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Keysight PNA Series Analyzers Frequently Asked Questions

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PNA Overall-System FAQs

These FAQ's relate to overall system operation, configuration, and firmware. They do not address network analyzer operational questions such as measurement techniques, calibrations, or specific programming examples. Please note that the answers to some of these questions will vary depending upon firmware revision and CPU board. [Look here to determine your CPU type](#). If your question is not answered here, contact your local Keysight field office.

FAQs are broken up into two sections; those dealing with the older models that used the 8.4 inch display with only 1 front panel USB port, and those newer PNAs with the 10.4 inch display and with 4 USB ports on the front panel.

What about Windows 7 and Windows 10?

Windows 10 upgrade information can be found on our [Windows 10 Information page](#).

Windows 7 upgrade information can be found on our [Windows 7 Information page](#).

The following questions relate mainly to those newer instruments with the larger 10.4-inch display. Some may also be applicable to older PNAs. For older PNAs, refer to the section that follows.

General

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2. Can I add more memory?
3. I am in a secure environment. What kinds/sizes of memory does the PNA have?
4. I want to view the help file (pnahelp.chm) on my PC, but when I open it, it shows an error? How do I fix this?
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7. How do I set the PNA to power back on (or stay off) after a power failure?
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6. Windows 10 is not activated and it wants me to connect to the Internet. For security, this is not allowed. What do I do?

Windows Networking (Administration/Security)

1. In my list of users, is one called "Agilent" or "PNA-Service" (as administrator.) What is it for and can I delete it?
2. I forgot my only administrator login password. What do I do?
3. What is the difference between an Administrator, User, Power User, etc.?
4. Our network is on a domain. Can I keep the PNA on a workgroup?
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10. I am unable to install Firmware A.09.50 (or above) on my older XP PNA-X; I get error 27500. What do I do?
11. Does the installation of new firmware affect the PNA's calibration status?

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ANSWERS

General

1. **Can I replace the hard drive with another, larger drive?**
Generally no, unless you have the capability of cloning an existing Keysight-supplied drive onto a larger-capacity drive. The hard drive is configured at the factory with many specific settings, and for that reason, the changing of hard drives is not supported by Keysight. Contact Keysight if a new hard drive is needed. Any replacement hard drive obtained from Keysight will have the entire operating system already installed and properly configured.
2. **Can I add more memory?**
No. The CPU boards are already supplied with the maximum amount of memory possible.
3. **I am in a secure environment. What kinds/sizes of memory does the PNA have?**
The PNA stores virtually all user information on its hard drive. The hard drive is the only security concern and removing it will suffice for security purposes. Full information can be on our [security page](#).
4. **I want to view the help file (pnahelp.chm) on my PC, but when I open it, it shows an error? How do I fix this?**
This is caused by a Windows security measure. To solve this, place the PNAHelp.chm file somewhere on your local hard drive (**not** on a networked drive), then (if running XP) right-click on the file, click **Properties**, then click **Unblock**.
5. **My XP PNA seems to hang when I try to shut it down or reboot. Is this a problem and how do I fix it?**
This is not a severe problem as it should eventually shut down, but it is a major annoyance. The solution is run a small batch file to delete some unneeded files. Perform this on **any** PNA running XP. [Download this tiny program](#), place it on the PNA and execute it. It only takes 5 seconds to complete, after which, the PNA will reboot.
6. **My PNA reports the wrong model number. What is wrong?**
If only the model number is incorrect, then this is probably a licensing issue and those can almost always be resolved quickly and easily via a phone call or email. It typically result when swapping hard drive without following the proper procedure. If the displayed serial number is incorrect *and* starts with the letters "SM" then the problem is that the CPU board cannot "see" the SPAM (DSP) board. The first thing to try is reseating the SPAM and/or CPU assemblies. If this does not solve the issue, then the PNA may have to be sent in for repair. If the serial number reads "None" then there is an issue with the SPAM board being able to communicate with the rest of the instrument.
7. **How do I set the PNA to power back on (or stay off) after a power failure?**
This is set in the BIOS which is different depending upon revision. The below applies to revision 5, 6, and 7 CPUs only.
 - Cycle power and when the PNA begins to power up, press the Delete key on a keyboard to enter the BIOS.
 - Navigate to the Chipset menu. For the revision 7 CPU, the required setting is located here and is obvious. For all other CPUs, continue.
 - Select South Bridge Configuration
 - Select SB PCH options
 - Select State after G3. You can set it to On, Off, or Last State. The PNA is always shipped using Last State.
8. **Does the PNA support Wake-on-LAN? I can't find it in the BIOS.**
This feature is buried deeply in the BIOS for the version 5 and 6 CPUs and is not very obvious. The version 7 CPU is easier to find.

- Enter the BIOS upon boot-up by pressing the DELETE (or DEL) key on a keyboard.
- Select the **Chipset** menu. For the Version 7 CPU, the WOL setting is now visible. For all other CPUs, continue.
- Select the **South Bridge** menu
- Select the **SB PCH options**. You will then see the WOL setting under the PCH LAN Controller heading.

As shipped, WOL is **not** enabled. To use this feature, you will also need to enable the "Wake on Magic Packet from power off state" setting of the Network Adapter in Device Manager. To do this, Right-click on the Network Connection (under Network adapters), Properties, Power Management.

9. How do I install a permanent or temporary option license?

Assuming you have the needed keyword, click on Utility, System, Service, Option Enable. In the drop-down list labeled 'Select Desired Option', select the option you wish to install. For a **permanent** license, enter the keyword in the space provided, then click on Enable. For a **temporary** license, the keyword will be provided with an expiration date. You **must** check 'Temporary' in the 'Option Type' box. Then click on 'Enter Expiration Date' and enter the **exact** date provided in the license. Enter the keyword in the space provided, then click on Enable. In most cases, an error will be shown if the license is not correct. Click Exit if done or select another option to be installed. In some cases, a prerequisite option must be installed before an option that is dependent upon that can be selected.

10. During the FPGA update process after updating my PNA, I get the error "TDO mismatch". How do I fix this?

A small percentage of our SPAM (DSP) boards seem to have this FPGA issue. We have a utility that will erase the FPGA and reprogram it with a known working version (Ver 52.00). Once this is loaded and restarted, the PNA will reprogram the FPGA again with whatever the current firmware requires. Download this [SPAM5 Factory Restore file](#) and unzip it to any convenient location on the PNA. Follow the instructions in the ReadMe text file.

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Operation

1. How can I prevent the PNA Application from running upon startup?

In the directory C:\Program Files\Agilent\Network Analyzer\Service or C:\Program Files (x86)\Agilent\Network Analyzer\Service or C:\Program Files (x86)\Keysight\Network Analyzer\Service is a program called something like **TogglePNA_Autostart**. Running this program will display the current state of this autorun and allow you to change it if desired.

2. My new E4418B/E4419B power meter or USB sensor is not recognized as being valid on the PNA. Why?

Newer power meters and USB sensors may not be recognized by older firmware. Follow the instructions on this page: [PNA power meter page](#) to solve this.

3. I cannot use my new N1911A/1912A (or N1913A/14A) power meter or I cannot use Channel B on my N1912A. Why?

Follow the instructions on this page: [PNA power meter page](#) to solve this.

4. My USB sensor sometimes hangs when making a power sensor measurement. Why?

This is a common problem and a known issue that has since been fixed. Please update your USB sensors to firmware version A1.02.02 or newer.

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Operating System (Windows XP/Win 7/Win 10)

1. Can I reload/reinstall the operating system?

The operating system should never be completely removed. If some files need to be replaced, there is a recovery method described in the service manual that will recover any corrupt or missing files.

2. Can I install other programs on this PNA such as an anti-virus?

Yes, but keep in mind that, while most software works fine, we cannot guarantee proper operation of the PNA with 3rd party software installed.

3. How do I access the BIOS?

During the splash screen on power up, press F2 (older CPUs) or the Delete key (newer CPUs) on an attached keyboard.

4. Can I install new Service Packs and other updates?

New factory shipments will contain the latest service pack and critical updates from Microsoft as of the date the hard drive image is created. As with the purchase of any new computer, one of your first steps upon receipt should be to check for any critical updates. Once that is done, the latest firmware should also be installed. PNA firmware updates do not include any OS-related updates. **Do not make any changes to the Agilent/Keysight IO Libraries installation even if a pop-up window says you should.**

Note: Some PNA hard drives were shipped with the Windows Update utility disabled. Microsoft provides a utility to fix this. [Download it here.](#)

5. I tried to boot from the recovery partition but I got an error about the resource not being found. What do I do?

Navigate to C:\Agilent\scripts\ and execute the batch file **setbcd.bat**. Then try again.

