

Waters[®] 8-port Serial Hub Support Version 2.0

This document provides supplemental product information for the Avocent[®] Ethernet multi-interface serial hub (ESP[™]-8 MI), and describes how to install and configure the hub for operation with Waters[®] Empower[™] Software. This 8-port serial hub supports Windows[®] 7, Windows Vista[™], and Windows XP operating systems. It serves as a standalone modular replacement for the Avocent Equinox SST-8 multiport serial adapter card, for most serial-to-Ethernet signal conversion applications.

Note: This driver was updated to add support for Windows 7 systems. Existing Empower build 1154 or Empower 2 users on Windows XP or Windows Vista systems do not need to update their ESP-8 driver.

Waters 8-port serial hub support features

The 8-port serial hub support kit contains the Avocent ESP-8 MI Serial Hub, cables and connectors for making serial connections to the hub, and the Waters ESP-8 Empower Utility (on a disc) for installing and configuring the ESP-8 software components on an Empower acquisition node.

8-port serial hub

The 8-port serial hub is a standalone device that uses a Category 5 (CAT 5) crossover cable to connect to the network interface card (NIC) of your Empower acquisition node. It provides 8 serial ports for RJ-45 input connections leading from serial instruments or devices, such as the Agilent 6890 GC. For additional product information and specifications, see the serial hub manufacturer's documentation that accompanies the product.

Note: This product is not intended for use in a clinical testing environment that requires IVD certification.

Waters ESP-8 Empower Utility

The Waters ESP-8 Empower Utility is a software application that allows you to configure an Empower acquisition node to use the 8-port serial hub. The utility prompts you for the information required to install (or uninstall) the ESP-8 device driver and to configure system settings.



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Product support

The 8-port serial hub supports the software, hardware, and cabling listed in the following sections.

Empower software

The 8-port serial hub supports these builds of Empower software:

Empower 3

- English (all releases)
- Japanese, Chinese, and Korean

Empower 2

- English (all releases)
- Japanese, Chinese, and Korean (Feature Release 3 [FR3] minimum, required)

Empower, build 1154

- English (Service Pack G [SP G] minimum, required)

Instruments

Instrument support for the 8-port serial hub complies with the Empower software compatibility standards for these instruments:

- Agilent 5890 GC
- Agilent 7673 GC Autosampler
- Agilent 6890 GC (all models, including 6890N)
- Agilent 7694 Headspace Sampler (G1289B and G1290B)
- Agilent A1100 LC modules (but not A1200 modules, and not Diode Array Detector [DAD])
- Waters busSAT/IN module
- Waters 474 Fluorescence Detector

Exception: The Agilent 6850 GCs (serial numbers \leq US0003200) are not currently supported by the 8-port serial **hub**. This range of 6850 GCs require the 8-port serial **card** to connect to an Empower acquisition Personal Workstation, LAC/E³² module, or acquisition client.

Cabling and configuration

Important: The internal wiring of the 8-port serial hub differs from that of the 8-port serial card. Although you can use the same 25-foot RJ45 cables, the 8-port serial hub uses different adapters to communicate with the supported instruments. Since the adapters are different, be sure to check the part numbers printed on the adapters against the corresponding part numbers in the following table.

