The PTS-SAASM is a state of the art frequency instrument offering a wide range of features and time and frequency outputs accurate to < 40 ns $\text{rms}$ to UTC (USNO) and $1 \times 10^{-12}$ respectively.

This new generation of network appliance is economical and reliable and offers complete remote control and monitoring via a web-browser based interface.

The PTS-SAASM can be used in either a single or dual redundant configuration and in conjunction with one of Brandywine Communications range of Distribution Amplifiers, such as the FTSU-100.

Applications for the popular PTS-SAASM include central time and frequency systems, satellite earth stations, military communication systems, and high availability network time servers.

An extremely accurate internal rubidium oscillator is used as the internal time base that drives all the time and frequency outputs. This rubidium oscillator is disciplined using an advanced control algorithm, ensuring superior holdover performance. The time constants of this algorithm are user-adjustable to suit specific applications.

A low cost rack adapter is available (not shown).

The PTS-SAASM utilizes a 12 channel P(Y) code SAASM GPS receiver. It may also be disciplined to an external 1PPS/HaveQuick time code source.

A 100baseT Ethernet port is provided which is used both for monitoring and control of the instrument and for Network Time Protocol. This interface supports both fixed and dynamic IP address assignment via DHCP.

In addition to configuring the PTS-SAASM, the built-in web browser provides information on GPS, internal monitoring of time errors, and internal parameters of the atomic oscillator. The user may set thresholds of any monitored parameter to trigger an alarm.

A precision 1PPS time mark is available for synchronizing or calibrating other equipment and the IRIG B serial time code allows synchronization to be distributed to other computers, displays, and related equipment requiring precise time.

An ASCII serial port outputs any user-selected time of day message at a 1/sec rate for synchronizing other equipment. The same output port may also be configured to output 50 bit/sec BCD time code in accordance with ICD-GPS-060.

A high stability 10MHz sine wave output provides an ultra-stable, low phase noise frequency reference derived from an SC cut crystal that is locked to the rubidium reference.
PTS-SAASM Specifications

1 PPS Output
- Connector: SMA
- Type: 5V dc, 10 microseconds wide
- On Time: Rising edge

Serial Interface
- Port Function: Setup and Control
- Connector: DB9
- Type: RS232
- Baud Rate: 300-115,200 (Default 115k N, 8, 1)

Sine Wave Output
- Number of outputs: 1
- Connector: SMA
- Frequency: 10 MHz
- Level: 2.5 Vpp into 50 Ohms
- Harmonic Distortion: <25 dBc
- Phase Noise (SSB): <130 dBc/Hz (10Hz) typical
- >140 dBc/Hz (100Hz) typical
- >150 dBc/Hz (1000 Hz) typical

Time Code Output 1
- Number of Outputs: 1
- Code Format (link sel): IRIG B 1kHz or DC level
- Level: 2.2 Vpp 600 Ohms HCMOS
- Connector: SMA

Time Code Output 2
- Number of outputs: 1
- Code format: 50 bit BCD ICD-GPS-060 or ASCII
- Level (link selectable): RS-232 (4,800, N, 8, 1) or BCD
- Connector: DB-9
- ASCII format: 1/sec user-programmable string

Fault Alarm Status
- Output Type: HCMOS level
- Output polarity: User programmable
- Connector: DB-9

Environmental
- Temperature: 0 to + 50°C
- Antenna: -40 to +85°C
- Humidity: To 95% non-condensing
- Power: 110/230 Vac
- Optional Power: 24 Vdc, -48 Vdc, 125 Vdc
- Dimensions: 3.25' x 7.25' x 15.8'
- With rack mount: 19 inch Rack Mount, 3.48' (2U)
- Weight: 5.5 pounds, typical

P(Y) Code GPS Receiver Specification
- Receiver Type: GRAM SA-ASM receiver
- Satellite Signal: GPS L1, L2 Dual Frequency
- Satellite Code: C/A, P(Y)
- Receiver Type: Parallel 12 Channel 12 all-in-view receiver
- Position Accuracy: 16m SEP in SA/AS environment with respect to WGS-84 with CV loaded
- Warm start: <120 seconds with Almanac, CV loaded
- Anti-spoofing: Accuracy maintained in spoofing environment up to 10db> satellite signals
- Jamming: Operates with 34dB J/S at both L1 and L2
- Cold Start Requirement: Automatic. No input of time or position required.
- CV Fill compatibility: DS102 (KYK-13)

Timing Accuracy
- Tracking satellites: ±100 ns. Absolute UTC
- Std Deviation: 20 ns
- Holdover Mode: One microsecond/day

Frequency Stability
- Tracking satellites: See table below
- Holdover Mode: <5x10^-11/month after 30 days aging
- Aging: ± 1x10^-10/0 to 50°C

Ethernet Interface
- Type: 100BaseT
- Connector: RJ45
- Protocols Supported: NTP (RFC1305), SNTP, Daytime
- Web Browser: 5 pages
- Status, GPS, Configuration, Alarms, Charts
- IP selection: Static or Dynamic via DHCP
- Protocols: Daytime, Telnet, FTP, DHCP, Time

Other Brandywine Communications Products
- FTSU-100 Frequency Synthesizer Distribution Amplifier
- Time/message displays
- Video Time/message inserters
- Timing plug in's for CPCI, PCI, PC104, VME, PMC and ISA platforms
- Time and Frequency distribution
- Low Cost Network Time Servers