Waters Driver Pack 2016 Release 1

Installation and Configuration Guide
General information

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Contacting Waters

Contact Waters with enhancement requests or technical questions regarding the use, transportation, removal, or disposal of any Waters product. You can reach us via the Internet, telephone, or conventional mail.

Waters contact information

<table>
<thead>
<tr>
<th>Contacting medium</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet</td>
<td>The Waters Web site includes contact information for Waters locations worldwide. Visit <a href="http://www.waters.com">www.waters.com</a></td>
</tr>
<tr>
<td>Telephone and fax</td>
<td>From the USA or Canada, phone 800-252-4752, or fax 508-872-1990. For other locations worldwide, phone and fax numbers appear in the Waters Web site.</td>
</tr>
<tr>
<td>Conventional mail</td>
<td>Waters Corporation&lt;br&gt;Global Support Services&lt;br&gt;34 Maple Street&lt;br&gt;Milford, MA 01757&lt;br&gt;USA</td>
</tr>
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Waters Driver Pack 2016 Release 1 (DP 2016 R1) includes instrument drivers and their associated firmware files, as well as the Deployment Manager and firmware Autoloader. The Deployment Manager installs instrument drivers and deploys firmware files on a computer. The Autoloader updates firmware on the instruments connected to the computer.

This section describes what environments DP 2016 R1 supports, and how to identify and resolve any compatibility issues before installing DP 2016 R1 on computers and servers.

**Requirement:** Review the Identifying and resolving compatibility issues section before proceeding with installation.

**See also:** For a list of all drivers provided in DP 2016 R1, see Instrument drivers.

### 1.1 System and software requirements

You can install DP 2016 R1 on the following configurations:

- Empower workstations
- MassLynx computers
- Empower client/server
- Empower Citrix server

**Restriction:** Do not install DP 2016 R1 on Empower database servers.

You can run DP 2016 R1 on the following operating systems:

- Windows XP, 32-bit
- Windows 7, 64-bit
- Windows Server 2003 R2 Enterprise edition
- Windows Server 2008 R2 Enterprise edition

### 1.2 Supported chromatography data software

DP 2016 R1 supports the following:

- Empower software version 2, FR5 and later
- Empower software version 3, FR1 and FR2
• MassLynx software version 4.1 with compatible SCNs, see Supported mass spectrometers.
• Stand-alone Console

Note: DP 2016 R1 has not been tested on Empower software version 3, FR3.

1.3 Supported mass spectrometers

Requirement: SQ and TQ detectors must be simultaneously installed on an Empower client, and cannot be run on a LAC/E module.

The following MassLynx SCNs are compatible with this release. If a mass spectrometer is compatible, it will function as expected after DP 2016 R1 and the following SCNs are installed.

<table>
<thead>
<tr>
<th>Mass spectrometers supported</th>
<th>ACQUITY systems</th>
<th>SCN</th>
<th>Operating system</th>
</tr>
</thead>
<tbody>
<tr>
<td>QDa</td>
<td>• ACQUITY UPLC</td>
<td>954, 961</td>
<td>Windows 7 64-bit</td>
</tr>
<tr>
<td></td>
<td>• ACQUITY UPLC H-Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• ACQUITY UPLC H-Class Bio</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• ACQUITY UPLC I-Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• ACQUITY Arc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQ</td>
<td>• ACQUITY UPLC</td>
<td>918</td>
<td>Windows 7 64-bit</td>
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<td></td>
<td>• ACQUITY UPLC H-Class</td>
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</tr>
<tr>
<td></td>
<td>• ACQUITY UPLC I-Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ</td>
<td>• ACQUITY UPLC</td>
<td>919, 959</td>
<td>Windows 7 64-bit</td>
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<td></td>
<td>• ACQUITY UPLC H-Class</td>
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</tr>
<tr>
<td></td>
<td>• ACQUITY UPLC I-Class</td>
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</tbody>
</table>

1.4 Empower client/server environment requirements

If you are installing the driver pack in an Empower client/server environment, keep the following requirements in mind:
• A maximum of four systems can be configured on each LAC/E module.
• When controlled by Empower software version 2, a maximum of seven modules can be configured in one system.
• A maximum of two 3D data generating detectors can be configured on each LAC/E module. These detectors are the PDA, FLR, and QDa detectors.

See also: For detailed information, see the Empower driver pack release notes and the appropriate version of the Empower software installation guide; for example, the Empower 3 Installation, Configuration, and Upgrade Guide.

1.5 Agilent software

Installation of the following Agilent software versions was tested with DP 2016 R1. This software is compatible with DP 2016 R1 in an Empower client/server environment, providing no Waters modules are connected to the LAC/E on which the Agilent software is installed.

• Agilent LC Instrument Control Software (ICS) Version 1.06
• Agilent Instrument Control Framework (ICF) Support v2.1 Hotfix 1
• Agilent Instrument Control Framework (ICF) Support v2.2
• Agilent 7890 GC Instrument Control Software (ICS) Version 2.5
• Agilent 7890 GC Instrument Control Software (ICS) version 2.6

Note: Installation of Agilent 7697A Headspace Sampler and Agilent G1888 Headspace Sampler was not tested.

1.6 Systems and modules not supported in DP 2016 R1

The 2420 ELS detector will not operate after DP 2016 R1 installation.

Restriction: Installation of DP 2016 R1 is not recommended for ACQUITY APC systems.

See also: Checking for ELS detector driver compatibility
2 Identifying and resolving compatibility issues

**Recommendation:** Before you install the driver pack you should review the computers and servers listed below for any compatibility issues, and resolve them.

