Preface

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WARNINGs

• To reduce the risk of electric shock, do not remove the cover. No user serviceable parts are inside. Refer to qualified service personnel if help is required.

• Use this product only in the manner described in this manual. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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Fax:     +1 203-944-4904
Email:   DXSupportAmericas@perkinelmer.com
Internet: http://www.perkinelmer.com

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• Software version (found by choosing About from the main Help menu)
• If applicable, the error number shown in the software or in the log file.

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This device complies with part 15 of the FCC (United States Federal Communications Commission) Rules. Operation is subject to the following two conditions:

• This device may not cause harmful interference, and
• This device must accept any interference received, including interference that may cause undesired operation.
CE

This device complies with all applicable CE rules and requirements.

NOTE

Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

REMARQUE

Tout changement ou modification apporté à cet instrument non expressément approuvé par l’entité responsable de la conformité peut annuler l’autorisation d’opérer l’appareil accordée à l’utilisateur.

Table of Symbols

Table 1 contains symbols that identify particularly important information and alert you to the presence of hazards. These symbols may appear in this manual and/or on the product it describes.

Table 1. Important Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="WARNING" /></td>
<td>WARNING: Caution. Refer to the User’s documentation. (ISO 7000-0434B)</td>
</tr>
<tr>
<td><img src="image" alt="NOTICE" /></td>
<td>NOTE: A cautionary statement; an operating tip or maintenance suggestion; may result in instrument damage if not followed.</td>
</tr>
<tr>
<td><img src="image" alt="Hazardous Voltage" /></td>
<td>Hazardous voltage; risk of electric shock. (IEC 60417-6042)</td>
</tr>
<tr>
<td><img src="image" alt="Biological Risks" /></td>
<td>Biological risks. (ISO 7000-0659)</td>
</tr>
<tr>
<td><img src="image" alt="Risk of Injury" /></td>
<td>Risk of injury due to moving parts, shearing force, and crushing areas in operations area.</td>
</tr>
<tr>
<td><img src="image" alt="Lifting Hazard" /></td>
<td>Lifting hazard. May result in injury. (ISO 3864)</td>
</tr>
<tr>
<td><img src="image" alt="Keep Dry" /></td>
<td>Keep Dry. (ISO 7000-0626)</td>
</tr>
<tr>
<td><img src="image" alt="Fuse" /></td>
<td>Fuse. (IEC 60417-5016)</td>
</tr>
<tr>
<td><img src="image" alt="Alternating Current" /></td>
<td>Alternating current. (IEC 60417-5032)</td>
</tr>
<tr>
<td>Symbol</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>On (power). (IEC 60417-5007)  Marche (alimentation).</td>
<td></td>
</tr>
<tr>
<td>Off (power). (IEC 60417-5008)  Arrêt (alimentation).</td>
<td></td>
</tr>
<tr>
<td>CE compliance mark.  Marque de conformité CE.</td>
<td></td>
</tr>
<tr>
<td>WEEE symbol (EN50419:2005). Do not dispose of as unsorted municipal waste. See the PerkinElmer website <a href="http://www.perkinelmer.com">www.perkinelmer.com</a> for more information.</td>
<td></td>
</tr>
<tr>
<td>Consult Instructions for Use. (ISO 7000-1641)  Consulter les Instructions d’emploi.</td>
<td></td>
</tr>
</tbody>
</table>
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Introduction

Overview

This FlexDrop iQ User Manual contains information about the safe and proper handling and operation of the FlexDrop iQ Non-contact Dispenser and FlexDrop iQ consumables.
Dispensing Runs

This chapter describes how to set up the FlexDrop iQ target and source plates, prepare the instrument, start a dispensing run, and analyze the results.

Starting the FlexDrop iQ

To start up the FlexDrop iQ:

1. Switch the instrument power switch on the back of the instrument to the On (|) position.
2. Press the On button on the front of the instrument. Wait for the tablet to start and the instrument to initialize.
3. On the tablet, touch the FlexDrop iQ Studio icon to start the FlexDrop iQ Studio software. You are prompted to Open a Saved Protocol or Create a New Protocol as shown in the figure below.

