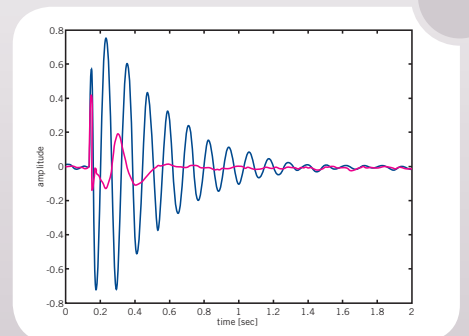


Laboratory Tables with Active Vibration Isolation – Active Workstation Series

Compact, ergonomic workstation solution – Halcyonics active workstation systems are the perfect combination of rigid stand, active vibration isolation system and stainless steel working surface. The systems combine excellent vibration isolation with an ergonomic workplace for many lab applications.

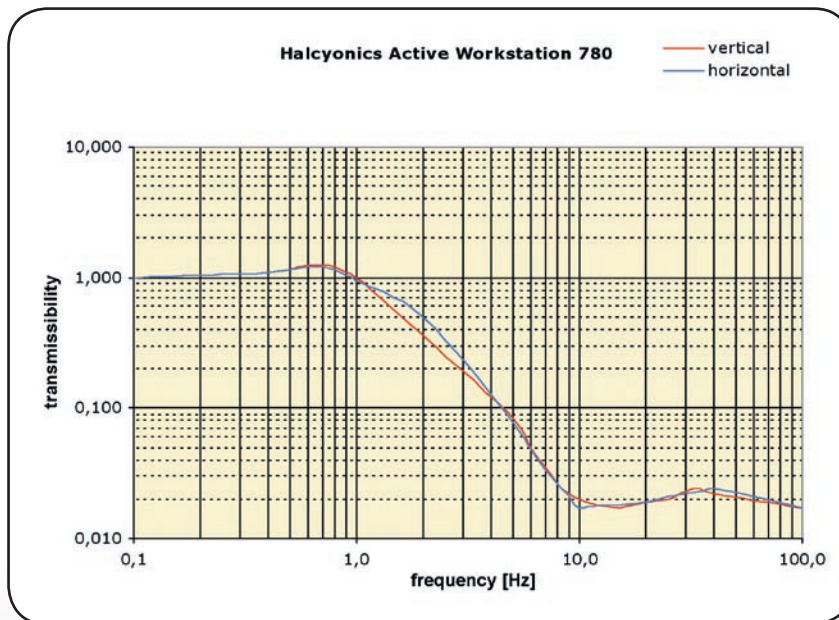


Halcyonics Active Workstation – the ideal workplace for vibration sensitive applications

The performance of every vibration isolation system is affected by the basic conditions in the particular laboratory. Under the most favorable conditions, the vibration isolation system is located directly on the floor. As this is not feasible in most cases, tables or support

frames are needed, which in turn have to meet high requirements. For its workstation systems, Halcyonics basically uses welded support frames that are ideal for use with active vibration isolation systems. Halcyonics workstations consist of a combination of the active vibration

isolation system and a support frame perfectly matched to this system. These workstations are optimal for use with inverse light microscopes together with scanning probe microscope head, patch clamp setups, vibration sensitive Laser equipment and, and, and.



▲ Fig. 1: Transmission graph of Active Workstation 780 - measured at a velocity of 100 $\mu\text{m/s}$ with a payload of 50 kg (110 lbs)

Features and benefits

- Fully automated auto-leveling
- 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 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
- USB 1.1 port and evaluation software for Microsoft Windows PCs

Application example: Active Workstation 900 in patch-clamp environments

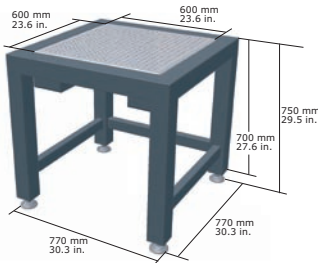
A patch-clamp application in neurosciences is one typical example for the use of Halcyonics active workstation systems. Earlier, the user had to setup a new patch-clamp station in a laboratory which was affected by strong building vibration especially at low frequencies. Tests with passive isolated tables were

not successful in the past; for this reason the user decided to use Halcyonics active vibration isolation. Thanks to the ergonomic design of the workstation, working with the light microscope is easy and comfortable as with a conventional lab table, but the system offers the performance of an active vibration isolation system.

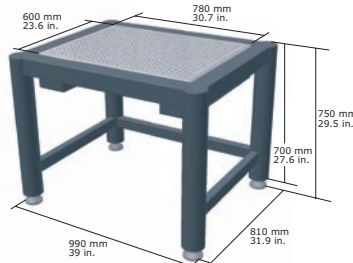


▶ Active Workstation 900 with patch-clamp setup inside a Faraday cage.