<table>
<thead>
<tr>
<th>Laboratory environment</th>
<th>Computers and servers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empower workstations</td>
<td>Each workstation where DP 2016 R1 is desired</td>
</tr>
<tr>
<td>MassLynx computers</td>
<td>Each computer where DP 2016 R1 is desired</td>
</tr>
<tr>
<td>Empower client/server</td>
<td>Each LAC/E module where DP 2016 R1 is desired. All clients controlling LAC/E modules that will run DP 2016 R1.</td>
</tr>
<tr>
<td>Empower Citrix client/server</td>
<td>Each LAC/E module where DP 2016 R1 is desired. The Citrix server. Each LAC/E module that does not specifically require the benefits of DP 2016 R1, but that has one or more of the incompatibilities listed in the Checking client/server compatibility section.</td>
</tr>
</tbody>
</table>

### 2.1 Checking for ELS detector driver compatibility

In earlier driver packs, a single ICS (the ELS detector ICS driver version 1.40) controls the ELS detector, 2424 detector, and 2420 detector. In DP 2016 R1, the ELS detector and 2424 detector are controlled using two separate instrument drivers. DP 2016 R1 does not contain a driver for the 2420 detector.

**Restriction:** DP 2016 R1 is incompatible with the ELS detector instrument driver version 1.40.

**Important:** When DP 2016 R1 is installed, it disables control of the 2420 detector, unless you resolve the incompatibility in one of the following ways.

#### 2.1.1 2420 ELS detectors in an Empower workstation or MassLynx computer environment

**Restriction:** Do not install DP 2016 R1 on any Empower workstation or MassLynx computer that controls Waters 2420 detectors.
2.1.2 2420 ELS detectors in an Empower client/server environment

**Restriction:** Do not install DP 2016 R1 on an Empower LAC/E module that controls Waters 2420 detectors or an Empower client that connects to a LAC/E module controlling a 2420 detector.

2.1.3 2420 ELS detectors in an Empower Citrix client/server environment

You can no longer control a 2420 detector with a Citrix client.

**Requirement:** To control the 2420 detector in a client/server environment, you must install DP 2016 R1 on the acquisition client.

2.2 Checking computer compatibility

Review each computer on which you plan to install DP 2016 R1 for the following conditions that can cause compatibility issues.

**Resolution:** If any of these conditions exist, uninstall all drivers, and then follow the instructions in Resolving incompatibility issues.

- **Installation of incompatible drivers.** You can install DP 2016 R1 only on computers that have the instrument drivers and driver packs listed in the Waters drivers for computers table. Any other drivers are not compatible.

- **Incorrect installation order of drivers.** You can install DP 2016 R1 only on computers with drivers that were installed in order by release date, from oldest to newest. See the Waters drivers for computers table.

- **Custom installation.** You can install DP 2016 R1 only on computers with driver packs that were installed in their entirety using the Typical installation option. Check your logs to ensure a Custom installation was not performed, as this is not compatible.

  **Note:** If a Custom installation is required, contact Waters Technical Support. Waters requires that you install all drivers in each driver pack.

- **Firmware deployed with installed drivers not loaded on instruments.** Ensure that instruments are running the same versions of firmware that are deployed by the drivers installed on the workstation or computer.

2.2.1 Waters drivers for computers

The following table lists the drivers that can be on computers, if DP 2016 R1 will be installed.
Requirement: Ensure that drivers were installed in the following order, using the **Typical** option in Deployment Manager. Not all drivers need to be installed. However, the computer cannot have any additional drivers that are not on this list and be compatible with DP 2016 R1.

<table>
<thead>
<tr>
<th>Driver or driver pack</th>
<th>Waters release date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACQUITY UPLC Systems June 2011 Driver Pack</td>
<td>June 2011</td>
</tr>
<tr>
<td>Waters ACQUITY QDa Instrument Component Software version 1.50</td>
<td>October 2013</td>
</tr>
<tr>
<td>Waters Driver Pack 4</td>
<td>October 2013</td>
</tr>
<tr>
<td>ACQUITY UPLC M-Class Driver Pack</td>
<td>March 2014</td>
</tr>
<tr>
<td>Waters ACQUITY QDa Instrument Component Software version 1.51</td>
<td>April 2014</td>
</tr>
<tr>
<td>Waters ACQUITY QDa Instrument Component Software version 1.52</td>
<td>May 2014</td>
</tr>
<tr>
<td>Waters Fraction Manager - Analytical Instrument Driver version 1.60</td>
<td>September 2014</td>
</tr>
<tr>
<td>Waters ACQUITY QDa Instrument Component Software version 1.53</td>
<td>May 2015</td>
</tr>
<tr>
<td>Waters Driver Pack 4 Supplemental Release 1</td>
<td>June 2015</td>
</tr>
<tr>
<td>ACQUITY Arc v1.65 Driver Pack</td>
<td>June 2015</td>
</tr>
<tr>
<td>Waters Fraction Manager - Analytical Instrument Driver version 1.65</td>
<td>December 2015</td>
</tr>
<tr>
<td>Waters ACQUITY QDa Instrument Component Software version 1.54</td>
<td>January 2016</td>
</tr>
<tr>
<td>Waters 2432 Conductivity Detector Instrument Driver</td>
<td>April 2016</td>
</tr>
</tbody>
</table>

### 2.3 Checking client/server compatibility

Review each Empower LAC/E module, Empower client, or Citrix server for the following conditions that can cause compatibility issues.

Resolution: If any of these conditions exist, uninstall all drivers, and then follow the instructions in Resolving incompatibility issues.

- **Installation of incompatible drivers.** When running on an Empower client or Citrix server, DP 2016 R1 can only control systems connected to Empower LAC/E modules with driver packs/instrument drivers in the Waters drivers for Empower LAC/E modules table.

- **Incorrect installation order of drivers.** When running on an Empower client or Citrix server, DP 2016 R1 can only control systems connected to Empower LAC/E modules with driver packs/instrument drivers that were installed in order by release date, from oldest to newest. See the Waters drivers for Empower LAC/E modules table.

- **Custom installation.** When running on an Empower client or Citrix server, DP 2016 R1 can only control systems connected to Empower LAC/E modules with driver packs/instrument drivers that were installed in their entirety using the **Typical** installation option. Custom installations are not compatible.
Note: If a Custom installation is required, contact Waters Technical Support. Waters requires that you install all drivers in each driver pack.

- **Firmware deployed with installed drivers not loaded on instruments.** When running on an Empower client or Citrix server, DP 2016 R1 can only control systems connected to Empower LAC/E modules where the firmware versions deployed with the driver packs/instrument drivers installed on the LAC/E module are loaded on the instruments connected to the LAC/E modules.