6. Windows 10 is not activated and it wants me to connect to the Internet. For security, this is not allowed. What do I do?

Microsoft does not allow Keysight to ship pre-activated copies of Windows 10. If no Internet is available, this must be done by phone. From the PNA's desktop, click on Start and select Command Prompt. Type in: **slui 4** An activation window will be displayed. Follow the instructions for your country.

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Windows Networking (Administration/Security)

1. In my list of users, is one called "Agilent" or "PNA-Service" (as administrator.) What is it for and can I delete it?

The Agilent/Service user is needed by Keysight service personnel and **should never be deleted!** (high-security customers excepted.) It poses a minimal security risk since each analyzer requires a **different** password based upon its unique serial number. In fact, it may increase security, as the normally used password need not be provided to service personnel. Passwords are maintained at the factory should they ever be needed. If this user name is deleted, any future repairs may require that the hard drive be reimaged!

2. I forgot my only administrator login password. What do I do?

First, see question 11 below. Assuming the "Agilent" user name has not been deleted, contact Keysight for instructions. If it has been deleted, then the hard drive may have to be re-imaged (recovered.)

3. What is the difference between an Administrator, User, Power User, etc.

This is more of a systems administrator type of question that is too involved to go into here. In general, it is best to keep users as Administrators or Power Users. If this poses a

security risk, then beware that some functions of the analyzer may not work if logged on as a user; mainly the ability to connect ECal Modules or USB power sensors if they have not been previously connected.

4. Our network is on a domain. Can I keep the PNA on a workgroup?

Yes, this works quite well in most cases. Contact your Systems Administrator.

5. What is the default configuration for network use?

The PNA is shipped with the network set to DHCP. If you do not have a DHCP server, then this will have to be changed. Contact your Systems Administrator.

6. What is my IP address?

The easiest way to find this is to click on Utility, System, Configure, LAN Status.

7. Previously, my PNA would automatically start up without entering a username/password; now I must always enter them. What changed and how do I fix it?

Windows limits access depending upon how it is configured. As shipped, the PNA is configured as part of a workgroup. This allows the unit to automatically start up without entering a name or password (although these can be required if desired.) If the PNA configuration is later changed so as to be part of a domain, then a name/password MUST always be entered at start up. This is a security requirement of Windows. The only solution is to remove the PNA from the domain, however this may impose other limitations depending upon your particular domain.

8. How can I prevent others from making adjustments or modifying firmware?

All service adjustments require that the user be logged on as an administrator. The AgileUpdate routine also has this requirement. To prevent non-administrators from installing **any** Windows installer package (including firmware), follow this procedure.

- Click on Start, Run, then type in: `gpedit.msc`
- Select: Computer Configuration,
Administrative Templates,
Windows Components,
Windows Installer
- Double-click on Disable Windows Installer, then select Enable and Always.

9. Does the PNA have any virus protection?

No! Use of an antivirus program is strongly recommended. Most any antivirus program should suffice although, in the past, we have seen an occasional issue. The PNA is always shipped with the latest service packs and critical updates that were available at the time that the master disk is produced.

10. What is my default username and password?

This depends upon when it was shipped and the operating system. Since about 2004, all PNAs shipped have had the username of **"PNA-Admin"**. The password for XP units is **"agilent"**. For Windows 7, the password is **"pna"** (both lower case.) Future units may start shipping with the Keysight default user name of "instrument" and the default password of "measure4u".

11. I need to maintain high security. How do I do that with a Windows operating system?

This subject is covered in depth in our [security document](#).

12. My PNA automatically starts up without asking for a password. How do I force it to ask for a login?

Keysight ships the PNA this way to avoid confusion. However, this may not satisfy everybody. To require a login, click on Start, Run and type in: `"control userpasswords2"` and click on OK. The resulting window will have an unchecked box labeled "Users must enter a user name and password..." Check this box and click OK to force the PNA to require a login. Contact your Systems Administrator for further help.

13. I changed my default password and now the PNA will not automatically start up without entering it. How can I change this?

To have the PNA boot automatically after changing the password, click on Start, Run and type in: `"control userpasswords2"` and click on OK. The resulting window will have an unchecked box labeled "Users must enter a user name and password..." Temporarily check this box and verify that the pna-admin account is highlighted. Then uncheck the box, then click on OK. You will be asked to enter the new password (twice). Click OK. Future re-boots will no longer require the password to be entered.

14. My antivirus program has found a Trojan virus on my brand new PNA! What do I do?

Keysight goes through great effort to insure that no viruses are accidentally shipped. Some antivirus programs may indicate a false positive on some files, such as `shutdown.exe` among others. It is not a virus! This may also show up in system restore files and other locations as well. This program is needed for the recovery process to run properly. Do not delete it. Because this false positive generates many questions, we have changed to a different program to prevent this concern in the future. However, it seems most every program that is capable of shutting down the PNA may be considered a virus by some antivirus programs. Other false positives may include `cmdshutdown.exe`, `restartApp.exe`, and `pskill.exe`. Some antivirus programs may also identify the VNC program as being dangerous. This is used for remote servicing and is **not** a virus. Some anti-virus programs are overly aggressive and may detect other false positives. Again, we go through great effort to ensure the PNA is virus free. Note that we have seen instances of users infecting the PNA with a virus as they were attempting to install an antivirus program. Be careful! Flash drives are particularly efficient at infecting systems. To minimize this risk, the Auto-Run feature of the Windows has been turned off on units shipped after mid-2011.

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Firmware

1. How do I find my current firmware revision?

On the network analyzer application, select: Help, About Network Analyzer.

2. Which version of firmware should I use?

Generally, customers should always use the "Customer Release" version of firmware instead of the Production release. It will have the best performance and, possibly, more features.

3. I just received a new PNA. Do I need to update the firmware?

Yes, almost always. Just like routers, phones, TVs, and computers, updating the firmware is one of the first things you should do. Because of the large time delay in factory production, new units shipped from the factory may have older firmware installed. Newer firmware will perform better and may have more features. Always update your firmware upon receipt of a new unit.

4. How can I find out when new firmware is released?

There are several ways. First, you can access our [firmware web page](#) to see if a new version is available. Second, and the preferred method if the analyzer has Internet access, select System, Service, AgileUpdate. It will indicate if a new version is available and allow you to download/install it. If LAN access is maintained, this program can be set to periodically check for new firmware and notify you if there is something new. This feature can be configured by the user from within the AgileUpdate program. See the help file under AutoCheck.

5. How large are firmware files?

PNA firmware files keep growing. Version 7.xx is about 60MB while newer 9.xx versions are about 80MB. Windows 7 versions are now running over 300MB due to inclusion of other (possibly needed) files. Future versions will probably exceed 600MB as we try to incorporate many platforms into one firmware download.

6. How do I upgrade Firmware?

The recommended method is to use the AgileUpdate utility (see above), however this can only be done if the analyzer has Internet access. If not, the firmware file can be downloaded from any computer with Internet access using our [firmware web page](#) and then transferred to the PNA via a flash drive. Once it resides on the Analyzer, double-click on the filename to begin the installation process.

7. Are all firmware revisions compatible with all versions of the Operating Systems (XP, Win7, W10)?

No. Each version is normally tied to a specific OS. Versions **below** 10.00 are for XP. Versions 10.00 and above are for Windows 7. Windows 10 is still unknown.

8. I get the error message "Bad Install Package" (or other error) upon firmware installation. What do I do?

Most of the time this means your download was corrupt or somehow truncated. Try downloading the firmware again and make sure that the entire file gets properly transferred.

9. After installing new firmware, there is no icon to run the PNA application. What is wrong?

This problem may occur if you are upgrading from some 8.xx versions or early 9.xx versions of firmware. This issue is due to the previous firmware installed, not the one you are trying to install. The solution is simple; just reinstall the firmware again; it will work properly the second time. Another way to avoid this is to first remove the firmware using the Add/Remove Programs (XP) or Programs and Features (Win 7) portion of Control Panel. When done, install the new firmware. It is also highly recommended to do this whenever downgrading firmware to an older version.

10. I am unable to install Firmware A.09.50 (or above) on my older XP PNA-X; I get error 27500. What do I do?

Early PNA-Xs did not have Internet Information services (IIS) installed and this is what prevents the installation. To fix this, click on Start, Settings, Control Panel. Click on Add/Remove Programs. On the left side, click on **Add/Remove Windows Components**. Check the box for Internet Information Services; then click Next. It will start installing IIS but will be unable to find some files. Click on Browse and navigate to **E:\mintint\I386**. Installation of IIS should then proceed normally. Once completed, try installing the newer firmware again.

