SCIEX
The Power of Precision

PA 800 Plus Empower™ Driver

Release Notes

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Contents

Introduction 1

This guide provides information about, and procedures for, installing the PA 800 Plus Empower™ Driver. The PA 800 Plus Empower™ Driver enables data acquisition from a PA 800 Plus Pharmaceutical Analysis system using the Waters Empower™ 3 (FR4) software. The PA 800 Plus Empower™ Driver must be installed on the same computer as the Waters Empower™ software.

Requirements 2

Operating System Requirements

This version of the software is compatible with Microsoft Windows 10, 64-bit. For computer requirements, refer to the section: Computer Requirements.

Computer Requirements

The computer must meet the minimum requirements for Microsoft Windows 10, 64-bit software. For more details, refer to the documentation supplied by Waters.

A free USB port is also required.

Validated Controller Configuration

Table 2-1 Validated Controller Configuration

Item	Details
Operating system	Microsoft Windows 10 Enterprise 2016 LTSB
Additional software	• Oracle client version 12.1.0.2.0 for 32-bit • Waters Empower™ software • National Instruments Driver, version 19
CPU	**Minimum:** CPU for Windows 7 or 10 Intel 2 Duo, E6400 2.13 GHz **Recommended:** Intel Core 2 Duo, E8400 3.0 GHz
Random access memory (RAM)	**Minimum:** 4 GB **Recommended:** 8 GB
Hard drive	**Minimum:** 25 GB
Free disk space	2 GB for Waters Empower™ software

Table 2-1 Validated Controller Configuration (continued)

Item	Details
Monitor	**Minimum:** 1024 × 768 resolution (except for LAC/E modules) **Recommended:** 1920 × 1080 resolution for client
Optional control interfaces	8-port serial hub
Ethernet adapters	1 Ethernet adapter for network connectivity **Minimum:** Greater than 100 Mbps **Recommended:** 1 Gbps

Required Software

Waters Empower™ 3 software must be installed. The PA 800 Plus Empower™ Driver was validated with the Waters Empower™ 3 (FR4) software.

During Early Access Customer Evaluation, customers evaluated the PA 800 Plus Empower™ Driver and found it to be fully compatible with Empower™ 3 (FR2) software or higher.

For additional data processing functions:

- To perform qualitative analysis calculations for SDS-MW and cIEF applications, the Waters Empower™ GPC software is required.
- To perform standard pharmacopoeia calculations such as resolution or noise and drift, the Waters Empower™ System Suitability software is required.

Contact a Waters sales representative to purchase a license for either software.

Required PA 800 Plus Firmware Version

The PA 800 Plus Empower™ Driver was validated on systems with the following versions of the PA 800 Plus firmware. Refer to Table 2-2.

Table 2-2 Validated PA 800 Plus Firmware Versions

PA 800 Plus System	Firmware Version
Non-ROHS certified PA 800 Plus system	10.2.3
ROHS certified PA 800 Plus system	10.2.5-R
CESI 8000 Plus system	10.3.7-R

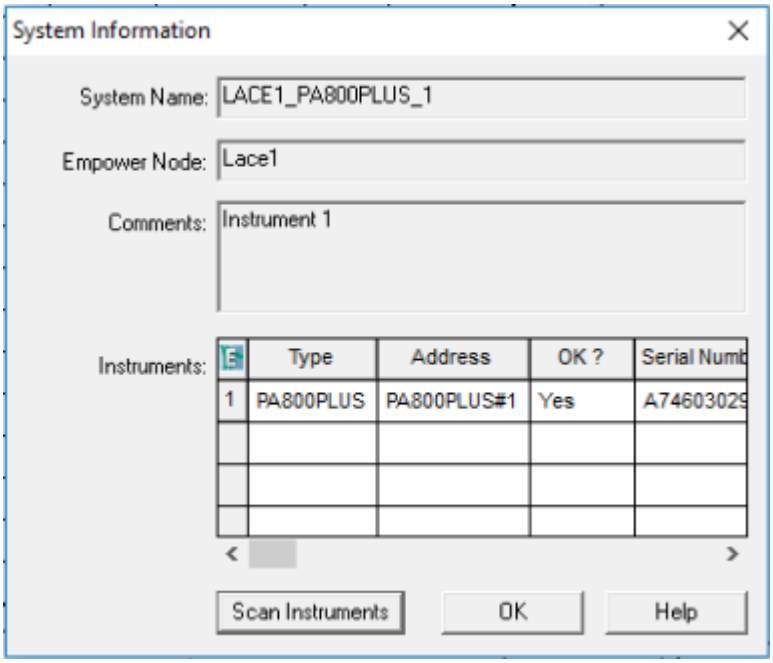
If the PA 800 Plus firmware is not one of the validated versions, it must be upgraded to make sure that the PA 800 Plus Empower™ Driver is compatible with Waters Empower™ software and the SCIEX tools used to perform an operational qualification. Refer to Determine the Firmware Version using the Waters Empower™ Software.

Determine PA 800 Plus System Firmware Version

Determine the Firmware Version using the Waters Empower™ Software

1. Open the Waters Empower™ software and then click **Run Samples**.
2. Select the correct system and click **OK**.
3. Click **View > System**.

Figure 2-1 System Information Dialog



4. Click **Scan Instruments**.

   If the **OK?** column shows Yes, then the driver is communicating with the LAC/E module.
5. Scroll to the right to the **Details** column.

   The firmware version is shown with other details of the system.

Figure 2-2 Firmware Version

	Details
1	Vendor Sciex; Detector PDA; Type PA 800 Plus; SerialNo A746030299; Firmware 10.2.5-R; Software 1.3.0.19319

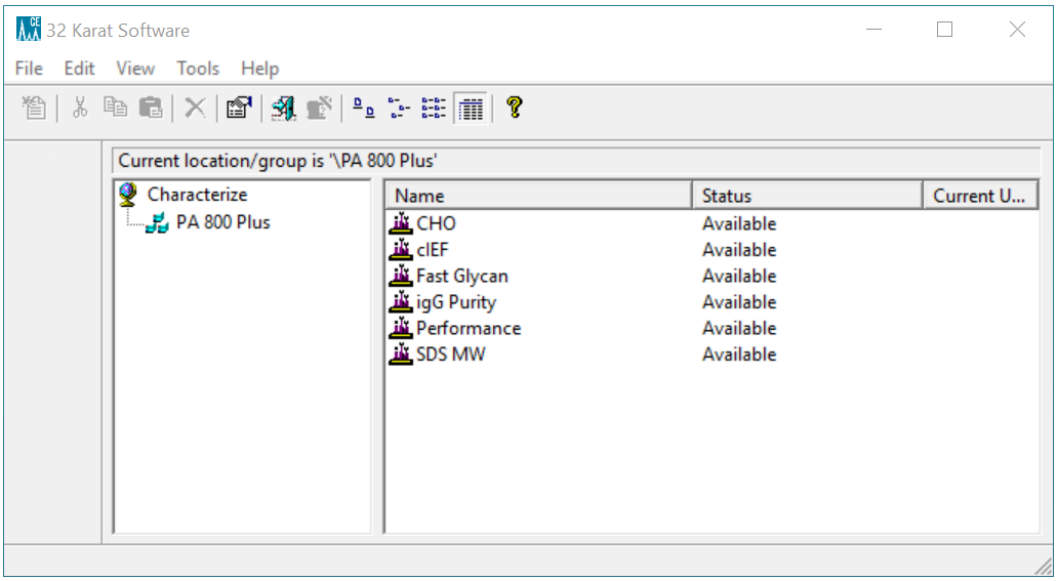
If the firmware must be updated, contact a SCIEX sales representative.