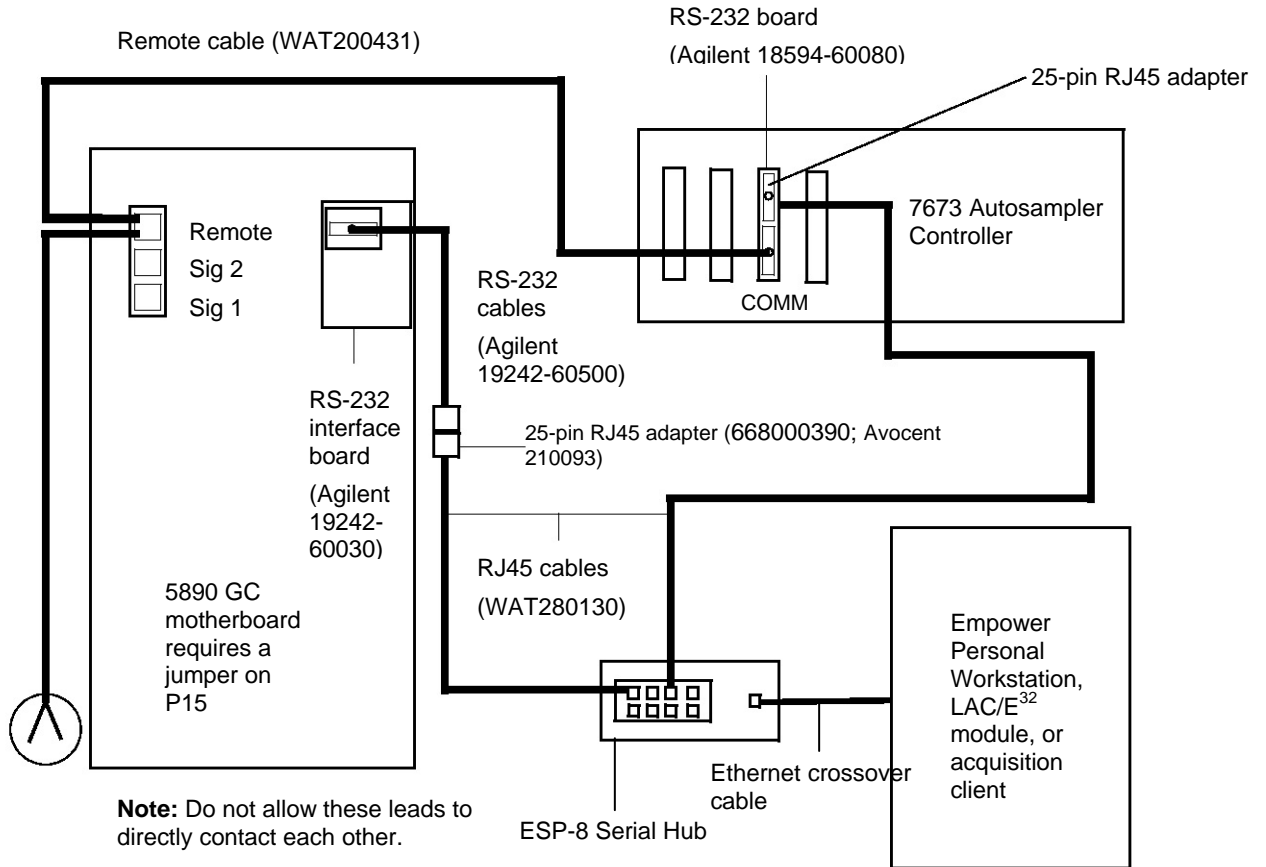
Cables and connectors included in the serial hub kit:

Cable or connector	Instrument	Waters part number	Avocent part number
RJ45 to DB9F (DCE) connector (4)	6890 GC, A1100 LC	668000389	210095
25-foot RJ45 cable (4)	All	WAT280130	690253
GC5890 Remote Event cable (2)	5890 GC, 7673 ALS Controller	WAT200431	-
RJ45 to DB25F (DCE) connector (4)	5890 GC, 7673 ALS Controller	668000390	210093
Shorting connector 1 CTR pin (2)	5890 GC	WAT072940	-
RJ45 to DB9M (DTE) connector	474 Fluorescence detector, busSAT/IN	668000391	210094

