



FREEZEFRAME HARDWARE INSTALLATION GUIDE

Install the IMAQ image acquisition software and *then* the PCI-14XX board

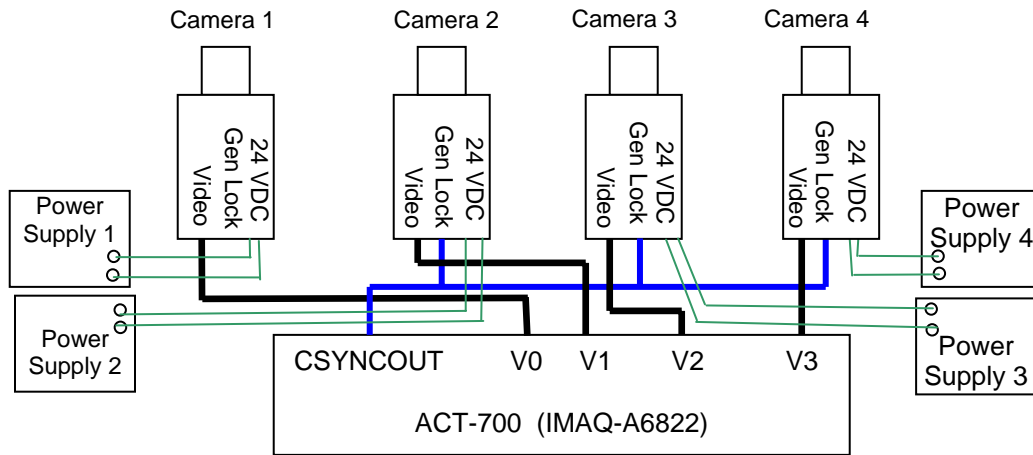
- *Before installing the video board*, load the NI-IMAQ (software from the CD provided with the video board).
- Shut down the computer and plug the PCI-1405 (ACT-655) board (for single camera system) or the PCI-1410 (ACT-610) board (for multi-camera system) into the open PCI-slot that is closest to the processor.
- Restart the computer.

Camera connections

Single camera

- Connect the camera output connector to the "Video" input BNC on the PCI-1405 (ACT-655) using the BNC cable provided.
- Connect the camera to the 24VAC power supply using the two-stranded wire provided. Polarity is unimportant since this is a 24V AC power supply. Use only the screw terminals labeled 24 Volts, not the ground terminal.
- Plug the power supply into any wall outlet.
- **Two cameras**
- Set up camera one as described above.
- Connect the multi-pin cable assembly provided to the PCI board.
- Connect the "video out" BNC connector on cameras 2 V1.
- Connect the CSYNCOUT BNC on the video board to the T connector on camera 2.
- Connect camera 2 to a 24VAC power supply as above.
- Plug the power supplies into any wall outlet.
- **Four cameras**
- Connect the multi-pin cable assembly and the National Instruments A6822 breakout box (ACT-700) to the PCI board.
- Connect the "video out" BNC connector on cameras 1 2, 3 and 4 to V0, V1, V2 and V3.
- Put one BNC T-connector on the GEN LOCK (or SYNC IN) plug on cameras 2 and 3.
- Connect the CSYNCOUT BNC on the video board to the T connector on camera 2.
- Connect the other side of the T-connector on camera 2 to the T-connector on camera 3.

- Connect the other side of the T-connector on camera 3 to the GEN LOCK/SYNC IN connector on camera 4.
- Connect each camera to a 24VAC power supply as above.
- Plug the power supplies into any wall outlet.



Configure the PCI-1405 (ACT-655) and PCI-1410 (ACT-610) Interface Cards

Before putting the PCI-1405 or PCI-1410 Image Acquisition board into your computer, install National Instruments NI-IMAQ driver software, version 3.1.3 or later.

Once the drivers are installed, shutdown, install the PCI-1405 or PCI-1410 into your computer. If using the PCI-1410, connect it to the IMAQ-A6822 and restart your computer. To configure the board and cameras, open National Instrument's Measurement and Automation Explorer (MAX). It's icon should be on the desktop (or use the start menu).

- In the Configuration list (left column) select:
 - My System
 - Devices and Interface
 - NI-IMAQ Devices
 - img0:IMAQ PCI-1410
 - Channel 0: RS-170
- Select the Operating Mode tab at the bottom of the window
- Set "Video Lock Mode" to "Channel 0" (Leave PCLK Source at "Internal 1x")
- Select the Acquisition Parameters tab
- Set "Bit Depth" to " 8 bit"
- All other Acquisition Parameters should be left at their default values:
 - Acquisition Window Left, Top, Width and Height: 120, 21, 640, 480
 - Frame Timeout: 1000

- Field/Frame Mode: Frame (Interlaced). First Frame: Odd
- Digital Filter: None
- Reference Level White and Black: 0.700 and 0.000
- In the Configuration list, select Channels 1-3 and repeat the steps above.
- Click the SAVE button at the top of the window.

