

Operating Instructions

active vibration isolation

halcyonics workstation i4 series



Contents

1.	Introduction	3
2.	Unpacking the Workstation_i4 System.....	3
3.	Symbols used in these Instructions.....	3
4.	Safety Instructions and Warnings	4
	General Warnings.....	4
	Electrical Safety.....	4
	Mechanical Safety	4
	DIN and European Standards, European Council Directives	4
5.	Getting Started and operation	5
	Setting up the Equipment	5
	Control Panel of the Workstation	6
	Automatic Load Adjustment and Transport Locking Mode	7
	Using Active Vibration Isolation	8
	Overmodulation of the System.....	8
6.	Appendix.....	9
	Care and Maintenance	9
	Specifications	10
	Dimensions of the Workstation_i4 System.....	11
	Transmissibility	13
	Settling time	13
	Dynamic Stiffness	13
	Accurion Offices	14

1. Introduction

Thank you for purchasing the halcyonics_workstation_i4 system. By selecting this workstation, you have acquired top-of-the-line active vibration isolation equipment. We feel confident that our system will meet your expectations and provide the best possible performance for your specific application.

Please read the operating instructions carefully to set up the WS_i4 system correctly.

We hope you enjoy working with your halcyonics_workstation_i4!

2. Unpacking the Workstation_i4 System

After unpacking the system, please check whether the package contains all components.

Equipment supplied for the halcyonics_workstation_i4 system:

- 1 ws_i4
- 1 power cord
- 1 power supply
- 1 instruction manual

3. Symbols used in these instructions



Warning symbol



Important note



Action that the user is required to take

4. Safety Instructions and Warnings

Please read through the following safety instructions and warnings carefully before using this equipment.

General Warnings

Do not operate the system in a potentially explosive or humid environment. Do not switch on the system if there is any visible damage or if you think it might be damaged. In this case, turn off the power immediately and notify our distributor in your area or contact Accurion's headquarters in Germany directly.

Electrical Safety

This system may be operated only on AC grounded power. Do not interrupt the protective grounding conductor under any circumstances. If you plan to use a power cable other than the standard power cord supplied with this equipment, first check that the protective grounding conductor is connected.

Before starting to operate this equipment, check the voltage rating to be sure that it matches your local voltage. For further information, please refer to the specifications on page 10.

Finish the set up and installation before attempting to plug it into an electrical outlet. Never open the equipment housing. Only authorized and qualified personnel may service or repair the equipment. The device must be connected to an easily accessible supply socket so that in the event of a malfunction, the supply plug can be removed quickly.

Mechanical Safety

Be sure that the workstation is installed on a rigid floor.



Please note that you need to activate the transport/relocation locking mode before you transport or move the equipment! For further instructions, please refer to the section "Automatic Load Adjustment and Transport Locking Mode" on page 7.

Intended Use

The system is suited to isolate various measurement equipment from building vibration and other disturbing influences. Every other use is not permitted.



Never use the isolation system in mobile environments or outside the specified environmental and operational requirements, see page 10.

DIN and European Standards, European Council Directives

Halcyonics Workstation_i4 systems conform to the requirements currently valid for electrical safety according to EC Directive 2006/95/EC and for electromagnetic compatibility according to EC Directive 2004/108/EC. This equipment has been tested and found to comply with the following standards EN 61010-1:2010.

5. Getting Started and Operation

Setting Up the Equipment

To obtain best performance from the halcyonics_workstation_i4, set it up on a stable, rigid flat surface. For optimal operating results, the planarity of the support surface should be 0.5 mm. Carpet or other soft floor coverings should be removed.

To set up your vibration isolation equipment, select a place with a vibration level that is as low as possible. Vibration generated at this place should not exceed velocities of 500 $\mu\text{m/s}$.

