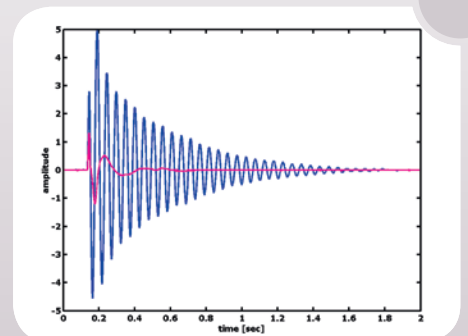


Benchtop Vibration Isolation Units – Nano Series

Ultra-compact, portable and easy to use – Nano 20 and 30 are Halcyonics' smallest active vibration isolation systems and the perfect solution for entry-level AFM's.

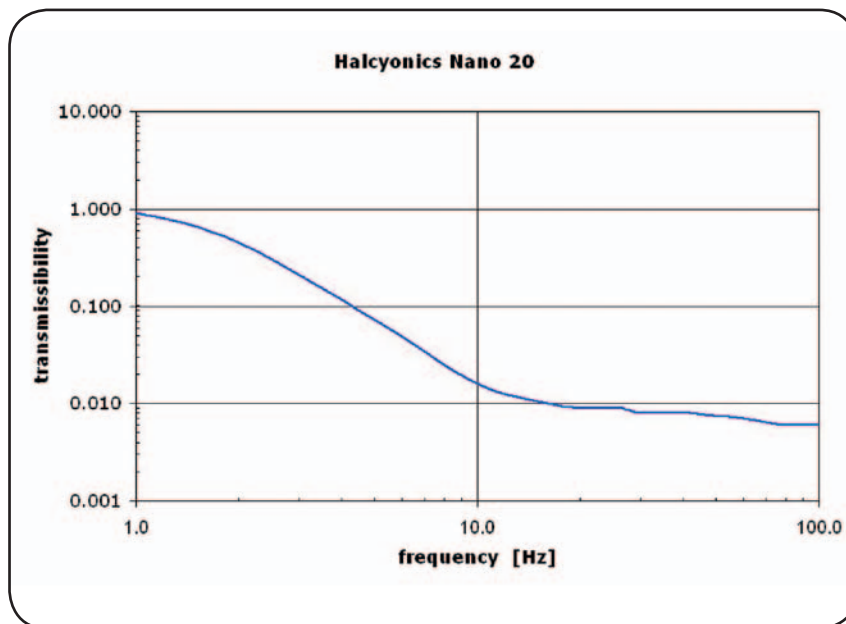


Halcyonics Nano systems – ultra-compact, portable and easy to use

With the Nano series, Halcyonics introduces a new product philosophy: highest performance in active vibration isolation, smallest dimensions and excellent cost-performance ratio. This technology even allows active vibration isolation for entry level AFM's.

There are two standard versions currently available: the Nano 20 and the Nano 30. Both systems are very lightweight and portable. The isolator of the Nano 20 only weighs 5.6 kg (12.3 lbs)! Setting up the Nano system is exceptionally easy. It does not require any tuning or load adjustment prior to its use.

Just place your application on top of the Nano system, attach the cables, release the transportation lock, turn it on and that's it! This is definitely the fastest and easiest setup of an active isolation system!



▲ Fig. 1: Transmission graph of a Halcyonics Nano 20 – measured at a velocity of 100 $\mu\text{m/s}$ with a payload of 8 kg (17.6 lbs).

Features and benefits

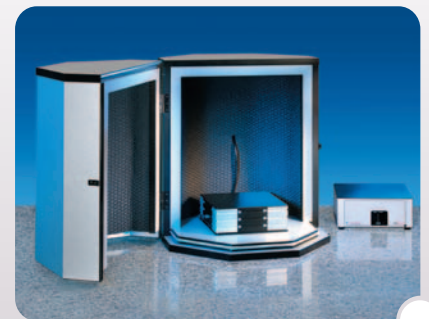
- Ultra-compact dimensions
- Easiest handling – no tuning or load adjustment
- AC power from an electrical outlet is sufficient; no compressed air supply needed
- Provides better vibration isolation (>99.0% isolation above 15 Hz) than large and complicated optical tables
- No natural low-frequency resonance; as a result, excellent vibration characteristics also in frequency ranges below 5 Hz
- Active isolation in all six degrees of freedom

Accessory for the Nano 20 – Acoustic Enclosure 200

For those users who do not only need a solution to isolate their AFM against building vibration, Halcyonics also offers a suitable compact acoustic enclosure for the isolation of airborne noise.

