

RBSOURCE 1500

HIGH-PERFORMANCE
RUBIDIUM REFERENCE



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.

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 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

Technical Specifications

ELECTRICAL

Spec	RBSource-1500	
Reference module	Standard	Options
RFOUT Frequency	10MHz	10.23MHz
Number of Output	8x backplane 1x faceplate	(ordering code: 10.23M) 16x backplane (no PPS) 1x faceplate (ordering code: 16RF)
PPSOUT	1PPS	1PPS
Functionality	See SMARTIMING+	See SMARTIMING+
Number of Output	8x backplane 1x faceplate	(ordering code: 16PPS) (no RF) 1x faceplate
Short Term Stability		(ordering code: S)
1s	2 ⁻¹¹	1 ⁻¹¹
10s	8 ⁻¹²	3 ⁻¹²
100s	3 ⁻¹²	1 ⁻¹²
Phase Noise (dBc/Hz)		(ordering code: LN)
(For RFOUT = 10MHz only)		
1Hz	-80	-100
10Hz	-100	-130*
100Hz	-125	-145
1kHz	-145	-155
10kHz	-145	-155
		* Subject to export control (end user statement required)
Aging	< 5E ⁻¹¹ / month (typical: 3E ⁻¹¹ / month)	< 3E ⁻¹¹ / month or 2E ⁻¹⁰ / year (order code: A) (typical: ±1E ⁻¹¹ / month)
Frequency Retrace	Off/On	< 5E ⁻¹¹ 24 hr / 1 hr
(In stable temperature, gravity, pressure and agnetic field conditions)		
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 ₀ ± 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	GPS/GNSS, E1, T1, Cesium, Maser	
Disciplining & filtering	Auto-adaptive SmarTiming+® technology	
Disciplining mode	Sync (phase alignment) or Track (freq. alignment)	
PPSOUT	1PPS	
Output level	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	< 50 ns	
Error	No GPS PPSRef noise, ± 1°C temp fluctuations	
In Sync mode		
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	Auto-adaptive 1000 to 100,000 sec	
Phase/Frequency	User settable Sync/Track mode **	
User settable	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 x11.81x1.73 in.	
Weight	4 kg / 8.82 lbs	
Mounting	Tabletop feet	19" rack mountable ears (ordering code: E)

SYSTEM SUPPLY

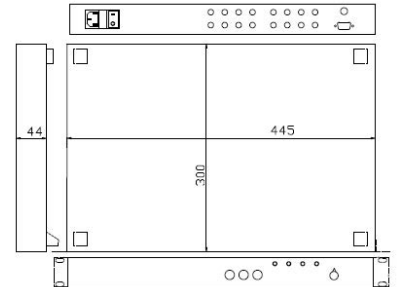
Type	RBSource-1500	
1x	RBSource-1500	
1x	Cables SUB-D male/female for PC serial COM	
2x	19" rack mountable ears or tabletop feet (option E)	
1x	iSyncMgr application, user manual & spec	
1x	Euro Power Cable Standard	US Power Cable (ordering code: US) China Power Cable (ordering code: CN) Swiss Power Cable (ordering code: CH) Indian Power Cable (ordering code: IN)

ORDERING INSTRUCTIONS

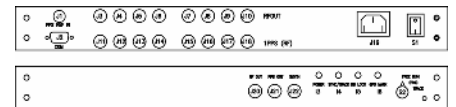
RBSource-1500 / XX / YY /

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	I/O
J3- J10	SMA	Pin 2 Tx/D / Pin 3 Rx/D / Pin 5 GND	
J11-J18	SMA	8x 10MHz sine reference outputs	O
J19	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	-

**POWERED
BY TRUST**

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