

Timing Reference Unit (TRU-SAASM)



Features:

- Ultra-stable GPS Disciplined Timing Reference
- 5 buffered IRIG outputs
- 5 buffered 1PPS outputs
- 10MHz frequency reference out
- 1U chassis
- Timing accuracy to 1×10^{-12}
- Dual Port NTP Server

The TRU is a state of the art, high-precision time/frequency standard capable of outputting five isolated IRIG Time of Day and 1PPS reference outputs. The TRU uses an internal GPS receiver to control a precision oscillator with accuracy up to 1×10^{-12} and excellent short term stability.

The TRU incorporates a high-sensitivity 12 channel SAASM GPS receiver, incorporating the latest advances in GPS anti-spoofing technology.

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 TRU.

The TRU is available in 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 C/A code GPS receiver is available for non-military applications.



TRU Technical 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:

IRIG outputs	
No of Outputs	5
Formats	IRIG B125 or B005
Connector	SMA
10MHz output	
No of Outputs	1
Connector	SMA
Accuracy	1X10 ⁻¹² (24hr avg.)
Amplitude	+13dBm
Harmonics	<35dBc
Non Harmonic	<85dBc
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	
No of Outputs	5
Accuracy	±50ns
Connector	SMA
Level	0-10V _{pk}
Impedance	50 Ω
HAVEQUICK Output	DB-15
Level	0-5V _{pk}

Power:	90 VAC to 260 VAC
	<15 Watts.
Connector	IEC320 (std)
	MS3102A (optional shown)

Dual Redundant Power (opt)

Control and Status:

Type	10/100BaseT Ethernet
No of Ports	2 independent
Protocol	IPV4, IPV6
	SNMPv1, V3 (opt)
	NTPV3, V4 (opt)
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
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Physical

Size	1U 19"x1.72x14" depth
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Environmental

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

* Mobile Application Version only