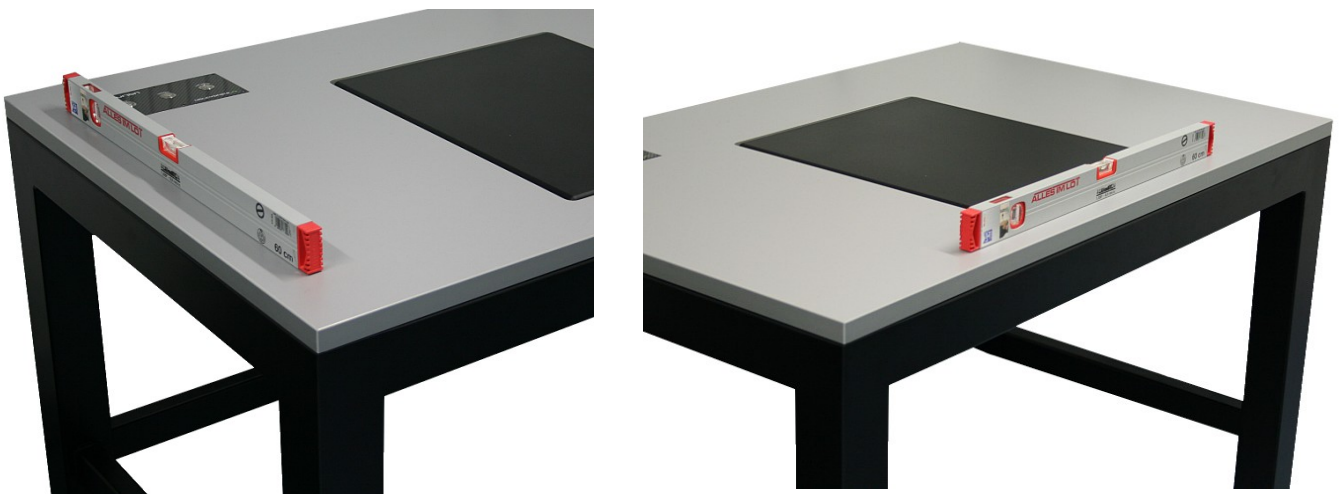


Operating the system at low temperatures may cause malfunctioning. If the equipment is brought from a cold environment into a relatively warmer one, we recommend that you wait approx. 2 – 3 hours before plugging it into AC power and switching on the power.



Start-up

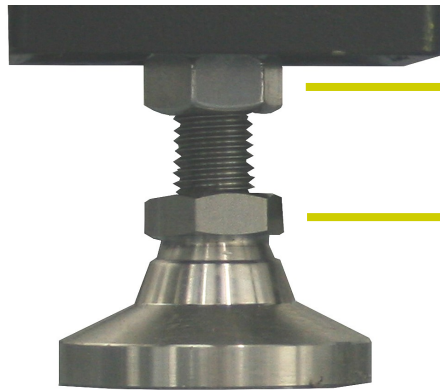
- Set up the system on a suitable surface as described above.
- Align the workstation with a water level, using a jaw wrench - size 24 to adjust the feet.
- Make sure that all 4 frame feet stand on the ground.
- After the workstation is balanced, lock the counternuts by using the jaw wrench.
- Use the power cord supplied to connect the system into the power socket to your local power.
- Center your application on the working surface.
- Turn on the power switch on the control panel of the system.
- Press the Load Adjust button for automatic load adjustment (see page 7)
- Set the switch for active isolation to on, blue LED is on (see page 8)



Alignment of the Workstation



Jaw wrench - size 24



Counternut

Height adjustment nut

Foot of the Workstation



The power connector of the Workstation is located on the left side, below the frame.



Position of the power connector

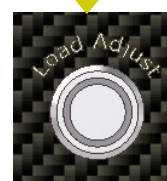
Control Panel of the Workstation



Power switch



Isolation switch



Load adjust switch

Automatic Load Adjustment and Transport Locking Mode

The top plate of the active isolated surface is supported by four steel springs. These springs carry the load placed on top. For the initial installation or after load changes these springs have to be pre-stressed according to the weight of the setup. This is done by electric motors via an electronic circuit. This procedure is called „automatic load adjustment“. The objective of the load adjustment is to elastically support the top plate by the springs.

