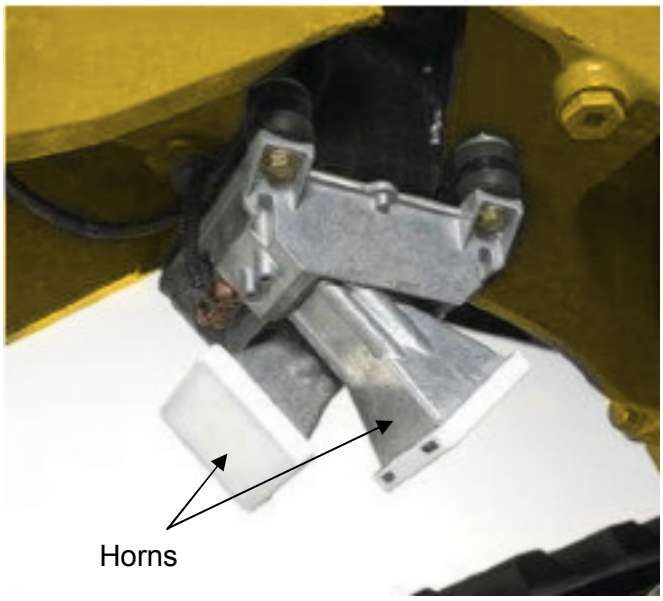
Dual Beam Radar



Powell Agricultural Solutions Dual Beam Radar

This dual beam ground speed sensor uses a concentrated millimeter wave radar signal and the proven Doppler (frequency shift) principle to accurately measure true ground speed. Two completely independent beams operate 90 degrees from each other which reduces the impact of mounting angle on signal power and accuracy. A self-compensating feature maintains accuracy over varied surfaces eliminating the need for calibrating.

Operational Control

Speed output on the radar has been designed to interface with multiple user devices.

Part Numbers:

- **PAS90212659** (+12V, 1.2W) - N. America
- **PAS90212662** (+12V, 0.1W) - Europe
- **PAS90212666** (+24V, 1.2W) - N. America

Radar Enclosure

- Completely sealed unit can be submerged underwater.
- Metal housing enhances the ESD performance, and acts as a heat sink for the transceivers.

CAN Capabilities

The Dual Beam Radar's design is CAN (Controller Area Network) based. CAN allows data to be transmitted to all controllers simultaneously. Vehicle direction is also determined and can be transmitted per ISO CAN standards.

- Transceivers and sensor can be disabled during operation
- Diagnostic capabilities

Two completely independent radar beams, 90 degrees from each other, are emitted from an antenna in each horn making the radar highly accurate. Having two sources of speed measurement reduces dropouts.

While this signal is useful for the information displays, it also enables closed-loop control systems, such as variable rate application techniques, and intelligent vehicle driveline management. A reliable true ground speed signal will also support emerging autonomous vehicle concepts.

The Dual Beam Radar has passed the full spectrum of tests specified in the ASAE EP-455 Standard for electronics on mobile equipment including temperature, vibration, moisture, dust, electrical, and electromagnetic compatibility (EMC) tests. The unit also meets the requirements of the R&TTE directive and is CE compliant.

PAS Dual Beam Radar Product Specifications

Velocity Range 0.5 to 62 mph (0.8 km/h to 100 km/h)

Accuracy ≤ ± 5% 0.5 to 1.3 mph (0.8 to 2.0 km/h)
≤ ± 2% 1.3 to 37.3 mph (2.0 to 60 km/h)
≤ ± 5% 37.3 to 62 mph (60 to 100 km/h)

Output Frequency **57.42 Hz/mph (35.6717 Hz/km/h)**

Square Wave Output VOH≥ +V (battery)-1.5V
@ I OH= 30 mA
VOL≤ 0.6 V
@ I OL= 30 mA

Start/Stop Delay ≤ 250 milliseconds
≤ 25 cm

Microwave Frequency 24.125 GHz (standard)

Mounting Angle Horizontal ± 10°

Mounting Height 18 to 60 inches from target surface (457 to 1524 mm)

Mounting Fasteners (4) 8 mm Cap screws. Hand start screws (and nuts if used) prior to applying torque of 19-28 Nm each.

Overall Dimensions 6.2in. x 6.3in. x 6.0in.
(158 x 161 x 153 mm)

Weight 4 lbs. (1.8 kg)

Connector Delphi Metri-Pack (10-pin)
Mating Connector P/N: 12048226

Pin A	Reserved
Pin B	Reserved
Pin C	Speed Output
Pin D	CAN High
Pin E	Ground
Pin F	Supply Power
Pin G	CAN Low
Pin H	Reserved
Pin J	Reserved
Pin K	Reserved

Electrical Supply +9 to +16V DC input voltage range ≤ 500 mA
+9 to +32V DC input voltage range ≤ 500 mA
(option for some configurations)

Electrical Protection Standard transient and steady state electrical protection (short circuit, reverse polarity, load dump, ESD, etc.)
Product will survive submersion with mating harness connected.

