



# M21000

## **Specification**

**Rated Speed:** 4000 RPM

**Angular Momentum at Rated RPM:** 21,000 N-M-S

**Anti-Rolling Torque at Rated RPM:** 45,000 N-M

**Spool-up Time to Rated RPM:** 45 Minutes

**Spool-up Time to Stabilization:** 30 Min. (70% RPM)

### **Spool-up Power**

**AC Motor:** 3000 Watts

**DC Control:** 240 Watts

### **Operating Power**

**AC Motor (sea state dependent):** 1000-3000 Watts

**DC Control:** 240 Watts

**AC Input Voltage:** 208-230VAC (+/- 10%), 50/60Hz  
Single Phase

**DC Input Voltage:** 24VDC @ 10 Amps

**Sea Water Supply to Heat Exchanger:** 15.1 liters/min  
(4 gal/min)

**Maximum Ambient Air Temperature:** 60 Deg C  
(140 Deg F)

**Weight:** 1320Kg (2900 Lbs)

### **Gyro Dimensions:**

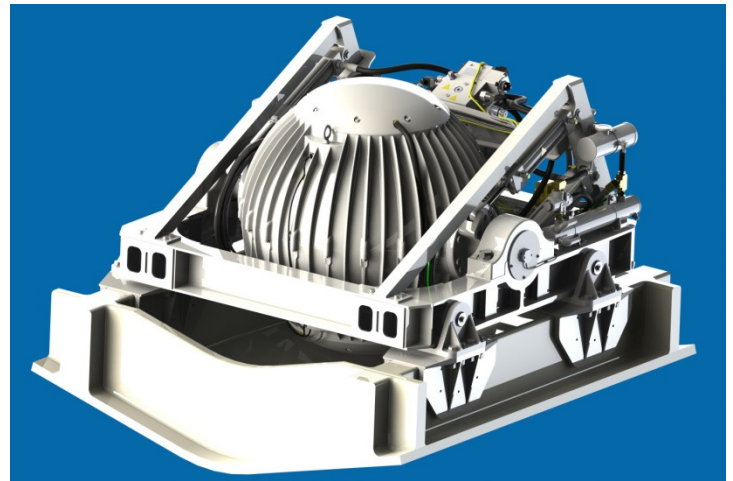
1.28 length x 1.42 width x 0.94 height – Meters

50.39 length x 55.9 width x 37 height - Inches

## **Performance**

Resonant boat roll is the most disorienting contrast with dry land experience and the least desirable motion on a boat. Uncomfortable, tiring, and probably the greatest cause of seasickness, it has been an unavoidable price to pay for many for the pleasure of being on the water.

Employing the principles of gyro-dynamics, Seakeeper vacuum-sealed gyro stabilizers exert a powerful righting torque that virtually eliminates boat roll without any need for drag-producing or damage-prone protrusions or appendages from the hull. Seakeeper's unique state-of-the-art motion control system actively regulates the hydraulic braking system to ensure the anti-roll torque is maximized for all hull designs and for the ever-changing operating and sea conditions.



## **Application**

Seakeeper's new M21000 gyro is perfect for larger yachts and vessels. Able to actively stabilize most vessels with displacements up to 90 tons, the M21000 is the perfect choice for discerning owners wanting a complete stabilization system that works equally well at zero-speed and at anchor and also while underway. For larger vessels, multiple units can be installed to achieve the desired stability characteristics.

### Electrical

The builder is responsible for supplying 208-230 VAC (+/- 10%), 50/60 Hz, single phase power on a 30 Amp service to the Motor Drive Box and 24 VDC on a 10 Amp service to the Control Box.

### Cooling

The Gyro bearings and Motor Drive Box are cooled by a closed glycol cooling loop that incorporates a sea water heat exchanger. The builder is responsible for providing 15.1 lpm raw water at ambient sea temperature and 6.9 Bar maximum pressure to this heat exchanger. The ambient air temperature in the compartment in which the Gyro and Motor Drive Box are mounted should not exceed 50°C.

### Loads

The boat builder or yard is responsible for designing the foundation to which the Gyro's saddle beams are attached and for ensuring that this foundation can safely transfer the concentrated Gyro loads from the saddle beams to the adjacent hull structure.

### Safety

The brake system automatically locks the Gyro so it cannot generate excessive anti-rolling torque loads in the event of a system fault or alarm, loss of electrical power or loss of brake pressure. The brake system can also be locked from the Keypad or by shutting off power at the circuit breaker.

