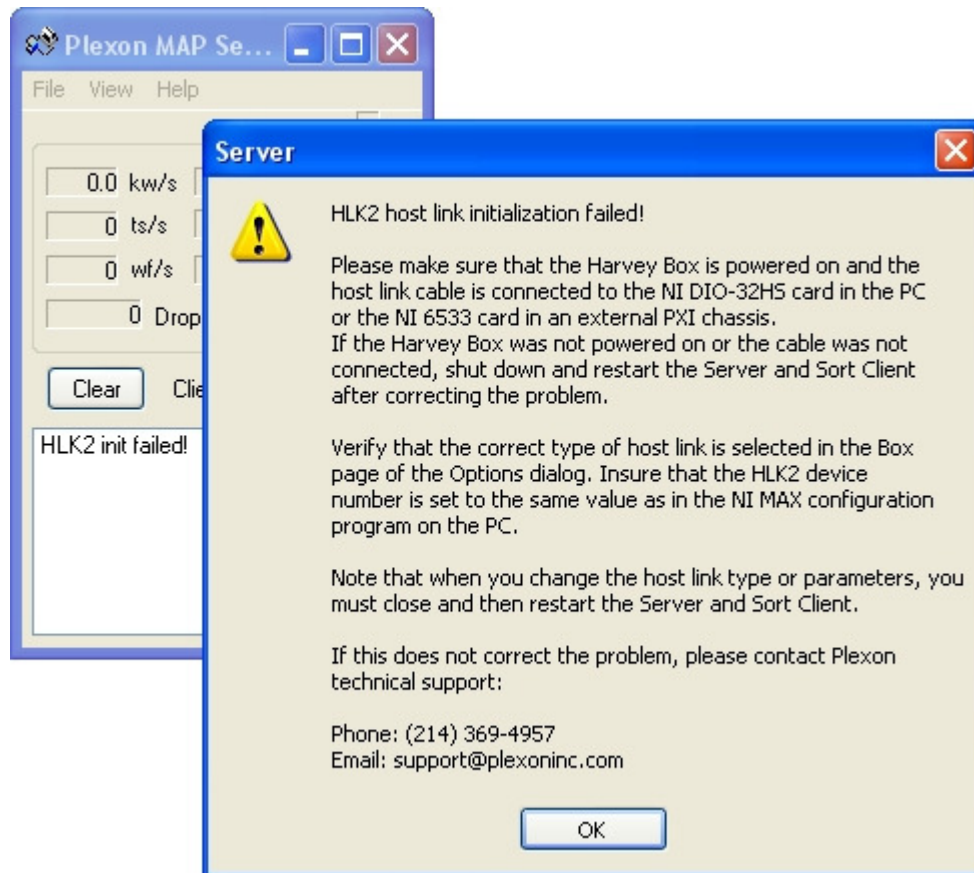


HLK2 Troubleshooting Guide

For the Plexon MAP System



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Introduction and Terminology

The subsystem that connects the Plexon MAP hardware to the host PC is called the HLK2, which is short for Host Link 2. The HLK2 consists of a board in the MAP chassis, a link cable, and a PCI card in the host PC. Spike waveforms, unit detection, and event data are transmitted from the MAP box to the PC through this connection. This link is also how gain, threshold, unit template, and box sorting commands are sent from the PC to the MAP SIG and DSP boards.

Server and SortClient are part of the RASPUTIN software package. Server brings in data from the MAP system via the HLK2 subsystem, and SortClient is the primary client that taps into this information for viewing, sorting, and saving a .plx file to disk. Other clients can also have access to the data collected by Server, such as the Matlab Client SDK, and clients included in the RASPUTIN package such as PEC and TCC.

When the MAP Server software displays an HLK2 Initialization Error, it is telling the user that the host PC cannot detect the MAP hardware through the link. There are several hardware and software causes for this error, and this document will get you familiar with the hardware components of the HLK2 subsystem, and will go through troubleshooting steps and fixes for the most common causes.

Hardware Components

There are three hardware components to the HLK2 subsystem: The MAP chassis HLK2 board, the HLK2 cable, and the HLK2 PCI card in the host PC.

