

RubiSource 2000

Portable Rubidium Timing Signal Reference

KEY FEATURES

- Cost-Effective Timing Source for Telecom/Metrology
- Test & Measurement Applications
- SDH/SONET/PDH Jitter/Wander Measurement Source
- Outputs: E1/T1, 2048/1544 kHz & 5/10 MHz
- Cesium Reference Input with Auto-Calibration Feature
- With and Without GPS Input Available
- CE Compliant

PRODUCT DESCRIPTION

Symmetricom's RubiSource™ 2000 is a low cost portable timing reference source based on Symmetricom's rubidium clock technology.

It's designed for telecom and metrology test and measurement applications. The rubidium clock provides highly accurate, stable and reliable output signals. Its fast warm-up eliminates the need for bulky backup batteries.

The RubiSource 2000 can be locked to an external primary source such as a cesium standard for automatic calibration of the rubidium clock.

The unit is available in two versions:

- RubiSource 2000
- RubiSource 2000 GPS

The GPS version supports a high performance GPS functionality to control the Rubidium oscillator. Nearly CS quality can be achieved in GPS controlled operation by using a

standard L1 GPS installation. Additionally GPS can be used as an alternative calibration input, without using an expensive primary reference source.

APPLICATIONS

TELECOM

The RubiSource 2000 is a powerful reference source, used to enable fast measurement and testing of the synchronization quality of PDH/SDH/SONET digital networks. MTIE and TDEV measurements for up to 1000 seconds can be easily performed without a GPS reference. Coupled with a GPS antenna, the range of observation time can be largely extended to meet specific requirements.

METROLOGY

Standard 5 MHz and 10 MHz reference sources are also provided for metrology and calibration laboratory equipment such as universal counters, spectrum analyzers and synthesized signal generators.



RubiSource 2000

Technical Data

PHYSICAL DATA

- Size WxHxD: Maximum 260 x 120 x 365 mm
10.24 x 4.72 x 14.37 inch
(without handle)
- Weight: Maximum 4.3 kg

ENVIRONMENTAL CONDITIONS

- Stationary use: 5° ... 40°C operating with specified accuracy
-10° ... 55°C operating with de-rated accuracy
(EN 300 019-1-3 class 3.1)
- Transportation: -25° ... 70°C (EN 300 019-1-2 class 2.2)
- Storage: -40° ... 85°C (EN 300 019-1-1 class 1.2)
- Humidity: 95 % non-condensing

REGULATIONS AND STANDARDS

- EN 61326-1:1997
- EN 61010-1:1993

RUBISOURCE 2000 (P/N 81700000)

- Power supply
 - Voltage: 100 ... 240 VAC, 50 ... 60 Hz
 - Current consumption: maximum 1.0 A
 - Power consumption: typically 30 W at 230 VAC, 22 W at 110 VAC
- Input: 1 x external reference: 5 MHz or 10 MHz sine wave
or square wave, 0.5 ... 5.0 Vpp into 50Ω / BNC,
MTIE (200 s) <1 ns
- Unframed outputs:
 - 1 x 5 MHz sine wave, 1 Vrms into 50Ω, BNC
 - 1 x 10 MHz sine wave, 1 Vrms into 50Ω, BNC
 - 2 x 2048 kHz, G.703.13 (10/98), 75Ω unbalanced, BNC
 - 2 x 2048 kHz, G.703.13 (10/98), 120Ω balanced, BNC Twinax
 - 1 x 1544 kHz, 2.5 Vpp, 75Ω unbalanced, BNC
 - 1 x 1544 kHz, 3 Vpp, 120Ω balanced, BNC Twinax
- Framed outputs (E1/T1):
 - 1 x 2048 kBit/s, G.703.9 (10/98), HDB3, 75Ω unbalanced, BNC
 - 1 x 2048 kBit/s, G.703.9 (10/98), HDB3, 120Ω balanced, BNC Twinax
 - 1 x 1544 kBit/s, AMI, 75Ω unbalanced, BNC
 - 1 x 1544 kBit/s, AMI, 120Ω balanced, BNC Twinax
- Frequency accuracy:
 - Factory shipment: 5×10^{-11} @ 25°C
 - With primary reference adjusted: 2×10^{-11} relatively to the reference
- Internal time base: Symmetricom's rubidium oscillator
Aging 5×10^{-11} / month
1×10^{-9} over 10 years

UNIT OPTIONS

- RubiSource 2000 GPS (P/N 81700002)
 - Input: GPS antenna signal with 5 VDC feeding;
N-type connector, female
 - Frequency accuracy:
 - Factory shipment: 5×10^{-11} @ 25°C
 - With primary reference adjusted: 2×10^{-11} relatively to the reference
 - With GPS connected: typically 1×10^{-12}
(ADEV typically 2.5×10^{-12})

GPS engine:

12-channel C/A-code-receiver (L1), tracks up to 12 satellites continuously

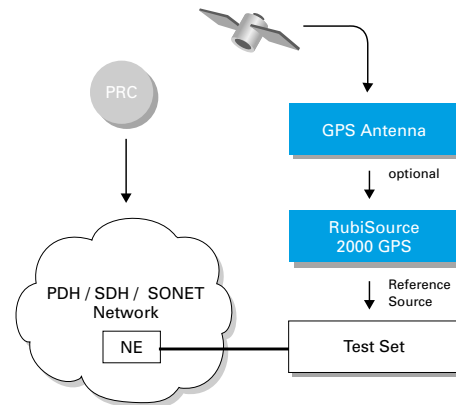
- Antenna set: includes active GPS antenna, mounting kit and antenna cable with connector (see below for length)
- Lightning protection
- User defined length of antenna cable (maximum 350 m)

Available Lengths of Antenna Cables

- | | |
|----------------------|--------------------------|
| • 25 m cable RG-58 | • 150 m cable "low loss" |
| • 50 m cable RG-213 | • 200 m cable "low loss" |
| • 75 m cable RG-213 | • 250 m cable LCF 1/2" |
| • 100 m cable RG-213 | |

ACCESSORIES

- Transport case (P/N 81700001)



Application diagram

ALLAN DEVIATION (10 MHz sine wave)

- t = 1 second <math>< 2.5 \times 10^{-11}</math>
typically <math>< 1.0 \times 10^{-11}</math>
- t = 10 seconds <math>< 0.8 \times 10^{-11}</math>
- t = 100 seconds <math>< 0.25 \times 10^{-11}</math>



RubiSource 2000



RubiSource 2000 GPS

* E1 = E12 according G.703 issue 11/2001

T1 = E11 according G.703 issue 11/2001



SYMMETRICOM, INC.
2300 Orchard Parkway
San Jose, California
95131-1017
tel : 408.433.0910
fax : 408.428.7896
info@symmetricom.com
www.symmetricom.com