Notices

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In This Guide

Agilent has prepared this manual as a technical reference for the Oligo Pro II systems.

This document includes system overviews, analytical methods, maintenance procedures, software operation, troubleshooting guide, and instrument shutdown procedures. Additional information includes literature references, instrument specification and utility requirements, parts and supply lists, product specification sheets, and system warranty information.

This document is intended for use by technical personnel that are proficient with analytical instrumentation operation and upkeep. A certain level of training and expertise is assumed and fundamentals are not addressed herein. Procedures are presented in a step-by-step format using photos and screen captures. If questions remain after reviewing a given topic or procedure, please contact your corresponding Agilent Sales/Service Representative.

1 Oligo Pro II System Overview
   This chapter gives an instrument overview.

2 Oligo Pro II Software – File Menu
   This chapter describes the Oligo Pro II software in more detail on the commands of the File menu.

3 Oligo Pro II Software – Admin Menu
   This chapter describes the Oligo Pro II software in more detail on the commands of the Admin menu.

4 Oligo Pro II Software – Utilities Menu
   This chapter describes the Oligo Pro II software in more detail on the commands of the Utilities menu.

5 Oligo Pro II Software – Help Menu
   This chapter describes the Oligo Pro II software in more detail on the commands of the Help menu.
6 Oligo Pro II Software – Operation Tab
This chapter describes the Oligo Pro II software in more detail on the Operation tab.

7 Oligo Pro II Software - Run Status Tab
This chapter describes the Oligo Pro software in more detail on the Run Status tab.

8 Oligo Pro II Software – Sample Name Entry
This chapter provides information on how to enter the sample names in the Oligo Pro II software.

9 Oligo Pro II Capillary Array
This chapter explains the essential operational parameters of the capillary array.

10 Appendix
This chapter provides a Quick Start Guide and additional information on part numbers, maintenance procedures, and system settings.
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1 Oligo Pro II System Overview

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This chapter gives an instrument overview.
About the System

The Oligo Pro II system is a multiplexed capillary electrophoresis (CE) instrument for performing automated, high throughput separation and quantification of single-stranded nucleic acids. Separation is achieved by applying an electric field through a narrow bore (75 µm i.d.) fused silica capillary array filled with various conductive gel matrices designed to sieve DNA/RNA molecules of a specific size range. When a high voltage is applied to the capillary array, injected DNA/RNA migrates through the gel matrix as a function of length or size, with smaller sized fragments eluting faster than larger sized fragments.

At a point toward the far end of the capillary array, detection of the separated DNA/RNA is achieved by UV absorption spectroscopy. By monitoring the relative UV absorption as a function of time during the CE separation, digital electropherograms representative of the DNA/RNA content of 12, 24, or 96 samples are collected in a single experimental run.
This chapter provides a basic overview of the Oligo Pro II system hardware and operation. **Figure 1** shows an external view of a fully configured Oligo Pro II system, which has a compact footprint of 40” on the bench top with a weight of 82 lbs (37 kg).

![Image of Configured Oligo Pro II system](image)

**Figure 1** Configured Oligo Pro II system with computer workstation
Oligo Pro II System Connections

The back of the Oligo Pro II instrument contains the communications panel where necessary connections are made to the instrument computer and electrical outlet for operation (Figure 2 and Figure 3).

The use of a double-conversion surge protection or uninterrupted power supply (UPS) device is highly recommended. Contact the corresponding Agilent Sales/Service representative for specific recommended models.

A minimum of three standard electrical wall outlets should be available to connect the instrument, computer and accessories, although a power strip can be used in place of separate wall outlets if needed.

Each connection is labeled on the PC. The various connections between the system and the Oligo Pro II instrument are summarized below:

- From the Oligo Pro II System:
  - Two USB cables to PC USB
  - Power cord to grounded electrical outlet
- From the PC:
  - Two USB connections to the Oligo Pro II system

The order/location of connections is critical and the locations have been identified on the computer.

- Power cord to grounded electrical outlet
- Connection to monitor, keyboard, mouse etc.
Oligo Pro II System Overview

Oligo Pro II System Connections

- AC power connection
- USB connections from instrument
- Internet connection
- Computer monitor connection

Figure 2  Back panel computer connections

- USB out to computer
- AC power connection
- Fuse mount
- Power switch

Figure 3  Back panel Oligo Pro II instrument connections
There are three primary points of access to the inside of the Oligo Pro II system: the top compartment, the side compartment access door, and the drawers (6 total) (Figure 4).
Top Compartment

The top compartment provides access to the optical detection platform and a capillary array cartridge. A non-accessible compartment on the back of the instrument contains the high voltage power supply and electronics that are connected to the array cartridge and safety interlock system. The safety interlock system shuts off the high voltage in case this door is opened while the instrument is running.

The capillary array cartridge is a replaceable, modular component of the Oligo Pro II system. You can easily exchange the capillary array cartridge. This process is explained in Chapter 4, “Oligo Pro II Software – Utilities Menu”.

![Figure 5](image)

**Figure 5** Oligo Pro II main unit top compartment open
Side Compartment

The side compartment allows access to the high pressure pump, syringe, waste bottle, conditioning solution, and gel solution.

The High-Pressure Syringe Pumping system provides automated flushing and filling of the capillary array with conditioning solution and separation gel, providing pressurization of the capillaries up to 280 psi.

Two different solutions are fed to and pumped through the capillary array during routine operation:

- **Capillary Conditioning Solution**
- **Separation Gel** (gel 1)

The appropriate solution is selected for pumping by way of a 6-way distribution valve.

The system also contains a waste bottle, which collects solutions pumped via the waste line from the capillary array reservoir during the filling process.

*Figure 6* Side door compartment
The four fluid line connections inside the Oligo Pro II system are:

- *Gel line* from syringe pump to gel bottle (gel 1 or gel 2)
- *Conditioning fluid* from syringe pump to conditioning fluid
- *Overflow waste line* from syringe pump to waste bottle
- *F-port line* from syringe pump (6-way valve) to F-port
The Oligo Pro II system front-panel drawers provide an external interface for loading *Buffer*, *Waste*, *Rinse*, and *Sample 96-Well Plates* into the system.

- **Buffer drawer** (top drawer): This location is used for the inlet buffer tray used during the CE separation.
- **Waste drawer** (second drawer from top): This location is used for loading the waste tray.
- **Rinse drawer** (third drawer from top): This location is used for loading the rinse tray.
- **Sample drawer 1** (fourth drawer from top): This location is used for sample plate number 1.
- **Sample drawer 2** (fifth drawer from top): This location is used for sample plate number 2.
- **Sample drawer 3** (sixth drawer from top): This location is used for sample plate number 3. It is also used for a 96-well plate containing sample storage solution.
**Oligo Pro II System Overview**

**Drawers**

---

**Drawer Status**

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buffer and Waste Drawers are interlocked</td>
<td>When any of the top two drawers are open, the high-voltage (for electrophoresis) will automatically shut off.</td>
</tr>
<tr>
<td>Rinse, Sample Drawers 1, 2, and 3 are not interlocked</td>
<td>Sample trays can be exchanged while the instrument is in operation.</td>
</tr>
</tbody>
</table>

---

**Figure 7**  Instrument drawer positions
Oligo Pro II System Loading and Orientation of 96-Well Plates

The Oligo Pro II system is a multiplexed CE system containing a capillary array, which is designed to interface directly with an entire plate of a standard 96-well plate footprint.

