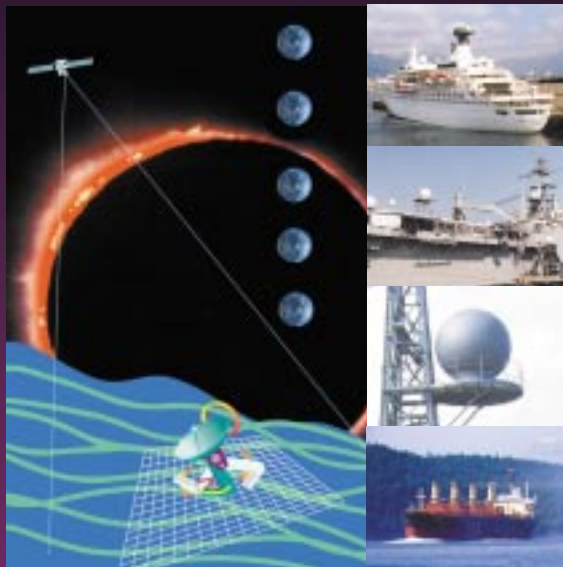


The World's Standard In
**Seaborne Satellite
Communications**

Sea Tel® Transmit and Receive Systems



Sea Tel®

Marine Stabilized Antenna Systems

**Don't
settle
for less.**

**Don't
pay
more!**



More reliable performance wherever you sail.

From C-Band to Ku-Band, you'll see the difference in more stable signal levels, fewer acquisition losses, lower bit-error rates.

Future compatibility! When Ka-Band satellites come on line, the same antenna system will let you bring high-speed data services on board.

Our pointing accuracy is already fully tested for Ka-band frequency on NASA's A.C.T.S. As new commercial Ka-band services at T1 to T3 data rates become available, you will have on board all the data intensive services you expect from land-based systems: multi-conferencing, Internet, video, high-speed data transfers, etc.

Sophisticated design and tight quality control allow Sea Tel Series 96 and Series 97 stabilized antenna systems to deliver premium U.S. Navy MIL-spec performance at no premium in price.

Up to now U.S. Navy MIL-Spec quality has meant premium prices. Not any more. With Sea Tel you pay only commercial prices – or less – for an antenna system that meets MIL-STD-901D for GRADE A shock and MIL-STD-461 for EMI and RFI (including 200V/M) ... and actually exceeds MIL-STD-167 for vibration.

A combination of performance and affordable pricing that leaves the competition playing catch-up — again!

Forgive us for bragging but we don't want you to miss that we've used a major new design approach to achieve our superior performance. By designing smart, we are able to bring you more at no increase in price or reduction in quality. In fact we've raised the price/performance bar so high, the competition is going to have a very hard time reaching it any time soon!



**This isn't future
technology.
It's available and
performing beautifully
around the world
today.**



Whatever size your vessel

Whatever your application

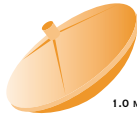
Whatever your budget



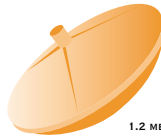
There's an advanced Sea Tel Series 96 or Series 97 stabilized antenna system that will do the job and do it right.



Sea Tel Series 96 stabilized antenna systems

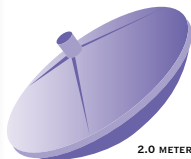


1.0 METER
MODEL 4096

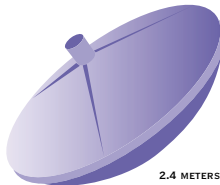


1.2 METERS
MODEL 4996T

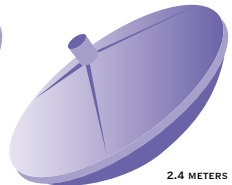
Sea Tel Series 97 stabilized antenna systems



2.0 METERS
MODEL 8797



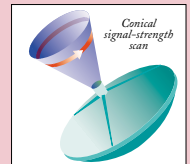
2.4 METERS
MODEL 9797



2.4 METERS
MODEL 9997

CONSCAN: The Final Touch.

As satellite frequencies climb into the Ka-band range, antenna misalignment tolerances become vanishingly small. We have chosen to leave nothing to chance. All antenna systems incorporate an aggressive, proactive signal tracking system called conical scanning (CONSCAN). This system reads the signal strength in each quadrant of the antenna and feeds this information to the system's DAC- 97 ACU. The DAC 97 then micro-steps the antenna alignment to equalize the signal strength in all four antenna quadrants. The signal is sampled more than 400



times a minute with the step-ping action adjusted to the frequency and the antenna size. The result: a remarkably stable signal, even at the highest Ka-band frequencies!