The halcyonics_i4 workstations have a combined automatic load adjustment and transport locking mode feature. Both functions are controlled using the "Load Adjust" button. The following modes can be selected depending on the number of times you press the button. The LEDs show the selected mode as follows:

- Green – load adjustment
- LED off – neutral
- Red – transport locking mode



The "load adjustment" mode (green LED) is used for automatic, load-dependent adjustment of the system. When you set up the system and press this button, the system will start the load adjustment. For initial adjustment and for changing the loading conditions, the green mode has to be selected. During the activation of the green LED, the system will check at intervals whether the load on the system has changed and will automatically move the top plate into the optimal position when necessary. If this automatic adjustment is not desired, please turn the LA-Automatic off by pressing the load adjust button once so that the LED is off. During the load adjustment of the system, the active isolation is interrupted.



The "neutral" mode (LED off) is selected to deactivate the automatic load adjustment and to avoid the self-adjustment of the system. This way the motors of the load adjustment do not start to run at an unwanted time. Once you switch on the system power for the first time, the workstation will be in the "neutral" mode. At this point, select the "load adjustment" mode. As soon as the stepper motors stop you can switch to "neutral" and the system is ready to operate.



Press and hold the button for 4 seconds!

During transportation the halcyonics_workstation_i4 system always has to be locked! In the lock mode a rigid mechanical contact between the top and the bottom of the system prevents the sensitive components from damage. To lock the system, change the load adjustment setting to the "transport locking mode" (red LED), and the four steel springs will be automatically pre-stressed up to the maximum.



The system may only be transported or moved in the transport-locked condition!



To change the different modes, it is necessary to press and hold the button for some seconds.

Using Active Vibration Isolation

Once you have started up the system, press the “isolation” button on the front panel to enable the active vibration isolation. Now the system initializes, which is shown by a flashing blue LED. When the system initializes for the first time or after a long interval, this process can take up to 30 seconds. When the blue LED remains lit, the active vibration isolation is activated.



Overmodulation of the System

The Workstation_i4 has been designed to compensate vibration amplitudes up to 500 $\mu\text{m/s}$. If vibrations significantly exceed this level the system changes to the stand-by mode, indicated by a flashing blue "Isolation" LED. After the overload excitation is stopped, the isolation mode will automatically be turned on again. After a severe overload the system may take up to 30 seconds to reach full active isolation performance, but normally only a few seconds are required.



The active vibration isolation will be automatically switched off during overmodulation of the system. Once this interference has subsided, the system will re-initialize and, after a few seconds, automatically resume to the active isolation mode. This procedure does not require any action from the user.

