FRU-SAASM

Frequency Reference Unit

The FRU is a state of the art, high-precision frequency standard capable of outputting ten isolated precision 10MHz frequency reference outputs. The FRU uses an internal GPS receiver to control a precision oscillator with accuracy up to 1 x 10-12 and excellent short term stability

The FRU meets the frequency stability requirements of MIL-STD-188-164A for SHF terminals.

A particular feature of the FRU is the ultra-high isolation (>100dB) between the 10MHz outputs, eliminating interaction between 10MHz outputs when they are loaded/unloaded.

The FRU incorporates a high-sensitivity 12 channel GPS Receiver.

FEATURES

- **Ultra-stable GPS Disciplined Frequency Reference**
- **10 Independent 10MHz outputs**
- **1U chassis**
- **Meets MIL-STD-188-164A stability requirements**
- **Frequency accuracy to 1 x 10-12**
- **Dual Port NTP Server**

Dual Ethernet ports are used for both monitoring/control of the FRU using Simple Network Monitoring Protocol (SNMP) as well as providing Network Time Protocol (NTP) to clients.

A Brandywine supplied user application may also be used to provide a Graphical User Interface to the FRU.

The FRU is available is a number of configurations to support specific applications. A

Mobile Application version features a special vibration isolated oscillator that provides isolation of the reference source from portable generator induced phase noise. The High Performance version uses a rubidium oscillator.

A SAASM GPS receiver is available for military applications.

Applications

- Flight Test
- Aircraft Data Collection
- Flight Instrumentation
- UAV Applications

Key Benefits

- Low Phase Noise 10 MHz Outputs
- Multiple Output signal formats for maximum flexibility
- Flight Qualified to 60,000 ft.
- MIL-STD-810F
- MIL-STD-461G
  (RE/CE101 & RE/CE102)

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Specifications

Input

GPS Antenna Input		
	Connector	BNC
1PPS input		
	Connector	DB-15
	Level	0-10V_{pk}
	Impedance	50 Ω
HAVEQUICK Input		DB-15
	Level	0-5V_{pk}
	Impedance	2 kΩ

Outputs

10MHz outputs			
	No of Outputs	10	
	Frequency	10MHz	
	Accuracy	1X10-12 (24hr avg.)	
	Amplitude	+13dBm	
	Harmonics	<40dBc	
	Non Harmonic	<90dBc	
	Isolation	<-100dBc when adjacent channel is opened or shorted	
	Phase Noise	(dBc/√Hz)	
		Static	Vibration*
	10Hz	-120	-120
	100Hz	-140	-90
	1kHz	-150	-130
	10kHz	-150	-150
	100kHz	-155	-155
	Phase perturbation	<5mdeg. in 0.2sec	
1PPS Output			
	Accuracy	±50ns	
Connector		DB-15	
	Level	0-10Vpk	
	Impedance	50 Ω	
HAVEQUICK Output		DB-15	
	Level	0-5Vpk	

Power

Input	90 VAC to 260 VAC 50/60 Hz
Power Consumption	<15 Watts

Control and Status

Type	10/100BaseT Ethernet
No of Ports	2 independent
Protocol	IPV4, IPV6-ready
	SNMP v1
	NTP v3
Graphical Interface	BWC Application

GPS Receiver

Receiver Type	GB-GRAM
Frequency	L1, L2 Dual Frequency
Satellite Code	C/A, P(Y)
Receiver Type	Parallel 12 Channel
Pos. Accuracy	16m SEP
Warm start	<120 seconds with Almanac, CV loaded

Reliability

MTBF	<70,000 hours

Physical

Size	1U 19” x 1.75” x 14” depth

Environmental

Humidity:	95% non-condensing.
Temperature:	0 to +50ºC operating
	-40 to +85ºC non-operating.
Temp. Shock:	-20 to +70 ºC 3 ºC/min
Vibration*:	1.5g peak. 50-2000Hz
Shock*:	MIL-STD-188-164A
	para. 5.1.2.16.c

* Mobile Application Version only

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