FAST-ACTING ELECTRONICS ARE BACKED UP BY SOPHISTICATED HORIZONTAL AND VERTICAL MECHANICAL SHOCK ABSORBERS.



HIGH-TORQUE MOTORS POSITION THE ANTENNA AND KEEP THE ANTENNA FIRMLY LOCKED-IN ON THE SELECTED SATELLITE.



SHIELDED ELECTRONICS FOR SYSTEM ELIMINATE EMI EMISSIONS AND RF.

SENSITIVE MOTION SENSORS ARE POSITIONED TO PERMIT FASTEST POSSIBLE RESPONSE TO SHIP MOVEMENTS.



Sea Tel's patented, 3-axis stabilization system isolates the antenna from the ship's motion no matter how rough the weather and seas. The antenna system responds to ship's movement at a rate as fast as 90 degrees per second.

The result? A maximum 0.2° error in the presence of +25° roll and +15° pitch ship motion and the ability to acquire the full range of frequencies from L-band to Ka-band. At last high-frequency, high-speed satellite data transmissions can be reliably received at sea!

You won't lose the signal due to stabilization errors at any frequency even in storm conditions.



An order of magnitude more accurate than previously available antenna stabilization systems! Less than 0.2° mispointing even at +/- 25° roll and +/- 15° pitch.

Voice, fax, television, weather, high speed data, video, Internet ... Sea Tel's patented, three-axis, servo-controlled stabilization systems minimize or eliminate signal dropout for "business as usual," reliable satellite communications, even in storm conditions.

An unmatched range of additional powerhouse features means a system you can rely on whatever the weather or the sea conditions:

- Automatic satellite acquisition with programming smart enough to initiate a search pattern if acquisition isn't immediate.
- Automatic linear Polang Positioning eliminates unintended interference with satellite signal transmissions.
- Unlimited azimuth (no cable unwrap) provides uninterrupted coverage however the ship turns.
- Internal diagnostics permit you to find out what's wrong and get it fixed fast.
- System MTBF of greater than 8,500 hours for an "availability rating" of 97%.
- Unlimited distance between outdoor and indoor equipment lets you put the antenna where it belongs and the controls where it's convenient, whatever your ship's layout.
- Cable installation requirements minimized by multiplexing control data on coax cable. The result? A less expensive installation due to fewer interconnect cables.
- Versatile gyrocompass interface assures a match with your ship's navigation system.
- Multiple monitor and control functions give you the ability to keep your antenna system tuned and operating for optimum performance.
- Recovery in seconds after over-limit events keeps you in business precisely when it's most important – when conditions are at their worst.
- Optional air conditioned radome maintains stability of RF system and minimizes humidity for extended parts life.



Series 96 and Series 97 Stabilized Antenna System Features and Specifications

There's a
Sea Tel Series
96 or Series 97
Stabilized
Antenna System
for every ship
and
application.

- Ship's motion +/- 25° roll and +/- 15° pitch
- <0.2 degrees peak mispointing @ +/- 25°/15°
- Automatic satellite acquisition
- Automatic linear Polang positioning
- Conical Scan Tracking
- Internal tracking receiver
- Unlimited azimuth
- Internal diagnostics
- Meets U.S. Navy MIL-STD-167-1 vibration specification
- Meets U.S. Navy MIL-STD-EMI & RFI (including 200V/M)
- Meets U.S. Navy MIL-STD-901D GRADE A shock
- CE Marked
- Unlimited distance between outdoor and indoor equipment
- Antenna control data multiplexed on coax cable
- Versatile gyrocompass interface
- Multiple monitor and control (M&C) functions

BELOW DECKS EQUIPMENT

- Sea Tel antenna control unit with internal SCPC tracking receiver (70 MHz, 140 MHz, wide L-band or narrow L-band), conical scanning and ship's gyrocompass interface for the step-by-step 1:1, 36:1 and 360:1 synchro gyrocompass systems
- Stabilized platform spares kit
- Operation and instruction manuals

