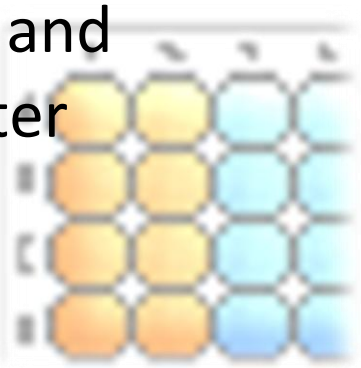
Biochrom ADAP Prisma Software

for the

Zenyth 200rt

Microplate Reader and Spectrophotometer



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ADAP Software for Zenyth 200 Operating Manual

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1. Installing and Launching ADAP Software

1.1. Overview

The ADAP software is a Windows®-based control program for the Zenyth 200 spectrophotometer.

Two versions of the ADAP software are available for the Zenyth 200: ADAP Basic and ADAP Primsa.

ADAP Basic software, which is provided with the instrument, is capable of performing several types of photometric measurements on microplate and cuvette samples:

- Single wavelength or bichromatic endpoint
- Single wavelength or bichromatic kinetic
- Multiwavelength
- Spectral scan
- Linear scan
- Area scan

Note: Linear and area scan measurements may be performed only on microplates. Upgrading to the ADAP Prisma software adds the ELISA and Quantitation modules, which feature advanced programming and evaluation capabilities.

Note: An instrument-dependent license code is required to access the ADAP Prisma functionality. The code is provided when purchasing an ADAP Prisma software license.

The ELISA module features the ability to:

- Define and perform quantitative evaluations, including curve fitting, and standard curves.
- Define and perform qualitative evaluations, including cutoff formulas and groups.
- Define plate layouts, including programming of blanks, standards and controls.
- Eliminate replicates and program test validation formulas.
- Recalculate reduced data from kinetic assays.
- Assign sample IDs.
- Configure multitest assays.

The Quantitation module features the ability to:

- Quickly and easily define and perform quantitative assays, including quantitation of samples with unknown concentrations.
- Define and perform spectral scan and multiwavelength assays.
- Perform the most common cuvette applications including:
- Measuring nucleic acid concentration
- Measuring oligo concentration, melting point, and conversion to pmol/µL.
- Measuring direct protein concentration at 280 nm.
- Determining the purity of DNA preparations.
- Monitoring bacterial growth with preset or user-defined conversion factors.

1.2. Installing the ADAP Software

Installing the ADAP software requires:

- Meeting the minimum computer system requirements for the ADAP software.
- Running the setup program.

1.2.1. System Requirements

Before installing the ADAP software, refer to Table 1-1 to ensure the target computer system meets the minimum requirements. Where relevant, Table 1-1 also lists recommended but not essential system requirements.

TABLE 1-1. ADAP BASIC SOFTWARE SYSTEM REQUIREMENTS

COMPONENT	MINIMUM REQUIREMENTS
CPU	Pentium® II 500 Mhz recommended Pentium® 133 Mhz minimum
RAM	16 MB minimum 64 MB recommended
Hard Drive	50 MB free space
Monitor	640x480 resolution
CD-ROM	Drive 4X
Mouse	IBM® compatible
Serial Port	1 free serial port per instrument connected
Operating Systems	Windows® 95 (Y2K update required) Windows® 98 (Y2K update 2 required) Windows® 98 Second Edition Windows® Millennium Edition

	Windows NT® 4 (Service Pack 5 or higher) Windows® 2000 Windows® XP Windows® 7 Windows® Vista
Web Browser Internet Explorer 4.01 (Service Pack 2 or later)	Web Browser Internet Explorer 4.01 (Service Pack 2 or later)
Database	Microsoft Data Access Components (MDAC) 2.6*
Keyboard 101 key	Keyboard 101 key

*The ADAP software installer automatically installs MDAC 2.6 if it is not present on the system.

1.2.2. Running the Setup Program

The ADAP software setup program installs all of the components required for the ADAP software to run.

To install the ADAP software:

Note: Before installing the ADAP software on a computer equipped with Windows® NT 4, 2000, XP, Windows 7 or Vista set up with multiple user accounts, the user *must* log into an account with Administrator privileges. Users logged into an account with Limited access are not permitted to install the software.

1. Exit all open Windows programs before running the ADAP software setup program.
2. Insert the ADAP software installation CD into the CD-ROM drive. After a few seconds, the welcome page will open:

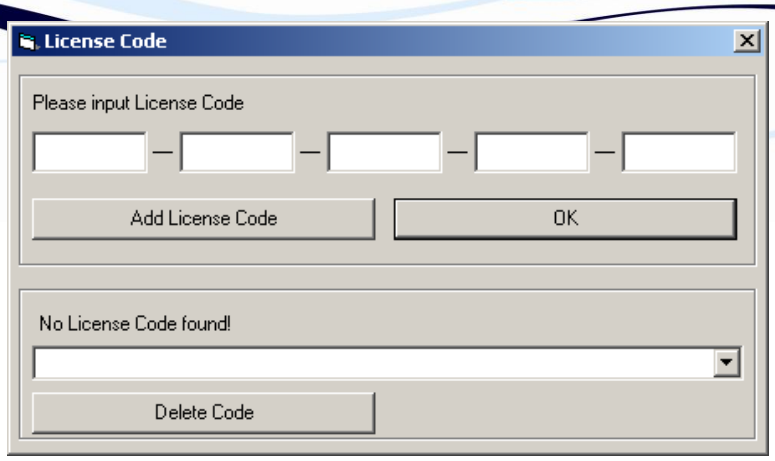
   Note: If the ADAP software setup program does not appear automatically, use Windows Explorer to locate the CD-ROM drive and open Setup.exe.
3. Follow the instructions in the setup wizard to install the software.
4. When the software installation is complete, choose **Close** to exit the setup program.
5. The ADAP software is ready to use.

   OR
   If prompted, choose **Restart**. After the computer restarts, the ADAP software will be ready to use.

1.2.3. Launching the ADAP Software

To launch the ADAP software:

1. From the Windows® Start menu, choose **Programs>Anthos Software>ADAP**.
2. The first time the ADAP software is launched, License Code appears:



Note: A License Code is required only for the ADAP Prisma software.

Note: To access License Code after running the ADAP software for the first time, from t the Windows menu, choose **About**, and then **choose License Code**.

3. Choose **Add License Code** to verify the License Code entered.

   Note: If the license code cannot be verified, re-enter it and choose Add License Code again.
   OR
   Choose **OK** to close License Code if no license code was entered.

   Note: Delete Code is used to delete time-limited promotional License Codes used to demonstrate advanced software features. Service codes used by Anthos service engineers to test instrument functionality may also be deleted.

