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Configuring Your PXI System in MAX 3.x and Above

Overview

This article describes the process for configuring your PXI system in Measurement & Automation Explorer (MAX) versions 3.0 and later.

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PXISYS.INI - Introduction

In a PXI system, the PXISYS.INI file provides mappings from PCI logical addresses (PCI bus, device, and function numbers) to corresponding PXI slot numbers, allowing device driver software to identify the slot of a PXI module. There is a unique PXISYS.INI file for every combination of PXI chassis and controller and the following instructions will describe how to install the correct PXISYS.INI file using Measurement & Automation Explorer (MAX) 3.x and above.

Configuring the PXI System in MAX

In MAX 3.x and above, you will always find a PXI System entry under "Devices and Interfaces". If you are using a PXI system, it is necessary to always configure the PXI System entry correctly so that MAX saves the appropriate PXISYS.INI file under the Windows system folder.

If you do not have a PXI system you do not need to configure this entry. Please refer to *KB 32QE2EL1 : Why Does a PXI System Appear in MAX 3.0 When I Do Not Have a PXI System?* for more information.

The steps required for configuring any PXI System entry are the same, regardless of if you are using an embedded controller or a remote controller (i.e. MXI-4). To configure the PXI System entry follow these steps:

1. Launch MAX (you will find the icon on the desktop of your computer) and ensure that you are working with MAX 3.x or above.
2. Click on the **Devices and Interfaces** section in the Configuration tree to expand it.
3. If the PXI system controller has not yet been configured it will be labelled as "PXI System (Unidentified)". Right Click on this entry and click on **Identify As** from the menu to choose the controller model that you are using.
   Note: If you are using a remote controller, such as MXI-4 or 8360, to control your chassis, you should select **External PC**.
4. Right-click on the chassis that appears under the PXI System entry and select **Identify As** from the menu to choose the chassis that you are using.
5. If you are using multiple chassis in your system repeat step 4 until you have identified all of the chassis in your PXI system.
6. Only after you have defined the controller and the chassis that you are using in your system will MAX save the correct PXISYS.INI file in the Windows system folder.

If you have a PXI Combo chassis (PXI-1010 or PXI-1011), or if you are using LabVIEW RT, please refer to the FAQ section.

For more information on configuring your PXI system, please go the Help menu in MAX and open the **Measurement & Automation Explorer Help for PXI** by navigating to **Help Topics»PXI**. You will find more information under the entry "PXI System Configuration".

What Are PXISYS.INI and CHASSIS.INI

The format of the PXISYS.INI and CHASSIS.INI files are outlined in the PXI Specification. For additional information on the PXI Specification, visit the webpage for the PXI Systems Alliance.

The PXI specification allows many configurations of PXI chassis and system modules. To assist system integrators, the manufacturers of PXI chassis and system modules must document the capabilities of their products. The minimum documentation requirements are contained in .ini files, which consist of ASCII text.

The CHASSIS.INI file describes the capability and features of the chassis and chassis manufacturers are required to provide this file. However, in order to describe the capabilities and structure of the PXI system, the architecture of the system's controller must also be described. The information in the CHASSIS.INI file is combined with information about the system controller into a single system initialization file, PXISYS.INI (PXI System Initialization). There is a unique PXISYS.INI file for every combination of PXI chassis and controller.

The system controller manufacturer will either provide a PXISYS.INI file for the particular chassis model that contains the system controller, or provide a utility that can read an arbitrary CHASSIS.INI file and generate the corresponding PXISYS.INI file.

Every National Instruments PXI chassis ships with a floppy that contains the corresponding CHASSIS.INI file. If a National Instruments PXI controller is also being used, the PXISYS.INI files for every combination of controller and chassis are available on the web here, in which case the user should not need to use the CHASSIS.INI file.

The .ini files can be read by the system integrator, and can also be used by configuration utilities and device drivers. Device drivers and other utility software will read the PXISYS.INI file to determine information about the system. The device drivers should have no need to directly read the CHASSIS.INI file. For example, the PXISYS.INI file can be used by driver software to identify that Slot 8 of a PXI-1010 chassis can be used to interface to an SCXI backplane. Additionally, the PXISYS.INI files provides mappings from PCI logical addresses (PCI bus, device, and function numbers) to corresponding PXI slot numbers, allowing device driver software to identify the slot of a PXI module.

For information about installing the PXISYS.INI file, see the Configuring the PXI System in MAX section.

FAQ

- **Configuring the SCXI portion of my Combo Chassis**
  1. Make sure that you have a PXI data acquisition device installed in the right most slot of your PXI combo chassis and if applicable, turn on the power to the SCXI portion.
  2. In MAX, right-click on **Devices and Interfaces** and choose **Create New**.

