Enabling Nanoscale Advances

Park SYSTEMS

Accurion Vario

Active Vibration Isolation Elements

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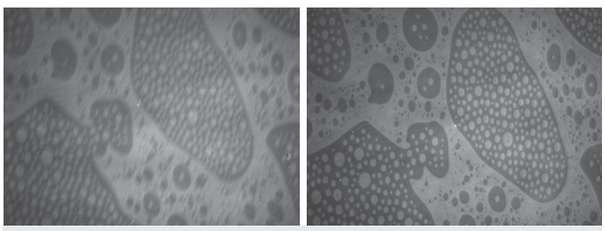
Active Vibration Isolation Elements

The Accurion Vario systems are element based modular vibration isolation systems, consisting of at least two isolation elements and an external control unit. The primary model, the Vario Basic has been designed for the isolation of high static loads. While the two-element-configuration can carry loads of up to 300 kg, the maximum load capacity can be increased by adding more isolation elements. Thus a set-up of six isolation elements can cope with a load of 900 kg.



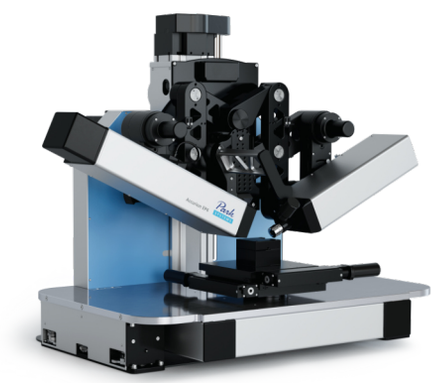
Floating monolayer of ethyl stearate without and with active vibration isolation taken with a Brewster angle microscope

For applications with frequent load changes or without access to the isolation elements, we offer the option of an automatic load adjustment.

The compact dimensions and its flexibility render this product series ideal for installations in customer-specific applications. A typical example is the combination with an optical breadboard. It serves as a mechanical link between the isolation elements and can be used for a variety of set-ups e.g. interferometer or other laser set-ups.

There are virtually no limits in applications offered by Vario systems.

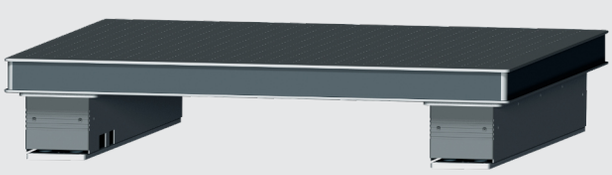
Selected Applications



- Accurion Vario Basic 40 with Accurion EP4

- Accurion Vario 60 with KSV NIMA PM-IRRAS

- Polytec TMC-500 TopMap on Accurion Vario Basic 40-600 (4 isolation elements)

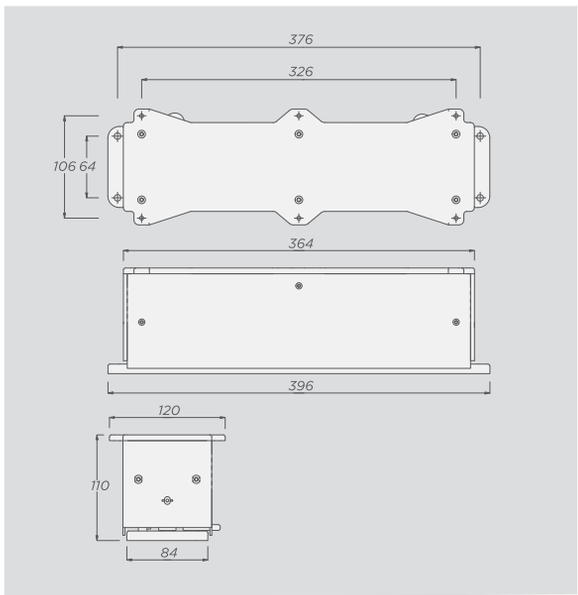


Accessories and Options

- Steel support frame
- Acoustic enclosure
- Automatic load adjustment
- Rack mountable external control unit
- Various breadboards with or without mounting holes (M6/25 or 1/4-20")

