



**YOUR NEXTGEN  
AVIONICS LEADER**



## **RADAR ALTIMETERS**

**THE ACCURATE, RELIABLE, AND AFFORDABLE SAFETY SOLUTION**

**For critical flight regimes, the FreeFlight Systems RA-4000 and RA-4500 Radar Altimeters (TSO and ETSO approved) provide today's flight crews with dependable, highly accurate and economical above-ground-level (AGL) information. This real-time system enhances operational safety during approaches, night time operations, and hazardous flight above rough terrain.**

Designed for applications such as helicopter and seaplane operations where accuracy is needed down to zero feet, the RA-4000 and RA-4500 Radar Altimeters provide precise AGL information from 2,500 feet down to ground level. The RA-4500 Radar Altimeter with its ARINC 429 output can be easily coupled with electronic flight information systems (EFIS) and flight director systems. Proven and precise, both systems offer improved situational awareness for a broad range of fixed and rotary wing aircraft.

FreeFlight Systems has over 50 years experience in Radar Altimetry and our systems have hard won, proven performance in the most challenging and critical segments of flight such as low altitude hover in rotorcraft, flare/touchdown in fixed wing aircraft and slow transition over varying terrain. Our unique combination of deep experience with a modern digital implementation makes FreeFlight Systems altimeters the only affordable choice for serious users.

### **RAD-40 Radar Altimeter Display**

The RAD-40 Radar Altimeter Display is compatible with the FreeFlight Systems RA-4000 and RA-4500 Radar Altimeters. This panel-mount display provides critical AGL information to the pilot which is especially important when there are no visual clues to the landscape surrounding the airport or the flight path.

The AGL information is displayed on a bright LED read-out as reported from the RA-4000 and RA-4500 through a standard serial interface. By simply turning the rotary knob on the front panel, the pilot is able to set a decision height (DH). When the preset altitude is reached, a DH LED is illuminated and a DH discrete output is set. The pilot is also able to activate five trip-point discrete outputs (100-1000 ft.) to signal additional alerts to the navigation management system if the aircraft descends through these altitudes.

In addition to the standard version, an optional night vision goggle (NVG) compatible display is available.



Radar Altimeter



RAD 40

# RA-4000 AND RA-4500 RADAR ALTIMETERS

## HIGHLIGHTS:

- Certified to TSO-C87 and ETSO 2C87
- EFIS interface (RA-4500)
- Increased pilot safety
- Software zero calibration
- Light-weight
- Easy installation
- Two-year warranty

## OPTIONS:

- Night Vision Goggle (NVG) compatible display
- Audio Tone Generator ATG-410

## RA-4000 and RA-4500

### SPECIFICATIONS

<b>Altitude Range:</b>	-20 to 2500 ft.
<b>Power Requirements:</b>	20 - 36 VDC; 400 mA MAX @ 28 VDC
<b>Environmental:</b>	-67°F to +158°F (-55°C to 70°C) Alt: 50,000 ft. (15,200 m)
<b>Size (HxWxL):</b>	3.06 x 3.15 x 6.78 in. (7.8 x 8.0 x 17.2 cm)
<b>Weight:</b>	Unit: 1.9 lbs. (0.86 kg) Ant. (2): 0.37 lbs. (0.17 kg)
<b>Antenna(s):</b>	Dual; response angles up to $\pm 20^\circ$ pitch, $\pm 30^\circ$ roll
<b>Transmitter Power:</b>	100 mW minimum out of transmitter
<b>Frequency:</b>	Frequency modulated continuous wave 4.3-GHz center frequency sweep, 4.25 to 4.35 GHz
<b>Update Rate:</b>	25 times/sec.
<b>Altitude Accuracy:</b>	0 to 100 ft. $\pm 3$ ft. 100 to 500 ft. $\pm 3\%$ 500 to 2500 ft. $\pm 5\%$
<b>Display Disable:</b>	Strut switch inputs
<b>Self-test:</b>	Power-on self test and recurring built-in test

### INTERFACE (INPUT/OUTPUT SUMMARY)

<b>Inputs</b>	Strut Switch
<b>Outputs RA4500</b>	RS-485/422 ARINC 429
<b>Outputs RA4000</b>	RS-485/422 RS-232C

### CERTIFICATIONS

<b>FAA Authorization:</b>	TSO-C87 Precision Equipment
<b>EASA Authorization:</b>	ETSO-2C87
<b>Environmental:</b>	DO-160E
<b>Software:</b>	DO-178B, Level C

## RAD-40

### SPECIFICATIONS

<b>Altitude Range:</b>	-20 to 3000 FT.
<b>Power Requirements:</b>	9 - 36 VDC; 450 mA @ 28 VDC
<b>Environmental:</b>	-4°F to +131°F (-20°C to +55°C) Alt: 50,000 ft. (15,200 m)
<b>Size (HxWxL):</b>	1.39 x 3.54 x 4.62 in. (3.5 x 9.0 x 11.7 cm)
<b>Weight:</b>	0.38 lbs. (0.17 kg)
<b>Type:</b>	LED, yellow seven segment
<b>Update Rate:</b>	2 times/sec.
<b>Decision Height Selection:</b>	10-ft. increments to 200 ft., 50-ft. increments from 200 to 950 ft.
<b>Flags:</b>	Displays Dashes ("—") when altimeter is unlocked
<b>Self-test:</b>	Lights all "8's" for LEDs and activates the DH LED
<b>DH Alert:</b>	Internal DH LED and external discrete output
<b>Trip Point Outputs:</b>	Five fixed trip points: 100, 150, 200, 500 and 1000 ft.

### CERTIFICATIONS

<b>FAA Authorization:</b>	TSO-C87
<b>Environmental:</b>	DO-160F
<b>Software:</b>	DO-178B, Level C.

\* When used with the RA-4000 or RA-4500 altimeters, the display will show -20 to +2500 ft.



3700 Interstate 35 South  
Waco, Texas 76706-3756 USA  
US: 800.487.4662  
International: +1.254.662.0000  
**FREEFLIGHTSYSTEMS.COM**