Active Isolation System AIS™

Active electronic-pneumatic vibration isolation system with powerful real-time control for the highest demands on effective isolation, deflection and constant level.

- Active electronic-pneumatic vibration isolation with up to 6 controlled degrees of freedom.
- Air springs work as passive air springs and as actuators.
- Highly efficient vibration isolation without resonance peaks.
- Optimum positional accuracy in both the vertical and horizontal axes.
- Minimum deflection and settling time in response to machine load changes.
- Very powerful real-time control.
- PLC, CAN bus and one controller and one highly dynamic proportional valve per degree of freedom.
- Each controller has a microprocessor and integrated high resolution sensors for position, pressure, and acceleration.
- User-friendly, intelligent WinSNI/WebVisu-Software for commissioning and diagnostics.
- Simple digital switching capability between scanning mode (during sensitive machine operations) and loading mode (in response to machine load changes).
- No feed forward signal required.
- No disturbing heat generation, magnetic field fluctuations or high power consumption as is the case with electromagnetic actuators.
**TRANSMISSION FUNCTION AIS™**

![Graph showing transmission function AIS™](image)

Membrane air spring BiAir®/-ED/HE-MAX

**APPLICATION AREA**

- Protection of vibration-sensitive machinery from floor vibrations.
- Minimization of structure borne vibration within a system. These are caused by load changes or movements of the machine.
- Settling time reduction.

**TASKS**

- AIS™ is used when the isolation effect and reaction times of conventional passive air spring isolators and a customary level control system are not sufficient.

**VIBRATION CRITERIA VC**

<table>
<thead>
<tr>
<th>VC - A</th>
<th>VC - B</th>
<th>VC - C</th>
<th>VC - D</th>
<th>VC - E</th>
<th>VC - G</th>
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<tbody>
<tr>
<td>50 μm/sec</td>
<td>25 μm/sec</td>
<td>12 μm/sec</td>
<td>6 μm/sec</td>
<td>3 μm/sec</td>
<td>1.5 μm/sec</td>
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**COMPASS PRO Wafer Inspection Machine**

**Electron microscope on a vibration isolating platform**

**AIS™ on Bilz measuring and test bed**

Optimum vibration isolation system for highly dynamic measuring and testing machines, laser high-resolution microscopes as well as inspection and production machines in the semiconductor industry.

- AIS™ enables the highly efficient, vibration isolated installation of highly dynamic machines without loss of performance or cycle time.
Active Isolation System AIS™

The Bilz AIS™ system is comprised of a PLC, CAN bus, 16-bit state controller, highly dynamic proportional valves, the BiAir® membrane air spring and the HAB™ horizontal air spring. A wide range of different sizes of valves and air springs for system design are available.

One controller and one valve are assigned to one air spring or one group of air springs. AIS™ works with at least three controlled groups of air springs and can be used with up to 6 degrees of freedom. The controllers are linked with the PLC via CAN bus.

A PC can be linked via a series RS-232 or Ethernet interface for commissioning and diagnostic purposes. The controller is mechanically coupled with the air spring isolator or to the machine in the direction of the force. Integrated on each controller is a microprocessor, a positioning system with feedback (resolution 0.2 µm), as well as an accelerometer (resolution 8 µg) and a pressure sensor (resolution 0.2 mbar). The signal sensor sampling rate is 4 kHz. As not only the higher-level control, but also each controller is equipped with a microprocessor and highly dynamic proportional valves are used, we can consider the system to be a powerful real-time control and an elaborate feed forward control from the machine manufacturer can be omitted.

The PLC also provides digital inputs and outputs, such as ready, pressure monitoring, position, power supply, switching between scanning/loading mode, emergency stop. The user friendly switching capability between scanning and loading mode offers the advantage of the isolation system providing a very rigid, responsive and accurate positioning system when the system is set for loading mode and when in the scanning mode a very soft and non-aggressive system.
CONTROLLER 19” PLC AND AIR SUPPLY 19” AirBox

Dimensions: W / H / D / 483 x 133 x 270 mm

CONTROLLER SPC-LC

Dimensions: W / H / D / 483 x 177 x 384 mm

ARRANGEMENT OF THE AIS™ SYSTEM FOR AIR SPRINGS AND CONTROLLERS WITH 6 DEGREES OF FREEDOM

Application example: Electron microscope on a vibration isolating platform

We reserve the right to make changes without prior notice.