

RADAR II AND III

GROUND SPEED SENSORS

Accurate and powerful ground speed sensors

Measuring ground speed has never been easier than with DICKEY-john high-performance ground speed sensors. Accurate speed sensing enables you to achieving top performance from your electronic monitoring and controlling products. An incorrect speed signal can potentially provide substantial errors in speed and distance measurement, chemical and fertilizer application and yield calculations. All of that can lead to expensive mis-applications, crop damage, reduced yields. The DICKEY-john Radar II delivers the truest velocity measurement at mounting heights over 96 inches (243.8 cm). The high-performance, top-of-the-line Radar III ground speed sensor is a streamlined, more compact version of DICKEY-john's best-selling Radar II model.

The true ground speed sensors calculate speed independently of wheel motion using a microwave (radar) signal and the principle of Doppler shift (measuring the changes in the frequency of the reflected signal). Because they don't use the movement of a wheel or drive shaft, errors in signal due to wheel slippage or wheel distortion from varying loads and ground conditions are eliminated.

The DICKEY-john radars may also be used to improve the performance of other monitors and control systems that require a speed sensor signal.

Features and Benefits:

- Views ground surface for accurate ground speed detection
- Velocity errors of less than or equal to 1% from .3 - 44 mph (.53-70.8 km/h) after field calibration
- High impact, chemical and weather resistant plastic housing
- Easy to install
- Mounts to view forward or backward from the vehicle
- Radar II mounting heights 18 - 96 inches (45.7 - 243.8 cm)
- Radar III mounting heights 18 - 48 inches (45.7 - 121.9 cm)



RADAR III



RADAR II



Backed by the Power of DICKEY-john:

When you buy a Radar II and III Ground Speed Sensor, you get all the dependability and value you expect from DICKEY-john products. DICKEY-john's advanced technology and superior electronics are backed by a team of expert, in-house mechanical, electrical, software, and test engineers.



DICKEY-john
SINCE 1966

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Specifications

Velocity Range

- .33 - 44 mph (.53 - 70.8 km/h) for 44 Hz/mph output frequency
- .26 - 44 mph (.42 - 70.8 km/h) for 59 Hz/mph output frequency

Accuracy

True Velocity errors of:

- $\leq \pm 3\%$.33 - 2 mph (.53 - 3.2 km/h)
 - $\leq \pm 1\%$ 2 - 67 mph (3.2 - 70.8 km/h)
- (Based on in-field system calibration)

Response, Output Speed

- ≤ 200 milliseconds lag for combo filter selection
[$d_v/d_t = 4.4$ mph/sec (6.4 km/h/sec)]

Turn ON/OFF Delay

- ≤ 12 inches (30.5 cm) distance traversed, typical

Footprint, Target Radar III

- Elliptical, 14.5 inches (36.8 cm) minor axis
- By 21.5 inches (54.6 cm) major axis
[at 24 inches (61 cm) mounting height]

Footprint Target Radar II

- Elliptical, 12 inches (30.5 cm) major axis
[at 24 inches (61 cm) mounting height]

Mounting Angle

- $35 \pm 5^\circ$ depressed from horizontal (from target surface)

Mounting Height Radar III

- 18 - 48 inches (45.7 - 121.9 cm) 24 inches (61 cm) nominal
(from target surface)

Mounting Height Radar II

- 18 - 96 inches (45.7 - 243.8 cm)

DC Power Requirements

- +VB (Unregulated battery voltage)
- +9 to 16 VDC @ $< .6$ Amp

Output Signal Characteristics

- VOH (High level output signal voltage in VDC)
- VOL (Low level output signal voltage in VDC)
- IOH (High level output source current in ma)
- IOL (Low level output sink current in ma)
 - VOH $\sim (+VB - 1.5 \text{ VDC}) - 1.051$ (IOH)
 - VOL $\leq .7$ VDC @ IOL ≤ 6 ma

Output Frequency

Factory selectable options:

- 59 Hz/mph (36.60 Hz/Km/h)
- 44 Hz/mph (27.45 Hz/Km/h)

Signal Output Filter Options

- Slow/Fast combo
- Fast (nominal .060 sec.)
- Superfast (nominal .014 sec.)

Output Stage Characteristics

- Transient/short protected NPN transistor
- ZOH (High level output source impedance)
- ZOL (Low level output sink impedance)
- ZOH ~ 1051 ohms
- ZOL ~ 63 ohms

Microwave Frequency

- 24.125 GHz ± 50 MHz except U.K. which is 24.300 GHz

Microwave Power

- 5mw, nominal Level

Overall Size

- Radar II: 4 x 4 x 12.25 inches (10.2 x 10.2 x 31.1 cm)
- Radar III: 4 x 3.4 x 3.1 inches (10.2 x 8.6 x 7.9 cm)

Weight

- Radar II: 4.5 lbs (2 kg)
- Radar III: 1 lbs (.5 kg)

Environmental Compliance

- EN ISO 14982
- ASAE EP-455
- Product is immuned to reverse polarity, EMI, and electrical transients such as load dump, alternator field decay, inductive load switching, etc.
- Operating temperature: -40° to 180° F (-40° to $+85^\circ$ C).
- Environmentally durable, i.e., not affected by chemicals, dust, salt spray, rain and wash.
- Operational vibration limits with isolation mounts
(Only valid for Radar III)
- 0.75 g (0.03 oz) from 200Hz - 350Hz, 3 g (0.11 oz) from 351Hz - 2000Hz (Only valid for Radar III)

Connector

Amp connector. The standard +12V unit is as follows:

- Amp 206429-1 (Mating Connector AMP 206430-2)
- Pin 1 Ground - Black
- Pin 2 Signal Out - Green
 - 0 - 12 VDC
 - Symmetrical Squarewave
- Pin 3 +12 VDC - Red
- Pin 4 Radar Presence

Note: Pin 3 and Pin 4 are jumpered at the connector.

Approvals:

Radar III

- eMark Certification e80002J
- Industry Canada certification 5682A-DJCRVSIII
- FCCID: B7JDJCRVSIII

Radar II

- eMark Certification e80001J
- Industry Canada certification 5682A-DJCRVSI
- FCCID: B7JDJCRVSI