### 2.3.1 Waters drivers for Empower LAC/E modules

The following table lists the drivers that can be on Empower LAC/E modules, in an Empower client or Citrix server environment, if DP 2016 R1 will be installed on the Empower client or Citrix server.

**Requirement:** Ensure that drivers were installed in the following order, using the **Typical** option in the Deployment Manager. Not all drivers need to be installed. However, a LAC/E module cannot have any additional drivers that are not on this list and be compatible with DP 2016 R1.

<table>
<thead>
<tr>
<th>Driver or driver pack</th>
<th>Waters release date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACQUITY UPLC Systems June 2011 Driver Pack</td>
<td>June 2011</td>
</tr>
<tr>
<td>ACQUITY UPC² System</td>
<td>March 2012</td>
</tr>
<tr>
<td>ACQUITY UPC² July 2012 Maintenance Release</td>
<td>July 2012</td>
</tr>
<tr>
<td>ACQUITY Advanced Polymer Chromatography System Driver Pack</td>
<td>June 2013</td>
</tr>
<tr>
<td>Waters ACQUITY QDa Instrument Component Software version 1.50</td>
<td>October 2013</td>
</tr>
<tr>
<td>Waters Driver Pack 4</td>
<td>October 2013</td>
</tr>
<tr>
<td>Waters ACQUITY QDa Instrument Component Software version 1.51</td>
<td>April 2014</td>
</tr>
<tr>
<td>Waters ACQUITY QDa Instrument Component Software version 1.52</td>
<td>May 2014</td>
</tr>
<tr>
<td>ACQUITY UPC² System May 2014 Driver Pack</td>
<td>May 2014</td>
</tr>
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<td>September 2014</td>
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</tr>
<tr>
<td>Waters 2432 Conductivity Detector Instrument Driver version 1.65</td>
<td>April 2016</td>
</tr>
</tbody>
</table>
2.4 Resolving incompatibility issues

Prerequisite: Ensure that all driver packs and instrument drivers were uninstalled from the computer.

To reinstall driver packs:

1. Install the necessary driver packs and drivers in their entirety, in the order they were released, from oldest to newest.

   Requirement: You must use the Typical installation option in the Deployment Manager.

   Note: If the installation is for an Empower workstation, a MassLynx computer, or an Empower LAC/E module, click Load Firmware, to prompt the Autoloader to load the firmware deployed by the driver packs and instrument drivers on the instruments connected to the computer.

   See also: Waters drivers for computers and Waters drivers for Empower LAC/E modules.

2. If the Waters ELS Detector ICS, version 1.40 was installed, uninstall it.

   Requirement: You must use the Deployment Manager to uninstall the driver.

3. Install DP 2016 R1 in its entirety.

   Requirement: You must use the Typical installation option in the Deployment Manager.

   Note: If the installation is for an Empower workstation, a MassLynx computer, or an Empower LAC/E module, click Load Firmware, to prompt the Autoloader to load the firmware deployed by DP 2016 R1 on the instruments connected to the computer.

   See also: For detailed installation instructions, see Installing the instrument-control software and firmware or Silent and push installations.
3 General Installation Process

3.1 Installing the instrument-control software and firmware

**Requirement:** This driver-pack release must be downloaded from the Waters Web site. A support plan is required to download the release.

To install the driver pack, you first install the instrument drivers, and then you install the instrument firmware. The Deployment Manager guides you through the entire process.

Always use the Deployment Manager provided with this driver pack. Do not use an earlier version of the Deployment Manager. You cannot change the installation directory for the instrument drivers to which the Deployment Manager installs.

**Prerequisites:**

- Ensure that the drivers installed previously on the computer or LAC/E module are compatible with this driver pack. See Identifying and resolving compatibility issues.

**To install instrument-control software:**

1. Exit all applications, and restart the computer.
2. Log on as a user with local administrator privileges.
3. If you are installing on a Citrix server, put the server in Install mode by opening a command prompt and typing `Change user/install`.
   **Result:** The screen response states User session is ready to install applications.
4. Run `Setup.exe`.
5. On the Deployment Manager Welcome page, click Next.
6. Click Install/Upgrade.
7. Select I have read the product release notes, and then click Next.
8. Select I agree to the License terms and conditions, and then click Next.
9. To install all drivers in the driver pack, select Typical (recommended).
   **Recommendation:** If you need to perform a Custom install, contact Waters Technical Service first.
10. If you are installing on a LAC/E module, Empower client, or Citrix server:
   a. Indicate whether to install mass spectrometers.
   b. Select the mass spectrometer driver to control.

   **Tip:** You can install multiple mass spectrometers but control only one. Select None if you intend only to view mass-spectrometer data.

   **Note:** When you install SQ Detector or TQ Detector drivers on a LAC/E module, Waters Service is disabled. Do not re-enable Waters Service.

11. Indicate whether to install Connections INSIGHT.

12. Review the list of instrument drivers and utilities for accuracy, and then click **Next** to start the installation.

   **Tips:**
   - Though installation times vary depending on the speed of the computer, they are usually approximately twenty minutes.
   - If you click , the Deployment Manager completes the current module's installation, and then stops.

13. Click **Finish**.

   **Result:** The Autoloader is launched. It lists the modules that require firmware updates.

   **Tip:** To locate the firmware file for a specific module, point to the module's name.

14. Click **Load Firmware**, to install the latest firmware.

   **Notice:** To avoid interrupting the firmware installation, do not cycle power to any system module until firmware for all modules is installed.

   **Tip:** You can run the Autoloader separately from the Deployment Manager; for example, when you need to install new firmware for one module. Run **Autoloader.exe** from one of the following locations:
   - In an Empower-controlled system, C:\Empower\Instruments\Firmware.
   - In a MassLynx -controlled system, C:\Program Files (86)\Waters Instruments\Firmware.

15. After all firmware is loaded, cycle power to all modules, as prompted by the Autoloader, and then click **Close**.

16. If the system includes a QDa, SQ, or TQ detector, cycle power to that instrument.

17. If you are installing on a Citrix server, you must return the server to Execute mode by opening a command prompt and typing **Change user /execute**.

