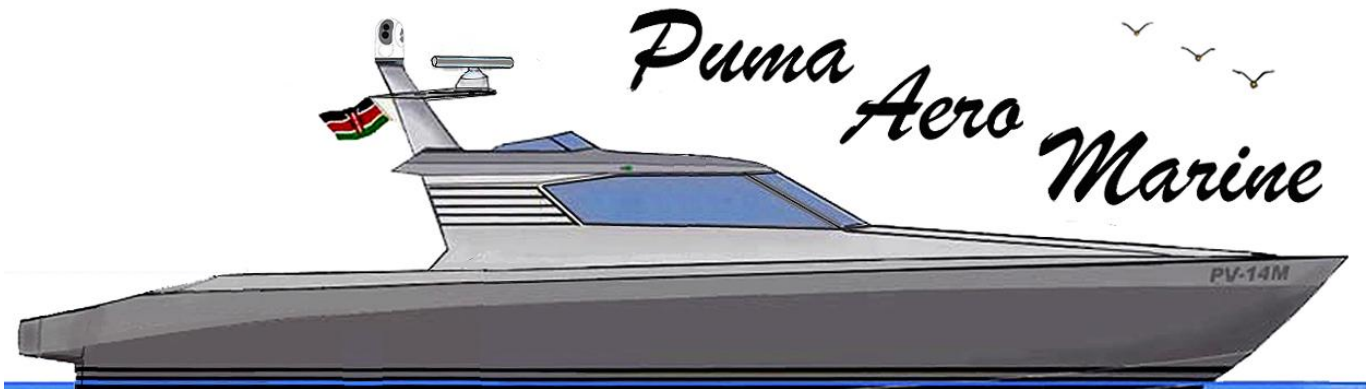


# FIV 14 Meter - Fast Interceptor Vessel

## Preliminary Specification

June 2014



### **FAST & VERY MANEUVERABLE TWIN DIESEL ~ FIV 14 METER FAST INTERCEPTOR VESSEL**

This 14 meter Fast Interceptor with POD drives is designed as a Police and/or Coast Guard vessel to operate at high-speed in shallow coastal waters or blue water up to approximately 150 miles from shore. The vessel has the ability to conduct her missions safely in open Oceans up to Sea State 3.

- Note: the specifications are very flexible with interior and equipment options.

### **MAJOR ASSETS:**

- The vessel is provided with the most efficient propulsion system available; Twin in-line 6 cylinder turbocharged after-cooled Volvo Penta IPS 800 diesel and POD drive system.
- Operate in shallow waters at speeds approaching 45 knots: 20% higher top speed than other drive systems from the same horse power.
- Virtually Silent Running: 50% lower perceived noise and vibration levels.
- Extremely Maneuverable: with her steerable pods.
- Joystick Docking or coming along side another vessel: Simply push the joystick in the direction you want your boat to move, or twist the top to rotate.
- Dynamic Positioning System holds the boat in position and heading, despite winds or currents. An excellent feature, useful in many mission situations.
- Cruise control is a new feature that provides fingertip control of engine rpm, letting the operator optimize fuel economy.
- Single-lever mode: lets you control all engines with one lever. Easy and precise even in rough seas.
- Integrated with the EVC (Electronic Vessel Control) system, the Glass Cockpit provides an enhanced overview and control of both engine and all navigation systems.
- A 30% reduction in fuel consumption provides a 40% longer operating range.
- Designed to be easily maintained and reduced operating costs.

