

At the Nanoscale / Nanotechnology “What’s the Big Deal”



Exhibit Description:

“At the Nanoscale” is a static component that aims to show just how super small one billionth of a meter, or one nanometer, really is. It is mounted to the backside of the Intro to Nanotechnology video kiosk. The copy panel and video monitor guide visitors through the concept of scale way down at the Nano level.

A Billion Beads is an activity where visitors inspect tubes that hold quantities of one thousand tiny beads, one million beads, and one billion beads. To the naked eye, the tube containing one thousand beads appears nearly empty. Visitors see that the next tube, partially filled, contains one million beads. Finally, to compare, a four-foot tall container nearly full contains approximately one billion beads.

This multimedia static component consists of one copy panel, three containers that hold different quantities of beads, and a flat-screen monitor that scrolls through various slides. Like all of the exhibit components in the Intro package, headphone listening stations with both English and Spanish audio description labels are included. These audio labels serve two functions—to explain the “Big Idea” content of the exhibit and to provide illustrative descriptions of the interactive experience.

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Nanotechnology “What’s the Big Deal” is a lively and engaging three-minute video, host Anders Liljeholm gives an overview to nanotechnology science. Anders explains some of the principles of nanotechnology, including the concept of the super tiny Nanoscale, and how materials can behave differently at the Nano level. Compelling examples of fascinating new consumer products, including self-cleaning windows and extremely efficient power lines, are presented, as well as medical applications of nanotechnology like new methods of cancer treatment. Visitors are introduced to some of the unique challenges and opportunities presented by Nanoscale science and are left to consider what big changes may come from the small world of nanotechnology.

Nanotechnology: What’s the Big Deal? is presented in both English and Spanish. Visitors select their preferred language by pressing the appropriate start button to launch the video. The exhibit component “At the Nanoscale” is attached to the backside of this video kiosk.

Exhibit Interface, At the Nanoscale:

Interactive

- Visitor sees a series of tubes containing tiny beads and a magnifier glass.
- The far left tube contains one thousand beads, and in order to see any of them must lift the tube to his/her face or look through the magnifier.
- The center tube contains one million beads, which partially fills the tube.
- The far right tube is large (over 4 ft tall) and contains one billion beads, which almost completely fills the tube.

Side Monitor

The monitor, on the right side of the interactive, displays images of nanotechnology.

- Images self scroll.
- Visitors can press the “Next” button to scroll to the next image.

Audio

- Visitor wears the headphones.
- Visitor chooses to listen to English or Spanish by pressing the “English” or “Española” button.
 - Audio starts.
 - Audio explains the content of the exhibit
 - Audio provides instructions of the interactive.
- Visitors can adjust the volume of the audio.

Exhibit Components:

The following lists of components combine to make the exhibit.

32" Monitor Cabinet:

- Weighing, 250 lbs.
- Dimension, 81" H x 53" W x 33"D

Graphic Header:

- Weighing, 10 lbs.
 - Dimension, 14"H x 50" W x 3"D
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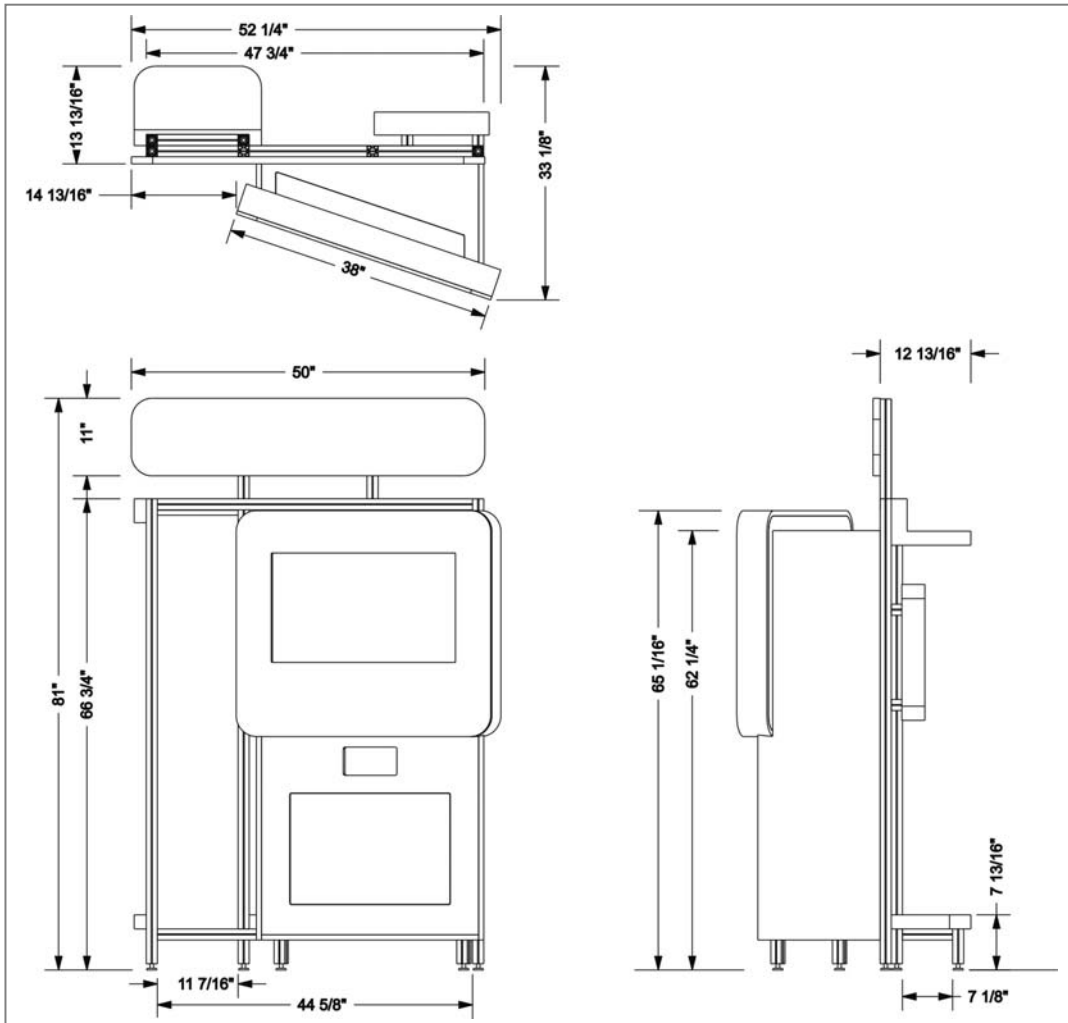
Exhibit Specifications

Dimensions:

- Exhibit Dimensions:
 - 81"H x 53"W x 33"D
- Exhibit Foot Print:
 - 53"W x 33"D
- Exhibit Floor Space:
 - 85"W x 97"D

Power Requirements:

- 110-volt, 15-amp.
 - Accessed through the base cabinet of the exhibit



Tools and Hardware:

Tools and Hardware needed for installation, maintenance and repairs to the exhibits.

Key

- 415-A
 - To open base cabinet.

Cam Wrench

- Cam locks
 - Securing Side Monitor to exhibit frame
 - Securing exhibit frame

9/64" Allen Wrench

- All ¼ x 20 button head bolts
 - Securing the exhibit monitor to interactive cabinet
 - Securing the Graphic Panel to the exhibit frame

5/32" Allen Wrench

- Security screws
 - Securing all second surface graphic panels

3/32" Allen Wrench

- Machine screws that secure Side Monitor shroud

#2 Phillips Screwdriver

- Machine screws
 - Securing Side Monitor shroud back panel

6" Crescent Wrench

- To adjust leveling feet

Parts:

Parts needed for installation, maintenance and repairs to the exhibit.