11. Does the installation of new firmware affect the PNA's calibration status?

No, never!

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Programming

1. With different channels, windows, and traces, how do I programmatically specify my target measurement when using GPIB/SCPI?

This is probably the most commonly asked programming question. Each measurement has a specific name regardless of its channel, window, or trace number. When in doubt as to which measurement a particular SCPI command will affect, precede the command with "CALC:PAR:SEL '*measName*'" See [programming examples](#) elsewhere on this web site.

2. Can I program the PNA using SCPI over LAN by using TCP/IP sockets (no DCOM)?

Yes, by using the PNA's built-in Sockets. Using a socket server makes it much easier to connect to the PNA, but it bypasses all of the security of DCOM. In many cases however, this may not be an issue.

3. I need more information on getting started with COM/DCOM. What do you have that will help?

See our [Getting started with VB and COM/DCOM](#) document on this. This is also useful for other languages too. Also check out Application Note [AN1408-13](#).

4. In DCOM, I get a "permission denied" error. What is wrong?

See our [DCOM Security Page](#) about this. This discusses multiple issues regarding DCOM access on the PNA including the difficulties of using events in DCOM. Also, if using XP with Service Pack 2, make sure Windows Firewall is properly configured to allow access; see our [XP-SP2 page](#). Finally, under My Computer, Tools, Folder Options, make sure you **do not** have "Use simple file sharing" checked. Enabling this will prevent all DCOM access.

5. Should I update any GPIB drivers that may appear in in the Windows Update utility?

Never update any GPIB drivers unless specifically requested by Keysight or this website! Newer versions of IO Libraries may put a prompt telling you that a new version is available; **ignore that!** Upgrading IO libraries will cause connection issues.

6. In COM, there are multiple object names for one interface, such as Application, IApplication2, IApplication3, etc. Which one should I use?

The short answer is: If you are **not** worried about using code on a PNA with older firmware than what you are developing on, then always use the object model without the "I" in front; in this case, just **Application**. For the long answer, open the PNA Help file and search on "Interface Inheritance".

7. How do I make a LAN connection to the PNA via the Agilent/Keysight IO libraries Connection Expert?

There are two ways to do this and they vary depending upon the version installed on your PC. **Both require that SICL be enabled on the PNA.** To do this, click on System, Configure SICL/GPIB, and check the box labeled "SICL Enabled". If using this permanently, you may want to have the PNA power up this way (check the appropriate box.) Then proceed with one of the following:

Method #1 for IOLIB 14.X

Run the Connection Expert and click on Add Instrument. Select LAN, then OK. Enter either the PNA's computer name or IP address. Click on Advanced. Select *Remote instrument name* and enter **hpiB7,16**. Then click on Test Connection and then Identify Instrument; both should work.

Method #2 for IOLIB 14.X

Run the Connection Expert and click on Add Interface. Click on Remote GPIB Interface, click Add. Note the provided VISA interface ID; you will need this name later for programming. Enter either the PNA's computer name or IP address. Change the *Interface Name on Remote Host* to: **hpiB7**. Finally, click on test connection.

Method #3 for IOLIB 15.X and above

Run the Connection Expert and click on Add Instrument. If the Auto-Find feature does not find your instrument, click on Add Address. Enter either the PNA's computer name or IP address. Check the box *Add to configuration*, then click OK. A window will be briefly be shown and then the connection expert window may show a communication failure. Click on *Change Properties*, then Advanced. Change the Remote instrument name to **hpiB7,16**. Then click on Test Connection and then Identify Instrument; both should work. Note: Instruments shipped beginning late 2008 can use the default Remote Instrument name of **inst0**

8. Can I update to Agilent/Keysight IO Library Suite 14.x (or 15, 16, or 17) on my existing PNA?

Except for the upgrade from 14.1 to 14.2 and the update from 16.0/16.1 to 16.2/16.3, the answer is NO! Doing so will break the functionality of the PNA's remote operation. This mostly occurs when customers try to upgrade from 16.x to 17.x. This is currently not allowed. In this case, your only easy recourse would be to re-image the hard drive using the recovery partition.

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Display

1. Can I connect an external monitor?

Yes. Any display connected to the rear panel output will show the same data as is on the internal display (unless the video is set for a virtual display.) The default resolution for 10.4" display units 1024x768. Note that the external display may not be active if the PNA was booted without an external monitor connected. To activate the display, use these hot-key

sequences:

Internal display only: **Ctrl + Alt + F3**

External display only: **Ctrl + Alt + F1**

Both displays simultaneously: **Ctrl + Alt + F12**, then select the desired configuration.

Alternately, you can click on the Intel HD Graphics Icon in the task bar, then select Graphic Properties.

2. Can I run the external monitor at another resolution?

Yes, but the internal display may not function at the same time. To do this, right-click on the Windows background and select Graphic Properties. Use the Advanced Mode.

3. What format should I use for storing screen dumps?

The PNA provides the ability to store graphics in 3 formats: **.bmp, .jpg and .png**. All are universally accepted by graphics program and web browsers. Assuming 16-bit color, a full screen bmp image will be 921kB in size. A jpg image will vary depending upon the image but is typically between 50 and 100kB. A png image will also vary, but is typically between 8 and 12kB. Since jpg is a "lossy" compression, the images produced are not exact replicas and will appear slightly distorted, hence, jpg files are best only for photographs. The best, and default, method is the png format. This loss-less compression is intended to replace .gif files and is the only format recommended. PNG files are universally accepted in all imaging, spreadsheet, and word processing programs.

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Touch Screen

1. The touch screen is not accurate. How do I calibrate it?

On the front panel, select System, Touchscreen, Calibrate Touchscreen. Depending upon the drive version, you will need to touch several "targets". More recent versions require that you touch **and hold** each target.

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USB Devices

1. Are the USB connections "powered ports?"

Yes, both front and rear panel USB ports are capable of supplying the full 500mA of current to a USB device. If using a hub, remember that the E-Cal modules require the full 500mA, so the hub must be powered.

2. Are the USB ports version 1.1 or 2.0 or 3.0?

All PNAs with the 10.4" display USB ports are version 2.0. With the latest 2200MHz CPU, two of the three USB ports on that CPU are 3.0; the front panel ports remain 2.0.

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The following questions relate mainly to those older instruments with smaller 8.4-inch display.

Some may also be applicable to newer PNAs. Keep in mind that some of this information may be outdated; it is being kept for historical purposes.

1. Why does my PNA hibernate when I turn off the power switch?
2. Can I replace the hard drive with another, larger drive?
3. Can I add a second hard drive?
4. Why is the parallel port connection so small?
5. Why are some rear panel ports covered?
6. Can I add more memory?
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14. My PNA-X has no floppy drive, so it can't access the verification kit floppy disk data. What do I do?
15. My PNA seems to hang when I try to shut it down or reboot. Is this a problem and how do I fix it?
16. My PNA reports the wrong model number. In addition, the serial number is also wrong...it starts with "SM". What is wrong?
17. Does the PNA support Wake-on-LAN? I can't find it in the BIOS.
18. How do I install a permanent or temporary option license?

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Operating System (Windows 2000/XP/Win 7/Win 10)

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2. I forgot my password. What do I do?
3. What is the difference between an Administrator, User, Power User, etc.
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5. What is the default configuration for network use?
6. What is my IP address?
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8. Previously, my PNA would automatically start up without entering a username/password; now I must always enter them. What changed and how do I fix it?
9. How can I prevent others from making adjustments or modifying firmware?
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7. My mouse pointer is constantly flickering. How do I fix this?
8. What format should I use for storing screen dumps?
9. My PNA displays a logo when first powering up but then the screen goes completely white. What happened?
10. My PNA (with XP) will not allow me to set the screen resolution back to 640x480. What do I do?
11. When I use an external monitor and disable the internal display, the PNA's LCD goes white. How do I get the screen to go black?
12. My older PNA (not PNA-X) has a dead display (completely black.) What is broken and how do I fix it?

Touch Screen (PNA-X and PNA C Models Only)

1. The touch screen is not accurate. How do I calibrate it?
2. The touch screen does not work and access to it greyed-out. Why?
3. How do I enable/disable the touchscreen?
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1. Do all USB devices work on the PNA?
2. Are both USB connections "powered ports?"