Determine the Firmware Version using the 32 Karat Software

1. Open the 32 Karat software.
2. Select the correct instrument to log on.

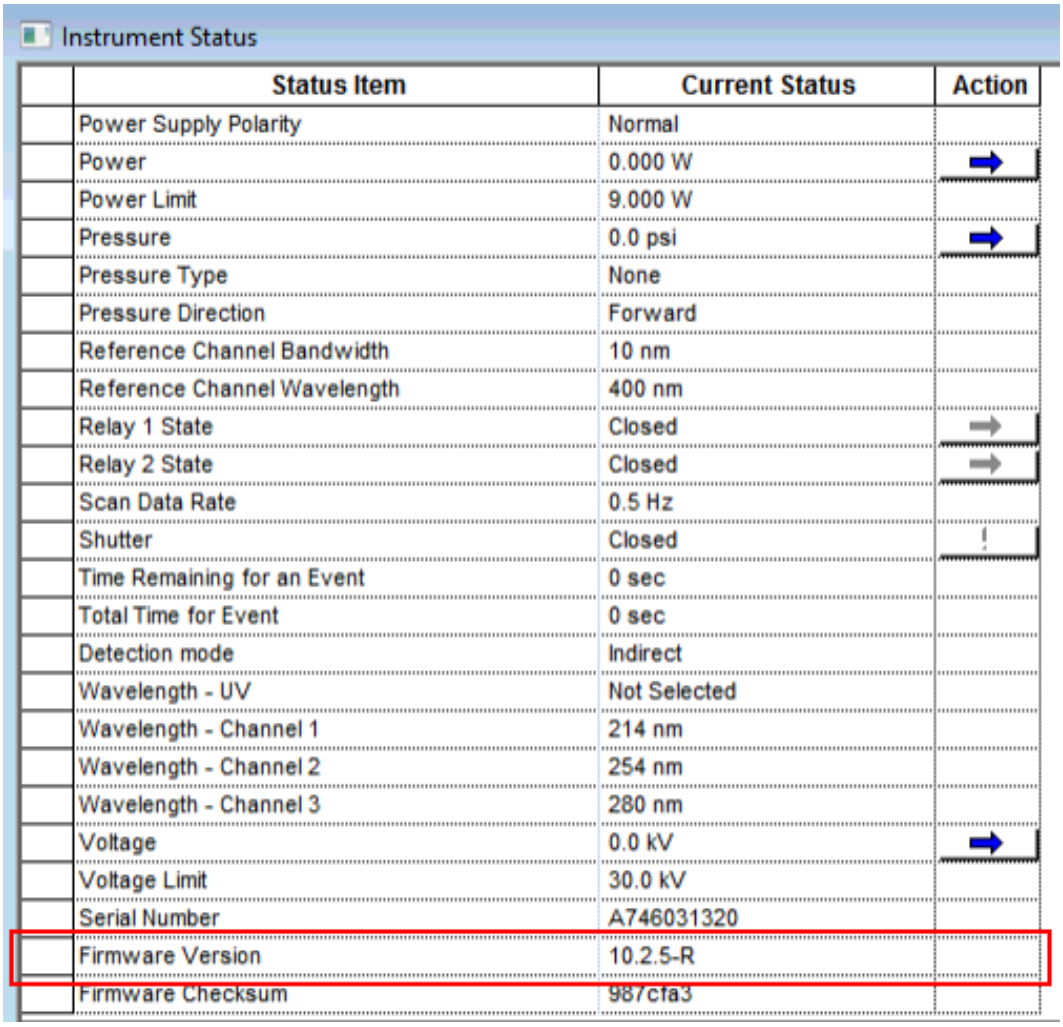
Note: Make sure that the PA 800 Plus system and the controller are communicating.

Figure 2-3 32 KaratSoftware Window



3. Click **Control > Instrument Status > View**.
4. Scroll down to find the firmware version.

Figure 2-4 Firmware Version



If the firmware must be updated, then contact a SCIEX sales representative.

Installation Instructions 3

Check for Previously Installed Drivers

1. Determine whether the Beckman Coulter PACE MDQ Control for Waters Empower driver is installed.
   a. Click **Control Panel > Programs and Features**.
   b. Look for **Beckman Coulter PACE MDQ Control for Waters Empower software**.

      If it is present, uninstall it. Refer to Uninstall the Beckman Coulter PACE MDQ Control for Waters Empower Software Driver.
2. Determine whether the correct version of the National Instruments Software driver is installed.

   Note: The PA 800 Plus Empower™ Driver requires National Instruments Software Driver version 19.0. If another version is installed, then it must be removed.

   a. Click **Control Panel > Programs and Features**.
   b. Look for **National Instruments Software**.

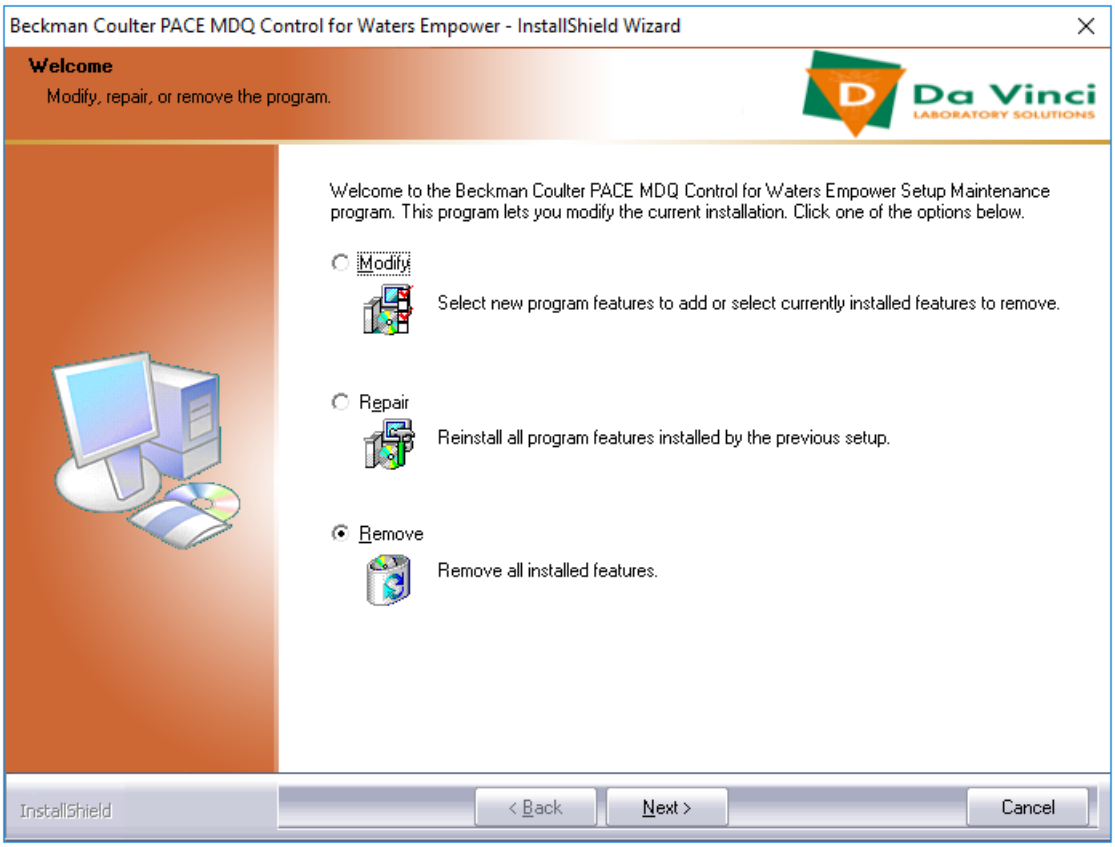
      If the version number is not 19.0 (or no version number is shown), then uninstall it. Refer to Uninstall Previous Versions of the National Instruments Software Driver.

Uninstall the Beckman Coulter PACE MDQ Control for Waters Empower Software Driver

1. Close any Waters Empower™ software programs that are open.
2. Click **Control Panel > Programs and Features**.
3. Click **Beckman Coulter PACE MDQ Control for Waters Empower software** and then click **Uninstall/Change**.

   The InstallShield Wizard window opens.
4. Click **Remove** and then click **Next**.

Figure 3-1 Beckman Coulter PACE MDQ Control for Waters Empower InstallShield Wizard



5. In the message that opens, click **Yes** to remove all features.
6. When the uninstallation is done, click **Finish** to close the InstallShield Wizard window.
7. In the Program and Features control panel, right-click, select **Refresh**, and then make sure that **Beckman Coulter PACE MDQ Control for Waters Empower software** is gone.

   If the driver is still shown in the control panel, then repeat the procedure to uninstall the driver.

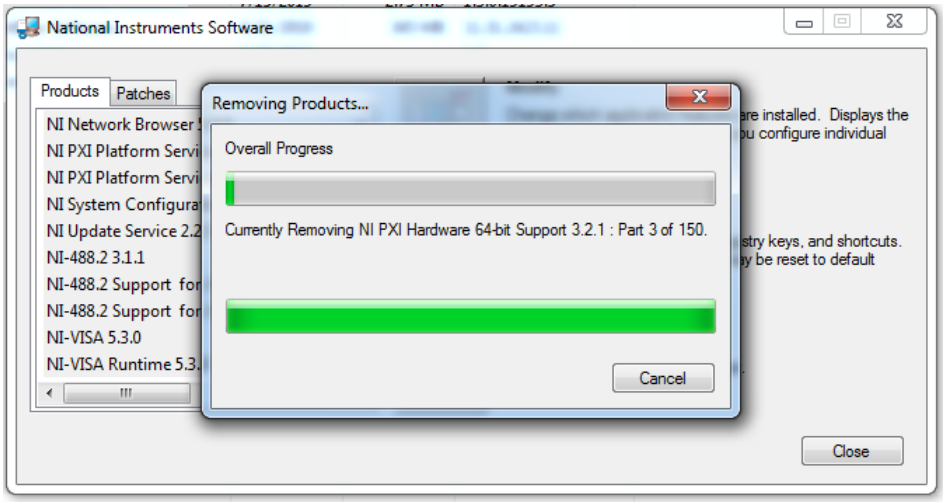
Uninstall Previous Versions of the National Instruments Software Driver

Note: The PA 800 Plus Empower™ Driver requires National Instruments Software Driver version 19.0. If another version is installed, then it must be removed.

1. Click **Control Panel > Programs and Features**.
2. Click **National Instruments Software** and then click **Uninstall/Change**.