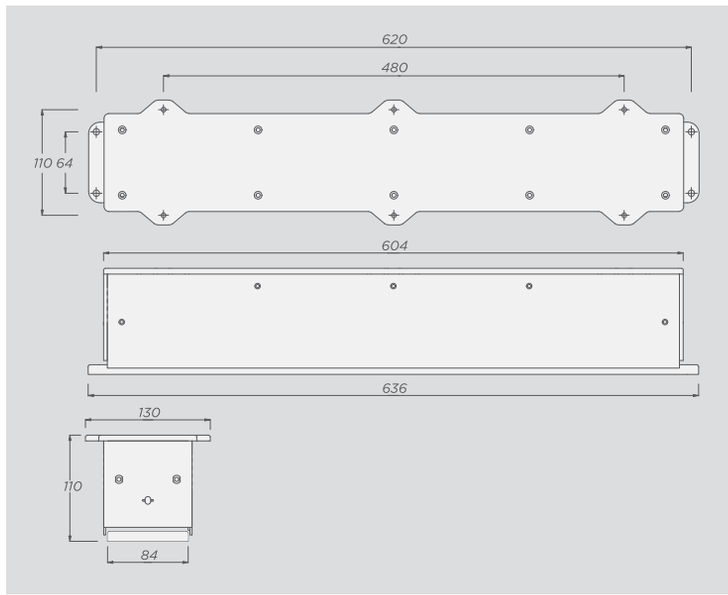
Vario Basic 40

396 × 120 × 110 mm / 15.6" × 4.7" × 4.3"



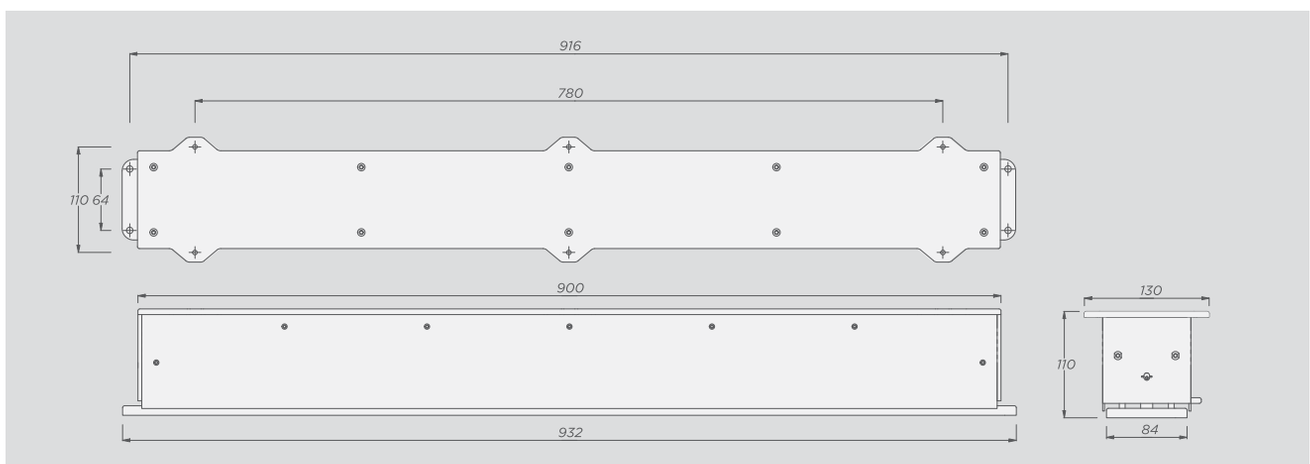
Vario Basic 60

636 × 130 × 110 mm / 25" × 5.1" × 4.3"