TECHNICAL SPECIFICATIONS

AXES OF STABILIZATION:	Three: elevation, cross-level, azimuth train
MAXIMUM MISPOINTING OF 0.2 DEGREES UNDER THE FOLLOWING CONDITIONS:	
TANGENTIAL ACCELERATION:	0.5G in 6 seconds
ROLL/PITCH STABILIZATION:	+/- 25° roll; +/- 15° pitch
AZIMUTH STABILIZATION:	Requires heading reference from ship's gyrocompass system
RATE (ALL AXES):	90 degrees/second
ACCELERATION:	60 degrees/sec. ²

Series 96 System-Specific Performance Specifications

Model 4096 Linear Ku-band	Model 4996T Linear Ku-band
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ABOVE DECKS EQUIPMENT

Antenna Size	1.0 meter/ 40 inch diameter	1.2 meter/ 48 inch diameter
Radome Size	56 inch diameter foam radome with GPS antenna	82 inch diameter foam radome with GPS antenna
Antenna Platform	All antennas: 3-axis servo-controlled stabilized antenna platform	
Feed Assembly	All antennas: Ku-band Tx/Rx Cross Pol linear feed assembly with CONSCAN	
RF Packages	All antennas: Integration of RF equipment either customer-furnished or Sea Tel supplied	

ANTENNA

Type	Composite, axis symmetric	Composite, Gregorian (dual optic)
Transmit Gain, Typical at 14.25 GHz	41.5 dB	42.5 dB
Receive Gain, Typical at 11.7 MHz	39.8 dB	41.65 dB
System G/T (Calculated)	Approx. 16.8 dB/k min.	Approx. 20 dB/k min.
Crosspolarization Isolation	25 dB min.	30 dB min.
Sidelobes	N/A	Meets Eutelsat
Feed Assembly	Prime focus linear orthogonal	Prime focus linear orthogonal

Series 97 System-Specific Performance Specifications

Model 8797 Linear/ Circular C-band	Model 8797 Linear/ Circular C-band	Model 8797 Linear/ Circular C-band	Model 8797 Linear/ Circular C-band	Model 9997 Linear Ku-band
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ABOVE DECKS EQUIPMENT

Antenna Size	2.0 meter/ 60 inch equivalent diameter	2.0 meter/ 60 inch diameter	2.4 meter/ equivalent diameter	2.4 meter/ equivalent diameter	2.4 meter/ 96 inch diameter
Radome Size	126 inch diameter foam radome with GPS antenna	126 inch diameter foam radome with GPS antenna	144 inch diameter foam radome with GPS antenna	144 inch diameter foam radome with GPS antenna	126 inch diameter foam radome with GPS antenna
Antenna Platform	All antennas: 3-axis servo-controlled stabilized antenna platform				
RF Packages	All antennas: Integration of RF equipment either customer-furnished or Sea Tel supplied				

ANTENNA

Type	Composite, axis symmetric	Composite, axis symmetric	Composite, axis symmetric	Composite, axis symmetric	Composite axis symmetric (dual optic)
Transmit Gain at:	6.18 GHz 39.8 dB min	14.25 GHz 47 dB min	6.175 GHz 38.5 dB min	14.25 GHz 48.5 dB min	14.25 GHz 48.9 dB min
Receive Gain at:	3.95 GHz 36.4 dB min	11.7 GHz 46 dB min	3.95 GHz 38.5 dB min	12.2 GHz 47.6 dB min	12.2 GHz 47.7 dB min
System G/T (Calculated)	Approx. 16.8 dB/k min	Approx. 23.0 dB/k min	Approx. 19.0 dB/k min	Approx. 26.0 dB/k min	Approx. 26.0 dB/k min
Crosspolarization Isolation	30 dB min.	30 dB min.	** see note	30 dB min.	30 dB min.
Sidelobes	** see note	** see note	** see note	29-25 log theta	
Feed Assembly	Prime focus, circular orthogonal	Prime focus, circular orthogonal	Radical offset, linear/circular polarization	Radical offset, linear/circular orthogonal	Cassegrain, linear orthogonal

* Also available in X-band for military applications
** Meets or exceeds IESS 601 (Standard G) rev 9

COMMUNICATIONS SYSTEM NOTE: Sea Tel does not represent any data rate performance in its specifications, only power output to the feed. Ku-band systems of 100 watts and more and C-band systems over 150 watts require rigid waveguide and waveguide rotary joint modifications on the feed at additional expense. Sea Tel reserves the right to change specifications and prices without notice. Sea Tel is a registered trademark of Sea Tel, Inc.

Sea Tel is ISO 9001 certified by NSAI



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