Each capillary of the array corresponds to a specific well for a given row in the 96-well sample plate. For example, the capillary array orientation is indexed such that capillary #1 corresponds to Well A1 and capillary #96 = H12.

**NOTE**

Well A1 of the 96-well plate should always be oriented to the back left location of the instrument drawer to ensure that the sample well location is correctly assigned and reported in the software.

Each drawer location houses a tray carrier containing alignment pins for ensuring proper alignment of the 96-well plate when placed against the capillary array.

The Oligo Pro II system has been designed to operate using specific dimensions and styles of plates.

Plates with similar dimensions may be used, but capillary damage may occur with the use of poor-quality PCR plates.

For a list of compatible PCR plates please refer to “Compatible Plates for the Oligo Pro II System” on page 120.
The Oligo Pro II system requires a minimum volume of 20 µL/well in the sample plate for proper injection.

When preparing sample plates for repeated use, a volume of 30 µL/well with a 20 µL (one drop) mineral oil overlay is recommended.

Check the wells of the sample plate/s after pipetting to ensure that there are no air bubbles trapped in the bottom of the wells. The presence of trapped air bubbles can lead to injection failures.

Air bubbles can be removed from the plates by introducing a brief centrifugation step prior to placing the plates into the tray carrier.
2 Oligo Pro II Software – File Menu

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Exit 29

This chapter describes the Oligo Pro II software in more detail on the commands of the File menu.
About this Software

The Oligo Pro II system employs proprietary software for operation and data analysis.

This software is preloaded on the instrument and checked prior to shipment as part of the instrument verification.
System Requirements

The software is run using a Windows 10 PC with the following requirements:

<table>
<thead>
<tr>
<th>Type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel Core i5 - 8500</td>
</tr>
<tr>
<td>SVGA Video</td>
<td>Minimum Resolution 1024 X 768</td>
</tr>
<tr>
<td>Memory</td>
<td>4 Gigabytes (1 x 4 GB) DDR4-2666</td>
</tr>
<tr>
<td>Available Hard Disk Space</td>
<td>500 Gigabytes</td>
</tr>
<tr>
<td>USB Serial Ports</td>
<td>6 ports (2 instrument, keyboard, mouse)</td>
</tr>
<tr>
<td>Network</td>
<td>If not using a local database, a network connection to the database server host is desired.</td>
</tr>
</tbody>
</table>
System Installation

To install the Oligo Pro II software:

1. Contact your corresponding Agilent Service Representative to request the software.

2. Navigate to **Oligo Pro II Installer > setup.exe**, and double-click **setup.exe**.

   OR

   Use the appropriate downloaded .exe to perform the installation.

3. Follow the setup instructions provided by the installation wizard. The default installation directory is C:\Agilent\Oligo PRO II.
Opening the Oligo Pro II Software

1. To log into the software, select the Oligo Pro II software icon (Figure 9).

   ![Figure 9: Oligo Pro II software icon](image)

   There are two levels of users available:
   - **Administrator**: The administrator login has enhanced access to functions such as allowing the user to edit separation methods.
   - **User**: The user login has restricted access that allows only routine operation of the instrument.

2. To log into the Oligo Pro II software, type **Administrator** or **User** into the **User ID** field of the login window (Figure 10).

3. Enter your password.

   The first time you log in, the password information is left blank.

   ![Figure 10: Login menu](image)
4 Click **OK.**

The main screen opens.

![Figure 11: Oligo Pro II software main screen](image)

More information about the **User** and **Administrator** functions within the software are discussed in a later chapter.

A password can be set for the system during the Agilent training and installation period at your facility or by using the **Change Password** command of the **Admin** menu described in section “**Change Password**” on page 38.

The first time you log into the Oligo Pro II software, a database is displayed indicating where the application is connected.

The database connection can be changed before logging in by clicking **Browse** next to the database field.

The login information is used in event and error logging to aid in controlling access to the system, tracking usage and monitoring changes to the system.

Every time you log into the Oligo Pro II software, you begin on the main screen (**Figure 11**).
Main Screen Toolbar

The main screen toolbar is located at the top of the Oligo Pro II software main screen as seen in Figure 11.
File Menu

Figure 12  File menu functions

File Manager

The File manager command allows electropherogram data to be examined within the Oligo Pro II software environment.

Files are normally analyzed using the Oligo Pro II Data Analysis software, which is covered in the Oligo Pro II Data Analysis Software User Manual.

The file manager also enables you to correct the capillary alignment for an individual data file.

Select the File manager command to open a file browser and to navigate to a data file. Once a file is selected, the file manager window opens (Figure 13).
Table 2 lists the functions of the file manager screen.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Opens a file browser to navigate to desired data file.</td>
</tr>
<tr>
<td>Cap. Alignment</td>
<td>Allows you to view and manipulate the capillary alignment for the data file opened only. Capillary alignment from a file is discussed in section “Capillary Alignment” on page 47.</td>
</tr>
<tr>
<td>Print</td>
<td>Allows you to print the twelve electropherograms to a page.</td>
</tr>
<tr>
<td>Exit</td>
<td>Closes the File manager window.</td>
</tr>
</tbody>
</table>

Table 3 lists the Current, Method summary, and Sample info toolbar functions.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>Displays the current of the separation during the analysis.</td>
</tr>
<tr>
<td>Method summary</td>
<td>Shows a summary of the method that was used for the separation.</td>
</tr>
<tr>
<td>Sample Info</td>
<td>Shows the sample names input for the separation file.</td>
</tr>
</tbody>
</table>
Once the data file is opened in the file manager, the data can be viewed in groups of 12 (by row) when the Group tab is selected. A page selection is located at the bottom of the screen allowing for navigation of all rows in a plate (assuming 96-capillary array data is chosen).

To view a single electropherogram at a time, either left-click twice on the desired well or select the Single tab. A page and well selection is located at the bottom of the screen allowing for navigation of all rows and wells in the plate.

Electropherogram data can be panned, zoomed in, or zoomed out of by right-clicking on the chart and selecting the function of interest.

**Oligo Pro II Data Analysis**

Selecting this command will open the Oligo Pro II data analysis software.

**Logout**

The Logout command allows you to log out of the Oligo Pro II software and to log in as a different user.

After logout, the login menu opens (Figure 10).

**Exit**

The Exit command closes the Oligo Pro II software. Alternatively, you can exit the program by selecting the red X on the top right corner of the main screen.
This chapter describes the Oligo Pro II software in more detail on the commands of the Admin menu.
Admin Menu

Figure 14  Admin menu commands
The Configuration command opens the Configurations dialog, where the administrator modifies Security Settings, Device Settings, Bottle Volumes, and Email parameters for the system.

In the Security Settings tab, the administrator can modify the login requirements for all users (Figure 15).

![Configuration settings - Security settings tab](image)

**Figure 15** Configuration settings - Security settings tab
A summary of the parameters in the Security Settings tab is provided in Table 4.

