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## 1 Abbreviations / Glossary

Below is a list of abbreviations and terms that are used throughout this document.

<table>
<thead>
<tr>
<th>Abbreviation / Term</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Sample Set</td>
<td>A set of samples to be analyzed – this is the Empower term for what is called a Sequence (SEQ) in Chromeleon.</td>
</tr>
<tr>
<td>Instrument Method</td>
<td>A file that contains instrument commands. – also referred to as Program (PGM)</td>
</tr>
<tr>
<td>Chromeleon (CM)</td>
<td>Dionex Chromeleon Chromatography Management System – a full featured chromatography data system.</td>
</tr>
<tr>
<td></td>
<td>Dionex Instrument Integration for Empower is based on Chromeleon technology, i.e., it installs and uses certain portions of Chromeleon.</td>
</tr>
<tr>
<td>Chromeleon Server</td>
<td>This is the portion of Dionex Instrument Integration for Empower that handles the data acquisition and communication with the connected chromatography modules.</td>
</tr>
<tr>
<td>Chromeleon Xpress</td>
<td>A limited version of Chromeleon, that allows instrument control and monitoring via software Panel Tabsets.</td>
</tr>
<tr>
<td>Dionex Instrument Integration for Empower</td>
<td>Dionex Instrument Integration for Empower – An interface software for controlling a wide range of Dionex chromatography instruments from Waters Empower.</td>
</tr>
<tr>
<td>Panel / Control Panel</td>
<td>Dionex Instrument Integration for Empower / Chromeleon uses this graphical user interface for direct control of instruments and monitoring the running sample. Not to be confused with the physical control panels on the instruments.</td>
</tr>
<tr>
<td>Panel Tabset</td>
<td>A collection of Panels that is suitable for a given combination of chromatography modules.</td>
</tr>
<tr>
<td>Program (PGM)</td>
<td>A file that contains instrument commands – This is the Dionex Instrument Integration for Empower terminology for the Instrument Method.</td>
</tr>
<tr>
<td>Sequence (SEQ)</td>
<td>A set of samples to be analyzed – this is the Dionex Instrument Integration for Empower/ Chromeleon term for what is called Sample Set in Empower.</td>
</tr>
<tr>
<td>Server Configuration</td>
<td>This is the Dionex Instrument Integration for Empower window where the Timebase (instrument system) can be configured.</td>
</tr>
<tr>
<td>Timebase (TB)</td>
<td>A complete set of chromatography modules that share the same system time – this Dionex Instrument Integration for Empower term is analogous with the Empower Instrument term.</td>
</tr>
<tr>
<td></td>
<td>A Timebase must be created and configured during the installation of Dionex Instrument Integration for Empower.</td>
</tr>
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</table>
2 Introduction

2.1 Scope

The Quick Start Guide gives an overview of the Dionex Instrument Integration for Empower. It provides a quick reference for the new and additional operations resulting from the use of Dionex Instrument Integration for Empower with instructions demonstrating how to control and acquire data from Dionex instruments via the Empower™ 2 software.

Note: This guide provides some basic information about how to use the Empower software with focus on controlling the Dionex instruments. In order to operate Dionex Instrument Integration for Empower with Empower efficiently the user must be familiar with the operation of Empower and the Dionex instrument.

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2.2 Document Conventions

At various points throughout the manual, messages of particular importance are indicated by certain symbols:

**Tip:** Indicates general information, as well as information intended to optimize performance.

**Important:** Indicates that failure to take note of the accompanying information could cause wrong results or may result in damage to the controlled instruments.

2.3 Other Resources

The following documents provide further details about installing, configuring and using the software.

<table>
<thead>
<tr>
<th>Document</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation Guide</td>
<td>- Describes all of the requirements for installing Dionex Instrument Integration for Empower (e.g. PC and operating system requirements).&lt;br&gt;- Lists the supported instruments.&lt;br&gt;- Gives step-by-step instructions for installing and configuring Dionex Instrument Integration for Empower for Waters Empower.</td>
</tr>
</tbody>
</table>

**Tip:** For consulting, training, and implementation services, contact your local Dionex support and service center.

2.4 What is Dionex Instrument Integration for Empower?

Dionex Instrument Integration for Empower provides an interface for controlling a range of Dionex liquid chromatography instruments with the Empower™ 2 software (from Waters).

Based on Chromeleon® technology it installs and uses certain portions of the Dionex Chromeleon Chromatography Management System such as the Chromeleon Server, the Chromeleon Server Configuration, Control Panels and the Program Editor. Installation Qualification is also managed via Chromeleon tools.

Empower™ 2 must be installed first. When Dionex Instrument Integration is installed afterwards, control of the connected Dionex instrument becomes possible from Empower™ 2. The acquired data is stored and managed by Empower™ 2.
3 How To...

The sections below provide instructions on how to perform common tasks that as a result of the Dionex Instrument Integration for Empower installation, are different from normal Empower operation. These include Operating Instruments, creating and editing an Instrument Method, and elements of creating and running a Sample Set Method.

3.1 Manual Instrument Operation

Dionex Instrument Integration for Empower provides easy to use Panel Tabsets (collection of control Panels) for direct interaction with the connected Dionex instruments, Figure 1. The Panels provide an easy means to control all of the common instrument properties (e.g. flow on/off, purge, detector wavelength, temperature settings, etc.).