![Figure 1. Starting Screen of the FlexDrop iQ Software](image)

4. If the desired protocol has not been saved, touch the Create New Protocol button, and continue with Selecting the Protocol Settings on the next page.

   If the desired protocol already exists, click the Open Saved Protocol button, open the desired XML or CSV file, and then edit or run the protocol. (Protocols opened from CSV files cannot be edited.)

**NOTE:** The tabs along the top of the FlexDrop iQ software screen (Figure 1) guide you through each single step of a dispensing run, highlighting the current step in blue.
Selecting the Protocol Settings

To create a new protocol, click **Create New Protocol.** The **Protocol Settings screen** opens as shown in Figure 2.

1. Select the desired options:
   - Enable or disable the **Deionization** function.
   - Enable or disable the **Dispense to waste** function (primes the source wells to make sure there are no air bubbles directly above the orifice).
     - Specify the volumes for priming each source well.
     - Specify the number of priming cycles for each source well.
   - Select the **Error handling** if no droplets are detected during priming (Ask, Abort, or Continue).
   - Select the **Optimization Level** (reduces dispensing time by reordering dispensing steps and using parallel dispensing).
     - Optimization Level 0: Strictly focuses on the Target Layout and uses one channel at a time to dispense.
     - Optimization Level 1: Strictly focuses on the Source Layout and uses one channel at a time to dispense.
     - Optimization Level 2: Utilizes multiple channels in parallel to dispense.
   - Select whether to **Save liquids in local liquid library** (Always, Ask, or Never).

2. Click **OK** and continue with **Selecting the Target Layout** on the next page.

**NOTE:** To change protocol settings, click the Target Layout tab and then click **Menu > Settings > Protocols.**
Selecting the Target Layout

Figure 3. Target Plate Settings Screen

1. Select the desired settings in the Add Target Plate window:
   - Optional: Enter a **Plate Identifier**.
   - Optional: Enter **Plate Barcode ID**.
   - Select the target **Plate Format** (96, 384, or 1536).
   - Optional: Select a **Waste Well** position if Dispense to Waste is enabled.

2. Click **Ok** to save the settings and display the main window to choose the Wellgroup.

   **NOTE:** To edit the **Target Plate** properties, click the **Edit** button in the top left corner of the **Target Layout** window.

   **NOTE:** If a barcode reader is available, barcodes can be scanned. Enable the barcode reader in the Advanced Device Settings (see page 28) and click the **Scan** button to scan the barcode.

3. Select the wells which should receive liquids by clicking on the desired well positions shown in the **Target Layout** tab. Selected wells are highlighted in blue and are defined as one Wellgroup (see Figure 4).
**NOTE:** To add additional target plates, click the Add button in the top left corner of the Target Layout window. The arrow buttons switch between different target plate layouts.

---

**Figure 4. Target Layout Screen with Blue Highlighted Wellgroup**
Selecting the Dispensing Options

The FlexDrop iQ software offers four different dispensing options, which are indicated as buttons Mixing, Dilution, Array, and Normalization on the left below the wellgroup (see Figure 5).

To add a dispense option, click the desired button, and then edit the options as described in each section below.

**Mixing** is a simple liquid transfer step to dispense a distinct volume or concentration of a chosen liquid to the selected wells on the target plate.

*NOTE:* When performing dispensing runs by concentration, the FlexDrop iQ software is able to calculate the required volume, as long as all parameters (total assay volume, liquid stock concentration and desired concentration in target well) are given. Define the Total assay volume for the whole target plate by clicking the **Edit** button and adjusting the assay volume. Total assay volume can also be different for several wellgroups. When defining the dispensing option by concentration, click Uncouple to define another total assay volume for the selected wellgroup, which is different from the total assay volume for the whole target plate.
Dilution creates direct dilutions within the selected wellgroup. Choose the liquid and the desired volume or concentration to dispense.

- **Volume or concentration**: Set volume/concentration start and end point for Logarithmic Auto and Linear distribution. Set starting volume/concentration for Custom distribution.
- Add additional 0 step to dilution series.
- **Distribution**: Choose distribution type of the dilution series. Linear, logarithmic, and individual dilution factors can be applied.
- Add replicates.
- Change dilution pattern to horizontal or vertical distribution.

