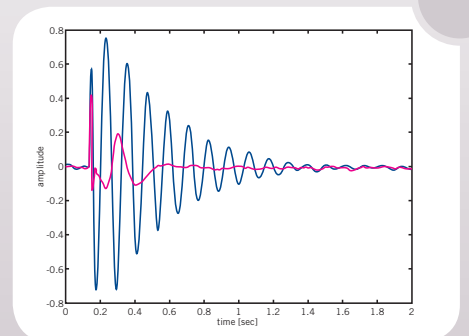
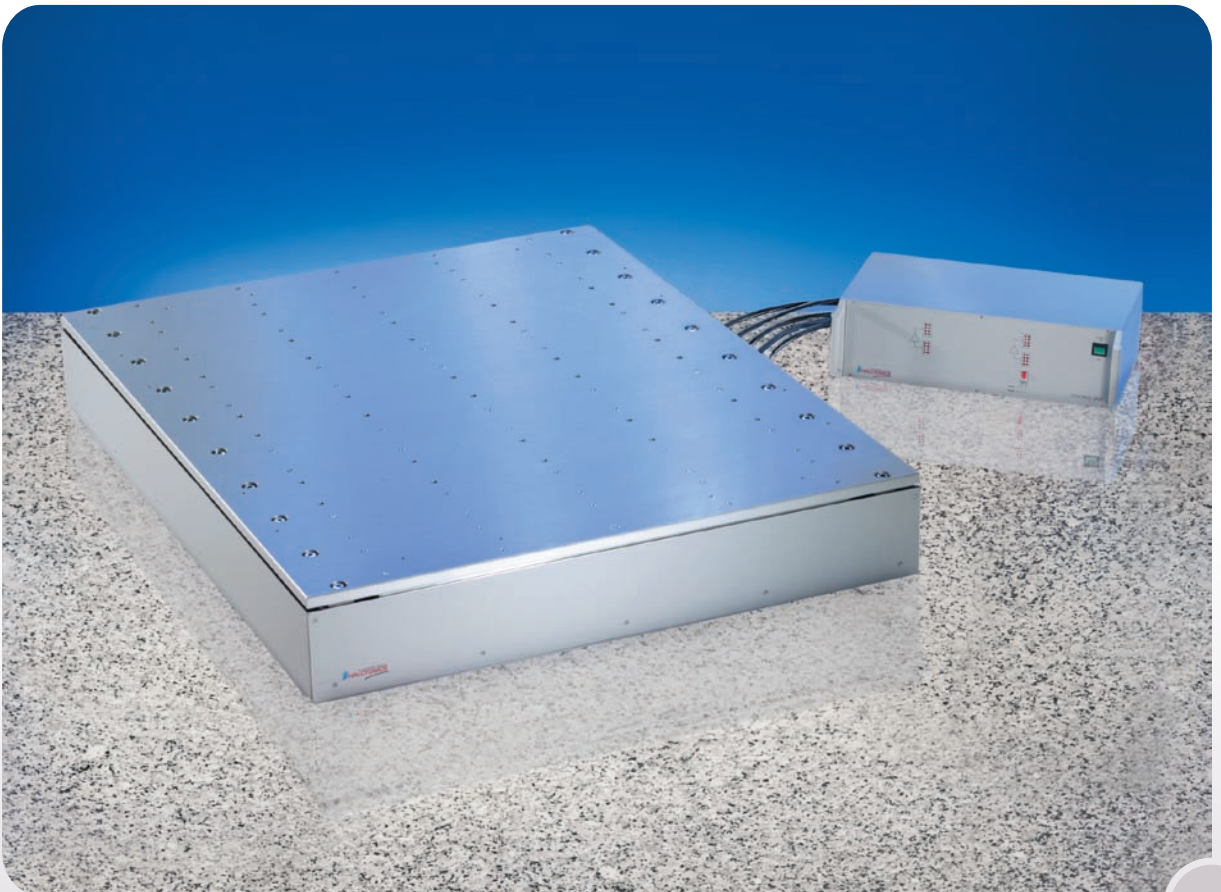


Active Vibration Isolation Platforms – Sandwich Series

Compact sandwich construction active vibration isolation platform featuring a height of only 130 mm (5.2 in.), without any obstructing isolation legs.

