RSR Transcoder™

RSR GNSS Transcoder and GPS Full-Constellation Simulator

Defense | 5G Communications | SATCOM | Transportation
Data Center Energy | Financial | Critical Infrastructure

The RSR GNSS Transcoder™ is based on VIAVI's GPS Simulator technology. The RSR GNSS Transcoder allows existing GPS equipment to be retrofitted to support next-generation GNSS, SAASM, M-Code, INS, and other PVT/PNT sources. The RSR Transcoder can also be used as a general-purpose small GPS simulator for testing, manufacturing, qualification, spoofing, and jamming simulation.

The RSR GNSS Transcoder can be powered and controlled from a standard USB port, as well as from an optional vehicle/avionics power supply that allows operation anywhere from 7 V to 36 V. The unit has integral RS-232 ports for communicating to an external GNSS receiver or other NMEA source, an external 1PPS input allowing 5ns time-transfer accuracy to the RF signal, and a GPS L1 RF output connector with integrated antenna load for GPS receivers that require a DC antenna load to operate properly.

Highlights

- Embedded NMEA Transcoding to L1 GPS in real-time
- Upgrade existing GPS to GNSS, SAASM, M-Code, INS
- Optional CSAC holdover capability
- 1.6 x 2.3 x 0.5 inches, 1.1 W
- USB, RS-232, interfaces
- 5 V USB, or 7 V to 36 V DC power
- Form, Fit, Function compatible to Rockwell Collins RSR SAASM Puck
- GPS Week Number Roll-over simulation or offsetting to bypass legacy GPS bugs
- High-dynamics simulation
- 5 ns timing and sub 1 m positioning-accuracy typically

RSR GNSS Transcoder

Typical Electrical Specifications

Module Specifications	Description
Data/Power connectors	Mini-USB for power and SCPI, 12-pin 2 mm Hirose for power and external GNSS
Outputs	One 3 V CMOS 1 PPS output, one 10 MHz CMOS 3 V DC output, disciplined by external 1 PPS reference or internal CSAC
	One RF SMA, GPS L1 C/A code, -100 to -120 dBm
Spectral Purity (1 MHz to 13.2 GHz)	< -33 dBc in-band (L1, ±20 MHz), < -80 dBm out-of-band
Harmonics of L1 (1.57542 GHz)	< -150 dBm
USB Control	SCPI-99 Control at 9.6 K, 19.2 K, 38.4 K, 57.6 K, 115.2 K
External GNSS receiver compatibility	Any NMEA compatible source, direct control of Rockwell Collins GB-GRAM and MicroGRAM SAASM GPS, and u-Blox GNSS receivers
USB SCPI Control/ Monitoring Port	Compatible to any terminal program and GPSCon, NMEA output sentences
Operating Temperature	-40°C to +75°C with TCXO, -10 to +70°C with CSAC
CSAC Holdover	< 1 µs/24 hrs typical @ 25°C with ±5°C change after 48 Hrs with stable 1 PPS UTC reference input
MTBF	> 600,000 Hours with TCXO

NOTE: Specifications subject to change without notice.

Product Ordering Information

VIAVI offers the RSR Transcoder in the following configurations:

Product Number	Description	With CSAC	With TCSAC	With Enclosure	MCX Conn	RoHS Comp.
1005123	RSR Transcoder w/CSAC - non-RoHS	•				
1005124	RSR Transcoder w/o CSAC - non-RoHS					
22174894	RSR Transcoder w/o CSAC - RoHS					•
1005127	RSR Transcoder w/o CSAC w/IP67 Encl - non-RoHS			•		
1005128	RSR Transcoder w/CSAC IP67 ENCL - non-RoHS	•		•		
1005133	RSR Transcoder w/CSAC and MCX connector - non-RoHS	•			•	
1005173	RSR Transcoder w/TCSAC and MCX connector - non-RoHS		•		•	
1005178	RSR Transcoder w/TCSAC IP67 w/Encl - non-RoHS		•	•		
1005193	RSR Transcoder w/TCSAC - non-RoHS		•			
22174898	RSR Transcoder w/o CSAC w/MCX Connector - RoHS				•	•

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