

# OceanTRx 7MIL

2.2m (7.2') Ruggedized Maritime VSAT System





The OceanTRx 7MIL is the latest addition to a long line of field-proven, maritime SatCom systems deployed in leading navies. The OceanTRx 7MIL builds on over 30 years of vast experience with demanding customers while introducing innovative concepts of environmental immunity and resilient, simultaneous RF-band operations for mission-critical applications. It provides reliable, high capacity, long-range multiband communication to navy vessels under extreme conditions.

## Main Characteristics

- Designed as mission-critical equipment from the start, achieving the highest levels of availability and resilience, even in the harshest environmental conditions.
- Built for the severe platform dynamics typical of smaller vessels, while maintaining no compromise of pointing accuracy required for High Throughput Satellite networks, even at Sea State 6.
- A modular system, which can be tailored to specific customer needs using single, dual, and multiband RF variants including C, X, Ku, Commercial and Mil Ka band frequency coverage. This technology simplifies upgrades and ensures that performance can keep pace with the rapidly changing demands placed on military networks.
- Compatible with a wide range of both COTS and military modems, including spread spectrum anti-jamming modems.
- Designed to operate in the crowded and hostile EMC environment of a modern warship, the OceanTRx MIL family of products has minimal impact on other communication, radars, sensor, and weapon systems.
- Field-proven operation with MEO and LEO satellites, utilizing “make-before-break” soft handovers.

## Innovation in Action

The OceanTRx 7MIL family incorporates Orbit’s patented, simultaneous RF-band antenna technology, delivering outstanding RF performance and pointing accuracy over time across all bands and minimizing rotating mechanical parts and cables. Single band and “zero touch” switchable or simultaneous multiband terminals provide users with unprecedented flexibility, enabling hybrid Geo Stationary Orbit (GSO) and Non GSO (NGSO) interoperability via high data-rate spot beams, as well as ubiquitous global coverage with single antennas or multi-antenna arrays.

## Reliability and Durability

Designed and tested to withstand the most demanding sea conditions, the OceanTRx 7MIL features a rugged electrical and mechanical design that complies with the most stringent environmental standards for shocks, vibrations, and electro-magnetic interference, including MIL-STD-810G and MIL-STD-461G enhanced configurations for defense applications.

## High Versatility and Multiple Configurations

The OceanTRx 7MIL’s modular approach enables a wide range of configurations, RF packages, frequency bands and modem platforms. This flexibility greatly facilitates reconfiguration, future upgrades and field maintenance without the need for additional modifications or rebalancing. Other options include air conditioning, heaters, and a wide choice of radome colors.



## Seamless Connections in Multiple Bands

A combination of OceanTRx 7MIL Single or Dual systems, and Multiband, provides seamless connectivity between satellites in MEO/LEO constellations or GEO. Continuous service is assured by automatically transferring active Ka-band or Ku-band links between setting and rising LEO/MEO satellites, and by automatically switching to backup C-band, X-band, Ka-band, or Ku-band GEO links in the event of deep rain fade or when exiting a MEO/LEO spot coverage area. In addition, a fleet operating OceanTRx 7MIL can extend its operations to polar regions while maintaining constant connectivity through non-GEO constellations such as HEO, MEO and LEO.

## Monitoring and Control

OceanTRx terminals employ an intuitive, user-friendly web interface via the Antenna Control Unit for total management of system operations. The controller allocates antenna resources while managing constellation tracking of the LEO, MEO and GEO satellites. Under normal conditions, it receives and processes satellite configuration and position updates from the satellite operator's Network Operations Center for completely hands-off operation.

## High Availability

OceanTRx 7MIL systems enable unprecedented levels of operational flexibility and resiliency. A fully active second antenna is perfect for MEO/LEO satellite zero handoff connectivity or to enable 360 degree coverage due to superstructure blockage, while a third antenna serves as a hot-standby – further optimizing system availability. Blockage is overcome by system switchover based on antenna Azimuth and Elevation blockage zones predefined during system installation.

## Full Regulatory Compliance

The OceanTRx 7MIL system is designed to comply and tested in accordance with industry regulations and standards including ITU, FCC, ETSI, Eutelsat, Intelsat, ANATEL, STANAG and Mil-STD-188-164C.