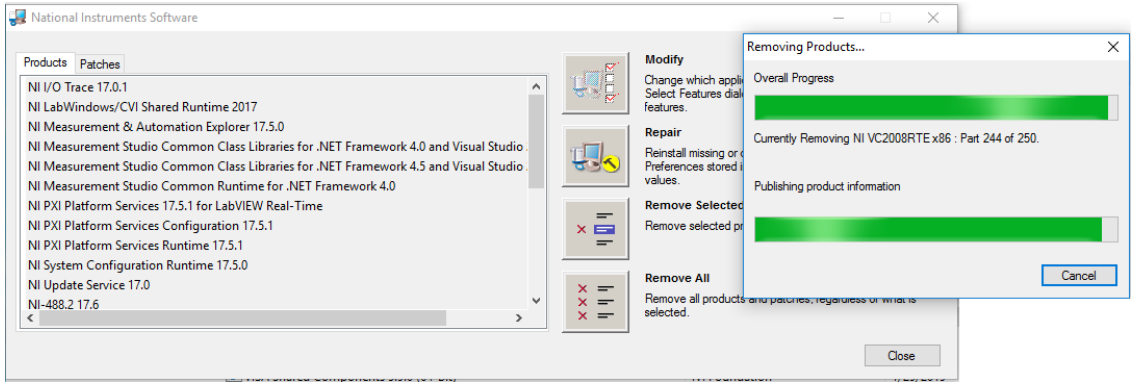
   The National Instruments Software window opens.
3. Depending on the version of the driver that is installed, do one of the following:
   - Hold **Ctrl-Shift**, press the down arrow to select all of the items in the list and then click **Remove**.

Figure 3-2 National Instruments Software Uninstall Dialog



- Click **Remove All**.

Figure 3-3 National Instruments Software Uninstall Dialog



4. When the uninstallation is done, click **Yes** to restart the computer.
5. After the computer restarts, log on.

Install the PA 800 Plus Empower™ Driver

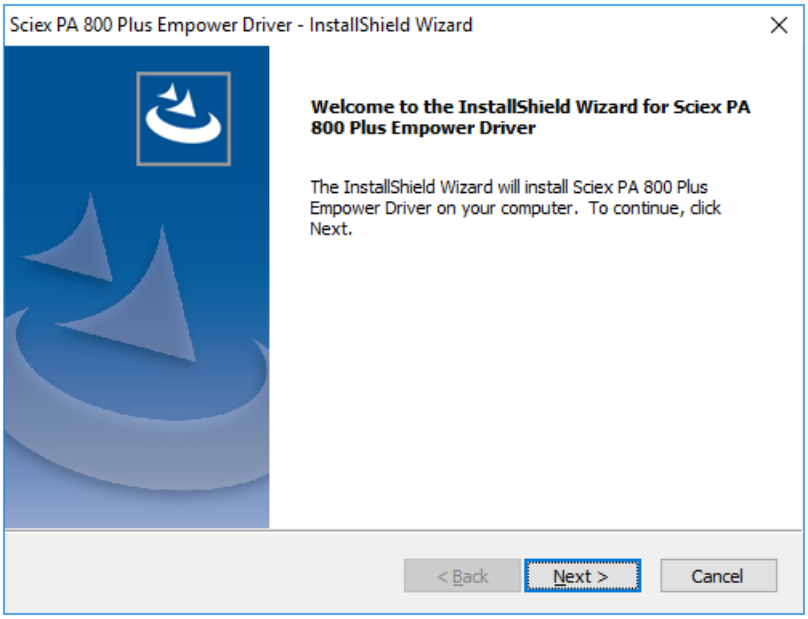
Note: The PA 800 Plus Empower™ Driver must be installed on the Citrix server, if the PA 800 Plus Empower™ Driver is operating under the Citrix environment.

1. Insert the PA 800 Plus Empower™ Driver DVD in the DVD drive.
2. Navigate to the PA 800 Plus Empower Driver V1.3.0 folder and then double-click **setup.exe**.

   The Open File - Security Warning dialog opens.
3. Click **Run**.

   The PA 800 Plus Empower™ Driver InstallShield Wizard opens.

Figure 3-4 Sciex PA 800 Plus Empower™ Driver InstallShield Wizard



4. In the License Agreement page, click **I accept the terms of the license agreement** and then click **Next**.
5. Follow the on-screen instructions to install the software. When prompted, accept the default values. If warnings are shown at the beginning of the installation, then ignore them.

Install the National Instruments Software Driver

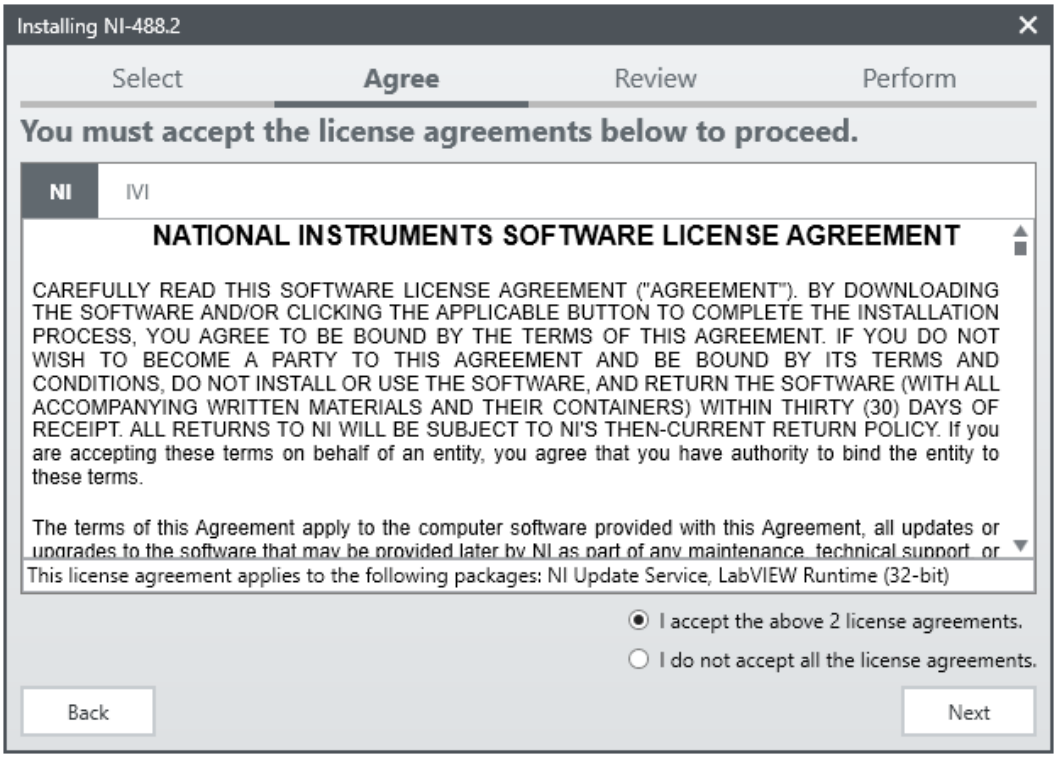
The PA 800 Plus Empower™ Driver requires the National Instruments Software Driver version 19.0.

1. On the PA 800 Plus Empower™ Driver Installation DVD, navigate to the NI-488.2 19.0 Driver folder and then double-click **Install.exe**.

   The Open File - Security Warning dialog opens.
2. Click **Run**.

   The installer checks for license agreements and then opens the following page.

Figure 3-5 NI Package Manager Installation Wizard

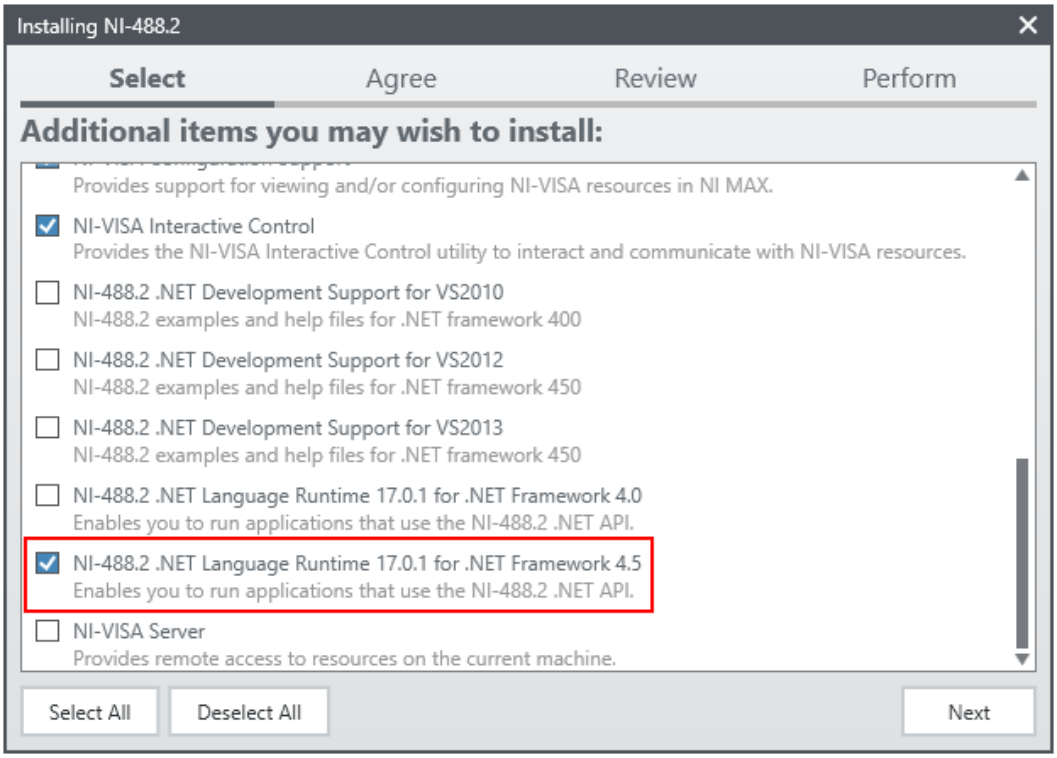


3. Click **I accept the above 2 license agreements.** and then click **Next** until the NI Package Manager page opens.
4. In the **Additional items you may wish to install** list, click **NI-488.2 .NET Language Runtime 17.0.1 for .NET Framework 4.5** and then click **Next**.