18. Restart the computer.
3.2 Removing instrument drivers and utilities

When necessary, use the Deployment Manager to remove driver pack instrument drivers and utilities.

To remove instrument drivers and utilities:

1. Restart the computer.
2. Navigate to the driver pack installation files, and run Setup.exe.
3. On the Welcome page of the Deployment Manager, click Next, and then select Remove.
4. To remove all drivers, select Typical, or to select specific drivers, select Custom.
5. If you selected Typical, to prevent Connections INSIGHT from being removed, in the Removal Options dialog box, clear the Remove Connections INSIGHT check box.
6. If you selected Custom, review the list of modules, and select the modules that you want to remove.
7. Click OK.
   Result: A list of the instrument drivers and utilities to be removed from the computer appears.
8. Review the list for accuracy, and then click Next, to start the removal.
   Tips:
   • To change settings before removal, click Back.
   • Though removal times vary depending on the speed of the computer, they are usually approximately 20 minutes.
9. After removal is complete, click Finish.
10. When prompted, restart the computer.
4 Silent and Push Installations

4.1 Silent and push installations

You can install or remove the driver pack using a silent or push installation. Both silent and push installations and removals are unattended, meaning that these operations do not require user interaction.

During a silent installation or removal, you deploy instrument drivers on a single Empower client, LAC/E module, or Citrix server. You store information required for the operation in a response file and an instrument-driver list file. Then, you call both files from a command prompt or from the commands in a batch file.

During a push installation or removal, you deploy instrument drivers to multiple Empower clients, LAC/E modules, or Citrix servers from a host computer. You control push installations and removals using PsExec, a Microsoft command-line tool. When you run PsExec, the response file is called as a command line argument, after the setup.exe file.

Restriction: In Empower Enterprise networks, you can perform push operations; however, push installation and removal is not supported in Empower networks with SQ and TQ detectors.

4.1.1 Preparing for a silent installation or removal

Before performing a silent installation or removal, you must first set up an instrument-driver list file and a response file. You can perform a silent installation or removal on an Empower client, a LAC/E module, or a Citrix server.

4.1.1.1 Creating the instrument-driver list file

To create an instrument-driver list file:

1. Create a .TXT file on the computer from which the installation or removal will be executed.

   Tip: You can edit the sample text file in the\Push Install\[language]\ directory of the downloaded driver pack. For example, \Push Install\en\ISC_List_EN.txt is the English language sample file.

2. List the names of all the instrument drivers to install or remove.

   Requirement: You must use a separate line for each item.

   See also: Instrument drivers.
**Note:** Instrument drivers are installed in the order in which each instrument appears in the Deployment Manager dialog box, not in the order in the instrument-driver list file.

### 4.1.1.2 Creating the response file

Specify the parameter settings in the response file to direct how instrument drivers are installed. For example, you specify the destination paths, language to install, and whether to restart the system. Response file settings apply to all of the instrument drivers in the instrument-driver list file.

The response file must be in XML format, using the correct XML syntax. You can rename the response file, but the file extension must remain `.RSP`.

**Tip:** A sample response file is available in the `\Push Install\[language]` directory of the downloaded driver pack. For example, `\Push Install\en\ICS_Response_EN_InstallAndUpgradeAll.rsp` is the English language sample file.

**See also:** For detailed information about the response file, see the appropriate chromatography data software's installation guide; for example, the *Empower 3 Installation, Configuration, and Upgrade Guide*.

### 4.1.2 Performing a silent installation or removal

**To perform a silent installation or removal:**

1. Ensure that the instrument-driver list file includes the instrument drivers that you want to install or remove.
   **See also:** Creating the instrument-driver list file.

2. If you are installing or removing the driver pack on a Citrix server, put the Citrix server in Install mode by opening a command prompt and typing `Change user /install`.

3. In the response file, do one of the following:
   - To install drivers, ensure that the ACTION property is set to `InstallALL`, `UpgradeALL`, or `InstallAndUpgradeALL`.
   - To remove drivers, ensure that the ACTION property in the response file is set to `RemoveAll`.
   **See also:** Creating the response file.

4. Run `Setup.exe` from a command prompt or from a batch file.

**Requirement:** The command must include the name of the response file and the path to `Setup.exe`; for example, `C:\DP 2016 R1\Setup.exe /responseFile C:\DP 2016 R1\Push Install\ICS_Response_EN_InstallAll.rsp`.

**Result:** The instrument drivers are installed on or removed from the Empower client, LAC/E module, or Citrix server, and then the computer restarts.
4.1.3 Preparing for a push installation or removal

Before performing a push installation or removal, download PsExec, a Microsoft command-line tool, to a host computer. As with a silent installation, you create an instrument-driver list and a response file. Additionally, for a push operation, you must create a node list file, which lists the addresses of all Empower clients, LAC/E modules, and Citrix servers to which you will install drivers or from which you will remove drivers.

You launch the push operations using PsExec. Use a command prompt or batch file to run the response file, instrument-driver list file, and node list file.

4.1.3.1 Downloading PsExec

You perform push installations and removals for instrument drivers using PsExec, a Microsoft command-line tool. PsExec is part of the toolkit PsTools.

To download the toolkit:

2. In the search box, type psexec, and click Search.
3. Click the PsExec link, and then download PsTools.
4. Follow the instructions for installing and using PsExec.

4.1.3.2 Creating the node list file

To create a node list file:

1. Create a .TXT file on the computer from which the installation or removal is executed.
2. List the names or IP addresses of all the Empower clients, LAC/E modules, or Citrix servers on which to install instrument drivers or from which to remove them.

Requirement: Use a separate line for each item.

4.1.4 Performing a push installation or removal

Requirement: To install or remove instrument drivers for Waters 2465 and 2475 instruments using the PsExec utility on Windows 7 systems, you must first disable the User Account Control. Click Start > Help and Support, and then search the Help for Turn off User Access Control.

To perform a push installation or removal:

1. If necessary, download PsExec.
2. Ensure that the instrument-driver list file includes the instrument drivers that you want to install or remove.

