# Frequently Asked Question

FAQ: My 8453/8454 spectrophotometer will not communicate with the ChemStation software.

Typically, an error "Spectrophotometer not connected", "Instrument not connected or switched off!", or "Power failure" will populate at the bottom of the ChemStation screen. (Please see figure 1.)
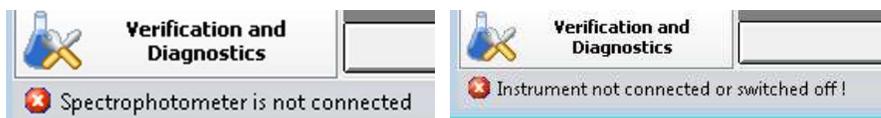


Figure 1.

**Caution: Electronic boards are sensitive to electrostatic discharge. To prevent damage, always use an ESD strap when handling electronic boards and components. (e.g. ESD wrist strap part number 7910031300)**

The following information is important, since the approach to solving the problem depends on both hardware and protocol.

Communication relies on one of two protocols: LAN (Local Area Connection) or GPIB (IEEE 488.2 General Purpose Interface Bus)

1. LAN only for the 8454
2. LAN or GPIB for the 8453
3. GPIB only for the 8452
4. Mixed LAN, GPIB, & RS232 for accessories. (While these systems are beyond the scope of this document, gathering the information described here will be helpful addressing those issues.)

The Agilent G1369A, B, or C interface card (The first revision the G1369A is also known as TalkToLab LAN Card) provides Local Area Network communication and replaces the Hewlett-Packard 400N J4100A Jet Direct Card.

The socket for a GPIB cable on the back of your spectrophotometer will likely be labelled with the initialism HP-IB. (Hewlett Packard Interface Bus)

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The information request in steps A, B, & C, are critical for resolving the communication issue.

Step A: The revision of the software. (From the ChemStation Help menu, choose About.)

Step B: The windows operating system. (Right mouse-click on the 'My Computer' icon and choose properties.  Alternatively, 'winver' is the command which opens the Windows properties box (Please see figure 2.)



Figure 2.

Step C: Addresses of the instrument and computer.

Instrument:
Open the Configuration Editor. (Start > All Program > UV Visible ChemStation > Configuration editor. (Please see figures 3 & 4.)
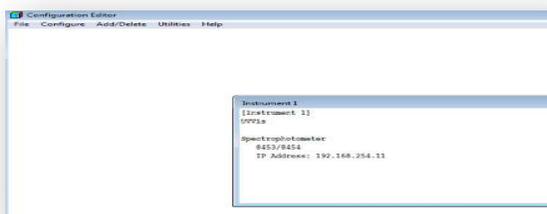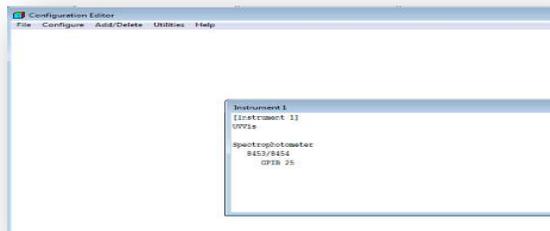


Figure 3.

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Figure 4.


If there is a GPIB address, verify that the GPIB address in the Configuration Editor matches the dip switch setting on the spectrophotometer. (The default is 25, 00011001) (Please see figure 15i on page 8.)


Computer:

<u>LAN</u>

i.      In the properties of the computer network card, select Internet protocol (TPC/IP) (Windows ≤ XP) (Please see figures 5, 6, & 7.) or Internet Protocol Version 4, (Windows ≥ 7) Please see figures 8 & 9.)

ii.      If you are using a BootP server or service to assign your IP address to the instrument, please verify that the address in the BootP matches the address of the instrument in the Configuration Editor. (Please see Figure 10.)

