Prologix

GPIB-ETHERNET Controller FAQ

1. How do I verify communication with an instrument (using Prologix GPIB Configurator utility)?

1. Disconnect GPIB-ETHERNET Controller from instrument and from PC.
2. Download and install Prologix GPIB Configurator utility.
3. Connect GPIB-ETHERNET Controller to an ETHERNET hub using a straight ETHERNET cable.
4. Connect the ETHERNET hub to PC using a straight ETHERNET cable.
5. Run NetFinder utility and locate the GPIB-ETHERNET Controller on the network and note it's IP address. Assign static IP address, or configure for DHCP, if required.
6. Run Prologix configurator and select Prologix LAN Controller.
7. Set configuration to CONTROLLER.
8. Enable (check) auto-read-after-write.
9. Set GPIB address to X, where X is the GPIB address of the instrument.
10. Type `++ver` in the command box and click the Send button. GPIB-ETHERNET Controller version is displayed in the Terminal box.
11. Connect GPIB-ETHERNET to instrument.
12. Type a valid instrument command in the command window and click the Send button. The response, if any, from the instrument is displayed in the Terminal box.

2. How do I verify communication with an instrument (using a terminal program or Telnet utility)?

1. Disconnect GPIB-ETHERNET Controller from instrument and from PC.
2. Connect GPIB-ETHERNET to an ETHERNET hub using a straight ETHERNET cable.
3. Connect the ETHERNET hub to PC using a straight ETHERNET cable.
4. Run NetFinder utility and locate the GPIB-ETHERNET Controller on the network and note it's IP address. Assign static IP address, or configure for DHCP, if required.
5. Using a terminal program or Telnet utility, connect to TCP port 1234 of GPIB-ETHERNET Controller.
6. Enter `++mode 1` . See Manual for command details.
7. Enter `++auto 1` . See Manual for command details.
8. Enter `++addr X` , where X is the GPIB address of the instrument. See Manual for command details.
9. Enter `++ver` . GPIB-ETHERNET Controller version is displayed.
10. Connect GPIB-ETHERNET to instrument.
11. Enter a valid instrument command. The response, if any, from the instrument is displayed.

3. How does Prologix GPIB-ETHERNET controller compare to products from other vendors?

While Prologix GPIB-ETHERNET controller provides many of the same features as GPIB-ETHERNET controllers from other vendors, it is much easier to use. Prologix GPIB-ETHERNET controller provides a network interface (TCP/IP) to communicate with instruments, while handling all GPIB protocol details for you. As a result, you can communicate easily with instruments even using any terminal program instead of having to write custom programs using a vendor supplied library. Please see the Manual for a complete list of features.

4. Is Prologix GPIB-ETHERNET controller compatible with National Instruments LabVIEW, Agilent VEE, and other test frameworks?

Yes. Prologix GPIB-ETHERNET controller provides a network interface (TCP/IP) to communicate with instruments, while handling all GPIB protocol details for you. Any test framework, or programming environment, that provides access to TCP ports is compatible with Prologix GPIB-ETHERNET controller. For example, you may use NI LabVIEW TCP functions to talk to Prologix controller and attached instruments.

5. How do I use Prologix GPIB-ETHERNET controller with LabVIEW?

Prologix GPIB-ETHERNET controller provides a network interface (TCP/IP) to communicate with instruments. Therefore you should use LabVIEW TCP functions or VISA network functions to talk to Prologix controller and attached instruments. Programs, or drivers, that use other interfaces are not compatible. Please see sample program in the Resources section.

The basic steps to communicate with an instrument in LabVIEW are as follows:

1. Connect to TCP port 1234 of GPIB-ETHERNET Controller.
2. Send `++mode 1` terminated with Line Feed. See Manual for command details.
3. Send `++auto 1` terminated with Line Feed. See Manual for command details.
4. Send `++addr X` terminated with Line Feed, where X is the GPIB address of the instrument. See Manual for command details.
5. Send a valid instrument command terminated by Line Feed.
6. Read connection for instrument response.

6. How do I use Prologix GPIB-ETHERNET controller with MATLAB, or using C++, C#, or Visual Basic?

Please see sample programs in the Resources section.

7. Will my custom LabVIEW or VEE programs work unmodified with Prologix GPIB-ETHERNET controller?

No. Prologix GPIB-ETHERNET controller provides a network interface (TCP/IP) to communicate with instruments, while handling all GPIB protocol details for you. Programs that expect a different interface (such as NI 488.2 interface) have to be modified to use the network interface to be compatible with Prologix GPIB-ETHERNET controller.