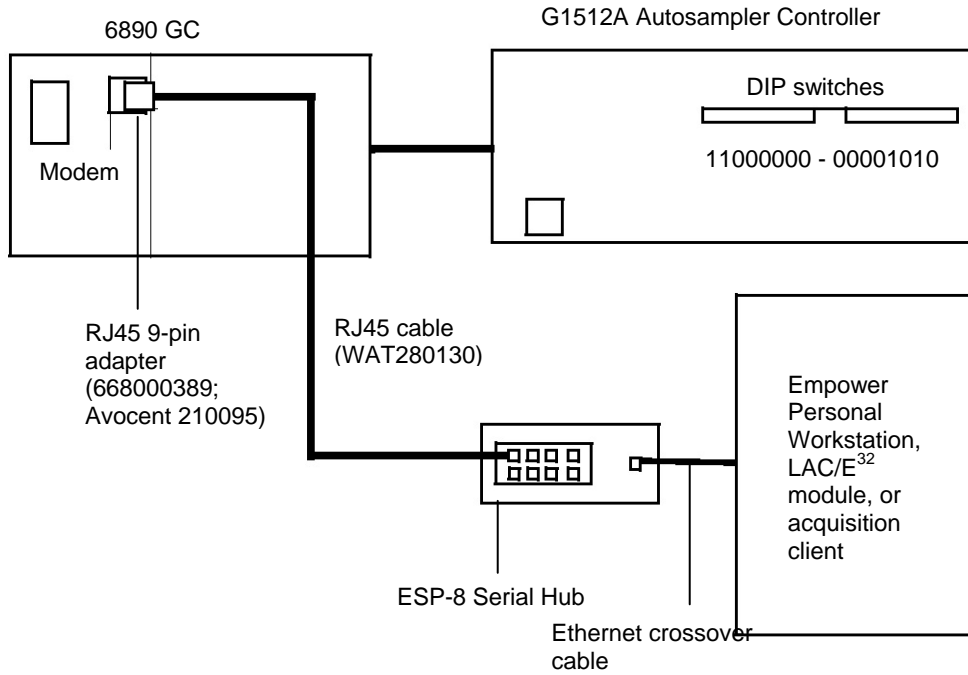
Recommendation: Use a CAT 5 crossover cable if you are connecting the serial hub directly to the instrument LAN.

The following illustrations show how to use these cables and connectors to connect the serial instruments to an Empower acquisition node.

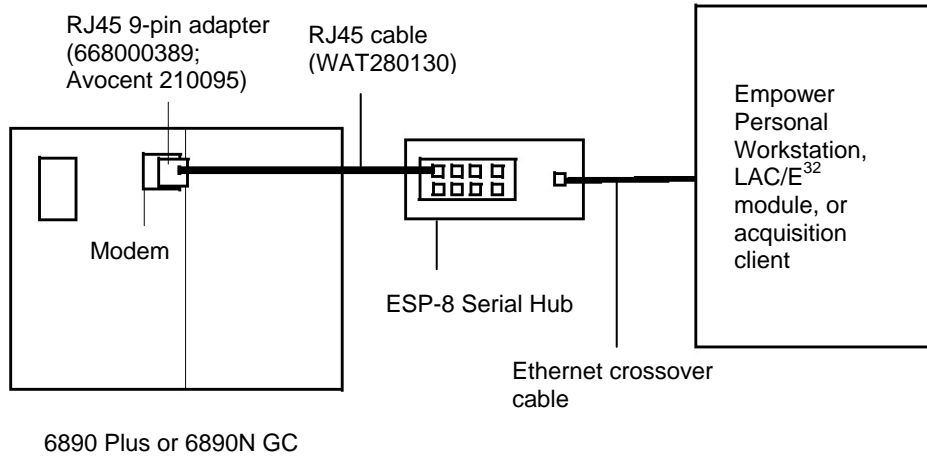
Connecting an Agilent 5890 GC and 7673 controller to the ESP-8 hub:



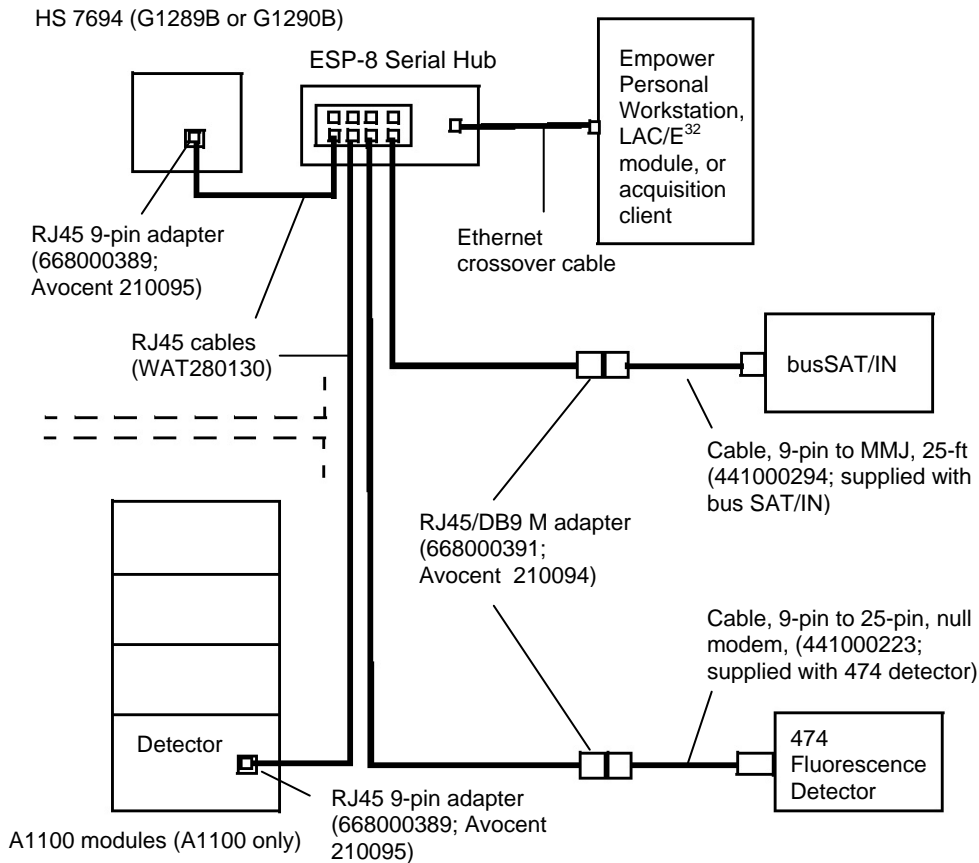
Connecting a 6890 with a G1512A controller to the ESP-8 hub:



Connecting a 6890 Plus GC or 6890N GC to the ESP-8 hub:



Connecting other supported serial equipment to the ESP-8 hub



Installation prerequisites

Before you install and configure the serial hub, ensure the Empower acquisition node (Empower Personal Workstation, LAC/E³² Acquisition Server, or acquisition client) and the hub meet the installation prerequisites described below.

Note: This driver was updated to add support for Windows 7 systems. Existing Empower build 1154 or Empower 2 users on Windows XP or Windows Vista systems do not need to update their ESP-8 driver.

Verifying availability of COM ports 3 through 10

Empower requires COM ports 3 through 10. Although these ports are typically reserved for communication devices, they can possibly be assigned to some other function, such as remote troubleshooting. If any of these ports are already in use, you will need to reassign them to COM ports higher than 10. You can check the port assignments using Device Manager.

To verify ports are available for the ESP-8 Empower Utility:

1. Open My Computer, and click Manage.
2. Click Device Manager > Ports, and then determine if ports 3 through 10 are unassigned.

Requirement: If any of ports 3 through 10 are assigned, continue with step 3 to reassign them.

3. Right-click an assigned port and select Properties.
4. Select Port Settings, and click Advanced.
5. For Setting, change the port number to a value outside the port 3 through 10 range, and then click OK.
6. Repeat steps 3 through 5 for any additional assigned ports in the 3 through 10 range.

Verifying no existing serial card driver is installed

If the Empower acquisition node was previously configured to support an 8-port serial card and both the serial card and driver are already installed on the node, remove both the card and the driver.

To remove the serial card driver using the serial card:

1. Install the 8-port serial card in the computer.
2. Click Device Manager > Multiport Serial Adapter.
3. Right-click Multiport Serial Adapter > Properties.
4. Select the Driver tab, and click Uninstall.
5. Power-off the computer, and remove the serial card.

Rationale: Doing so prevents the native driver from being reinstalled when you reboot.

If only the serial card driver is installed (as in the case of a LAC/E³² module), the driver can remain in the system, but you must remove the second IP address from the instrument LAN network card before installing the serial hub driver.

To remove the secondary (alternate) IP address:

1. From the Control Panel, double-click Network Connections.
2. Right-click the instrument LAN bridge and select Properties. View the TCP/IP properties.
3. Delete the alternate address (for example, 64.1.1.1), leaving only one IP address associated with the instrument LAN.

