

## AARDVARK DR+GPS

### KEY FEATURES

- Instantaneous and accurate positions in deep urban canyons and dense forests.
- Continuous position outputs in tunnels, parking garages and on lower bridge decks.
- Reliable positioning for tracking high-value assets and for mapping applications.
- Improves QoS and customer satisfaction and retention to maximize service revenue.
- 19 mm x 19 mm SMT module
- Provides DR data with 5Hz update frequency.

### WHEN GPS ALONE IS JUST NOT GOOD ENOUGH

The Trimble® Aardvark DR+GPS combines dead reckoning (DR) with GPS to produce accurate and instantaneous positions, even under the most difficult conditions. For service providers tracking high-value or perishable cargo, Aardvark DR+GPS dramatically improves quality of service (QoS). Dead reckoning (DR) estimates position based on heading and distance traveled since the last known position. The more accurate the speed, time and heading inputs, the more accurate the dead reckoning.

This is where GPS helps. GPS continuously calibrates the gyro and speed sensors to produce optimal dead reckoning. Aardvark DR+GPS has an on-board gyro sensor and accepts inputs from an odometer pulse and a forward/reverse indicator. Its sophisticated DR+GPS algorithm autocalibrates these sensors and optimally blends the sensor inputs and GPS to produce accurate position and velocity outputs in the most hostile GPS environments.

The Aardvark DR+GPS comes in two flavors: the -30 that must be flat mounted and the -50 that can be mounted in any orientation.

The -50 version contains a three axis gyro and sophisticated algorithms to self-calibrate. This allows the module to be mounted in any orientation on your vehicle and still output the highest quality position and velocity measurements.



## AARDVARK DR+GPS MODULE

An SMT module suitable for integration in navigation, telematics and tracking systems. This module includes a sophisticated DR processor and gyro sensor and accepts external inputs from speed pulse and optional forward/reverse indicator. Antenna Open/Short detection and reporting is supported.

### OVERVIEW

- DR positioning solution with integrated GPS receiver and gyro sensor
- SMT form factor 19 mm x 19 mm x 2.54 mm
- Supports both NMEA and HIPPO binary protocols
- Automatic calibration of external sensor inputs
- Accepts Map Match Inputs

### GPS PERFORMANCE CHARACTERISTICS

Refer to the Trimble Condor GPS Receiver datasheet

### PERFORMANCE CHARACTERISTICS

Fully calibrated and stable system, clear view accuracy  
For GPS performance characteristics, refer to the Trimble Condor GPS Receiver datasheet

Receiver Type	GPS Single Frequency L1, SBAS capable
Position Update Rate (DR)	5 Hz (Default) with 10 Hz Option
Horizontal Accuracy (DR)	5 m (CEP 50%)
Altitude Accuracy (DR)	5 m (CEP 50%)
Speed Accuracy	0.5 % of Speed
Heading Accuracy	<2 degrees
PPS Accuracy, relative to UTC/GPS-Time	± 25 ns (50%)

### TTF

DR-TTF ..... 2 s

### PROTOCOLS

Configurable ..... NMEA or HIPPO binary  
NMEA Messages ..... GGA, GSA, GSV, RMC, VTG and ZDA  
Supports proprietary NMEA messages

### INTERFACES

• All digital inputs and outputs are 3.3 V Low-Voltage TTL compatible  
Inputs .....  $V_{IL} \leq 0.8 V$ ,  $V_{IH} \geq 2.0 V$   
Outputs .....  $V_{OL} \leq 0.4 V$ ,  $V_{OH} \geq 2.4 V$   
UART ..... 38400 Baud, 8 data bits, None parity, 1 stop bit  
(default, Baud rate and Parity are configurable)  
Odometer ..... 0 kHz–3 kHz, distance of 1 cm–1 m per pulse  
Forward/Reverse indicator (Optional)

### ANTENNA INPUT

- Support for active antennas (3.0 V supply, 25 dB LNA gain)
- For passive or 5.0 V antennas, see application notes in Aardvark manual

### POWER SUPPLY

Main Power Supply Voltage	3.0 V to 3.6 V (3.3 V typical)
Power Consumption	200 mW (typical)
Backup Power Supply Voltage	2.5 V to Vcc
Backup Power Consumption	6 $\mu A$ @ 25 °C
Antenna Power Supply Voltage	Vcc

### ENVIRONMENTAL CHARACTERISTICS

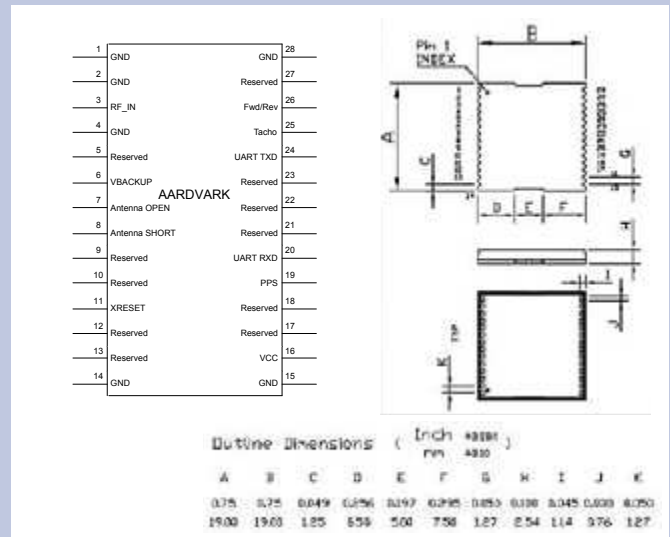
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +105 °C
Humidity	5% to 95% RH non-condensing @ 60°C
Vibration	5 Hz to 20 Hz: 0.008 g <sup>2</sup> /Hz 20 Hz to 100 Hz: 0.05 g <sup>2</sup> /Hz 100 Hz to 900 Hz: -3 dB/octave
Module Dimensions	19 mm x 19 mm x 2.54 mm

### ACCESSORIES

- Antenna – Compact, active, magnetic and non-magnetic antennas suitable for vehicle installations.
- Evaluation Kit -- the A3000 is an enclosure with an automotive connector for easy vehicle installation and evaluation.

### ORDERING INFORMATION

PIN #	MODEL	COMMENTS
88788- 30	Flat	This version must be mounted flat in the vehicle.
88788- 50	Tilt	This version includes a three axis gyro and can be mounted in any orientation in the vehicle.



Parts of this product are patent protected.  
Trimble has relied on representations made by its suppliers in certifying this product as RoHS compliant.  
Specifications subject to change without notice.  
Trimble Navigation Limited is not responsible for the operation or failure of operation of GPS satellites or the availability of GPS satellite signals.

### NORTH AMERICA

Trimble Navigation Limited  
Corporate Headquarters  
935 Stewart Drive  
Sunnyvale, CA 94085  
+1-800-787-4225 Phone  
+1-408-481-8258 Phone  
Email: AD\_Sales@trimble.com

### EUROPE

Trimble Navigation Europe  
+46 70-544-10-20 Phone

### KOREA

Trimble Export Ltd, Korea  
+82-2-555-5361 Phone

### CHINA

Trimble Navigation Ltd, China  
+86-10-8857-7575 Phone

