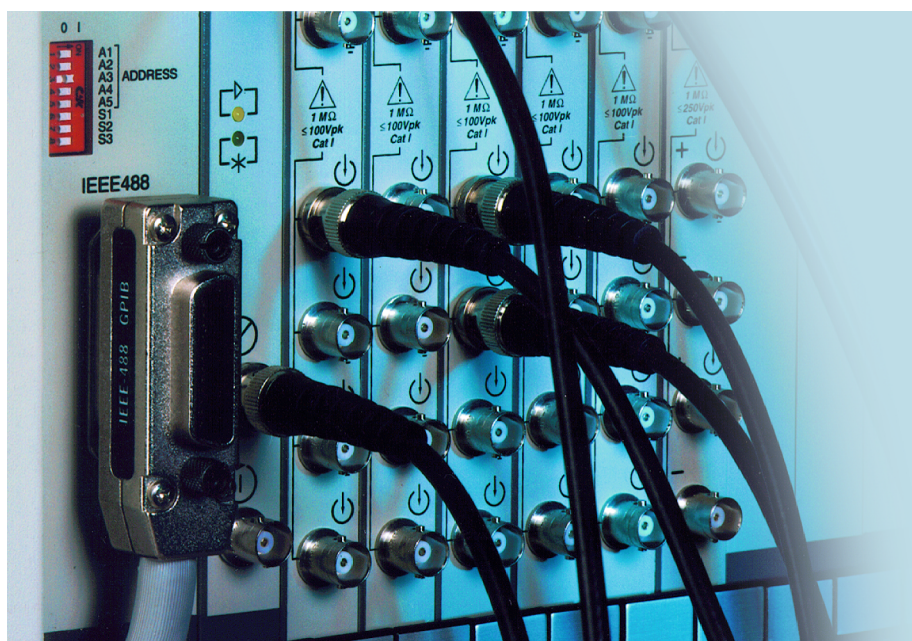


User Manual

English



BE256/MultiPro Control Option Perception

Document version 1.1 - July 2009

For Perception 6.0 or higher

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1 Introduction

1.1 General

Welcome to the Perception BE256/MultiPro control option. With the BE256/MultiPro Option for Perception you can control your legacy Nicolet data acquisition systems and benefit from the latest and state-of-the-art Perception software. This document describes the steps you need to make in order to use the data acquisition systems with Perception. It also describes how to use Perception and your systems as well as inevitable limitations.

1.2 Requirements

The Perception BE256/MP control is an option that is enabled through the use of the HASP®4 USB Token. This option is listed as **BE256 / MultiPro Control** in the Perception menu:

Help > About > More... > Options page.

1.2.1 System requirements

- Perception software 5.0 or later with the BE256/MP option enabled. As minimum the 'standard' Perception version is required. The Perception 'viewer-only' version is not supported.
- An IEEE-488 (GPIB) interface: National Instruments™ GPIB-USB-HS interface (tested by HBM), or a 100% compatible card or interface (not tested by HBM)
- The BE256/MP control option has been tested and is known to be working with:
 - Interface model: NI GPIB-USB-HS
Driver: NI-488.2 version 2.4 for Windows 2000/XP
OS: Windows XP, SP3
 - Interface model: NI GPIB-USB-HS
Driver: NI-488.2 version 2.5 for Windows 2000/XP/Vista x64/Vista x86
OS: Windows Vista x64



IMPORTANT

If you use this BE256/MP Control option with other interfaces, other driver versions or other OS variants, HBM cannot guarantee proper operation, nor can HBM provide any support in these situations.

1.3 Supported hardware

- BE256 Modular Data Acquisition System with 600-Series digitizer modules
- MultiPro Modular Data Acquisition System

2 Getting Started

2.1 Introduction

This section describes how to install and connect to the IEEE-488 instrumentation bus. IEEE-488 is a short-range, digital communications bus specification that has been in use for over 30 years. Originally created for use with automated test equipment, the standard is still in wide use for that purpose. IEEE-488 is also commonly known as HP-IB (Hewlett-Packard Instrument Bus) and GPIB (General Purpose Interface Bus).

Legacy Nicolet data acquisition systems use this bus.

This section describes the steps required to:

- Install the GPIB interface
- Adapt the GPIB settings to meet the system requirements and verify the correct connection of the GPIB interface with your system

2.2 Installation of the GPIB interface

In this document we describe the installation and usage of a National Instruments™ GPIBUSB- HS interface. Other interfaces may also work but are not supported.