See also: Creating the instrument-driver list file.

3. Ensure that the node list file includes the names of all the Empower clients, LAC/E modules, and Citrix servers on which you want to install or remove the instrument drivers.

See also: Creating the node list file.

4. In the response file, do one of the following:
   - To install drivers, ensure that the ACTION property is set to InstallALL, UpgradeALL, or InstallAndUpgradeALL.
   - To remove drivers, ensure that the ACTION property is set to RemoveAll.

See also: Creating the response file.

5. Run PsExec from a command prompt or batch file.

Requirement: The command must include the location of the PsExec executable file, the response file, the instrument-driver list file, and the node list file.

Result: The instrument drivers are installed on or removed from the Empower clients, LAC/E modules, or Citrix servers.

4.2 Creating an installation package

By creating your own installation package to deploy the driver pack from a shared location in your network, you can select which instrument drivers and firmware files to place in the package.

To create an installation package:

1. In the desired network location, create a directory for this driver pack's folders and files.

   Recommendation: Create a new directory for each Water's driver pack, to ensure that you always use the Deployment Manager that comes with the driver pack. Deployment Manager software is updated regularly, and is not necessarily compatible with other Water's driver packs.

2. Copy the driver folders and files that you need for your system, the source folder, and Setup.exe to the new directory.

   Requirement: You must copy the source folder, which contains the DM.exe file and the Setup.exe file.

   Restriction: If you rename folders, do not use special characters, such as trademark symbols.
5 Verifying installation and troubleshooting

After performing the installation, verify that the files were successfully installed. If installation fails, you can take the following actions:

• Run the Repair utility, which corrects known installation and compatibility problems involving installation artifacts caused by nonstandard installers or older Waters instrument-control software.
• Remove all previous versions of the software and retry the installation.
• Save a service profile log with information about your system, and then contact Waters Technical Support for assistance.

See also: Using the Repair utility and Saving a service profile log.

5.1 Verifying installation

Verify the installation using the Verify Files utility, in Empower software, or Verify Instrument Driver Files utility, in MassLynx.

See also: For detailed procedures on using these utilities, see the appropriate chromatography data software's installation guide; for example, the Empower 3 Installation, Configuration, and Upgrade Guide.

5.2 Using the Repair utility

The Repair utility corrects known installation and compatibility problems involving installation artifacts caused by nonstandard installers or older Waters instrument-control software.

To use the Repair utility:

1. Navigate to the driver pack installation files, and run Setup.exe.
2. On the Deployment Manager Welcome page, click Next.
3. Click Repair.
5.3 Saving a service profile log

The Service Profile utility records system information, including configuration data, serial numbers, software versions, errors, network setup, Windows updates, other applications installed, counters, and diagnostic results.

Note: The exact information saved to the service profile log depends on your user access. An Administrator can save all information to the log.

Alternative: You can also save a service profile log by navigating to one of the following paths and double-clicking serviceprofile.exe.

- For Empower software: C:\Empower\Instruments\Bin
- For MassLynx software: C:\Program Files\WatersInstruments\Bin

To save a service profile log:

1. In the Console, select Troubleshoot > Save service profile.
2. Enter a description of the issue you are experiencing or a question for Waters Technical Support.
3. Click Settings.
4. Select the options that specify the information that you want to collect.
5. Click Save.

Result: The console saves the Waters Service Profile.zip file. The default location is the computer desktop.
6. Send the .ZIP file to Waters Technical Service.
The following ICS and firmware drivers are part of DP 2016 R1.

