



# TECHNICAL DATA SHEET

## RAPTOR FMC-BL Shipborne Radar Wind Profilers



**System:** RAPTOR FMC-BL Radar Wind Profiler

**Applications:** Boundary layer Radar Wind Profiler. Uses solid-state phased array antenna and IMU inputs from ship for full motion compensation for installation on a ship.

**Transmit Frequency:** 915 and 1290 MHz; additional frequencies available

**Antenna:** Phased array, microstrip

**Beam Steering:** Real-time Full Motion Compensation, multiple-azimuth, multiple-zenith, full beam steering 40° cone above radar

**Transmitter:** Solid state, 800 W

**Receiver:** Fully digital IF generation and reception

**Health Monitor:** Separate sub-system for monitoring health and status

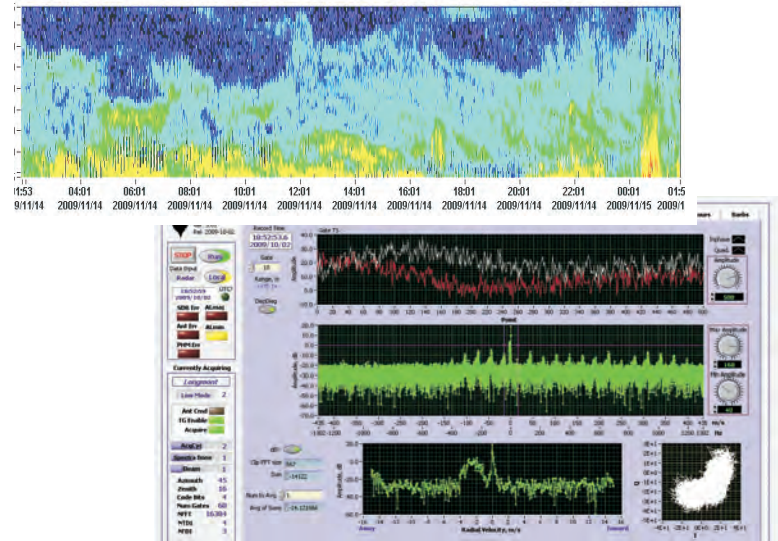
**Height Resolution:** User selectable from 75 to 1000 meters

**Range:** <110m to 4km

**AC Power:** 120 or 240 VAC, 50 or 60 Hz single phase standard (country of delivery power systems available)

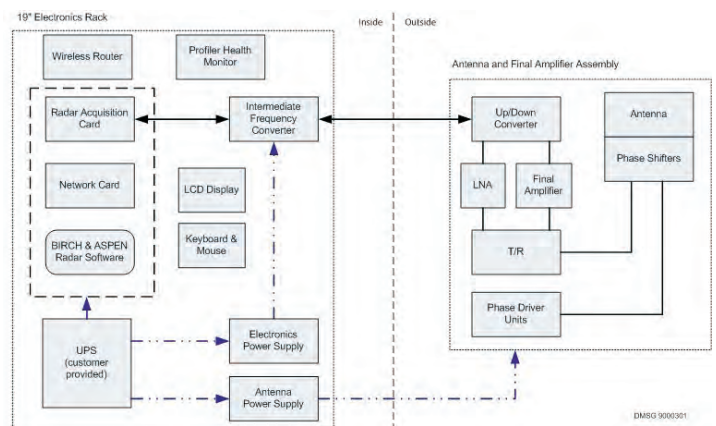
**Network:** Standard ethernet TCP/IP supports remote system display and control via fiber optic, wireless, PSTN or cellular networks

**PC OS:** Windows 7 or Red Hat Linux



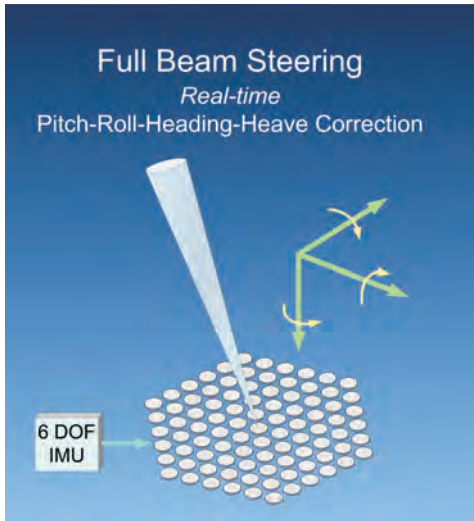
*Above Top: Display of range corrected radar returned power (upper) and Signal to Noise Ratio (lower). Image shows turbulent layers and clouds. Above Bottom: Diagnostic time series and spectra display allows investigation of hardware problems or radio frequency interference.*

