Zephyr® Active Magnetic Bearing Controller

The Zephyr controller is a powerful, compact, cost effective magnetic bearing controller for turbomachinery and rotating equipment in the power range of 1 MW to 18 MW.

- Simple and fail-safe integration of the controller with the machine station via the digital output/input from the digital controller
- An optimised, automated commissioning and tuning process available to the OEM/end user
- Remote monitoring and adjustment capabilities
- Built-in condition monitoring system provides comprehensive diagnostics
- High processing performance which allows for more complex algorithms that provide higher dynamic efficiency, improved usability and ergonomics, and noise immunity
- The integrity of functional testing, verification and development of new features performed on in-house test rig is far superior to simulation testing methods used by others

**AT A GLANCE**

**Machinery power range:** 1 to 18 MW

**For critical applications requiring the highest availability:**
- Oil & gas transportation, storage and production
- Petrochemical and process equipment
- Compressors, motors, generators, pumping systems and industrial chillers
- Turbomachinery and blowers
- Sour gas with sealed bearings

**Benefits:**
- Very simple to operate: no control buttons
- No moving parts, contributing to exceptional reliability
- Flexible mounting: on the wall or in a cabinet
- Reduced maintenance cost with planned and predictive maintenance programmes
- Lower total cost of ownership due to higher reliability and lower maintenance costs
- Automated Commissioning can eliminate OEM/end user dependence on the supplier
- Capability of retrofit to magnetic bearings supplied by others

**Certification:**
- CE, CB and TR-CU

**Support:**
- 24-7 on-call service (reply within 1 hour)
- Spares service and extended warranty option
- Comprehensive training programme

**CONTROL LAW CAPABILITY**
- SISO/MIMO controller with tracking filters
- Multi-coordinate control (MCC)
- Automatic balancing algorithm (ABA)
- Runout compensation
- Open loop feed forward**
- Advanced amplifier algorithm (for software flux feedback)

**SENSOR SUPPORT**
- Inductive
- Magnetic displacement**
- Flux feedback**

**DIAGNOSTIC CAPABILITIES**
- Web server interface*
- Event logging*
- Automatic clearance check
- Integrated transfer function measurement**
- Integrated spectra capability**
- Integrated harmonic capture**
- 3rd level trip*
- Built-in tools show compliance with ISO sensitivity performance criteria*

**OTHER**
- Support for purge protected bearings

* Available as an option or as standard depending upon variant
** Not available on some variants

**CONFIGURATION**
- 5 axis controller (option for 4 axis control)

**INTERFACES**
- Hardwired discrete DCS interface*
- Analogue diagnostic outputs*
- Temperature (RTD)**
- MODBUS RTU or TCP slave*
- SOAP slave*

**330(D) x 900(W) x 345(H) mm**
<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site Installation</strong></td>
<td>Indoors with atmospheric control or regular air exchange</td>
</tr>
<tr>
<td><strong>Frame Size &amp; Rating</strong></td>
<td>330(D) x 900(W) x 345(H) mm; Cable entry from sides. IP30 convection air cooled with option for forced cooling for higher output current</td>
</tr>
<tr>
<td><strong>Dimensions Allowing for Cabling</strong></td>
<td>360(D) x 1000(W) x 345(H) mm</td>
</tr>
<tr>
<td><strong>Additional Area Above Left for Passive Cooling Vent</strong></td>
<td>330(D) x 895(W) x 845(H) mm</td>
</tr>
<tr>
<td><strong>Maximum Weight</strong></td>
<td>45 kg</td>
</tr>
<tr>
<td><strong>Input Voltage: Mains Option</strong></td>
<td>230VAC (50/60Hz), single phase (model 5000: 1.5kW max, model 6000: 3kW max), EMC/EMI filtered, external UPS required</td>
</tr>
<tr>
<td><strong>Output Power</strong></td>
<td>390V @ 24A per magnet (continuous), 28A (peak)</td>
</tr>
<tr>
<td><strong>Operating Temperature Range</strong></td>
<td>30°C above ambient, max +70°C</td>
</tr>
<tr>
<td><strong>Relative Humidity Range</strong></td>
<td>15 to 80% max non-condensing</td>
</tr>
<tr>
<td><strong>Transport &amp; Storage Temperature Range</strong></td>
<td>-40°C to +70°C, humidity 93% max non-condensing</td>
</tr>
<tr>
<td><strong>Area Classification</strong></td>
<td>Non-hazardous</td>
</tr>
<tr>
<td><strong>Maximum Cable Length Between Cabinet &amp; Bearings</strong></td>
<td>150m; consult for extended cable lengths to 500+m</td>
</tr>
<tr>
<td><strong>Certification</strong></td>
<td>CE, CB and TR-CU; contact Waukesha Magnetic Bearings for certificate numbers</td>
</tr>
</tbody>
</table>