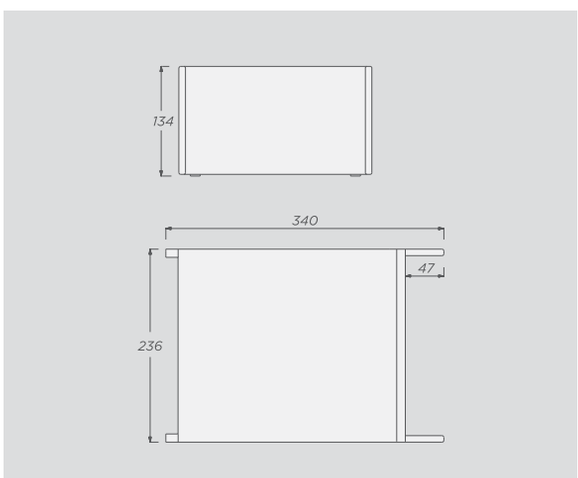


Vario Basic 90

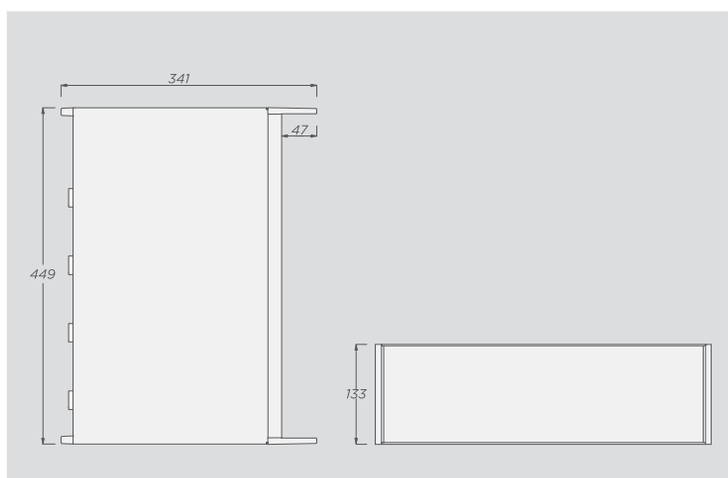
932 × 130 × 110 mm / 36.7" × 5.1" × 4.3"



2-port control unit



4-port control unit

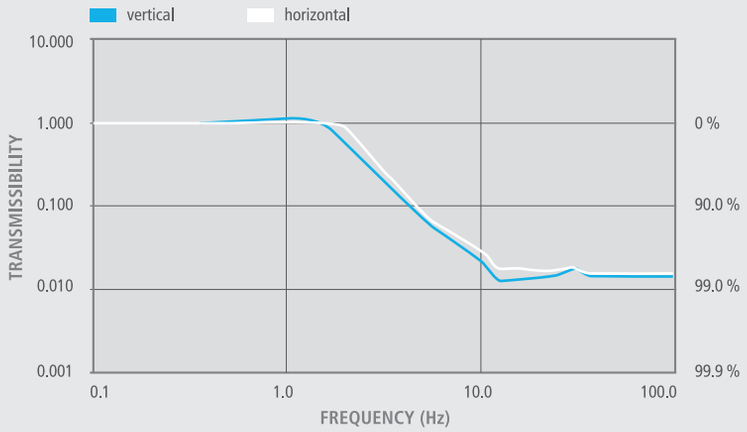


Specifications	Vario Basic 40	Vario Basic 60	Vario Basic 90
Dimensions of isolation element (L × W × H)	396 × 120 × 110 mm 15.6 × 4.7 × 4.3 inch	636 × 130 × 110 mm 25 × 5.1 × 4.3 inch	932 × 130 × 110 mm 36.7 × 5.1 × 4.3 inch
Load capacity – 2 element configuration	0 – 300 kg / 0 – 660 lbs	0 – 300 kg / 0 – 660 lbs	0 – 300 kg / 0 – 660 lbs
Load capacity – 4 element configuration	0 – 600 kg / 0 – 1320 lbs	0 – 600 kg / 0 – 1320 lbs	0 – 600 kg / 0 – 1320 lbs
Weight per isolation element Weight of control unit	6.8 kg / 15 lbs 4.5 kg / 10 lbs	8.6 kg / 19 lbs 4.5 kg / 10 lbs	10.4 kg / 23 lbs 4.5 kg / 10 lbs
Isolation technology	Accurion control technology based on piezoelectric type acceleration pickup, fast signal processing and electro-dynamic force transducers.		
Control electronics	External control unit with sensor and actuator LEDs.		
Force directions	Active compensation in all six degrees of freedom.		
Isolation performance	> 5 Hz = -25 dB (94.4 %)	> 10 Hz = -35 dB (98.2 %)	
Active bandwidth	1 – 200 Hz* (passive isolation beyond 200 Hz)		
Settling time	300 ms**		
Response time	0.5 ms***		
Stroke of the actuator	1 mm		
Max. correction forces – 2 element configuration	Vertical ± 8 N	Horizontal ± 4 N	
Max. correction forces – 4 element configuration	Vertical ± 16 N	Horizontal ± 8 N	
Max. compensation level	550 µm / sec. at 8 Hz and 150 kg / 330 lbs**		
Interface	BNC analog diagnostic output – 50 Ω		
Environmental and operational requirements	Electrical voltage: Power consumption: Operating temperature: Relative humidity: Operating altitude:	100 – 250 V / 47 – 63 Hz Typically 10 – 20 W; max. 50 W 15 – 40 °C / 59 – 104 °F 0 – 60 % < 2,500 m / 8,100 ft	
Certified according to:	2014/35/EU 2014/30/EU FCC Regulations Part 15.107 & 15.109 SI 2016:1091		