Installing the NI GPIB-USB-HS interface is a two-step process:

- 1 Install the software
- 2 Connect the interface

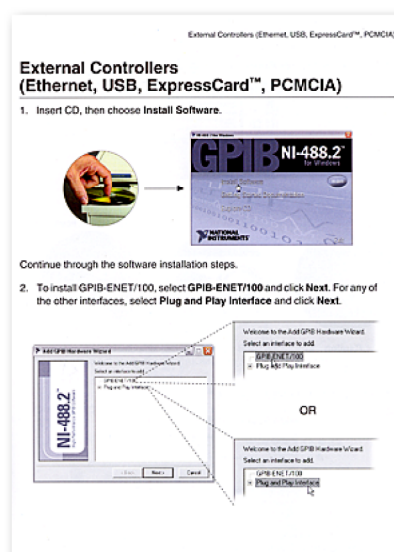


Figure 2.1: Installation manual of the GPIB interface

Read the installation manual that came with your GPIB interface

2.2.1 Install the software

Install the software

Read the GPIB Installation Guide that came with your interface. Summarized:

- Insert the CD that comes with the interface in your computer and choose install in the dialog that comes up
- Follow the on-screen instructions

2.2.2 Install the hardware

To install the hardware do the following:

Connect the USB interface to your computer. A plug-and-play notification may come up for your device. Execute this wizard first before you continue with any other application that may have been started automatically after the restart of your computer.

2.2.3 Verify the correct connection

You should use the NI Measurement & Automation explorer that came with your interface and is installed automatically.

- 1 Make sure your data acquisition system is connected through a GPIB cable with the interface.

CAUTION



Ensure the GPIB devices and the computer containing the GPIB interface share the same ground potential.

- 2 Power up your data acquisition system.
- 3 Start the NI Measurement & Automation explorer.
- 4 Select **Devices and Interfaces** in the configuration tree on the left and expand this node.
- 5 Select **GPIB0 (GPIB-USB-HS)**
In the pane on the right-hand side the GPIB Interface is listed.
- 6 Click **Scan For Instruments** on the top. The software starts scanning, and after a few seconds your data acquisition system must be listed:

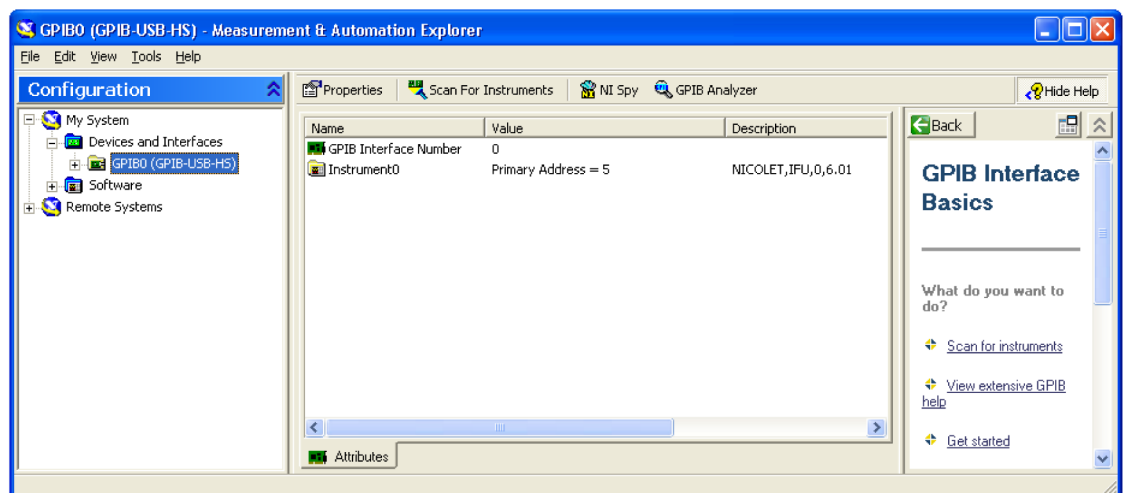


Figure 2.2: Measurement and automation explorer

The primary address is the GPIB address of your system.

At this point you must make the correct communication settings.

2.2.4 GPIB communication settings

GPIB-controlled Nicolet data acquisition systems and Perception require the following configuration settings to be in effect:

The instrument must be controlled through an interface named **GPIB0**. Any other name will result in a failure to recognize and communicate with the instrument.