Output Power 1.8 W EIRP Standard
100 mW EIRP EU Version

Regulatory Compliance FCC
IC
CE

Storage Temperature -104°F to +185°F
(-40°C to +85°C)

Operating Temperature -86°F to +185°F
(-30°C to +85°C)

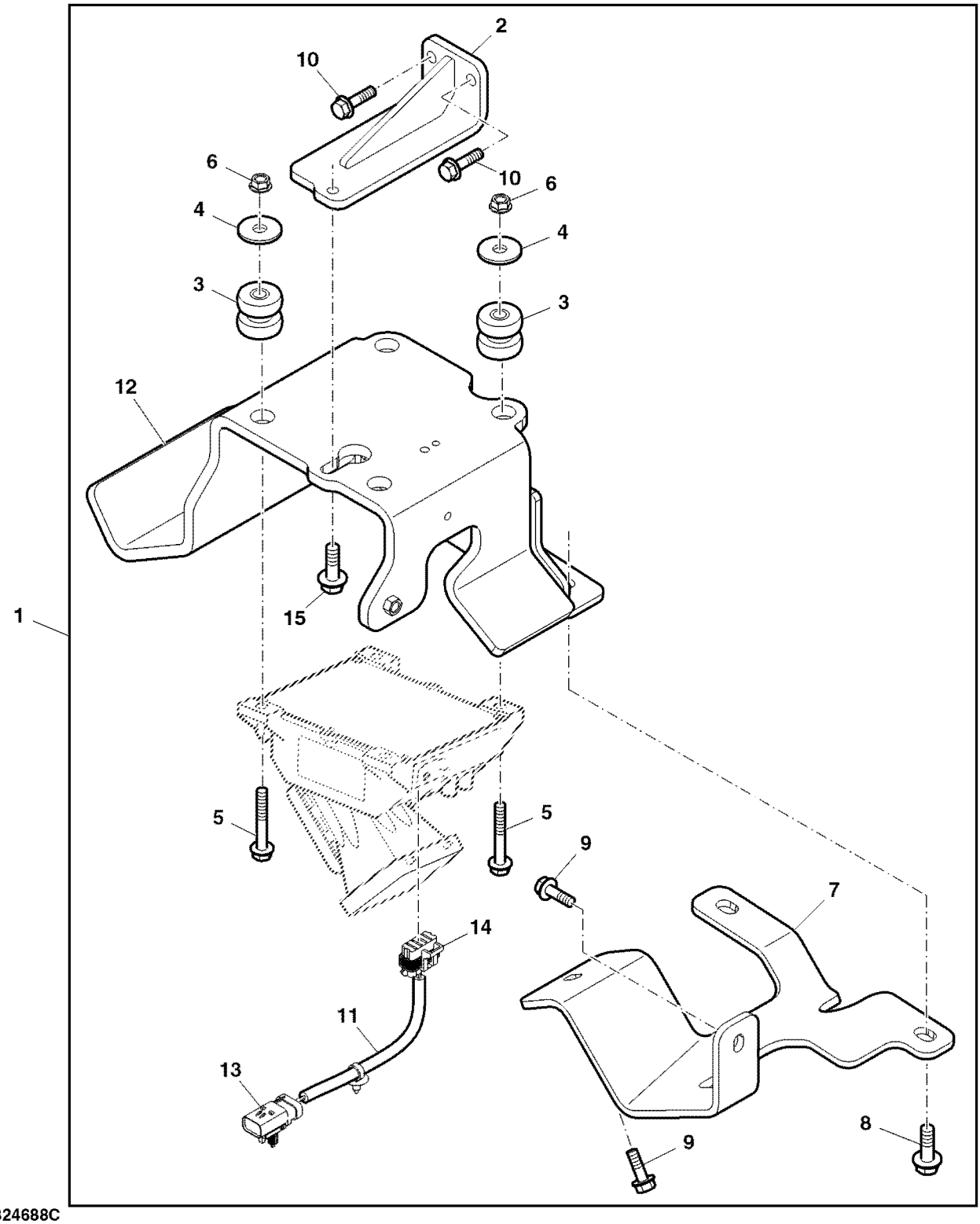
The following CAN message will be sent from the sensor.

PGN	Bytes	Data 0	Data 1	Data 2	Data 3	Data 4	Data 5	Data 6	Data 7
FE49	8	Speed lower byte	Speed upper byte	FF	FF	0	FF	FF	Direction
		(hex value D1D0, units 0.001 meter/sec)							00 - Reverse 01 - Forward 10 - Error 11 - Not available or not installed
		Example							
		FC	0C	FF	FF	0	FF	FF	01
		11.9664 (KPH)							Forward

PGN	Bytes	Data 0	Data 1	Data 2	Data 3	Data 4	Data 5	Data 6	Data 7
EF21	8	AD	0	Module ID	Front horn speed lower byte	Front horn speed upper byte	Rear horn speed lower byte	Rear horn speed upper byte	Radar Beam Status
					(hex value D4D3, units 0.001 meter/sec)		(hex value D6D5, units 0.001 meter/sec)		00 - invalid 10 - Beams Active 20 - Beams Off 30 - Missing Front Beam 40 - Missing Rear Beam
		Example							
		AD	0	A9	B8	11	C3	4	10
		16.3296 (KPH)					4.3884 (KPH)		Beams Active

PAS Dual Beam Radar Mounting Kit

Mounting Kit contains a mounting bracket, complete wire harness, and hardware.



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