4. Choose **OK** to close License Code. Login appears (Figure 1-2).

5. Enter the User Name and Password.

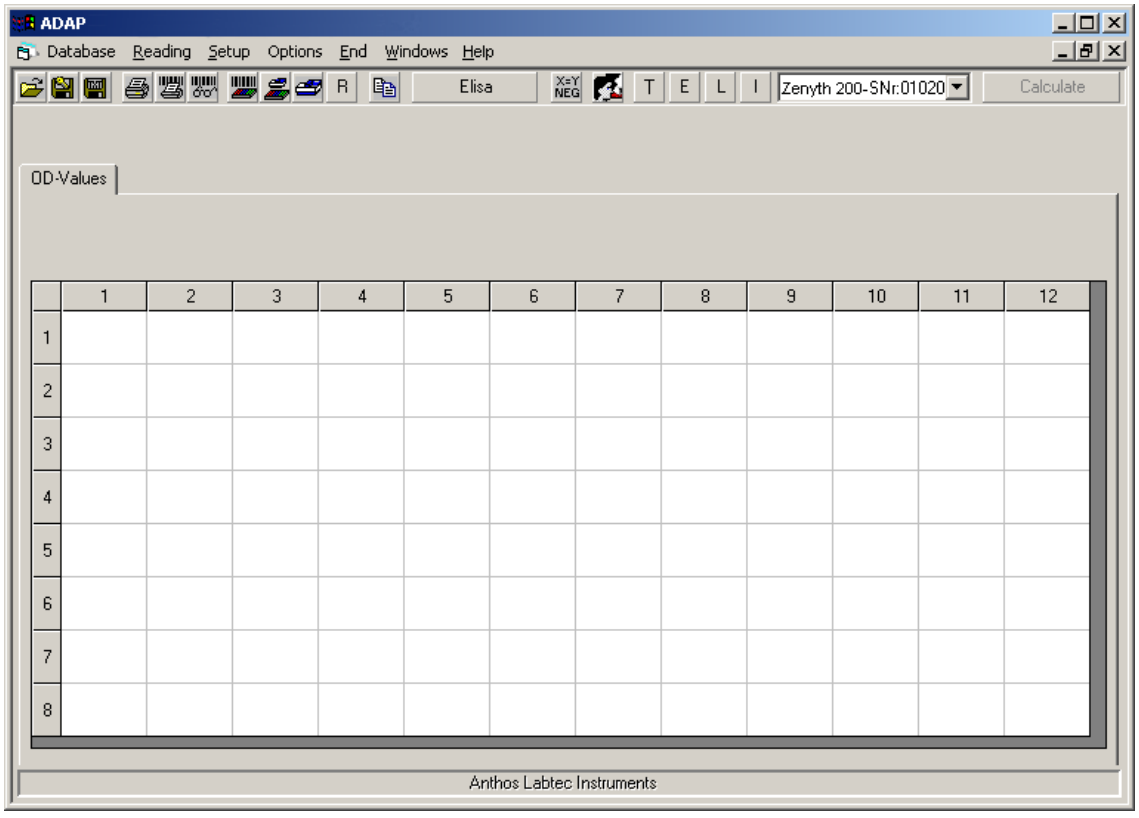
TABLE 1-2. GENERIC USER NAMES AND PASSWORDS

User Name	Password	User Level
sadmin	sadmin	System administrator(user level 3)
admin	admin	Local administrator (user level 2)
user	user	User (user level 1)

Note: If a password is forgotten, contact the system administrator or Biochrom service.

Note: The first user who logs into the ADAP software should accept the role of system administrator. Log in using the generic system administrator user name and password in Table 1-2. After logging in the first time, the password should be changed.

6. Choose **OK**. ADAP appears.



2.

3. User Login and System

3.1. Overview

The ADAP software has the ability to manage up to 50 different users. Only authorized users are able to operate the system, and are identified in the user activity log and on printed reports generated by the software. A hierarchy with three different user levels is implemented:

- Level 1 — These users can perform Quick, Test, and Multitest measurements. However, they may not create, edit, or delete test definitions or configure system and instrument parameters.

- Level 2 (local administrator) — Along with performing Quick, Test, and Multitest measurements, Level 2 users are allowed to create, edit, and delete test definitions and configure some system and instrument parameters.

- Level 3 (system administrator) — These users have the same privileges as Level 1 and Level 2 users, and may also add and delete Level 1 and Level 2 users, edit existing user information for Level 1 and Level 2 users, and provide user passwords. They may add Level 3 users, but may not edit or delete Level 3 accounts after they are created.

  Note: Test and Multitest measurements are available only in the ADAP Prisma software.

User administration includes:

- Accepting the role of system administrator the first time the software is run (refer to Section 2.2, Accepting the Role of System Administrator the First Time the ADAP Software is Run).

- Logging into the ADAP software

- Changing a password.

- Adding and deleting users, as well as editing user information.

- Viewing the user log.

3.1.1. Accepting the Role of System Administrator

The first time the software is run, the person logging in must accept the role of system administrator (Level 3) and immediately change the default provided password.

Note: More than one user may assume the role of a system administrator.

A system administrator (Level 3) can:

- Add Level 1, Level 2, and Level 3 users.
- Delete Level 1 and Level 2 users.
- Edit existing user information of Level 1 and Level 2 users
- Provide user passwords for Level 1, Level 2, and new Level 3 users.

A system administrator (Level 3) cannot:

- Delete other Level 3 users.
- Edit existing user information of other Level 3 users.

3.2. Logging Into the ADAP Software

Authorized users must log in with their individual user name and password each time ADAP software is started.

Note: After seven minutes of inactivity, users are automatically logged out and must log in again to continue using the software.

The first time a user logs in, the default user name and password in Table 2-1 must be used according to the user level. After logging in with a default user name and password, the password should be changed.

3.2.1. To log into the ADAP software:

1. From the Start menu, choose **Programs>Anthos Software>ADAP**. The ADAP software starts up and Login appears (Figure 2-1).

2. Enter the **User** and **Password**.

   Note: If a password is forgotten, contact the system administrator or Biochrom service.

3. Choose **OK**.

   Note: If a Level 1 or Level 2 user attempts to access a software function they do not have permission to perform, Login appears. To access the software function, a User and Password for a user with permission to perform the function must be entered.

User Name	Password	User Level
sadmin	sadmin	System administrator(user level 3)
admin	admin	Local administrator (user level 2)
user	user	User (user level 1)

TABLE 2-1. DEFAULT USER NAMES AND PASSWORDS

3.2.2. Changing a Password

The user should change the password after logging in the first time with a default user name and password (Table 2-1). However, users may change their password at any time.

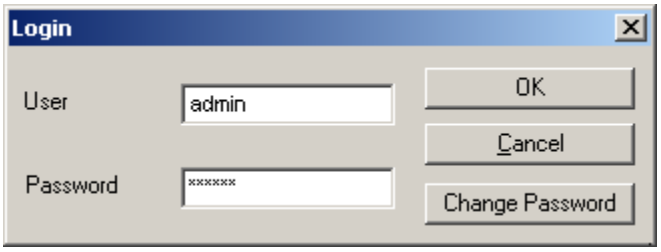
To change a password:

1. Start the ADAP software.

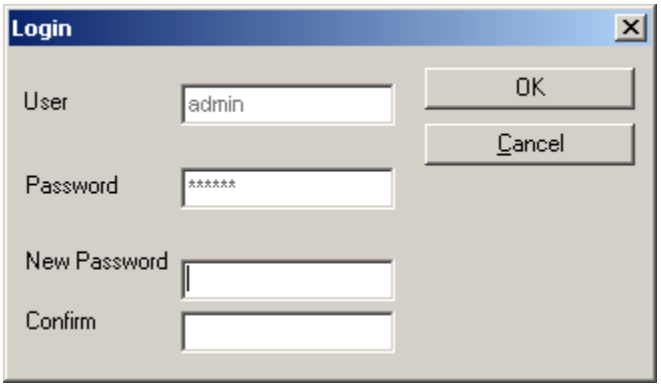
OR

From the Setup menu, choose **Change User**. Login appears.

2. Enter a valid User Name and Password. Change Password appears



3. Choose **Change Password**. Login expands to display password information.



4. In New Password, enter the new password.

Note: Passwords are case sensitive and limited to 15 characters, including spaces.

5. In Confirm, enter the new password a second time.
6. Choose **OK**. The user is logged in and the password is changed.

3.2.3. Adding, Editing, and Deleting Users

Only system administrators (Level 3) can add, edit, and delete users. For Level 1 and Level 2 users, a system administrator can add and delete users, edit user information and assign passwords. A system administrator can create new system administrator (Level 3) accounts, but cannot edit or delete other system administrator accounts after they have been created.