## PRINCIPAL DIMENSIONS:

Length: 14.3 meters (47')                      Beam: 4.2 meters (13'11")  
Length Water Line: 13.3 meters (43'2")      Dead rise at Transom: 22.1 degrees  
Normal Draft 0.86 meters (2'8")              Fully laden Draft 0.97 meters (2'11")  
Displacement: Unladen 10.2 tons              Gross tonnage 12.5 tons  
Fuel: 1.0 tons Approximately 10 hours of operation at cruising power  
Cruising Speed Fast cruise 34 knots @ 1,800 RPM  
Maximum 47 knots (@ 28C degrees ambient air)

## CONSTRUCTION:

- Hull; Stepped "V" Reinforced Fiberglass/Kevlar with Core-Cell. Hand layup vacuum infused. Watertight bulkheads and engine mounts are of welded from 5083 aluminum alloy, reinforced with welded structural aluminum 5086-H116 alloy angles.
- Minimum of four (4) watertight compartments with watertight doors and/or hatches
- Superstructure and deck; Kevlar/Reinforced Fiberglass with Core-Cell. Hand layup vacuum infused.
- Aluminum and/or stainless steel mounting backing plates embedded in the core for cleats, handrails, doors, hatches, etc.
- Option \*Small Arms Ballistic Resistant composite in the vessels crew stations area.
- Option \*Small Arms Resistant Armor Glass NIJ Level IIIA - installed in all wheel house windows.
- Hand rails and railings of anodized aluminum
- The vessel to be designed in accordance with American Bureau of Shipping.

## PRIMARY POWER:

### **A revolutionary propulsion system for high speed patrol boats:**

The fast patrol boats with traditional inboard propulsion have an increasing demand for reduced emissions – in particular the NOx & Co2 – but also for improved handling, enhanced onboard comfort, higher speed, and fuel savings. The twin Volvo Penta IPS 800 system with the Volvo Penta D11 engine is the answer, combining all the above with reliability and outstanding environmental properties.

The twin Volvo Penta D11 engines are In-line 6 cylinder diesels, turbocharged after cooled heat exchangers, providing 417kW (567hp) to each POD's propeller shafts at 2,300 rpm.

The Volvo Penta's D11 engines have been developed from the latest design in modern diesel technology. The engines have a robust block with ladder frame and a one-piece cylinder head, forming the base for a smooth-running and durable engine. High pressure electronic unit injector system with 4-valve technology, "twin entry" turbo combined with a mechanical compressor and an efficient charge air cooler, governed by the electronic engine management system which results in efficient combustion with world-class diesel performance. This produces a unique acceleration capability, while maintaining clean exhausts, low emissions and reduced fuel consumption.



## PROPULSION DRIVES: Twin Volvo Penta IPS (Leading Pod System)

The propellers are forward facing at the front of a hydro dynamically optimized pod unit, working in undisturbed water, with a minimum of pressure pulses affecting the hull, and are specially designed for the D11 engines.

- The pod unit is designed for an efficient flat hull surface with maximum buoyancy. The propeller thrust is parallel with hull and all the power is driving the boat forward.
- The propeller position is well under the hull giving minimum risk for cavitation caused by air intrusion and less marine growth.



Maneuvering and handling are areas where Volvo Penta IPS truly sets a completely new standard. The reason for this excellent maneuverability is:

- The propulsion units are individually steerable, turning and pointing the entire thrust in the desired direction. This results in much higher efficiency and far greater response to helmsman's commands.



- Twin counter-rotating propellers on each propulsion unit means optimum thrust and no side forces, resulting in excellent course keeping capability.
- The propellers are producing horizontal thrust and working in undisturbed water with no cavitation.