- Headphones
 - AKG K77
- Monitors
 - Mediawiz 10"
 - Sony 31" FWD32LX2F/B
- Media Player
 - Roku 410
- Amplifier
 - Produced by The Science Museum of Minnesota (SMM)
- Two, Tubes
 - Steve Spangler Science
- One, Magnifying Glass
 - Produced by The Oregon Museum of Science and Industry (OMSI)

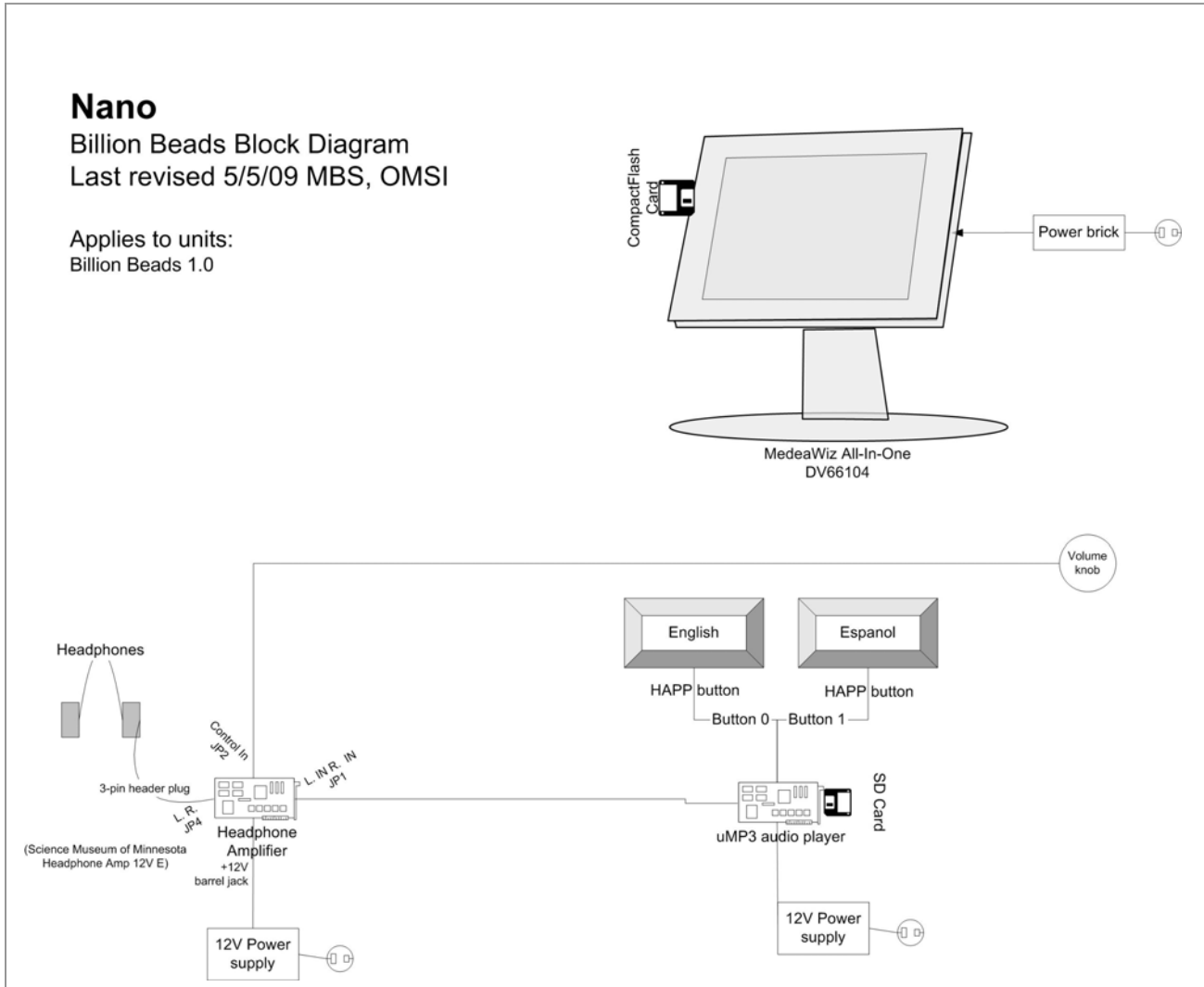
Media:

Nano

Billion Beads Block Diagram

Last revised 5/5/09 MBS, OMSI

Applies to units:
Billion Beads 1.0



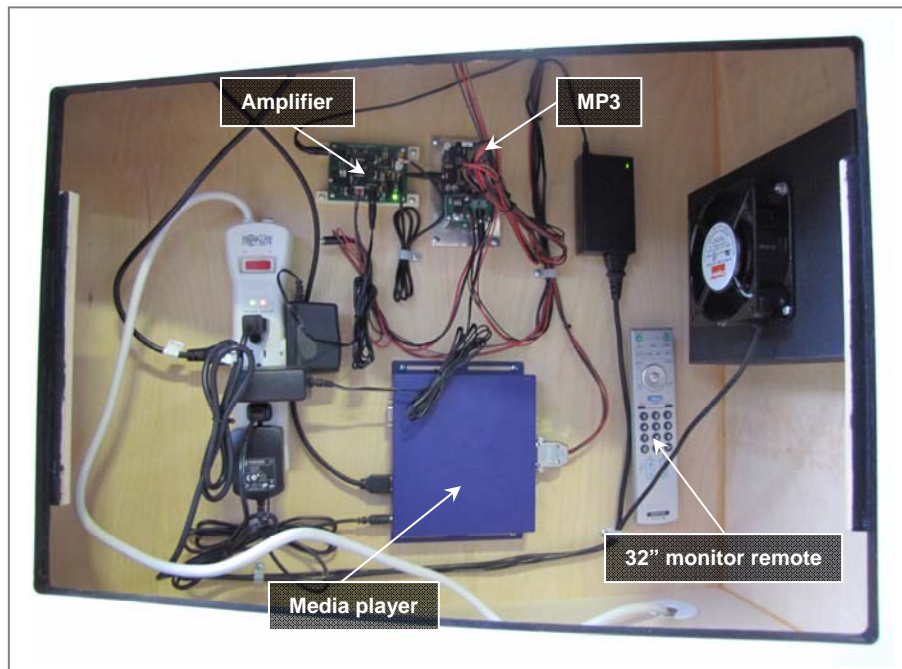
Service Access

Base cabinet Access

- Accessed with a 415-A key
- Contains
 - Power outlet strip
 - Media player
 - Audio amplifier
 - Audio media reader
 - Fan
 - 32" monitor remote



- Note: For access to the 32" monitor the 32" monitor shroud can be removed.
- Note: For access to the 10" Monitor controls and video card, the 10" monitor needs to be removed from frame and accessed through the back.



Trouble-Shooting

Interactive:

32" monitor

- No attractor screen on power up.
 - Ensure there is power to the exhibit.
 - Ensure power strip is switched to the “ON” position.
 - Ensure the monitor is switched to the “ON” position.
 - Check to ensure all power plugs are connected to power strip and to the back of the Monitor.
 - Check to ensure source plug is connected to the media player and to the back of the Monitor.
 - Check to ensure media card is securely inserted into the media player.
- ➔ **If the above conditions are met, the media card, media player, or monitor may be faulty, replace as needed.**

10" monitor

- No Picture on power up.
 - Ensure there is power to the exhibit.
 - Ensure power strip is switched to the “ON” position.
 - Ensure the monitor is switched to the “ON” position.
 - Check to ensure all power plugs are connected to power strip and to the back of the Monitor.
 - Check to ensure source plug is connected to the 10" monitor.
 - Check to ensure media card is securely inserted into the 10" monitor.
- ➔ **If the above conditions are met, the media card, or monitor may be faulty, replace as needed.**

Audio:

- No Sound
 - Check to ensure all plugs are securely connected to the Amplifier.
 - Check to ensure plugs are securely connected to the “ENGLISH” and “ESPANOLA” buttons and the Signal cable is securely connected to the media player.
 - Check to ensure media card is securely inserted into the media player.
- ➔ **If the above conditions are met, the media card, or buttons may be faulty, replace as needed.**