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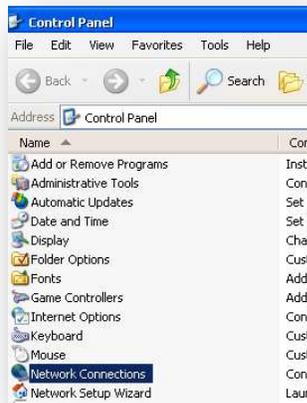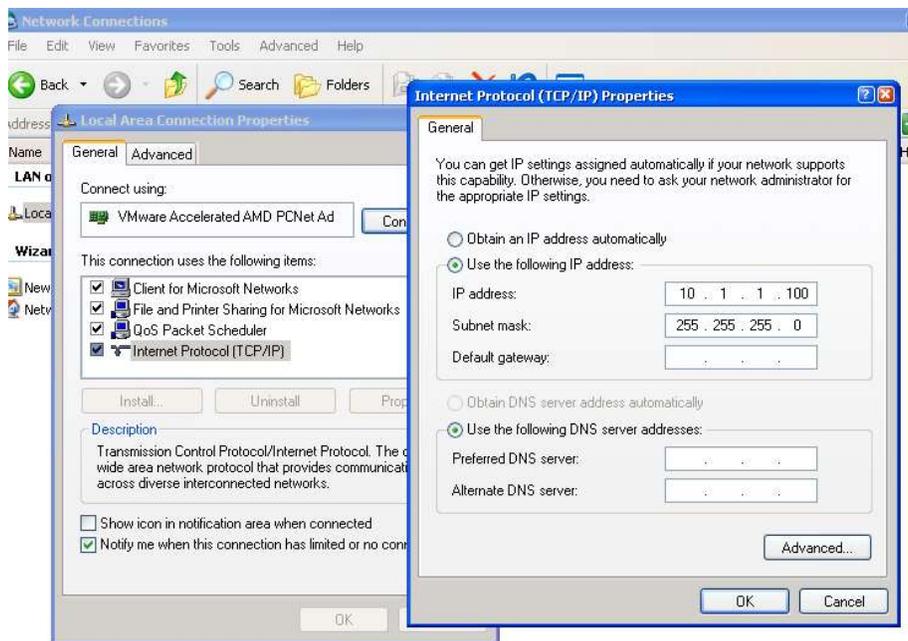From Insight to Outcome



Figure 5.



Figure 6.



Figure 7.

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Figure 8.



Figure 9.



Figure 10.
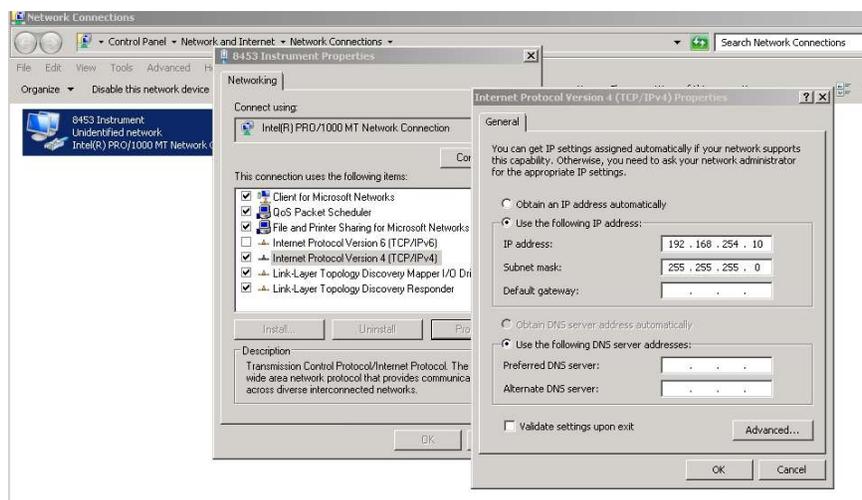
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GPIB:

Open the IO Config Utility, from the Task bar, and depending on what version of IO libraries are installed will give you the option of Choose Run IO Config or Agilent Connection Expert. Verify that the SICL Interface Name is hp82341, the Bus Address is 30, the Logical Unit is 7, the System Controller box is checked, and in newer version of IO Libraries ≥ 15, Auto-discover instruments connected to this interface is unchecked. (Please see figures 11 & 12.)
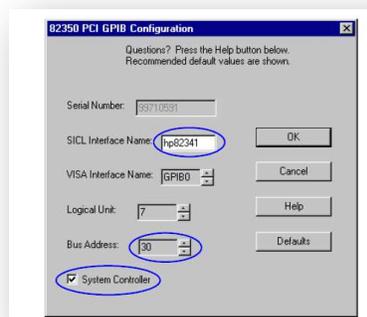


Figure 11.                              Figure 12.

Check the cable connections and the 8 position CONFIG switch.

1. The LAN cable should be plugged into the Agilent G1369A/B/C or J4100 LAN port (green square) and NOT the CAN ports (red square). (CAN ports: Agilent uses the robust Controller Area Network almost exclusively for Agilent HPLC communication between modules, and the hand-held controllers G1323B and G4208A.   The 8453 CAN ports allowed for control of the 8453E by the G1819A hand held controller.  The voltage output of the ports is 12-24V, which can damage the computer network card, which outputs about 3 volts.) (Please see figure 13.)

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Figure 13.

2. If the Agilent BootP Service program is assigning an IP address to your G1369x LAN card it would be better to assign a fixed IP address using telnet. Please the Appendix I: Three Steps to Using the G1369A, B, or C LAN Interface Default IP Address for Communication with an Instrument on an Isolated Network. If you prefer an address other than the default 192.168.254.11, please the Appendix II: Using Telnet Session to Set IP address for G1369x LAN Card. This is not an option for the J4100 Jet Direct Card.

3. If the computer connects directly to the instrument, verify that the cable is a crossover cable. A crossover cable is either black or it has crossover written on it. (Please see figure 14.)
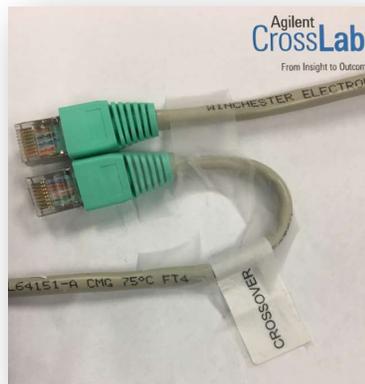


Figure 14.

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4.  If connected through a Router, Switch, or Hub, then the cable must be a twisted pair cable. (i.e. not a crossover cable.)

5.  If connected by GPIB, it is very important to remove the cable, and then re-install the cable at both ends.

6.  The CONFIG dip switches are used for GPIB communication, factory testing, cold starting, and RS232 communication for firmware updates.  The dip switches should be all set to 0 for LAN.  The switches are set to a specific address for GPIB.  GPIB requires switches 4,5,6,7,8.  The first 3 switches must be it the down (zero) position. (Please see figure 15ii.) This works out since 30 (11110) is the highest GPIB address.



Figure 15i.                                    Figure 15ii.

Verify that the windows Firewall is turned off and restart the system in the following order:

1. The Router, Switch, or Hub, if it is a part of your system. (Most often these are restarted by unplugging, as there is not always a switch.)

2. The computer, and wait until Windows boots up fully.

3. The instrument, and wait until the Status light is green. (ready)

4. Open the Online session of the ChemStation software.

LAN: If computer still fails to communicate, test the integrity of the connection by pinging the addresses. (Please see Appendix II, Figure 9b.)

If the instrument ping is unsuccessful, you may have a hardware failure of the LAN card,

GPIB: If computer still fails to communicate, it's possible the cable is bad. If you have a 'known good' cable, try that.  If that works, then replace the cable.

The IO Libraries may be corrupt.  Uninstall and re-install the IO libraries, from the ChemStation disk, which are found in a folder labelled GPIB.  If you do not have the disk, as of this document revision, you may download the libraries from Keysight Technologies.  Search for IO Libraries Suite Downloads, and choose Previous Versions.  The latest supported version is 16.3.17218.1 Update 1.

