Description
The low probability of intercept radar altimeter was developed and tested by the U.S. Navy for tri-service use. The core of the LPIA is a high-speed digital signal processor and RF module operating on a frequency-hopped, spread-spectrum, phase-encoded, low-power signal waveform.
The transmit waveform and receive signal processing allow the LPIA to extend altimeter accuracy, performance envelope (roll, pitch, and altitude), jamming resistance, and low probability of intercept capabilities far beyond existing altimeters. The advanced waveform and signal processing also allows the LPIA to discriminate a slung load from the ground return.

High gain achieved in the receive signal processing allows for very low power output, resulting in a simple RF design without multiple power amplifier circuits. The reduced circuitry and low operating temperature help drive LPIA in-field reliability predictions to greater than 6800 hours MTBF predicted.
The LPIA is 100 percent backward compatible with existing installations of the APN-194, APN-224, APN-232, APN-209 and APN-171, eliminating A-kit costs by use of simple, interchangeable front panels, mounting plates, and analog I/O cards and reuse of existing antennas. High reliability and extensive BIT coverage support a cost-effective “O to D” maintenance concept, with minimal replacement and pipeline spare requirements. Commonality of design reuses five of the seven subassemblies (digital signal processor card, RF module, digital I/O card, power supply cards, and chassis) in multiple configurations allowing users to share cost savings achieved by a broader production base. The waveform and signal processing are software controlled, allowing easy tailoring of performance to the unique challenges of various platforms. The software is field-reprogrammable, keeping new installation and software maintenance costs low.

Features
- Maximum LPI effectiveness
- High-accuracy performance over all altitudes and attitudes
- Superior anti-jam performance
- Ability to discriminate slung loads
- High reliability and low life-cycle cost
- Highly adaptable modular design facilitates form, fit and function compatibility for retrofits and new installations
### LPIA-194, RT-1805
- **Customers**: U.S. Navy
- **Application**: F/A-18, C-2A, AV-8B, AH-1W, V-22, EA-6B, F-14, SH-60, T-45, CH-60, P-3C, S-3, JSF, C-130
- **Weight**: 4.1 lbs.
- **Prime power**: 115 Vac, 400 Hz, 1Ø
- **Power usage**: 32W
- **MTBF**: Fighter environment > 6,800 hours; UAS, Airlift environment > 11,600 hours
- **Power output**: < 1W, 4.2 to 4.4 GHz
- **Vibration**: Fighter, uninhabited, rotary and turboprop
- **Accuracy**: 0-5000 ft: ±2 ft or 2% of altitude; 5000-35000 ft: ±50 ft + 1% of altitude
- **Interfaces**: Analog outputs: compatible with all existing height indicators. Digital outputs: MIL-STD-1553B, RS-422
- **Fault detection**: 98% BIT coverage

### LPIA-171R
- **Customers**: U.S. Navy
- **Application**: CH-53, MH-53, UH-1N, CH-46, E-2C
- **Weight**: <5.0 lbs.
- **Prime power**: 115 Vac, 400 Hz, 1Ø
- **Power usage**: 32W
- **MTBF**: Fighter environment > 6,800 hours; UAS, Airlift environment > 11,600 hours
- **Power output**: < 1W, 4.2 to 4.4 GHz
- **Vibration**: Fighter, uninhabited, rotary and turboprop
- **Accuracy**: 0-5000 ft: ±2 ft or 2% of altitude; 5000-35000 ft: ±50 ft + 1% of altitude
- **Interfaces**: Analog outputs: compatible with all existing height indicators. Digital outputs: MIL-STD-1553B, RS-422
- **Fault detection**: 98% BIT coverage

### LPIA-224R
- **Customers**: U.S. Air Force
- **Application**: A-10, B-18, B-52
- **Weight**: 4.4 lbs.
- **Prime power**: 115 Vac, 400 Hz, 1Ø
- **Power usage**: 32W
- **MTBF**: Fighter environment > 6,800 hours; UAS, Airlift environment > 11,600 hours
- **Power output**: < 1W, 4.2 to 4.4 GHz
- **Vibration**: Fighter, uninhabited, rotary and turboprop
- **Accuracy**: 0-5000 ft: ±2 ft or 2% of altitude; 5000-35000 ft: ±50 ft + 1% of altitude
- **Interfaces**: Analog outputs: compatible with all existing height indicators. Digital outputs: MIL-STD-1553B, RS-422
- **Fault detection**: 98% BIT coverage

### LPIA-232R
- **Customers**: U.S. Air Force
- **Application**: C-130, C-141, F-22, C-5, F-16, F-111, F-15, T-43, H-53, C-17, JSF, F-117*, CV-22*, H-60
- **Weight**: 4.5 lbs.
- **Prime power**: 4.5 lbs.
- **Power usage**: 32W
- **MTBF**: Fighter environment > 6,800 hours; UAS, Airlift environment > 11,600 hours
- **Power output**: < 1W, 4.2 to 4.4 GHz
- **Vibration**: Fighter, uninhabited, rotary and turboprop
- **Accuracy**: 0-5000 ft: ±2 ft or 2% of altitude; 5000-35000 ft: ±50 ft + 1% of altitude
- **Interfaces**: Analog outputs: compatible with all existing height indicators. Digital outputs: MIL-STD-1553B, RS-422
- **Fault detection**: 98% BIT coverage

### LPIA-209R
- **Customers**: U.S. Army
- **Application**: AH-66, AH-64, H-60, UH-1, OH-58
- **Weight**: 4.1 lbs.
- **Prime power**: 28 Vdc
- **Power usage**: 32W
- **MTBF**: Fighter environment > 6,800 hours; UAS, Airlift environment > 11,600 hours
- **Power output**: < 1W, 4.2 to 4.4 GHz
- **Vibration**: Fighter, uninhabited, rotary and turboprop
- **Accuracy**: 0-5000 ft: ±2 ft or 2% of altitude; 5000-35000 ft: ±50 ft + 1% of altitude
- **Interfaces**: Analog outputs: compatible with all existing height indicators. Digital outputs: MIL-STD-1553B, RS-422
- **Fault detection**: 98% BIT coverage

**High commonality among all variants**

- **Common among all variants – DSP card, RF module, digital I/O card and chassis**

**Shared AC power supply**

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**Shared DC power supply**

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