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.

### Technical Specifications

<table>
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<tr>
<th>Available Standard Versions</th>
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<tr>
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#### 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 ± 12 N
  - Sandwich 1000-6.0: vertical ± 24 N; horizontal ± 12 N
  - Sandwich 1000-6.4: vertical ± 24 N; horizontal ± 16 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 µm/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:** 0 – 40°C (32 – 104°F)
- **Relative humidity:** 0 – 60%
- **Operating altitude:** < 2,500 m (8,000 ft)

### Certification

- **Electrical Safety:** CE certificated according to directive 89/336/EEC
- **EMC:** CE certificated according to directive 73/23/EEC

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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 – 39.4 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%).

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.

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 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.

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 (> 98.2% 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

Fig. 1: Transmission graph of SW 1000 - measured at a velocity of 100 µm/s, with a payload of 60 kg (132 lbs)

Fig. 2: Dimensions of Sandwich platforms and controllers

Fig. 3: Setting 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 vibration 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.

Sandwich 800

- 2 port control unit

Sandwich 1000

- 4 port control unit

Halcyonics Sandwich – compact vibration isolation platform for heavy loads
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 – 39.4 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 (98.7%).

**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.

Halcyonics Sandwich – compact vibration isolation platform for heavy loads

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Load capacity:

| Sandwich 800-4.0: vertical ± 0.6 kg (1.320 lbs) | Sandwich 1000-4.0: vertical ± 0.75 kg (1.650 lbs) |
| Sandwich 1000-4.4: vertical ± 0.9 kg (2.000 lbs) | Sandwich 1000-6.0: vertical ± 0.9 kg (1.980 lbs) |
| Sandwich 1000-6.4: vertical ± 1.0 kg (2.000 lbs) | Sandwich 1000-8.0: vertical ± 1.2 kg (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) |
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| Maximum compensation level: | 350 µm/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 |
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| | 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 |

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