If it still fails to communicate, you may have a faulty GPIB card 82350B or GPIB to USB converter 82357A or B.  These products are owned of Keysight Technologies.  The 82350B is obsolete and not available.  The 82357B may be available.  Verify with Keysight Technologies, that it will still work with an Agilent instrument.  National Instruments card or converters will not work with the Agilent instruments, although they are the supported communication for Cary instruments.

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## Appendix I:

### Three Steps to Setting the G1369x LAN Interface Default IP Address for Communication

1. Set the G1369x LAN Card IP Address to 192.168.254.11
2. Set the computer's Network Interface Card IP Address to 192.168.254.10
3. Set the IP address in the ChemStation Configuration Editor to the G1369x LAN card address. (i.e. 192.168.254.11) (Later versions of LC and GC OpenLAB CDS ChemStation will discover the address during auto configuration.)

Step 1: Set the G1369x LAN Card IP Address to 192.168.254.11
1. Power off the instrument, and remove the G1369x LAN card.
2. Set the Configuration Switch positions 5 & 6 to up. (i.e. 'on' or '1') (Please see figure 1a. for the switch location.)
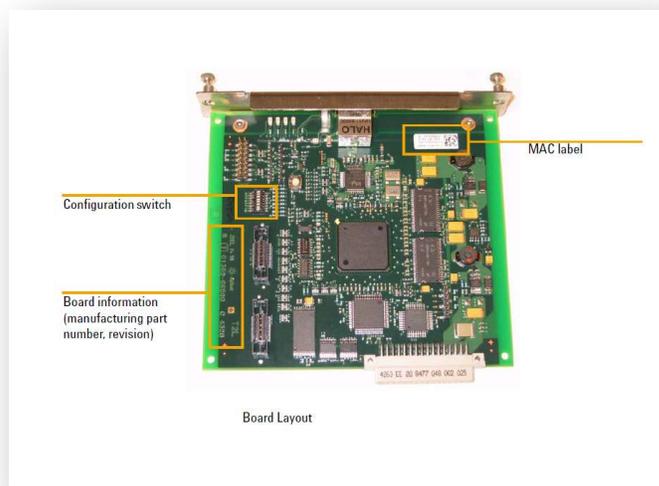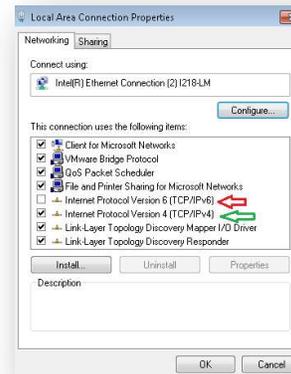   The IP address is now fixed at 192.168.254.11



Figure 1a.

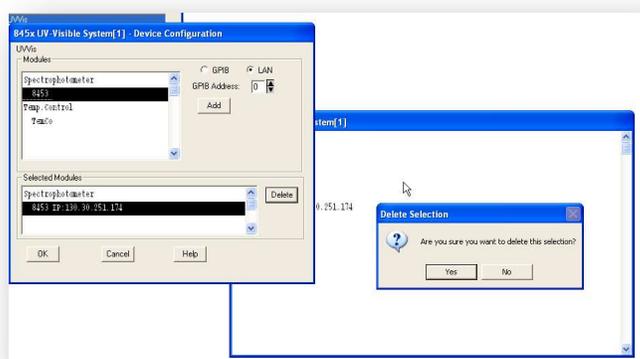Agilent Technologies, Inc. believes this document to be accurate and up to date, but will not assume responsibility for its use; individuals must determine its fitness for their purposes.
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Step 2: Set the computer's address to 192.168.254.10
(This is specific to the Windows 7 & Windows 10 Operating Systems.  In the network card
properties of Windows XP the network card will be labelled Internet Protocol (TCP/IP) instead of
Internet Protocol Version 4  (TCP/IPv4))
Select Start and enter IP in the Windows 7 Search window.
Select View Network Connections (Please see figure 2a.)
Right mouse click on the LAN icon and select Properties.
Uncheck Internet Protocol 6 (TCP/IPv6) (Please see figure 3a, red arrow.)

