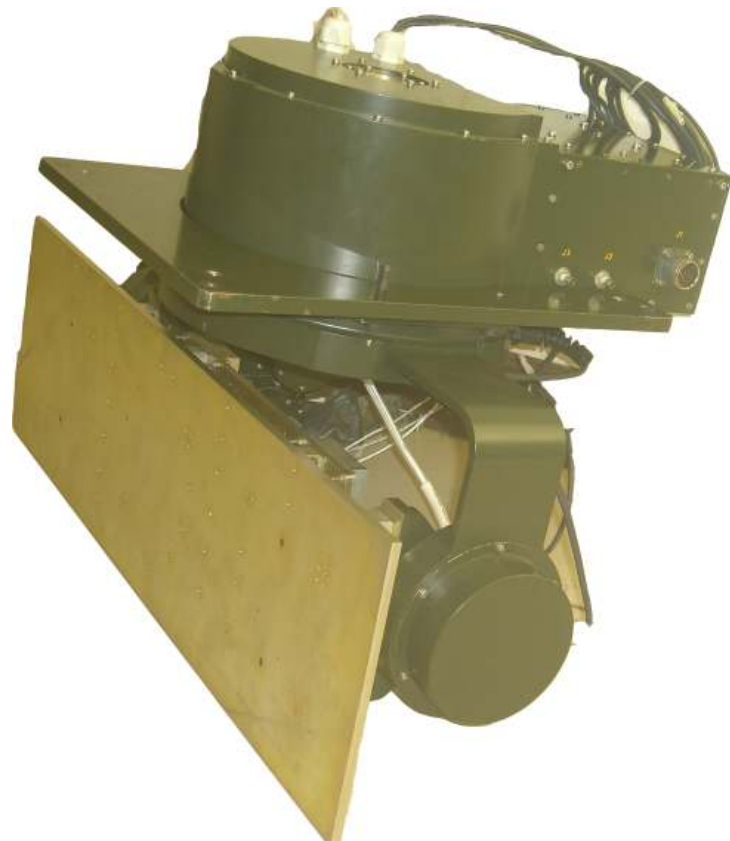




# ANTENNA STABILIZATION UNIT



### Applications

- Surveillance systems
- Airborne radar pedestals
- Tracking systems
- Gimbal

The Antenna Stabilization Unit (ASU) is envisaged for positioning and stabilizing the payload. The payload mainly consists of RF front end and antenna. In order to maintain the Line of Sight (LOS) of the antenna towards the target of interest, it is necessary to steer the antenna to the required angular position both Azimuth and Elevation against aircraft Yaw and Roll.

The Antenna pointing and stabilization system shall compensate for Yaw and Roll motions of the aircraft and keep the antenna aligned towards the designated area of interest against azimuth and elevation changes because of headings and attitude change of the aircraft and distance traveled. The pointing and stabilization system consists of an Antenna, Antenna control unit (ACU) and a host computer. The ACU is TMS based DSP system capable of performing closed loop position control, motor control and monitoring functions and should point the antenna towards the designated area of interest using on board INS data. The host computer shall issue mode selection command along with the relevant command data to the ACU.

## ANTENNA STABILIZATION UNIT

### Azimuth and Elevation Drive Specifications

Number of axes	:	Two axis of rotation (elevation over azimuth orthogonal to each other)
Modes of Operation of ASU:		Mode A: Strip map Mode B: Spot mode Mode C: Ground Moving Target Indication (GMTI)
Maximum Velocity	:	Azimuth: 18 °/second Elevation: 18 °/second
Minimum Velocity	:	Azimuth: 6 °/second Elevation: 6 °/second
System requirements	:	i) Maximum Roll Angle: $\pm 18^\circ$ ii) Maximum Rate of Change of Roll Angle: $18^\circ / \text{sec}$ iii) Maximum Pitch Angle: $\pm 10^\circ$ iv) Maximum Rate of Change of Pitch Angle: $10^\circ / \text{sec}$ v) Maximum Rate of Change of Heading: $10^\circ / \text{sec}$ vi) ii) Maximum Yaw Angle : $\pm 10^\circ$ , Yaw rate : $10^\circ / \text{sec}$
Position accuracy of Azimuth and Elevation angles	:	<1 milliradian
Orthogonality between two axis	:	<2 milliradian

### General Specification

Host Communication	:	MIL-1553B&RS422 for command interface.
Weight	:	< 24 $\pm$ 2Kgs. (Excludes Antenna)
Payload	:	Antenna disc 700x215x10mm, Weight 6.0Kgs
Fitment	:	Mounted on stiff back up plate of the gimbal. Phase array on the front side and Strip line power divider and RF front end on the backside.
Supply Voltage	:	28 volts
Protection	:	EMI/EMC. Will conform MIL-STD 461E
Power Peak	:	<100 watts, and Average<50 watts

### Environment Specification

Temperature range	:	Storage: -40° C to + 70° C; Operating -40° C to +55° C
Thermal shocks	:	To withstand -40° C to +70° C as a sudden change
High altitude	:	30,000 ft and Version2 35,000 ft at -40° C RH: 85% to 95%

### Operating Limits

Limits of travels (dead stop)	:	-50° to +230° (Az) -15° to +65°(Elv)
Electrical limits (limit switch)	:	-47° to +228° (Az)-12° to +67° (Elv)
Software limits (operational)	:	-45° to +225° (Az)-10° to +65° (Elv)
Maximum speed	:	3 RPM
Operational speed	:	1 RPM