![Figure 6. Dispensing Option - Dilution](image-url)
Normalization equalizes the filling level of each target well to the same volume within a dilution series.

Figure 7. Dispensing Option - Normalization

Select one of the normalization options:

- **Highest fluid volume**: Equalize wells to the same total volume using the well with the highest volume level of the wellgroup.

- **Specific volume**: Equalize wells to a user-specified volume.

- **Specific % of assay volume**: Equalize well volume to the specified percentage of the total assay volume.
**Array** creates arrays within one or multiple wells.

![Image](image.png)

**Figure 8. Dispensing Option – Array, Specifying Array Size and Position**

The following items can be edited:

- **ID**: Select a pre-defined array or create a new array.
- **Size X/Y**: Specifies the array size (spot number).
- **Pitch X/Y**: Specifies the distance between spots.
- **Location**: Specifies the position of the array within the well.

Choose the wells to be dispensed and the desired dispensing option (see Figure 9).
Figure 9. Defining Dispensing Options within an Array

The selected array pattern will be applied to all chosen wells of target layout.

Figure 10. Final Array in Target Layout

NOTE: Mixing, Dilution, Normalization and Array will affect all wells of the selected area in the respective wellgroup.
**Edit Wellgroups**

To edit a wellgroup, select the wellgroup in the list on the left side of the screen. Click in the wellgroup on the target plate layout to be edited. Blue squares display in each corner of the area.

Change the size of an area by hovering on a blue square until the square turns red, and then click and drag to the desired size.

Change the position of the whole wellgroup by clicking in the middle of the wellgroup, and then click and drag to the desired position on the target plate.

Remove selected wells by dragging them to the bin icon (see Figure 11) or pressing the “Del” key on the keyboard.

![Figure 11. Editing Wellgroups on the Target Plate](image.png)
Copy Wellgroups

Whole wellgroups with already defined dispensing option, volume, and liquid can be copied by clicking the **Copy Wellgroup** button of the respective wellgroup. Select the liquid you want to use and the location for the new wellgroup (see Figure 12).

![Copy Wellgroup - Setup Screen](image)

Figure 12. Copy Wellgroup - Setup Screen
Selecting the Source Plate

After the target layout is defined, click the Source Layout tab to specify the Source Plate and Source Well Volume.

<table>
<thead>
<tr>
<th>Add Source Plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Identifier</td>
</tr>
<tr>
<td>Plate Barcode</td>
</tr>
<tr>
<td>Plate Type</td>
</tr>
<tr>
<td>Maximum source well volume</td>
</tr>
</tbody>
</table>

Click Ok to proceed.

**NOTE:** Edit the Source plate properties by clicking the Edit button in the Source Layout window. To add additional source plates, click the Add button on the top of the Source Layout window.

All liquids and the minimum required volumes for dispensing used in the protocol are listed on the left side of the screen in the Unassigned liquids section (see Figure 14).
Figure 14. Source Plate Setup - Unassigned Liquids

Liquids are assigned either by manually dragging them to the desired position on the source plate or automatically by clicking **Auto Assign All**. Assigned liquids move from the left to the right side of the screen into the **Assigned liquids** section.

Figure 15. Source Plate Setup - Assigned Liquids

After defining the source plate layout click **Overview** in the top bar to proceed.
Viewing the Protocol Overview

The Overview tab displays a simulation mode, to preview the protocols. The time required to dispense the whole protocol and the total number of dispensing steps are shown. Click **Start Simulation** to review all dispensing steps. Adjusting the simulation speed enables speeding up or slowing down the simulation, whereas adjusting the dispensing step allows you to observe specific steps of the protocol.

![Figure 16. Overview – Simulation Mode Screen](image)

Click **Dispense** in the top bar to proceed.
Starting the Dispense Protocol

To run the dispensing protocol:

1. After the dispensing protocol is set up, prepare the source plate with respective liquids.

2. Click **Start Dispensing.** The FlexDrop iQ software prompts you to insert the source plate into the upper tray and the target plate into the lower tray of the device.