Here are several important details such as naming conventions and identification methods that are good to know during troubleshooting:

1) HLK2 board in the MAP chassis

The HLK2 board in the MAP chassis is a board designed by Plexon that replaced the HLK (also known as MXI) link system in 2001. It has an HLK2 label on the upper ejection tab (see image to the right).

2) HLK2 cable

The HLK2 cable is a National Instruments digital link cable. There is another National Instruments cable that Plexon uses to connect 16 channel A/D boards in some MAP systems that looks identical, but is not compatible. The National Instruments cable used for the HLK2 subsystem will have a red sticker on the connectors, and can also be identified by the white cable sleeve number



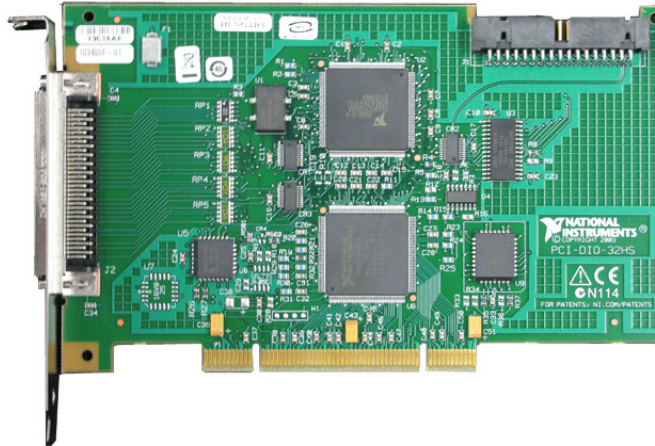
The HLK2 cable sleeve will read “183432B-02”.

Please Note: The HLK2 cable has many delicate wires running through it. Any physical trauma to the cable such as being bent too sharply or having any heavy objects resting on it can cause a wide variety of problems.

The National Instruments warranty on this part is transferred to the end user upon purchasing from Plexon. Plexon cannot repair National Instruments hardware.

3) HLK2 PCI card in the host PC

The HLK2 PCI card that sits in the host PC is a National Instruments PCI-6533 card. It is identified in the Windows Device Manager and the National Instruments Measurement & Automation (NIMAX) software as a PCI-DIO-32HS.



The National Instruments warranty on this part is transferred to the end user upon purchasing from Plexon. Plexon cannot repair National Instruments hardware.

Software Components

There are three software components to the HLK2 subsystem: The Traditional NIDAQ Drivers, the RASPUTIN software suite, and the National Instruments Measurement & Automation Explorer.

Here are several important details, such as naming conventions and purposes of the software components:

1) Traditional NIDAQ Driver

The HLK2 PCI card in the host PC is a National Instruments “E-Series” card, which Server interfaces with via the Traditional NIDAQ Driver set. This driver must be installed for Server to work. The original driver CD is shipped with new systems, and the software package is available on the National Instruments website. If you need to install this package again, then it is important to remember to specify that the Traditional



NIDAQ driver set should be installed, otherwise only the MAP-incompatible DAQMX driver set will be installed.

Please Note: Only specific versions of the National Instruments driver sets are compatible with the MAP system. Please contact Plexon support (support@plexon.com) for information on how to acquire the correct software.

2) **RASPUTIN**

RASPUTIN is the MAP control and client software package that includes Server and SortClient. It is highly recommended that you use the latest version of the RASPUTIN software (found at Plexon.com) so that you have all the latest features and bug fixes.

RASPUTIN is only supported when run under Windows XP 32-bit.

Please Note: If you decide to upgrade RASPUTIN from version 1 to 2 please make sure you first have a license key dongle (either a parallel port or USB dongle). Version 1 of the RASPUTIN software doesn't require a license key, and when version 2 was released in 2001 Plexon shipped license keys to all version 1.0 users.

3) **National Instruments Measurement & Automation Explorer**

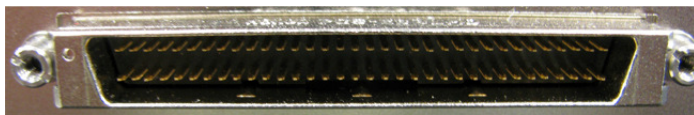
For the sake of brevity, this software is also called NIMAX. NIMAX is used to view National Instruments devices that are on the computer. It is a useful diagnostic tool, and is also allows you to assign device numbers, which is how Server identifies the PCI cards for the HLK2 and A/D subsystems. This software is installed with the National Instruments driver packages.