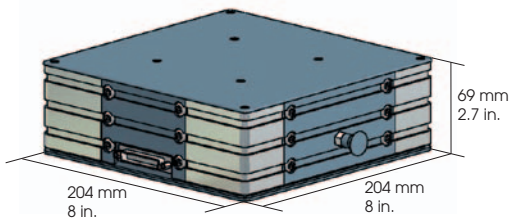
The Acoustic Enclosure 200 has been optimized for use with the Nano 20 system. The wide door opening offers good accessibility to the inside application. During the AFM setup, the door can be taken off. Major advantage of

the Nano concept is, that the isolator does not heat up the air volume inside the enclosure. The system is equipped with a small external controller. Thus almost all electrical power is consumed at the control box and any thermal power loss is kept far away from the isolation unit. This is a significant benefit for users of acoustic enclosures, since all other active desktop systems with integrated electronics generate heat inside the enclosures!

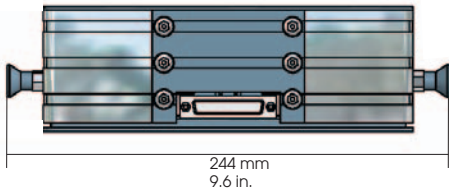
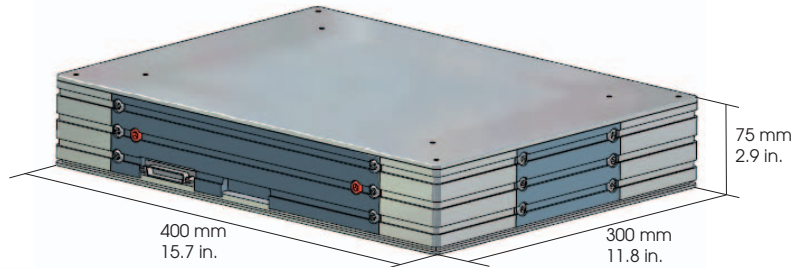


▲ Fig. 2: Nano 20 inside optional Acoustic Enclosure 200.