6. Appendix

Care and Maintenance

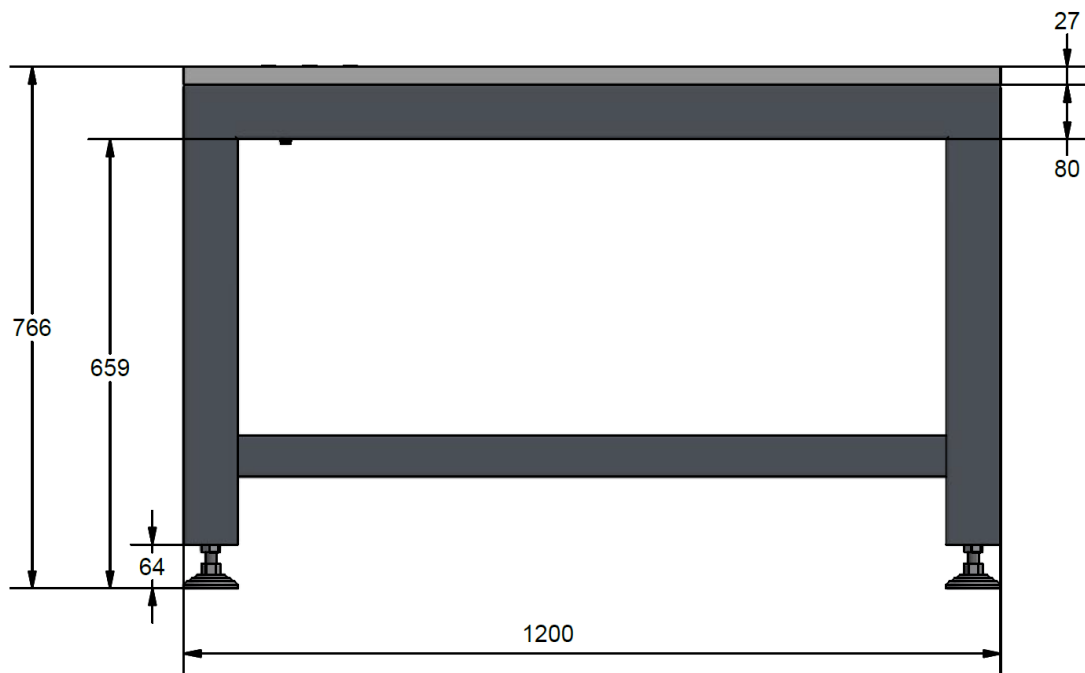
The halcyonics_workstation_i4 system has been carefully designed and manufactured by Accurion. To maintain this equipment and the validity of your warranty, you should observe the following recommendations:

- Store the system in a dry place. Never expose it to rain, liquids or dampness. The minerals contained in these liquids may lead to short-circuits or corrosion of the electronic circuits.
- Where possible, avoid operating and storing the system in dirty or dusty environments as this may otherwise damage the electronic or mechanical components.
- Do not store the system in hot environments. Operating the system at high temperatures may compromise its performance and reduce its lifetime.
- Do not store the system in cold environments. When the temperature rises to normal room temperature, moisture condenses inside the system and causes a circuit failure. If you need to transport the system from a cold environment to a warmer one, wait approx. 2 – 3 hours before plugging it into AC power and switching on the power.
- Do not drop the system or shake it, and never expose it to impact or blows. Improper handling can damage the integrated electronics and mechanical components in the system.
- To clean, wipe off dust from the exterior surfaces of the system using a lint-free cloth. For cleaning, do not use any aggressive cleaning agents.

