

POS MV™ SPECIFICATIONS

ROBUST POSITION AND ORIENTATION SOLUTIONS FOR MARINE MAPPING

Applanix Position and Orientation Systems for Marine Vessels (POS MV) are engineered to support water science data collection operations, particularly those where accurate, uninterrupted, and robust solutions are needed for direct georeferencing and mapping. Professionals involved in surf zone and coastal area mapping, harbor lane surveys, environmental assessments, channel inspection and dredging assessment, offshore resource exploration, erosion mapping, maritime and coastal waterway infrastructure inventory mapping depend on POS MV solutions.

Employing state-of-the-art high precision gyros which are tightly coupled to supporting GPS, the POS MV provides continuous and accurate position and orientation data logging for vessel and sensor guidance. Reliable POS MV output is produced in severe sea conditions, during periods of blocked or intermittent GPS, in areas where GPS reception is compromised by multipath effects, or at times when position drift must be reduced and faster signal reacquisition is essential.

POS MV delivers a full six degree-of-freedom position and orientation solution measuring location, velocity, attitude, and heave plus acceleration and angular rate vectors. Applanix marine solutions are able to affix position and orientation data accurately under the most demanding conditions, regardless of vessel dynamics, 200 times each second, making direct georeferencing and motion compensation for maritime remote sensing operations a productive and practical option.

PERFORMANCE SUMMARY - POS MV Accuracy

POS MV 320	DGPS	RTK	GPS Outage
Position	0.5 - 2 m ¹	0.02 - 0.10 m ¹	<2.5 m for 30 s outages, <6 m for 60 s outages
Roll & Pitch	0.020°	0.010°	0.020°
True Heading	0.020° with 2 m baseline 0.010° with 4 m baseline	-	Drift less than 1° per hour (negligible for outages <60 s)
Heave	5 cm or 5% ²	5 cm or 5% ²	5 cm or 5% ²

POS MV WaveMaster	DGPS	RTK	GPS Outage
Position	0.5 - 2 m ¹	0.02 - 0.10 m ¹	<3 m for 30 s outages, <10 m for 60 s outages
Roll & Pitch	0.030°	0.020°	0.040°
True Heading	0.030° with 2 m baseline	-	Drift less than 2° per hour
Heave	5 cm or 5% ²	5 cm or 5% ²	5 cm or 5% ²

POS MV Elite	DGPS	RTK	GPS Outage
Position	0.5 - 2 m ¹	0.02 - 0.10 m ¹	<1.5 m for 60 s outages DGPS, <0.5 m for 60 s outage RTK
Roll & Pitch	0.005°	0.005°	0.005°
True Heading	0.025°	0.025°	Drift less than 0.1° per hour (negligible for outages <60 s)
Heave	3.5 cm or 3.5% ²	3.5 cm or 3.5% ²	3.5 cm or 3.5% ²

¹ One Sigma, depending on quality of differential corrections

² Whichever is greater, for periods of 20 seconds or less

SYSTEM SPECIFICATIONS

COMPONENT	DIMENSIONS	WEIGHT	TEMPERATURE	HUMIDITY	POWER
PCS-1	L = 432mm, W = 89mm, H = 356mm	5 lb	0 °C to +55 °C	10 - 80% RH	110/230 Vac, 50/60 Hz, auto-switching 80
PCS-2	L = 281mm, W = 165mm, H = 90mm	3 lb	-20 °C to +60 °C	5 - 90% RH	24 Vdc, 50 W (peak)

HOUSING AND ADAPTOR PLATES

COMPONENT	DIMENSIONS	IP RATING
Waterproof Housing	L = 209mm, H = 181mm	IP68
Adaptor Plate	L = 135mm, W = 142mm, H = 19mm	IP68

INERTIAL MEASUREMENT UNIT (IMU)

TYPE	DIMENSIONS	WEIGHT	TEMPERATURE	ORIGIN
IMU-1	L = 165mm, W = 162mm, H = 162mm	4.5 lb	-40 °C to +70 °C	US
IMU-2	L = 204mm, W = 204mm, H = 168mm	3.5 lb	-40 °C to +60 °C	US
IMU-3	L = 160mm, W = 160mm, H = 102mm	3.6 lb	-40 °C to +60 °C	US

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

COMPONENT	DIMENSIONS	WEIGHT	TEMPERATURE	HUMIDITY
PS Antenna	L = 187mm, W = 53mm	0.5 lb	-40 °C to +70 °C	0-100% RH

1. ETHERNET INPUT OUTPUT

Ethernet Parameters	(100 base-T) Time tag, status, position, attitude, heave, velocity, track and speed, dynamics, performance metrics, raw IMU data, raw GPS data.
Display Port Control Port	Low rate (1 Hz) UDP protocol output TCP/IP input for system commands
Primary Port	Real-time (up to 200 Hz) UDP protocol output
Secondary Port	Buffered TCP/IP protocol output for data logging to external device

2. SERIAL RS232 INPUT OUTPUT

5 COM Ports	User assignable to: NMEA output (0-5), Binary output (0-5), Auxiliary GPS input (0-2), Base GPS correction input (0-2)
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3. NMEA ASCII OUTPUT

Parameters	NMEA Standard ASCII messages: Position (\$INGGA), Heading (\$INHDT), Track and Speed (\$INVTG), Statistics (\$INGST), Attitude (\$PASHR, \$PRDID), Time and Date (\$INZDA, \$UTC).
Rate	Up to 50 Hz (user selectable)
Configuration	Output selections and rate individually configurable on each assigned com port.

4. HIGH RATE ATTITUDE OUTPUT

Parameters	User selectable binary messages: attitude, heading, speed.
Rate	Up to 100 Hz (user selectable)
Configuration	Output selections and rate individually configurable on each assigned com port.

5. AUXILIARY GPS INPUTS

Parameter	NMEA Standard ASCII messages: \$GPGGA, \$GPGST, \$GPGSA, \$GPGSV. Uses Aux input with best quality.
Rate	1 Hz

6. BASE GPS CORRECTION INPUTS

Parameter	RTCM 1, 9, 18, 19, CMR and CMR+ input formats accepted. Combined with raw GPS observables in tightly-coupled navigation solution.
Rate	1 Hz

6. DIGITAL I/O

1PPS	1 pulse-per-second Time Sync output, normally high, active low pulse
Event Input (2)	Time mark of external events. TTL pulses > 1 msec width, rising or falling edge, max rate 200 Hz.

7. USER SUPPLIED EQUIPMENT

- PC for POS Controller (Required for configuration):
Pentium 90 processor (minimum), 16 MB RAM, 1 MB free disk space, Ethernet adapter (RJ45 100 base T), Windows 98/2000/NT/XP
- PC for POSpac Post-processing Software: Pentium III 800Mhz or equivalent (minimum), 256 MB RAM, 400 MB free disk space, USB Port (For Security Key), Windows 2000/XP

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