

# Laser Tracking System

## LTS 2000

BAE SYSTEMS introduces the Laser Tracking System (LTS 2000); a self-contained, mobile tracking system designed to track airborne targets and extract precise accurate position data. The LTS 2000 is a monopulse LIDAR system operating at 50 pps that offers .05 milliradian angle tracking and 1-foot range tracking accuracy.



A true eyesafe system, the LTS 2000 operates at power density levels over an order of magnitude below the ANSI standard maximum exposure levels at the output aperture of the transmitter.

The LTS 2000 receiver has two fields of view, which allow for the continuous tracking of targets from 800 feet to over 25 nautical miles in range. The LTS 2000 is designed to track a target augmented with a precision retro array. Targets with poorer augmentation may be tracked at somewhat less than the full specified range.

Standard equipment includes a visual acquisition lens system, a laser spot viewing lens system, and a very fine "through the receiver" visual channel. The visual channel accurately reports optics droop when viewing stars allowing precision calibration of the receiver.

The laser transceiver features an embedded VME processor that controls the optical transmitter and receiver functions while outputting angle and range errors to the host data processing subsystem.

The LTS 2000 console is a state-of-the-art VME design that contains a Console Central Processor to format switch closure and potentiometer data for the host computer. The console provides the operator with displays and controls for monitoring target acquisition, tracking process, data storage and data reduction.

The VME host computer and peripheral equipment function as the main control source of the LTS 2000. Functions such as data handling and processing, system mode control, system calibration, display control and processing, error processing, range and angle loop filtering and control for tracking, intersystem communication, timing, acquisition control, and transmission of target data are performed by the VME subsystem. Peripheral equipment consists of a laser printer, and an OPCOM PC with display and keyboard. One hard disk drive provides the main program storage for the VME host interface. The second and third disk drives record data from the computer for post-mission analysis. The laser printer is used to provide a hard copy of mission data in real-time or from playback of disk recordings, calibration data when requested by the operator, and pedestal mislevel data (as a graphic display).

The operator's control shelter, a transporter-mounted design, houses the host computer, its peripheral equipment, and the console used to operate the LTS 2000. In addition to being well lit, the shelter contains a heating/cooling system designed to provide a comfortable working environment. The tracking pedestal may be operated astride the transporter or remotely up to 100 feet away.

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# LTS 2000 SYSTEM SENSOR SPECIFICATION

## SYSTEM SPECIFICATION

Transmitter	Solid State, eye-safe 1.574 micron laser
Average Output Power	0.5 watts
Transmit Beam Width	Continuously variable Minimum 0.5 mrad Maximum 10 mrad
Receiver Type	Two FOV monopulse, four channel digitizing
Transmitter PRF Rate	50 Hz, synchronized master timing
Precision	Angular: 0.05 mils Range: 1.0 foot
Minimum Target Detection Range	49 km in a standard clear atmosphere (visibility >50 km) assuming a cooperative target equipped with retroreflector array.
Acquisition Camera	
HFOV	21° to .42° continuous zoom
Spectral	B&W with .650 to .9 $\mu$ band pass filter
Functions	Focus, zoom and iris
Laser Spot Camera	
HFOV	68° to .97° continuous zoom
Spectral	B&W with 1.534 to 1.614 $\mu$ band pass filter
Functions	Focus, Zoom and Iris
Visual-channel	
HFOV	.32° Fixed
Spectral	B&W with .50 to .6 $\mu$ band pass filter
Functions	Iris, Focus (same as receiver)
Generator	60 kW diesel
Pedestal	Gear drive Elevation over Azimuth with 20-bit encoder, portable, fiber optic control interface, magnesium casting
Angle coverage	Continuous rotation in Azimuth, -5° to +185° in Elevation
Angular acceleration	100 mrad/sec/sec
Angular rate	>1000 mrad/sec in Azimuth and >75 mrad/sec in Elevation

## ENVIRONMENTAL SPECIFICATION

### Exterior Equipment

Ambient Operating Temperature Range:	
Operating	-10 to +40 degrees C
Non-Operating	-20 to +70 degrees C
Altitude	Sea level to 3000 meters

### Interior Equipment

Ambient Operating Temperature Range:	
Operating	+5 to +35 degrees C
Non-Operating	0 to +50 degrees C
Altitude	Sea level to 3000 meters