For correct communication with the various instruments, the following global GPIB settings for the interface GPIB0 should be in effect:

- 1. **Enable Auto Serial Poll No**
- 2. **Assert REN when SC Yes**

Depending on the type of card/interface:

- 3. **DMA Transfer Mode Single**

or

- DMA Channel None**

- (1) When Auto Serial Poll is ON this can interfere with data transfer on some instruments.
- (2) For older instruments it is required that the Remote Enable line (REN) is active for correct communication.
- (3) On some computers/operating systems the DMA transfer is not compatible with the BE256/MP-driver. Turning DMA off may improve overall stability when problems are encountered.

For correct operation of the software there is no IRQ required.

With this information you can set up the configuration:

- 1 Select **GPIB0** and click **Properties** on the top. The following dialog comes up:

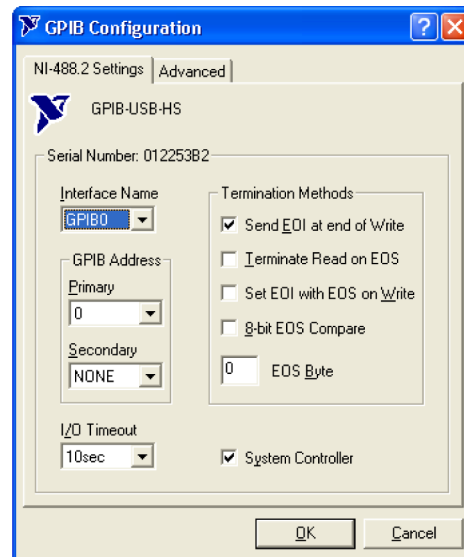


Figure 2.3: GPIB8 Configuration (Settings) dialog

- 2 Make sure the settings are as shown here.
- 3 Select the **Advanced** page:

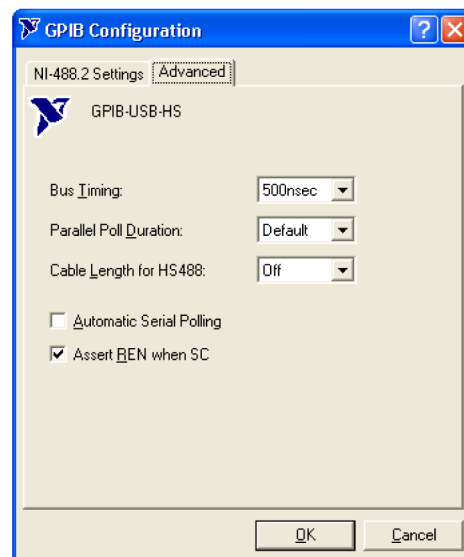


Figure 2.4: GPIB8 Configuration (Advanced) dialog

- 4 Make sure the settings are as shown here.
- 5 Click **OK**

2.3 Test communication

To test basic communication do the following:

- 1 Right-click **Instrument0**. A shortcut menu appears.
- 2 On the shortcut menu click **Communicate with Instrument**. The following dialog comes up:



Figure 2.5: NI-488.2 Communicator dialog (Part 1)

- 3 Replace the **Send String** with "MD0*ID?*MD1*ID?" and click **Write**.
- 4 Click **Read** and the dialog now should look like this:

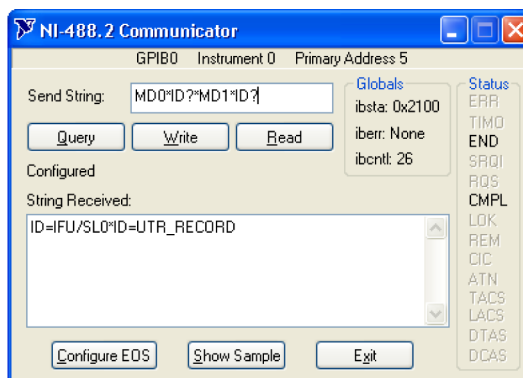


Figure 2.6: NI-488.2 Communicator dialog (Part 2)

- 5 Click **Exit** to close this dialog.
- 6 On the **File** menu, click **Exit**.

This concludes the installation and verification.

2.4 Note on MultiPro

After each time you power up the MultiPro you can only test communication by a **Query** of the *IDN? command. The returned string will look like **NICOLET , 002001000000,0,2415.3**. Full communication is not available until a firmware image has been downloaded after powerup into the MultiPro memory.

