



## Model 4006 Next Generation Ku-Band 1 Meter



### **“Broadband-at-Sea”** Marine Stabilized Antenna System

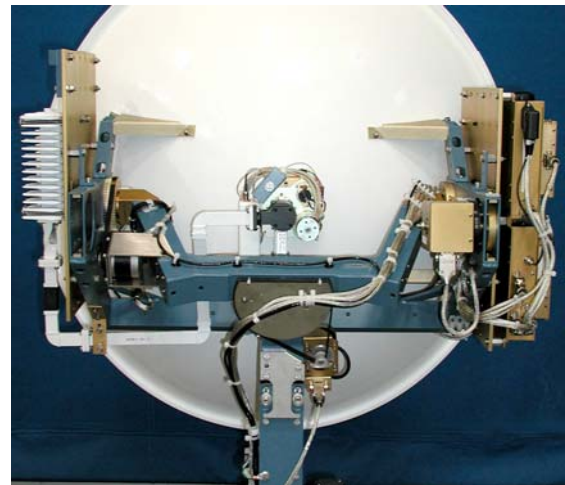
The Model 4006 is a 1-meter Ku-Band maritime VSAT antenna for SCPC, broadband, or hybrid networks. Based on the very popular Model 4003, the Model 4006 is the next generation of stabilized antenna systems to be added to the Sea Tel product line.

The 4006 utilizes the same radome and antenna as the 4003. This antenna system meets the FCC's 2-degree spacing requirement, which is a remarkable achievement for a 1-meter ring-focus antenna. The antenna efficiency is better than 70% across the transmit and receive bands.



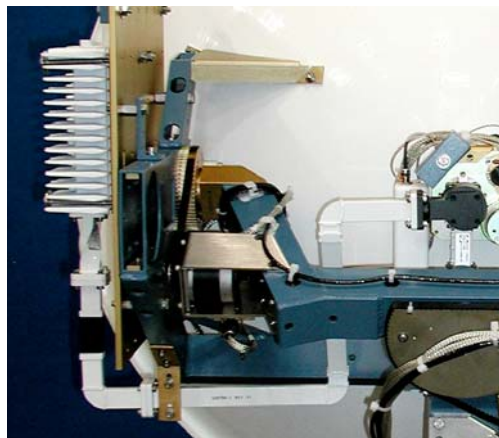
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The extremely rugged stabilized platform used with the 4006, by design allows for a full 0 to 90 degrees of targetable satellite elevation range. The 4006 design enhancements ensure uninterrupted operation regardless of low or high satellite elevation look angles. These low and high satellite elevation look angle areas include: Norway, Alaska, Russia, West Africa, and South East Asia.



For most applications the standard 4 Watt BUC is sufficient. For higher return-link (ship-to-satellite) data-rate applications, the 4006 platform will support the integration of medium power (larger/heavier) BUC's. *BUC's larger than 8 watts will require an outdoor power supply to be integrated with the BUC on the stabilized pedestal.*

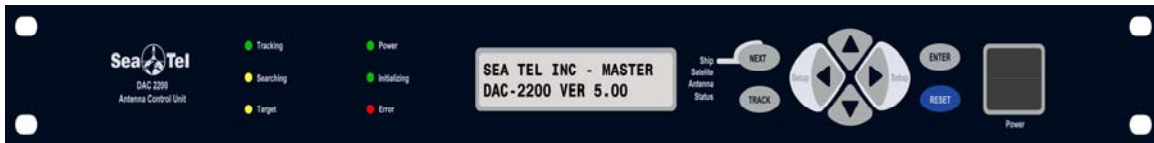
To maintain transmit path efficiency, the 4006 uses waveguide between the output of the BUC and the input of the antenna feed assembly. The use of a waveguide rotary joint in the transmit path allows >180 degrees of feed rotation for automatic polarization alignment to the satellite. The total transmitted power loss from the waveguide and rotary joint is typically <0.5 dB.