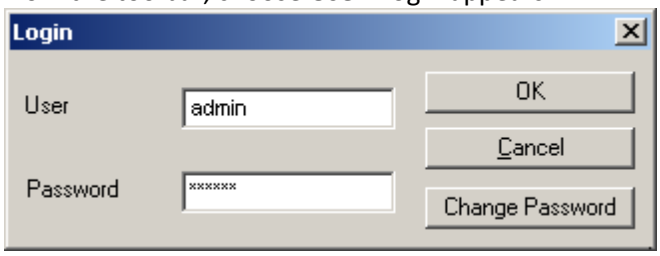
Adding New Users

A system administrator (Level 3) creates new user names and passwords for new users.

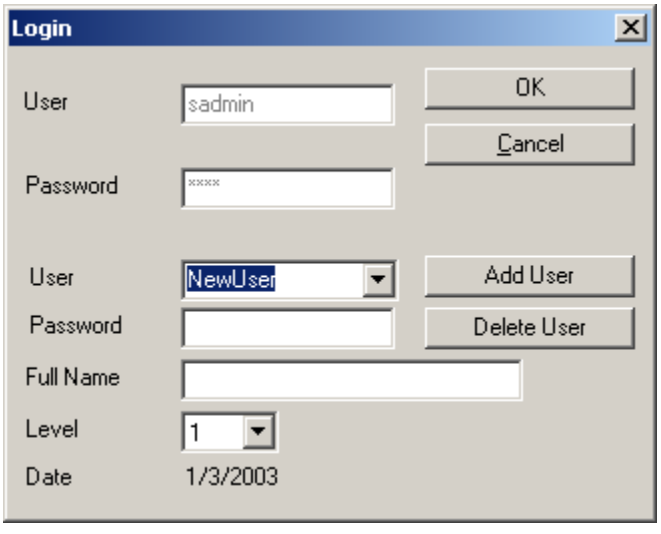
To add a new user:

1. Start the ADAP software.

   OR
   From the Setup menu, choose **Change User**.
   OR
   From the toolbar, choose **User**. Login appears



2. Enter a valid system administrator (Level 3) User Name and Password. A Change Password button appears
3. Choose **Change Password**. Login expands to display detailed user information.



4. In User, enter a user name for the new user.
5. In Password, enter the password the new user will use to login to the ADAP software.

   Note: Passwords are case sensitive and limited to 15 characters including spaces.

6. In Full Name, enter the full name of the new user.

   Note: A user's Full Name appears in the user log table and on printed reports generated by the software.

7. Select the desired **Level** for the new user (refer to Section 2.1, *Overview*)
8. Choose **OK** to add the user and exit Login. The user may now log on using the new user name and password.

   OR

   Choose **Add User** to add another user.

   OR

   Choose **Cancel** to delete the new user from the list and exit Login.

Deleting Users

A system administrator (Level 3) can delete Level 1 and Level 2 users.

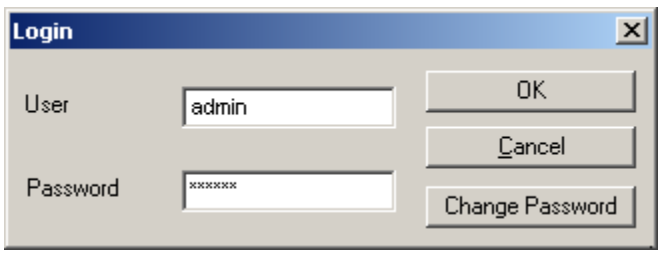
Note: Only system administrators (Level 3) can delete users. However, they are not permitted to delete other system administrators.

To delete a user:

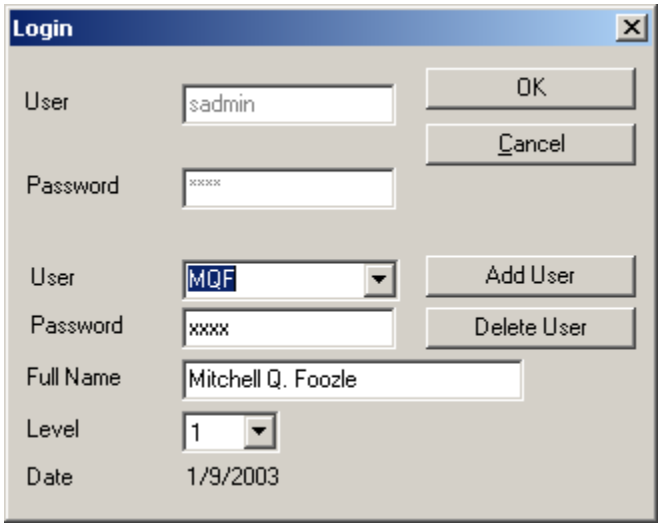
1. Start the ADAP software.

   OR
   From the Setup menu, choose **Change User**.
   OR
   From the toolbar, choose **User**. Login appears.

2. Enter a valid system administrator (Level 3) User Name and Password.Change Password appears:



3. Choose **Change Password**. Login expands to display detailed user information



4. In User, select the user to be deleted.
5. Choose **Delete User**. The user is removed from the user list.
6. Choose **OK** to delete the selected user from the software and exit Login.

   OR
   Choose **Cancel** to prevent deleting the selected user from the software and exit Login.

   Note: Only one user may be deleted each time Login is open. To delete additional users, exit Login, then reopen it to delete the next user.

Editing Existing User Information

A system administrator (Level 3) can edit existing user information, including user name, password, full name, and user level, for Level 1 and Level 2 users.

Note: Only system administrators (Level 3) can edit existing user information. However, they are not permitted to edit user information for other system administrators.

To edit user information:

1. Start the ADAP software.

   OR

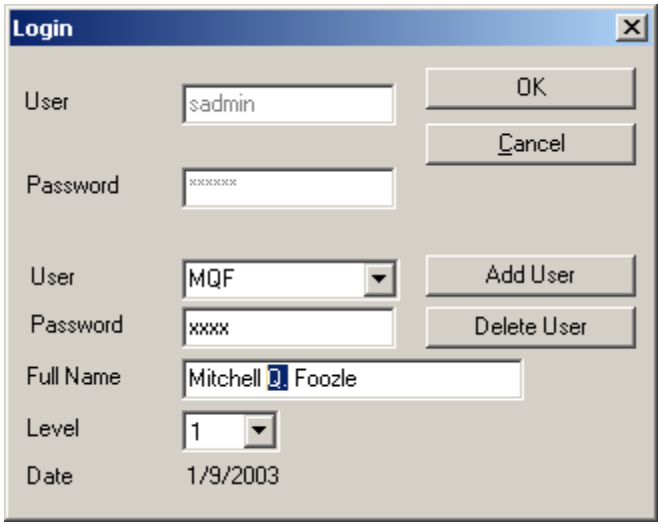
   From the Setup menu, choose **Change User**.

   OR

   From the toolbar, choose **User**. Login appears

2. Enter a system administration (Level 3) User Name and Password. Change Password appears.

3. Choose **Change Password**. Login expands to display detailed user information.



4. In User, select the desired user to edit.

5. Edit the user information as desired.

6. Choose **OK** to save changes made to the user information and exit Login.

   OR

   Choose **Cancel** to discard changes made to the user information and exit Login.

3.2.4. Viewing the User Log Table

The ADAP software maintains an activity log that tracks certain events performed in the software. The log may be saved in text format so that it can be imported into other software applications.