8. Is Prologix GPIB-ETHERNET controller a drop-in replacement for controllers from other vendors?

No. Prologix GPIB-ETHERNET controller provides a network interface (TCP/IP) to communicate with instruments, while handling all GPIB protocol details for you. Programs that expect a different interface (such as NI 488.2 interface) have to be modified to use the network interface to be compatible with Prologix GPIB-ETHERNET controller.

9. How do I configure the network settings of Prologix GPIB-ETHERNET controller?

Prologix NetFinder utility can locate and configure all Prologix GPIB-ETHERNET controllers in a local network. The controllers implement a discovery and configuration protocol using UDP broadcasts. Since routers do not (normally) forward broadcast packets, NetFinder can only locate controllers which are on the same network segment as the PC on which the utility is running. There can be hubs, switches or bridges between the PC and GPIB-ETHERNET controllers, but no routers.

Once configured with an IP address (static or through DHCP), GPIB-ETHERNET is accessible from the local network, a connected remote network, or the Internet.

Prologix GPIB-ETHERNET controllers support static IP and DHCP.

Since the discovery protocol does not need to know the IP address of controllers, it can be used to (re)configure controllers which have unknown IP address, misconfigured address (for example, wrong network), or to discover their DHCP assigned IP.

10. How do I configure the GPIB settings of Prologix GPIB-ETHERNET controller?

Easiest way to configure GPIB settings is to use the Prologix GPIB Configurator utility (part of KE5FX GPIB toolkit). Prologix GPIB Configurator will locate all Prologix GPIB-ETHERNET controllers in the local network. Once the controllers have been discovered, select the controller you wish to configure.

You can also configure GPIB settings by making a telnet connection to port 1234 on the Prologix GPIB-ETHERNET controller and entering commands manually as described in the User Manual.

11. What is the difference between NetFinder and Prologix GPIB Configurator utilities?

Use NetFinder to discover GPIB-ETHERNET controllers and to configure their network settings. Use Prologix GPIB Configurator to configure their GPIB settings. A unified utility is forthcoming.

12. How do I communicate with Prologix GPIB-ETHERNET controller?

Connect to TCP port 1234 on the GPIB-ETHERNET controller. Once connected, you may communicate using:

- Terminal window in Prologix GPIB Configurator
- Terminal utilities such as TeraTerm or HyperTerm applications (both support network connections in addition to serial connections)

- Custom programs using network sockets. Most programming languages and frameworks support network connectivity.

Please see sample programs in the Resources section.

13. How do I use Prologix GPIB-ETHERNET controller in NI LabVIEW?

You can communicate with Prologix GPIB-ETHERNET controller and attached instruments using TCP functions in LabVIEW. Use the *TCP Open Connection* function to establish a TCP connection to port 1234 of Prologix GPIB-ETHERNET controller. All commands and data may then be sent, and received, over this connection.

14. How do I download and print screen plots from instruments?

To download and print plots you need a plotter emulation application such as:

- 7470.exe — an excellent open source application.

15. How do I use 7470 (HP 7470A plotter emulator) application with Prologix GPIB-ETHERNET controller?

Here are quick start steps for using 7470 application:

1. Connect GPIB-ETHERNET to PC.
2. Run Prologix GPIB Configurator (which is part of 7470 download) and select IP address corresponding to GPIB-ETHERNET.
3. Set configuration to DEVICE, GPIB address to 5, and click “Update CONNECT.INI” button.
4. Close Prologix GPIB Configurator.
5. Connect GPIB-ETHERNET to instrument, directly, or using a GPIB cable.
6. Run 7470 application and press ‘w’ to wait for plot data from instrument.
7. Start plot from instrument front panel.

Please see 7470 User Guide for more details.

16. How do I use HyperTerminal with Prologix GPIB-ETHERNET controller?

1. Connect GPIB-ETHERNET to PC.
2. Start HyperTerminal. (HyperTerminal application can usually be found in *Start* | *Programs* | *Accessories* | *Communications* menu.)
3. Open *File* | *Properties* dialog.
4. In the *Connect To* tab, select *TCP/IP (Winsock)*, set port number to 1234 and enter the IP address of Prologix GPIB-ETHERNET controller.
5. In the *Settings* tab, click *ASCII setup….* In the new dialog, check *Send line ends with line feeds* and *Echo typed characters locally*.
6. Click *OK* twice.

