

# GNSSOURCE 2500

LOW-COST, HIGH-PERFORMANCE  
PRIMARY GPS/GNSS RUBIDIUM  
REFERENCE STANDARD



## 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.

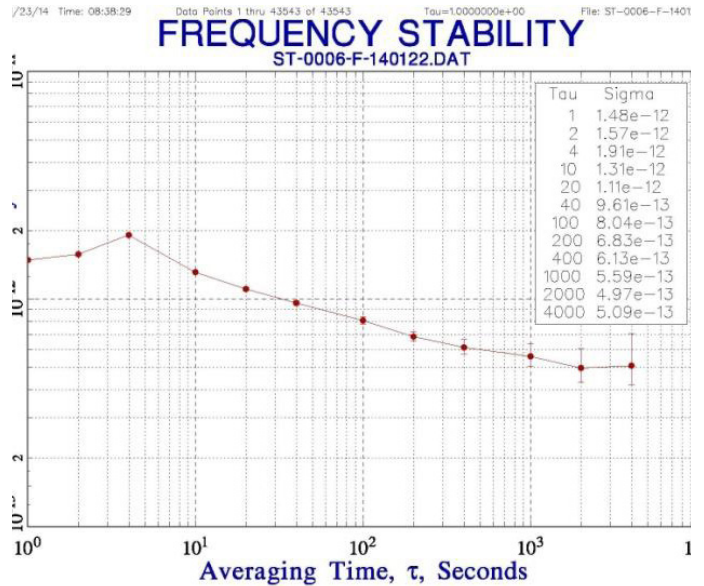
It's designed for cross-industry applications, where high stability and timekeeping features is a driving requirement.

**Safran Electronics & Defense is with you every step of the way, building in the intelligence that gives you a critical advantage in observation, decision-making and guidance.**

## KEY 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

# Technical Specifications

## ELECTRICAL

Spec		GNSSource-2500	
Reference module	Standard	Options	
RFOUT Frequency	10MHz	10.23MHz	
Number of Output	8x backplane 1x faceplate	(ordering code: 10.23M) 16x backplane 1x faceplate (ordering code: 16RF)	
PPSOUT	1PPS See SMARTIMING+	1PPS See SMARTIMING+ (ordering code: 16RF) 1x faceplate	
Functionality	SMARTIMING+		
Number of Output	8x backplane 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)		(ordering code: LN)	(ordering code: ULN)
(RFOUT: 10 MHz)	-90	-100	-103
1Hz	-110	-126	-133*
10Hz	-135	-145	-153*
100Hz	-145	-155	-155
1kHz 10kHz	-150	-155	-158
*: subject to export control			
Aging		< 5E-11 / month (typical: 3E-11 / month)	
(Measured after 3 months of continuous operation)			
Frequency Retrace		< 5E-11 24 hr / 1 hr	
Off/On			
(In stable temperature, gravity, pressure and agnetic field conditions)			
RFOUT Levels			
Output		Sine wave, 0.5 Vrms ( $\pm 10\%$ / 50 $\Omega$ ), 1x faceplate **Sine wave, 1.0 Vrms ( $\pm 10\%$ / 50 $\Omega$ ), 8x backplane (** ordering code: 16RF 16x) 50 $\Omega \pm 20\%$	
Impedance		< -25dBc < -80dBc	
Harmonics			
Spurious f0 $\pm 100$ kHz (SYNTH Off)			
GPS Antenna Connector		SMA	

## SMARTIMING+® FUNCTIONALITY

Spec		GNSSource-2500	
Disciplining module		Standard	
PPSOUT		1PPS	
Output level		CMOS 0-5V (+- 20 mA sink/source) User settable, 0 to 1s in 133ns/step	
Pulse width (PW) or duty cycle		< 50 ns	
PPSOUT to PPSREF		No GPS PPSRef noise, $\pm 1^\circ\text{C}$ temp fluctuations	
Sync Error			
In Sync mode			
PPSOUT to PPSREF (DE)			
Programmable delay (In Track mode)		0 to 1 s in 66 ns steps	
PPSOUT Holdover Time Stability		Within $\pm 2^\circ\text{C}$ 1 $\mu\text{s}/24$ hr	
Smart Loop Time Constant		Auto-adaptive 1000 to 100,000 sec User settable Sync/Track mode ** Selected by RS232 interface	
Phase/Frequency User settable		** 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	Patch antenna kit	(ordering code: CA) 5+15m / 16.4' + 49'	
Cable Length	Not applicable		
Antenna mounting bracket	$\geq 5$ m / 16.4'	Not applicable (ordering code: BRA)	

## POWER

Spec		GNSSource-2500	
		Standard	
Power Supply		AC input 100-240 VAC	
Power Input Fluctuation		$\pm 10\%$ 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 x11.81x1.73 in.	
Weight		4 kg / 8.82 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	US Power Cable (ordering code: US)	China Power Cable (ordering code: CN)
	Standard	Swiss Power Cable (ordering code: CH)	Indian Power Cable (ordering code: IN)

## SOFTWARE UPGRADES

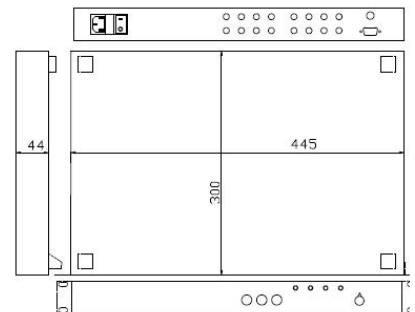
GNSSource-2500	
Download the latest software upgrades at <a href="http://www.orolia.com">www.orolia.com</a>	

## ORDERING INSTRUCTIONS

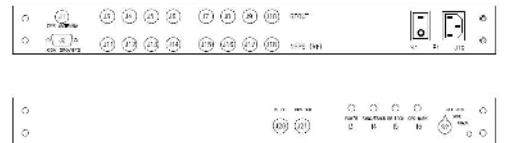
GNSSource-2500 / XX / YY / .....



## 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	Pin 2 Tx/D / Pin 3 Rx/D / Pin 5 GND	O
J11- J18	SMA	8x 10MHz sine reference 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	-

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