Verifying firewall protection is disabled or an exception has been added

Before installing and configuring the 8-port serial hub, you must either disable the firewall for the instrument LAN card or add an exception for the ESPxin.exe program.

Restriction: Perform one of these actions, but not both.

Tip: If you choose to disable firewall protection, you can reenable it after the serial hub installation is complete.

Disabling the firewall

To disable the firewall on Windows XP:

1. Right-click My Network Places and select Properties.
2. Right-click the instrument LAN and select Properties.
3. On the Advanced tab, click the Settings button.
4. In the Windows Firewall dialog box, click the Advanced tab.
5. Clear the instrument LAN connection check box, and then click OK.
6. Once installation is complete, follow steps 1 through 4, and then select the instrument LAN connection check box and click OK to reenable the firewall.

To disable the firewall on Windows 7:

1. From the Control Panel, double-click Windows Firewall.
2. In the left-hand pane, select "Turn Windows Firewall on or off".
3. Select the appropriate Windows Firewall setting to disable the firewall.
4. Click OK.
5. Once installation is complete, follow steps 1 and 2, and then select the appropriate Windows Firewall setting to enable the firewall.

Adding an exception

To add an exception for the installation program on Windows XP:

1. Right-click My Network Places and select Properties.
2. Right-click the instrument LAN and select Properties.
3. On the Advanced tab, click the Settings button.
4. In the Windows Firewall dialog box, click the Exceptions tab.
5. Click Add Program.
6. In the Add a Program dialog box, click Browse, then locate and select the Espxin.exe program in the local folder that contains the unzipped Avocent install files.
7. Click OK. Espxin.exe now appears in the list.
8. Click OK, and then click OK.

To add an exception for the installation program on Windows 7:

1. From the Control Panel, double-click Windows Firewall.
2. In the left-hand pane, select "Allow a program or feature through Windows Firewall".

3. Click "Allow another program".
4. In the Add a Program dialog box, click Browse, then locate and select the Espxin.exe program in the local folder that contains the unzipped Avocent install files.
5. Click Add, and then click OK.
6. When Espxin.exe appears in the list, ensure the name and the appropriate network are selected.
7. Click OK.

Verifying the hub is in its default state (initialized)

If the hub you are installing was used in a previous configuration, you must reinitialize the hub to restore its default state before you can install and configure it to operate with an Empower acquisition node. To ensure the hub is in its default state, power-on the hub and press the INIT button on its front panel (see the Troubleshooting section at the end of this document for details).

Installation

To install the 8-port serial hub and the Empower ESP-8 Serial Hub Support, first unpack the hub and connect it to the serial instruments, the Empower acquisition node, and the AC power source. Once the hub is powered-on, you can install and configure the ESP-8 software on the Empower acquisition node.

Installing the 8-port serial hub and serial devices

To install the 8-port serial hub hardware:

1. Connect the hub to the Empower Personal Workstation, LAC/E³² module, or acquisition client.
2. Connect the serial devices to the hub's serial ports using the appropriate cables and connectors (see Cabling and configuration, above).
3. Connect the AC power cord to the appropriate power source, and power-on the hub.

Installing the ESP-8 software

To install the ESP-8 software on the Empower acquisition node:

1. On the acquisition node, create an appropriately named folder.

Example: C:\ESP-8

Tip: This folder name will be used as an example throughout the rest of this procedure.

2. Insert the Waters Empower ESP-8 Serial Converter Support disc.

3. Double-click the appropriate install file for your operating system, then unzip the files to the C:\ESP-8 folder you created in step 1.
 - Windows 7 (64-bit): Double-click esp_install_win7_x64_6.0.0.3.exe.
 - Windows Vista: Double-click esp_install_vista_6.0.0.3.exe.
 - Windows XP: Double-click esp_install_xp2k3_6.0.0.3.exe.
4. Copy the ESPConfig.exe file to the C:\ESP-8 folder you created in step 1.