You are now ready to communicate with the controller. Enter ++ver command in the HyperTerminal window to verify communication with controller.

17. How do I use Tera Term Pro with Prologix GPIB-ETHERNET controller?

1. Connect GPIB-ETHERNET to PC.
2. Start Tera Term Pro.
3. Open *Setup* | *TCP/IP…* dialog. set port number to 1234 and enter the IP address of Prologix GPIB-ETHERNET controller. Click *OK*.
4. Open *Setup* | *Terminal* dialog. Set *Transmit* to *CR+LF*, and check *Local echo*. Click *OK*.

You are now ready to communicate with the controller. Enter ++ver command in the Tera Term Pro window to verify communication with the controller.

18. Which commands do I use to control my instrument?

Refer to the programming manual of your instrument for commands accepted by your instrument.

19. How do I create programs to control instruments, and acquire data, using Prologix GPIB-ETHERNET controller?

Any programming language and environment that provides network access may be used to develop programs to control instruments using the Prologix GPIB-ETHERNET controller. Please see sample programs in the Resources section. Also, check out Ulrich Bangert's EZGPIB, an easy to use data acquisition tool for use with Prologix GPIB-ETHERNET controller.

20. Can Prologix GPIB-ETHERNET controller control

multiple instruments?

Yes. Specify the GPIB address of the instrument to control using the `++addr` command. All subsequent instrument commands are sent to the specified address. When you want to control a different instrument, issue another `++addr` command with the new address. See User Manual for complete details and samples.

21. Why is the instrument not responding to commands?

Some common reasons are:

- Prologix GPIB-ETHERNET controller is not in CONTROLLER mode.
- Prologix GPIB-ETHERNET controller does not have the correct instrument GPIB address.
- *Read-after-write* may not be enabled. See User Manual.
- Instrument is not in TALK/LISTEN mode. Check instrument front panel menu, or back side DIP switch.
- Prologix GPIB-ETHERNET controller is not securely connected to instrument. Try using a GPIB cable, if direct connection is not secure.
- Other instruments on the GPIB bus may be interfering. Disconnect (not just power down) all instruments except the one being used.
- Command is not recognized by the instrument. Check instrument programming manual.

22. Why is the instrument reporting *QUERY UNTERMINATED* or *ERROR -420* error when using Prologix GPIB-ETHERNET controller?

After sending a command to an attached instrument, Prologix GPIB-ETHERNET controller will address it to talk to read back the response. If the command does not generate a response (often called non-query commands), some instruments will generate the *QUERY UNTERMINATED* error when addressed to talk. In effect the instrument is saying, you have asked me to talk but I have nothing to say. The error is often benign and may be ignored.

However, if you wish to avoid the error use the `++read` command to read instrument responses. For example:

`++auto 0`	—	Turn off read-after-write
`SET VOLT 1.0`	—	Non-query command

`*idn?`	—	Query command
`++read eoi`	—	Read until EOI is asserted by instrument
`"HP54201A"`	—	Response from instrument

See User Manual for complete details.

23. Can I connect Prologix GPIB-ETHERNET controller directly to my PC or laptop?

If the PC or Laptop network card supports auto-MDIX (most new ones do) you may use a *straight* Ethernet cable to connect to GPIB-ETHERNET controller. Otherwise you need a *cross-over* Ethernet cable. If you encounter problems, use an Ethernet hub or a switch.

24. How do I communicate with Prologix GPIB-ETHERNET controller over wireless network?

You need a wireless bridge. Connect Prologix GPIB-ETHERNET controller to the wireless bridge, and configure the bridge to connect to your wireless LAN. Follow bridge manufacturer's instructions. Wireless bridges are often sold as "gaming adapters" or "print servers". We have successfully tested with the following devices:

1. Linksys WGA54G Gaming Adapter – easy to setup, but can bridge only one GPIB-ETHERNET controller
2. Netgear WGPS606 Print Server – can bridge up to four GPIB-ETHERNET controllers

25. What kind of power supply does Prologix GPIB-ETHERNET controller need?

Prologix GPIB-ETHERNET controller ships with a 110-240V power adapter. Non-US customers will need a plug adapter. There is no need for a voltage converter.