### Location

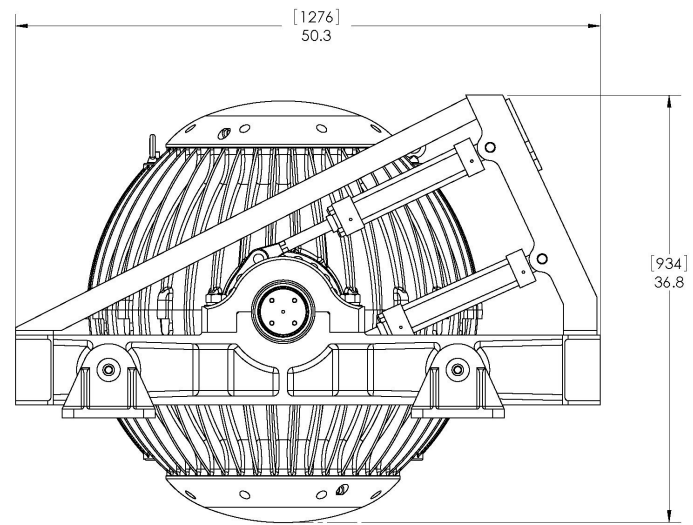
The Gyro is a torque device and therefore does not have to be installed at a specific forward or aft location or on the centerline. However, the Gyro should not be installed at forward locations in a high speed boat where the vertical accelerations exceed  $\pm 1$  G (0 to 2G range).

### Controls

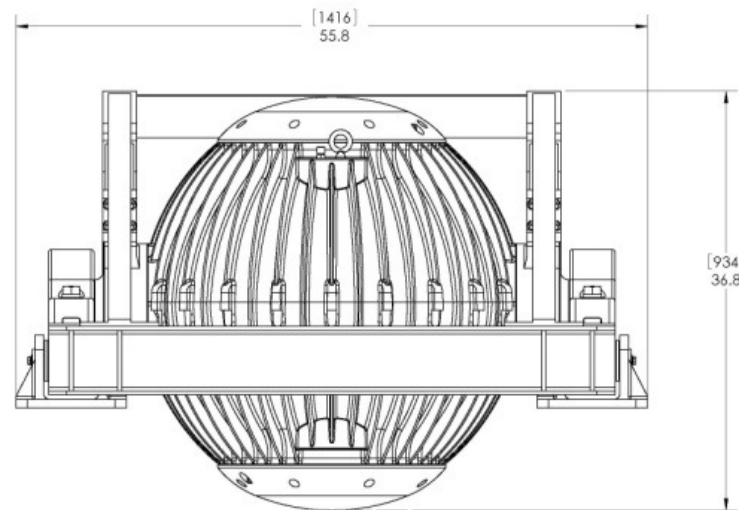
A Keypad and small Display are provided to start, operate, monitor and shutdown the Gyro.

### Monitoring

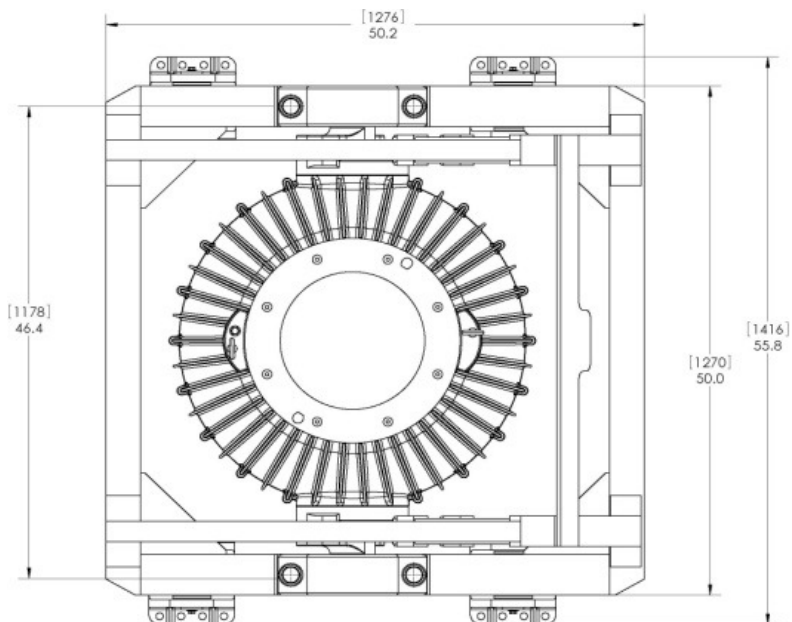
Sensors, alarms and shutdowns are provided to allow unattended operation. Sensors measure flywheel bearing temperatures, vacuum pressure, motor and drive temperatures, gimbal angle, brake pressure, and ship motion. The Gyro controller sends sensor values and alarm information to the display and also locks the brake and shuts down the motor drive in the event of a fault or alarm condition Gyro operating history during faults or alarms is recorded in the controller's memory for subsequent recall by a qualified service person if needed.



PORT SIDE VIEW



FRONT VIEW



TOP VIEW