**Table 4  Configuration – Security Settings tab functions**

<table>
<thead>
<tr>
<th>Configuration Option</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Login required</td>
<td>True or false</td>
<td>If true: User must log into the application. If false: No login is required for user level access.</td>
</tr>
<tr>
<td>Minimum password length</td>
<td>0 to 12</td>
<td>The password must exceed this number of characters</td>
</tr>
</tbody>
</table>
| Maximum number of login attempts | O to 12   | If a user attempts to log in with an invalid password, after this many attempts:  
• That user ID is made inactive and the error logged  
• The failed login attempt is recorded in the event log  
• The application is shut down |
| Time to change passwords | O to 36 months | A password (login ID and signature) will expire after the set number of months. If set to zero, there is no password expiration.          |
| Auto logoff time     | O to 30 minutes | If the application is left unattended for length of time, the current user will be logged off. If set to zero, there is no automatic logoff. |
| Number of previous passwords | O to 4  | When a user changes their password, they may not select from this number of previously used passwords. If set to zero, there is no previous used password restriction. |
The **Device Settings** tab allows modification of the device settings. The settings should be updated whenever a new capillary array cartridge is installed (Figure 16).

A summary of the configuration options in the **Device Settings** tab is provided in Table 5.
### Table 5  Configuration – Device Settings tab functions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of capillaries</td>
<td>Administrator</td>
<td>Values: 12, 24 or 96. Note, selecting 12 when a 96-capillary array is installed may cause hardware issues and ruin the array.</td>
</tr>
<tr>
<td>Capillary length</td>
<td>Administrator</td>
<td>Value: 55. Note that this length refers to the effective length of the capillaries in use and uses those methods only.</td>
</tr>
<tr>
<td>Capillary array serial</td>
<td>Administrator</td>
<td>Text field. Maximum length 14 characters.</td>
</tr>
<tr>
<td>number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffer tray</td>
<td>Administrator</td>
<td>Buffer tray selection is locked to Buffer Row A.</td>
</tr>
<tr>
<td>Storage solution tray</td>
<td>User</td>
<td>Allows for the selection of tray and row for the storage solution tray.</td>
</tr>
<tr>
<td>Language</td>
<td>User</td>
<td>Allows the user to select language for the software (default is english).</td>
</tr>
<tr>
<td>Language file</td>
<td>Administrator</td>
<td>Allows the user to change the language of the software by selecting the appropriate (.csv) language file. (Example: Chinese, English and German)</td>
</tr>
<tr>
<td>Set tray name to folder</td>
<td>Administrator</td>
<td>Allows the user to automatically set the tray name to the folder prefix.</td>
</tr>
<tr>
<td>prefix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reset tray info when</td>
<td>Administrator</td>
<td>Automatically resets tray information when queuing multiple runs.</td>
</tr>
<tr>
<td>queuing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Save</td>
<td>Administrator</td>
<td>Saves the chosen settings.</td>
</tr>
<tr>
<td>Reload</td>
<td>Administrator</td>
<td>Reloads the previously saved settings.</td>
</tr>
</tbody>
</table>
The **Bottle Volumes** tab allows modification of the reagent bottle volumes (**Figure 17**).

The gel 1, gel 2, conditioning, and waste bottles can be set from 50 mL to 5000 mL by entering the appropriate volume of the container used in the system.

![Configuration settings - Bottle volumes tab](image17)

**Figure 17** Configuration settings - Bottle volumes tab

The **Email** tab allows the user to set up e-mail settings (**Figure 18**).

![Configuration settings - Email tab](image18)

**Figure 18** Configuration settings - Email tab
Information on the **Host**, **Port number**, etc. may be found at the e-mail source or with the local site information technology administrator. For example, yahoo.com offers an e-mail settings page as shown in Figure 19.

**NOTE**

After inputting all the desired e-mail settings, select **Test Connection** (green arrow) to ensure a positive test. If the test is not positive or passed, the parameters are not set correctly.

**NOTE**

After passing the connection test, click **Save**.

---

**Figure 19**  
Example outgoing mail settings
The command **Change password** opens the window shown in Figure 20.

Changing the password is accessible to all users.

**Password requirements:**

- Maximum password length is 40.
- Password can contain letters or numbers.
- Passwords are case insensitive.

![Change Password](image)

**Figure 20** Change password menu
User Maintenance

The command **User maintenance** opens the **User Maintenance** window (Figure 21).

In this window, the administrator can add, delete, and modify all users that can access the Oligo Pro II software.

1. To edit the settings, select the pencil icon 🔎.
2. After editing, and if all entries are acceptable to the user, select the check mark ✅.

A summary of the parameters in the **User Maintenance** window is provided in Table 6.

Table 6  User maintenance window parameters

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>User ID</td>
<td>User ID for login or signature. This ID must be unique for the system.</td>
</tr>
<tr>
<td>Access Level</td>
<td>Set the user access level to user or administrator.</td>
</tr>
<tr>
<td>User Name</td>
<td>The full name of the user.</td>
</tr>
<tr>
<td>Email</td>
<td>Users email address (optional).</td>
</tr>
</tbody>
</table>
The Archive & purge database command is used to maintain the event and error log database.

Event and error logs are saved in the database and can be retrieved for advanced troubleshooting.

This function allows the user with administrative rights to back up the data for future use in a different location or on an external storage device.
Event Report

The Event report command provides a tabular report of the audit trail of the events that have occurred in the Oligo Pro II software.

Selecting Event report from the Admin menu opens the Select Date Range window where the user can select Use all dates or Use selected date range (Figure 22).

![Select Date Range window](image)

Users with both Administrator and User level access can view the Event Report.

The Event Report contains the following information for each event log item:

- User name: user who was logged in
- Computer name: network name of the computer where the event occurred
- Event date
- Event code action
- Description

After selecting the appropriate date range in the Select Date Range window and selecting OK, an Event Report is generated (Figure 23).
The icons along the top of the Event Report follow standard Windows function nomenclature and are summarized in Figure 25.

Table 7  Event report icons and descriptions

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Page section</td>
</tr>
<tr>
<td></td>
<td>Back to parent report</td>
</tr>
<tr>
<td></td>
<td>Stop rendering (i.e. stop report generation)</td>
</tr>
<tr>
<td></td>
<td>Refresh</td>
</tr>
<tr>
<td></td>
<td>Print</td>
</tr>
<tr>
<td></td>
<td>Print layout</td>
</tr>
<tr>
<td></td>
<td>Page setup</td>
</tr>
<tr>
<td></td>
<td>Save</td>
</tr>
<tr>
<td>100%</td>
<td>Zoom</td>
</tr>
</tbody>
</table>
Error Report

The Error report function is used for advanced troubleshooting.

Selecting the command Error report from the Admin menu opens the Select Date Range window where you can select Use all dates or Use selected date range (Figure 24).

![Select Date Range window](image)

Figure 24 Select Date Range window.

The Error Report captures the following information:
- Software exceptions and hardware errors detectable by the software
- User name: the user who was logged in when the error occurred
- Computer name: network name of the computer where the error occurred
- Event date
- Error code
- Description

After selecting the appropriate date range in the Select Date Range window and selecting OK, an Error Report is generated (Figure 25).

