ORCA TECHNOLOGIES
TIME AND FREQUENCY PRODUCTS

TimeTraveler

Portable GNSS Synchronized Time and Frequency System

C/A (L1) and M-Code (L1/L2)

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





General Product Description

The ORCA Technologies TimeTraveler is a rugged C/A or M-Code GPS Synchronized portable master clock that can easily be transported to locations where no synchronization or UTC traceable time and frequency sources are available. The TimeTraveler utilizes a high performance rubidium frequency standard as its internal clock. Prior to deployment the TimeTraveler requires several days of synchronization from GPS to properly discipline the internal rubidium frequency standard in order to meet the high performance requirements of better than +/- 15 milliseconds over a period of one (1) year with no external synchronization.

The TimeTraveler can be configured with one or two high performance Lithium Iron Phosphate batteries. Because ORCA utilizes a “Low Power Mode” of operation while running on batteries this allows our unit to maintain precision time and operation of the rubidium frequency standard in excess of 20 hours. For those situations where a user requires extended battery operation beyond 20 hours, ORCA Technologies has designed an external Battery Pack that can be used in conjunction with the TimeTraveler. These battery packs can be transported separately, charged independently, swapped as needed, and combined to provide a wide range of run times

The FAA has restricted transportation and use of some batteries on commercial aircraft to a maximum 100 Watt Hour specification. The TimeTraveler falls within these guidelines through the use of a single battery providing 10 hours of run time under “Low Power Mode”. On long flights or operations where extended battery run time is required, ORCA Tech has designed a unique battery swap system where fresh batteries can be installed as needed without affecting the operation of the TimeTraveler. As an added bonus our TimeTraveler batteries can be charged during flight or travel from any available aircraft seat chargers, airport charging stations or any other AC power source.

The TimeTraveler comes standard with a variety of the most popular time and frequency outputs. It doesn't matter where or when you go, your ORCA Tech precision time and frequency system will be ready with the outputs you need. For a list of these signals please review the product specifications. Custom outputs are available too!

Setup is easy. Prior to leaving for your destination select the "Low Power Mode". Once AC power has been removed your Time Traveler will operate off the internal batteries. Once AC power has been reestablished or "Low Power Mode" has been disabled, full function of the TimeTraveler including the availability of all the output signals will resume.

ORCA Tech has taken into consideration several very important features.

- Modularity:
  - The TFEP or Time and Frequency Electronics Package is self-contained. If for any reason the TFEP needs to be handled separately or removed from the TimeTraveler the enclosure is secured via 4 twist screws.
  - The batteries are also self-contained in their own enclosure and are "hot swappable". Although the enclosure cannot be removed from the TimeTraveler an easy access lid to the battery compartment has been designed. Removal of the lid allows for easy battery replacement.
- Shock and Vibration:
  - The TimeTraveler is housed in a Pelican Model 1520 case and has been designed to meet the MILSPEC shock and vibration performance specifications of MS-910, MS-901D and MS-461F. The internal timing circuitry has shock mounts to further protect critical components.

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TimeTraveler GPS Synchronized Time and Frequency System

Product Specifications

General Specifications

- Timing Accuracy:
  < 50 Nanoseconds to UTC (GPS) while synchronized to GPS
- Internal Oscillator: Rubidium Frequency Standard
  +/- 15 ms/year after oscillator discipline

Standard Input

- GPS Input: 1.575 GHz L1 C/A Code
  GPS Receiver: 12 parallel channels
  Internal Oscillator disciplined to GPS
  Connector: BNC

Optional Inputs

- AM and DCLS Serial Time Code Input
  Format: IRIG A, B, G; NASA36
  AM Amplitude: 1-6 Vpp
  DCLS: TTL
  Connector: BNC
- 1PPS Reference Input
  Amplitude: TTL levels
  Connector: BNC
- Frequency Reference Input
  (10MHz) Amplitude:
  1-6 Vpp Connector:
  BNC

Communications

- NTP Unicast
  Hardware based, on RJ-45 Connector
  With standard security protocols
- PTPv2 Default Profile, IPv4 and IPv6, UDP Multicast,
  Two-step PTPv2 packets, on RJ-45
- USB Port
  Command Line Interface
  Connector: USB-B

Selectable Outputs (Optional)

(Universal Card: Up to 8 selectable outputs on BNC)

- AM and DCLS Serial Time Code Out
  Format: IRIG A, B, G, H
  AM Amplitude: 1Vrms into 50 ohms
  DCLS: 5V logic
- Dual 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%

Additional Outputs

(see attached options data sheet for more details)

- HaveQuick, includes STANAG
- PTTI (24 or 40 bit)
- 1PPS, 10V levels
- Time Strobe 1PPS, 5V
- Serial Time of Day, 5V
- Clock, 5V, 19.2kHz

Environmental/Mechanical

- Physical Dimensions
  Size: Pelican Model 1520 (19.78" L x 15.77" W x 7.41" D)
  Weight: <24 pounds
- OLED Display: Graphic 256 X 64
- Operating Temperature: -30 to 50 degrees C
- Storage Temperature: -40 to +70 degrees C
- Humidity: To 95% non-condensing
- Altitude: 45,000 feet in pressurized compartment
- Shock/Vibration: Designed to meet Mil Specs 461F, 901D, 910
- All cords stored inside of Top Covers for all cases
- Black Case (Other Colors based on Case Color Availability). All Panels will be Black Mil Spec. Powder Coat

Power

- AC input Voltage is Wide Range (90 to 264 VAC)
- Input current not to exceed 5 Amps for each case
- Input AC Frequency 50/60 Hz

Battery

- Battery Voltage 12 VDC (Battery Quick Change Configuration without Clock Interruption)
- Battery Technology is Lithium Iron Phosphate
- Battery Run Time: Single 10 hours, Dual 20 Hours. One Battery Operation for FAA Commercial Passenger Flight Requirements.
- Recharge Time: 8 hours

Available Options

- M-Code Receiver Module
- 7 Day Battery Pack: Not intended for Commercial Passenger FAA flights (freight flights and military aircraft only).
- Waterproof Outside Plug Access to allow closed case operation

For additional information contact your ORCA Representative at 949-682-3289 or via email at
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