3. Select your combo chassis (PXI-1010 or PXI-1011) from either the "NI-DAQmx SCXI Chassis" or "Traditional NI-DAQ Device" list and click on **Finish**.
4. Follow the rest of the instructions to configure your SCXI system.

More information on configuring your SCXI system can be found in the MAX help under **Help»Help Topics»PXI** (search for "scxi").

- **How do I configure my PXI System if I am using LabVIEW RT (Pharlap)?**
  MAX 3.x makes configuring the PXI System for LabVIEW RT easy. Under **Remote Systems** in MAX find the IP Address for the PXI system that you want to configure, and then follow the same instructions as above to identify your PXI controller and chassis.

- **How do I configure two or more PXI combo chassis that are connected via a Remote Controller in MAX 3.x?**
  Using NI-DAQmx to Configure Multiple Combo Chassis
  The NI-DAQmx driver supports this functionality fully in MAX 3.0. The SCXI chassis and modules are detected when the PXI chassis are identified properly.

  Using Traditional NI-DAQ to Configure Multiple Combo Chassis
  If you are using Traditional NI-DAQ, the best method for configuring this type of set up is to programmatically configure the chassis from LabVIEW. Use the following steps to configure the chassis:
  1. In MAX, add your PXI-1010 or PXI-1011 chassis under Traditional NI-DAQ Devices.
  2. Manually add the SCXI modules to the chassis.
  3. Configure the gain and filter settings for the modules in MAX.
  4. The DAQ device in the right-most slot of the PXI chassis should be configured as the "cabled device" for one of the SCXI modules, as well as the chassis communicator.
  5. Exit MAX.
  6. Each time you boot the PXI chassis (or cycle the power on the SCXI chassis), run the Modify PXI SCXI Configuration VI in the attached VI library to change the SCXI configuration to use the internal PXI-SCXI communication mode.

  Note: The SCXI chassis will not auto-detect modules in MAX nor will it pass the verification test in MAX.

- **How can I correlate my PXI slot number to the device name/number assigned to my PXI DAQ device?**
  By using the correct PXISYS.INI file for your PXI chassis, the slot number will be listed under the "Properties" information for each PXI DAQ device in MAX. In Traditional DAQ the device number will be assigned according to the slot number that the device occupies in the PXI Chassis. For example, if a PXI-6070E occupies slot 2 in your PXI-1000B chassis, the PXI-6070E's device number in traditional DAQ will also be 2. If you change the PXI-6070E's slot position, the device number will also change to correspond to the new slot position.

  This correlation holds true as long as you do not manually modify the device number assigned to each of your PXI DAQ devices.

Troubleshooting

- **Why Do the PXI Devices Show Up As Unknown/Empty Under Slot View For My Chassis?**
  Symptoms
  When I click on my PXI Chassis under the PXI System tree in MAX 3.x and select **Slot View**, only my controller is listed in Slot 1 and the rest of the slots are listed as Unknown/Empty. The devices in my chassis show up correctly in the tree view underneath the PXI Chassis and appear to be working properly, except that I haven't been able to send any signals across the PXI trigger lines. What is going on, and how can I fix this?

  Solution
  There are two main reasons that all or some of your devices will be listed as Unknown/Empty in the Slot View for your PXI Chassis.
  1. **You Must Identify Your PXI Controller and Chassis Correctly**
     If you don't identify your PXI controller or chassis correctly, then the wrong PXISYS.INI file will be copied to your windows directory (i.e. C:\WINDOWS\PXISYS.INI or C:\WINNT\PXISYS.INI), and the devices in your chassis will not be detected properly in the Slot View for your chassis. You must make sure that you have identified your PXI Controller and Chassis correctly under the PXI system - for more details see the Configuring the PXI System in MAX above. If your system is identified correctly and the devices still aren't being listed in the slot view, then continue to the next step.

  2. **Make sure that you have privileges to modify PXISYS.INI**
     When you identify your PXI controller and chassis in MAX, a new PXISYS.INI file is copied to your Windows directory. If MAX shows that you have identified your system correctly and the devices are still not listed in the slot view, then it may mean that MAX was unable to update the PXISYS.INI file.
     1. Make sure that your Windows account has privileges to modify files in the Windows directory. The easiest way to ensure that you have privileges to modify files in this directory is by logging into your system as an administrator. You can right-click on the Windows directory and view the security settings to see which users have privileges to modify files in the directory.
     2. Make sure that the PXISYS.INI file is not **read only** or **write protected**. You can do this by right clicking on the PXISYS.INI file in the windows directory and then view the properties for the file to see if it is read only.

  3. If you have verified that the PXISYS.INI file is write enabled (i.e. not read only), and you still can't see your devices in the slot view, then search your computer for the PXISYS.INI file. If the file exists anywhere other than the windows or winnt folder, then delete that instance of the file. If this still doesn't solve the problem, then contact National Instruments technical support for assistance - http://ni.com/support.