The icons along the top of the Error Report follow standard Windows function nomenclature and are summarized in Table 7.
### Oligo Pro II Software – Admin Menu

### Error Report

#### Figure 25  Error Report window

<table>
<thead>
<tr>
<th>User Name</th>
<th>Computer Name</th>
<th>Event Date</th>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator</td>
<td>SCGB3RM6W</td>
<td>12/3/2019 2:10:53 PM</td>
<td>Device Connect</td>
<td>No camera connection</td>
</tr>
<tr>
<td>Administrator</td>
<td>SCGB3RM6W</td>
<td>12/3/2019 2:10:53 PM</td>
<td>Device Connect</td>
<td>HV Board connection failed, Pump Board connection failed, Pressure Board connection failed, Stage Board connection failed</td>
</tr>
<tr>
<td>Administrator</td>
<td>SCGB3RM6W</td>
<td>12/3/2019 2:10:54 PM</td>
<td>Hardware</td>
<td>Set valve failed, No USB connection, Resetting USB connection.</td>
</tr>
</tbody>
</table>
This chapter describes the Oligo Pro II software in more detail on the commands of the Utilities menu.
Utilities Menu

Figure 26 Utilities menu commands
Capillary Alignment

Capillary alignment is required when a new capillary array is installed. It may also be performed when the instrument capillary alignment is not correct. The sign of such an incorrect alignment is low peak intensities even when the sample concentration is high.

When `Capillary alignment` is selected from the `Utilities` menu, the `Capillary Alignment` screen opens.

![Capillary Alignment screen](image)

**Figure 27** Capillary Alignment screen
Capillary Alignment From Real-Time Window

1. Manually select the red line threshold and drag it up to the desired level.
2. From the toolbar, select **Align**.
3. If you have not selected all capillaries, move the threshold and realign them. Perform the realignment until the capillaries are aligned.
4. Keep the following settings:
   - Peak width: 3
   - Sensitivity: 5.0
   - Select the **Space Checking** check box
   - Enter 1 frame/sec.
5. Click **Save**.

Capillary Alignment From File

1. From the toolbar of the **Capillary Alignment** window, select **Read Raw**.
2. Navigate to the location of the raw file using the Windows prompts.
   
   The default saved location of raw data is: `C:/Agilent/Data/(Date: YYYY MM DD)/(Time: XXH XXM)`.
4. The **Align from File** window opens (Figure 28), allowing the user to align the capillaries from the selected run file. The toolbar of the **Align from File** window is discussed in Table 8.
5  Left-click the red baseline and draw it upwards from the bottom of the graph but not above the top of capillary peaks, as shown in Figure 28.

6  Select Locate caps from the toolbar in the Align from file window.

   This will locate the capillary peaks and place a yellow box at the apex of the selected capillaries denoting the capillary pixel location.

   The bottom left corner of the screen states the number of capillaries found. This should be 12 or 96 depending on the configuration of the instrument and type of array in use.

   If necessary, adjust the capillary positions:

   •  To manually adjust the capillary position, left-click the white line dissecting the capillary and drag it left or right to the desired location.

   •  Should the number be off due to too many or too few capillary positions, redraw the red baseline and repeat this step.

   •  To insert or delete a capillary position, right-click on the black area of the graph or the capillary pixel location table to the right of the graph.

   •  Right-clicking on the graph area also allows for zooming in or out on the graph.

---

**Table 8  Align from file toolbar functions**

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🍀 Open</td>
<td>Opens a new file</td>
</tr>
<tr>
<td>✔️ Ok</td>
<td>Accepts Changes to the file (i.e. Capillary locations)</td>
</tr>
<tr>
<td>✖️ Cancel</td>
<td>Cancels any actions and closes the file</td>
</tr>
<tr>
<td>📷 Original</td>
<td>Locates the Original Capillary Positions used when the selected file ran.</td>
</tr>
<tr>
<td>💾 Locate caps</td>
<td>Locates the capillaries based on peak positions in the selected open file. Note: Move the red baseline up so that only the peaks of interest are integrated and not noise from the baseline.</td>
</tr>
</tbody>
</table>
7 Once the desired number of capillaries is located, select **Ok** from the *Align from file* toolbar. This will save any changes made to the capillary alignment and close the *Align from file* window, returning you to the **Capillary Alignment** screen.

8 Select **Save** from the Capillary Alignment window.

From this point forward the instrument will use these saved pixel locations for all future runs.
Hardware Testing

The command **Hardware testing** is available to users with administrator privileges and is used for troubleshooting the instrument.

The **Hardware testing** command from the **Utilities** menu opens the **Hardware Testing Screen** as seen in **Figure 29**.

![Hardware Testing Screen](image)

**Figure 29**  Hardware testing screen

An overview of the functions available in the **Hardware Testing Screen** is listed in **Figure 29**.
## Table 9: Functions of the Hardware Testing Screen

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valves &gt; Waste</td>
<td>Select to open the valve. Clear to close the valve. The status of the valve</td>
</tr>
<tr>
<td></td>
<td>is indicated by an open/filled circle in the status bar, respectively.</td>
</tr>
<tr>
<td>Valves &gt; Air pump</td>
<td>Select to open the valve. Clear to close the valve. The status of the valve</td>
</tr>
<tr>
<td></td>
<td>is indicated by an open/filled circle in the status bar, respectively.</td>
</tr>
<tr>
<td>Valves &gt; UV lamp</td>
<td>Always ON</td>
</tr>
<tr>
<td>Stage &gt; Move</td>
<td>Moves the tray to the selected position.</td>
</tr>
<tr>
<td>Stage &gt; Reset stage</td>
<td>Allows the user to reset the stage position should a drawer be opened</td>
</tr>
<tr>
<td></td>
<td>before the stage finishes its movement.</td>
</tr>
<tr>
<td></td>
<td>Available on instrument serial numbers 2600, and higher.</td>
</tr>
<tr>
<td>Bottle Levels</td>
<td>Gives a visual indication (simulation based on calculated usage) of the</td>
</tr>
<tr>
<td></td>
<td>amount of reagents available in the system.</td>
</tr>
</tbody>
</table>
Move Stage

Allows the user to move the stage to the selected location. See Table 10 for details.

![Figure 30 Stage movement options](image)

### Table 10 Stage movement descriptions

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buffer</td>
<td>Picks up the buffer tray from the buffer drawer and holds it against the capillary array.</td>
</tr>
<tr>
<td>Park</td>
<td>Places the current tray being held back into its respective drawer and moves the instrument platform to the bottom of the instrument allowing for buffer replacement.</td>
</tr>
<tr>
<td>Store</td>
<td>Places the current tray being held back into its respective drawer and picks up the storage solution tray to hold it against the capillary array.</td>
</tr>
</tbody>
</table>
Prime

The Prime function allows the user to prime any of the three available reagent bottle line should a new solution be added to the instrument or bubbles be found in the reagent bottle lines.

Selecting the Prime function from the Utilities menu opens the Prime window as seen in Figure 31. The Prime functions are discussed in Table 11.

![Prime window](image)

**Figure 31** Prime window

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid selected</td>
<td>Allows the user to select which reagent line or combination of lines to prime (Conditioning and/or Gel 1).</td>
</tr>
<tr>
<td>Cycles</td>
<td>Refers to number of cycles (1-10) of the syringe to complete. One cycle is generally sufficient.</td>
</tr>
<tr>
<td>Fill rate</td>
<td>Allows the user to adjust the Fill rate up and down 0-1000. Gel should not be pulled from the gel bottle at a rate above 10 µL/s.</td>
</tr>
<tr>
<td>Empty rate</td>
<td>Allows you to adjust the Empty rate up and down 0-1000. Gel should not be pushed higher than 20 µL/s.</td>
</tr>
</tbody>
</table>
Solution Levels

Allows the user to adjust the volumes added to the reagent bottles and adjust the waste bottle level when emptied.