CAUTION: Potential Communication Error. Make sure that NI-488.2 .NET Language Runtime 17.0.1 for .NET Framework 4.5 component is selected before clicking OK. If the component is not installed, then the LAC/E module and the PA 800 Plus system will not be able to communicate.

Note: By default, other components are selected in this list. They are also required and should remain selected.

Figure 3-6 Required .NET Components

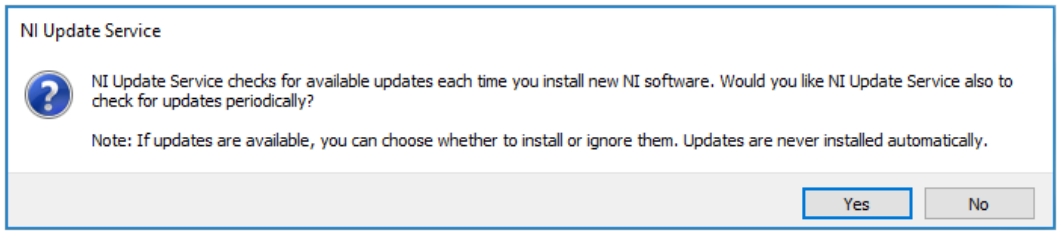


5. In the Agree page, click **I accept the above 2 license agreements.** and then click **Next**.
6. In the next page, click **I accept the above 2 license agreements.** and then click **Next**.

   The installation can take a few minutes.

   When the installation is done, a message about the NI Update Service is shown.

Figure 3-7 NI Update Service Message



7. Click **No**.

8. If installer shows a message about the NI Customer Experience Improvement Program, then click **No, I do not want to participate in the NI Customer Experience Improvement Program** and then click **OK**.
9. Click **Reboot Now** to restart the computer.
10. Log on to the computer.

Note: If a dialog asking to register the software opens, click **Cancel** to dismiss it.

Configure the Waters Empower™ Software 4

Use the following procedures to configure the Waters Empower™ software to work with the PA 800 Plus system.

Change the Pressure Units

The Waters Empower™ software can display pressure in units of psi or millibar. By default, the units are millibar. The pressure units can be changed from the LAC/E workstation or Citrix server.

Use the following procedure to change the units.

1. Log on to the computer as a user with administrator privileges.
2. Close the Waters Empower™ software.
3. Open the Registry Editor window.
   a. Click **Start**, type **R**, and then click **Run**.

      The Run dialog opens.

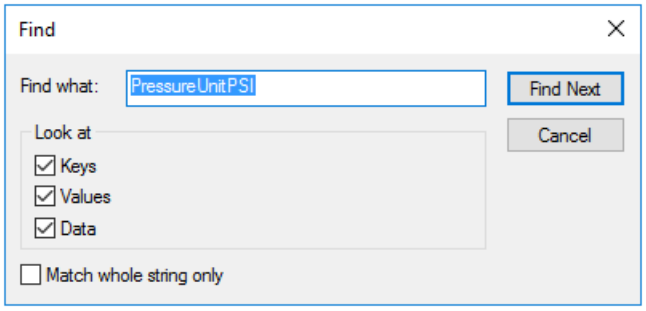
   b. Type **regedit**.
   c. Click **Yes** in the message that appears.

   The Registry Editor window opens.
4. Locate the registry entry for the pressure units.
   a. Click **Edit > Find**.
   b. (Optional) Click the **HK_LOCAL_MACHINE** folder in the tree structure.

      Tip! The search for the entry is much faster when **HK_LOCAL_MACHINE** is selected.

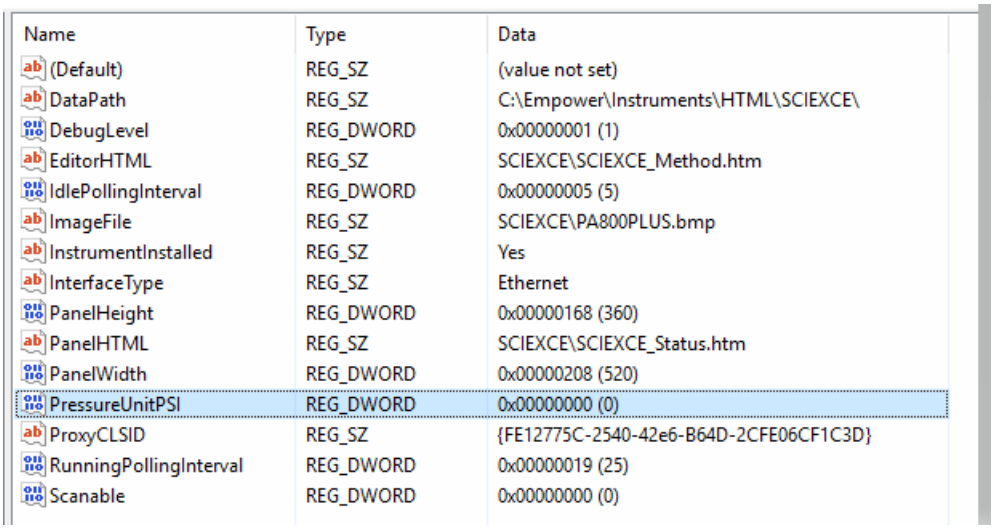
c. In the **Find what:** field, type **PressureUnitPSI** and then click **Find Next**.

Figure 4-1 Find Dialog



The search can take some time. When the key is found, it will be highlighted in the right pane of the Registry Editor window.

Figure 4-2 Registry Editor



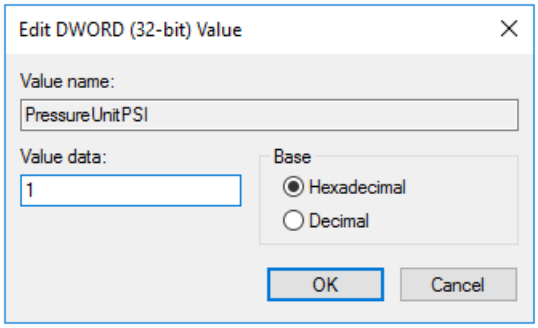
Name	Type	Data
(Default)	REG_SZ	(value not set)
DataPath	REG_SZ	C:\Empower\Instruments\HTML\SCIEXCE\
DebugLevel	REG_DWORD	0x00000001 (1)
EditorHTML	REG_SZ	SCIEXCE\SCIEXCE_Method.htm
IdlePollingInterval	REG_DWORD	0x00000005 (5)
ImageFile	REG_SZ	SCIEXCE\PA800PLUS.bmp
InstrumentInstalled	REG_SZ	Yes
InterfaceType	REG_SZ	Ethernet
PanelHeight	REG_DWORD	0x00000168 (360)
PanelHTML	REG_SZ	SCIEXCE\SCIEXCE_Status.htm
PanelWidth	REG_DWORD	0x00000208 (520)
PressureUnitPSI	REG_DWORD	0x00000000 (0)
ProxyCLSID	REG_SZ	{FE12775C-2540-42e6-B64D-2CFE06CF1C3D}
RunningPollingInterval	REG_DWORD	0x00000019 (25)
Scanable	REG_DWORD	0x00000000 (0)

5. Edit the registry entry.

a. Double-click **PressureUnitPSI**.

The Edit DWORD (32-bit) Value dialog opens.

Figure 4-3 Edit DWORD (32-bit) Value Dialog



b. In the **Value data** field, type the value for the units and then click **OK**.

- **1** for psi
- **0** for mbar

c. Click **File > Exit** to save the changes and close the Registry Editor window.

Configure the Acquisition Server

Note: Set up the acquisition server in the Waters Empower™ 3 (FR4) software before completing the following procedure. For instructions refer to the manufacturer's documentation that came with the software.

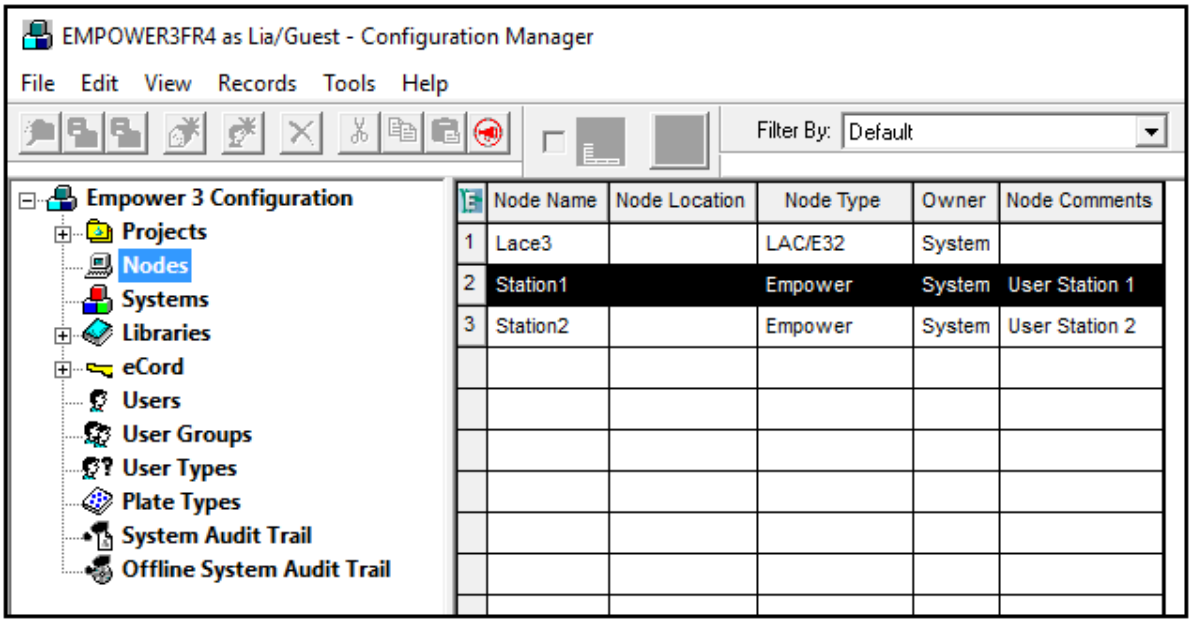
1. Double-click the **Empower** icon on the desktop and log on as a user with administrative privileges.
2. In the Waters Empower™ software Start dialog, click **Configure the System**.