3. Do I need a USB hub?
4. Can I use my existing DIN keyboard and mouse?
5. Are the USB ports version 1.1 or 2.0?

ANSWERS

General

1. Why does my PNA hibernate when I turn off the power switch?

(This is for older PNAs only; current units do not support hibernation and you may receive errors if you try.) In reality, turning off the power just puts the analyzer into hibernate mode. This is done so that the analyzer will "wake up" in the same state in which it was shut down. More importantly, it significantly shortens the power-up time. Behavior of the power switch can be modified within Windows.

Caution: If the system needs to be completely re-booted, from the taskbar, select Start, then Shutdown. It is recommended that the PNA be completely shut down at least once every 5-30 days.

2. Can I replace the hard drive with another, larger drive?

Generally no, unless you have the capability of cloning an existing Keysight-supplied drive onto a larger-capacity drive. The hard drive is configured at the factory with many specific settings, and for that reason, the changing of hard drives is not supported by Keysight. Contact Keysight if a new hard drive is needed. Any replacement hard drive obtained from Keysight will have the entire operating system already installed and properly configured. As of April 2004, the older 10GB hard drive has been replaced with a 40GB drive. XP is only supported on this newer drive. Future drives may be even bigger. Laptop hard drive were used since they were more rugged than desktop drives. As of late 2010, Solid State Drives are used instead of mechanical drives.

3. Can I add a second hard drive?

No. Keysight does not support this. Hard drives connected by other means, such as USB, are acceptable.

4. Why is the parallel port connection so small? (old 266MHz CPU units only)

At the time of development, this was supposed to be the new standard and physical space was already short. This standard never caught on and as a result we shipped all units with an adapter. All units shipped since from about March 2002 to April 2006 have a 500MHz CPU boards which has a standard size connector. 1.1GHz (or faster) CPU's contain no parallel or serial ports; instead they have more USB ports.

5. Why are some rear panel ports covered? (very old units only ~2001)

On older units, several data port connectors are covered to prevent access. One of these ports is mechanically identical to a printer port but some units have 26 volts connected to one pin. Accidentally connecting a printer to this is guaranteed to destroy your printer! Most of these special purpose ports are not supported by firmware revisions below 2.0. These port connectors are now available on newer units.

6. Can I add more memory?

Sometimes yes, sometimes no. The 266MHz CPU board (the one with the rear-panel USB port oriented horizontally) will accept up to 256MB of memory while the 500MHz CPU boards can hold 512MB. The amount your unit has varies depending upon when it was shipped (right-click on My Computer, then Properties to view the amount installed).

266MHz CPU boards have only one memory slot; 500MHz CPUs units have two. Most any standard PC-100 SDRAM **laptop** memory SODIMM's will function (but see below for 256MB parts). The memory is located on the CPU assembly; see service manual for removal information. If only one memory slot is available, the existing SODIMM must be replaced. You **must** observe all anti-static precautions when installing memory! Caution must be used when selecting memory for either the 266MHz or 500MHz CPU boards as many common 256MB SODIMMs **will not** function with the PNA. Only those with a 32MBx64 configuration will work; typically, these will have 16 chips per SODIMM. Make sure the memory you buy will function with the TX chipset used with the 266MHz CPU board, or with the BX chipset used with the 500MHz CPU board. The Keysight part number for the 256MB part is 1818-8825 which is equivalent to Micron P/N MT16LSDF3264HG-10EE4.

The 1.1GHz CPU board contains only one memory socket and is always shipped with the maximum of 1GB, so no upgrades are possible.

The 1.6GHz CPU (PNA-X) has two full-size memory slots. All units were shipped with 1 DIMM of 1GB; the remaining slot is empty. You can easily upgrade total memory to 2GB. You can buy most any 1GB **desktop DIMM** (not laptop) memory with these specs: DDR 333MHz PC2700 CL2.5. The Micron p/n is MT16VDDT12864AY-335. Do not exceed 1.25 inches (32mm) in DIMM height. The MXA signal analyzer uses a virtually identical CPU board so the 2GB upgrade kit for that will work just as well for the PNA-X. Order p/n N9020-60032.

The 2.0 GHz CPU is filled to the maximum of 4GB, so no upgrades are needed. The 2.0 GHz i7 CPU is shipped with 8GB which is the maximum amount currently supported.

7. Is there anything that should be backed up to floppy disk (or flash drive)?

Yes, except for the N524x, N522x, and N526x models. Two or more small files (several kb each) should be backed up in case the hard drive should ever fail. These contain the calibration factors for the receiver assembly. These files all start with **mxcalfile_**. These are in the Program Files/Keysight/Network Analyzer directory. It may also be useful to back up the **gen.lic** file, located in the same directory. The PNA-X models do not need these files backed up.

8. I am in a secure environment. What kinds/sizes of memory does the PNA have?

The PNA stores virtually all information on it's hard drive. System memory varies (64MB-8GB) but this is all in volatile SDRAM which loses its contents when power is removed. In addition to this, most board assemblies have one or two EEPROMs which hold only 512 Bytes each. Access to these EEPROMs is not normally available to users; although some service adjustments may modify the contents. These EEPROMs hold board-specific cal constants and other factory information such as serial number, date of manufacture, revision number, etc. There are no batteries other than the one used to power the system clock. For high security installations, it is recommended that the hard drive be removed when transportation to a non-secure area is required. For more information see our [security page](#).

9. My PNA is responding extremely slowly or not at all. Why?

Assuming you do not have an older CPU board with insufficient memory, there are two likely causes.

- o You have a virus/worm such as Blaster, Welchia, Lovegate, Sasser, or any of the thousands of others that attempt to take over your computer. These can bring the PNA to virtual halt when connected to a network as the virus attempts to propagate itself. Use the TaskManager to verify only the expected processes are running and make sure you install an antivirus program.
- o Some older mechanical hard drives will start "clicking" regularly as they begin to degrade. An occasional clicking may be normal but excessive clicking means it is having problems finding data. This can substantially slow the PNA. If your PNA is very slow to respond **and** it also clicks considerably, it is time to back up your data and replace the hard drive. Of course, this does not apply to newer units with SSDs.

10. Can I change the partition sizes of the hard drive?

No! Attempting to change the partition size of any portion of the hard drive **will** render the drive unbootable. Most customers would probably use Partition Magic to do this. Partition Magic is **not** compatible with our hard drive structure. If this is an absolute necessity, contact Keysight for help.

11. I want to view the help file (pnahelp.chm) on my PC, but when I open it, it shows an error? How do I fix this?

This is caused by a Windows security measure. To solve this, place the PNAHelp.chm file somewhere on your local hard drive (**not** on a networked drive), then (if running XP) right-click on the file, click **Properties**, then click **Unblock**.

12. My front panel stopped working. Why, and how do I fix this?

This is an intermittent issue caused by a hardware problem on older PNAs (not PNA-X or PNA C models). This issue requires a modification to the front panel. Complete information is available in our [Service Note](#).

Note: The E8356-63061 front panel interface board will not work with early 266 MHz CPU boards. The BIOS loaded on these CPU boards does not recognize all of the components on this new FPI board. If the new BIOS is not available, the CPU board and the hard drive will need to be replaced with the current parts.

13. My PNA-X has no floppy drive, so it can't access the verification kit floppy disk data. What do I do?

Copy the PNA files from the kit's floppy disk to any USB flash drive; then connect the flash drive to the PNA. The System Verification program will automatically scan all attached drives for the proper files. If the Ver Kit is new or if it is sent in for recertification, data will be supplied on a USB flash drive. Since the data takes up less than 1 MB, you can use the drive for other purposes as well! As of 2010, verification and cal kits ship with flash drives instead of obsolete floppy disks.

14. My PNA seems to hang when I try to shut it down or reboot. Is this a problem and how do I fix it?

This is not a severe problem as it should eventually shut down, but it is a major annoyance. While we had a few "solutions" that seemed to work (including a full re-image of the HDD), the final solution turned out to be relatively simple and involved deleting some unneeded files. A simple program was made to automatically perform this on **any** PNA running XP. [Download this tiny program](#), place it on the PNA and execute it. It only takes 5 seconds to complete, after which, the PNA will reboot.

15. My PNA reports the wrong model number. In addition, the serial number is also wrong...it starts with "SM" instead of the normal "MY", "US", or "SG". What is wrong?

If only the model number is incorrect, then this is probably a licensing issue and those can almost always be resolved quickly and easily via a phone call or email. If the displayed serial number is incorrect and starts with the letters "SM" then the problem is that the CPU board cannot "see" the SPAM board. The first thing to try is reseating the SPAM and/or CPU assemblies. If this does not solve the issue, then the PNA may have to be sent in for repair. If the serial number reads "None" then there is an issue with the SPAM board being able to communicate with the rest of the instrument.