The Oligo Pro II software tracks the solution levels as the instrument is used. This ensures that the instrument has enough fluids for all of the planned runs.

If the solution levels are low, the software will issue a warning and ask the user to adjust the solution levels before it can proceed with a separation.

Selecting the Solution levels command from the Utilities menu opens the Check Solution Volumes window (Figure 32).

![Figure 32 Check solutions volumes window](image)

1. When solutions are refilled, open this window and enter the correct solution levels (mL) for each container.
   a. Use the up and down arrows or enter the solution level in each entry field to adjust solution levels.
   b. To save changes to solution levels, select Ok.

**NOTE**

For the program to run correctly (i.e. to issue the correct warning), it is important that you enter the solution levels into the program every time that new solutions are placed onto the instrument.
5 Oligo Pro II Software – Help Menu

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Tutorial Videos 57
User Manual 57
About 57
About Firmware 58
Check for Updates 58

This chapter describes the Oligo Pro II software in more detail on the commands of the Help menu.
Help Menu

Figure 33  Help menu commands

Tutorial Videos

Selecting Tutorial videos opens a folder containing videos made to help you with topics such as Placing an array on the Fragment Analyzer and Performing a Capillary Alignment.

User Manual

Navigating to the command User manual opens a drop-down list of every chapter of the user manual.

About

The About command opens an About Oligo Pro II window displaying the version number of software, hardware serial number, and copyright information.
About Firmware

The About firmware command opens an About Firmware window displaying the voltage, pump, and motion control.

Check for Updates

This will check for software updates.
This chapter describes the Oligo Pro II software in more detail on the Operation tab.
Operation Tab Overview

Figure 34  Oligo Pro II software main screen
Tray Selection and Sample ID

Select the sample tray to be used from either the Sample Tray drop-down list or the colored tab tray selection, depending which configuration is set (Figure 35).

1. In the tray window, select .
   The Visual preferences dialog window opens (Figure 36).

2. Choose between the sample tray drop-down list or the colored tab tray selection (Figure 35).

3. If you use the colored tab tray selection window, select to change the color of each sample tray in the Color selection window.

4. To select a row from the 96-well plate depicted in the sample and sample tray selection window, left-click once in that row (Figure 35). To select a new row, left-click on another row.
5 To clear a row selection, select (Figure 35).

The Tray name field of the selection window allows you to input a name for the tray being run (Figure 35). You can also click in this field and use a bar code scanner to import sample names for the plate being run.

Enter sample information in the Sample ID section of the main screen (Figure 37). For a 96-cap system, you must select each row individually to manually enter data (rows A-H). You can also save or load sample names and information using .txt or .csv files. These functions are discussed in Table 12.

<table>
<thead>
<tr>
<th>Capillary</th>
<th>Well</th>
<th>Sample ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A1</td>
<td>SampA1</td>
</tr>
<tr>
<td>2</td>
<td>A2</td>
<td>SampA2</td>
</tr>
<tr>
<td>3</td>
<td>A3</td>
<td>SampA3</td>
</tr>
<tr>
<td>4</td>
<td>A4</td>
<td>SampA4</td>
</tr>
<tr>
<td>5</td>
<td>A5</td>
<td>SampA5</td>
</tr>
<tr>
<td>6</td>
<td>A6</td>
<td>SampA6</td>
</tr>
<tr>
<td>7</td>
<td>A7</td>
<td>SampA7</td>
</tr>
<tr>
<td>8</td>
<td>A8</td>
<td>SampA8</td>
</tr>
<tr>
<td>9</td>
<td>A9</td>
<td>SampA9</td>
</tr>
<tr>
<td>10</td>
<td>A10</td>
<td>SampA10</td>
</tr>
<tr>
<td>11</td>
<td>A11</td>
<td>SampA11</td>
</tr>
<tr>
<td>12</td>
<td>A12</td>
<td>SampA12</td>
</tr>
</tbody>
</table>

Figure 37  Sample information editor

Table 12  Sample information editor functions

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load from file</td>
<td>Loads sample names from a .txt or .csv based file.</td>
</tr>
<tr>
<td>Save tray</td>
<td>Saves the information entered for an entire sample tray.</td>
</tr>
<tr>
<td>Reset tray</td>
<td>Resets the entire sample tray to the default Sample ID settings.</td>
</tr>
</tbody>
</table>
Experimental Run Controls and Adding to Queue

The Oligo Pro II software provides pre-loaded default methods for both capillary array conditioning and experimental methods for each analysis kit offered by Agilent.

The experimental run controls shown in Figure 38 shows the controls available for Run selected rows, Run entire tray, and Condition capillary array. These options are discussed below.

Reagent levels of the bottles are also shown.
Run Entire Tray

Selecting **Run entire tray** opens the **Separation Setup** window (**Figure 39**). Select a method using the drop-down list (**Figure 40**).
The functions of the **Separation Setup** window are discussed in **Table 13**.

**Table 13**  Separation Setup window functions

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method</td>
<td>Select a method from the drop-down list (<strong>Figure 39</strong>).</td>
</tr>
<tr>
<td>Tray name</td>
<td>The Tray name is shown as input by the user on the main screen or the default name appears. You may edit this field by typing in the provided field.</td>
</tr>
<tr>
<td>Folder prefix</td>
<td>The folder prefix allows you to add a prefix to the folder name where the results files will be written.</td>
</tr>
<tr>
<td>Copy results /copy path</td>
<td>The default directory location for the data is C:\Agilent\Data. Select Copy results, and click [...] to navigate to a different location where you want to copy the saved data.</td>
</tr>
<tr>
<td>Notes</td>
<td>Allows to add any additional information you may require for a set of samples.</td>
</tr>
<tr>
<td>Merge rows</td>
<td>When using a 12- or 24-capillary array, select this option to merge several runs for data analysis.</td>
</tr>
</tbody>
</table>
After choosing an appropriate method from the drop-down list and providing appropriate notes, copy paths, etc., select **Ok** to add the chosen method to the method queue, select or **Cancel** to close the window.

The settings icon in the top of the **Separation Setup** window opens the method editor window (**Figure 41**). Here, you can define a new method, or edit the existing method prior to executing a run.

In the method editor window, select a method from the drop-down list. To create a new method, select **File > Save as** and save as the new method with a unique name. If you want to edit and save the existing method, select **Save** to accept the changes and close the window. To edit the current method for the current run without permanently saving the method, select **OK**.

**Figure 41**  Method editor window

The method editor window allows for customization of the run parameters for a CE separation.