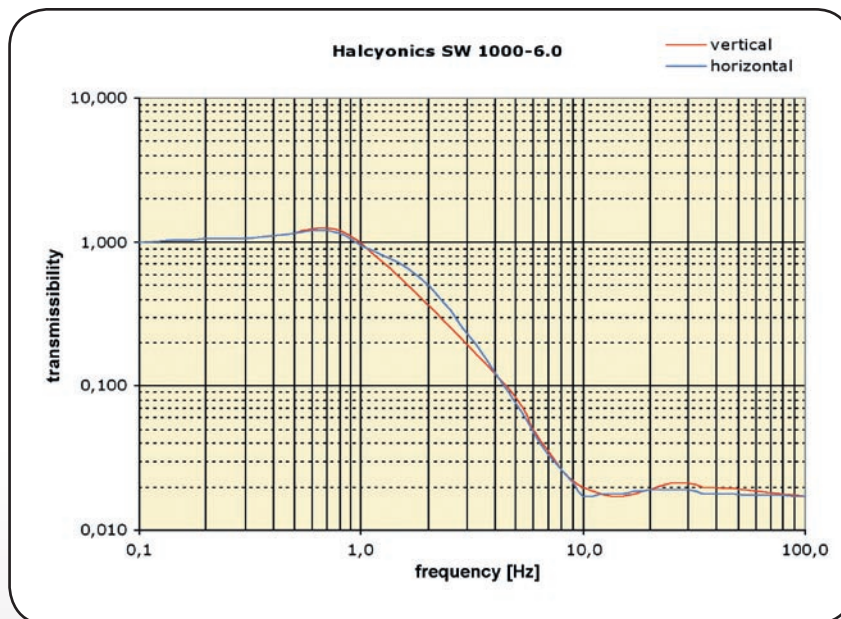


Compact isolation platforms – the ideal basis for SEM's and more.

Halcyonics' Sandwich systems featuring compact dimensions and excellent isolation performance set the standards on the market for isolation platforms for medium-heavy to heavy applications. The standard platform is exceptionally compact (1000 mm x 800 mm – 39.8 x 31.5 in.), only 130 mm (5.1 in.) high, yet supports up to 1,200 kg (2,650 lbs), depending on the version. For smaller applications, Halcyonics also offers a smaller

standard version measuring 800 x 800 mm (31.5 x 31.5 in.). Sandwich platforms are the ideal solution for vibration isolation of scanning electron microscopes. All over the globe, numerous Halcyonics platforms are currently used together with the most diverse SEMs supplied by the manufacturers Hitachi, Carl Zeiss, Jeol, Tescan and more. This is why Halcyonics has many years of experience in technical consultation, installation and commissioning of

sophisticated active vibration isolation systems. A major advantage of the active Halcyonics platforms is that they do not generate any natural low-frequency resonance, which is responsible for problems encountered with passive vibration isolation systems in low-frequency ranges below 5 Hz. The active vibration isolation of Sandwich platforms starts right at 1 Hz and, above 10 Hz, attains more than 35 dB (98.2%).



▲ Fig. 1: Transmission graph of SW 1000 - measured at a velocity of 100 $\mu\text{m/s}$, with a payload of 60 kg (132 lbs)

Features and benefits

- Modular design, two different standard sizes and five different load ranges available
- AC power from an electrical outlet is sufficient; no compressed air supply is needed
- Provides better vibration isolation (> 98.22% isolation above 10 Hz) than is normally possible with complicated, large passive floor platforms
- 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

Application example: SW 800-4.0 used with scanning electron microscope

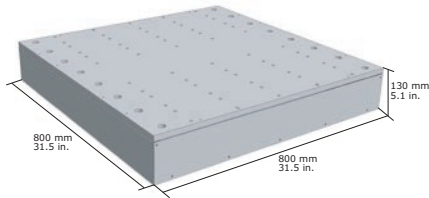
Sandwich isolation platforms are usually required to isolate sensitive equipment against floor vibration. This application example shows the platform used together with a Tescan scanning electron microscope. The SEM was located in an old research building close to an industrial area. The maximum resolution that

could be achieved with the SEM prior to the installation of the active vibration isolation platform was limited due to heavy low-frequency building vibration. After installation of the platform, the building vibration issue was solved and the SEM could be operated with the highest magnification.