3. To pause the protocol at any time during the run, click the **Pause** button.

4. To stop the protocol at any time during the run, click the **Abort Dispensing** button. Source wells might have to be refilled with liquid and the target plate must be exchanged before starting the next run.
Viewing the Results

The Results tab displays the performance of the dispensing run directly after dispensing all liquids into the target plate. The volume of each well is counted in number of droplets, and the color of the wells indicates whether the dispensed volume meets the threshold selected at the bottom of the window.

- All green wells received the requested volume, within the specified threshold.
- All yellow wells are above the specified threshold but are on the limit of the specified threshold.
- All red wells received a volume lower than the requested volume and are below the specified threshold.

All used liquids are displayed on the left side of the screen with the corresponding position on the source plate. The FlexDrop iQ software provides information on the performance of each source well.

Selecting any target well displays all liquids and volumes dispensed into the selected well on the right side of the window. Use the Selected Well arrow buttons at the bottom of the window to move the selection to another well.

![Figure 18. Results of a Dispensing Run](image)

The results of the dispensing run are automatically saved as a PrintLog.txt file. To review the graphical output of the results, print logs can be opened in the FlexDrop iQ software.
Shutting Down the FlexDrop iQ

To shut down the FlexDrop iQ:

1. Remove any plates from the Source and Target drawers.
2. Close the Source and Target plate drawers.
3. In the FlexDrop iQ Studio software, select **Menu > Exit** to close the FlexDrop iQ Studio software.
4. On the tablet, select the Windows button, then select **Power > Shut Down**. Wait until the tablet power turns off.
5. Switch the instrument power switch on the back of the instrument to the **Off (O)** position.
Print Log

The print log text file, printlog.txt, summarizes the results of a dispensing run. All PrintLogs are labelled with the date and time of the dispensing run and are saved in C:\Users\<username>\FlexDrop iQ Studio\PrintLogs.

![PrintLog.txt File with Drop Detection Information for Each Dispensing Step](image)

The Printlog file contains the following information:

<table>
<thead>
<tr>
<th>Content</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DateTime</td>
<td>Date and time of performed dispensing run</td>
</tr>
<tr>
<td>Software Product Version</td>
<td>Current Software version of the device</td>
</tr>
<tr>
<td>Software Build Version</td>
<td>Software release date</td>
</tr>
<tr>
<td>Source Plate ID</td>
<td>Name of used source plate and source plate type</td>
</tr>
<tr>
<td>Target Plate ID</td>
<td>Name of used target plate and target plate type</td>
</tr>
<tr>
<td>Liquid</td>
<td>Name of liquid used for the respective dispensing step</td>
</tr>
<tr>
<td>Source</td>
<td>Source well position for the respective dispensing step</td>
</tr>
<tr>
<td>Target</td>
<td>Target well position for the respective dispensing step</td>
</tr>
<tr>
<td>TargetFwd/Side</td>
<td>Target position coordinates on the target plate in mm</td>
</tr>
<tr>
<td>Drop</td>
<td>Total number of droplets counted for a source-target constellation</td>
</tr>
<tr>
<td>Miss</td>
<td>Total number of missing droplets for a source-target constellation</td>
</tr>
<tr>
<td>TargetVolume</td>
<td>Protocol setup of the target volume for the respective dispensing step</td>
</tr>
<tr>
<td>DosingEnergy</td>
<td>Calculated dosing energy for the respective dispensing step</td>
</tr>
</tbody>
</table>
Comma-Separated Values (CSV) File

The CSV format can be used for importing and exporting FlexDrop iQ dispensing protocols.

Protocols can be created using either the FlexDrop iQ Studio software or the CSV format. Exported CSV files are saved in C:\Users\<username>\FlexDrop iQ Studio\Protocols\ by default.

The CSV file used on the FlexDrop iQ device consists of a header and a task section.

