

# RBSource™-1500

## Smart GPS/GNSS Disciplinable Rubidium Source

### SmarTiming+® 1ns-Resolution Disciplining Technology Inside

The RBSource is a low-cost, high-performance GPS/GNSS disciplinable Rubidium reference source. It integrates a smart Rubidium clock and uses the GPS/GNSS SmarTiming+® technology, disciplining the Rb clock 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.



### KEY FEATURES

- Integrated Rb clock
- Integrated GPS/GNSS disciplinable Rb clock 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
- Power supply voltage (AC input 100-240 VAC / 50-60Hz)
- Compact 1U rack mountable chassis

### Applications

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

## SPECIFICATIONS

### ELECTRICAL

Spec	RBSource-1500	
Reference module	Standard	Options
RFOUT Frequency Number of Output	10MHz 8x backplane 1x faceplate	10.23MHz <b>(ordering code: 10.23M)</b> 16x backplane (no PPS) 1x faceplate <b>(ordering code: 16RF)</b>
PPSOUT Functionality Number of Output	1PPS See SMARTIMING+ 8x backplane 1x faceplate	1PPS See SMARTIMING+ <b>(ordering code: 16PPS) (no RF)</b> 1x faceplate <b>(ordering code: S)</b>
Short Term Stability		
1s	2 <sup>-11</sup>	1 <sup>-11</sup>
10s	8 <sup>-12</sup>	3 <sup>-12</sup>
100s	3 <sup>-12</sup>	1 <sup>-12</sup>
Phase Noise (dBc/Hz) (RFOUT: 10 MHz)		(ordering code: LN)
1Hz	-80	-100
10Hz	-100	-130*
100Hz	-125	-145
1kHz	-145	-155
10kHz	-145	-155
Aging (Measured after 3 months of continuous operation)	< 5E <sup>-11</sup> / month (typical: 3E <sup>-11</sup> / month)	< 3E <sup>-11</sup> / month or 2E <sup>-10</sup> / year <b>(order code: A)</b> (typical: ±1E <sup>-11</sup> / month)
Frequency Retrace Off/On (In stable temperature, gravity, pressure and agnetic field conditions)		< 5E-11 24 hr / 1 hr
RFOUT Levels		
Output		Sine wave, 0.5 Vrms ±10%
Output backplane		Sine wave, 1.0 Vrms ±10%
Impedance		50 Ω ±20%
Harmonics		< -25dBc
Spurious f <sub>o</sub> ± 100kHz (SYNTH Off)		< -80dBc

### SMARTIMING+® FUNCTIONALITY

Spec	RBSource-1500	
Disciplining module	Standard	
PPSREF Level	CMOS 0-5V or 0-3.3V rising edge	
Reference input types Disciplining & filtering Disciplining mode	GPS/GNSS, E1, T1, Cesium, Maser Auto-adaptive Smartiming+® technology Sync (phase alignment) or Track (freq. alignment)	
PPSOUT	1PPS	
Output level Pulse width (PW) or duty cycle	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, ± 1°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 ± 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	

### POWER

Spec	RBSource-1500
	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	RBSource-1500
	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	RBSource-1500	
	Standard	Option
Size	445 x 300 x 44 mm (1U) / 17.52 x 11.81 x 1.73 in.	
Weight	4 kg / 8.82 lbs	
Mounting	Tabletop feet	19" rack mountable ears <b>(ordering code: E)</b>

### SYSTEM SUPPLY

Type	RBSource-1500	
1x	RBSource-1500	
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

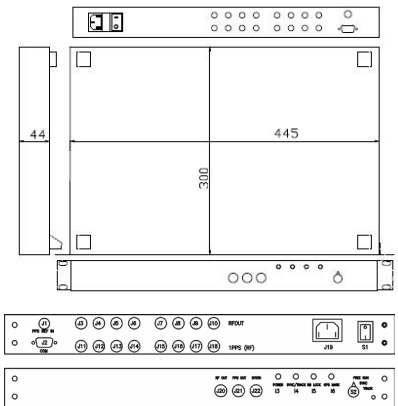
RBSource-1500	
Download the latest software upgrades at <a href="http://www.orolia.com">www.orolia.com</a>	

### ORDERING INSTRUCTIONS

**RBSource-1500 / XX / YY / ....**

Type    Option 1    Option 2

### MECHANICAL LAYOUT



### I/O INTERFACES

#### Back Panel

N°	Type	Definition	I/O
J1	SMA	1pps input	I
J2	SUB-D9-F	Serial communication RS232 Pin 2 TxD / Pin 3 RxD / Pin 5 GND	I/O
J3- J10	SMA	8x 10MHz sine reference outputs	O
J11-J18	SMA	8x 1PPS outputs (8x 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
J22	BNC	SYNTH output (optional)	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	-