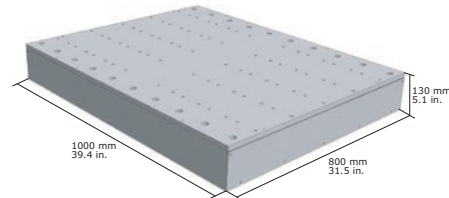


▲ Tescan Vega II XMU SEM on a Halcyonics SW 800-4.0 platform

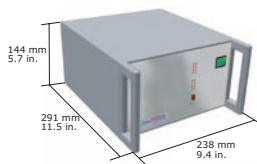
Sandwich 800



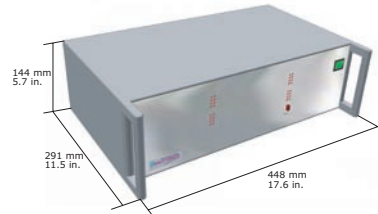
Sandwich 1000



2 port control unit



4 port control unit



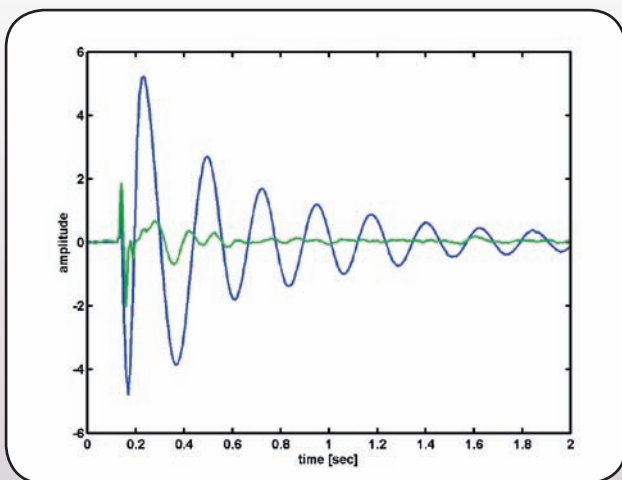
▲ Fig. 2: Dimensions of Sandwich platforms and controllers

Halcyonics Sandwich – compact vibration isolation platform for heavy loads

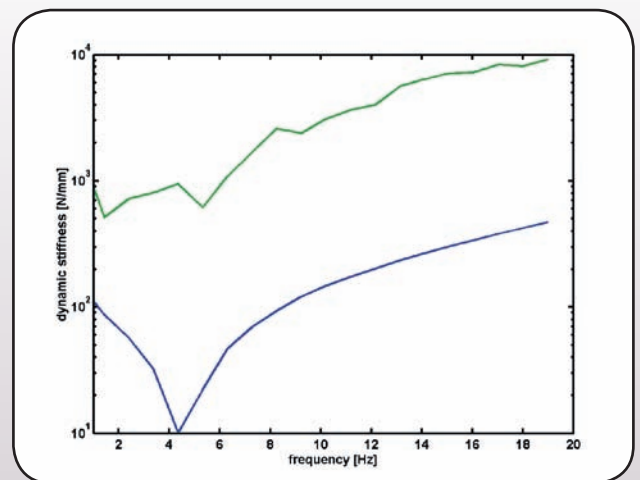
Installation of these platforms is easy. In most cases, the Sandwich platform neatly fits directly below the equipment of your application, where it is virtually “invisible.” The platform does not have any external isolation legs or feet; for this reason, application equipment remains readily accessible. Halcyonics Sandwich vibration isolation platforms only need an AC power outlet, but do not require any compressed air supply, and are maintenance-free. Before the platform