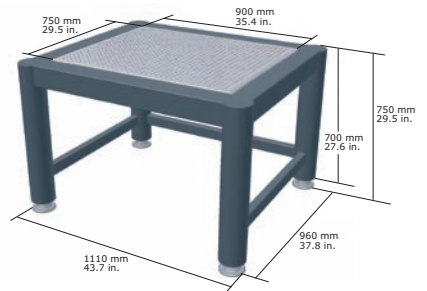
Active Workstation 600



Active Workstation 780



Active Workstation 900



▲ Fig. 2: Dimensions of Active Workstation systems and controller

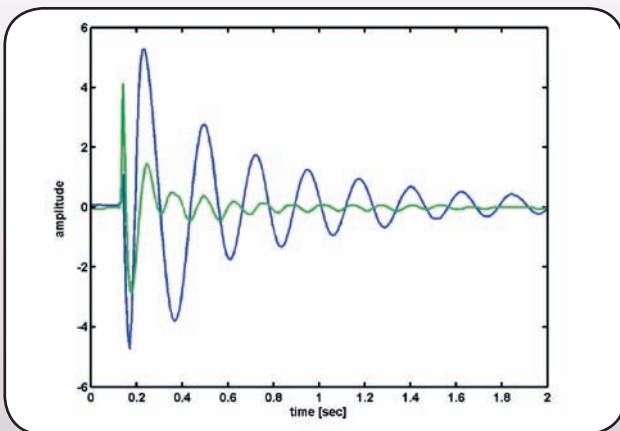
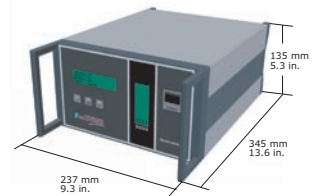
High-performance workstation solution – three standard sizes available

In addition to their high isolation from floor vibration through AVI (active vibration isolation), Halcyonics workstations also dampen application-generated vibration by AVC (active vibration control), e.g., this technology isolates vibration caused when the user touches the equipment. Thanks to Halcyonics workstations, active vibration isolation takes effect right at 1 Hz and considerably increases from this frequency upward. Above 10 Hz, Halcyonics Active Workstation systems achieve an isolation of 35 dB. A major advantage of active Halcyonics systems is that they do not have any natural low-frequency resonance, which is responsible for problems encountered with passive

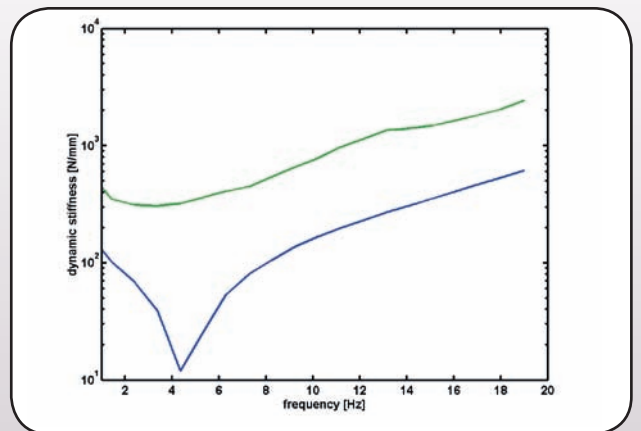
vibration isolation systems in low-frequency ranges below 5 Hz. The systems isolate vertical and horizontal vibration as well as vibration generated around the vertical axis of rotation as well as both horizontal axes of inclination. The degree of freedom of the active isolation system is thus six.

There are three standard versions currently available: Active Workstation 600, Active Workstation 780 and Active Workstation 900. Besides standard versions, Halcyonics also manufactures customized workstations on the basis of its active vibration isolation systems in order to meet highly diverse requirements on load, size and vibration environment.

VarioControl



▲ Fig. 3: Settling time of a Halcyonics Active Workstation 780 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 Active Workstation 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		
Active Workstation 600	Active Workstation 600 M6/25	Active Workstation 600 ¼–20 in.
Active Workstation 780	Active Workstation 780 M6/25	Active Workstation 780 ¼–20 in.
Active Workstation 900	Active Workstation 900 M6/25	Active Workstation 900 ¼–20 in.
Performance Specifications		
Isolation technology:	Halcyonics VarioControl technology based on piezoelectric type acceleration pickup, fast signal processing and electro-dynamic force transducers.	
Control electronics:	Easy-to-navigate menu for all settings, second graphics display for vibration levels	
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:	Vertical ± 8 N; horizontal ± 4 N	
Load capacity:	Active Workstation 600: 0–300 kg (0–660 lbs) Active Workstation 780: 0–310 kg (0–695 lbs) Active Workstation 900: 0–325 kg (0–715 lbs)	
Other Specifications		
Dimensions:	See figure 2	
Weight:	Active Workstation 600: 120 kg (264.6 lbs) Active Workstation 780: 142 kg (313.1 lbs) Active Workstation 900: 175 kg (385.8 lbs)	
Top plate material:	Honeycomb structure breadboard with stainless steel surface (magnetical)	
Top plate surface flatness:	±0.13 mm (0.005 in.) over any 0.3 m ² area	
Maximum compensation level:	550 µm/s at 9 Hz and 160 kg (353 lbs)**	
Repeatability of load adjustment:	60 µm	
Interface:	USB 1.1 standard	
Software: (for Microsoft Windows based PCs)	<ul style="list-style-type: none"> • Activate/deactivate active vibration isolation by remote control • Monitor function – display sensor signals • Spectrum analyzer function – guidance to locate disturbing vibration sources • Location finder – guidance to find the ideal installation location in the lab 	
Environmental and Operational Requirements		
Electrical voltage:	100–250 V/47–63 Hz	
Power consumption:	40–55 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 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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