Select the check box next to the individual parameters to enable different steps and parameters. The individual parameters are discussed in **Table 14**.
Table 14  Method editor window functions

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform Prerun</td>
<td>A short pre-run is recommended to normalize the gel inside the capillaries.</td>
</tr>
<tr>
<td>Rinse</td>
<td>The rinse option allows you to dip into the selected position rinsing the capillary tips and electrodes between the pre-run and sample injection. The Tray position, Row, and Dip count can be altered as well.</td>
</tr>
<tr>
<td>Sample Injection</td>
<td>Define the Voltage and Time for the voltage injection.</td>
</tr>
<tr>
<td>Separation</td>
<td>Define the Voltage and Time of the CE Separation.</td>
</tr>
</tbody>
</table>
Condition Capillary Array

Selecting **Condition capillary array** opens the **Select Conditioning Method** window ([Figure 42](#)). Select a method using the drop-down list ([Figure 43](#)).

![Select Conditioning Method window](image)

**Figure 42** Select Conditioning Method window
After choosing an appropriate method from the drop-down list, select **OK** to add the chosen method to the method queue, or **Cancel** to close the screen.

Select ![Editor Icon](image) to open the condition capillary array method editor window, which allows the user with administrator privileges to define a new conditioning method, or to edit the existing method prior to executing a run. The conditioning method editor window is shown in **Figure 44**.

Users with user level are allowed to view the method parameters of the selected file in the **Method Summary**.

To create a new method, select **File > Save as** and save as the new method with a unique name. If you want to edit and save the existing method, select **Save** to accept the changes and close the window. To edit the current method for the current run without permanently saving the method select **OK**.
The condition capillary array method editor window allows for customization of the run parameters for a CE separation. The individual parameters are discussed in Table 15.
## Table 15 Condition capillary array method editor window settings

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1, 2, or 3</td>
<td>Enables/disables the step to be used.</td>
</tr>
<tr>
<td>Time</td>
<td>Total time of the conditioning step.</td>
</tr>
<tr>
<td>Fill pressure</td>
<td>Maximum fill pressure. This should be set &lt; 300 psi.</td>
</tr>
<tr>
<td>Solution</td>
<td>Select <strong>Conditioning</strong> solution or <strong>Gel 1</strong> reagent bottles for use.</td>
</tr>
<tr>
<td>Fill reservoir rate</td>
<td>The rate at which the syringe fills the reservoir.</td>
</tr>
<tr>
<td>Fill capillary rate</td>
<td>The rate at which the syringe fills the capillaries. This should be no greater than 10 µL/s for a gel, and up to 200 µL/s for capillary conditioning fluid.</td>
</tr>
<tr>
<td>Time</td>
<td>Total time of conditioning step.</td>
</tr>
<tr>
<td>Fill syringe from solution</td>
<td>The rate at which the syringe fills from the selected solution.</td>
</tr>
<tr>
<td>Pull from reservoir</td>
<td>The rate at which the syringe pulls liquid from the reservoir. For the Oligo Pro II system this should never exceed 30 µL/sec.</td>
</tr>
<tr>
<td>Hold pressure rate</td>
<td>The rate at which the syringe will pressurize the capillaries to maintain pressure.</td>
</tr>
<tr>
<td>Push to waste</td>
<td>The rate at which the syringe will empty to waste.</td>
</tr>
<tr>
<td>Tray</td>
<td>Select the tray to pump into when conducting the conditioning. Always pump to buffer tray when pushing gel through capillaries to avoid drying the capillary tips.</td>
</tr>
</tbody>
</table>
Once a sample tray has been selected, sample names are entered into the **Sample ID** field. When **Add to queue** has been selected, the chosen method is shown in the method queue (**Figure 45**).

**Figure 45** shows three sample runs chosen from sample trays 1, 2, and 3 followed by a pause in the method queue and a priming method.

A **Pause** or **Prime** can be inserted into the method queue by selecting the method queue area of the screen. When **Insert Prime** is selected, the **Prime** window opens, prompting the user to choose the bottle location to prime from a drop-down list (**Figure 46**).

Methods loaded into the method queue can be moved up or down based on the user’s needs by left-clicking on the method and dragging it to the desired location in the queue.

To view the parameters for the separation method in the method queue, select **Method summary** next to the separation method. A summary of the method will appear, as shown in **Figure 47**.
Select **Edit** from the Method summary window allows you to make final changes to the method if desired.

To cancel only the separation method in the queue, select **X** next to the separation method. To delete all items in the queue, select **X** from the method queue run control toolbar.

To expand the method and show a detailed summary, select the down arrows next to the separation method.

There are three run controls for the method queue: **Clear the Method Queue**, **Pause the Method Queue**, and **Start the Method Queue**. These run controls are shown in **Table 16**.
### Table 16  Method queue run controls

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear</td>
<td>Clears all separation methods, pauses, and primes from the queue.</td>
</tr>
<tr>
<td>Pause</td>
<td>Pauses the method queue. The current method running will still complete. To restart the queue select the start icon.</td>
</tr>
<tr>
<td>Start</td>
<td>Starts the method queue. Once started the top method will disappear and the screen will switch to the run status tab. The next method will move up in the queue.</td>
</tr>
</tbody>
</table>
This chapter describes the Oligo Pro II software in more detail on the Run Status tab.
Run Status Tab Overview

Once **Start** has been selected (for more information, refer to *Chapter 6, “Oligo Pro II Software – Operation Tab”*), the display will switch from the **Operation** tab to the **Run Status** tab.
Stage Movement Animation

Whenever the stage moves from one position to another, the animation shows where the Oligo Pro II stage is moving to/from (Figure 48). This provides a real-time view of what is happening.

Figure 48  Stage movement animation
Conditioning Animation

When the Oligo Pro II instrument is pumping conditioning solution or gel, the animation in Figure 49 is shown. The animation gives a real-time view of exactly what the instrument is doing during a conditioning and/or gel/fill sequence.
Pre-Run / Injection View

When the Oligo Pro II instrument is completing a pre-run or injection, the screen in Figure 50 is shown.

![Pre-run/injection screen](image-url)

**Figure 50** Pre-run/injection screen
Real-Time Separation View

When the Oligo Pro II instrument starts the separation, the screen shows the real-time view of the separation (Figure 51).

Figure 51  Real-time separation window

The **Group** tab at the top shows the run in a group of 12 electropherograms. The **Single** tab shows individual electropherograms.

When a 96-capillary system is running, you can select between rows of a group on the bottom left of the electropherograms by select the corresponding letter of the row. When viewing the **Single** tab, you can also select the well number to view.

Other options available from the **Run Status** tab are discussed in **Table 17**.
### Table 17  Run status tab options

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Method summary" /></td>
<td>Opens a popup window showing the method summary for the current method being run.</td>
</tr>
<tr>
<td><img src="image" alt="Abort Task" /></td>
<td>Aborts only the individual task being done, i.e. stage movement, pumping, or injection.</td>
</tr>
<tr>
<td><img src="image" alt="Abort All" /></td>
<td>Aborts the entire method being run and begins the next method in the queue. If no methods are found, the stage returns to the storage position. When selected, a window asks to verify if you really want to abort.</td>
</tr>
<tr>
<td><img src="image" alt="Current" /></td>
<td>Shows the current for the separation being performed.</td>
</tr>
<tr>
<td>Task status</td>
<td>Shows the status bar and time left for each individual task being accomplished, i.e. stage movement, pumping, or injection.</td>
</tr>
<tr>
<td>Method status</td>
<td>Shows the status bar and time left for the entire method to complete.</td>
</tr>
</tbody>
</table>
Status Bar

The bottom bar of the Oligo Pro II software shows a real-time status bar containing important information about the instrument status. These functions are discussed in Table 18.