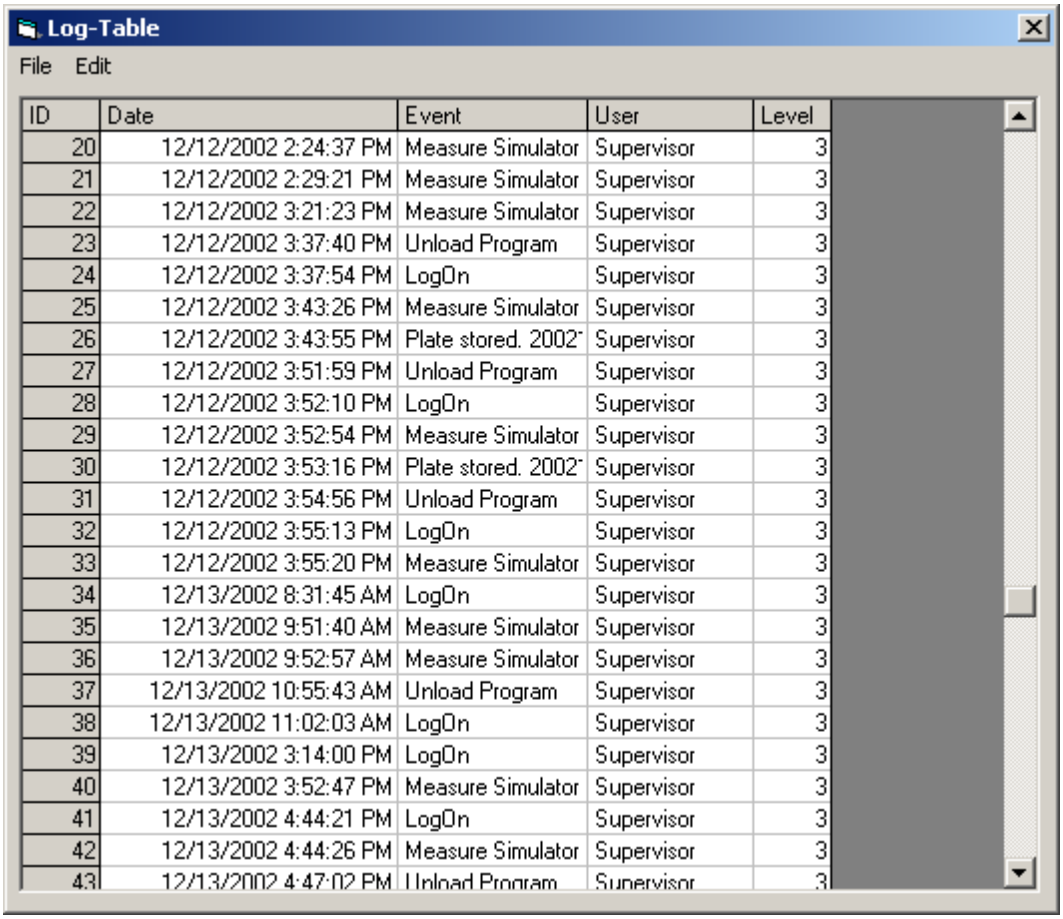
An event is added to the log whenever:

- A user logs into the ADAP software.
- Quick measurements are run or have parameters changed.

- A test definition is created or modified (ADAP Prisma only).
- Tests or multitest assays are run or reevaluated (ADAP Prisma only).
- A database error is reported.
- The ADAP software is closed.

To view the log table:

From the Database menu, choose **View Log Table**. Log-Table appears.



ID	Date	Event	User	Level
20	12/12/2002 2:24:37 PM	Measure Simulator	Supervisor	3
21	12/12/2002 2:29:21 PM	Measure Simulator	Supervisor	3
22	12/12/2002 3:21:23 PM	Measure Simulator	Supervisor	3
23	12/12/2002 3:37:40 PM	Unload Program	Supervisor	3
24	12/12/2002 3:37:54 PM	LogOn	Supervisor	3
25	12/12/2002 3:43:26 PM	Measure Simulator	Supervisor	3
26	12/12/2002 3:43:55 PM	Plate stored. 2002	Supervisor	3
27	12/12/2002 3:51:59 PM	Unload Program	Supervisor	3
28	12/12/2002 3:52:10 PM	LogOn	Supervisor	3
29	12/12/2002 3:52:54 PM	Measure Simulator	Supervisor	3
30	12/12/2002 3:53:16 PM	Plate stored. 2002	Supervisor	3
31	12/12/2002 3:54:56 PM	Unload Program	Supervisor	3
32	12/12/2002 3:55:13 PM	LogOn	Supervisor	3
33	12/12/2002 3:55:20 PM	Measure Simulator	Supervisor	3
34	12/13/2002 8:31:45 AM	LogOn	Supervisor	3
35	12/13/2002 9:51:40 AM	Measure Simulator	Supervisor	3
36	12/13/2002 9:52:57 AM	Measure Simulator	Supervisor	3
37	12/13/2002 10:55:43 AM	Unload Program	Supervisor	3
38	12/13/2002 11:02:03 AM	LogOn	Supervisor	3
39	12/13/2002 3:14:00 PM	LogOn	Supervisor	3
40	12/13/2002 3:52:47 PM	Measure Simulator	Supervisor	3
41	12/13/2002 4:44:21 PM	LogOn	Supervisor	3
42	12/13/2002 4:44:26 PM	Measure Simulator	Supervisor	3
43	12/13/2002 4:47:02 PM	Unload Program	Supervisor	3

Saving the Entire Log Table as a Text File

The entire log table can be saved as a tab-delimited text file which can be imported into another software application, such as a spreadsheet or database.

To save the data in Log-Table as a text file:

1. From the File menu, choose **Save**. Save As appears.
2. Browse to the desired folder to save the history log file.
3. In File name, enter a file name for the history log.
4. Choose **Save** to save the history log to a text file.

Copying the Entire Log Table to the Clipboard

The entire log table can be copied to the clipboard as tab-delimited text and pasted into any application using the Paste command.

Note: The contents of the entire log table will be copied. Portions of the log table cannot be copied separately.

To copy the data in Log-Table to the clipboard:

1. From the Edit menu, choose **Copy**. The contents of the Log-Table are copied to the clipboard.
2. Open or switch to the application where the log contents will be pasted.
3. Choose the **Paste** command to paste the history log into a new or existing file.

Note: Most applications have a standard shortcut of CTRL+V assigned to the Paste command.

3. Configuring the Instrument to Perform Measurements

3.1 Overview

Before performing measurements, the instrument setup and system settings must be configured. Instrument setup includes configuring communications and temperature settings. System settings designate the file format and storage location of measurement results data, the language in which the ADAP software is run, and the text of printout header lines.

Configuring the ADAP software includes:

- Configuring the instrument setup
- Configuring system settings

  Note: Only users with Level 2 (administrator) and Level 3 (system administrator) access may configure instrument setup and system settings.