16. Does the PNA support Wake-on-LAN? I can't find it in the BIOS.

This feature is buried deeply in the BIOS for the newer i7 and Celeron CPUs and is not very obvious. Enter the BIOS upon boot-up by pressing the DELETE (or DEL) key on a keyboard. Select the **Chipset** menu, then **South Bridge** menu, then **SB PCH options**. You will then see the WOL setting under the PCH LAN Controller heading. As shipped, WOL is **not** enabled. To use this feature, you will also need to enable the "Magic Packet from power off state" setting of the Network Adapter in Device Manager. Right-click on the Network Connection, Properties, Power Management.

17. How do I install a permanent or temporary option license?

Assuming you have the needed keyword, click on Utilities, System, Service, Option Enable. In the drop-down list labeled 'Select Desired Option', select the option you wish to install.

For a **permanent** license, enter the keyword in the space provided, then click on Enable.

For a **temporary** license, the keyword will be provided with an expiration date. You **must** check 'Temporary' in the 'Option Type' box. Then click on 'Enter Expiration Date' and enter the **exact** date provided in the license. Enter the keyword in the space provided, then click on Enable.

In either case, an error will be shown if the license is not correct. Click Exit if done or select another option to be installed. In some cases, a prerequisite option must be installed before an option that is dependent upon that can be selected.

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Operation

1. How do I minimize the application?

On firmware versions below 2.0: Click on **View**, then check on **Title Bars**. This will reveal the Minimize button, but it also slightly reduces the size of the window. Firmware 2.0 and above have a minimize selection within the View menu. The PNA-X and "C" models have the minimize under the File menu.

2. How can I prevent the PNA Application from running upon startup?

In the directory C:\Program Files\Agilent\Network Analyzer\Service or C:\Program Files (x86)\Keysight\Network Analyzer\Service is a program called **Toggle_PNA_Autostart.vbs**. Simply run this script and tell it not to autostart. You can always run it again to restore the autostart feature.

3. My new E4418B/E4419B power meter or USB sensor is not recognized as being valid on the PNA. Why?

Newer power meters and USB sensor may not be recognized by older firmware. Follow the instructions on this page: [PNA power meter page](#) to solve this.

4. I cannot use my new N1911A/1912A (or N1913A/14A) power meter or I cannot use Channel B on my N1912A. Why?

Follow the instructions on this page: [PNA power meter page](#) to solve this.

5. After upgrading firmware on my older PNA I am getting the error "Your Src board has the wrong cal..." Why?

This is due to a board header bit that is not set properly. Older firmware did not care about this bit, but newer firmware does. This can be easily and quickly fixed from the front panel, however you must contact us for this information. See contact information in footer of this page.

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Operating System (Windows 2000/XP/Win 7/Win 10)

1. Can I reload/reinstall the operating system?

The operating system should never be completely removed. If some files need to be replaced, there is a recovery method described in the service manual that will recover any corrupt or missing files.

2. Can I install other programs on this unit?

Yes. Keysight has tested several popular programs along with most of the Microsoft Office Suite and found no problems. However, support for other programs cannot be provided and the unintended actions of other programs are the responsibility of the end user. Do not install any GPIB drivers unless specifically told to do so! Operation of other large programs will probably be helped by extra memory if your current unit has only a small amount. Only the network analyzer application, as shipped from the factory, is guaranteed to perform properly.

3. When will Windows 10 be used as the operating system?

The current guess is sometime near the end of 2017. This may change.

4. Can I boot from a USB CD-ROM or flash drive?

The newer CPU boards (500MHz and faster) can be booted from most USB CD-ROM drives and/or flash drives. The older (266MHz) CPU board does not allow this.

5. How do I access the BIOS?

During the splash screen on power up, press F2 on an attached keyboard.

6. My unit (with a 10GB drive) has a "D" partition. Can I store data there?

This is not highly recommended, but is possible. On very old units, this space is needed for the recovery partition to function properly. On units shipped up to Oct 2004, firmware updates and a Ghost image are stored here. If more hard drive space is absolutely needed, up to 1GB of this partition could be used (if you have a 10GB drive.) Never delete any original files on the D partition; this could prevent the recovery process from functioning. Newer 40GB drives and above have much more space available and are partitioned differently. On these units, the D drive is almost entirely available for customer use.

7. What is the recovery partition?

On very early units (until Apr 2002), the recovery partition (D:) contains a completely separate installation of Windows 2000. Since it should never be used, it should hopefully never get damaged. If the primary partition gets damaged, the only easy solution for recovery is to boot from this partition and use it to repair the primary partition. Do not fill this partition with other files since repairing an operating system requires several hundred megabytes of free space within the recovery partition. Complete recovery instructions are in the service manual.

On newer units (those shipped until Oct 2004 with a "Ghost" directory on the "D" partition), the recovery partition contains a complete image of the primary partition as it was when it was shipped. It also contains the program to restore the image to the primary partition. Using this method will result in the loss of all information and changes made since the unit was new. Refer to the service manual or help file for more information.

On units shipped after Oct 2004, the recovery partition (Drive E:) contains critical recovery data and this partition should never be used by the customer. Instead, use the much larger Drive D:\ partition, which is meant for user data and backups.

8. Where is my Microsoft product key number?

The product key (or CoA) is located on a label placed on the right side of the instrument (as viewed from the front.)

9. How can I eliminate the built-in 30-second delay when re-booting?

This should already be preset to 5 seconds by the factory. This value should not be eliminated, but it can be substantially reduced. In Windows, right-click on My Computer, select Properties, Advanced, Startup and Recovery. Change the current 30-second delay to 5 seconds (no less than 2 sec) Select OK.

10. What Service Pack is installed? Can I install new Service Packs and other updates?

To view the current service pack installation, right-click on My Computer, then select Properties.

New factory shipments will contain the latest service pack and critical updates from Microsoft once they have been evaluated. Keysight is required to ship all new service packs and critical updates within 90 days of their release.

Existing customers should install critical updates (from Microsoft) as soon as they are released. When new service packs are released, it may be best to wait a while until we can evaluate them for possible conflicts with the PNA. If an issue arises, it will be posted on our "[Latest News](#)" page. Service packs, critical updates, and other OS related updates are only available from Microsoft. PNA firmware updates do not include any OS-related updates. As with the purchase of any new computer, one of your first steps upon receipt should be to check for any critical updates. Once that is done, the latest firmware should also be installed. **Never install any updates to a GPIB driver (such as IO Libraries) unless requested to do so by Keysight (and more specifically, by this website!)**

11. Can I install XP on my PNA by myself?

No! If the PNA was shipped with Windows 2000, you cannot upgrade to XP. The CPU board requires different drivers for XP and, while you may be able to get the PNA to act as a computer, the Network Analyzer portion will not function. Contact Keysight if an upgrade is required. Also see our [XP Intro page](#).

12. My PNA has a license tag affixed to it that does not match the operating system. Why?

This may happen when a new OS is released but Keysight is still using the older OS. This happened with the W2k-to-XP transition and again with the XP-to-Vista transition. The license tag can be ignored for now. The PNA switched to XP in April 2004. Vista will never be used. The PNA will probably switch to Windows 7 sometime around the end of 2012, but this could change.

13. I tried to boot from the recovery partition but all I get is a blinking cursor. What do I do?

This can happen if the PNA hard drive is not properly set up or if the Master Boot Record (MBR) gets corrupted. Many units were shipped with this issue. The fix is simple.

1. Start the PNA, then close the PNA application if/when it starts.
2. Click on Start, Run.
3. Enter the number "1" then click on OK.
4. You will be presented with a DOS menu with several items listed. Enter the number that corresponds to "Repair boot.ini and MBR".
5. When the DOS window closes, reboot the PNA. The recovery system should now be functional.

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Windows Networking (Administration/Security)

1. In my list of users, is one called "Agilent" (as administrator.) What is it for and can I delete it?

The Agilent/Keysight user is needed by Keysight service personnel and **should never be deleted!** (high-security customers excepted.) It poses a minimal security risk since each analyzer requires a **different** password based upon its unique serial number. In fact, it may increase security, as the normally used password need not be provided to service personnel. Passwords are maintained at the factory should they ever be needed. If this user name is deleted, any future repairs may require that the hard drive be reimaged!

2. I forgot my only administrator login password. What do I do?

First, see question 11 below. Assuming the "Agilent" user name has not been deleted, contact Keysight for instructions. If it has been deleted, then the hard drive may have to be re-imaged (recovered.)