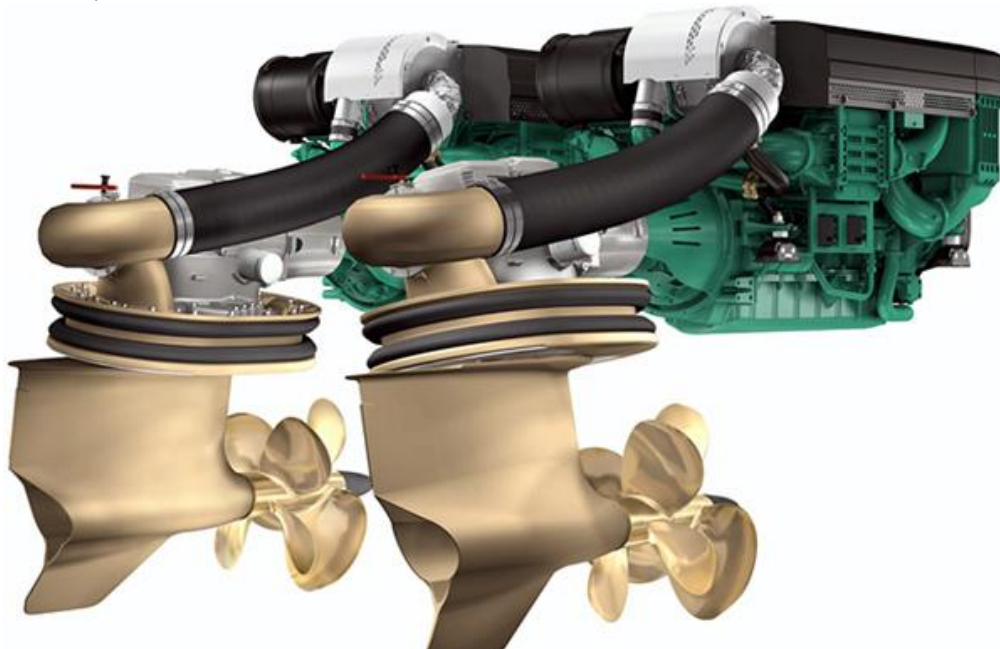
- There is an increased number of propeller blades (7) with smaller diameter to distribute the forces in combination with good tip clearance to the hull. This means that the pressure pulses created by the propellers have very little effect on the hull.
- Electronic controls give a distinct and precise feeling, and shifting is immediate. Thanks to the progressive electronic steering, the wheel spins easier at low speed, further reducing driver effort.
- The system is equipped with revolutionary features such as Joystick and Dynamic Positioning System.



- Integrated with the EVC (Electronic Vessel Control) system, the Glass Cockpit provides an enhanced overview and control of both engine and all navigation systems.
- At higher speeds there is immediate response to driver commands with safe and predictable handling. Driving the boat is both safe and economical.



- Power plants are mounted in a side by side engine compartment within an isolated fireproof and watertight compartment. Engine compartment equipped with two Fire Extinguishing System. The batteries are located in the watertight compartment just ahead of the engine compartment. The diesel fire/de-watering pump is at the aft portion of the wheelhouse, accessible from the main deck.



## ELECTRICAL SERVICE:

Main System: 24-28 Volt DC System: AC sub-systems 220 Volt / 50 Hz.

- Main engines starters 24 VDC
- Four 12 VDC Marine Gel-Cell Batteries, rated at 225 amp hours 1,470 cranking amps.
- Two 24 VDC Alternators, each providing 80 amps.
- Newman Phase Three series 220 VAC Battery Chargers
- Four (1 in each watertight compartment) automatic submersible bilge pumps 2,000 GPH
- Docking lights: Forward and Aft 50 watts each (24 VDC)
- IML underwater hull lights (24 VDC)
- Navigation lights, spot lights and cabin lighting all 24VDC
- Pure Sine Wave Inverter 24 VDC to 1,000 watts of 50 Hz, 220 VAC
- Shore Power 50 Amp Powersmart Heavy Duty 220/250 VAC Cordset 15.2 meter (50') length

## CREW:

A three (3) to four (4) man crew is recommended for normal operations. This vessel may be controlled from either the helm station on the flying bridge or in the enclosed wheel house. The wheelhouse area has an arrangement to seat five (5) on bolster seats, enclosed in air-conditioned comfort. Note: (Air conditioning is powered off the main engines and/or a separate 220 VAC system operated from shore power).