Figure 20. CSV Format for the FlexDrop iQ Application

Header Section

The structure and content of the header section is:

<table>
<thead>
<tr>
<th>Cell number/Content</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Name of the protocol</td>
</tr>
<tr>
<td>B1</td>
<td>FlexDrop iQ Studio software version</td>
</tr>
<tr>
<td>C1</td>
<td>User of the protocol</td>
</tr>
<tr>
<td>D1</td>
<td>Date of protocol setup</td>
</tr>
<tr>
<td>E1</td>
<td>Time of protocol setup</td>
</tr>
<tr>
<td>A2</td>
<td>Source plate type</td>
</tr>
<tr>
<td>B2</td>
<td>Name of the source plate</td>
</tr>
<tr>
<td>D2</td>
<td>Max Fill Volume of wells in Liters</td>
</tr>
<tr>
<td>E2</td>
<td>Target plate type</td>
</tr>
<tr>
<td>H2</td>
<td>Position of the waste well on the target plate</td>
</tr>
</tbody>
</table>
### Description of CSV File Header (Part 2 of 2)

<table>
<thead>
<tr>
<th>Cell number/Content</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DispenseToWaste</td>
<td>Enable/disable priming before dispensing (=True/False)</td>
</tr>
<tr>
<td>DispenseToWasteCycles</td>
<td>Number of priming cycles for each source well (=1/2/3)</td>
</tr>
<tr>
<td>DispenseToWasteVolume</td>
<td>Dispensing volume for each priming cycle (=5e-8/…/1e-6)</td>
</tr>
<tr>
<td>UseDeionization</td>
<td>Enable/disable deionization of source and target plates to de-static the SourceWells (=True/False)</td>
</tr>
<tr>
<td>OptimizationLevel</td>
<td>Protocol optimization used to reduce total dispensing time (=NoOptimization/Reorder/ReorderAndParallel)</td>
</tr>
<tr>
<td>WasteErrorHandling</td>
<td>Checkpoint for the dispensing run if no droplets are detected during priming (=Ask/Abort/Continue)</td>
</tr>
<tr>
<td>Save Liquids</td>
<td>Checkpoint for Liquid Library handling (=Ask/Never)</td>
</tr>
<tr>
<td>Source Well</td>
<td>Enter position of source well for respective dispensing step</td>
</tr>
<tr>
<td>Target Well</td>
<td>Enter position of target well for respective dispensing step</td>
</tr>
<tr>
<td>Volume [µL]</td>
<td>Enter volume in microliter for respective dispensing step</td>
</tr>
<tr>
<td>Liquid</td>
<td>Enter exact name of liquid for respective dispensing step</td>
</tr>
</tbody>
</table>

**NOTE**

The structure and content of the header section is crucial for proper import of the .csv files into the FlexDrop iQ software. The fourth line of the Header should never be changed!

**REMARQUE**

La structure et le contenu de la section d’en-tête sont cruciaux pour une importation correcte des fichiers .csv dans le logiciel. La 4ème ligne de l'en-tête ne doit jamais être modifiée !

### Task Section

All dispensing steps of the dispensing protocol are defined in the task section. As indicated by the header, each dispensing step has a defined source well position, target well position, a desired volume in microliter and the exact name of the used liquid from the liquid library. Each dispensing step should be added row-wise to the CSV list until the protocol is completed.
Advanced User Settings

These settings are not necessarily required for operating the FlexDrop iQ software but are useful to adjust the dispensing protocols for individual needs.

About Liquids and the Liquid Library

All data on different liquids and their dispensing parameters are saved in the Liquid Library.

Liquid Library

The Liquid Library displays all liquids that have been used for protocols. Liquids are shown with their stock concentration and chosen liquid class. Liquids can be deleted or added.

Assign favorite liquids by selecting the blue star in front of a liquid. Favorite liquids display in the drop-down list when choosing a liquid for any dispensing option while creating a protocol. To choose a liquid that is not a favorite, click Show All Liquids, select the liquid name, and click the Select Liquid button.

![Figure 21. Liquids in the Liquid Library](image)

To edit a liquid, click the liquid and then click the Edit button. The Define Liquid window opens as shown in Figure 22.

To create a new liquid, click the Add New Liquid button. The Define Liquid window opens as shown in Figure 22.

Use the Define Liquid window to specify the liquid name, concentration, color, and Liquid Class. (The Source Plate compatibility for the selected Liquid Class displays but cannot be changed in this window.)
Figure 22. Define Liquid Window

**Liquid Class Library**

The Liquid Class Library contains the dispensing parameters for different liquid types like aqueous liquids, DMSO, glycerol, solvents, etc., for the FlexDrop iQ Source Plate.