Hardware Troubleshooting

Here are common hardware-related causes and solutions for the HLK2 Initialization Error.

1) **Bent or recessed pins**

Both the HLK2 MAP board and the HLK2 PCI card have male connectors. The pins on the connectors can be easily bent or pushed into the connector (see image of correct pins below).



In most cases, bent or recessed pins can be quickly fixed with a good set of needle-nose pliers.

2) **Unseated PCI card**

If the PCI card isn't firmly seated in the PC motherboard, it won't be detected by Windows. The PCI card can become unseated spontaneously due to the weight of the HLK2 cable, and the fact that some Dell PC models don't have screws in the PCI card slots (opting for a plastic holding bracket instead).

Check to make sure the PCI card is firmly seated. After reseating, Windows might ask to reinstall the driver for that card.

3) **Unseated HLK2 cable**

An unseated HLK2 cable at either end will cause an HLK2 failure. If you find an unseated connection, remove it first to check for bent pins, and then firmly seat the connector and screw in the supports.

4) **MAP power**

There is a power switch on the front of the MAP box, as well as the back. Both need to be on for the MAP box to connect to the PC successfully.

5) **Computer incompatibility**

Plexon MAP systems are shipped with a host computer specifically for use with the MAP box. If a 3rd party PC is used to connect to the MAP system, then there are no



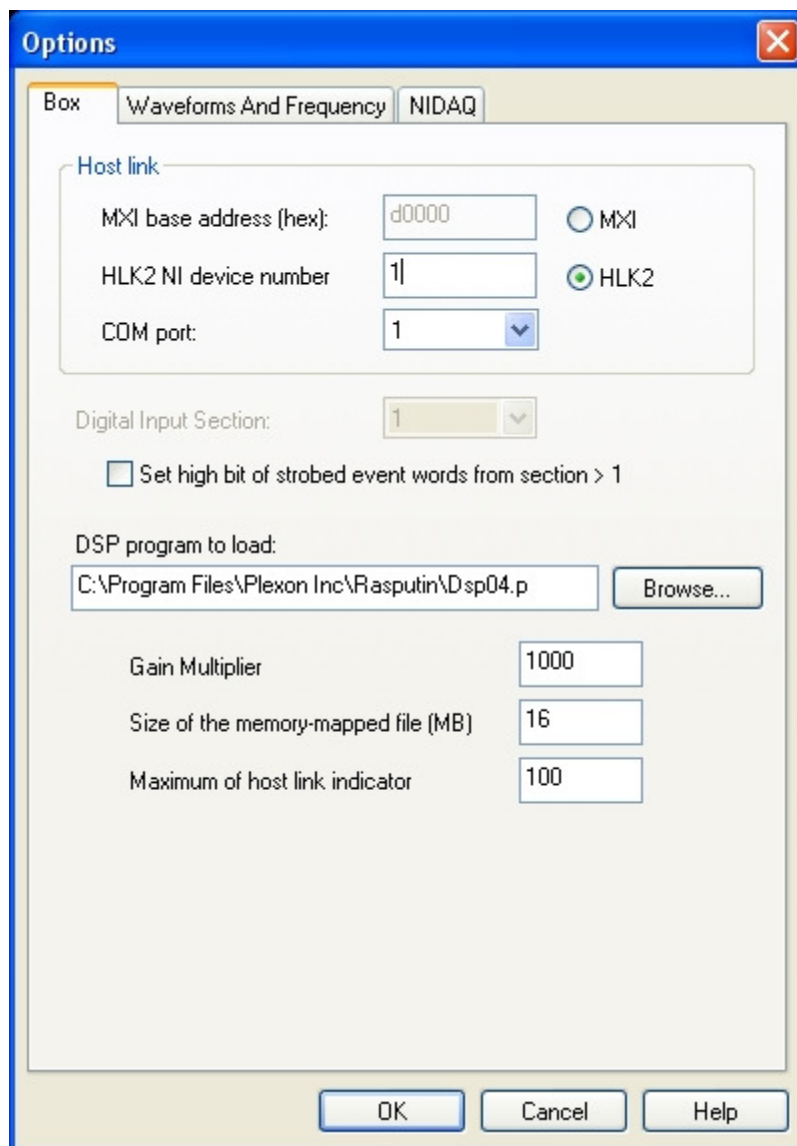
guarantees that the MAP box will correctly connect with the PC. Known incompatibilities include quad-core processors and versions of Windows other than XP 32-bit. There may be many more unknown incompatibilities.