3. What is the difference between an Administrator, User, Power User, etc.

This is more of a systems administrator type of question that is too involved to go into here. In general, it is best to keep users as Administrators or Power Users. If this poses a security risk, then beware that some functions of the analyzer may not work if logged on as a user. Users may not have read/write-permissions on the Network Analyzer directory and therefore the application may not function well unless this permission is given. Also, a normal user will not be able to change GPIB control from talker/listener to system controller (500MHz CPU only). Some of this has changed with firmware revision 2.0 or above.

4. Our network is on a domain. Can I keep the PNA on a workgroup?

Yes, this works quite well in most cases. Contact your systems administrator.

5. What is the default configuration for network use?

The PNA is shipped with the network set to DHCP. If you do not have a DHCP server, then this will have to be changed. Contact your Systems Administrator.

6. What is my IP address?

The easiest way to find this is to open a command prompt window (DOS prompt) and enter: `ipconfig /all` The Help, About Network Analyzer menu selection on newer firmware will also display the "computer name" of the PNA if it is connected to an active network.

7. I can't get IE to access the Internet via LAN; even though all my configurations are properly set.

Internet Explorer may need to be initialized before it functions properly. Right-click on the IE desktop icon and select properties. On the connections tab, select the setup button and answer all questions. If you still can't access the Internet, check to see if any needed proxy name has been entered. Viruses have been known to prevent some or all Internet

access. In some cases, a virus may change the date (to 1998 or so) to prevent Windows Update from functioning.

8. Previously, my PNA would automatically start up without entering a username/password; now I must always enter them. What changed and how do I fix it?

Windows 2000 and XP limit access depending upon how it is configured. As shipped, the PNA is configured as part of a workgroup. This allows the unit to automatically start up without entering a name or password (although these can be required if desired.) If the PNA configuration is later changed so as to be part of a domain, then a name/password MUST always be entered at start up. This is a security requirement of Windows. The only solution is to remove the PNA from the domain, however this may impose other limitations depending upon your particular domain.

9. How can I prevent others from making adjustments or modifying firmware?

All service adjustments require that the user be logged on as an administrator. The AgileUpdate routine also has this requirement. To prevent non-administrators from installing any Windows installer package (including firmware), follow this procedure.

- Click on Start, Run, then type in: `gpedit.msc`
- Select: Computer Configuration,
Administrative Templates,
Windows Components,
Windows Installer
- Double-click on Disable Windows Installer, then select Enable and Always.

10. Does the PNA have any virus protection?

No! During manufacturing, Symantec AntiVirus is installed on each unit but this is removed before shipment due to licensing issues. Use of an antivirus program is **very strongly** recommended. Obviously, Symantec AntiVirus will function, but other antivirus programs should also work well. The PNA is always shipped with the latest service packs and critical updates that were available at the time that the master disk is produced. [See previous Service Pack question.](#)

11. What is my default username and password?

This depends upon when it was shipped and the operating system. Early units had the username of "administrator" and no password. For a while in early 2004, the password of "tsunami" was used. All XP units shipped since then have the username of "**PNA-Admin**" with the password of "**agilent**" (lower case.) Since we are now Keysight, all units shipped with Windows 7 have the same user name of "pna-admin", but the password is simply lower case "**pna**".

12. I need to maintain high security. How do I do that with a Windows operating system?

This subject is covered in depth in our [security document](#).

13. My PNA automatically starts up without asking for a password. How do I force it to ask for a login?

Keysight ships the PNA this way to avoid confusion. However, this may not satisfy everybody. To require a login, click on Start, Run and type in: "`control userpasswords2`" and click on OK. The resulting window will have an unchecked box labeled "Users must enter a user name and password..." Check this box and click OK to force the PNA to require a login.

14. I changed my default password and now the PNA will not automatically start up without entering it. How can I change this?

To have the PNA boot automatically after changing the password, click on Start, Run and type in: "`control userpasswords2`" and click on OK. The resulting window will have an unchecked box labeled "Users must enter a user name and password..." Temporarily check this box and verify that the pna-admin account is highlighted. Then uncheck the box, then click on OK. You will be asked to enter the new password (twice). Click OK. Future re-boots will no longer require the password to be entered.

15. We have modified our XP-based PNA to meet the US government's DSS security requirements and now the PNA will not start up. How can we fix this?

If all the DSS changes are made, the PNA will not function. Only one setting need be changed, as follows.

1. Click on Start->Run
2. Type in `Gpedit.msc`
3. Local Computer Policy->Computer Configuration->Window Settings->Security Settings->Local Policies->User Rights Assignment
4. Double click on "Impersonate a client after authentication"
5. Click "Add user or group"
6. Type "Service"
7. Click OK
8. Close the group policy editor
9. Reboot the PNA

16. My antivirus program has found a Trojan virus on my brand new PNA! What do I do?

Keysight goes through great effort to insure that no viruses are accidentally shipped. On many antivirus programs, the file `shutdown.exe` may be falsely detected as a virus. It is not a virus! This may also show up in system restore files and other locations as well. This program is needed for the recovery process to run properly. Do not delete it. Because this false positive generates many questions, we have changed to a different program to prevent this concern in the future. However, it seems most every program that is capable of shutting down the PNA may be considered a virus by some antivirus programs. Other false positives may include `cmdshutdown.exe`, `restartApp.exe`, and `pskill.exe`. Some antivirus programs may also identify the VNC program as being dangerous. This is used for remote servicing and is **not** a virus. Some anti-virus programs are overly aggressive and may detect other false positives. Again, we go through great effort to ensure the PNA is virus free. Note that we have seen instances of users infecting the PNA with a virus as they were attempting to install an antivirus program. Be careful! Flash drives are particularly efficient at infecting systems. To minimize this risk, the Auto-Run feature of the Windows has been turned off on units shipped after mid-2011.

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Firmware

1. How do I find my current firmware revision?

On the network analyzer application, select: Help, About Network Analyzer.

2. How can I find out when new firmware is released?

There are several ways. First, you can access our [firmware web page](#) to see if a new version is available. Second, and the preferred method if the analyzer has Internet access, select System, Service, AgileUpdate. It will indicate if a new version is available and allow you to download/install it. Starting with firmware revision A.02.50, an automated notification program is included. If LAN access is maintained, this program will periodically check for new firmware and notify you if there is something new. This feature can be configured by the user from within the AgileUpdate program. See the help file under AutoCheck.

3. How large are firmware files?

Versions below 2.0 are about 15MB. Version 6.xx is about 50MB while newer versions are over 80MB. Starting in 2012, the firmware will jump to about 130MB due to the inclusion .Net 4.0 which is now required for some new functionality. Firmware will always be increasing in size.

4. How do I upgrade Firmware?

The recommended method is to use the AgileUpdate utility (see above), however this can only be done if the analyzer has Internet access. If not, the firmware file can be downloaded from any computer with Internet access and then transferred to the PNA via LAN or via flash drive. Once it resides on the Analyzer, double-click on the filename to begin the installation process.

5. Are all firmware revisions compatible with all versions of the Operating Systems (W2k, XP, Win7)?

No. At some point, all firmware revisions will be locked to a particular OS. This does not mean that they will not work, but older versions of firmware will not be tested on new platforms. For more information and for a compatibility chart, see our [firmware page](#).

6. I get the error message "Bad Install Package" (or other error) upon firmware installation. What do I do?

Most of the time this means your download was corrupt or somehow truncated. While each firmware size is different, make sure that it approximately correct. Firmware file sizes range from about 48MB for 6.xx firmware; 65MB - 95 MB for versions 7.xx to 9.4x. Versions above that are over 130MB. Try downloading the firmware again.

7. After installing new firmware, there is no icon to run the PNA application. What is wrong?

This problem may occur if you are upgrading from some 8.xx versions or early 9.xx versions of firmware. This issue is due to the previous firmware installed, not the one you are trying to install. The solution is simple; just reinstall the firmware again; it will work properly the second time. Another way to avoid this is to remove the firmware using the Add/Remove feature in Control Panel, and then installing new firmware.

8. I am unable to install Firmware A.09.50 (or above) on my older PNA-X; I get error 27500. What do I do?

Early PNA-Xs did not have Internet Information Services (IIS) installed and this is what prevents the installation. To fix this, click on Start, Settings, Control Panel. Click on Add/Remove Programs. On the left side, click on **Add/Remove Windows Components**. Check the box for Internet Information Services; then click Next. It will start installing IIS but will be unable to find some files. Click on Browse and navigate to **E:\mintint\I386**. Installation of IIS should then proceed normally. Once completed, try installing the newer firmware again.

9. Does the installation of new firmware affect the PNA's calibration status?

No, never!

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Programming

1. Can I run HP/Agilent/Keysight BASIC for Windows on the PNA and also access the GPIB port?

Yes, contact Agilent for full instructions.