3.1. Configuring the Instrument Setup

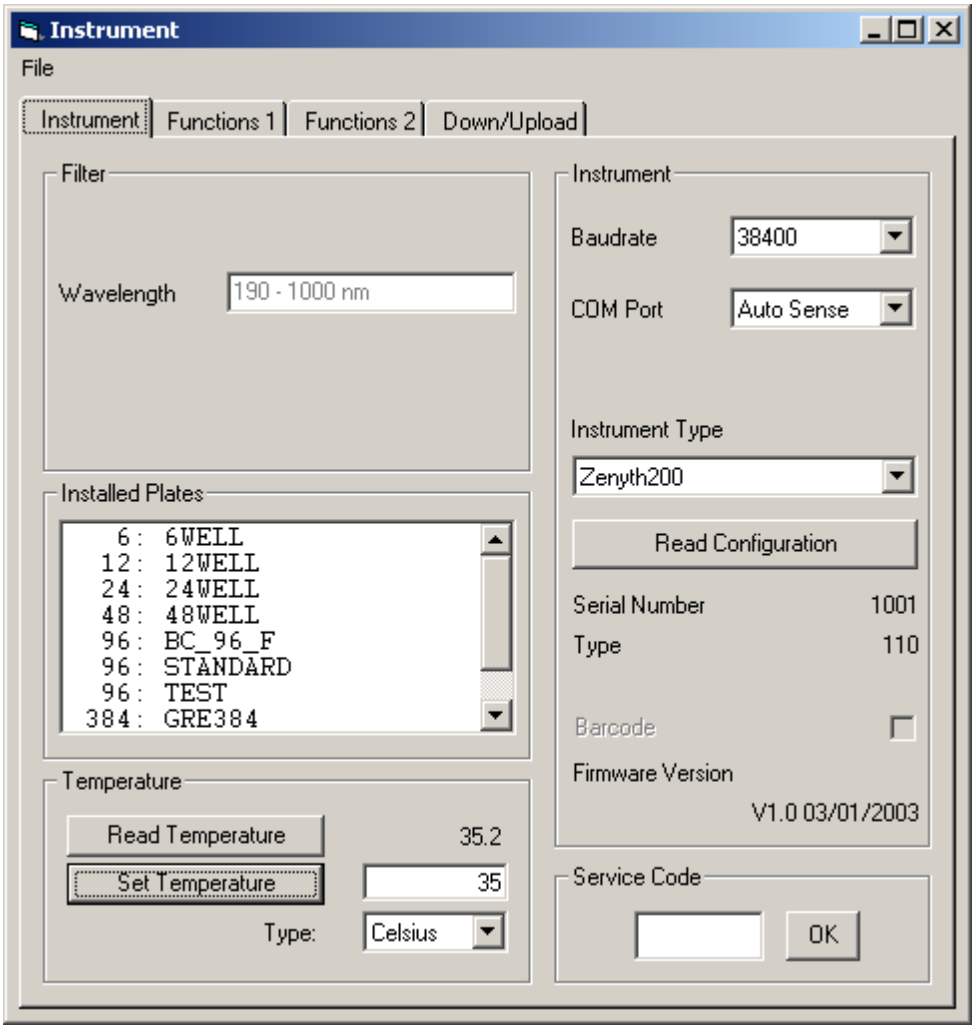
Instrument parameters are displayed and configured in Instrument.

Instrument is divided into five configuration areas:

- Instrument — Configures communications settings and displays instrument information.
- Filter — Displays the range of wavelengths available for measurements. No configuration is required.
- Installed Plates — Displays plate formats that can be used by the instrument.
- Temperature — Displays and sets the internal instrument temperature.
- Service Code — For Biochrom Service Engineers only.

3.1.1. To access Instrument:

1. From the Setup menu, select **Instrument**. Instrument appears:



2. The options in Instrument configure communications settings between the computer and Zenyth 200 and display current information about the connected instrument.

3. To configure the communications settings:

    a. In Baudrate, select **Auto Sense** or the desired baud rate for communication between the ADAP software and the microplate reader. Setting a specific Baudrate, such as 9600, requires that the Baudrate setting on the instrument match that in the ADAP software.

    Note: The Zenyth 200 supports baudrates of 9600, 19200, and 38400.

b. In COM Port, select **Auto Sense** or the serial communications port on the back of the computer to which the microplate reader is connected.

c. In Instrument Type, select **Zenyth 200**.

d. Select **Read Configuration**. Plate formats stored in the instrument are read and displayed in **Installed Plates.**

3.1.2. Viewing Installed Plates

Installed Plates displays all the plate formats that can be used in measurements performed by the instrument.

Note: Installed Plates is automatically populated when **Read Configuration** is selected in **Instrument**.

3.1.3. Setting the Instrument Temperature

The Zenyth 200 features the ability to perform temperature-controlled incubations.
To set the temperature:

1. In Type, select **Celsius** or **Fahrenheit**.

   Note: The Fahrenheit scale is available only on instruments sold in the United States.

2. Choose **Read Temperature** to display the current instrument temperature.
3. In Set Temperature, enter the desired temperature for incubation.

   Note: The incubation temperature must be a minimum of 4° C (7.2° F) above ambient. The maximum incubation temperature is 45° C (113° F).

4. Choose **Set Temperature** to prepare the Zenyth 200 for incubation.
5. To determine when the desired incubation temperature has been reached, choose **Read Temperature** until the current temperature of the Zenyth 200 matches the desired incubation temperature.

   Note: The incubation temperature will remain at the current setting until Set Temperature is changed.

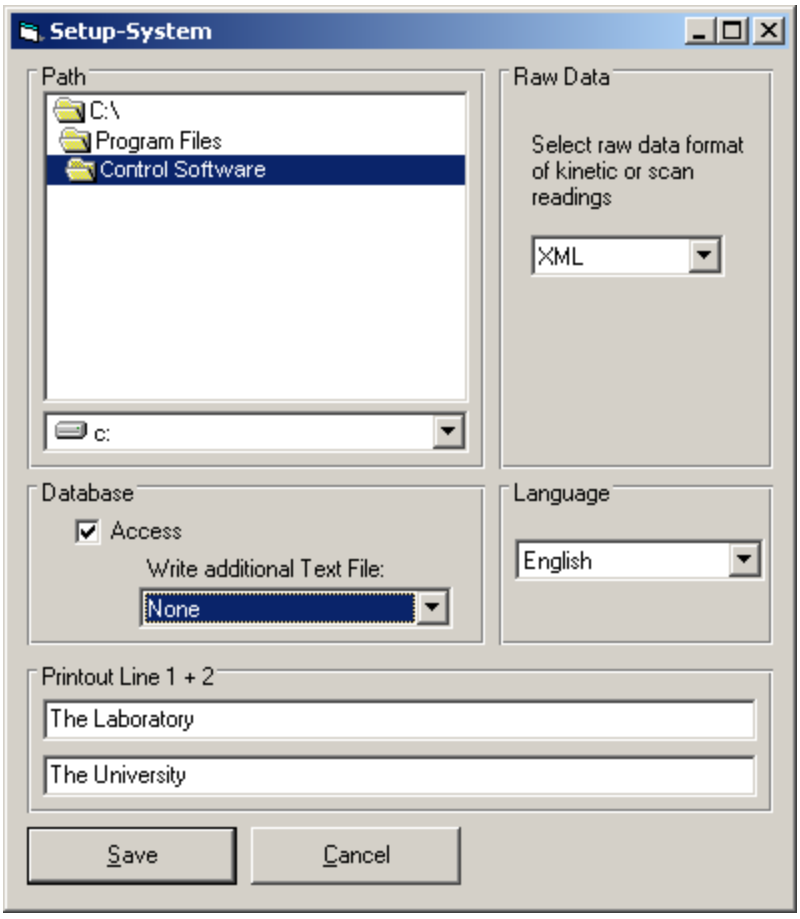
   Note: To turn temperature control off, in Set Temperature, enter **0**.

3.2. Configuring System Settings

System settings, including data storage path, raw data format, and printout headers, are configured in Setup-System.

To configure system settings:

1. From the Setup menu, select **System**. Setup-System appears.



2. To create a new database, select the desired local or network drive. Folders on the selected drive are displayed in the upper.

3. Browse to the desired location where the database will be created by double-clicking the desired folders.

   Note: Changing the Path when a database already exists creates a new database and makes the original database inaccessible to the ADAP software. Plate layouts, test definitions, and test results stored in the original database will not be available to the ADAP software unless the to the database is restored.

4. In Raw data, choose the desired file format for saving raw data:

a. • TXT — Saves the raw data as a text file readable by most word processing applications.

b. • XML — Saves the raw data as an XML file. XML is a format designed for sharing information over the Web.

5. In Database, select **Access** to store measurement data in the ADAP software database.

   Note: If no Database options are selected, options for manually saving the data appear after each measurement. If no save option is selected at this time, the measurement data is not saved.