Now select each of the 4 channels in turn and use the Grab button to see a live image from each camera. Clicking or Shift-clicking on the image window zooms and unzooms the image.

If you can see an image at this point, you should be able to see an image in FreezeFrame (quit MAX before opening your Actimetrics program).

If you can't see an image, most problems at this step originate from improper connections.

- Make sure each camera is connected properly as described above.
- Use a voltmeter, if available, to make sure that the power supplies are providing 24 VAC to the power input screw terminals on each camera.
- If an image appears on some channels and not others yet the connections seem correct, try swapping camera connections around to see if the problem follows the suspected bad camera. Call Coulbourn Instruments for help with this.

Configure the computer's speakers and sound card

FreezeFrame relies on the computer's sound card and speakers for generating conditioning stimuli. Connect the computer's speakers as in your computer manual and test the sound system. You can test the system by playing a CD (from the START menu, choose Accessories->Multimedia->CD Player), or by opening the Sounds control panel, selecting a sound and playing it using the rightward pointing arrow ("Preview:").

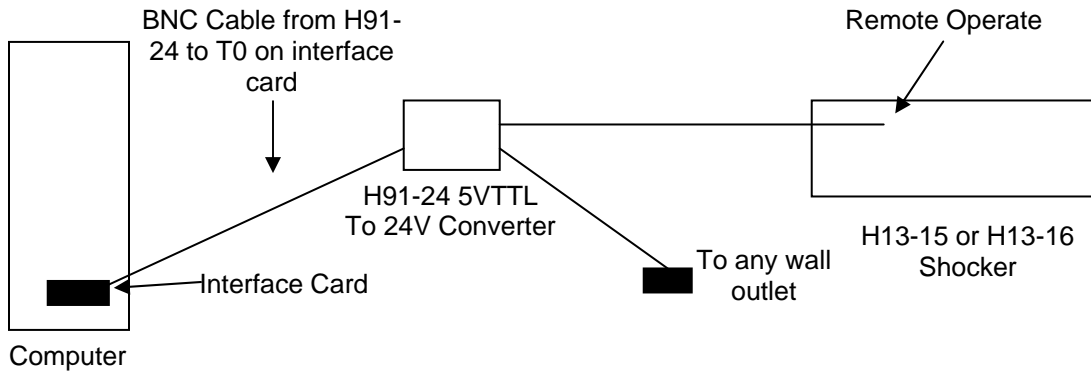
If the sounds do not play, check the speaker connections, whether they are turned on and whether the volume is set high enough. Next check whether the drivers for the sound card that came with the computer are properly installed and functional. If they are not, consult with the computer manufacturer.

If you are able to play a CD or a sound in the Sounds control panel, FreezeFrame should be able to play conditioning stimuli as well.

Shocker Stimulus Connection

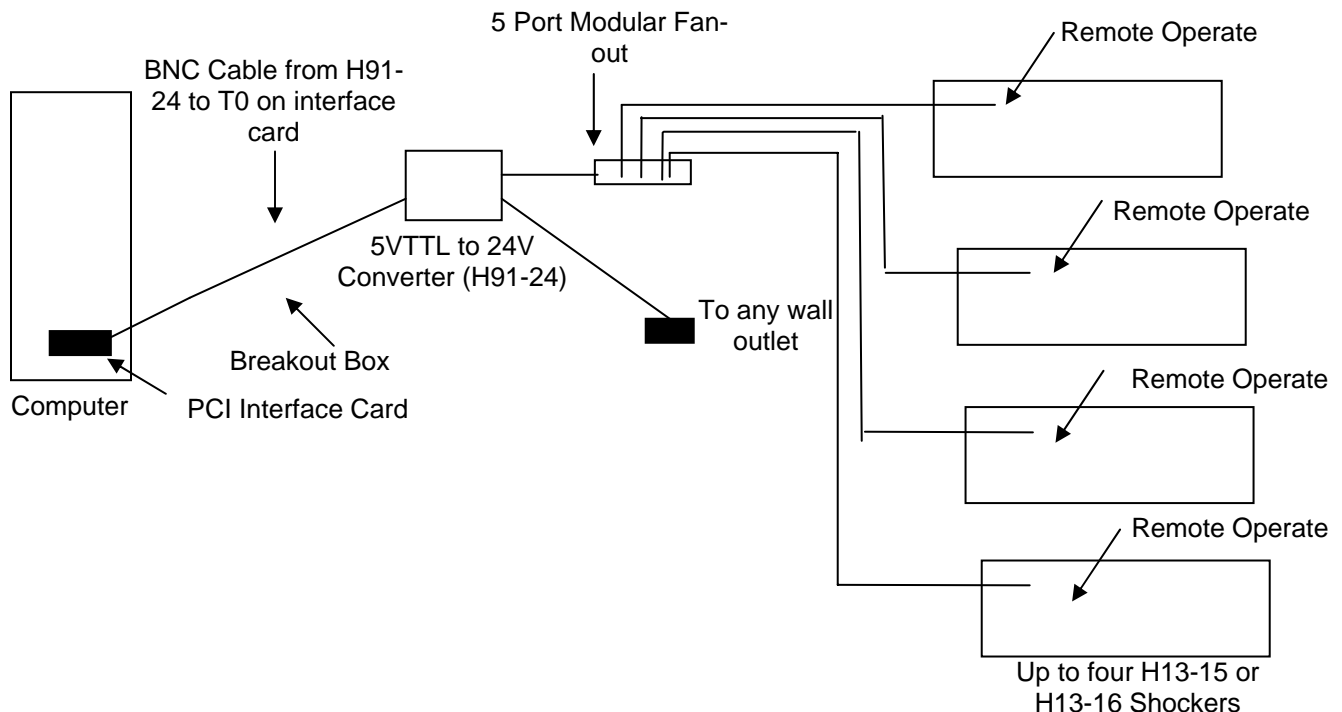
Single station systems with the PCI-1405 (ACT-650) interface card