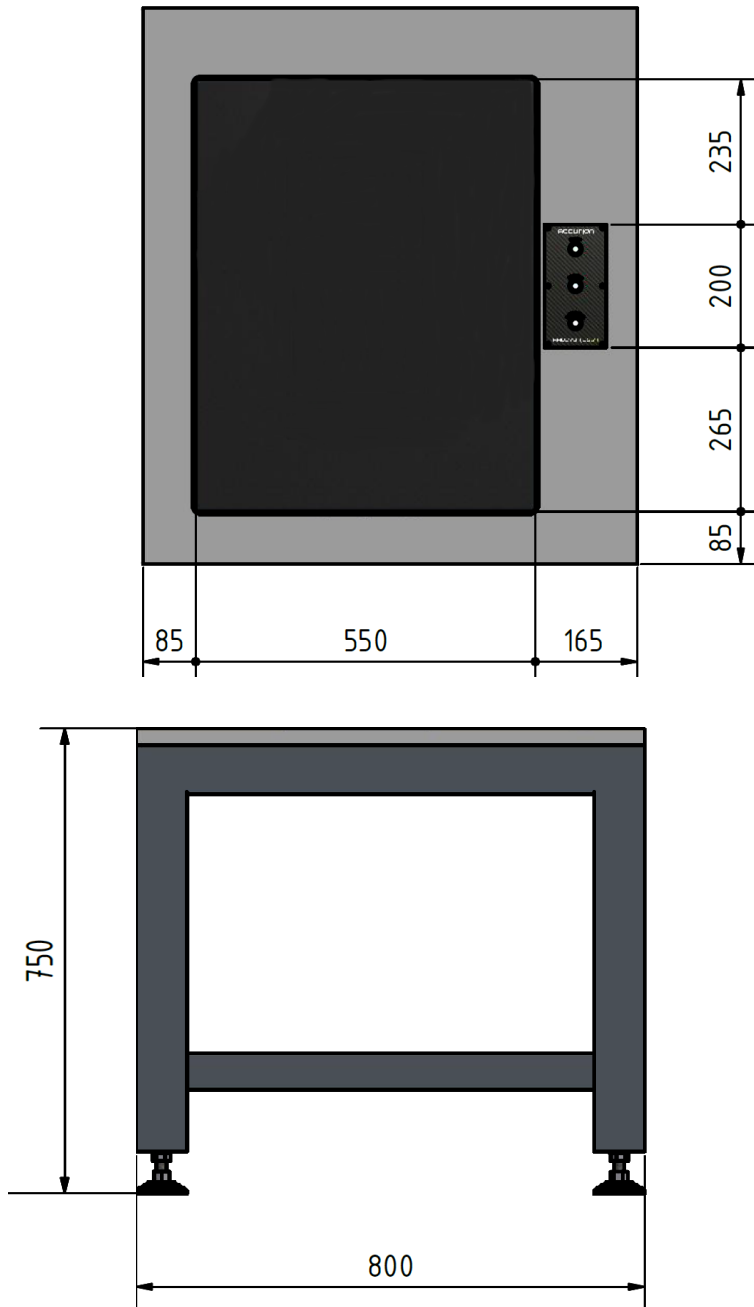
Specifications

Available Standard Versions	
Workstation_i4	
Workstation_i4/large	
Performance Specifications	
Isolation technology:	Accurion control technology based on piezoelectric type acceleration pickup, fast signal processing and electro-dynamic type force transducers
Force directions:	Active compensation in all six degrees of freedom
Isolation performance:	> 5 Hz = 25 dB (94.4%); >10 Hz = 40 dB (99.0%)
Active bandwidth:	0.6 – 200 Hz*
Settling time:	300 ms**
Stroke of the actuator:	1000 µm
Max. correction forces:	Vertical ± 8 N; horizontal ± 4 N
Load capacity:	WS_i4: 0 – 120 kg (0 - 265 lbs) / WS_i4/large: 0 - 105 kg (0 - 231 lbs)
Other Specifications	
Dimensions:	See page 11-12
Weight:	Workstation_i4: 115 kg (254 lbs) Workstation_i4/large: 135 kg (298 lbs)
Table top material:	Active isolated surface: powder coated aluminium Surrounding surface: melamine-phenolic resin
Top plate surface flatness:	± 0.10 mm over complete surface
Max. compensation level:	500 µm/s at 6 Hz and with a load of 60 kg (132 lbs)**
Repeatability of load adjustment:	120 µm
Environmental and Operational Requirements	
Electrical voltage:	100 - 240 V AC/47 – 63 Hz
Power consumption:	130 W
Operating temperature:	10 – 40°C (50 – 104 F)
Operating humidity:	0 – 60%
Operating altitude:	< 2500 m (8100 ft)
Certification	
Electrical safety:	CE certificated according to the directive 2014/35/EU
EMC:	CE certificated according to the directive 2014/30/EU
<p>* Floating table top is supported by steel springs; low-pass characteristics of spring-mass combination dominates the dynamic behaviour above 200 Hz.</p> <p>** The settling time and maximum compensation level depend on several conditions, such as payload, frequency, load distribution and height of the payload. Therefore this value should be considered as an estimation.</p>	