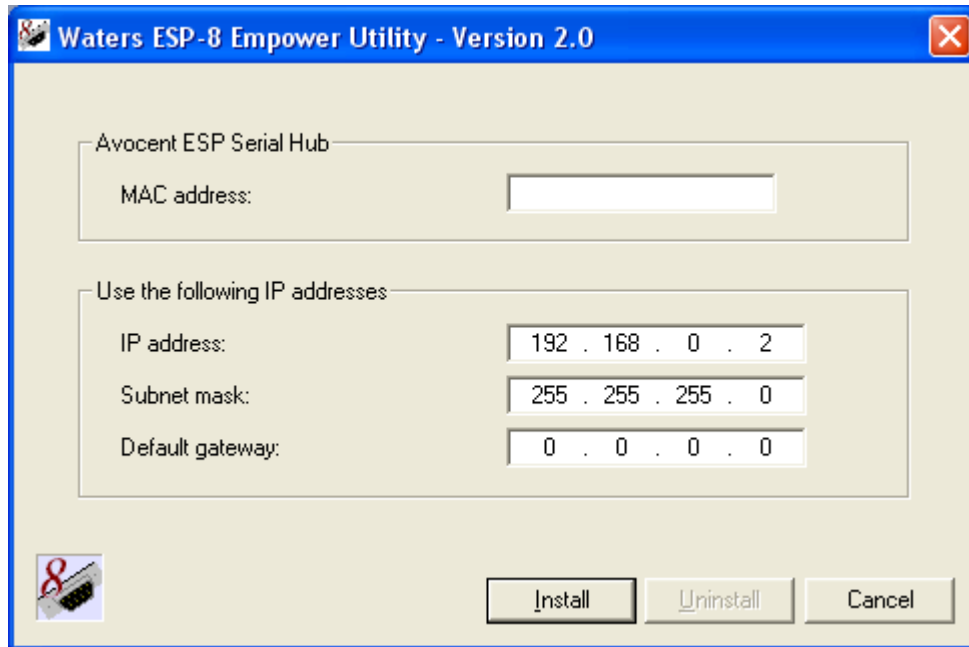
Tip: If this is a new installation, reinitialize the hub by inserting a pin in the INIT hole on the front of the ESP hub box, then press and hold the button on the front until the LEDs stop blinking and you hear a click. This ensures that the hub will not have a previously-assigned IP address.

If this is not a new installation, there is no need to reinitialize the serial hub.

5. From the C:\ESP-8 folder, double-click ESPConfig.exe to run the installation program.

Tip: If ESPConfig.exe is not in the same folder as the esp_install files, the program prompts for the location of the ESP-install.exe file. Locate the ESP-install.exe file in the C:\ESP_8 folder and click Open.

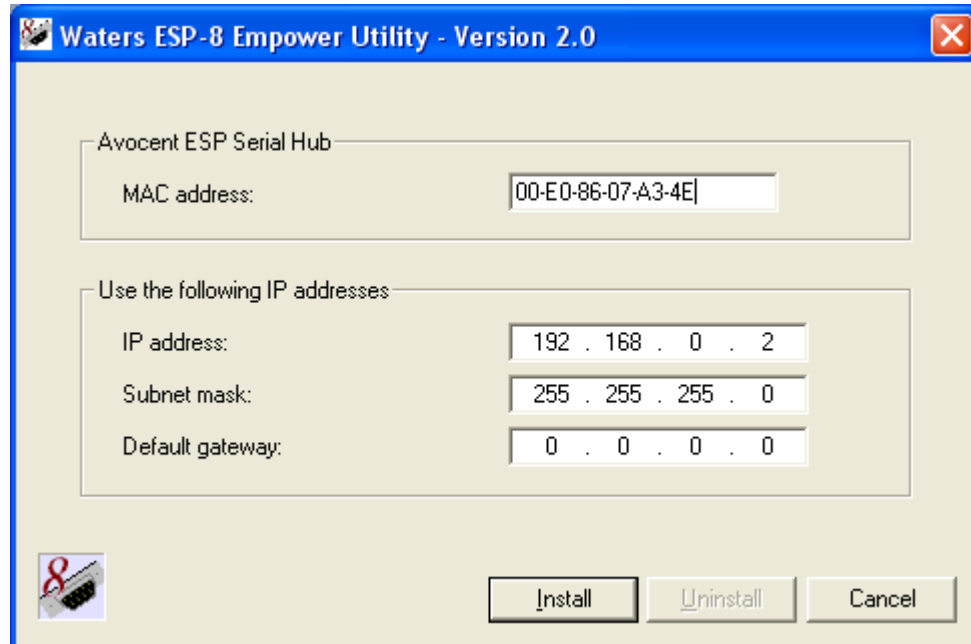
Result: The Waters ESP-8 Empower Utility dialog box appears.



