ORCA TECHNOLOGIES
TIME AND FREQUENCY PRODUCTS

Trestles GPS/GNSS Synchronized Time and Frequency System

- Network Time Server / Time Code Generator / Frequency Generator -



Standard Features:

- Synchronizes to GNSS, Time Codes, 1PPS, and 1/5/10 MHz/MPPS
- 3 Gb Network Ports serving NTP & PTPv2
- 1PPS Output
- External Frequency Input—1, 5, 10 MHz
- 1PPS, Time Interval / Event Timing Input
- Alarm Output
- LED Status Indicators
- OLED Display
- Web page for setup and control

Optional Features:

- Independent Multi-Code Outputs — IRIG A, B, E, G and H
- Universal Outputs— PPO, 10MHz, Pulse Rates/PPS, N.1, Time Codes
- OCXO and Rubidium Oscillator Upgrades
- 5/10 MHz Low Phase Noise Outputs
- Fiber Optic Input and Output
- NMEA Outputs
- MILSTAR Timing Input and Output
- SAASM and M-Code versions are available

General Product Description

The *Trestles* Time and Frequency System is a rackmount GPS/GNSS Receiver designed for time and frequency applications including NTP and PTP network time server requirements. With 4 option module slots, and up to 4 user-configured outputs per module, Trestles is adaptable to many different applications. Option modules include our Universal Card, Quad Code Output card, Low Phase Noise frequency card and fiber option input and output cards.

Time and rate outputs are precisely referenced to GPS/GNSS or time code input. Two time codes are available simultaneously in both AM and DCLS formats on the *Universal Card*. Additional outputs include pulse rates and 10 MHz sinewave.

SMART PORT

Through the use of our Smart Port Technology, *Trestles* introduces a revolutionary way to distribute the above time codes, frequencies and pulse rates. A wide variety of signals are available in every ORCA Tech *Trestles* time and frequency system. Every user has front panel or web browser access to each of these ready-to-use signals that can be selected for distribution via optional rear panel modules providing up to 16 independent outputs. No longer do you have to dedicate a specific signal to a specific output—you can change them at any time. Smart Port Technology puts control into the hands of the customer and gives the ultimate amount of flexibility in supporting today's ever-changing time and frequency requirements.

For additional information contact your ORCA Representative at 949-682-3289 or via email at sales@orcatechnologies.com www.orcatechnologies.com

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Trestles Time and Frequency System



Rear Panel with DC option

General Product Description continued

NETWORK SECURITY

Trestles utilizes the latest and greatest network and security practices available today. With security being of utmost importance to many of our customers, including government organizations and the military, *Trestles* was specifically designed to be the most secure Network Time Server available. Utilizing the latest OS and software available to us through our LINUX platform, ORCA is able to incorporate protocols specific to network security Information Assurance (IA) standards. ORCA understands the importance of making the latest protocols available to the end user while also taking into consideration JTIC and STIGS standards. Security will always be a standard feature on our product. Any new security features will always be incorporated into our latest software update, which will always be free of charge to our customers.

Management:
- IPv4/IPv6
- Authentication: LDAP, TACACS+
- Syslog: Logging
- SNMP: Supports SNMP v1, v2c, and v3

Communications:
- HTTP & HTTPS

Security Features:
- SSL: Secure Socket Layer
- TLS: Transport Layer Security
- Password Protected
- Notifications via SNMP Traps & e-mails

SUGGESTED PAIRING

This unit can be paired with our System Matrix Switch Distribution Amplifier SMS-101 or our SD-218 switch and distribution amplifier to provide ultimate flexibility in the number and variety of each output. Switching technology is included for redundant operation.

WARRANTY

Trestles comes with a 2-year warranty. Technical support and software updates and upgrades are always free.

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Trestles Time and Frequency System

Product Specifications

General Specifications

- Timing Accuracy:
  < 15 nanoseconds to UTC (GNSS/GPS)
  < 15 nanoseconds to DCLS Time Code
  < 500 nanoseconds to AM Time Code reference
  < 15 nanoseconds to External Frequency or 1PPS reference
- Internal Oscillator: 10MHz Temperature Compensated (TCXO)
  100PPB, DAC steering

Standard Inputs

- GPS/GNSS Input: 1.575 GHz L1 C/A Code
  GNSS Receiver: 32 parallel channels
  Internal Oscillator disciplined to GNSS
  Antenna: ordered separately
  Connector: BNC
- AM and DCLS Serial Time Code Input
  Format: IRIG A, B, G
  AM Amplitude: 1-6 Vpp
  DCLS: TTL levels
  Connector: BNC
- 1PPS Reference Input / Time Interval / Event Timing
  Amplitude: TTL levels
  Connector: BNC
- USB Port
  Factory Download Port for firmware updates
  Connector: USB-B
- Frequency Reference Input—1, 5 or 10MHz
  Amplitude: 1-6 Vpp
  Connector: BNC

Standard Output

- 1PPS Output
  Amplitude: 5V logic, TTL into 50 ohms
  Positive edge on time, 50% duty cycle
  Connector: BNC

Network Ports (3 independent)

- NTP Unicast, with Standard Security Protocols
  Hardware based
  Connector: RJ-45
- PTPv2 Default Profile
  Ethernet II, IPv4, UDP Multicast,
  Two-step PTPv2 packets
  Connector: RJ-45

Alarm Output

- Alarm Output, Open Collector
  Connector: BNC

Power

- 85-264 VAC, 120-370 VDC (<24 W), 47-63 Hz
- Optional Primary DC Power input, 18-75 VDC (<25 W)
- Optional Second Power input. AC or DC

Option Bays (4)

Universal Card Output Module
(4 selectable outputs on BNC)

- AM and DCLS Serial Time Code Out
  Format: IRIG A, B, E, G; NASA36, XR3, 2137
  AM Amplitude: 1Vrms into 50 ohms
  DCLS: 5V logic
- Dual N.1 Synthesizer Outputs
- Programmable Pulse Outputs
- 10 MHz Sine Output
  Amplitude: 1 Vrms
- 1PPS Output
  Logic Level: 5V logic, TTL into 50 ohms
  Timing: Positive edge on time
  Duty Cycle: 50%
  Connector: BNC

Code Output Module

- Four independently settable outputs
  Format: IRIG A, B, E, G, H
  AM Amplitude: 1Vrms AM into 50 ohms
  DCLS: 5V logic, ratio set to 3:1
  Connector: BNC

T1 Module

- T1 Output
  Format: Framed All 1s AMI ESF

Have Quick Module, MILSTAR input/output

Low Phase Noise Module

Offset (Hz)	Specification (dBc/Hz)	Typical (dBc/Hz)
1	-80	-85
10	-105	-112
100	-130	-135
1k	-140	-147
10k	-150	-155

OCXO and Rubidium Oscillator Upgrades

Environmental/Mechanical

- Physical Dimensions
  Size: 1U, 19 inch rack mount
  1.75”H x 17.0”W x 12.0”D
  Weight: <10 pounds
  OLED Display: 2 Graphic 256 X 64
  Operating Temperature: -30 to 50 degrees C
  - standard model. Options may change temp limits.
  Storage Temperature: -40 to +80 degrees C
  Humidity: To 95% non-condensing

Alternate Versions

SAASM and M-Code. Please contact ORCA for information.

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(Specifications Subject to Change—211203)