Add new liquid classes either by importing provided Liquid Class files (*.libx) or creating new liquid classes.

<table>
<thead>
<tr>
<th>NOTE</th>
<th>Liquid classes can only be deleted on the Advanced Settings tab. For information about Advanced Settings, see page 35.</th>
</tr>
</thead>
<tbody>
<tr>
<td>REMARQUE</td>
<td>Les classes liquides ne peuvent être supprimées que dans l'onglet Paramètres avancés. Pour plus d'informations sur les paramètres avancés, reportez-vous à la page 35.</td>
</tr>
</tbody>
</table>
Creating a New Liquid Class

To create a new liquid class:

1. Click the **Add New Liquid Class** button on the Liquid Class Library window.

   ![](Figure 23. Liquid Class Library Overview)

2. Type a name for the new liquid class and click **Define**.

3. Choose one of the following options to define a new liquid class:
   - **Copy from existing**: Dispensing parameters are copied from an existing liquid class, which can be edited thereafter.
   - **Measure**: Automated calibration of the parameters. Detailed description in Automated Calibration for new liquid classes on page 31.
   - **Manually**: Enter parameters manually. Detailed description on page 33.

   ![](Figure 24. Add New Liquid Class Window)
Automated Calibration for New Liquid Classes

The Liquid Class Manager guides you through the steps to measure and set up individual liquid classes.

Perform the following steps to measure a liquid class:

- **Step 1**: Define the position of the source well for liquid class calibration.
- **Step 2**: Select the target plate format and position for waste disposal.
- **Step 3**: Select the liquid volume in the source well.
- **Step 4 (optional)**: Edit the minimum and maximum dosing energy for the liquid class.
- **Step 5**: Define the pressure settings to use for the calibration and how many measurement points per pressure setting to record. Calibration at more than one pressure setting is possible.

To start the measurement, select one row of the table, click **Measure selected row**, and follow the instructions in the FlexDrop iQ software.

After the measurement is finished, the FlexDrop iQ software calculates the liquid class from the generated data (see Figure 26). To show the resulting graph, click the arrow next to the table. The graph can be intersected with [0,0] by selecting the **Intersect with [0,0]** check box.
Figure 26. Measured Values and Plotted Graph of Automated Calibration of Liquid Classes

Select **Save and Finish** to save the liquid class in the **Liquid Class Library**.

For more information on how to adjust individual liquid classes properly, please contact your PerkinElmer Service Representative.

**NOTE** Using a calibrated pipette to fill the well for calibration is highly recommended. The higher the filling volume of step 3, the more precise the result will be. Measurement of triplicates is recommended to confirm that the measured droplet volumes are stable.

**REMARQUE** L'utilisation d'une pipette étalonnée pour remplir le puits pour l'étalonnage est fortement recommandée. Plus le volume de remplissage de l'étape 3 est élevé, plus le résultat sera précis. La mesure des triplicats est recommandée pour confirmer que les volumes de gouttelettes mesurés sont stables.

**NOTE** As soon as the liquid class is saved, it cannot be edited anymore.

**REMARQUE** Dès que la classe liquide est enregistrée, elle ne peut plus être modifiée.
Manual Calibration of New Liquids

According to the specific correlation of dosing energy and generated droplet volume, a liquid class can be defined as a polynomial equation. By modification of the individual parameters, the liquid class can be adjusted manually. Adjust the parameter values for “M”, “N”, “Min” and “Max” (see Figure 27).

![Figure 27. Liquid Class Parameters and Values](image)

- **M (Slopes)**: Specifies the generated droplet volume in nanoliter (nL) upon application of the specified dosing energy.
- **N (Offset)**: Specifies the intersection of the graph with the Y-axis. Default 0.0 nL.
- **Min (Minimum dosing energy)**: Specifies the lowest pressure to be applied for the respective liquid class. Default is 50 mbar*ms.
- **Max (Maximum dosing energy)**: Specifies the highest pressure to be applied for the respective liquid class. Default is 300 mbar*ms.

Select **Save and Finish** to save the liquid class in the **Liquid Class Library**.