   Note: Selecting Access ensures that *all* measurement data is saved and may be exported to text files for viewing in other software applications. For example, after a measurement is completed and saved, exporting the measurement data from the database is the only method available to create a text file with the data arranged as a matrix.

6. In Database, select a text file format to store measurement data in text files.
   - **None** — Text files are not saved.
   - **Text File PLT** — Saves measurement results as a *.plt file with text formatting that can be read by the Zenyth 200st standalone software.
   - **Text File Structure, TAB** — Saves measurement results in tab delimited columns that can be imported into many spreadsheet and database applications.
   - **Text File Structure, Semicolon** — Saves measurement results in semicolon-delimited columns that can be imported into many spreadsheet and database applications.
   - **Text File Matrix**— Saves measurement results in tab-delimited matrices that can be imported into many spreadsheet and database applications.

     Note: Measurement data may be saved simultaneously in the ADAP software database and in text files.

     Note: If no D**atabase** options are selected, manual options for saving data appear after each measurement. If no save option is selected at this time, the measurement data is not saved.

7. In **Language**, select whether to run the ADAP software in **English** or German.

8. In Printout Line 1 + 2, enter the header text that will appear on all printouts of measurement results.

9. Choose **Save** to save the new settings. Setup-System closes.

   OR

   Choose **Cancel** to close Setup-System without saving changes.

Manually Controlling the Instrument With the ADAP Software
4.1 Overview
The ADAP software provides two Functions tabs that permit manually controlling many instrument operations independently from measurements. Functions 1 controls operations such as loading and ejecting microplates and displays instrument information (refer to Section 4.2, *Using Functions 1*). Functions 2 calibrates the lamps and transports and provides manual control of microplate shaking (refer to Section 4.3, Using Functions 2).
To access the Functions tabs:
1. From the Setup menu, choose **Instrument**. Instrument appears (Figure 4-1).
2. Choose the desired Functions tab to display: **Functions 1** or **Functions 2**.
The selected tab is displayed (Figure 4-1).

4.2 Using Functions 1
Functions 1 is divided into two sections: Functions and Information (Figure 4-1). Functions controls several common instrument operations (refer to Section 4.2.1, *Performing Functions*). Information displays information about the connected instrument (refer to Section 4.2.2, *Viewing Information*).

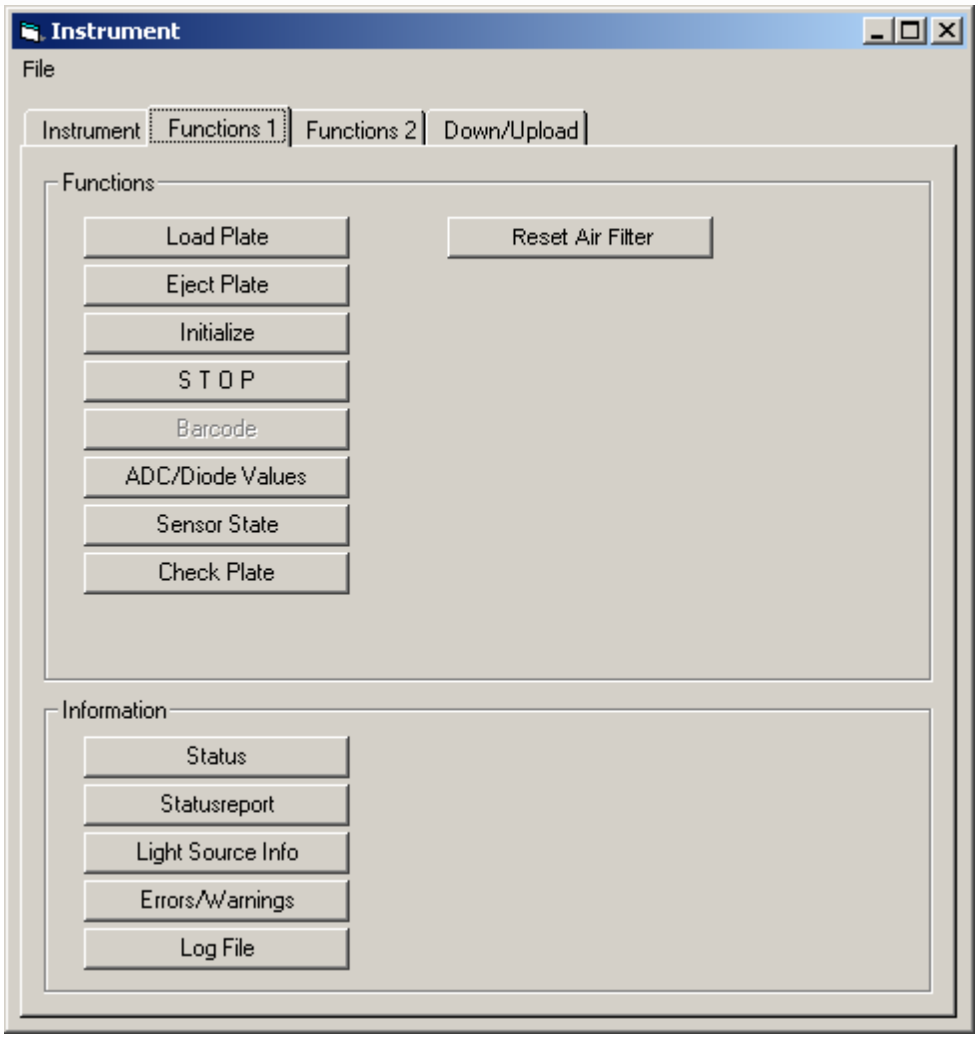

Instrument
File
Instrument
Functions 1
Functions 2
Down/Upload
Functions
Load Plate
Eject Plate
Initialize
S T O P
Barcode
ADC/Diode Values
Sensor State
Check Plate
Reset Air Filter
Information
Status
Statusreport
Light Source Info
Errors/Warnings
Log File

Figure 4-1. Instrument — Functions 1
Manually Controlling the Instrument With the ADAP Software 4-3
ADAP Software for Zenyth 200 Operating Manual
4.2.1 Performing Functions
The options in Functions control basic instrument operations as described in Table 4-1. Functions that report the status of instrument components display results in Information (Figure 4-2).
Table 4-1. Functions 1: Functions

Functions	Operation
	Moves the plate transport inside the instrument.
	Moves the plate transport outside the instrument.
	Moves all mechanical components of the instrument to home positions.
	Stops all operations in progress.
	Note: This function is not available.
	Continuously updates and displays in Information the ADC value of the instrument until Information is closed.
	Continuously updates and displays in Information the current state of all instrument sensors until Information is closed.
	Checks that a microplate is inserted in the instrument.
	Resets the air cycle count after replacing the air filter on the instrument.

4-4 Manually Controlling the Instrument With the ADAP Software
Anthos Labtec Instruments GmbH
4.2.2 Viewing Information
The options in Information display instrument setting information as described in Table 4-2.
When an option is selected in Information, the specific instrument information relating to the selected option appears in Information (Figure 4-2).
Figure 4-2. Information displaying instrument status
Table 4-2. Functions 1: Information Options

Information	Operation
	Displays in Information the current state of the instrument: OK, Ready, Error, or Standby.
	Displays in Information the current status of several mechanical components, including installed options and ADC values.
	Displays the current status of the light sources in Information.
	Displays current alerts, errors, and warnings in Information.
	Displays in Information the instrument log file that records all commands sent by the software to the instrument and execution errors.