Dimensions of the Workstation_i4 System

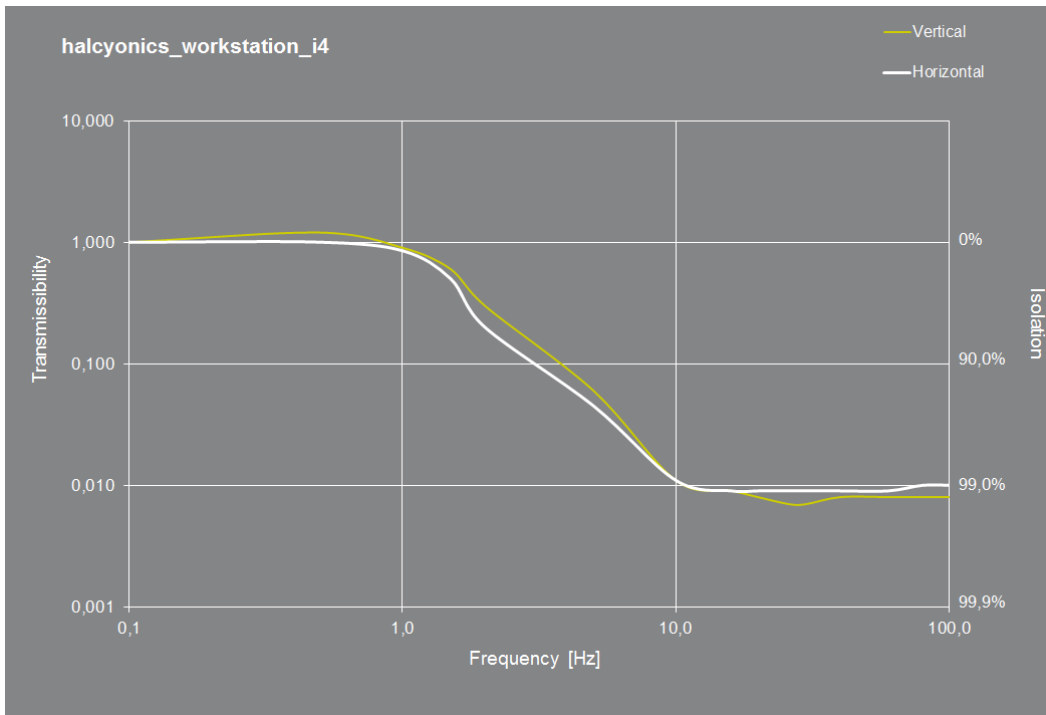


Workstation_i4



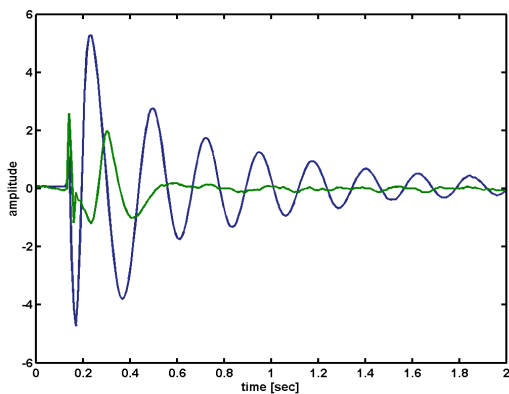
Workstation_i4large

Transmissibility



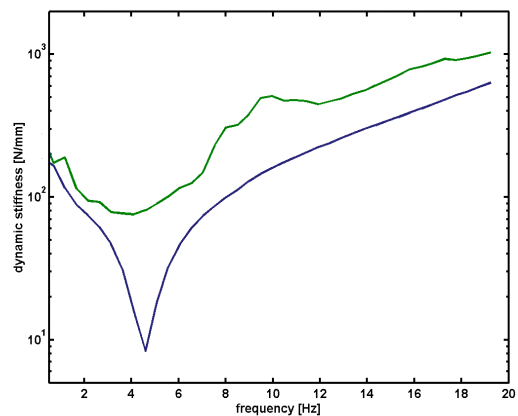
Transmission graph WS_i4, measured at a velocity of 100 $\mu\text{m/s}$ with a payload of 20 kg (44 lbs)

Settling Time



Settling time of a Workstation_i4 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.

Dynamic Stiffness



Dynamic isolator stiffness (green) of Accurion's WS_i4 system compared to a commercially available passive air-damped isolation system (blue). Due to their higher dynamic stiffness, Accurion's systems are less sensitive to direct forces affecting the isolation system.

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