Table 18 Instrument Status Information

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![6.0kV]</td>
<td>Left-clicking on this icon will show the voltage level for the last 5 minutes.</td>
</tr>
<tr>
<td>![44μA]</td>
<td>Left-clicking on this icon will show the current level for the last 5 minutes.</td>
</tr>
<tr>
<td>![0.0 PSI]</td>
<td>Left-clicking on this icon will show the pressure level for the last 5 minutes.</td>
</tr>
<tr>
<td>![Lamp: ON]</td>
<td>The blue circle denotes high voltage present and states that the LED is on. If the circle is grey, the LED is turned off and the message reads LED OFF.</td>
</tr>
<tr>
<td>![Waste: Closed]</td>
<td>Denotes if the waste valve is open or closed.</td>
</tr>
<tr>
<td>![Stage: Buffer A(Trey1A)]</td>
<td>Denotes the location of the stage at that point in time.</td>
</tr>
</tbody>
</table>
8 Oligo Pro II Software – Sample Name Entry

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Importing Sample Names 85
Importing Sample Names Using a Bar-Code Reader 87

This chapter provides information on how to enter the sample names in the Oligo Pro II software.
Sample Name Entry

**Entering Sample Names Manually**

1. From the **Operation** tab, select the tray number, the desired row, and the sample cell.
2. In the field **Sample ID**, enter the desired sample names.
3. Save the file as a .txt or .csv using the save functions (**Figure 52**).

**Figure 52**  Manual sample entry
Importing Sample Names

✔ The files must be available in .txt or .csv file format.

✔ The data format must comply with the format described below in order for the system to read the files correctly.

1 In the Operation tab, select Load from file to load a set of saved or previously created sample names.
   • For a .txt file, a single column of sample names are used (Figure 53)

![Text Editor Image](image)

Figure 53  txt file format (single row of names—no well numbers or row numbers)
For a .csv file, the format is row number, well number, and sample name (Figure 54).

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
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Figure 54: .csv file format: row number, well number, sample name
Importing Sample Names Using a Bar-Code Reader

For the purposes of sample name import, a bar code reader is equivalent to a keyboard. When a bar-code is read, the program searches the Samples folder for a name that is identical to the bar-code. If a name is found, then the file (and the corresponding sample names) is imported.

1. Place the sample name files into the C:/Agilent/Samples folder. If a folder does not exist, create a new Samples folder (Figure 55). The sample name file can be either a .txt file or .csv file (using the formats described in section “Importing Sample Names” on page 85). The sample name files are created by the user, or automatically by a LIMS system.

   ![Figure 55](samples_folder.png) Samples folder

   It is critical that the name of the file is identical to what is read by the bar-code reader.

   Example:

   In Figure 56, the name associated with the bar-code is 00060065.

   ![Figure 56](barcode.png) Bar code 00060065
Thus, the .csv file or .txt file must be given the file name 00060065 and placed in the Samples folder (Figure 59).

2. In the field Tray name of the Operation tab, highlight the tray name with the mouse cursor (Figure 58).
3 Use the bar-code reader to scan the bar-code on the plate.

The names are automatically imported (Figure 59).

Figure 59  Imported sample names
9 Oligo Pro II Capillary Array

Capillary Array Parts 91
Removal of the Capillary Array 92
Unpacking a New Capillary Array 101
Capillary Array Installation 107

This chapter explains the essential operational parameters of the capillary array.
Capillary Array Parts

The Oligo Pro II instrument capillary array allows for direct parallel injection and separation of 12, 24, or 96 samples at once.

The capillary array cartridge is located in the upper compartment of the instrument and accessed by opening the instrument hood.

Figure 60  Capillary array parts (12-capillary array shown)
Removal of the Capillary Array

This section provides a guideline to remove a capillary array cartridge from the Oligo Pro II instrument.

Before proceeding with the capillary array removal, go to Utilities > Move Stage and select the park icon to place the stage into the park position and ensure all trays have been returned to their corresponding drawers.

1. Open the top hood of the instrument.
2. Unplug the white high voltage supply cable for the top front panel and place in the holder of the capillary array frame.

**Figure 62** Instrument top compartment – high voltage supply cable
3  Remove the window guard.

**NOTE**  Avoid looking directly at the light.

4  Pull out the capillary reservoir connector slide.
Use the capillary reservoir connector tool to loosen the capillary array bundle by prying up on the bundle.

Figure 65  Instrument top compartment – capillary reservoir connector tool
6 Remove the capillary array bundle by pulling up gently. Avoid pulling up hard as to not break any capillaries.

7 Carefully insert the protective cover over the capillary bundle.
8 Place the capillary array bundle on the top holder of the capillary array window.

Figure 68 Instrument top compartment – storing covered capillary array bundle
9 Remove the capillary array window from the window holder.

Do not press on or touch the capillaries.

10 Flip the array window after removal so that the capillary array bundle goes from the right to the left side of the array frame.
11 Attach the array window to the capillary array frame using the attachment screw.

Figure 70  Instrument top compartment – attach array window to capillary array frame

12 Use the provided hex wrench to remove the two white screws holding the capillary array in place.

Figure 71  Instrument top compartment – array attachment screw removal
13 Carefully lift the array straight up to remove it from the Oligo Pro II instrument.

Once removed from the instrument, the capillary array cartridge is ready for disposal or storage.
Unpacking a New Capillary Array

This section provides a guideline of the steps required to physically unpack a new capillary array from the shipping container and packaging.

Save the original packaging when receiving a new capillary array cartridge. This packaging is necessary for proper shipment of a capillary array in the event of a return.

1. Open the capillary array shipping box and remove the foam cover.

Figure 73  Capillary array shipping box – open box and remove foam cover
2. Remove packaged array from shipping box.
3 Remove plastic shipping cover from the capillary array.

NOTE Take care not to break capillaries or touch the array window when removing packaging.
4 Unwind the rubber band securing the capillary array bundle to the capillary array window.

Figure 76  Capillary array shipping box – rubber band removal
5 Use the provided hex wrench to remove the two white screws securing the array to the shipment frame.

Figure 77 Capillary array shipping box – shipment frame screw removal
Carefully lift the array straight up to remove it from the shipment frame.

**Figure 78** Capillary array shipping box – remove array from shipment frame
Capillary Array Installation

This section will provide a pictorial guide of the steps required to physically install a capillary array cartridge into the Oligo Pro II instrument.

Before proceeding with installation ensure the instrument is in the park position. If it is not in the park position, go to Utilities > Move Stage and select the park icon to place the tray being held back into its drawer and move the stage into resting position.

1. Open the top hood of the instrument.
2 Carefully place the capillary array into the top compartment of the instrument with the array window facing out.

The four alignment pins should align with the alignment holes in the instrument.
3 Use the provided hex wrench to install the two white screws holding the capillary array in place.

![Figure 81](Image) Instrument top compartment – array attachment screw installation

4 Remove the array window attachment screw.

![Figure 82](Image) Instrument top compartment – remove array window
5 Carefully flip the array window so that the capillary array bundle goes from the left to the right side of the instrument.

6 Position the capillary array window onto the loading bars and firmly slide it down into place.

**NOTE**

Do not press on or touch the capillaries.