Note: The instrument Log File is primarily
intended for Anthos service engineers.
Manually Controlling the Instrument With the ADAP Software 4-5
ADAP Software for Zenyth 200 Operating Manual
Information can be:
• Copied to the clipboard (refer to Section 4.2.2.1, *Copying Instrument*
Information to the Clipboard).
• Saved as a text file (refer to Section 4.2.2.2, *Saving Instrument Information*
in a Text File).
• Printed (refer to Section 4.2.2.3, *Printing Instrument Information*).
4.2.2.1 Copying Instrument Information to the Clipboard
Information can be copied to the clipboard and then pasted into another application such as a word processor.
To copy the information to the clipboard:
From the File menu, choose **Copy**. The information is copied to the clipboard and can be pasted in any application using the Paste command.
Note: Most applications have a standard shortcut of CTRL+V
assigned to the Paste command.
4.2.2.2 Saving Instrument Information in a Text File
Information can be saved as a text file (*.txt), a format that can be opened by most word processors.
To save the information as a text file (*.txt):
1. From the File menu, choose **Save**. Save As appears.
2. In Save As, browse to the desired directory where the file will be saved.
3. In File name, enter a name for the text file.
4. Choose **Save**. The text file is saved in the specified directory location with the specified File name.
4-6 Manually Controlling the Instrument With the ADAP Software
Anthos Labtec Instruments GmbH
4.2.2.3 Printing Instrument Information
To print the information in Information:
1. From the File menu, choose **Print**. Print appears (Figure 4-1).
Figure 4-1. Print
2. In Printer, select the desired printer to print the information. All printers that are properly installed and configured on the computer are listed.
3. In Options, select the desired **Font** and text **Size**.
Note: Body text is printed in the selected Font and Size. Headlines,
headings, and table text are printed using formatting defined by the
ADAP software.
4. Choose **OK** to print the information.
Note: If the selected printer is configured to print to a file, such as an
Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The
printed file is saved to the ADAP software home directory.
Manually Controlling the Instrument With the ADAP Software 4-7
ADAP Software for Zenyth 200 Operating Manual
4.3 Using Functions 2
Functions 2 is divided into two sections: Adjustments and Functions (Figure 4-3).

Adjustments calibrate the lamps and plate and optics transports (refer to Section 4.3.1, *Adjusting the Instrument*). Functions provides manual control over shaking microplates (refer to Section 4.3.2, *Manually Shaking Microplates*).

Note: The Set Valve, Dispense, and Set Pump Voltage functions are not available for the Zenyth 200.

Figure 4-3. Instrument — Functions 2

4.3.1 Adjusting the Instrument

When the ADAP software controls the instrument, two adjustment options, Adjust Lamp and Auto Calibration are available to users with Level 3 (system administrator) access. Select the desired operation to perform the action described in Table 4-3.

4.3.2 Manually Shaking Microplates

Shaking permits microplates loaded in the instrument to be shaken outside of a measurement.

To perform a shaking operation:

1. In Mode, select the desired shaking intensity: **Low**, **Medium**, or **High**.
2. In Time, enter the length of time to perform the shaking operation.
3. Choose **Shaking** to shake for the specified Mode and Time.

Table 4-3. Functions 2: Adjustment Options

Adjustment	Operation
	Checks the deuterium and halogen lamps and calibrates lamp output and gain values.
	Displays status in Information
	Calibrates the plate and optics transports.
	Displays the calibration values in Information.

4.4 Quick Access to Frequently Performed Operations

Several frequently performed operations can be accessed quickly from the ADAP software menus and toolbar:

- Set Temperature (refer to Section 4.4.1, *Setting Instrument Temperature*).
- Eject Plate (refer to Section 4.4.2, *Ejecting Plates*).
- Load Plate (refer to Section 4.4.3, *Loading Plates*).
- Initialize Instrument (refer to Section 4.4.4, *Initializing the Instrument*).

4.4.1 Setting Instrument Temperature

The Zenyth 200 is capable of performing temperature-controlled incubations of microplates. Refer to the user's manual for Zenyth 200 for more information.

To set the temperature:

1. From the Reading menu, choose **Set Temperature**.

OR

From the toolbar, choose **Temperature**. Temperature appears (Figure 4-4).

Note: Actual Temperature displays the current temperature inside the instrument.

Note: The temperature scale used is determined by the setting in

Instrument (refer to Section 3.2, *Configuring the Instrument Setup*).
The Fahrenheit scale is only available on instruments sold in the United States.
Figure 4-4. Temperature

2. In Temperature, enter the desired incubation temperature.
Note: The incubation temperature must be a minimum of 4° C (7.2° F) above ambient. The maximum incubation temperature is 45° C (113° F).
The incubation temperature will remain at the current setting until a different temperature is entered.
To turn temperature control off, enter **0**.
3. Choose **OK** to set the incubation temperature and close Temperature.
OR
Choose **Cancel** to close Temperature without changing the incubation temperature.
4.4.2 Ejecting Plates
To move the plate carrier and microplate outside the instrument:
From the Reading menu, choose **Eject Plate**.
OR
From the toolbar, choose **Eject Plate**.
4.4.3 Loading Plates
To move the plate carrier and microplate inside the instrument:
From the Reading menu, choose **Load Plate**.
OR
From the toolbar, choose **Load Plate**.
4.4.4 Initializing the Instrument
To move all mechanical components of the instrument to home positions:
From the Reading menu, choose **Initialize Instrument**.
OR
From the toolbar, choose **Initialize Instrument**.

Transferring Data Between the Instrument and Computer
5.1 Overview
Test and plate definitions; measurement results; and instrument EEPROM, firmware, and software updates can be transferred between the computer and Zenyth 200.
Depending on type, data is transferred by choosing data transfer options in Down/Upload within the ADAP software or by copying files using a local area network, floppy disk, or Microsoft ActiveSync® outside of the ADAP software.
Note: Down/Upload is available only to users with Level 2 (administrator) and Level 3 (system administrator) access.
Note: Refer to Section 5.5, Transferring Data Between the Zenyth 200st and *Computer Using Microsoft Windows®* for information about transferring data between the computer and instrument outside of the ADAP software.
The ADAP software automatically recognizes whether the connected instrument is a

standalone Zenyth 200st or a computer-controlled Zenyth 200rt. The types of data that can be transferred vary by instrument capability. Refer to Table 5-1 for more details.

Table 5-1. Data Transfer by Instrument Capability

Data Type	Zenyth 200st	Zenyth 200rt	Section
Firmware	Yes	Yes	Refer to Section 5.2, *Updating Firmware, EEPROM Data, and Standalone Software.*
EEPROM data	Yes	Yes	
Standalone software	Yes	No	
Plate definitions	Yes	Yes	Refer to Section 5.3, *Editing and Transferring Plate Formats.*
Test definitions	Yes	No	Refer to Section 5.4, *Importing and Exporting Test Definition Files.*
Measured plate results	Yes	No	Refer to Section 5.5, *Transferring Data Between the Zenyth 200st and Computer Using Microsoft Windows®* and Section 5.5.1, Importing Measurement Results From the Zenyth 200st to the ADAP Software Database.

5.2 Updating Firmware, EEPROM Data, and Standalone Software

Firmware transfer functions in Down/Upload permit instrument firmware, EEPROM data, and standalone software to be transferred between the computer Zenyth 200. Transfer functions for instrument firmware are reserved for Anthos service engineers and require a valid service code to access.

Users with Level 2 (administrator) and Level 3 (system administrator) can:

- Upload EEPROM data from the Zenyth 200 to the computer (refer to Section 5.2.1, Uploading EEPROM Data from the Zenyth 200 to the Computer).

Note: EEPROM data should only be uploaded to the computer by an Anthos service engineer.

Note: Downloading updated EEPROM data to the Zenyth 200 requires a valid service code.

- Update the standalone software on a Zenyth 200st by transferring files via a local area network, floppy disk, or Microsoft ActiveSync® (refer to Section 5.5, Transferring Data Between the Zenyth 200st and Computer Using Microsoft Windows®).