Connect a 5VTTL to 24V Converter (H91-24) BNC cable to input to the BNC connector labeled "TRIG" on the PCI-1405 (ACT-650) interface card. The TRIG connector provides a 5V (TTL-compatible) signal. For single station systems, connect the remote operate on the shocker to the RJ11 modular connector on the 5VTTL to 24V Converter (H91-24) using the 2-Pin to Modular Extension Cable (H91-11). Connect the Wall Mount Power Supply included with the 5VTTL to 24V Converter (H91-24) to the H91-24 and to a wall outlet.



Multi-Station Systems with the PCI-1410 (ACT-610) interface card

Connect the interface cable to the multi-pin connector on the PCI-1410 (ACT-610) interface card. Connect the 5VTTL to 24V Converter (H91-24) to T0 connector on the PCI-1410 (ACT-610) interface card. Stimuli 2-4 (shock and 2 auxiliary outputs) correspond to the BNC connectors labeled T0, T1 and T2, in order. Connect the 5 Port Modular Fan Out (802-66MF-005) that is included with the Shocker Expansion Kit (ACT-110) to the RJ11 input of the 5VTTL to 24V Converter (H91-24). Using the four 2-Pin to Modular Extension Cables (H91-11) included in the Shocker Expansion Kit (ACT-110) connect the remote operate of each shocker to one of the inputs on the 5 Port Modular Fan Out (802-66MF-005).

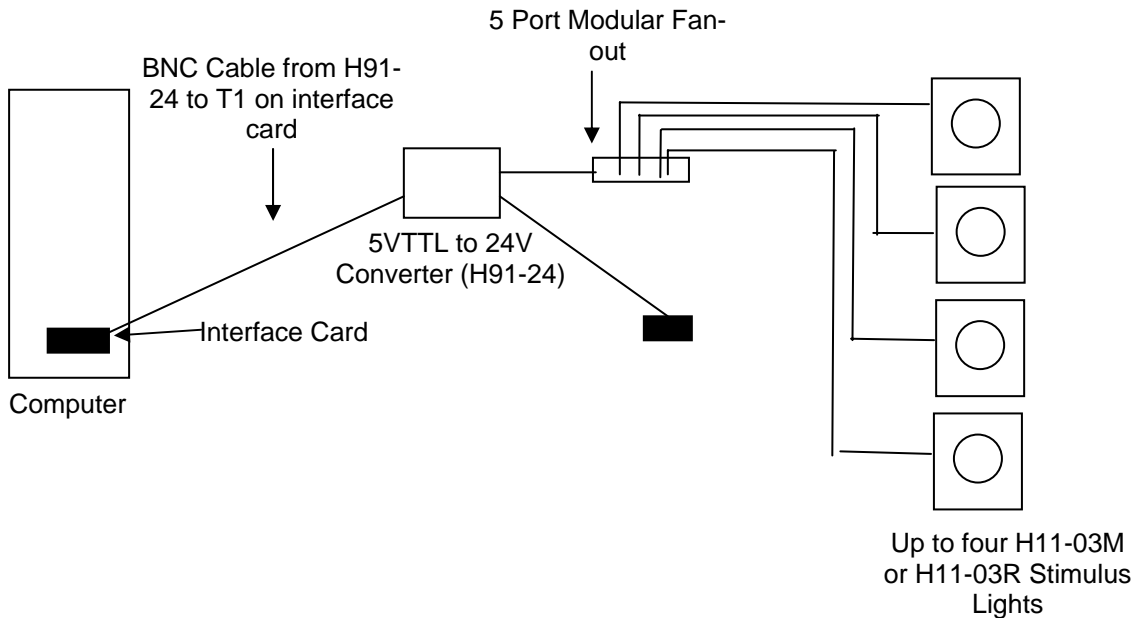


Connect the Shocker to the cage

Using the H93-01-25 or H93-01-50 shock cables, connect the shock output of the shocker(s) to the grid floor of the test cage(s).