6. Enter the MAC address (Ethernet) as it appears on the front panel of the ESP-8 module.
7. Verify the default values that appear for the IP address, Subnet mask, and Default gateway are acceptable.

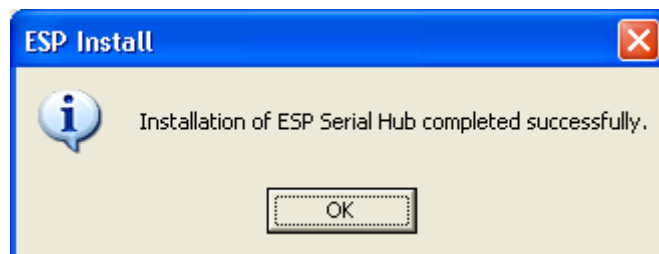
Tip: These fields all have default values that are valid most of the time when plugging the hub directly into a computer's local network interface card. For example, with a

computer's local NIC configured with an IP address of 192.168.0.1 and Subnet mask of 255.255.255.0, any unused address from 2 to 254 on the 192.168.0 subnet can be valid. If the local NIC is configured for a different subnet, you can change the NIC's IP address to 192.168.0.1 or to another address that reflects the NIC's subnet.



8. Click Install.

Result: Configuration of the ports occurs, and a message appears informing you of the successful installation.



9. Click OK.

Result: The task bar on the desktop informs you that new hardware, the Avocent ESP Port, is found.

Verifying the Installation

To verify that the ESP-8 software was successfully installed and configured:

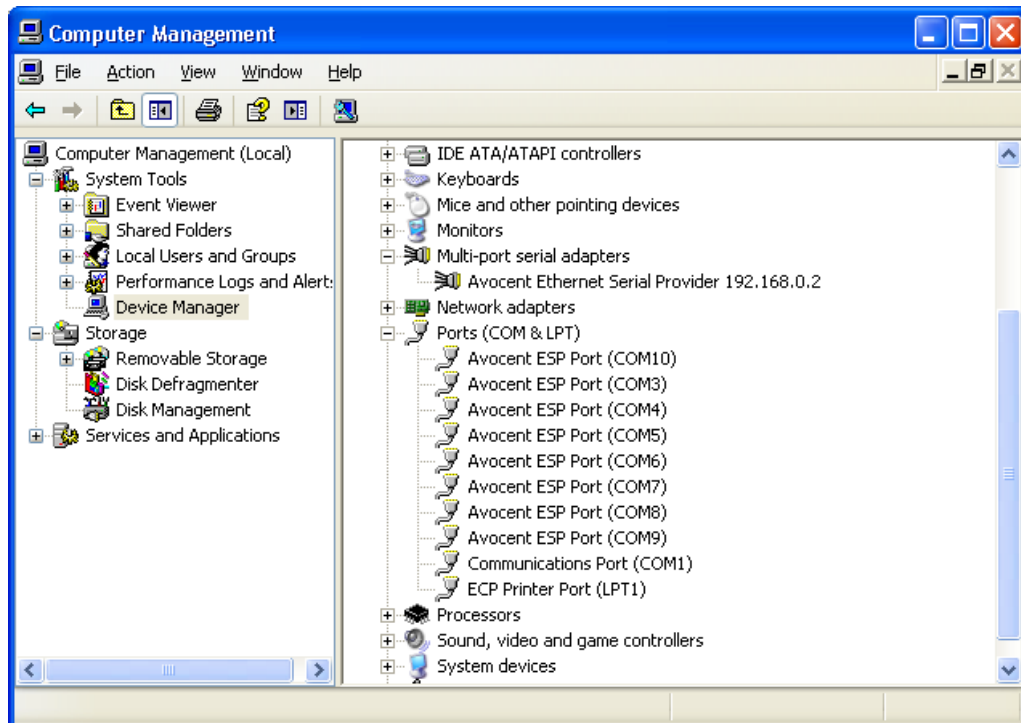
1. Close the installation windows, and navigate to Computer Management.