Figure 4-4 Waters Empower™ Software Start Dialog

The Configuration Manager window opens.

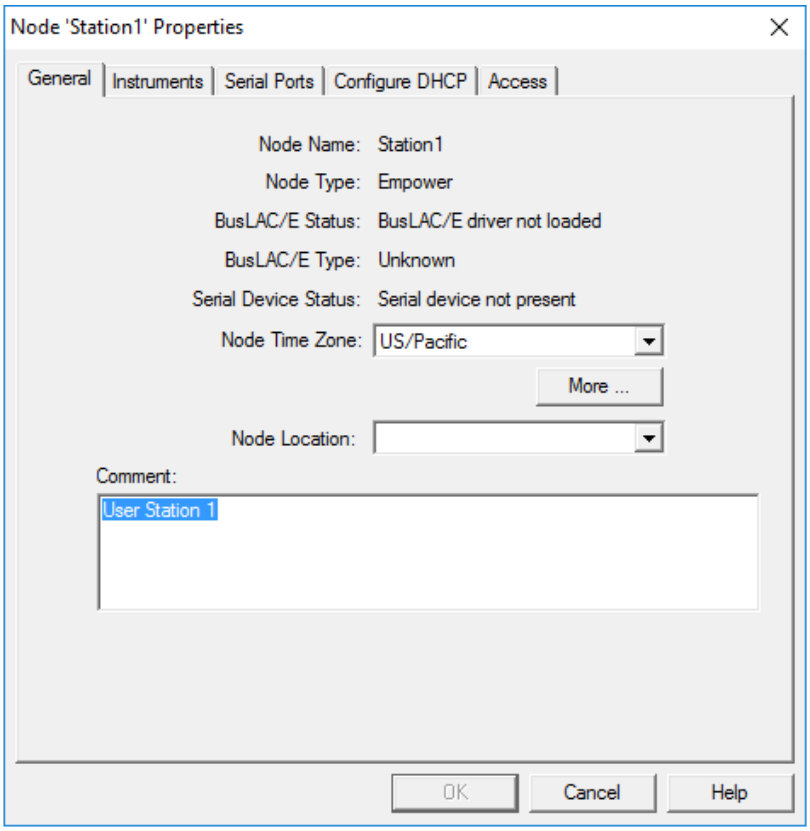
Note: The list of nodes in the following figure will reflect the local Waters Empower™ software configuration.

Figure 4-5 Confguration Manager Window



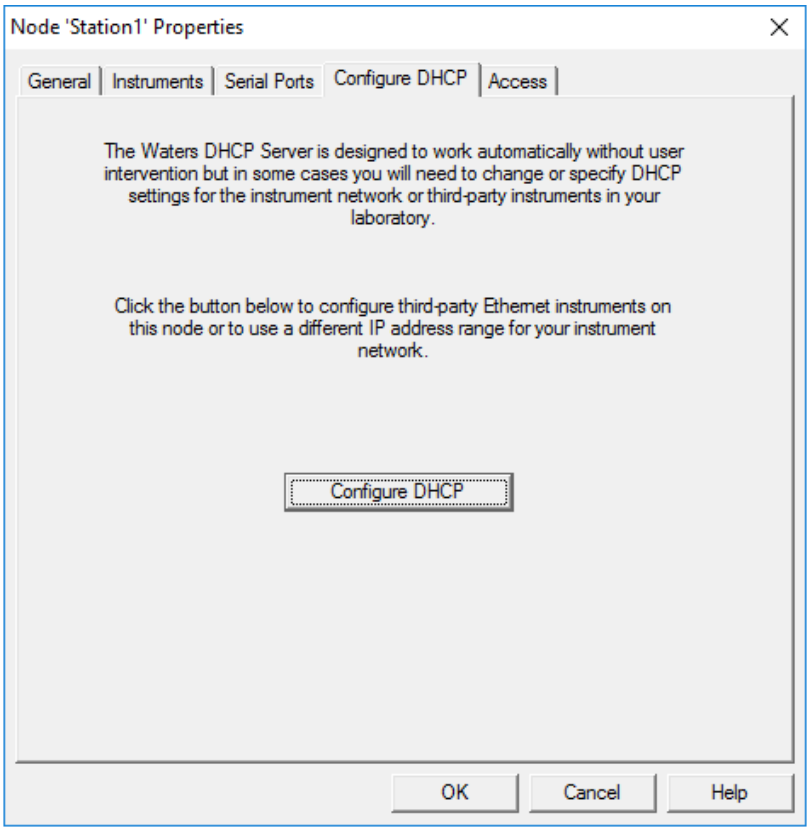
3. In the table, right-click the node to be configured and select **Properties**.

Figure 4-6 Node Properties Dialog, General Tab



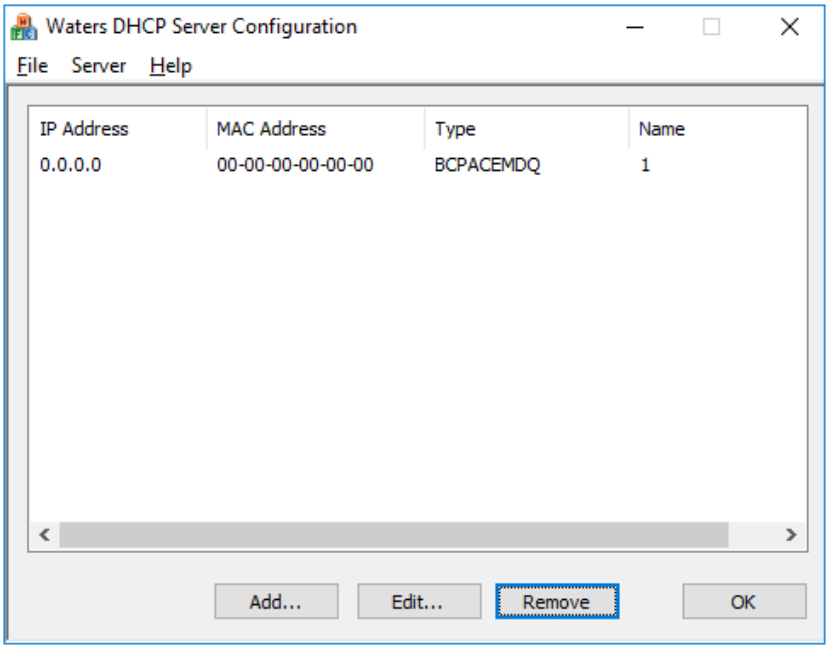
4. Click the **Configure DHCP** tab, and then click **Configure DHCP**.

Figure 4-7 Configure DHCP Tab



The Waters DHCP Server Configuration dialog opens.

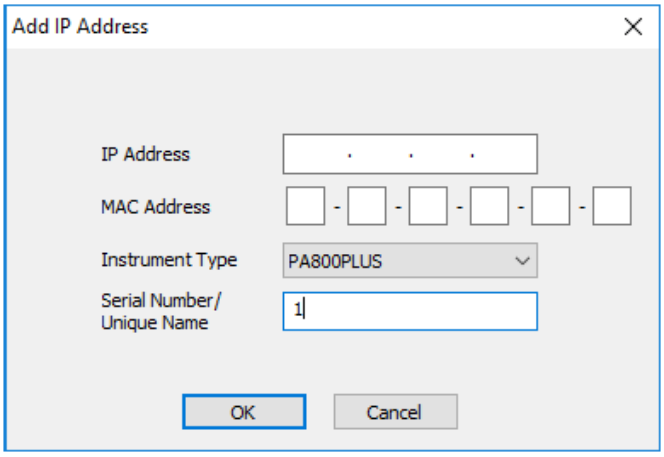
Figure 4-8 Waters DHCP Server Configuration Dialog



5. If the Beckman Coulter PACE MDQ Control for Waters Empower Software Driver was previously installed, then delete any existing CE instruments in the list. Click **BCPACEMDQ** in the dialog and then click **Remove**.
6. Click **Add**.

   The Add IP Address dialog opens.
7. Update the fields in the dialog as follows.

Figure 4-9 Add IP Address Dialog



a. Leave the **IP Address** field blank. It is not required for a PA 800 Plus system.

b. Leave the **MAC Address** field blank. It is not required and is automatically set to 00-00-00-00-00-00.

c. Click **Instrument Type** and select **PA800PLUS** from the list.