Software Troubleshooting

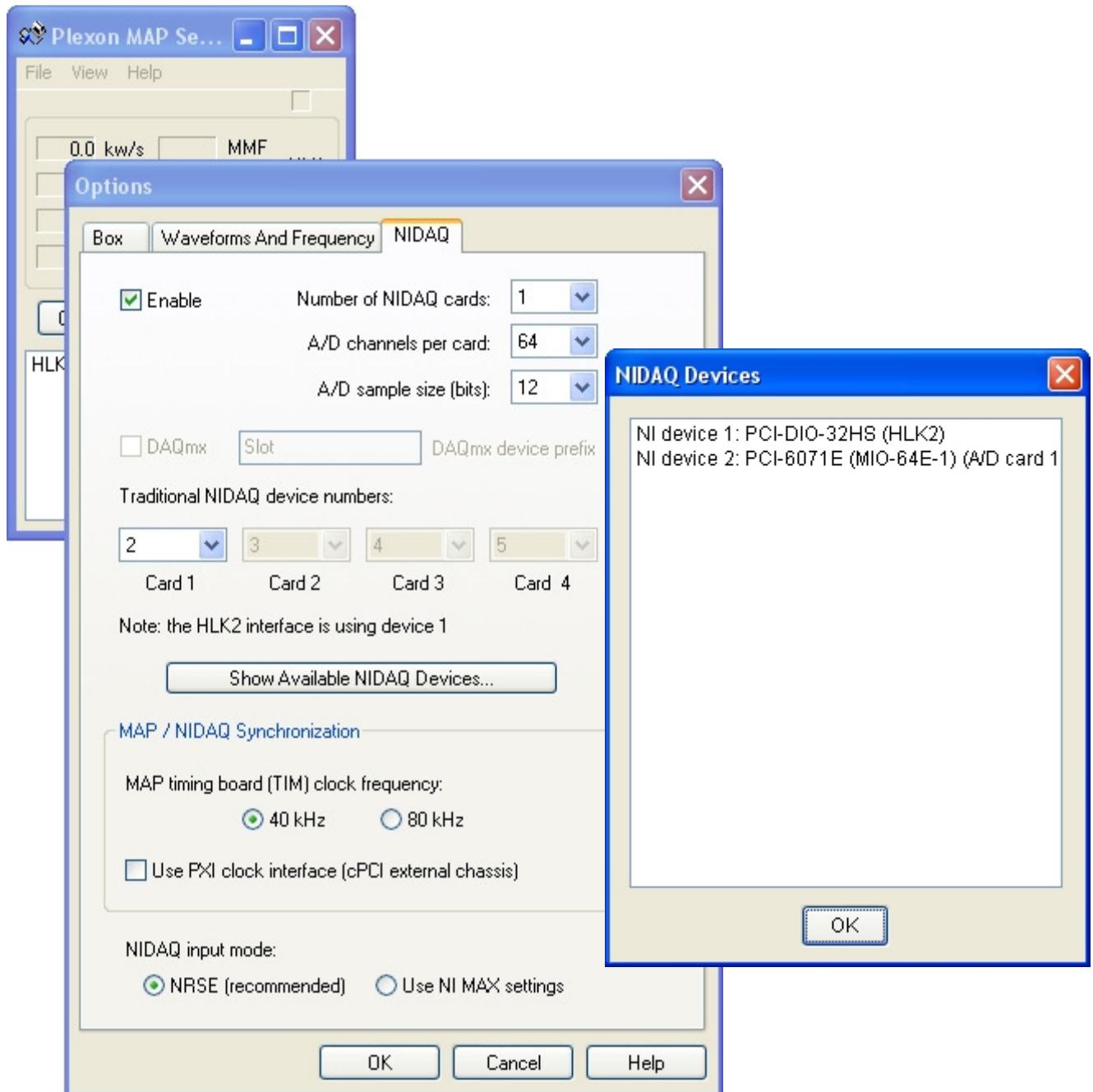
Here are common hardware-related causes and solutions for the HLK2 Initialization Error.