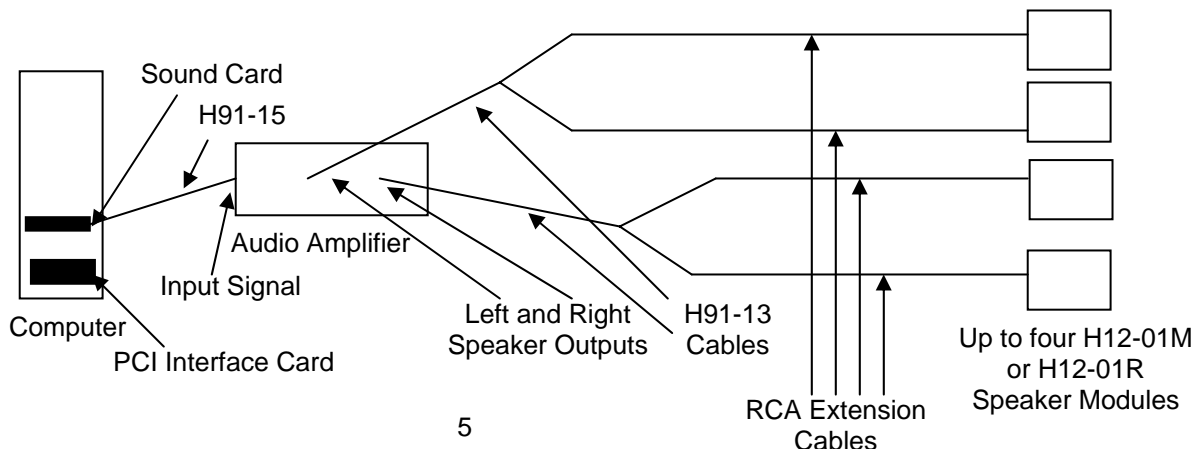
Visual Stimulus Connection (Available on PCI-1410 interface card (ACT-610) only)

The visual stimulus is connected in much the same way as the shockers are connected. In a single station system the 5VTTL to 24V Converter (H91-24) is connected to one of the trigger outputs (e.g., T1). The 5 Port Modular Fan-out included with the Light Stimulus Control Expansion Kit (ACT-12) is connected to the 5VTTL to 24V Converter (H91-24) at the RJ12 modular jack input. The stimulus lights (H11-03M or H11-03R) from each cage are then connected to the 5VTTL to 24V Converter (H91-24). The 5VTTL to 24V Converter (H91-24) is connected to any wall outlet.



Auditory Stimulus Connections

The auditory stimulus is generated from the sound card of the computer. The output of the sound card is connected to the Audio Amplifier included with the Audio Expansion Kit (ACT-140) using the H91-15 cable, also included with the ACT-140. You can use the phono input. Make sure that the input selection knob on the front of the amplifier matches the input used. Connect one of the Male RCA to 2 Female RCA cables (H91-13) included in the Audio Expansion Kit (ACT-140) to the left speaker output. Connect the other H91-13 to the right speaker output. Using the 6 foot RCA extension cables (802-RCAMF-072), also included in the Audio Expansion Kit (ACT-140), connect the speakers (H12-01M or H12-02R) to the female RCA connectors of the H91-13.



House Light and Cubicle Fan Connections

The house light and cubicle fan are controlled manually. Using the Power Box with Switch that is included in the House Light / Fan Controller Kit (ACT-130), connect the two Modular 5-Port Fan Out (802-66MF-005) to the Power Box with switch. Connect the power supply of the Power Box to any wall outlet. Connect each of the house lights (H11-03M or H11-01R) to the inputs of one of the 5-Port Fan Out (802-66MF-005) using the 7 Foot RJ11 Extension Cables (802-66MM-084) included with the House Light / Fan Controller Kit (ACT-130). The cubicle fans are connected to the other 5-Port Fan Out (802-66MF-005) using the remaining 7 Foot RJ11 Extension Cables (802-66MM-084).

Installation of Cages and Cubicles

For additional information on cage and cubicle installation, refer to the Habitest User's Guide, available on the internet at:

<http://www.coulbourn.com/images/cimanuals/HabitestH-SeriesHardwareUserGuide.pdf>