-
S2	SWITCH	Free run, Sync or track selection switch	-