



OceanTRx™ 7 Multiband

Orbit 2.2 m (7.2') Multiband Stabilized Maritime VSAT System





Leader in Maritime Satcom

Orbit's OceanTRx 7 2.2 m (7.2') VSAT terminals now serve the majority of the world's largest cruise ships, meeting the most demanding mission- and business-critical, data-hungry service requirements with unmatched availability. Based on its performance, reliability and success in the commercial sector, OceanTRx 7 has been tailored for service with a growing number of leading NATO and allied navies.

Electrically switchable C/Ka and Ku/Ka multiband terminals provide customers with unprecedented flexibility, enabling hybrid Geostationary Orbit (GSO) and MEO/LEO interoperability via high data-rate spot beams and ubiquitous global coverage. Orbit pioneered MEO maritime operations on the O3b constellation and can support next generation LEO services.

Innovation in Action

Orbit's proven OceanTRx 7 Multiband C/Ka- and Ku/Ka-band stabilized maritime satcom solutions enable the most demanding maritime vessels and platforms to benefit from broadband communications for highspeed and cost-effective services. Industry-leading tracking accuracy translates into high margins and throughput and the terminals integrate easily with existing onboard systems and networks. Both single- and multi-band configurations provide a compact VSAT system that offers RF performance equivalent to a 2.4 m (95") dish with only 2.7 m (106") footprint. The extraordinarily-small footprint and light weight expands the range of vessels and locations for installation, while offering outstanding RF performance relative to its size, strict regulatory compliance and support for multiple swappable RF chains. The multiband terminal takes up to 40% less deck space than industry-standard 2.4 m (95") and 3.8 m (150") systems and is more than 30% lighter than competitive solutions. Small enough to be shipped as a fully assembled and tested unit in a standard 20-foot container, OceanTRx 7 Multiband can be installed in half a day.

Typical Application:

Seamless connections in C/Ka and Ku/Ka bands

A combination of OceanTRx 7 Multiband C/Ka and Ku/Ka systems, each with respective RF chains, provides seamless connectivity between satellites in MEO/LEO constellations or GEO. Continuous service is assured by automatically transferring active Ka-band links between setting and rising LEO/MEO satellites, and by automatically switching to backup C- or Ku-band GEO links in the case of deep rain fade or when exiting a MEO/LEO spot coverage area.

Monitoring and Control

OceanTRx terminals employ an intuitive, user-friendly 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 7 systems enable unprecedented levels of operational flexibility and resiliency. A fully active second antenna is perfect for MEO/LEO satellite zero handoff connectivity, while a third antenna in the system further enhances availability and access management.

The OceanTRx Family Advantage

OceanTRx is field proven on over 100 deployments around the world. A mature, low-load design and heritage Field Replaceable Units (FRUs) and software are common to the entire OceanTRx family, ensuring high reliability, spares commonality, ease of maintenance and reduced lifecycle costs of ownership across a fleet.

High Versatility and Multiple Configurations

OceanTRx 4's modular approach enables a wide range of configurations, RF packages, frequency bands and modem platforms, as well as up to 200W Block Up Converter (BUC) power levels. This flexibility greatly facilitates reconfiguration, upgrades and field maintenance, without the need for additional modifications or re-balancing. Other options include air conditioning and a wide choice of radome colors.

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

- Electrical switching between C/Ka bands and Ku/Ka bands
- Highly efficient dual-offset Gregorian 2.2m (87") antenna
- Superior stabilization and tracking under severe sea conditions
- Single-, dual- and triple-antenna architecture
- Support for optional RF packages and BUC power levels
- Accommodation of multiple BUCs per system for greater band-switching flexibility
- Electronic Field Replaceable Units (FRUs) and software common to OceanTRx 4
- Modular FRUs, for streamlined maintenance, common to the entire OceanTRx family
- Delivery of the fully-assembled and tested unit in a 20-foot container
- Simple installation using a single cable for below-deck connectivity
- Advanced remote-monitoring, diagnostics and troubleshooting capabilities
- Patented algorithm enabling seamless MEO/LEO satellite handover

OceanTRx 7 Multiband Technical Specifications

Antenna Type	Dual offset Gregorian
Antenna Size	2.2 m (87")
Radome Size	D: 2.7 m (106"), H: 2.60 m (102")
ADE Weight (Exc BUC)	Less than 600 Kg (1,320 lb)
Configuration	Quadruple-axis polarization-over-elevationover-tiltover-azimuth
Range of Dynamic Motion	Full hemispherical coverage, with satellite elevation view angle as low as 10° at all sea conditions, with no "keyholes" at zenith or horizon
Handover	Make-before-break
Tracking Method	Combination of inertial stabilization, ephemeris tracking and dynamic RF tracking
Controller Modes	Dual antenna, with a contingency for a single antenna

Ephemeris Format	NORAD two-line elements (ASCII)
Polarization	Circular: LHCP/RHCP, Linear: Vertical/Horizontal
Range of Mechanical Pedestal Axes	Azimuth: Continuous Elevation: -30° to +120° Cross elevation: -30° to +30°
Ship Gyro Interface	NMEA 0183, step-by-step, synchro
Operating Bands	Up to 2 selectable bands
Power Requirements Typical ADE & BDE 100-130 VAC or 200-250 VAC 50/60 Hz	ADE system < 500 W W/O BUCs BDE equipment: 100 W
ADE-BDE Connectivity	Single coax cable only - up to 140 m (L-band, Tx/Rx, LAN, 10MHz ref); Fiber optics option - up to 1000 m, can be implemented as an upgrade to an existing system

Frequency Band	C	X	Ku	Ka	Ka-Wideband
Frequency Transmit	Circular: 5.850 to 6.425 GHz Linear: 5.850 to 6.725 GHz	7.9 to 8.4 GHz	13.75 to 14.5 GHz	29.0 to 31.0 GHz	27.5 to 30.0 GHz
Frequency Receive	Circular: 3.625 to 4.200 GHz Linear: 3.400 to 4.200 GHz	7.25 to 7.75 GHz	10.7 to 12.75 GHz	19.2 to 21.2 GHz	17.7 to 20.2 GHz
Polarization Control (Electrically Switchable)	Circular: RHCP/LHCP Linear: HOR/VER	RHCP/LHCP	HOR/VER	RHCP/LHCP	
XPD (Typical in Tx)	Cir: 27 dB, Lin: 30 dB	19 dB	30 dB	27 dB	
System G/T (Typical at mid-range including all losses)	17 dB/°K	19 dB/°K	24 dB/°K	24 dB/°K	
System EIRP (Typical at mid-range including all losses)	57 dBW (with 80W BUC)	53 dBW (with 20W BUC)	59 dBW (with 25W BUC)	64 dBW (with 20W BUC-SAT)	
BUC Size Options	20/40/80/100/200W	20/40/80W	16/25/40/100/200W	10/20/40/60W	
Dynamic Accuracy under Sea Motion	0.25 dB RMS				

Environmental Compliance

Wind Speed	Up to 100 knots
Shock	MIL-STD 810 F
Vibration	MIL-STD 167-1 (mast-mounted equipment)
Temperature	Operation: -25°C to +55°C with radome, as per IEC 60945:2002, Storage: -25°C to +70°C
Humidity	IEC 60945:2002 - Damp Heat Humidity 93% (±3%) @ 40°