Figure 2a.                                        Figure 3a.

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Highlight Internet Protocol Version 4 (TCP/IPv4) (Please see figure 3a, green arrow.)
Select properties and choose the radio button, Use the following IP address.
Enter: IP Address: 192.168.254.10, Subnet Mask: 255.255.255.0, (Please see figure 4a.)

Figure 4a.

Step 3: Set the IP address in the Configuration Editor.
Open the Configuration Editor
From the Configure menu select Instruments
Change the IP address to 192.168.254.11
Depending on the type of instrument, you may need to delete the old address and then add the new address.
Example: 8453 UV Vis Diode Array Spectrophotometer
Highlight the selected instrument and choose delete. (Please see figure 5a.) Then select 8453 and choose Add.  You can then enter the address 192.168.254.11 which matches the G1369x LAN card

Figure 5a.

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<u>**Appendix II:**</u>

**Using Telnet to Set an IP address for the Agilent LAN Card (G1369A : G1369B : G1369C)**

Step1: Enable Telnet Client in Windows 7 or windows 10; it is disabled by default.

  i.   In the Windows search box, type "Turn Windows features on or off…" it will populate under Control Panel and select it. (Please see figure 1b.)

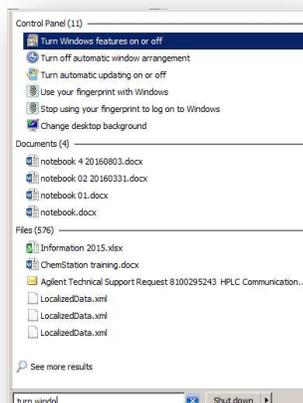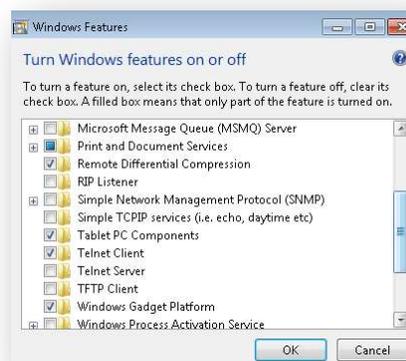  ii.  Check the Telnet Client box and choose OK. (Please see figure 2b.)



Figure 1b.                                    Figure 2b.

Step 2:

  i.     Verify, by inspection, that only one G1369 card is connected to the computer.

  ii.    Set the card's dip switches 5 & 6 to 1. (Initially the default address is necessary to telnet into the card.)

  iii.   All commands are executed by pressing the Enter key.

  iv.    Enter the command telnet, followed by the address. (i.e. telnet 192.168.254.11) The reply will be Agilent Technologies TalkToLab. (Please see figure 3b & 4b.)

  v.     The forward slash command, '/' identifies the card and current address. (Please see figure 5b.)

  vi.    Enter the command ip followed by the desired address. The command 'ip' sets the new address.  (Please see figure 6b.)

  vii.   Enter the forward slash to verify that the address has been set. (Please see figure 7b.)

  viii.  Enter quit. The 'quit' command saves the address. (Please see figure 8b.)

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ix.      On the G1369 card, set the dip switch 5 to on and all others to off.  Make changes to the workstation if necessary.  Once you restart everything, you can ping the stored address. (Please see figure 9b.)

❖  In this example, I am using 10.1.1.100 for illustration purposes.  You may be using this address for a variety of reasons, as it conforms to the IANA private network reserved addresses.  It is more likely that you will be using something like 192.168.254.12 etc. because another G1369 card is using 192.168.254.11.



Figure 3b.



Figure 4b.



Figure 5b.

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Figure 6b.



Figure 7b..



Figure 8b.



Figure 9b.

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