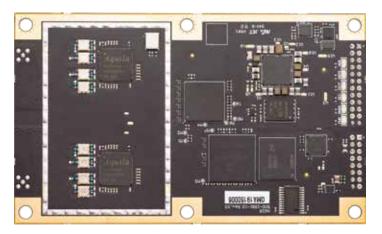




# ADVANCED HEADING AND RTK POSITIONING



## **Patlas**°

Develop sophisticated machine control and navigation solutions in a world full of complex dynamic environments. The Vega 40 is one of our most advanced GNSS heading and positioning boards.

The Vega 40 uses dual antenna ports to create a series of additional capabilities; including fast, high-accuracy heading over short baselines, RTK positioning, onboard Atlas L-band, RTK-enabled heave, low-power consumption, and precise timing.

#### **Scalable Solutions**

With the Vega 40, positioning is scalable and field upgradeable with all Hemisphere software and service options. Use the same centimeter-level accuracy in either single frequency mode, or employ the full performance and fast RTK initialization times over long distances with multi-frequency multi-constellation GNSS signals. High-accuracy L-band positioning from meter to sub-decimeter levels available via Atlas correction service.

#### **Ease of Migration**

Leverage the industry standard form factor for easy upgradeability from other manufacturers' modules.

#### **Key Features**

- Extremely accurate heading with long baselines
- Multi-frequency position, dual-frequency heading supporting GPS, GLONASS, BeiDou, Galileo, QZSS, IRNSS, and L-band
- Atlas<sup>®</sup> L-band capable to 4 cm RMS
- Athena™ GNSS engine providing best-in-class RTK performance
- Excellent coasting performance
- 5 cm RMS RTK-enabled heave accuracy
- Strong multipath mitigation and interference rejection
- New multi-axis gyro and tilt sensor for reliable coverage during short GNSS outages

GNSS Receiver Specifications				
Receiver Type:	Multi-Frequency GPS, GLONASS BeiDou, Galileo, QZSS, IRNSS and Atlas			
Signals Received:	GPS L1CA/L1P/I GLONASS G1/C	52/G3, P1/P2 33i/B10C/B2A/B2B/ E5a/E5b/E6BC/		
Channels: GPS Sensitivity: SBAS Tracking: Update Rate:	1,100+ -142 dBm 3-channel, parallel tracking 10 Hz standard, 1 Hz or 20 Hz optional (with activation)			
Timing (1 PPS) Accuracy: Rate of Turn: Cold Start: Warm Start: Hot Start:	20 ns 100°/s maximum 60 s typical (no almanac or RTC) 30 s typical (almanac and RTC) 10 s typical (almanac, RTC and position)			
Heading Fix: Antenna Input	10 s typical (Hot Start)			
Impedance: Maximum Speed: Maximum Altitude:	50 Ω 1,850 mph (999 kts) 18,288 m (60,000 ft)			
Accuracy Positioning: Autonomous, no SA: <sup>1</sup> SBAS: <sup>1</sup> Atlas H10: <sup>1,3</sup> Atlas H30: <sup>1,3</sup> Atlas Basic: <sup>1,3</sup> RTK: <sup>1</sup> Heading (RMS):	RMS (67%) 1.2 m 0.3 m 0.04 m 0.15 m 0.50 m 8 mm + 1 ppm 0.16° rms @ 0.5 separation 0.08° rms @ 1.0 separation			

	K/WIS (07 /0)	ZDK/W3 (73/0)	Mecho
o SA: 1	1.2 m	2.5 m	Mech
	0.3 m	0.6 m	
	0.04 m	0.08 m	
	0.15 m	0.3 m	Vibrati
	0.50 m	1.0 m	EMC:
	8 mm + 1 ppm	15 mm + 2 ppm	
	0.16° rms @ 0.5		
	separation		
	0.08° rms @ 1.0	Mecho	
	separation	Dimen	
	0.04° rms @ 2.0 m antenna		Dimen
	separation		Weigh
	0.02° rms @ 5.0 m antenna		Status
	separation		
	0.5°	-	
	30 cm rms (DGNSS) , 5 cm rms (RTK)		Power
Specifi	cations		
Specifi	Anten		

**L-Band Receiver S** Receiver Type: Channels: Sensitivity: **Channel Spacing:** Satellite Selection: Reacquisition Time:

Pitch/Roll (RMS):

Heave (RMS): 1

Single Channel 1525 to 1560 MHz -130 dBm 5.0 kHz Manual and Automatic 15 seconds (typical)

Depends on multipath environment, number of satellites in view, satellite geometry, and ionospheric activity

2 Depends on multipath environment, number of satellites in view, SBAS coverage, satellite geometry, and ionospheric activity

3. Hemisphere GNSS proprietary

4. With future firmware upgrade and activation

5. CMR and CMR+ do not cover proprietary messages outside of the typical standard

#### Communications Ports: 3 x full-duplex (1 x 3.3V CMOS, 1 x 3.3V CMOS with flow control, 1 x RS-232 with flow control) 1 x USB Host/Device 1 x Ethernet 10/100Mbps 2 x CAN (NMEA2000, ISO 11783) 1 x SPI 3.3V CMOS **Interface Level:** 4800 - 115200 **Baud Rates:** Correction I/O Protocol: Hemisphere GNSS proprietary ROX format, RTCM v2.3, RTCM v3.2, CMR<sup>5</sup>, CMR+<sup>5</sup> Data I/O Protocol: NMEA 0183, Crescent binary 1 PPS, CMOS, active high, rising edge sync, 10 k $\Omega,$ 10 pF load Timing Output: CMOS, active low, falling edge **Event Marker Input:** sync, 10 k $\Omega$ , 10 pF load Power Input Voltage: 3.3 VDC +/- 5% < 2.5 W all signals + L-band Power Consumption: 757 mA all signals + L-band **Current Consumption:** Antenna Voltage: 5 VDC maximum Antenna Short Circuit **Protection:** Yes Antenna Gain Input Range: 10 to 40 dB **Environmental** Operating -40°C to +85°C (-40°F to +185°F -40°C to +85°C (-40°F to +185°F Temperature: Storage Temperature: Humidity: 95% non-condensing (when in an enclosure) ... nanical Shock: EP455 Section 5.14.1 Operational (when mounted in an enclosure with screw mounting holes utilized) EP455 Section 5.15.1 Random ion. CE (IEC 60945 Emissions and Immunity) FCC Part 15, Subpart B CISPR 22 anical 100 L x 60 W x 10 H (mm) nsions: 3.9 L x 2.4 W x 0.4 (in) ht: 44 g (1.56 oz) Indications (LED): Power, Primary and Secondary GNSS lock, Differential lock, DGNSS position, Heading r/Data ector: 24-pin male header 2 mm pitch 16-pin male header 2 mm pitch na Connectors: MMCX, female, straight **Aiding Devices** Provides smooth and fast heading Gyro: reacquisition. During loss of GNSS signal's heading stability is degraded by $< 1^{\circ}$ per minute for up to 3

**Tilt Sensors:** 

minutes. Provide pitch, roll data and assist in fast start-up and reacquisition of heading solution



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