2. Can I run HP/Agilent/Keysight VEE on the PNA and also access the GPIB port?

Yes, see [appendix](#) for full instructions.

3. What is the difference between PRESET and FPRESET?

Preset sets up a default S11 measurement trace within one window. FPRESET eliminates all channels, windows and traces. Prior to firmware 2.2, FPRESET does not actually perform a Preset, so the Preset command should precede this command. This has been fixed in Firmware Rev 2.2 and above.

4. What is the preferred programming language?

That is up to each customer. For many example programs, Keysight uses Microsoft's Visual Basic. This has the best combination of capability and flexibility, takes full advantage of COM, and is one of the simplest languages to use.

5. Can I run Visual Basic on the PNA and develop code from there?

Yes, however, developing code on a small screen is difficult at best. You may want to use a large external monitor (see Display questions below.)

6. With different channels, windows, and traces, how do I programmatically specify my target measurement when using GPIB/SCPI?

This is probably the most commonly asked programming question. Each measurement has a specific name regardless of its channel, window, or trace number. When in doubt as to which measurement a particular SCPI command will affect, precede the command with "CALC:PAR:SEL '*measName*'" See [programming examples](#) elsewhere on this web site.

7. Can I program the PNA using SCPI over LAN by using TCP/IP sockets (no DCOM)?

Yes. Beginning with firmware revision 6.03.05, the PNA has built-in Sockets. Using a socket server makes it much easier to connect to the PNA, but it bypasses all of the security of DCOM. In many cases however, this may not be an issue.

8. The NI "Scan for Instruments" feature does not seem to work. How can I control another instrument via GPIB?

This applies to the 266 and 500MHz CPU boards only! The PNA application controls the talker/listener vs controller mode. If the application was last left in talker/listener mode, then it must be set to controller mode before communication can be established with external instruments. Start the PNA application, select System, Configure, SICL/GPIB, and click on system controller. The NI Scan utility should now work even if the PNA application is closed. It should stay in this mode until the PNA is completely re-started.

9. I need more information on getting started with COM/DCOM. What do you have that will help?

See our [Getting started with VB and COM/DCOM](#) document on this. This is also useful for other languages too. Also check out Application Note [AN1408-13](#).

10. In DCOM, I get a "permission denied" error. What is wrong?

See our [DCOM Security Page](#) about this. This discusses multiple issues regarding DCOM access on the PNA including the difficulties of using events in DCOM. Also, if using XP with Service Pack 2, make sure Windows Firewall is properly configured to allow access; see our [XP-SP2 page](#). Finally, under My Computer, Tools, Folder Options, make sure you **do not** have "Use simple file sharing" checked. Enabling this will prevent all DCOM access.

11. Should I update any GPIB drivers that may appear in in the Windows Update utility?

Never update any GPIB drivers unless specifically requested by Keysight or this website! Most PNAs use a special GPIB driver and updating to another one could cause major problems!

12. In COM, there are multiple object names for one interface, such as Application, IApplication2, IApplication3, etc. Which one should I use?

The short answer is: If you are **not** worried about using code on a PNA with older firmware than what you are developing on, then always use the object model without the "I" in front; in this case, just **Application**. For the long answer, open the PNA Help file and search on "Interface Inheritance".

13. How do I make a LAN connection to the PNA via the Agilent/Keysight IO libraries Connection Expert?

There are two ways to do this and they vary depending upon the version installed on your PC. **Both require that SICL be enabled on the PNA.** To do this, click on System, Configure SICL/GPIB, and check the box labeled "SICL Enabled". If using this permanently, you may want to have the PNA power up this way (check the appropriate box.) Then proceed with one of the following:

Method #1 for IOLIB 14.X

Run the Connection Expert and click on Add Instrument. Select LAN, then OK. Enter either the PNA's computer name or IP address. Click on Advanced. Select *Remote instrument*

name and enter **hpiib7.16**. Then click on Test Connection and then Identify Instrument; both should work.

Method #2 for IOLIB 14.X

Run the Connection Expert and click on Add Interface. Click on Remote GPIB Interface, click Add. Note the provided VISA interface ID; you will need this name later for programming. Enter either the PNA's computer name or IP address. Change the *Interface Name on Remote Host* to: **hpiib7**. Finally, click on test connection.

Method #3 for IOLIB 15.X and above

Run the Connection Expert and click on Add Instrument. If the Auto-Find feature does not find your instrument, click on Add Address. Enter either the PNA's computer name or IP address. Check the box *Add to configuration*, then click OK. A window will be briefly be shown and then the connection expert window may show a communication failure. Click on *Change Properties*, then Advanced. Change the Remote instrument name to **hpiib7.16**. Then click on Test Connection and then Identify Instrument; both should work. Note: Instruments shipped beginning late 2008 can use the default Remote Instrument name of **insio**

14. Can I update to Agilent/Keysight IO Library Suite 14.x (or 15, 16, or 17) on my existing PNA?

Except for the upgrade from 14.1 to 14.2 and the update from 16.0/16.1 to 16.2/16.3, the answer is NO! Doing so will break the functionality of the PNA's remote operation. This mostly occurs when customers try to upgrade from 16.x to 17.x. This is currently not allowed. In this case, your only easy recourse would be to re-image the hard drive using the recovery partition. It is possible to update from 14.1 to 14.2, and [this special process](#) must be followed. The upgrade from 16.0/16.1 to 16.2 or 16.3 is also allowed.

15. My program's calibration routine, which used to work, now provides bad data with firmware 6.xx. Why?

Both this question, and the next one (#16), have the same cause. Refer to that answer.

16. Why doesn't the PNA automatically save a cal set anymore when I calibrate programmatically?

If you have written PNA automation code for firmware A.04.87.01 or below, and are calibrating multiple paths and using .cst files to recall the state and cal information, you may receive erroneous data after upgrading to A.06.01.05 or greater.

The PNA has implemented a new method for handling calibration sets. In A.04.87.01 and below, when a calibration was completed, a user cal set was automatically saved in the cal set list. In A.06.01.05 and greater, the PNA will store the cal set information in a calibration register. This register is overwritten whenever a new calibration is completed on the channel the register is associated. In order to utilize your existing code, it is necessary to add an additional "compatibility" command, "SENS:CORR:PREF:CSET:SAVU 1" for an unguided calibration, "SENS:CORR:COLL:GUID:SAVE 1" for a guided calibration, or the "CalSet.Copy" property using the COM interface. These commands tell the PNA to automatically save a user cal set at the end of a calibration.

Alternately, you can download and execute this small [compatibility VBS script](#) on the PNA which will set a registry value that indicates whether or not compatibility mode should be on or off. Once set, it will remain that way until specifically cleared or the hard drive is replaced. This setting will survive both a shut down and a firmware update.

17. For a 500MHz CPU system, clicking on Start, Programs, Agilent/Keysight IO Libs, IO Config produces an error. What can I do about this?

This was an issue with some versions of the hard drive. Instead of accessing the IO Config utility via the Start menu, use the tray icon provided in the taskbar at the bottom of the screen.

18. My PNA-X (N5242A) cannot connect via SICL over LAN even after following your instructions. How do I fix this?

Some early PNA-X unit were misconfigured (those shipped before Nov 2007.) To fix this, execute C:\Program Files\Agilent\IO Libraries Suite\bin\iocfg32.exe. Ignore any USB-GPIB warning. Under Configured Interfaces, find the item with the SICL name of **hpiib7** and remove it. Under Available Interface Type, find the **Internal Instrument** interface and click on Configure. Accept the defaults; click OK. On the PNA application, click on Utility, System, Configure, SICL/GPIB/SCPI and disable the SICL Automatic Startup. Exit the PNA-X application entirely. Re launch the PNA-X app and then re-enable the SICL Automatic Startup.

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Display

1. How do I change the internal display intensity?

For reliability reasons, this feature was not implemented. If the display is too bright when used in a darkened location, the only current solution is to use a neutral density filter, cut to the same size as the display.

2. Why is the display set to only 256 colors? (266MHz CPU boards only)

This was done to speed processing on the old 266MHz cpu board and is more than sufficient for any network analyzer work. Other applications may need more colors. While the color depth can be increased, it may slow response times. The cursor may flicker slightly at higher color depths; see below.

3. Changing the display resolution seems to have no effect. Why?

The LCD panel on older units can only display a resolution of 640x480. If the resolution is increased, the LCD panel will actually display a **portion** of the full "virtual" resolution. This can be seen by moving the cursor to the beyond the edges of the display. Newer units (The N524x, N522x, and all "C" models) use a 1024x768 display.