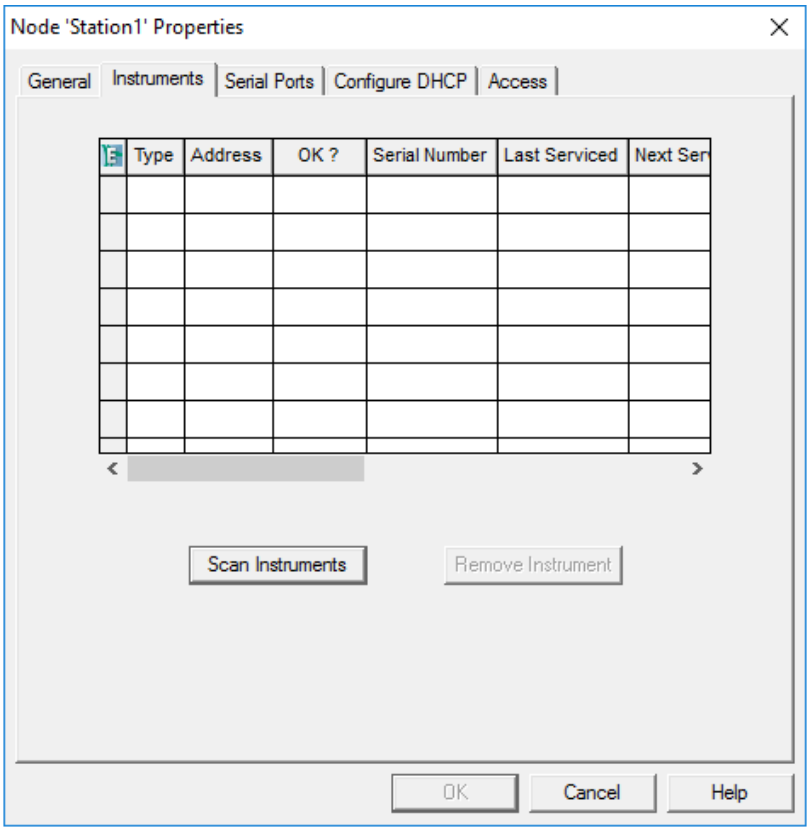
d. In the **Serial Number/Unique Name** field, type **1**.

e. Click **OK**.

If a message about the MAC address is shown, dismiss the message, type any number in the **MAC Address** field, and then click **OK**.

8. If the Beckman Coulter PACE MDQ Control for Waters Empower Software Driver was previously installed, click the **Instruments** tab.

Figure 4-10 Instruments Tab

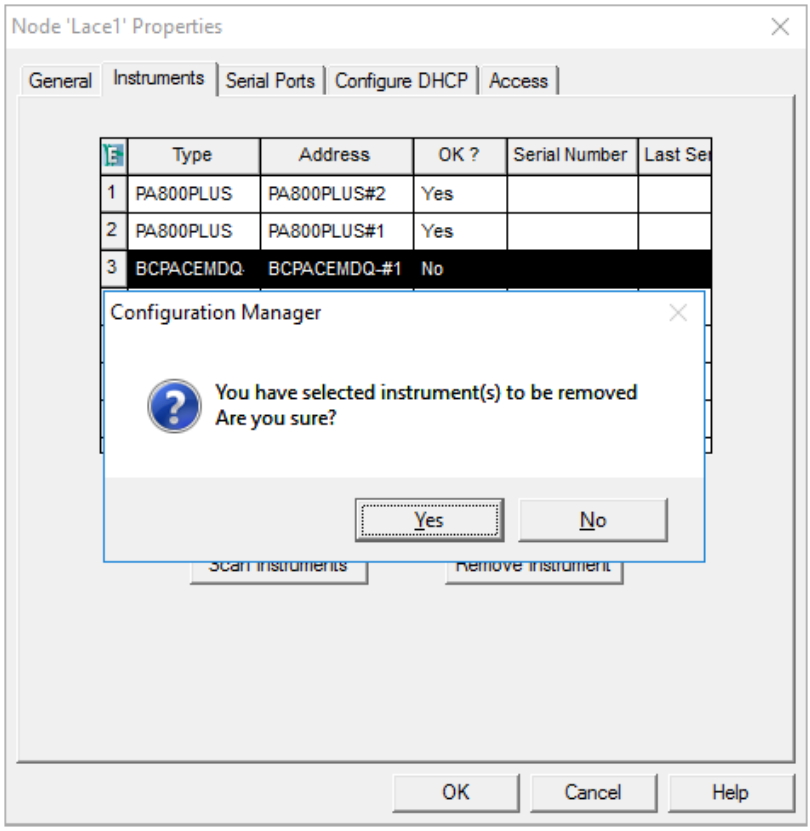


9. Delete any previously configured instruments associated with the Beckman Coulter PACE MDQ Control for Waters Empower Software Driver.

a. Click the row with the instrument to be deleted and then click **Remove Instrument**.

Previously configured instruments have BCPACEMDQ in the **Type** column.

Figure 4-11 Confirmation Message



b. Click **Yes** in the message that is shown and then click **Yes** in the message that follows.

c. If there are additional instruments with BCPACEMDQ in the **Type** column, repeat the procedure to delete them.

10. Click **OK**.

The Node Properties dialog closes.

11. If a second PA 800 Plus system is to be connected to the LAC/E module, repeat this procedure except in step 7, type **2** in the **Serial Number/Unique Name** field.

Note: The additional steps required to set up the second PA 800 Plus system must be performed by a SCIEX Field Service Employee. Contact SCIEX Technical Support at sciex.com/request-support.

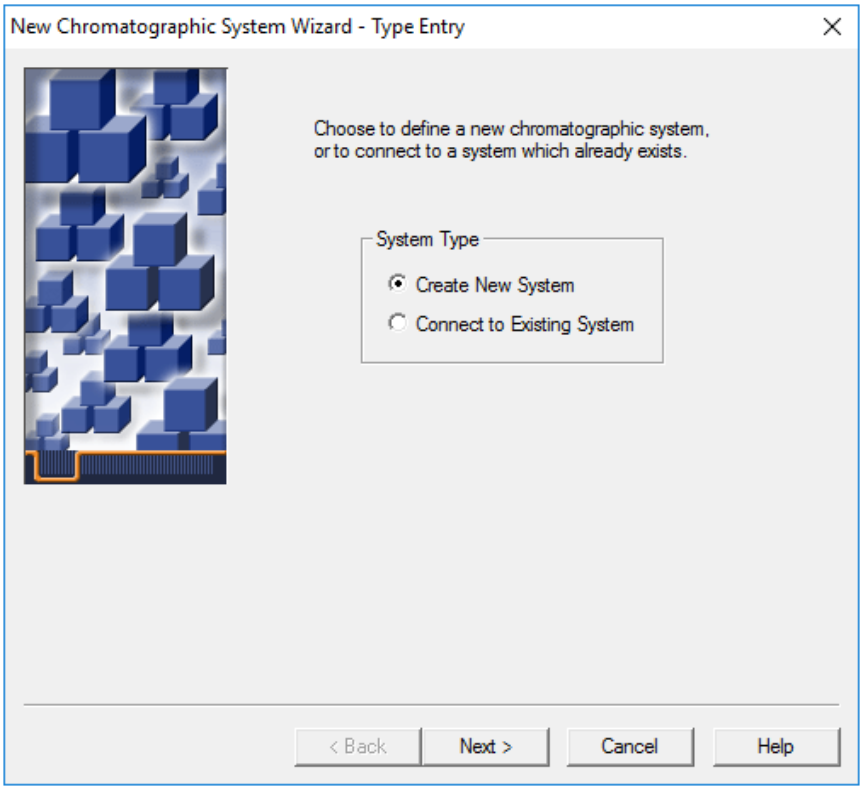
Set Up a New Chromatographic System

The Waters Empower™ software is designed for chromatography. Therefore any instrument connected to the software is referred to as a "chromatographic system". The PA 800 Plus system must be configured as a chromatographic system before it can be used.

1. In the Configuration Manager window, click **File > New > Chromatographic System**.

   The New Chromatographic System Wizard opens.