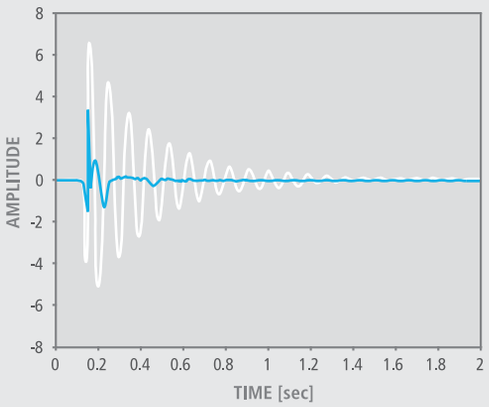
*The low-pass characteristics of the spring-mass combination dominate the dynamic behavior of the isolation system above 200 Hz. The part of the active isolation decreases with increasing frequency.

**The settling time and maximum compensation level depend on several conditions such as payload, vibration frequency and load distribution. The mentioned settling time value is exemplary for a centric load of 80 kg. The settling time defines the time until an incoming vibration is compensated.

***The response time determines when the system starts to actively isolate an incoming vibration after detection by the sensors.



Transmission graph of the Vario Basic 60 measured at a velocity of 100 µm/s with a payload of 50 kg (110 lbs).



Settling time Vario (blue) compared to a conventional air vibration isolation system (white).

Key Features

- Isolation in all six degrees of freedom.
- Active vibration isolation starts at 1.0 Hz (passive isolation above 200 Hz).
- Settling time only 0.3 s.
- No compressed air supply is needed, AC power from an electrical outlet is sufficient.
- No natural low frequency resonance and, as a result, excellent vibration characteristics also in frequency ranges below 5 Hz.
- Convenient manual load adjustment – automatic load adjustment as an option.
- Excellent position stability and stiffness.
- Wide range of standard sizes and customizations available.

- Accurion Vario Basic 40–600 with breadboard on steel support frame

Park Systems Global

● Regional headquarters
● Distribution partners

Park Systems GmbH - Accurion

Park Systems GmbH previously known as Accurion GmbH is a leading provider of high-end, state of the art imaging ellipsometry and active vibration isolation products. Accurion was merged into Park Systems Corporation in 2022 to boost its R&D resources and expand its sales network to better serve its customers.
Park Systems is a world leading manufacturer of nano metrology-microscopy solutions including the atomic force microscopy (AFM), white light interferometry and infrared spectroscopy systems.
It provides complete range of nano metrology and microscopy products for researchers and engineers in the chemistry, materials, physics, life sciences, semiconductor, and data storage industries.

Prior to merger with Park Systems, Accurion was previously known as Nanofilm Technology GmbH, a spin-off from the Max Planck Institute for biophysical chemistry in Goettingen. In 1991, the company began designing the Brewster angle microscope for the characterization of ultrathin films. In 1996, the company's division of active vibration isolation was established. In 2009, Halcyonics GmbH, a specialist in active vibration isolation solutions, merged with Nanofilm Technology GmbH to form Accurion GmbH.

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