**Tip:** The actual instrument configuration will determine which Panels and controls are automatically included in the Panel Tabset.

1. Contained in the Control Panel, Navigation button of QuickStart Interface or in Run Samples dialog of Empower, each module of the Dionex Timebase (Instrument) has a separate tab (Figure 1a) with basic operational commands for real-time control, Figure 1b.

2. If these commands are insufficient, clicking on the Dionex More Options button (Figure 1c) opens Chromeleon Xpress.

*Figure 1 Dionex Instrument Integration for Empower Timebase Panel Tabset*
3. Chromeleon Xpress provides further visual commands for the modules represented in panel tabsets. It also has access to a full range of commands for the timebase.

4. To access module specific properties use the tabs in the top row of the screen, Figure 2a.

5. Use the controls on the Panels to make the necessary settings, Figure 2b.

6. Advanced properties of the modules, such as Qualification data can be accessed via Sub-Panels, Figure 2c.

7. Press F8 or right-click and select Commands… from context menu. This launches the Commands dialog box, Figure 3.

8. Devices, commands, and properties are displayed hierarchically by default (Figure 3a). For example, relays and inputs of a device are listed under the main device, channels of a detector are listed under this detector, and so on.

9. On the left side of the dialog box, select a device and click the + character (Figure 3b). This displays a list of all special commands available for this device.

10. Select a command (for example, the Visible_Lamp). On the right side of the dialog box, the system now indicates the current values and all command parameters that can be edited (Figure 3c).

11. Assign new parameters to the command.

12. Click Execute to perform the selected command, Figure 3d.
3.2 Creating / Editing Instrument Methods

Creating and editing instrument methods in Empower now utilizes the Chromeleon Program Wizard and Program Editor. For example, in the QuickStart dialog selecting the View Instruments Method window now displays the Chromeleon Program Editor as does editing an Instrument Method in the Run Samples dialog.

3.2.1 Chromeleon Program Wizard

The Program Wizard guides you through Program creation. It assists you in creating a program by automatically converting your entries into the appropriate Chromeleon program commands. In this way, you can create a program even if you do not know the command syntax.

**Tip:** If no instrument method (program) is selected or the operator creates a new method and opens the Instrument Method Editor or alternatively selects the View Instrument Methods window in QuickStart dialog then the Chromeleon Program Wizard starts automatically.

1. Follow the wizard to create your required instrument method, Figure 4.
2. At the end, click Finish. The Chromeleon Program Editor displays the instrument method.

3.2.2 Chromeleon Program Editor

The PGM Editor allows you to edit the Instrument Methods (control programs).

1. To open the different views of the PGM Editor, click the icons on the left pane (the shortcut bar, Figure 5a).

   Tip: The Device Name used in the Server Configuration program determines the Device Views name. For example, if you have named your pump HPLC Pump, the Device View is named HPLC Pump, also.

2. In the device view, the respective page of the Program Wizard is re-opened. Multiple pages are displayed in tabs (Figure 5b).

3. Existing commands can be modified or new commands entered for a device (Figure 5c).
4. Further edits, corrections and additions can be applied within the Commands view. The Commands view in the PGM Editor shows the actual program listing the various commands in chronological order with control commands in black, comments in green and incorrect entries in red.

5. Highlight the row of the command where you want to make an edit and right-click then choose Command… or alternatively use the keyboard shortcut F8.
6. The Commands dialog opens with the selected property highlighted, Figure 6. Make the necessary changes and click OK.

7. Chose File > Save, (or use the Save icon on the toolbar, Figure 5d) enter a file name for the new or modified instrument method (program) and click “Save”.

### 3.3 Sample Sets

#### 3.3.1 Defining Plates

When defining Plates for a Sample Set Method the relevant plate (tray) should be selected and the Plate Layout Position defined.

1. For example an autosampler containing the Dionex 1.8/2.0 mL, 40 vial sample tray would require the tray to be selected thrice with R, G and B set as Plate Layout Positions for each plate (Figure 7).

**Tip:** R, G and B relates to the Red, Green and Blue segments of the UltiMate autosamplers.

**Tip:** For Dionex autosamplers, the maximum number of sample racks permissible is six. For the wash vial holders, enter ,R and ,G and ,B respectively.
Tip: For instructions how to create Dionex plates (trays) refer to section 3.4 of the *Installation Guide*.

![Figure 7 Define Plates for Sample Set Method](image)

Tip: The Define Plates for Sample Set Method dialog can be accessed by clicking Plates icon.

Tip: The following Vial nomenclature must be used in Empower to define sample positions; for the Dionex 1.8/2.0 mL, 40 vials the first position in the red segment is R:A,1 (Red segment, row A and position 1).

### 3.3.2 Sample Set Run Times

When creating a sample set or performing any sample injection, Empower requires the operator to specify the injection Run Time. Chromeleon programs also contain time related events and the two times are not synchronized. The operator is therefore required to manually set both times to be the same.

1. In order to view the Chromeleon instrument method (program) end time the operator should view the Instrument Method via Empower.
2. Select the Commands view icon in shortcut bar and scroll to the bottom (Figure 8a).
3. Record the time of the last event. In this example it is 30 minutes (Figure 8b).
4. 30 minutes or the relevant time should then be entered into the Run Time field of Empower for each sample that this instrument method (program) relates to. For example in Sample Set Wizard as shown in Figure 9.