This is done automatically when you start Perception and the MultiPro is visible in the Hardware navigator (Used Hardware or Unused hardware).

After this you could return to the M & A explorer and receive a string like **NICOLET ,MULTIPRO,0,1.00**.

2.5 Notes on Vista

When using Windows Vista there are some differences with respect to the user interface of the NI Measurement & Automation explorer. With version 2.5 of the driver, version 4.2 of the M & A explorer is delivered.

2.5.1 Start the M & A explorer

You must start the M & A explorer in elevated mode: you need to run it as administrator.

The User Interface

The M & A explorer now combines the various dialog boxes into one single pane:

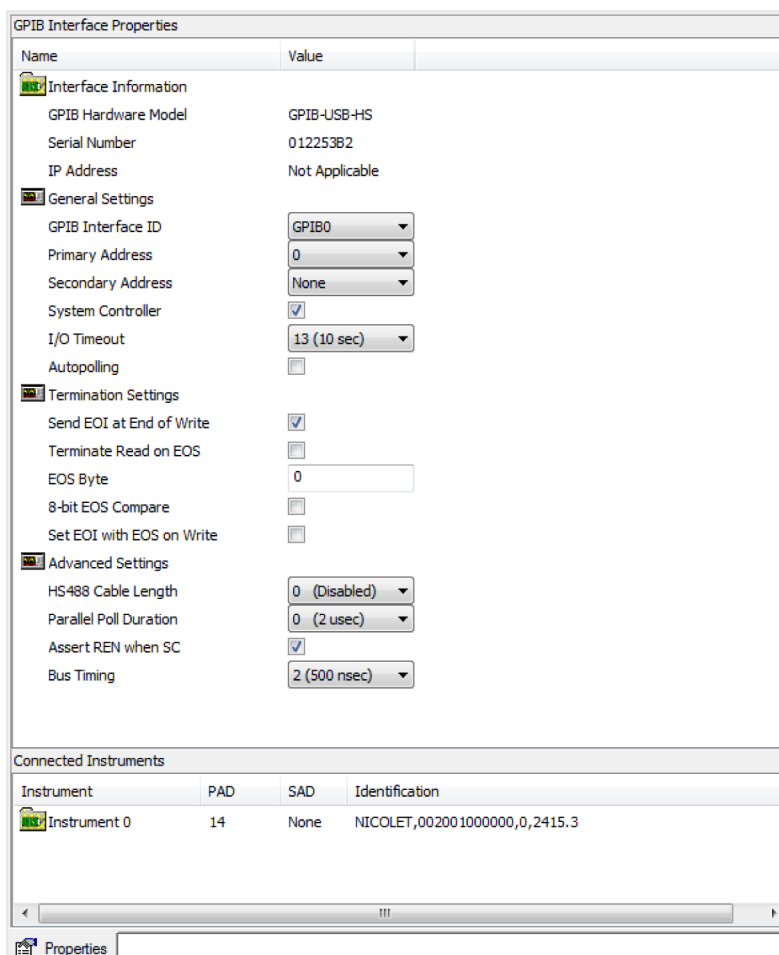


Figure 2.7: Measurement and Automation explorer

Here you clear **Autopolling**, and set **Assert REN when SC**. All other settings should have the factory values.

3 Perception and BE256/MP Control

3.1 Introduction

Now we know that basic communication with the system is possible, it is time to use Perception. In general a BE256 or MultiPro system is managed by Perception the same way as it handles and supports a GEN series or LIBERTY data acquisition system. Features that are available are displayed, features that are not available or supported are not shown. Therefore: the fact that Perception supports streaming data is of no use for a BE256 or MultiPro because these systems do not support this feature.