1) Device number mismatch

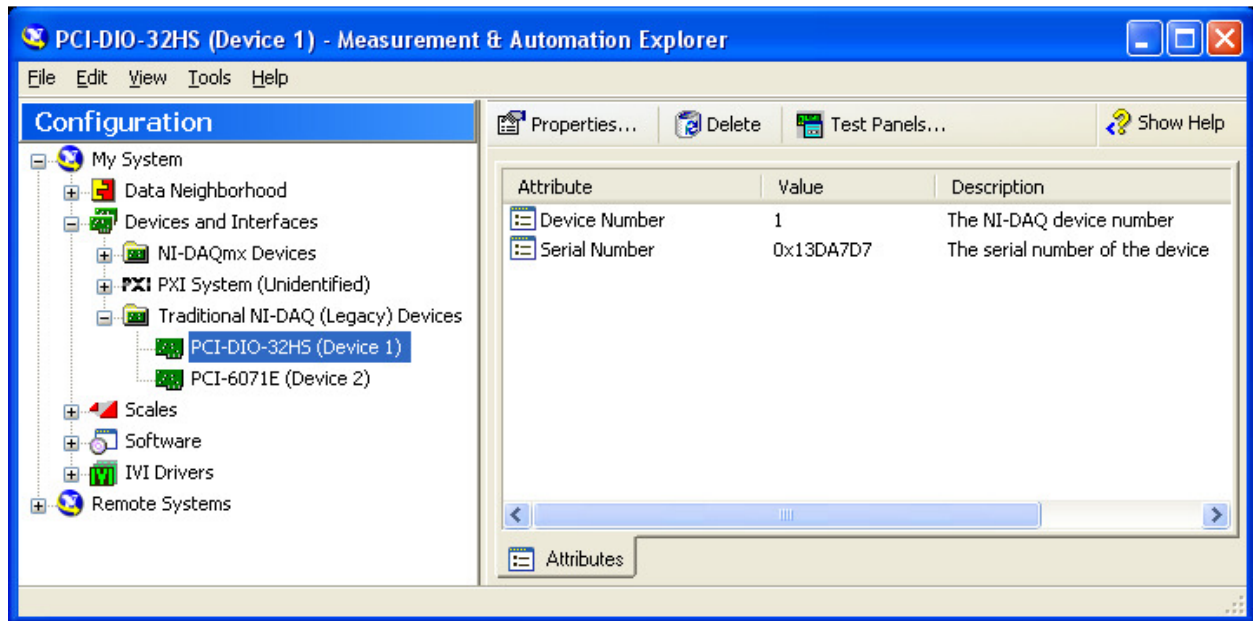
The Server software identifies the HLK2 PCI card with a device number. This number is given to Server in the View->Options menu under the “Box” tab.



In newer versions of Server (version 2.6.0 and up) there is a utility in the Server settings for viewing which device number the HLK2 PCI card has been assigned by the driver. In Server, go to View->Options and then select the “NIDAQ” tab. The “Show Available NIDAQ Devices” button will list all installed NI cards and their corresponding device numbers. If nothing is listed here, then you’ll have to open the NIMAX program.



Open NIMAX (under Start->Programs->National Instruments->Measurement & Automation) to view any NI devices on the PC. You can see them under the “Devices and Interfaces->Traditional NIDAQ Devices” branch. NIMAX has to be run at least once for the viewing utility in Server to function, and sometimes after a hardware problem it will need to be run again.



2) nidaq32.dll missing

If the Traditional NIDAQ Driver Set isn't installed, or if for some reason the nidaq32.dll file is missing or corrupt, you will see this message in the Server window. Reinstall the Traditional NIDAQ Driver.

Document History

March 18 2010 – V1.0

- Initial creation of document for troubleshooting common HLK2 subsystem problems.
- Screenshots used RASPUTIN 2.6.2