Below and forward of the wheelhouse is an entry to a small galley and crew head, equipped as follows:

- Refrigerator / Freezer: Gross capacity: 79.1 liters (2.8 cu ft.), dual power 24 VDC and 220 VAC
- One Burner Cook Top Stove Combo Alcohol and/or 220 VAC
- A Stainless Steel Microwave Oven 220 VAC
- Galley Sink
- Dinette nook seating for four
- Toilet, Manual Jabsco

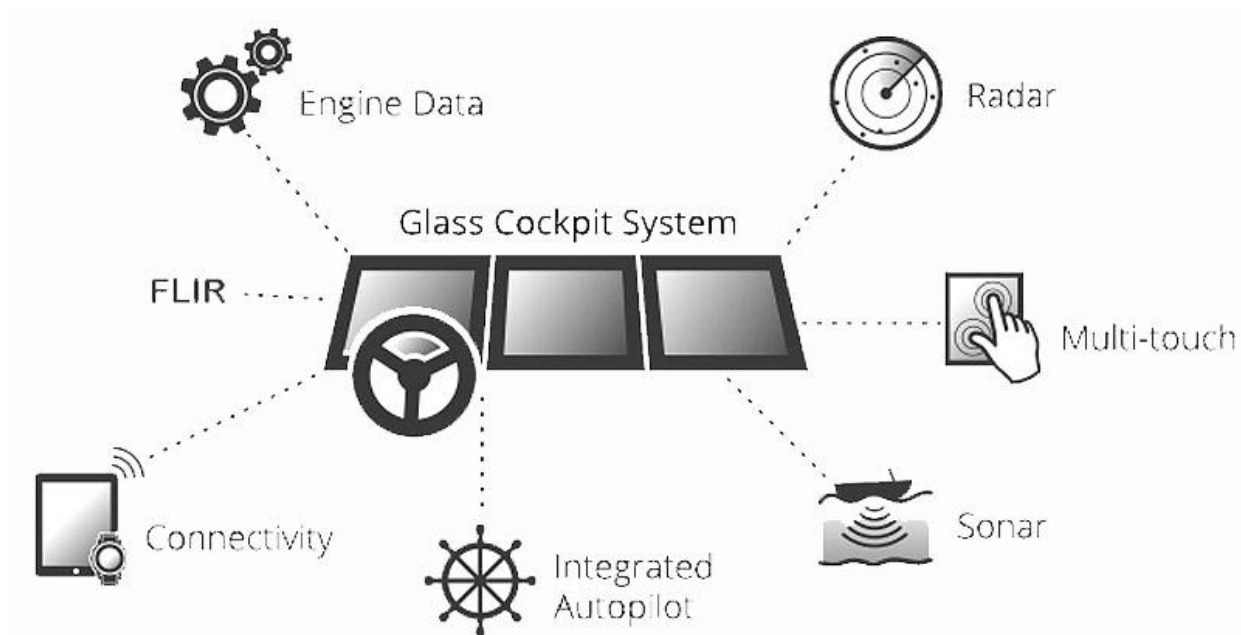
## ELECTRONICS:

Garmin the unique Glass Cockpit system means a clean, easy-to-use dashboard – and more importantly – enhanced overview with control of both engine and navigation in one place.



Integrated with the EVC system (Electronic Vessel Control), the Glass Cockpit gathers all driver information and displays it in one spot. The easy-to-handle, pinch-to-zoom displays give you instant control. In the wheelhouse are three of the largest Garmin displays. The GMM 190 ultra-thin 19" SXGA anti-glare touchscreen Monitor, 45.4 cm x 39.9 cm x 8.1 cm (19"), which are easy to read by the helmsman and the vessels captain. The fly bridge is provided with three Garmin (30.5 x 22.9 cm; 38.1 cm diagonal) (15") touchscreen displays.

- One look. One touch. One system.  
When you power up your boat all screens light up simultaneously. All settings that you control, including instrument dimming, are carried out concurrently at the helm and the flybridge. The Glass Cockpit system is a common, ergonomic design – and interface – for the whole dashboard, with push-buttons on the controls and touch-buttons on the screens.
- Auto guidance  
This unique feature searches through all relevant charts to create a route you can follow – and avoid shallow water, buoys and other obstacles. Coupled with the autopilot, it not only shows the way, it takes you there!
- Total integration  
Full EVC functionality means that you monitor functions like Dynamic Positioning System, Interceptors and Autopilot through the displays.