3.2 Connect to a system

You can connect to one or more BE256 and MultiPro systems. To connect to a BE256 or MultiPro system:

- 1 Make sure the system is powered and connected.
- 2 Start Perception
- 3 Once fully launched, open the **Hardware Navigator**.
The system should be listed in the **Unused Hardware** section as <system name>_<gpib address>. Example: BE256_5

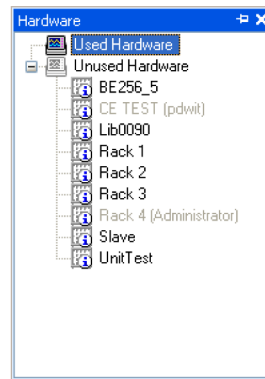


Figure 3.1: Hardware Navigator

- 4 If your system is not listed:
 - Make sure you have the BE256/MP option installed. If so:
 - Right-click **Unused Hardware** and click **Scan for Mainframes** in the shortcut menu.
- 5 To connect to the system do one of the following:
 - Double-click the system
 - Drag the system to the **Used Hardware**

Now the Configure Recorders dialog comes up. This dialog is the equivalent of the TEAM256 Channel Assignment dialogs. However, where TEAM256 had a separate dialog for each recorder, here all recorders are listed in one dialog.

This dialog comes up for both BE256 and MultiPro systems.

Note *You can only assign channels to main and sub timebase if your system supports this.*

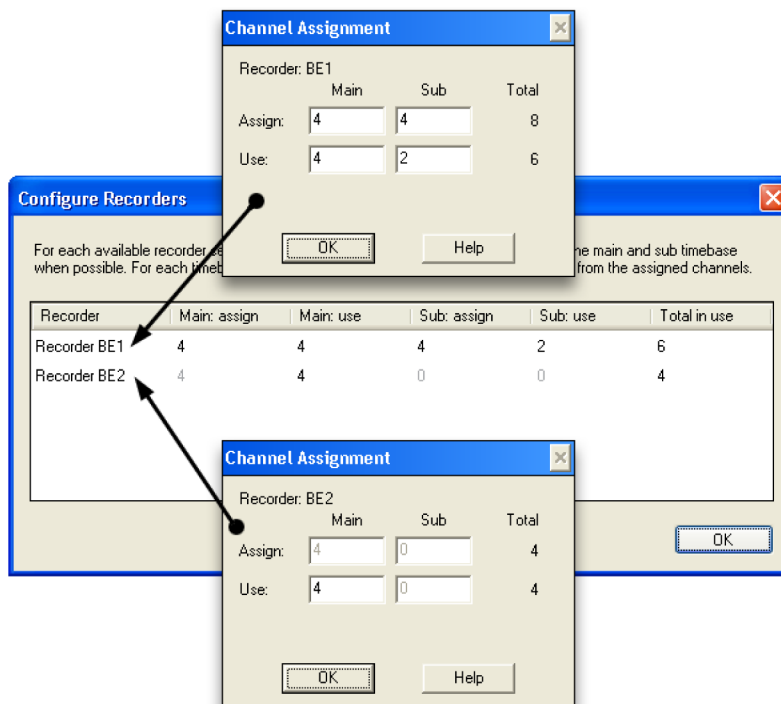


Figure 3.2: Configure Recorders dialog and Channel Assignments dialogs.

6 Make your selections and click **OK**.

Perception continues to connect with the mainframe. When finished the system is in the **Used Hardware** section and ready to use.

3.2.1 When your system is not listed

When your system is not listed, even after a **Scan for Mainframes**, the most likely cause is an incorrect installation of the GPIB interface and/or the driver. Please:

- Go through the installation procedure again step by step very carefully.
- Make sure GPIB0 is selected as interface for your instrument.
- Make sure you have the correct interface and drivers as listed in the requirements section.

If all this fails you should contact your GPIB interface supplier, your IT-department or any other experienced and knowledgeable user.

3.3 Known limitations

3.3.1 General

The Perception software by definition allows you to connect multiple systems and mix systems. Therefore you can connect to one or more BE256 and/or MultiPro systems and one or more GEN series and/or LIBERTY systems and control them all together from within Perception.



CAUTION

However, recorded data will not be synchronized. There is no provision to synchronize legacy data acquisition systems with GEN DAQ products or LIBERTY. This may lead to unexpected results when reviewing the data.

3.3.2 Limitations

The Perception support for legacy Nicolet data acquisitions systems includes all major functionality of the systems. The following is a list of features that are not supported (refer to your hardware manual for details).

BE256 system

- Master/slave mainframe configurations
- External timebase
- Slope trigger
- Auto trigger
- Trigger all blocks
- AND/OR trigger

MultiPro system

- MultiPro 200 advanced trigger board
- External timebase

3.3.3 Other restrictions

When using Perception to control a BE256 or MultiPro system you cannot use:

- live data and live displays
- real-time meters

and there is:

- no absolute time information
- no timing information between successive sweeps.

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