*Below: The RAPTOR FMC-BL is equipped with advanced phase shifter electronics and micro-patch antenna that allow full ship motion compensation. All components are user replaceable in the field to provide increased uptime and improved data quality.*



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The RAPTOR FMC-BL includes real-time pitch-roll-heading-heave correction to compensate for movement of the vessel.

The DeTect RAPTOR line of Radar Wind Profilers provides unattended, real-time operational support for weather forecasting and aviation, aerospace, military, research and other applications demanding high quality

meteorological data products. RAPTOR systems utilize the latest in digital radar technologies to insure high reliability and low operating cost. With a full digital receiver system and advanced signal processing, the result is superior data products at high temporal resolution suitable for true operational applications. With the Radio Acoustic Sounding System (RASS) option, the system additionally provides vertical profiles of virtual temperature. RAPTOR systems are modular, scalable and engineered and constructed to high standards incorporating commercial off-the-shelf (COTS) components to reduce costs of ownership and enable ongoing technology insertion and upgrade opportunities.

The RAPTOR FMC-BL is nominally a 915 or 1290 MHz radar for boundary layer wind profiling while at sea. The system utilizes an innovative fixed-mount phased array antenna with solid-state phase shifters, and a motion compensation package for: 1) ingesting external inertial measurement information 2) pointing the antenna to compensate and 3) to process wind data for realtime output. Radar software included:

- BIRCH radar control software with consensus processing wind calculation software, and low-level data (time series and spectra), moments and winds products displays and data archive.

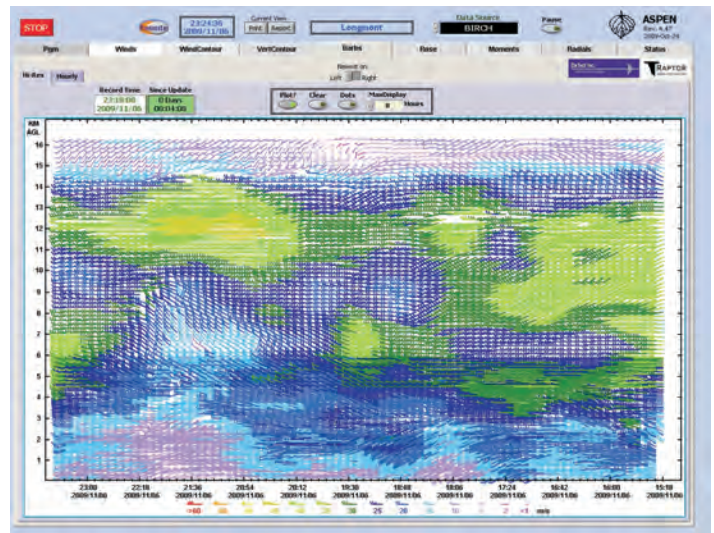
- ASPEN advanced signal detection processing and data display software with time/height continuity analysis, multi-peak discrimination, QC algorithms displays and data archive.

The complete RAPTOR system includes:

- Radio Frequency Translator (RFT) Subsystem (acts as analog front-end for digital receiver)
- Transmit/Receive Switch
- High power Amplifiers (2000 W each)
- Profiler Health Monitor (PHM)
- Electronics Power Supply (EPS)

All RAPTOR radar systems come with a full parts and labor warranty that includes:

- On-site service
- 24-7 technical support
- Data QA/QC checking
- RAPTOR software upgrades



Top: Highly customizable, operator-friendly display of wind speed and direction. Bottom: Illustration of RAPTOR's full beam steering capabilities in conjunction with ship motion compensation.

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