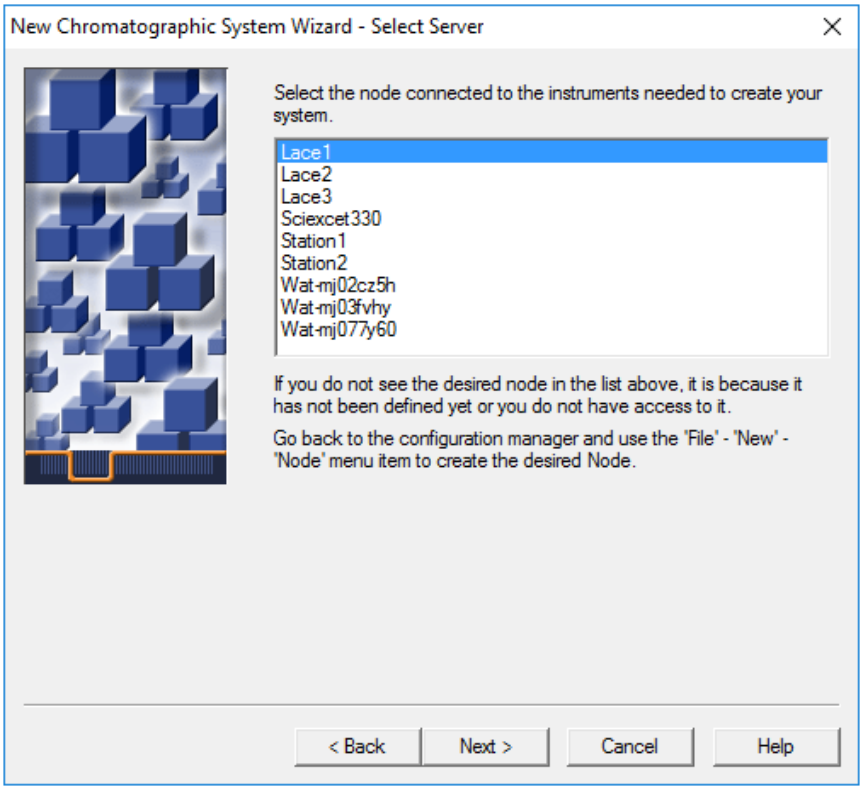
Figure 4-12 Type Entry Page



2. Click **Create New System** and then click **Next**.

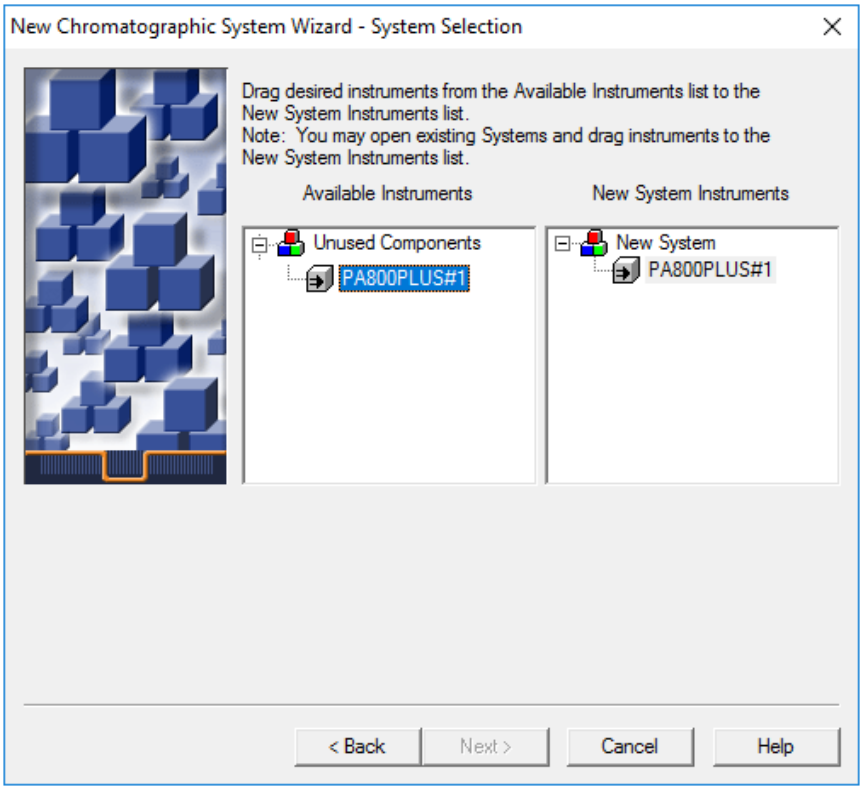
Note: The list of nodes in the following figure will reflect the local Waters Empower™ software configuration.

Figure 4-13 Select Server Page



3. Click the node with the PA 800 Plus system and then click **Next**.

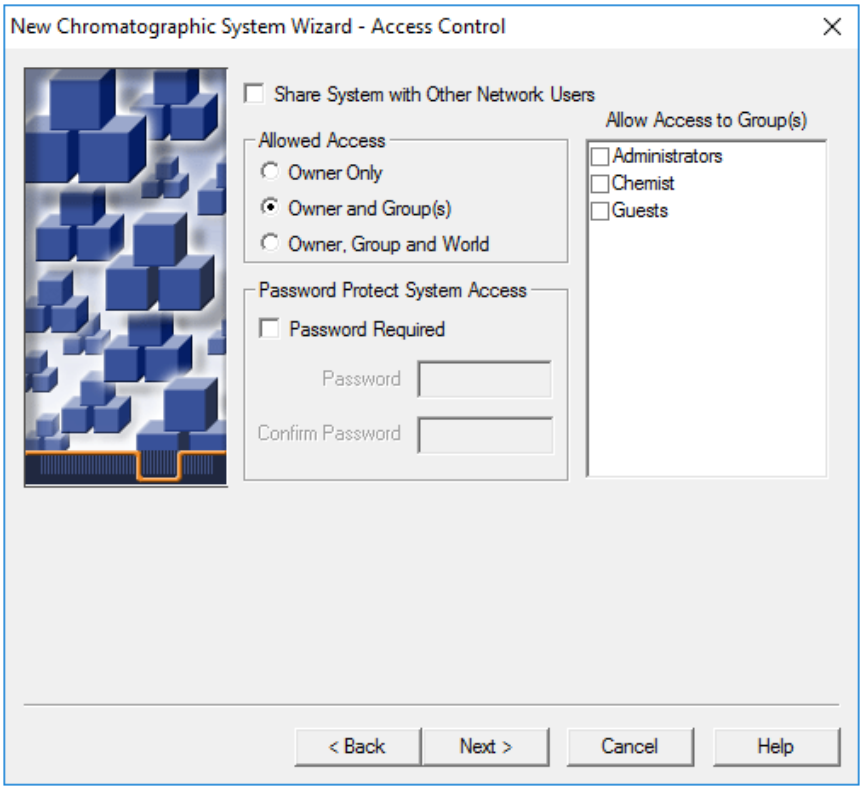
Figure 4-14 System Selection Page



4. In the **Available Instruments** list on the left, click **PA800PLUS#1**, drag it to the **New System Instruments** list on the right, and then click **Next**.

5. Update the fields on the page as follows.

Figure 4-15 Access Control Page



a. **Share System with Other Network Users**: Select to allow other network users access to the system.

b. **Allowed Access**: Select the types of users allowed to access the system. Choices are **Owner Only**, **Owner and Group(s)**, or **Owner, Group, and World**. For the latter two, select the groups in the **Allow Access to Group(s)** list.

c. **Allow Access to Group(s)**: Select the groups allowed access to the system.

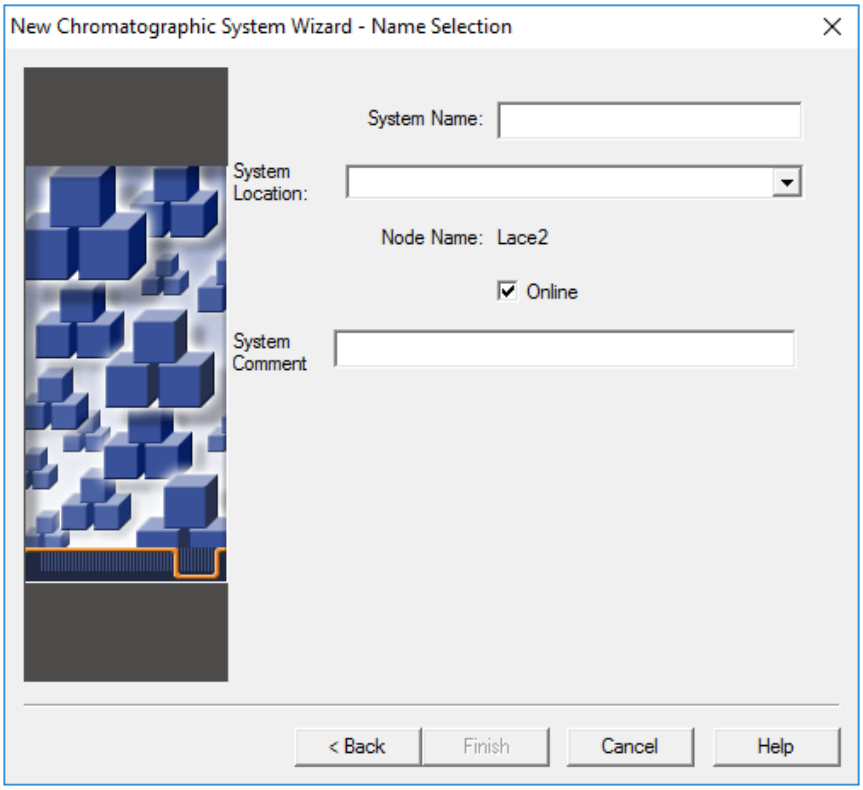
   At least one group must be selected.

d. **Password Protect System Access**: Select **Password Required** to require a password. In the **Password** and **Confirm Password** fields, type the password, up to 30 characters.

e. Click **Next**.

6. Update the fields on the page as follows.

Figure 4-16 Name Selection Page in New Chromatography System Wizard



a. **System Name**: Type the name of the system, up to 30 characters. The name is used in the Empower database and the Configuration Manager window.

b. **Online**: Select this check box to bring the new system online.

c. **System Comment**: (Optional) Type comments or other identifying information for the system, up to 250 characters.

d. Click **Finish**.

e. If a message about an existing system configured in another online system shows, click **OK**.

Define the Buffer and Sample Trays

In the Waters Empower™ software, the sample and buffer trays in the PA 800 Plus system are referred to as "plates". Plates must be defined in the Waters Empower™ software. To simplify this process, SCIEX provides text files with the required information that can be imported.