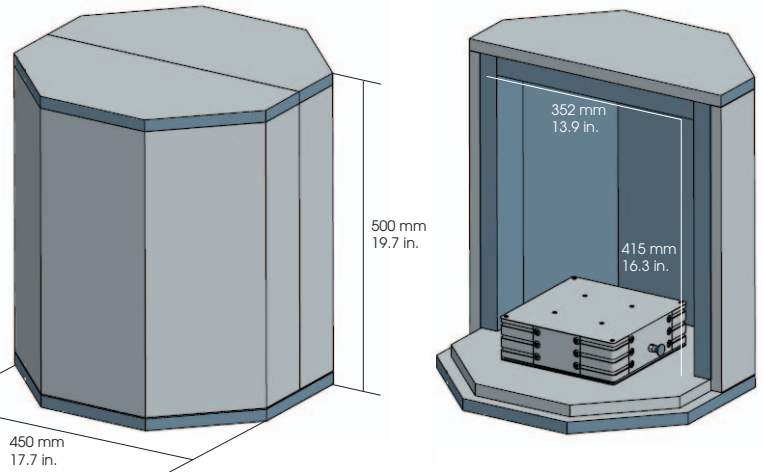
Nano 20



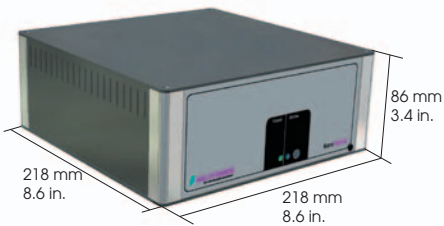
Nano 30



Acoustic Enclosure 200



NanoControl



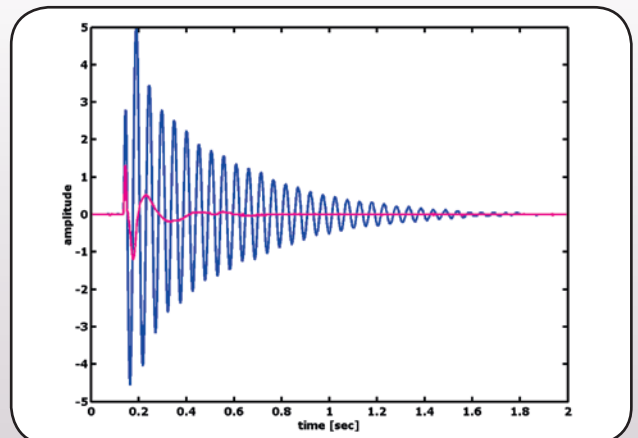
▲ Fig. 3: Dimensions of Nano systems

Nano 20 and 30 – efficient vibration isolation for even the smallest applications

Thanks to Halcyonics' NanoControl technology, active vibration isolation takes effect right at 1 Hz and increases considerably from this frequency upwards. At above 15 Hz, Halcyonics Nano systems achieve an isolation of 40 dB – which means that 99.0% of the vibration is effectively isolated.

In addition to their high isolation from floor vibration through AVI (active vibration isolation), Nano systems also dampen application-generated vibration by AVC (active vibration control), e.g., vibration caused when the user touches the equipment.

Fig. 4: Settling time of a Halcyonics Nano system (red) compared to a conventional spring-mass combination. Halcyonics active vibration isolation systems provide quick and effective compensation of disturbing vibrations.



Technical Specifications

Available Standard Versions

Nano 20

Nano 30

Performance Specifications

| | |
|-------------------------|--|
| Isolation technology: | Halcyonics NanoControl technology based on piezoelectric type acceleration pickup, fast signal processing and electro-dynamic force transducers. |
| Control electronics: | External control unit |
| Force directions: | Active compensation in all six degrees of freedom |
| Isolation performance: | > 5 Hz = 23 dB (93.0%); >15 Hz = 40 dB (99.0%) |
| Active bandwidth: | 1 – 200 Hz* |
| Settling time: | 300 ms |
| Max. Correction forces: | Vertical \pm 8 N; horizontal \pm 4 N |
| Load capacity: | Nano 20: 0–8 kg (0–17.6 lbs) Nano 30: 10–30 kg (22–66 lbs) |

Other Specifications

| | |
|-----------------------------|---|
| Dimensions: | See figure 3 |
| Weight: | Nano 20 isolator: 5.6 kg (12.3 lbs) Nano 30 isolator: 11.3 kg (24.9 lbs) NanoControl unit: 2.1 kg (4.6 lbs) |
| Table top material: | Powder coated aluminium |
| Top plate surface flatness: | \pm 0.15 mm over complete surface |
| Maximum compensation level: | 55 μ m/s at 2 Hz and 8 kg (17.6 lbs)** 350 μ m/s at 6 Hz and 8 kg (17.6 lbs)** |

Environmental and Operational Requirements

| | |
|------------------------|---------------------|
| Electrical voltage: | 100–250 V/47–63 Hz |
| Power consumption: | 30–50 W |
| Operating temperature: | 10–40 °C (50–104 F) |
| Relative humidity: | 0–60% |
| Operating altitude: | < 2500 m (8100 ft) |

Certification

| | |
|--------------------|--|
| Electrical Safety: | CE certificated according to directive 2006/95/EC |
| EMC: | CE certificated according to directive 2004/108/EC |

* Floating table top is supported by steel springs; low-pass characteristics of spring-mass combination dominate the dynamic behaviour above 200 Hz.

** The maximum compensation level depends on several conditions, such as payload, frequency, load distribution and height of the payload. For that reason this value should be considered as an approximation.

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