4. Can I connect an external monitor?

Yes. Any display connected to the rear panel output will show the same data as is on the internal display (unless the video is set for a virtual display.) The default resolution for older PNAs is standard VGA; 640x480 and 60Hz refresh. For newer PNAs, the resolution is 1024x768. For newer CPU boards, the external display may not be active if the PNA was booted without an external monitor connected. To activate the display on a 500MHz CPU, use these hot-key sequences:

Internal (LCD) display only: **Ctrl + Alt + L**

External (CRT) display only: **Ctrl + Alt + C**

Both displays Simultaneously: **Ctrl + Alt + S**

For the 1.1 GHz CPU and faster, use these hot-key sequences instead:

Internal display only: **Ctrl + Alt + F3**

External display only: **Ctrl + Alt + F1**

Both displays simultaneously: **Ctrl + Alt + F12**, then select "Dual Display Clone" under the Display Devices heading.

5. Can I run the external monitor at another resolution?

Yes, but the internal display may not function at the same time. To do this, right-click on the Windows background and select Properties. Select Settings, then Advanced. For the 266MHz CPU board: On the tab labeled CHIPS, select the CRT display device; Click Apply (make sure an external display is functioning before doing this!) Click OK to keep these settings. The resolution and refresh rates can now be changed as needed. The graphics circuitry is capable of full 24-bit color at 1024x768 resolution and can be used up to 1280x1024 (more in some cases).

For the 500MHz CPU board, click on Lynx3DM tab. For the 1.1GHz CPU (and faster) click on the Intel tab.

6. My external CRT monitor flickers slightly, can I increase the 60Hz refresh rate?

Yes, but only if the internal display is disabled (see above question.) The internal display will only function at 60Hz.

7. My mouse pointer is constantly flickering. How do I fix this?

(266 MHz CPU only!) This may happen when the display is set to greater than 256 colors. The flickering can be eliminated by going to Control Panel, Mouse and disabling the pointer shadow selection in the Pointers tab.

8. What format should I use for storing screen dumps?

The PNA provides the ability to store graphics in 3 formats: **.bmp, .jpg and .png**. All are universally accepted by graphics program and web browsers. Assuming 16-bit color, a full screen bmp image will be 921kB in size. A jpg image will vary depending upon the image but is typically between 50 and 100kB. A png image will also vary, but is typically between 8 and 12kB. Since jpg is a "lossy" compression, the images produced are not exact replicas and will appear slightly distorted, hence, jpg files are best only for photographs. The best, and default, method is the png format, available in revision A.02.10 or above. This loss-less compression is intended to replace .gif files and is the only format recommended.

PNG files are universally accepted in all imaging, spreadsheet, and word processing programs.

9. **My PNA displays a logo when first powering up but then the screen goes completely white. What happened?**
(266 and 500MHz CPU only.) This may happen if the PNA was last shut down with only an external display in operation. Either reconnect an external monitor or, if using a 500MHz CPU board, press **Ctrl + Alt + L** to re-select the internal LCD display.
10. **My PNA (with XP) will not allow me to set the screen resolution back to 640x480. What do I do?**
(Non-PNA-X and non-C models only) The minimum recommended resolution for XP is 800x600, however it will function at 640x480. Go to Control Panel, Display. Click on Settings, Advanced, Adapter, List All Modes and select **640x480, High Color, 60Hz**.
11. **When I use an external monitor and disable the internal display, the PNA's LCD goes white. How do I get the screen to go black?**
There is no way to do this with the 266 or 500MHz CPU boards. This capability does exist in the 1.1GHz (and above) CPU board.
12. **My older PNA (pre-2009 and not PNA-X) has a dead display (completely black.) What is broken and how do I fix it?**
This is almost always due to a blown 2-Amp fuse on the display inverter board and is relatively easy to fix. Remove the front panel then remove the 4 screws holding the display in place. You will see the inverter board on the back of the display. Verify the fuse is open. If so, replace the blown 2-amp fuse with a 4 amp surface mount fuse (or 3A if 4A is not available.) Most any connection method will suffice if the fuse does not fit properly. [See picture.](#)

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Touch Screen

1. **The touch screen is not accurate. How do I calibrate it?**
On the front panel, select System, Touchscreen, Calibrate Touchscreen. Depending upon the drive version, you will need to touch several "targets". More recent versions require that you touch **and hold** each target.
2. **The touch screen does not work and access to it greyed-out. Why?**
Due to various models of touchscreens, drivers, and firmware, there are several reasons why this may happen. Some may require a patch to be installed. See [this page](#) on touchscreen patches.
3. **How do I enable/disable the touchscreen?**
On the front panel, select System, Touchscreen, and toggle the Touchscreen On/Off softkey. If this does not seem to do anything, see next question.
4. **The touch screen works but the On/Off control has no effect. Why?**
Early PNA-C models may need a registry patch. See [this page](#) on touchscreen patches.

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USB Devices

1. **Do all USB devices work on the PNA?**
Keysight has tested many different USB devices on the PNA. Generally, single purpose devices (such as keyboards, mice, cameras, printers, pen drives, etc.) seem to work well. Some multi-purpose devices have had problems. These include keyboards with built-in USB hubs and other multi-purpose hubs. A couple of these devices actually prevented the PNA from powering up, although they worked well once the PNA had fully booted. Because of the large number of devices available, we can only recommend that you carefully evaluate each device. Reboot the PNA both with and without the USB device attached to ensure it boots up properly.
2. **Are the USB connections "powered ports?"**
Yes, both front and rear panel USB ports are capable of supplying the full 500mA of current to a USB device. If using a hub, remember that the E-Cal modules require the full 500mA, so the hub must be powered.
3. **Do I need a USB hub?**
Newer (2003 and later) microwave units have more USB ports. For PNAs made before 2003, a powered hub is very useful and is almost a necessity. It allows connection of more than just a keyboard and mouse. The E-Cal unit can also be connected as well as a printer, CD-ROM drive or USB flash drive. Non-powered hubs could also be used in some cases, but beware of power limitations and do not attempt to connect an E-Cal unit to it.
4. **Can I use my existing PS/2 keyboard and mouse?**
Yes. Keysight has tested a device called a Y-Mouse adapter that allows a PS/2 keyboard and mouse to be connected to a single USB port. This also frees up one USB port. See <http://www.ymouse.com>.
5. **Are the USB ports version 1.1 or 2.0 or 3.0?**
It depends upon the CPU and model number. For the PNA-X, N522xA, and all "C" models, all USB ports are version 2.0. For anything else, if you have the latest 1.1GHz CPU, then the four ports located on the rear of the CPU board itself are revision 2.0. All other USB ports are version 1.1; regardless of whether or not you have the newer 1.1GHz CPU board. As of 2012 the PNA does not support USB 3.0

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Appendix

Getting HP/Agilent/Keysight VEE to Work (via COM) from within the PNA

Getting VEE for Windows to run internally on the PNA can be a bit difficult. While the installation of the product usually goes well, addressing **both** the PNA **and** devices connected to the GPIB is not intuitive. This document shows step-by-step instructions for doing this. The use of VEE version 6 or higher is assumed. In this example a COM interface is configured for communication to the PNA, while SCPI is used for GPIB communications.

1. If VEE is not already installed on the PNA, do it now.
2. If the PNA Application is not running, start it now. Once it starts, click on System, Configure, SICL/GPIB. Click on the System Controller checkbox to make this active. Click on OK to exit this screen. For now, you may want to minimize the PNA application by selecting View, Title Bars, then minimizing the application.
3. Run the Agilent/Keysight VEE application (Start, Programs, Agilent VEE Pro 6.0.) After it starts, select **Device, ActiveX Automation References**. The registered automation services will be displayed, the Keysight PNA will **NOT** be shown.
4. Select Browse. Then, change the "Files of type" pull-down menu to read **"All Files."** Browse to the directory C:\Program Files\Agilent\Network Analyzer. Highlight the file **835x.exe** and select **Open**. The window will close and the Agilent/Keysight PNA Series 1.0 Type Library will now appear and will be checked. Select **OK**.
5. The Classes and members of the PNA Type Library can now be seen by selecting **Device, Function & Object Browser**. You are now ready to start programming the PNA via COM.

- Instruments connected to the PNA's GPIB port must be addressed via GPIB commands to device 14. In other words, a power meter at address 13 must be addressed as 1413. If this is not set up properly, run the Agilent/Keysight IO configuration program. Note that the same GPIB interface may appear twice, one being at device 8 and the other at device 14. Use device 14.

If all else fails, contact Keysight support for help.

Last Updated: May 16, 2019

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