### Table A–1: Solvent Managers

<table>
<thead>
<tr>
<th>Instrument name</th>
<th>Part number</th>
<th>Systems</th>
<th>ICS name in Deployment Manager</th>
<th>ICS version</th>
<th>Firmware name in Deployment Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACQUITY UPLC Binary Solvent Manager (BSM)</td>
<td>186015001, 186015000</td>
<td>ACQUITY UPLC ACQUITY UPLC I-Class</td>
<td>Binary Solvent Manager</td>
<td>1.67</td>
<td>Binary Solvent Manager [V1.65]</td>
</tr>
<tr>
<td>ACQUITY UPLC Quaternary Solvent Manager (QSM) and Bio QSM</td>
<td>186015018, 186015041</td>
<td>ACQUITY UPLC H-Class and H-Class Bio</td>
<td>Quaternary Solvent Manager</td>
<td>1.67</td>
<td>Quaternary Solvent Manager [V1.65]</td>
</tr>
<tr>
<td>ACQUITY Arc Quaternary Solvent Manager-R (QSM-R)</td>
<td>186017000</td>
<td>ACQUITY Arc</td>
<td>Quaternary Solvent Manager-R</td>
<td>1.65</td>
<td>Quaternary Solvent Manager-R [V1.65]</td>
</tr>
<tr>
<td>ACQUITY UPLC Isocratic Solvent Manager (ISM)</td>
<td>186015019</td>
<td>All ACQUITY UPLC systems</td>
<td>Isocratic Solvent Manager</td>
<td>1.65</td>
<td>Isocratic Solvent Manager [V1.65]</td>
</tr>
<tr>
<td>Driver or software component</td>
<td>Part number</td>
<td>Systems</td>
<td>ICS name in Deployment Manager</td>
<td>ICS version</td>
<td>Firmware name in Deployment Manager</td>
</tr>
<tr>
<td>------------------------------</td>
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<td>--------------------------------------</td>
</tr>
<tr>
<td>ACQUITY UPLC Sample Manager (SM)</td>
<td>186015005, 186015006</td>
<td>ACQUITY UPLC</td>
<td>Sample Manager</td>
<td>1.67</td>
<td>Sample Manager [V1.65]</td>
</tr>
<tr>
<td>ACQUITY UPLC Sample Manager - Flow Through Needle (SM-FTN and Bio-SM-FTN)</td>
<td>186015017, 186015040, 186015046</td>
<td>ACQUITY UPLC H-Class and H-Class Bio ACQUITY UPLC I-Class</td>
<td>Sample Manager-FTN</td>
<td>1.67</td>
<td>Sample Manager-FTN [V1.65]</td>
</tr>
<tr>
<td>ACQUITY UPLC Sample Manager - Fixed Loop (SM-FL)</td>
<td>186015060</td>
<td>ACQUITY UPLC I-Class</td>
<td>Sample Manager</td>
<td>1.67</td>
<td>Sample Manager-FL [V1.65]</td>
</tr>
<tr>
<td>ACQUITY Arc Sample Manager Flow Through Needle-R, with and without heating/cooling, (SM-FTN-R)</td>
<td>186017001, 186017007</td>
<td>ACQUITY Arc</td>
<td>Sample Manager-FTN-R</td>
<td>1.65</td>
<td>Sample Manager FTN-R [V1.65]</td>
</tr>
<tr>
<td>ACQUITY UPLC Sample Organizer (SO)</td>
<td>186015020, 186015021</td>
<td>All ACQUITY UPLC</td>
<td>N/A</td>
<td>Controlled by the Sample Manager</td>
<td>Sample Organizer [V1.60]</td>
</tr>
<tr>
<td>ACQUITY UPLC Sample Organizer, for rotary tray style sample managers</td>
<td>186015014</td>
<td>ACQUITY UPLC H-Class and H-Class Bio ACQUITY UPLC I-Class</td>
<td>N/A</td>
<td>Controlled by the Sample Manager</td>
<td>Sample Organizer [V1.60]</td>
</tr>
<tr>
<td>Column Heaters</td>
<td></td>
<td>Systems</td>
<td>ICS name in Deployment Manager</td>
<td>ICS version</td>
<td>Firmware name in Deployment Manager</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------</td>
<td>----------------------------------</td>
<td>--------------------------------</td>
<td>-------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>ACQUITY UPLC Column Heater</td>
<td>N/A</td>
<td>ACQUITY UPLC</td>
<td>N/A</td>
<td>Controlled by the Sample Manager</td>
<td>Controlled by the Sample Manager</td>
</tr>
<tr>
<td>ACQUITY UPLC Column Heater/Cooler (CHC)</td>
<td>186015008</td>
<td>ACQUITY UPLC</td>
<td>Column Manager</td>
<td>1.67</td>
<td>Column Manager [V1.40.74]</td>
</tr>
<tr>
<td>ACQUITY UPLC Column Heater, Active (CH-A)</td>
<td>186015042</td>
<td>ACQUITY UPLC H-Class and H-Class Bio ACQUITY UPLC I-Class</td>
<td>N/A</td>
<td>Controlled by the Sample Manager</td>
<td>Controlled by the Sample Manager</td>
</tr>
<tr>
<td>ACQUITY UPLC High Temperature Column Heater (HTCH)</td>
<td>186015010</td>
<td>ACQUITY UPLC</td>
<td>N/A</td>
<td>Controlled by the Sample Manager</td>
<td>Controlled by the Sample Manager</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column Managers</th>
<th></th>
<th>Systems</th>
<th>ICS name in Deployment Manager</th>
<th>ICS version</th>
<th>Firmware name in Deployment Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACQUITY UPLC Column Manager</td>
<td>186015007, 186015009</td>
<td>ACQUITY UPLC</td>
<td>Column Manager</td>
<td>1.67</td>
<td>Column Manager [V1.40.74]</td>
</tr>
<tr>
<td>ACQUITY UPLC Column Manager, Active (CM-A)</td>
<td>186015043</td>
<td>ACQUITY UPLC H-Class and H-Class Bio ACQUITY UPLC I-Class</td>
<td>Column Manager</td>
<td>1.67</td>
<td>Column Manager (Active) [V1.65]</td>
</tr>
<tr>
<td>ACQUITY UPLC Column Manager Auxiliary (CM-AUX)</td>
<td>186015049</td>
<td>ACQUITY UPLC H-Class and H-Class Bio</td>
<td>Column Manager</td>
<td>1.67</td>
<td>Column Manager (Active) [V1.65]</td>
</tr>
</tbody>
</table>

**Column Heaters accommodating 30-cm columns**
### Table A–3: Column Managers (continued)

<table>
<thead>
<tr>
<th>Driver or software component</th>
<th>Part number</th>
<th>Systems</th>
<th>ICS name in Deployment Manager</th>
<th>ICS version</th>
<th>Firmware name in Deployment Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACQUITY UPLC 30-cm Column Heater (30-cm CH)</td>
<td>186017008</td>
<td>ACQUITY Arc</td>
<td>N/A</td>
<td>Controlled by the Sample Manager</td>
<td>Controlled by the Sample Manager</td>
</tr>
<tr>
<td>ACQUITY UPLC 30-cm Column Heater/Cooler (30-cm CHC)</td>
<td>186015011, 186017009</td>
<td>All ACQUITY UPLC and ACQUITY Arc</td>
<td>N/A</td>
<td>Controlled by the Sample Manager</td>
<td>Controlled by the Sample Manager</td>
</tr>
<tr>
<td>ACQUITY UPLC 30-cm Column Heater with Active Solvent Preheating (CH-30A)</td>
<td>186015045</td>
<td>ACQUITY UPLC I-Class, ACQUITY UPLC H-Class and H-Class Bio, and ACQUITY Arc</td>
<td>N/A</td>
<td>Controlled by the Sample Manager</td>
<td>Controlled by the Sample Manager</td>
</tr>
</tbody>
</table>