*Figure 83*  Instrument top compartment – array window placement
7 Remove the capillary array bundle from the top holder of the capillary array window.

Figure 84 Instrument top compartment – capillary array bundle removal

8 Carefully remove the protective cover from the capillary bundle and place it back on the holder on top of the window.

Figure 85 Instrument top compartment – removing protective cover
Install the capillary array bundle by firmly pushing the capillary array bundle into the reservoir opening until a distinct click is heard.

Push in the capillary reservoir connector slide to secure the capillary array bundle.

If this step is not followed, the capillary array bundle will be damaged upon pressurization.
11 Place the window guard over the array window.

![Figure 88](image1.png) Instrument top compartment – window guard placement

12 Remove the high voltage cable from the array frame holder and firmly push it into the high voltage cable connection.

![Figure 89](image2.png) Instrument top compartment – high voltage supply cable
13 Close the reagent door and top hood of the instrument.

Figure 90  Oligo Pro II instrument

After installing an array, the Oligo Pro II requires a capillary alignment as described in Chapter 4, “Oligo Pro II Software – Utilities Menu”.
10 Appendix

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Full Skirt Sample Plates 121

This chapter provides a Quick Start Guide and additional information on part numbers, maintenance procedures, and system settings.
Permissible Characters

The following tables show which characters are permissible (Table 19) and not permissible (Table 20) for a file name.

**Table 19  Permissible characters for a file name**

<table>
<thead>
<tr>
<th>Characters</th>
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<td>}</td>
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<tr>
<td>]</td>
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<tr>
<td>,</td>
</tr>
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</table>

**Table 20  Non-permissible characters for a file name**

<table>
<thead>
<tr>
<th>Characters</th>
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</thead>
<tbody>
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<td>`</td>
</tr>
<tr>
<td>&lt;</td>
</tr>
<tr>
<td>?</td>
</tr>
</tbody>
</table>
Preventative Maintenance Schedule

**Daily Maintenance**

- ✔ Empty the waste bottle and waste tray.
- ✔ Replace the inlet buffer in the buffer tray position.
- ✔ Replace DI water in rinse tray when applicable.
- ✔ Ensure there is conditioning solution in the conditioning solution bottle location.
- ✔ Ensure there is gel in the gel bottle location.
- ✔ Replace the capillary storage solution and plate weekly.

**Monthly Maintenance**

- ✔ Replace the buffer and waste plates with new ones.
- ✔ Replace the gel and conditioning solution bottles with new ones.

**As Needed to Restore Separation Performance**

- ✔ Perform full conditioning with conditioning solution and gel.
Capillary Array Window Cleaning

1. Open the side door and hood of the Oligo Pro II system.
2. Remove the bundle end of the capillary array using the capillary array bundle removal tool. Place bundle in provided protective cover.
3. Remove the capillary array window from the capillary array window holder. Do not touch the array window.
4. Place a paper tower behind the capillary array window as shown in Figure 91.

![Figure 91](image) Capillary array window with paper towel behind

5. Use a spray bottle filled with molecular grade ethanol, gently spray the Capillary Array Window.
6. Use a small nylon paintbrush to gently brush the capillaries in one direction while they are still wet. Alternatively, use a Kim-Wipe to blot the array window dry.
7. Reinstall the capillary array window and bundle.
8. Perform a separation on the Oligo Pro II system.
9. Realign the capillaries when finished by navigating to Utilities > Optical Alignment.
This Quick Start Guide assumes that the Oligo Pro II system has been conditioned previously and does not require a full conditioning.

Preparing System for Separation

1. Ensure there is enough Gel for a separation.
   - 96 Capillary System - Minimum of 10 mL
   - 12 Capillary System - Minimum of 5 mL
   Note that the Oligo PRO II System uses 5 mL of Gel for each 96 cap method separation or 2.5 mL for each 12 cap method.
2. Place a 1X Inlet Buffer in the Buffer Tray position.
   - 96 Capillary System - All Rows 1.0 mL
   - 12 Capillary System - Row A only 1.0 mL
3. Place a 96-Deep Well Tray filled with 1.0 mL diH₂O per well in the Rinse Tray position.
4. Load Sample Tray into the Sample 1, 2, or 3 positions, minimum of 20 µL/well.

Recommended sample concentration is between 1 - 5 µM diluted in diH₂O.

Loading a Run in the Oligo Pro II Software

1. Select Run Selected Group (12 cap) or Run Entire Tray (96 cap) from the main screen of the Oligo Pro II software.
2. Select the Method to run from the drop-down menu or alter injection/run settings using the Method Editor.
   - Sample injection voltage and time can be adjusted to increase or decrease sample load.
   - Sample separation voltage and time can be adjusted to increase/decrease separation time.
   Note that a 12 kV separation for 70 minutes will give n-1 resolution through 60nt.
3. Select OK to add the method to the Method Queue.
4. Select ✅ to start the Method.
Compatible Plates for the Oligo Pro II System

Buffer/Waste/Rinse Plates

The Oligo Pro II system uses a specific deep 96-well plate (1.2 mL) supplied by Fisher Scientific (Part #AB0787) for the buffer, waste, and rinse plate. This specific plate must be used with the instrument (three plates are supplied upon installation).

Standard 1.2 mL deep well, half height, or square well 1.2 mL 96-well plates should not be used as buffer/waste/rinse plates with the Oligo Pro II system, as damage to the capillary array will occur.

Table 21 List of Buffer/Waste Plate

<table>
<thead>
<tr>
<th>Item</th>
<th>Vendor / Part #</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Buffer/ Waste Deep 96-Well Plates</td>
<td>Fisher Scientific #AB0787</td>
<td>Abgene 96-Well 1.2 mL Polypropylene Deepwell Storage Plate, case of 50</td>
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<tr>
<td>Buffer/ Waste Deep 96-Well Plates</td>
<td>Agilent #M5340-50003</td>
<td>Abgene 96-Well 1.2 mL Polypropylene Deepwell Storage Plate, case of 50</td>
</tr>
</tbody>
</table>
Full Skirt Sample Plates

The Oligo Pro II system has been designed to work exclusively with full skirted PCR plates. This instrument is shipped with a set of special plate adapters: **M1300-109 - DRAWER ADAPTER-FULL SKIRT 96 WL MPLATES**.

The Oligo Pro II will not function properly with semi-skirted or non-skirted plates.

Table 22  List of Sample Plates

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<th>Item</th>
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</thead>
<tbody>
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<td>Eppendorf full skirt plates</td>
<td>Fisher Scientific #E0030129512</td>
<td>Eppendorf twin.tec 96 Well LoBind PCR Plates, Skirted</td>
</tr>
<tr>
<td>BioRad Hard Shell plates</td>
<td>BioRad #HSP9601</td>
<td>Hard-Shell 96-Well PCR Plates, low profile, thin wall, skirted, white/clear</td>
</tr>
</tbody>
</table>

The use of PCR plates with different dimensions to the above recommended plates could lead to decreased injection quality and consistency. Damage to the capillary array cartridge tips is also possible.
In This Book

This user manual contains information about the Oligo Pro II software.

The user manual describes the following:

• system overview,
• requirements and installation,
• software menu commands,
• software tabs,
• capillary array,
• sample name entry.