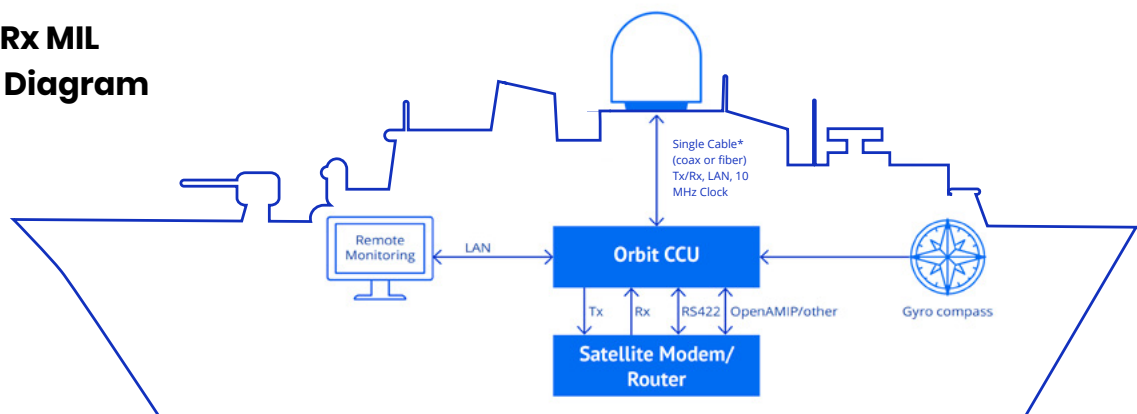
## World-Class Customer Support

Through our International Service Centers, Orbit's trained support engineers are available 24/7 to handle the urgent needs of customers worldwide. A global inventory replenishment system ensures efficient spare parts distribution across regions. With the capability to remotely access systems for troubleshooting and diagnostics, Orbit's real-time service support increases availability for enhanced customer satisfaction and cost benefits.

## Key Features

- Simultaneous operation or automatic switching of Dual and Multiple bands
- Optional, fast manual band swapping with multiple BUCs per system
- Designed and tested for the strictest MIL-STD-810G Environmental conditions
- Designed and tested for the strictest MIL-STD-461G EMI/EMC conditions
- Superior stabilization and tracking under severe sea conditions
- Single, dual and multiple-antenna architecture, including combination with OceanTRx 7 per vessel
- Electronic Field Replaceable Units (FRUs) and software common to OceanTRx 4 and 7 systems
- Compact – two fully-assembled and tested units fit in a 20-foot container
- Advanced remote-monitoring, diagnostics, and troubleshooting capabilities
- Patented algorithm enables seamless MEO/LEO satellite handover

## OceanTRx MIL System Diagram



\*In case of simultaneous operation over more than one band, additional ADE-BDE cable will be required per band

# OceanTRx 7 MIL

## Features and Specifications

### Features

Antenna Type	Dual offset Gregorian
Antenna Size	2.2 m (87")
Radome Size	D: 2.70 m (106") H: 2.60 m (102")
Dynamic Accuracy under Typical Sea Motion	0.25 dB RMS
Dynamics (motion on a 40m ship as per DOD-STD-1399-301A)	Tracking: Up to Sea-State 6 Survival: Up to Sea-State 8
Range of Mechanical Pedestal Axes	Azimuth: Continuous Elevation: -32° to +113° Cross Elevation: -25° to +25°
Ship Gyro Interface	NMEA 0183
Modem Interface	L-band
System Weight (including Radome, RF dependent)	< 950 kg
Enhanced Environmental Conditions Compliance	Temperature: -25°C +55°C as per MIL-STD-810G Shock: MIL-STD-810G Humidity: MIL-STD-810G Rain: MIL-STD-810G Salt Fog: MIL-STD-810G Vibration: MIL-STD-810G Wind: Up to 120 knots EMI/EMC: MIL-STD-461G

### Multi Band Specifications

Frequency Band	<b>Ku/Ka</b>	
Frequency Transmit	Ku: 13.75 to 14.5 GHz Ka: 27.5 to 30.0 GHz	
Frequency Receive	Ku: 10.70 to 12.75 GHz Ka: 17.70 to 20.2 GHz	
Polarization Control	RHCP/LHCP Co-Cross (Ka) and HOR/VER Cross Pol (Ku)	
XPD (Within 1dB Contour)	<b>Ku</b> Tx ≥ 25.0 dB Rx ≥ 25.0 dB	<b>Ka</b> Tx ≥ 27.32 dB Rx ≥ 27.32 dB
System G/T (Typical at mid-range, 40° elevation, clear sky including all losses)	Ku: 23.6 dB/°K Ka: 26.0 dB/°K	
System EIRP (Typical at mid-range including all losses) Ku, Ka Psat	Ku: 65.2 dBW (with 100W BUC) Ka: 67.5 dBW (with 40W BUC)	
Power Requirements Typical ADE & BDE 100-130 VAC or 200-250 VAC 50/60 Hz	ADE system < 950 W Without the BUC	