### Table A–4: Detectors

<table>
<thead>
<tr>
<th>Driver or software component</th>
<th>Part number</th>
<th>Systems</th>
<th>ICS name in Deployment Manager</th>
<th>ICS version</th>
<th>Firmware name in Deployment Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACQUITY TUV</td>
<td>186015028</td>
<td>All UPLC systems</td>
<td>TUV Detector</td>
<td>1.67</td>
<td>TUV Detector (1) [V1.60]</td>
</tr>
<tr>
<td>ACQUITY TUV, thermally enhanced</td>
<td>186015031</td>
<td>All UPLC systems</td>
<td>TUV Detector</td>
<td>1.67</td>
<td>TUV Detector (2) [V1.60]</td>
</tr>
<tr>
<td>ACQUITY PDA</td>
<td>186015026</td>
<td>All UPLC systems</td>
<td>PDA Detector</td>
<td>1.67</td>
<td>PDA Detector (1) [V1.65]</td>
</tr>
<tr>
<td>ACQUITY PDA, thermally enhanced</td>
<td>186015032</td>
<td>All UPLC systems</td>
<td>PDA Detector</td>
<td>1.67</td>
<td>PDA Detector (2) [V1.65]</td>
</tr>
<tr>
<td>Driver or software component</td>
<td>Part number</td>
<td>Systems</td>
<td>ICS name in Deployment Manager</td>
<td>ICS version</td>
<td>Firmware name in Deployment Manager</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------</td>
<td>---------</td>
<td>-------------------------------</td>
<td>-------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>ACQUITY PDA e λ</td>
<td>186015030</td>
<td>All UPLC systems</td>
<td>PDA Detector</td>
<td>1.67</td>
<td>PDA Detector (1) [V1.65]</td>
</tr>
<tr>
<td>ACQUITY PDA e λ, thermally enhanced</td>
<td>186015033</td>
<td>All UPLC systems</td>
<td>PDA Detector</td>
<td>1.67</td>
<td>PDA Detector (2) [V1.65]</td>
</tr>
<tr>
<td>ACQUITY FLR</td>
<td>186015029</td>
<td>All UPLC systems</td>
<td>FLR Detector</td>
<td>1.67</td>
<td>FLR Detector [V1.42]</td>
</tr>
<tr>
<td>ACQUITY RI</td>
<td>186015070</td>
<td>All UPLC systems</td>
<td>RI Detector</td>
<td>1.40</td>
<td>RI Detector [1.40]</td>
</tr>
<tr>
<td>ACQUITY ELS</td>
<td>186015027</td>
<td>All UPLC systems</td>
<td>ELS Detector</td>
<td>1.67</td>
<td>ELS Detector [1.40]</td>
</tr>
<tr>
<td>ACQUITY Arc and Waters 2489 UV-Vis</td>
<td>186002487, 186248900, 186017002</td>
<td>Alliance HPLC and ACQUITY Arc systems</td>
<td>2489 UV/Vis Detector</td>
<td>1.65</td>
<td>2489 Detector [V1.65]</td>
</tr>
<tr>
<td>ACQUITY Arc and Waters 2998 PDA</td>
<td>186002998, 186299800, 186017003</td>
<td>Alliance HPLC and ACQUITY Arc systems</td>
<td>2998 PDA Detector</td>
<td>1.65</td>
<td>2998 Detector [V1.65]</td>
</tr>
<tr>
<td>ACQUITY Arc and Waters 2475 FLR</td>
<td>186002475, 186247500, 186017006</td>
<td>Alliance HPLC and ACQUITY Arc systems</td>
<td>2475 FLR Detector</td>
<td>1.65 a</td>
<td>2475 Detector [V2.10]</td>
</tr>
<tr>
<td>ACQUITY Arc and Waters 2414 RI</td>
<td>186241400, 186241401, 186017004</td>
<td>Alliance HPLC and ACQUITY Arc systems</td>
<td>2414 RI Detector</td>
<td>1.65 a</td>
<td>2414 Detector [V2.10]</td>
</tr>
<tr>
<td>ACQUITY Arc and Waters 2424 ELS</td>
<td>186002424, 186242400, 186017005</td>
<td>Alliance HPLC and ACQUITY Arc systems</td>
<td>2424 ELS Detector</td>
<td>1.65 a</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Mass detectors and spectrometers**
Table A–4: Detectors (continued)

<table>
<thead>
<tr>
<th>Driver or software component</th>
<th>Part number</th>
<th>Systems</th>
<th>ICS name in Deployment Manager</th>
<th>ICS version</th>
<th>Firmware name in Deployment Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACQUITY QDa</td>
<td>176003207, 176003208</td>
<td>Alliance HPLC, All UPLC, and ACQUITY Arc systems</td>
<td>QDa Detector</td>
<td>AcquityMD1.54</td>
<td>N/A</td>
</tr>
<tr>
<td>ACQUITY TQ</td>
<td>176001263</td>
<td>All UPLC systems</td>
<td>Waters TQ Detector</td>
<td>AcquityTQ1.41</td>
<td>N/A</td>
</tr>
<tr>
<td>ACQUITY SQ</td>
<td>176000872</td>
<td>All UPLC systems</td>
<td>Waters SQ Detector</td>
<td>AcquitySQ1.41</td>
<td>N/A</td>
</tr>
</tbody>
</table>

a. For more information about updating this module with DP 2016 R1, see Waters Driver Pack 2016 Release 1 Release Notes.

Table A–5: Miscellaneous

<table>
<thead>
<tr>
<th>Driver or software component</th>
<th>Systems</th>
<th>ICS name in Deployment Manager</th>
<th>ICS version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Console Controller</td>
<td>All ACQUITY UPLC</td>
<td>Local Console Controller</td>
<td>1.60</td>
</tr>
<tr>
<td>Connections INSIGHT</td>
<td>iAlert is supported for ACQUITY systems, ACQUITY modules, and HPLC detectors supported by an ICS</td>
<td>Connections INSIGHT</td>
<td>3.2</td>
</tr>
<tr>
<td>Columns Calculator</td>
<td>HPLC and UPLC</td>
<td>Columns Calculator</td>
<td>1.60</td>
</tr>
<tr>
<td>nanoACQUITY Switch Utility</td>
<td>ACQUITY M-Class</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Waters Pump Control Software</td>
<td>Waters ACQUITY solvent managers, Waters 25X5 Quaternary Gradient modules</td>
<td>Waters Pump Control Software</td>
<td>3.10</td>
</tr>
<tr>
<td>Deployment Manager</td>
<td>N/A</td>
<td>N/A</td>
<td>DM.exe3.1.210.1</td>
</tr>
</tbody>
</table>

a. For more information, refer to the ACQUITY UPLC M-Class Driver Pack Installation and Configuration Guide.
B Compliance recommendations

Any time you install, change, or uninstall software or system modules in a regulated environment, Waters recommends that you follow your organization's approved standard operating procedures.