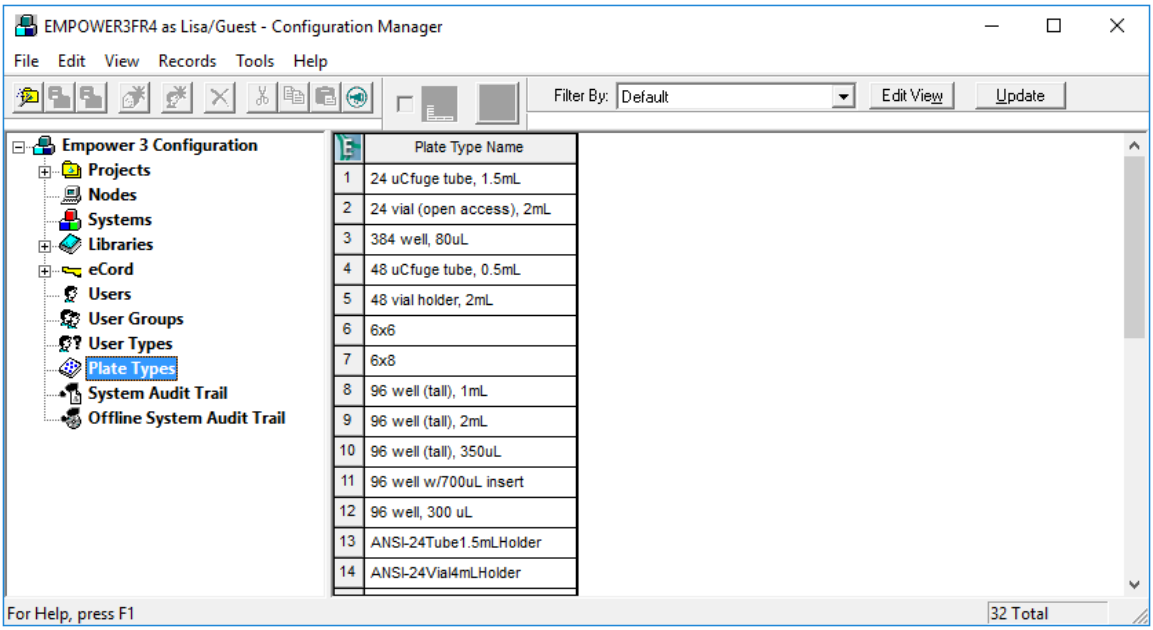
1. Insert the PA 800 Plus Empower™ Driver DVD in the DVD drive.

2. In the Waters Empower™ software Start dialog, click **Configure the System**.

   The Configuration Manager window opens.

3. Click **Plate Types** to show the plates that are already defined.

Figure 4-17 Plate Types in the Configuration Manager Window



4. Create the plate for the buffer tray.

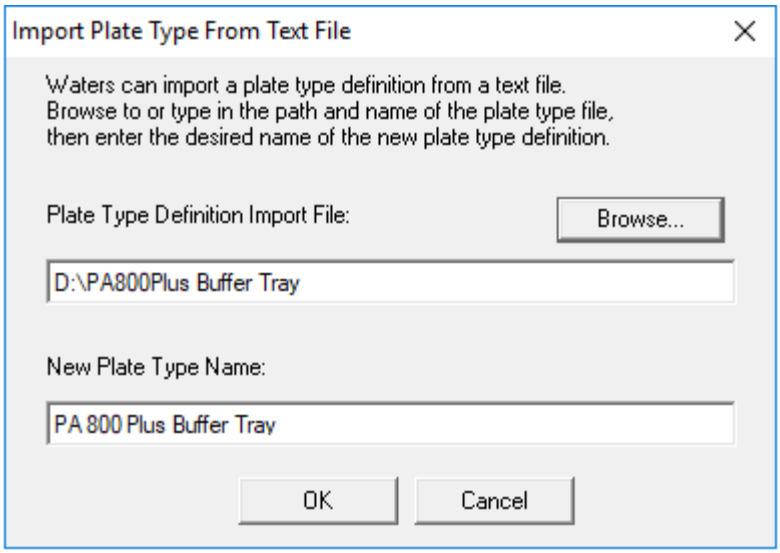
   a. Right-click in the table and then select **Import from Text**.

   b. Click **Browse** and then navigate to the PA800Plus Buffer Tray.txt file on the PA 800 Plus Empower™ Driver DVD.

   Note: If the DVD is not available, then a copy of the file is included in this document. Copy the contents and then paste it in a text file. Refer to Plate Definition Files.

   c. Type **PA 800 Plus Buffer Tray** in the **New Plate Type Name** field and then click **OK**.

Figure 4-18 Import Plate Type From Text File Dialog



The buffer tray is added to the list in the Configuration Manager window.

5. Repeat step 4 to create the sample trays.
   - For the 48-vial sample tray, select the PA800Plus Sample Tray.txt file and then name the plate PA 800 Plus Sample Tray.
   - For the 96-well sample tray, select the PA800Plus 96 Well Sample Tray.txt file and then name the plate PA 800 Plus 96 Well Sample Tray.

   As for the buffer tray, if the plate definition file is not available, a copy is available in this document. Refer to Plate Definition Files.

   Note: The plate definition file for the 96-well sample plate is for a standard SCIEX 96-well plate (PN 609844). To use a 96-well plate from another manufacturer, click **File > New > Plate Type** in the **Configuration Manager** window and then define the plate manually.

6. If the Beckman Coulter PACE MDQ Control for Waters Empower™ Software Driver was previously installed, then delete any plates that were created for use with the driver. Right-click the row number for the plate and then select **Delete**.
7. (Optional) To view detailed information about a plate, right-click the row number for the plate and then select **Properties**.
8. (Optional) To delete a plate, right-click the row number for the plate and then select **Delete**.

   Only plates added by a user can be deleted. Pre-defined plates cannot be deleted.
9. Click **File > Exit** to close the **Configuration Manager** window.

Known Issues in the PA 800 Plus Empower™ Driver 5

- If the GPIB interface cable is removed from the LAC/E module, then communication to the PA 800 Plus system will be lost. Connect the GPIB interface cable and then restart the LAC/E module.
- In a sample set method, any values in the **Injection Volume** field are ignored. Instead, the Waters Empower™ software uses the **Duration** parameter for the injection event to determine the injection volume.
- In a **Inject Pressure Capillary Fill**, an error will be caused if **sample lid** is selected for the tray positions. Instead, select **Sample** as the tray position and set the vial incrementation to 1.

Note: The user is required to program a specific method if it is required to return to a vial.

Plate Definition Files A

This section include the plate definitions for the buffer tray, the sample tray, and the SCIEX 96-well sample tray. These plates must be defined in the Waters Empower™ software.

The files should be installed as part of the PA 800 Plus Empower™ Driver installation.

If they are missing and the plates need to be defined, copy the text, paste it in a text editor, and then save the file.

PA800Plus Buffer Tray Plate Definition File

```
Empower Profile for Plate Type: CE Buffer Tray
 Plate Type: XY
 Permanent: No
 Plate Terminology: Plate
 Well Terminology: Well
 Plate Dimensions:
  X: 85.00
  Y: 85.00
  Height: 17.00
 Well Dimensions:
  Top Left Well X Location: 9.00
  Top Left Well Y Location: 9.00
  Well Diameter: 12.00
  Well Depth: 14.00
 Row and Column Dimensions:
  Number of Rows: 6
  Row Spacing: 13.40 mm
  Number of Columns: 6
  Column Spacing: 13.40 mm

 Row and Column Offsets:
  Row Offset Type: None
  Row Offset: 0.00 mm
  ColumnOffset Type: None
  Column Offset: 0.00 mm
 Origin: Bottom Left

 Scheme:
  Referencing: XY
  Horizontal: ABC ...
  Vertical: 123 ...
  Sequential Continuous: Off
  Horizontal First Priority: On
```

PA800Plus Sample Tray Plate Definition File

```
Empower Profile for Plate Type: CE Sample Tray
 Plate Type: XY
 Permanent: No
 Plate Terminology: Plate
 Well Terminology: Well
 Plate Dimensions:
  X: 85.00
  Y: 128.00
  Height: 17.00
 Well Dimensions:
  Top Left Well X Location: 9.00
  Top Left Well Y Location: 17.10
  Well Diameter: 12.00
  Well Depth: 14.00
 Row and Column Dimensions:
  Number of Rows: 8
  Row Spacing: 13.40 mm
  Number of Columns: 6
  Column Spacing: 13.40 mm

 Row and Column Offsets:
  Row Offset Type: None
  Row Offset: 0.00 mm
  ColumnOffset Type: None
  Column Offset: 0.00 mm
 Origin: Bottom Left

 Scheme:
  Referencing: XY
  Horizontal: ABC ...
  Vertical: 123 ...
  Sequential Continuous: Off
  Horizontal First Priority: On
```

PA800Plus 96 Well Sample Tray Plate Definition File

```
Empower Profile for Plate Type: 96-Well Sample Tray
 Plate Type: XY
 Permanent: No
 Plate Terminology: Plate
 Well Terminology: Well
 Plate Dimensions:
  X: 85.00
  Y: 128.00
  Height: 17.00
 Well Dimensions:
  Top Left Well X Location: 11.00
  Top Left Well Y Location: 14.50
  Well Diameter: 6.80
  Well Depth: 14.00
 Row and Column Dimensions:
  Number of Rows: 12
  Row Spacing: 9.00 mm
  Number of Columns: 8
  Column Spacing: 9.00 mm

 Row and Column Offsets:
  Row Offset Type: None
  Row Offset: 0.00 mm
  ColumnOffset Type: None
  Column Offset: 0.00 mm
 Origin: Bottom Left

 Scheme:
  Referencing: XY
  Horizontal: ABC ...
  Vertical: 123 ...
  Sequential Continuous: Off
  Horizontal First Priority: On
```

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