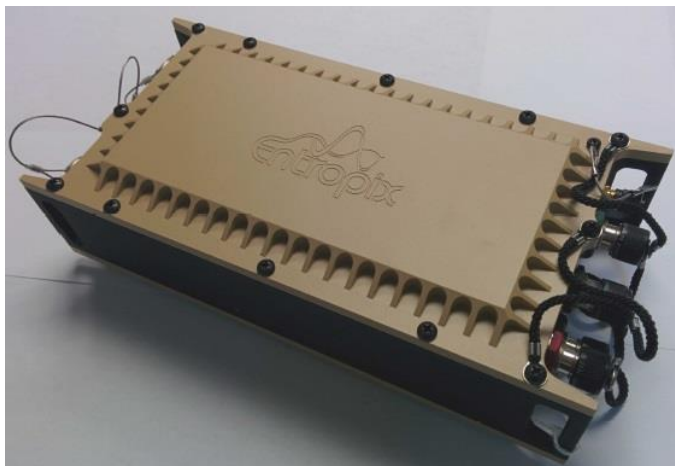


CORSAIR-HF with Orion Antenna System HF Direction-Finding and Geolocation System

Entropix, LLC [CAGE 6LTT1]
833 Phillips Road
Victor, NY 14564
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Corsair Transceiver

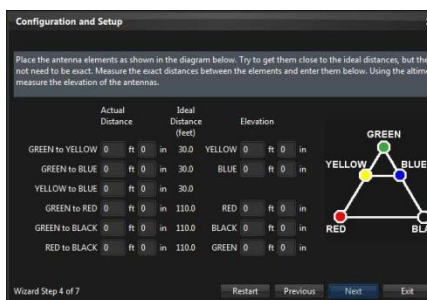
The Corsair-HF product family is a complete solution for HF Direction-Finding and Geolocation, providing both a strategic and tactical capability at very low size, weight and power consumption. The Corsair supports a family of antenna systems for fixed-site, vehicular, mobile, maritime, and manpack deployments. Corsair reduces logistics and cost by using common components. All configurations use the same Corsair Transceiver (and Calibration Transmitter). The Corsair system also uses a common user interface for all configurations based on RaptorX.

The Corsair Orion Antenna System utilizes active dual-mode antennas array to support Direction Finding of groundwave, skywave, and Near Vertical Incidence Skywave (NVIS) targets. Corsair can automatically determine which elements and mode to use for any

target. Corsair may be used in single node or in networked configurations. All relevant traditional Direction-Finding and Geolocation methods are supported including Angle-of-Arrival (AOA), Time-Difference-of-Arrival (TDOA), and Frequency-Difference-of-Arrival (FDOA). Corsair also supports the newer Geolocation by Spectral Analysis of Transforms (GSAT) algorithm (patents pending). Sophisticated analysis tools are provided for the operator through the RaptorX interface, including tools for handling for multiple talkers and interference. All HF analog modulations are supported including automatic tuning and demodulation. HF digital modulations are supported as an option.

The Corsair Transceiver frequency range is 1.6 to 30 MHz, with full instantaneous bandwidth. Four channels are available. Three are receive only channels, and a fourth channel that may be configured as receive or transmit. (Transmit is for future electronic attack capability.)

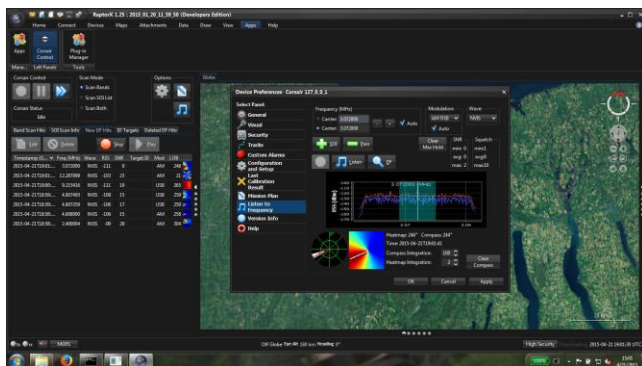
The Corsair Transceiver contains embedded GPS for timing, but also supports an optional internal Chip Scale Atomic Clock (CSAC) for improved clock accuracy.



The Corsair Orion Antenna System can use an antenna array with either three or five antenna elements. In a minimal configuration of three antenna

elements, the system weighs less than 67 lbs. with battery. The five element configuration can run up to 15 hours on a single BB-2590. No calibration is needed nor used for skywave targets, including close NVIS.

The Corsair Orion Antenna System may be operated as a single node and provides DF. Alternatively, Corsair is compatible with BORESIGHT and JICD 4.2 systems to provide network support for Geolocation.



RaptorX User Interface

The effects of different antenna array configurations can be difficult to understand. Corsair provides a Wizard that assists the operator to construct the best possible antenna array and understand the performance of the deployed antenna array.

Corsair provides analysis tools to assist the operator. Information is both presented in real time and recorded for non-real time analysis. Corsair provides a programmable wideband search capability. Corsair also supports programmable frequency sets for signals-of-interest. Different filtering criteria may also be specified. All HF analog modulations are supported, and fully automatic tuning and demodulation is provided, including for LSB and USB. HF digital modulations are supported as an option. For multiple talkers and

interference, Corsair enables the target signal (only) to be separated for fusion of multiple instances.

Corsair with Orion Antenna System Specifications:

- Less than 67 lbs., for 3 element antenna array, on battery power.
- Single Node AOA Error: typically less than 6° (including NVIS)

Transceiver Specifications:

- *Frequency Range:* 1.6 to 30 MHz Wideband
- *Size:* 4.5"W x 2.5"H x 9.25"D
- *Weight:* 4.5 lbs.
- *Battery Life:* 15 hours on a single BB-2590
- *Power Input Range:* 12 VDC (9.5 to 18.0 VDC)
- *Temperature range:* -20° to +70°
- 4 channels, 3 receive only and 1 configurable for transmit or receive. (Transmit for electronic attack)
- Designed to meet Mil-Std-810G
- IP data interface, 10/100 Mbps Ethernet
- Single node or networked (via IP interface)
- Supports all traditional methods: AOA, TDOA, and FDOA. Supports newer Geolocation by Spectral Analysis of Transforms (GSAT) algorithm.

Features:

- Integrated with Raptor X for map displays.
- Programmable wideband search and frequency sets for signals-of-interest including filters.
- Real time presentation and recording for non-real time analysis.
- Fusion of multiple targets and instances, including separation for multiple talkers and interference.
- Fully automatic tuning and modulation type identification. (including LSB and USB).
- Orion Antenna System has dual-mode antennas with automatic determination of propagation mode.
- Compatible with BORESIGHT and JICD 4.2 network Geolocation systems.
- Optional HF digital modulations.
- Optional Chip Scale Atomic Clock (CSAC) for increased clock accuracy.