is started up, the actual load has to be adjusted. No further adjustments or modifications of the platform are necessary. Halcyonics offers six different standard versions ranging from 600 kg (1,320 lbs) load capacity up to 1,200 kg (2,650 lbs). To select the required platform, the actual weight of the application equipment, load distribution and further parameters are of key importance. Please contact us to give us information about your special application. We will then be

happy to advise you on the platform best suited to meet your needs. For complex applications, Halcyonics will measure the vibration on-site where your equipment is installed and, depending on the results, will offer you a customized solution. You also have the option of requesting Halcyonics to adapt the external dimensions of a standard platform version to meet your exact specifications or to design systems that handle heavier loads.



▲ Fig. 3: Settling time of a Halcyonics Sandwich system (green) compared to a conventional air-damped vibration isolation system (blue), made by one of the major manufacturers of optical tables and vibration isolated laboratory desks. Halcyonics active vibration isolation systems provide quick and effective compensation of disturbing vibrations.



▲ Fig. 4: Dynamic isolator stiffness (green) of Halcyonics Sandwich systems compared to a commercially available passive air-damped isolation system (blue). Due to their higher dynamic stiffness, Halcyonics systems are less sensitive to direct forces that affect the isolated platform. As a result, Halcyonics active vibration isolation systems offer excellent position stability.

Technical Specifications

Available Standard Versions	
Sandwich 800-4.0	Sandwich 1000-6.0
Sandwich 1000-4.0	Sandwich 1000-6.4
Sandwich 1000-4.4	Sandwich 1000-8.0
Performance Specifications	
Isolation technology:	Halcyonics active vibration isolation technology based on piezoelectric type acceleration pickup, fast signal processing and electro-dynamic force transducers.
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:	1.0 – 200 Hz*
Settling time:	300 ms
Max. correction forces:	Sandwich 800-4.0: vertical ± 16 N; horizontal ± 8 N Sandwich 1000-4.0: vertical ± 16 N; horizontal ± 8 N Sandwich 1000-4.4: vertical ± 16 N; horizontal ± 8 N Sandwich 1000-6.0: vertical ± 24 N; horizontal ± 12 N Sandwich 1000-6.4: vertical ± 24 N; horizontal ± 12 N Sandwich 1000-8.0: vertical ± 32 N; horizontal ± 16 N
Load capacity:	Sandwich 800-4.0: 0–600 kg (0–1,320 lbs) Sandwich 1000-4.0: 0–600 kg (0–1,320 lbs) Sandwich 1000-4.4: 0–750 kg (0–1,650 lbs) Sandwich 1000-6.0: 0–900 kg (0–1,980 lbs) Sandwich 1000-6.4: 0–1,050 kg (0–2,310 lbs) Sandwich 1000-8.0: 0–1,200 kg (0–2,650 lbs)
Other Specifications	
Dimensions:	See figure 2
Weight:	Sandwich 800-4.0: 105 kg (230 lbs) Sandwich 1000-4.0: 115 kg (250 lbs) Sandwich 1000-4.4: 115 kg (250 lbs) Sandwich 1000-6.0: 135 kg (300 lbs) Sandwich 1000-6.4: 135 kg (300 lbs) Sandwich 1000-8.0: 155 kg (340 lbs)
Maximum compensation level:	350 μ m/s at 9Hz and 300 kg (661 lbs) for SW 1000-4.0**
Interface:	BNC analog diagnostic output – 50 Ohms
Environmental and Operational Requirements	
Electrical voltage:	100–250 V / 47–63 Hz
Power consumption:	Sandwich 800-4.0: 20 – max. 70W Sandwich 1000-4.0: 20 – max. 70W Sandwich 1000-4.4: 20 – max. 70W Sandwich 1000-6.0: 30 – max. 140W Sandwich 1000-6.4: 30 – max. 140W Sandwich 1000-8.0: 40 – max. 140W
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 89/336/EC
EMC:	CE certificated according to directive 73/23/EEC

* Floating table top is supported by steel springs; low-pass characteristics of spring-mass combination dominates 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 estimation.

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