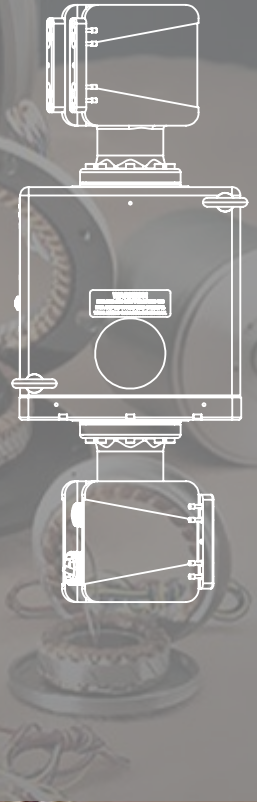


# VECTOR 150

Precision  
Pan-Tilt  
System



MOTION CONTROL

PAN-TILT MOTOR SYSTEMS



**General Dynamics Ordnance and Tactical Systems' precision pan and tilt systems** combine our high power DC brushless motors and high accuracy resolvers directly coupled to the payload for maintenance free operation with zero backlash. With a payload capacity of up to 150 pounds, the Vector-150 is ideally suited for multi-sensor platforms. The integrated 16 bit resolver is directly coupled to each axis for superior control and accuracy, making it ideal for long-range electro-optical and infrared camera systems. Built-in control electronics and software provide precise, smooth motion at all speeds. An integrated slip ring is standard on every unit, providing continuous rotation in the pan axis. The Vector-150 is also available with optional inertial gyro-stabilization, making it ideal for applications requiring dynamic position control.

General Dynamics Ordnance and Tactical Systems designs and manufactures a full portfolio of high-performance camera systems and components that provide our customers the clarity, accuracy, and reliability to successfully complete their

mission. Leveraging our custom motor and resolver technologies, we design and manufacture maintenance-free, precision pan-tilt systems with zero backlash and lower total cost of ownership.

# VECTOR 150

## Precision Pan-Tilt System

### FEATURES

- » Direct drive technology provides maintenance-free operation with zero backlash
- » High resolution and precision allow for long-range pointing accuracy and stability
- » Precise and smooth operation at all speeds
- » Lower cost of ownership due to high reliability and low maintenance
- » Versatile multi-sensor payload configurations
- » Larger diameter tilt axis drive shaft with improved bearing support and increased mechanical structural rigidity
- » Internal integrated GPS location capability
- » Internal slip ring with dual Gigabit Ethernet capability
- » Updated control electronics and software
- » Field programmable software
- » Elapsed-Time Clock measures run-time hours
- » Improved system diagnostics

### CONFIGURATION OPTIONS

*Gyro-Stabilization:* 2-Axis Pan and Tilt

*Marine Package:* Includes upgraded materials, improved seals, and powder coat paint with epoxy primer

*Finishes:* Desert Sand polyurethane paint (standard), white, black, and other custom colors and finishes available upon request

### SYSTEM SPECIFICATIONS

Operating Voltage	18-56 VDC
Operating Temperature	-40°C to +70°C (-40°F to +158°F)
Pan Speed	0.01 to 120°/sec
Pan Angle	Continuous
Tilt Speed	0.01 to 120°/sec
Tilt Angle	±60°
Resolution	0.005°
Position Repeatability	±0.01°
Position Accuracy	±0.1°
Backlash	None
Payload	150 lbs (75 lbs Max each side)
Continuous Torque	2500 oz-in @ 24 VDC
Weight	85 lbs (38.6kg)
Environmentally Sealed	IP67

### CONTROL SPECIFICATIONS

RS-232

Proprietary motion control algorithm developed specifically for Pan and Tilt systems

Predictive control loop based on a single adjustment for servo tuning greatly simplifies optimization for different payloads

Hardware and software control of position, speed, and acceleration at all times

Trapezoidal speed profile virtually eliminates overshoot at commanded position

### GYRO-STABILIZATION SPECIFICATIONS

Payload orientation is inertially stabilized in two axes to compensate large-amplitude, low-frequency disturbances, such as a rocking ship

Higher frequency disturbances can be stabilized with electronic stabilization of imaging system

Dual gyro modes to optimize performance for 1) ships and 2) masts and towers

# VECTOR 150

## Precision Pan-Tilt System

### BENEFITS

- » Capable of carrying payload weight of up to 150 lbs (75 lbs per side)
- » Better compatibility with different payloads for easier integration and servo loop tuning for optimal motion performance
- » Determine exact fielded location by querying each system on a network, e.g. use for target triangulation
- » Allows camera/radar image data to be passed through without compression or loss while still allowing 360 degree continuous rotation
- » Faster processor allows for enhanced controls to optimize integration/customization for different applications
- » Shortens time to market while increasing capabilities
- » Allows upgrades to be pushed to fielded applications without returning the systems to the factory
- » Track usage hours for reporting and/or for planning upgrades
- » Monitors health and status of system and provides BIT (Built-In-Test) for improved troubleshooting and diagnostics