#### Marine Autopilot System: Garmin GHP™ 10V

- Garmin Auto-guided Navigation for Volvo Penta. Designed for Volvo Penta Inboard Performance Systems (IPS) joystick systems
- Shadow Drive™ technology, operators will enjoy the security of knowing they maintain control even when relying upon the autopilot. The Shadow Drive system automatically disengages the autopilot if the helm is turned, allowing the helmsman to maneuver the vessel. The autopilot automatically re-engages when the helmsman holds a steady course.
- Controlled using a GHC™ helm control unit and is compatible with the GHC remote and quatix™ the world's first marine GPS navigation watch featuring ANT™ wireless technology

- NMEA 2000® connectivity. This control unit communicates with the autopilot system via a NMEA 2000® bus, so autopilot heading data can easily be shared with other devices.
- The GHP 10V's simple interface offers easy operation with intuitive controls. Up to 3 GHC controllers can be interfaced with a single GHP 10V, allowing for autopilot capabilities in multiple stations on the vessel.
- The GHP 10V marine autopilot adds a whole new level of versatility. Made specifically for use with Volvo Penta's Inboard Performance Systems (IPS) Joystick systems, the GHP 10V gives mariners an easy-to-use autopilot setup for auto-guided navigation.
- The GHP 10V is a robust autopilot system designed to meet your needs and exceed your expectations. Its confidence you can count on when you're navigating the open waters.

#### GPS Receivers: Garmin GPS: 19x NMEA 2000® WAAS-capable

- The highly accurate GPS 19x NMEA 2000 position receiver/antenna provides 10 Hz update rates for position, velocity and time data. It offers high-sensitivity reception and enhanced position acquisition to the Garmin multifunctional displays (MFD), instrument display and autopilots.
- Delivers Reliable Location Data: The 32-channel receiver is capable of tracking multiple global navigation satellite systems, including GPS, GLONASS, Galileo<sup>1</sup> and QZSS<sup>1</sup>. Since more satellites are visible, it can provide more accurate fixes in challenging conditions. With its enhanced position, heading and speed accuracy delivered 10 times more often than other receivers/antennas, it provides smoother drawing of your position on the chart/plotter/MFD at higher speeds. It can determine your precise location to within 3 meters (9.84 ft).

#### FLIR **M-Series**: Premium Multi-Sensor Maritime Thermal Night Vision System

- Watch thermal and low-light video simultaneously on the EVC systems multiple displays and/or single multi-function display. Sleek, powerful, and effective, M-Series cameras are thermal night vision systems for on the water. The M-618CS system has a Thermal Range Performance of 1,200 meters for images the size of a man and 2,700 meters to see another vessel. It's clear, sharp images that let you see what you're trying to find or miss.



#### Open Array Radar: Garmin GMR™ 1206 x HD

- The Garmin GMR 1206 x HD open-array radar is a powerful radar which offers high-definition digital technology for superior target detection and image resolution. With 12 kW of power, the (1.83 m) 6 ft. GMR 1206 x HD will bring more detail and focus to the EVC system.
- The GMR 1206 xHD, a (1.83 m) 6 ft. scanner with 1.1 degree horizontal beam width and selectable 24/48 RPM rotation speeds. This high-performance radar comes standard with 12 kW of power providing a more accurate picture of the surroundings. The GMR 1206 x HD also features high-definition technology, providing up to 8 times more sampling data compared to our standard radar. With it, you'll get faster information acquisition and improved detection on small targets at a longer range.
- Maximum range 72 NM a with 20 meter minimum range
- High definition (outstanding target separation with less screen clutter)
- MARPA target tracking (collision avoidance)

### Transducer: Garmin GSD™ 22 Digital Remote Sounder

- The powerful Garmin GSD 22 digital sounder adds detailed sonar data to your compatible EVC Network. To provide high-speed sonar data returns and super-crisp detail.
- The GSD 22's digital design provides extraordinary target definition and deep water performance and allows it to transmit at up to 2 kW, depending on your transducer. The 22 also adjusts gain and transmits power automatically to optimize the returns for shallow water. It connects to a dual-frequency transducer and works with everything from a standard 500 W transom-mount transducer to a heavy-duty 2 kW thru-hull or in-hull transducer and can reach a depth of up to 1,524 meters (5,000').
- The AIS 600 black box transceiver allows you to receive AIS target data as well as transmit your own vessel information to others in the fleet with AIS receivers in your area.

