OceanTRx™

OceanTRx 7 Multiband

Orbit 2.2m C/Ka and Ku/Ka stabilized
maritime VSAT system

ORBIT *If you can conceive it, we can provide it.*



Orbit's OceanTRx 7 Multiband 2.2m VSAT terminals were designed to meet the most demanding mission-critical and business-critical, data-hungry applications with unmatched service availability targets.

Electrically switchable C/Ka and Ku/Ka multiband terminals provide customers with unpresented flexibility, enabling hybrid Geostationary Orbit (GSO) and Non-Geostationary Orbit (NGSO) networks, for both high data rates and global coverage. NGSO networks may contain Medium Earth Orbit (MEO) satellites, such as O3b, and/or Low Earth Orbit (LEO) satellites.

OceanTRx 7 Multiband for maritime satcom

Orbit's new OceanTRx 7 Multiband C/Ka- and Ku/Ka-band stabilized maritime satcom solutions enable the most demanding maritime vessels and platforms to enjoy fiber-like broadband communications for high-speed and cost-effective Internet services.

OceanTRx 7 Multiband represents the evolution of Orbit's OceanTRx 7-300 and OceanTRx 7-500 into a single platform supporting both single-band and multi-band configurations. It is a revolutionarily compact maritime VSAT system that offers industry-standard RF performance equivalent to a 2.4m (95") dish with only 2.7m (106") footprint. The key to this breakthrough is an extraordinarily-small footprint with 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 2.4m (95") and 3.8m (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.

The Orbit advantage

- **Highly efficient VSAT systems**
  A dual offset Gregorian antenna meets stringent satcom regulations and reduces service costs
- **Stabilized precision tracking**
  Complying with the most demanding maritime environmental requirements, the system delivers dynamic accuracy of less than 0.25dB RMS

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, maintains constant contact with the satellite constellation. Continuous service is assured by automatically transferring active Ka-band links between setting and rising NGSO satellites and by automatically switching to backup C or Ku-band GSO links in the case of rain fade.

Monitoring and control

Each terminal incorporates an Antenna Control Unit and a Central Control Unit to manage system operations. The controllers allocate antenna resources while managing constellation tracking of the LEO, MEO and GEO satellites. Under normal conditions, the controllers receive and process satellite configuration and position updates from the NGSO Network Operations Center for completely hands-off operation.

Key features

- Electrical switching between C/Ka bands and Ku/Ka bands, respectively
- Highly efficient dual-offset Gregorian 2.2m (87") antenna
- Superior stabilization and tracking under severe sea conditions
- 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 7 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 NGSO satellite handover

> **Easy installation & upgrades**
> OceanTRx 7 terminals can be installed in half a day, with multiband frequency support and field-upgradable configuration capabilities built in

> **World-class customer support**
> Orbit's global support team delivers 24/7 service with remote monitoring capabilities and on-site technical support

OceanTRx™ 7 Multiband technical specifications

Antenna Type	Dual offset Gregorian
Antenna Size	2.2m (87'')
Radome Size	D: 2.7m (106"), H: 2.6m (102")
ADE Weight (w/o BUC)	Less than 600 Kg (1,320 lb)
Configuration	Quadruple-axis polarization-over-elevation-over-tilt-over-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

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 Frequency – 2 selectable bands (for other options contact factory)	Ka-band: Tx: 29-31 GHz, Rx: 19.2-21.2 GHz O3b Ka-band: Tx: 27.6-29.1 GHz Rx: 17.8-19.3 GHz Ku-band: Tx: 13.75 to 14.50 GHz, Rx: 10.7 to 12.75 GHz C-band: Tx: 5.850 to 6.425 GHz, Rx: 3.625 to 4.2 GHz
System G/T (typical @ mid-range, clear sky, 30° elevation, including all losses)	Ka-band: 24.5dB/°K Ku-band: 24 dB/°K C-band: 16.6dB/°K
System EIRP with multiple BUC options (typical @ mid-range, including all losses)	Ka-band: 67dBW with a 40W BUC Ku-band: 59 dBw with a 25W BUC C-band: 55.5 dBw with an 80W BUC

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

Indoor Main Power	Auto-ranging 90-130 VAC or 200-250 VAC at 50/60 Hz, less than 100W RMS
Outdoor Main Power	Auto-ranging 90-130 VAC or 200-250 VAC at 50/60 Hz, approx. 1100W RMS
ADE-BDE Connectivity	Standard: Single coax cable only – up to 140m (L-band, Tx/Rx, LAN, 10MHz ref) Fiber optics connection – up to 1000m, can be implemented as an upgrade to an existing system

Environmental conditions 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°

High availability

Fully active third antenna system to increase availability

Maintenance plans

To keep your system in top operating condition

Please contact our Orbit Account Managers to assist you in selecting the right system and options to meet your needs:

Orbit Communications Systems
8D Hatzoran St, POB 8657, Netanya 4250608, Israel, T +972-9-892-2777, F +972 9 885 5944
www.orbit.com