



# POS MV

## MAXIMIZE YOUR ROI WITH POS MV SURFMASTER

POS MV SurfMaster is a user-friendly, turnkey system designed and built to provide accurate attitude, heading, heave, position, and velocity data of your marine vessel and onboard sensors.

POS MV is proven in all conditions, and is the georeferencing and motion compensation solution of choice for the hydrographic professional.

MV blends GNSS data with angular rate and acceleration data from an IMU and heading from the GPS Azimuth Measurement System (GAMS) to produce a robust and accurate full six degrees-of-freedom position and orientation solution.

### Key Features

- ▶ Up to 0.03° roll and pitch performance
- ▶ IN-Fusion 2.0 ensures optimal GNSS aiding for any given conditions
- ▶ TrueHeave - no requirement to tune filter for specific conditions, no settling time so no run in time
- ▶ High accuracy inertial measurement units featuring SmartCal
- ▶ Data time tagged to microsecond accuracy



PERFORMANCE SUMMARY  
POS MV SURFMASTER ACCURACY

	DGPS	Fugro MarineStar®	IARTK	POSPac MMS PPP	POSPac MMS IAPPK	Accuracy During GNSS Outage
Position	0.5 - 2 m <sup>1</sup>	Horizontal: 10 cm 95% Vertical: 15 cm 95%	Horizontal: +/- (8 mm + 1 ppm x baseline length) <sup>2</sup> Vertical: +/- (15 mm + 1 ppm x baseline length) <sup>2</sup>	Horizontal: < 0.1 m Vertical: < 0.2 m	Horizontal: +/- (8 mm + 1 ppm x baseline length) <sup>2</sup> Vertical: +/- (15 mm + 1 ppm x baseline length) <sup>2</sup>	~ 6 m for 30 s total outages (RTK) ~ 3 m for 60 s total outages (IAPPK)
Roll & Pitch <sup>3</sup>	0.04°	0.03°	0.03°	< 0.03°	0.025°	0.05°
Heading <sup>3</sup>	0.06° with 4 m baseline 0.08° with 2 m baseline	-	-	-	-	0.2° (IAPPK, 60 second outage) 0.3° (RTK, 60 second outage)
Heave TrueHeave™	5 cm or 5% <sup>4</sup> 2 cm or 2% <sup>5</sup>	-	-	-	-	5 cm or 5% <sup>4</sup> 2 cm or 2% <sup>5</sup>

PCS OPTIONS

COMPONENT	DIMENSIONS	WEIGHT	TEMPERATURE	HUMIDITY	POWER
Rack Mount PCS	L = 442 mm, W = 356 mm, H = 46 mm	3.9 kg	-20 °C to +70 °C	10 - 80% RH	AC 120/230 V, 50/60 Hz, auto-switching 40 W
Small Form Factor PCS	L = 167 mm, W = 185 mm, H = 68 mm	2.5 kg	-20 °C to +60 °C	0- 100% RH	DC 10-34 V, 35 W (peak)

INERTIAL MEASUREMENT UNIT (IMU)

ENCLOSURE	DIMENSIONS	WEIGHT	TEMPERATURE	IP RATING
Between Decks	L = 158 mm, W = 158 mm, H = 124 mm	1.66 kg	-40 °C to +60 °C	IP65
Submersible	Ø100 mm (base plate Ø132 mm) X 61 mm <sup>6</sup>	2.4 kg	-40 °C to +60 °C	IP68

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

COMPONENT	DIMENSIONS	WEIGHT	TEMPERATURE	HUMIDITY
GNSS antenna	Ø178 mm, W = 73 mm	0.45 kg	-50 °C to +70 °C	0- 100% RH

ETHERNET INPUT/OUTPUT

Ethernet ..... (10/100 base-T)  
Parameters..... Time tag, status, position, attitude, velocity, track and speed, dynamics, performance metrics, raw IMU data  
raw GNSS data  
Display Port ..... Low rate (1 Hz) UDP protocol output  
Control Port ..... TCP/IP input for system commands  
Primary Port ..... Real-time (up to 200 Hz) TCP/IP protocol output  
Secondary Port ..... Buffered TCP/IP protocol output for data logging to external device

SERIAL RS232 INPUT OUTPUT

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

NMEA ASCII OUTPUT

Parameters..... NMEA Standard ASCII messages: Position (\$GPGGA), Heading (\$INHDT), Track and Speed (\$INVTG), Statistics (\$GPGST), 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

HIGH RATE ATTITUDE OUTPUT

Parameter..... User selectable binary messages: attitude, heading, speed  
Rate ..... Up to 200 Hz (user selectable)  
Configuration..... Output selections and rate individually configurable on each assigned com port

AUXILIARY GNSS INPUTS

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

BASE GNSS CORRECTION INPUTS

Parameter..... RTCM V2.x, RTCM V3.x, CMR and CMR+, CMRx input formats accepted. Combined with raw GNSS observables in navigation solution  
Rate ..... 1 Hz

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

USER SUPPLIED EQUIPMENT

- PC for POSView Software (Required for configuration): Pentium 90 processor (minimum), 256 MB RAM, 2 GB free disk space, Ethernet adapter (10/100 Base-T Ethernet; IEEE 802.3 standard), Windows 7 SP1, Windows 7 Embedded, Windows 8, and Windows 10
- PC for POSpac MMS Post-processing Software: Intel Pentium series 1Ghz or or faster 64-bit processor (minimum), 2GB RAM, 2.6 GB free disk space, USB Port (For Security Key), Windows 7 SP1, Windows 8.1, Windows 10

<sup>1</sup> Depending on quality of differential corrections

<sup>2</sup> Assumes 1 m IMU-GNSS antenna offset

<sup>3</sup> No range limit

<sup>4</sup> Whichever is greater, for periods of 14 seconds or less

<sup>5</sup> Whichever is greater, for periods of 35 seconds or less

<sup>6</sup> Height excludes connector

APPLANIX

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Specifications subject to change without notice.