### VHF Communication Radio

- Garmin VHF 300 AIS combines radio communication and 1 or 25 watts of transmit power with multi-station support to give you the flexibility and convenience you need to safely navigate and communicate on the open water.
- The VHF 300 AIS is equipped with a 2-way 30 W hailer system for communication with other boats or deckhands. In addition, the VHF 300 AIS has a voicemail feature that lets you pre-record a 15 second message and deliver the message to any Digital Selective Calling radio; The ability to replay the last 90 seconds of any incoming voice transmission at the touch of a button.
- The VHF 300 system provides detailed data on your surroundings, regardless of visibility. You'll have ship identification information, position, course and speed for vessels equipped with AIS within range. The VHF 300 AIS also receives both Class A and Class B signals at the same time to ensure no critical information is lost.

### Intercom system

- Bluetooth wireless combined wired submersible Intercom system 8 station.

### SAFETY EQUIPMENT:

- Complete First Aid Kit (First Voice™ FV3100 SET System)
- One 6 Person Canister Coastal life rafts, automatically inflated canopy with survival kit.
- Ten Life Jackets U.S.C.G. Type III
- Five Portable 1A10BC Rated Fire Extinguisher
- Each engine equipped with Fire boy Automatic FE-241 Fire Extinguishing System
- Fire and de-watering pump diesel 13.8 kW (10hp) Head lift Max 116 meters (380') Output Maximum 24,000 liters per hour (9,200 GPH)
- Four Manual Bilge Pump MK3 19 GPM self-priming pump for each watertight compartment
- To include all required safety equipment for the size and class of vessel
- Satellite 406 MHz EPIRB Category II

### FINISH:

- Exterior is primarily a Gel coat finish. Balance of exterior primed and painted according with INTERLUX specifications for their Perfection Topside Paint a, 2-part polyurethane.
- Below waterline primed and painted according with INTERLUX specifications for Interlux Nautical Epoxycop hard modified-epoxy antifouling paint.
- Interior walls painted or covered with deluxe commercial grade wall covering.
- Decks covered with grey Decko Dot Marine Flooring



## OTHER EQUIPMENT:

- Compass (Magnetic)
- Fenders along the gunnels
- Anchor with 45 meters of line and 2 meters of chain
- Lifting points (eyelets)
- Vessels Shipping Cradle
- Direct engine air inlet system
- Two 28 VDC engine compartment blowers
- One large 220 VAC engine compartment blowers to cool the engine compartment at the dock.
- Fuel Polishing System GCF MODEL FPS-240BCR
- Dock Lines / Tow Bridle / Larger Towing Bollard
- SeaLift stern platform lift up to 1,134Kg. (2,500 pounds) RIB Tender 4.2 meters (13'11") in length. Also provides the means to recover divers and/or swimmer from the water.

**CUSTOM DECORATION:** Interior decoration will be designed and provided by the Buyer.

**TRAINING:** Intense Training will be provided for client's key personnel for operating all equipment installed and vessel maintenance in Florida. Plus onsite training for other personnel provided in a maritime system simulator and on the vessel training.

**SPARES:** Provide recommended spare parts required for equipment installed on the vessel.

**WARRANTY:** All fabrication work unconditionally guaranteed for 12 months. Installed equipment by Manufacture's Standard Warranty based of the following utilization.

- Excess of 40 knots 150 hours annually or a 10% annual utilization
- Excess of 12 knots to 40 knots 1050 hours annually or a 70% annual utilization
- Excess of 5 knots to 12 knots 300 hours annually or a 20% annual utilization
- Total annual utilization 1,500 hours

**Design & Built by:** Puma Aero Marine of Florida

**Link:** <http://PumaMarine.com/> ~ **Email:** [Sales@PumaMarine.com](mailto:Sales@PumaMarine.com)



# Puma Aero Marine