**NOTE:** mbar*ms describes the relationship of pressure and mechanical valve opening time. The dosing energy must be between the minimum and maximum values.

**NOTE:** Increasing the maximum dosing energy might be required for liquids more viscous than water. However, 300 mbar*ms is recommended and sufficient for most fluids. We recommend increasing in 50 mbar*ms increments, if necessary.
About Plate Format Library

The plate format library contains target plate formats, which are used with the FlexDrop iQ. Standard SBS format plates like 96-, 384- and 1536-well plates are available by default. New and individual target formats can be created in the Target Plate Editor window (see Figure 28).

Figure 28. Target Plate Editor Window

The following items can be edited:

- **Name**: The plate format name.
- **Optional**: The plate manufacturer’s name.
- **Length/Width/Height**: The outer dimension of the plate.
- **Number of Rows/Columns**: Number of Rows or Columns on the plate.
- **Optional**: **Cavity Volume**: The maximum filling volume of the plate well.
- **Distance to First Row/Columns**: The distance from the plate edge to the center of the first well as shown in the Target Plate Editor.
- **Distance between Row/Columns**: The distance from the center of one well to the center of the next well as shown in the Target Plate Editor.

**NOTE**: Cavity volume does not have any impact on the plate format itself. Exceeding volume is not considered an error since this information is only relevant for the user.
About Advanced Settings

To access the Advanced Settings, select Menu > Settings > Device Settings, click the Show Advanced Settings button (see Figure 29) in the General Settings window, and enter the password “PerkinElmer”. The Advanced Settings allow access to the Use Barcode Reader option, Endless Dispensing option, Position Settings and Dispense Head Settings.

Figure 29. Device Settings Screen – Accessing the Advanced Settings

Dispense Head Settings

If the FlexDrop iQ dispenses incorrect volumes, re-calibration of the device might be required.

| CAUTION     | Before re-calibrating the FlexDrop iQ, please contact your PerkinElmer Service Representative!
| ATTENTION  | Do not change values in Advanced Settings without instruction from PerkinElmer personnel. Misuse can cause damage to the device. |

| CAUTION     | Avant de recalibrer l'FlexDrop iQ, veuillez contacter votre représentant de service PerkinElmer !
| ATTENTION  | Ne modifiez pas les valeurs des paramètres avancés sans aucune instruction du personnel PerkinElmer. Une mauvaise utilisation peut endommager l'appareil. |
In the Dispense Head Settings, there are two methods to re-calibrate the FlexDrop iQ:

1. Adjusting the slider values of every single channel manually.
2. Automated re-calibration of the device by clicking **Check Calibration** (see Figure 30).

![Figure 30. Advanced Settings - Dispense Head Settings with Automated Re-Calibration](image)

When using the automated re-calibration, the Dispense Head Calibration window guides you through the calibration (see Figure 31):

![Figure 31. Dispense Head Calibration – Protocol Screen](image)
The following settings can be adjusted:

- **Source plate type**: Choose the source plate that will be used for calibration.
- **Set dosing energy**: Choose the pressure to apply for calibration.

Follow the instructions and click **Check calibration** to start the measurement.

### CAUTION

*Use only a calibrated pipette for re-calibration of the device!*

### ATTENTION

*Utilisez une pipette étalonnée uniquement pour le réétalonnage de l’appareil!*

The FlexDrop iQ counts the number of droplets dispensed and calculates the deviation to the expected number of droplets. Clicking **Update calibration** moves the current FlexDrop iQ slider values by the offset of the deviation previously calculated (see Figure 32).

![Figure 32. Dispense head calibration process (step 1-4).](image)

(1) Current slider values before re-calibration. (2) Calibration protocol. (3) Confirmation to adjust slider values according to measurement. (4) Automatically adjusted values after measurement.
Reset Liquid Classes

To restore the original liquid classes provided by PerkinElmer if they have been deleted or modified, click **Reset Liquid Classes** in the **General Settings** window (Figure 33).

![Figure 33. Restoring Original Liquid Classes](image)

A message box displays the Liquid Classes that will be reset and prompts you to confirm that you want to reset the liquid classes listed. Click OK to reset the liquid classes or Cancel to retain the existing changes. Reset liquid classes does not delete new liquid classes!