



RA-4000 AND RA-4500 RADAR ALTIMETERS

The accurate, reliable, and affordable safety solution



RA-4000 with Dual Antennas,
RAD-40 Radar Altimeter Display, and Mounting Tray

RA-4500 with ARINC 429 Interface, Mounting Tray,
Dual Antennas, and RAD-40 Radar Altimeter Display

For critical flight regimes, the new FreeFlight Systems RA-4000 and RA-4500 Radar Altimeters (TSO-C87) 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.

These systems are especially valuable when flying search and rescue missions, forestry operations, pipeline maintenance, offshore helicopter operations, aero-medical emergency services, border patrol, and electronic news gathering operations. The RA-4500 Radar Altimeter with its ARINC 429 output can be easily coupled with modern 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. 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 2000 feet down to ground level.

Consisting of a remote unit and dual antennas for increased accuracy, the RA-4000/4500 series of radar altimeters are designed to be lightweight, easy to install, and flexible in aircraft placement. For the professional or private pilot, the RA-4000 and RA-4500 are essential safety tools at an attractive price.

RAD-40 Radar Altimeter Display

The RAD-40 Radar Altimeter Display (TSO-C87) 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 readout as reported from the RA-4000 or RA-4500 through a standard RS-422 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. Moreover, the pilot is able to activate five trip-point discrete outputs (100-1000 ft.) to signal additional alerts to the flight management system or navigation management system if the aircraft descends through these altitudes. In addition to the standard version, a night vision goggle (NVG) compatible display is available. To simplify certain installations, a display mounted in a round faceplate adapter is also offered as an option.

HIGHLIGHTS

- Meets Precision Equipment output specification of TSO-C87
- ARINC 429 interface (RA-4500)
- Increased pilot safety
- Software zero calibration
- Lightweight
- Easy installation
- Two-year warranty

OPTIONS

- Night Vision Goggle (NVG) compatible display
- Round faceplate adapter for display

RA-4000 AND RA-4500 RADAR ALTIMETERS

RA-4000 and RA-4500

SPECIFICATIONS

Altitude Range:	-20 to 2000 ft.
Power Requirements:	20 - 36 VDC; 400 mA MAX @ 28 VDC
Environmental:	-67°F to +158°F (-55°C to 70°C) Alt: 50,000 ft. (15,200 m)
Size (HxWxL):	3.06 x 3.15 x 6.78 in. (7.8 x 8.0 x 17.2 cm)
Weight:	Unit: 1.9 lbs. (0.86 kg) Ant. (2): 0.37 lbs. (0.17 kg)
Antenna(s):	Dual; response angles up to ±20° pitch, ±30° roll
Transmitter Power:	100 mW minimum out of transmitter
Frequency:	Frequency modulated continuous wave 4.3-GHz center frequency sweep, 4.25 to 4.35 GHz
Update Rate:	25 times/sec.
Altitude Accuracy:	0 to 100 ft. ±3 ft. 100 to 500 ft. ±3% 500 to 2000 ft. ±5%
Display Disable:	Strut switch inputs
Self-test:	Power-on self test and recurring built-in test

INTERFACE (INPUT/OUTPUT SUMMARY)

	RA-4000	RA-4500
Inputs	Strut Switch	Strut Switch
Outputs	RS-485/422 RS-232C	ARINC 429 RS-485/422 RS-232C Optional ARINC 522 Analog

CERTIFICATIONS

FAA Authorization:	TSO-C87 Precision Equipment
Environmental:	DO-160E
Software:	DO-178B, Level C

RAD-40

SPECIFICATIONS

Altitude Range:	-99 to 9999 ft.*
Power Requirements:	9 – 36 VDC; 450 mA @ 28 VDC
Environmental:	-4°F to +131°F (-20°C to +55°C) Alt: 50,000 ft. (15,200 m)
Size (HxWxL):	1.39 x 3.54 x 4.62 in. (3.5 x 9.0 x 11.7 cm)
Weight (2):	0.38 lbs. (0.17 kg)
Type:	LED, yellow seven segment
Update Rate:	2 times/sec.
Decision Height Selection:	10-ft. increments to 200 ft., 50-ft. increments from 200 to 950 ft.
Flags:	Displays Dashes ("----") when altimeter is unlocked
Self-test:	Lights all "8's" for LEDs and activates the DH LED
DH Alert:	Internal DH LED and external discrete output
Trip Point Outputs:	Five fixed trip points: 100, 150, 200, 500 and 1000 ft.

CERTIFICATIONS

FAA Authorization:	TSO-C87
Environmental:	DO-160F
Software:	DO-178B, Level D

* When used with the RA-4000 or RA-4500 altimeters, the display will show -20 to +2000 ft.



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