A risk-based review may assist you in a regulated environment to evaluate changes detailed in the release notes. Using company SOPs, determine if any documentation updates and requalification of the system modules, chromatographic system, or chromatographic data system (CDS) are required.

B.1 Instrument update classification (major update)

Waters considers this update to be a major change from previous versions. Therefore, consider requalifying each updated system module prior to release for use within your laboratory. After the system module is qualified, Waters recommends that you perform system suitability testing of each instrument system, to demonstrate proper control functionality, and to confirm that the system is capable of producing consistent results.

B.2 Software requalification options

Consider using the requalification options outlined below to verify software installation and correct operation:

- To confirm that the new files loaded properly, consider performing a software installation qualification.
- To confirm the operation of the newly loaded software, consider performing an operational qualification (user or vendor) for the updated software installation.
- To determine if additional testing is required, consider evaluating the changes in the software release, to assess the risk associated with the installation. Depending on the risk, it may be appropriate to perform existing, updated, or new software tests. These tests may be known as performance qualification tests, user acceptance tests, verification tests, or validation tests.

To assist you, if required, Waters provides various levels of Qualification (or Compliance) Services and validation consultancy through our Professional Services organization.

When multiple, identical systems are involved, consider a risk-based approach to qualification activities.
B.3 Instrument requalification options after software or firmware change

Consider using the requalification options outlined below to verify hardware installation and correct instrument operation:

- To confirm that the firmware files on the system modules were installed correctly, compare the checksum values in the product release notes to the checksum values displayed in the console.

- To confirm instrument system operation with any newly loaded software, driver, or firmware, consider performing an operational qualification for the updated instrument system.

- To confirm performance, control, and communications of the instrument system, consider conducting a performance qualification (user or vendor) or system suitability test.

When multiple, identical instruments are involved, consider a risk-based approach to qualification activities.

B.4 Requalification with Waters' Total Assurance Plans

The Waters' Total Assurance Plan (TAP) with System Qualification Option covers upgrades and requalification of the instrument driver, software, firmware, or hardware in these cases:

- During yearly requalification, as provided in the plan.

- If installing this release is required for operation of a new module or system, where qualification of the new module or system is covered by the plan.

Requalification of the CDS software and computers after a driver upgrade may or may not be included in your TAP.

Review your TAP to determine which services are covered and which are not covered. For situations not covered by the plan, Waters can perform the qualification, but additional charges will apply.
Anti-virus considerations

Some real-time virus scanners mistake normal data acquisition and instrument control for virus activity, and thus interfere with proper operations. Full-system scans and live updates can be network-intensive, disk-intensive, and CPU-intensive, and they can also interfere with normal data acquisition. Schedule scans and updates for idle times when data acquisition does not occur.

Certain anti-virus program features like "intrusion prevention" and "tamper protection" can also interfere with normal operation. Disable them as well.

C.1 Empower

For Empower 2 and Empower 3 software installations, exclude the Empower installation folder (usually C:\Empower) and its sub-folders.

C.2 MassLynx 4.1

For MassLynx 4.1 installations, exclude these folders:

- For 64-bit computers: C:\Program Files (x86)\Waters Instruments, and its sub-folders.
- For 32-bit computers: C:\Program Files\Waters Instruments, and its sub-folders.
- the MassLynx installation folder, usually C:\Masslynx, and its sub-folders.
Acquisition server
LAC/E module

Autoloader
Utility for loading or updating firmware onto instruments.

BSM
Binary solvent manager

Citrix server
Server in an Empower Enterprise network environment that runs Citrix software.

Deployment Manager
The Deployment Manager, or installer, manages the driver-pack installation process. It allows for the installation, removal, and repair of instrument drivers.

Driver pack
A driver pack combines drivers for ACQUITY and other Waters-related devices on a DVD or in a downloadable file. It is a collection of control software, firmware, the Deployment Manager, and other applications.

Empower client
Client connected to an Empower Enterprise environment that runs the Empower data system and contains instrument drivers and other driver-pack files. Empower clients do not connect directly to instrument systems, but control them through a LAC/E module or an Empower acquisition client.

Empower software
Data-system software for Waters systems.

Firmware
Software that runs on an instrument or device, to control its actions. Communicates with instrument drivers installed on the PC.
FLR detector
Fluorescence detector

ICS Companion
A program that runs as a background process when you launch the Deployment Manager. It reconciles .NET and other dynamically linked files (DLLs) used to control instruments.

Instrument control software (ICS)
Now called instrument drivers. Instrument drivers contain all software required to configure, control, and monitor a particular instrument.

June 2011 Driver Pack
Older driver pack, released in June 2011. Also known as Driver Pack 3.

LAC/E module
Acquisition server in Empower systems. LAC/E stands for Laboratory Acquisition and Control Environment.

MassLynx software
Data system used primarily with mass spectrometers.

nanoACQUITY
Nano-scale flow rate version of the ACQUITY UPLC system.

PDA detector
Photodiode array detector.

PsExec
Command-line tool by Microsoft from which you execute the Deployment Manager, to push instrument drivers on remote systems.

QDa
A mass detector specifically designed for liquid chromatography.

Repair utility
Use the Repair utility to correct installation problems. Launch the utility if a problem arises after you install the driver pack, after you install older drivers, or after you load a MassLynx SCN.
**SCN**
Software change note. MassLynx software release adapted for use with a specific mass spectrometer or system.

**Supplemental driver pack**
Waters releases fixes and updates for instrument drivers and firmware in a supplemental driver pack.

**TUV detector**
Tunable ultraviolet detector

**UPLC**
Ultra-high Performance Liquid Chromatography, or Ultra Performance LC

**Verify Files**
Verify installation of driver pack for Empower software.

**Verify Instrument Driver Files**
Verify installation of driver pack for MassLynx software and third-party data systems.

**Workstation**
Standalone workstation, with Empower Personal, MassLynx software, or third-party data system installed.

**WPC**
Waters pump control. Software component necessary for MassLynx software control of multiple pumps.