2. Select System Tools > Device Manager.

Result: On the right side of the screen, the Multiport Serial Adapter list entry displays “Avocent Ethernet Serial Provider 192.168.0.2”, and ports 3 to 10 appear under Ports (see figure below).

Tips:

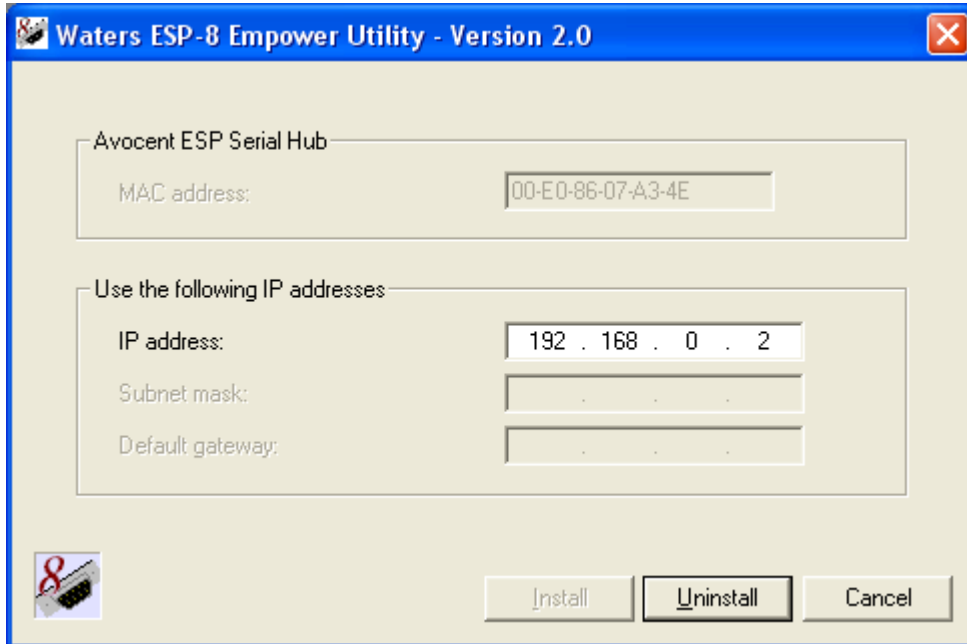
- If ports 3 through 10 do not appear, restart the computer.
- It is normal for COM10 to be listed first due to the Windows sorting scheme. However, this does not mean that the first physical ESP-8 port is mapped to COM10. To check port mapping, open the C:\ESP-8\ESP-Summary.log file. This file indicates that ESP physical ports 1 through 8 are mapped to COM ports 3 through 10.
- If the starting COM port is not COM3, right-click “Avocent Ethernet Serial Provider 192.168.0.2” and click Properties. On the ESP tab, select COM3 (even if it shows as “Used”), and then click OK. The COM ports are now correctly assigned.



Uninstalling the ESP-8 software

To uninstall the ESP-8 software:

1. Double-click the ESPConfig.exe file to launch the Waters ESP-8 Empower Utility.



2. Click Uninstall.

Troubleshooting

Unsuccessful installation

If a message directs you to uninstall and reinstall the hub, double-click the ESPConfig.exe file to launch the Waters ESP-8 Empower Utility. Click Uninstall to remove the ESP-8 software, and then repeat the steps in the Installation section to reinstall and configure the ESP-8 software.

If the hub was previously installed

If the hub you installed was used in a previous configuration, you must reinitialize the hub to restore its default state before you can install and configure it to operate with an Empower acquisition node. To ensure the hub is in its default state, power-on the hub, and press and hold the INIT button on the hub's front panel.

When you first press the INIT button, the ONLINE LED begins to flash, confirming the INIT button was pressed. Continue to press the INIT button for 12 seconds. During this interval, the LED flashes more rapidly and then stops flashing. All nonvolatile information is then reset to the factory defaults, and the hub immediately reboots.