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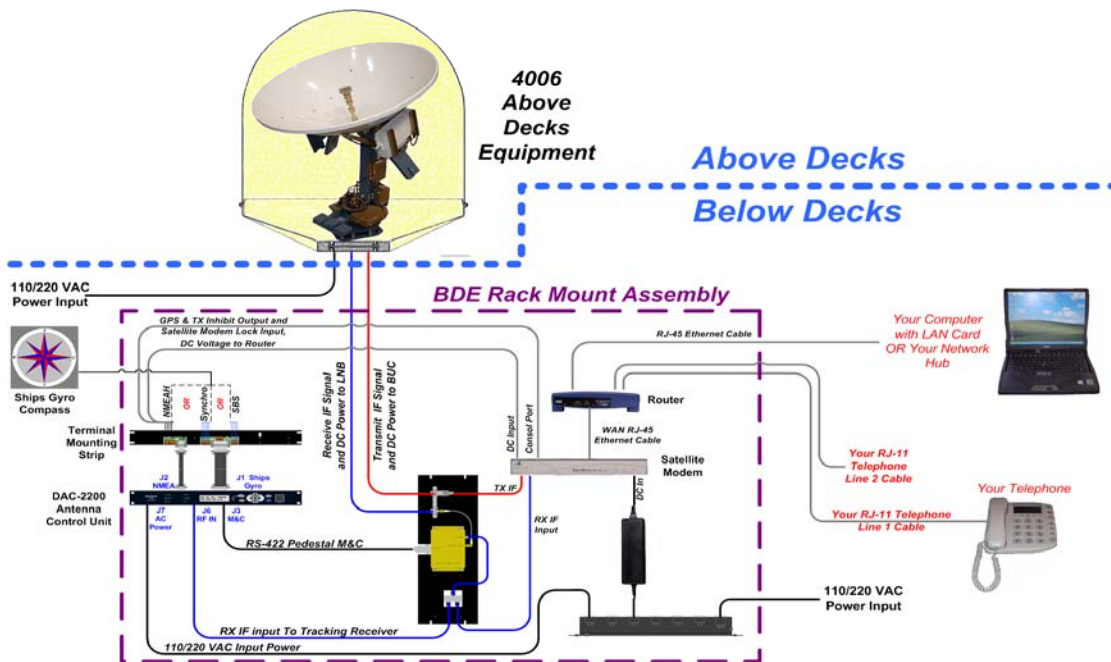
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The Model 4006 utilizes the new DAC 2200 antenna control unit. The DAC 2200 ACU is 1 rack-unit in height (1.75 inches) and is configured with an L-band DVB compliant tracking receiver, gyrocompass interfaces for both digital (NMEA 0183 HDT character strings) and most analog gyrocompass systems. *(A gyrocompass or other ships heading reference is required for proper system operation.)*



A serial data port, plus an RJ-45 ethernet port have been incorporated for connection to external equipment for the purpose of remote monitor and control of the system. The ethernet port (when connected to the ship's network) will allow the network operator complete remote diagnostic capability. The DAC 2200 is also compatible with the TSC-10 Touch Screen Controller. The TSC-10 will be extremely useful when the system is operating in multi-region or multi-beam roaming applications.

The Model 4006 is compatible with most L-Band satellite modems. The standard 4 Watt BUC requires +24 VDC power and the 10 MHz reference signal from the modem. Our systems have been tested to be compatible with SCPC , iDirect, EMS, Viasat, and Nera DVB-RCS modems. Networks using TDMA return channels require a GPS interface to allow maritime mobility. The Model 4006 provides this GPS reference.





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## 4006 System Specifications

Antenna Feed	1-Meter / 40 inch diameter Ring-focus Cross-Pol standard, Co-Pol optional. Automatic polarization control is standard.	
LNB	LNB can be provided for 10.95-11.7 GHz, 11.7-12.2 GHz or 12.2-12.75 GHz frequency bands.	
Antenna Gain	TX Gain	41.8 dB
	RX Gain	40.1 dB
System G/T	18.2 dB/k at 45 degrees elevation ( <i>Includes radome losses</i> )	
Transmit Frequency	14.0 - 14.5 GHz ( <i>13.75-14.5 GHz option available</i> )	
Receive Frequency	10.95-12.75 GHz Ku Band, ( <i>LNB band selection required</i> )	
Pedestal Type	Three Axis	
Stabilization Accuracy	0.225 degrees MAX, 0.15 degrees RMS ( <i>while operating under specified ship motions</i> )	
Range of Motion	Elevation	-20° to +115°
	Azimuth	Unlimited
	Cross level	+/- 25 degrees
Maximum Specified Ship Motions	Roll	+/- 25 degrees
	Pitch	+/- 15 degrees
	Yaw	Unlimited
Radome	Diameter	48 inches
	Height	59 inches
	Weight	250 lbs
DAC 2200 Antenna Control Unit	L-band DVB Compliant tracking receiver DiseQc compatible LNB voltage and tone selectable Serial I/O RJ45 Network Interface Digital and Analog interfaces for ship's gyrocompass system	

*New regulatory requirements have been placed on ships fitted with maritime VSAT antennas, called Earth Stations on Vessels or ESVs. Compliance with these regulations is not a function of the ship-owner or operator, but is a function of the Service Provider. One of our requirements, as the antenna manufacturer, is to continuously monitor stabilization error, and if this error reaches 0.5 degrees activate a control logic signal which is then used to cease or terminate all transmissions. This control signal is provided for use by the Service Provider or System Integrator; in some cases this signal is read by the satellite modem, or is used to control the transmitter through the RF equipment's M & C interface (if one is available).*

*Compliance with the remainder of the rules will require a coordinated exchange of information between Sea Tel equipment and the service provider's equipment. Sea Tel is willing to provide suggestions on ways to comply with the first set of rules described above and will provide all necessary information and assistance to comply with the second set of rules, which involves limiting off-axis transmitted power levels toward the horizon.*