5.2.1 Uploading EEPROM Data from the Zenyth 200 to the Computer

EEPROM data from the Zenyth 200 can be *uploaded* to the computer using the

EEPROM Data function in Down/Upload.
Note: EEPROM data should only be uploaded to the computer by an Anthos service engineer.
Note: Downloading updated EEPROM Data to the Zenyth 200 requires a valid service code.
To upload EEPROM data from the Zenyth 200:
Note: Before transferring data, the Zenyth 200st must be placed in Remote Control mode. Refer to the instrument user's manual for more information.
1. From the Setup menu, choose **Instrument**. Instrument appears (Figure 5-1).
Figure 5-1. Instrument

2. Choose **Down/Upload** (Figure 5-2).
Figure 5-2. Instrument — Down/Upload
Upload
EEPROM Data

3. In the Instrument -> PC column, choose **EEPROM Data**. Save As appears (Figure 5-3).
Figure 5-3. Saving EEPROM Data
4. Browse to the directory where the uploaded EEPROM data file will be saved.
5. In File name, choose a name for the EEPROM data file
6. Choose **Save** to create the backup plate definition file. Information appears, displaying EEPROM data.
Figure 5-4. Information displaying uploaded EEPROM data
7. Close Information.

5.3 Editing and Transferring Plate Formats
The Zenyth 200 supports microplate formats ranging from 6 to 384 wells. Dimensions for each plate format are stored in a plate definition file on the instrument. This plate definition file may be uploaded to the computer where it can be edited using the ADAP software. Plate formats can be added, edited, or deleted from the plate definition file. When editing is complete, the plate definition file can be downloaded back to the Zenyth 200.
Note: Zenyth 200 plate data (*.plt) files are not the same as plate definition (*.plt) files used by the ADAP software.
When a plate definition file is downloaded to the instrument, all plate formats saved in the file are copied to the instrument firmware, erasing *all* previously stored plate formats. For this reason, backing up plate definition files uploaded from the instrument is important (refer to Section 5.3.1, *Uploading and Backing Up Plate Formats Stored in the Zenyth 200*).
Note: Edit Plate Definition can edit plate formatting information stored in any plate definition file saved on the computer. However, it is intended to be used only to edit plate formats currently stored in the instrument firmware.

Edit Plate Definition provides the ability to:
• Create and edit plate formats (refer to Section 5.3.2, *Creating and Editing* Plate Formats).
• Delete plate formats (refer to Section 5.3.3, *Deleting Plate Formats*).
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Once editing plate formats is complete, plate definition (*.plt) files can be downloaded to the Zenyth 200 firmware (refer to Section 5.3.4, *Downloading Plate* Formats to the Zenyth 200).
Figure 5-5. Down/Upload — edit and transfer plate definition options
Edit and
transfer plate
definitions
5-8 Transferring Data Between the Instrument and Computer
Anthos Labtec Instruments GmbH
5.3.1 Uploading and Backing Up Plate Formats
Stored in the Zenyth 200
Before editing a plate format, all plate formats uploaded from the Zenyth 200 to the computer should be backed up. Backing up the original plate formatting information is critical because each time edited plate formats are downloaded to the instrument, the original plate formatting information stored in the instrument is overwritten.
To upload and backup plate formats:
Note: Before transferring data, the Zenyth 200st must be placed in Remote Control mode. Refer to the instrument user's manual for more information.
1. In the ADAP software, from the Setup menu, choose **Instrument**. Instrument appears (Figure 5-1).
2. Choose **Down/Upload** (Figure 5-5).
3. In Test/Plate Definition, choose **Plate Definition** under Instrument -> PC to transfer the stored plate definition file from the instrument to the computer. Save As appears (Figure 5-6).
Figure 5-6. Save As
4. Browse to the directory where the uploaded plate formats will be stored in a plate definition (*.plt) file.
5. In File name, choose a name for the file; for example, default_plates_backup.plt.
6. Choose **Save** to create the backup plate definition file.
7. Repeat steps 3 – 5 to create a second copy of the plate definition file. This is the file that will be edited and transferred back to the instrument.
8. In File name, choose a name for the plate definition that will be edited and transferred back to the instrument. Use a name similar to that given to the backup file; for example default_plates.plt.
9. Choose **Save**.
Transferring Data Between the Instrument and Computer 5-9
ADAP Software for Zenyth 200 Operating Manual
5.3.2 Creating and Editing Plate Formats
Plate formats uploaded from the instrument and stored in a plate definition (*.plt) can be created and edited.

To create or edit a a plate format:
1. Upload and backup plate formats using the steps detailed in Section 5.3.1, Uploading and Backing Up Plate Formats Stored in the Zenyth 200.
2. In Test/Plate Data Transfer, choose **Edit Plate Definition**. Open appears (Figure 5-7).
Figure 5-7. Opening a plate definition file
3. Browse to and select the plate definition (*.plt) file to edit.

4. Choose **Open**. Plate Definition appears (Figure 5-8).
Figure 5-8. Plate Definition
5. To create a new plate format, in Name, enter a name for the new plate format.
OR
To edit an existing plate format, in Name, select the desired plate format to edit.
6. In Well, select the number of wells on the plate.
Note: 1536-well plates are not supported by the Zenyth 200.
Note: Refer to the graphic in Plate Definition (Figure 5-8) showing the dimensions when configuring steps 8-12. All measurements are in millimeters (mm). Plate dimensions should be measured, or taken from the specifications provided by the plate manufacturer.
7. In A0X, enter the distance from the edge of the X-axis of the microplate to the center of the first well in the X-axis.
8. In A0Y, enter the distance from the edge of the Y-axis of the microplate to the center of the first well in the Y-axis.
9. In Delta X, enter the distance between well centers in the X-axis.
10. In Delta Y, enter the distance between well centers in the Y-axis.
11. In Diameter, enter the diameter of each well.
Note: The Diameter must be smaller than the values for Delta X and Delta Y.

12. From the File menu, choose **Save** to save the new or edited plate format to the plate definition file.
13. From the File menu, choose **End** to close Plate Definition.
Note: To transfer the plate formats from the computer to the instrument, refer to Section 5.3.4, Downloading Plate Formats to the Zenyth 200.

5.3.3 Deleting Plate Formats

Plate formats uploaded to the instrument and stored in a plate definition (*.plt) file can be deleted.
To delete a plate format:
1. Upload and back up plate formats using the steps detailed in Section 5.3.1, Uploading and Backing Up Plate Formats Stored in the Zenyth 200.
2. In Test/Plate Data Transfer, choose **Edit Plate Definition**. Open appears (Figure 5-9).
Figure 5-9. Opening a plate definition file
3. Browse to and select the plate definition (*.plt) file to edit.

4. Choose **Open**. Plate Definition appears (Figure 5-10).
Figure 5-10. Plate Definition
5. In Name, select the desired plate format to delete from the list.
6. From the Edit menu, choose **Delete**. A confirmation appears (Figure 5-11).
Figure 5-11. Confirmation to delete plate definition
7. Select **Yes** to delete the plate format from the plate definition file.
Note: To transfer plate formats from the computer to the instrument, refer to Section 5.3.4, Downloading Plate Formats to the Zenyth 200.

5.3.4 Downloading Plate Formats to the Zenyth 200

Plate formats stored in a plate definition (*.plt) file can be transferred from the computer to the Zenyth 200.
To transfer plate formats:
Note: Before transferring data, the Zenyth 200st must be placed in Remote Control mode. Refer to the instrument user's manual for more information.
1. From the Setup menu, choose **Instrument**. Instrument appears (Figure 5-1).
2. Choose **Down/Upload** (Figure 5-5).
3. Choose **Plate Definition** under PC -> Instrument. Open appears (Figure 5-12).
Figure 5-12. Opening a plate definition file
4. Browse to the directory where plate definition file is saved and select it.
5. Choose **Open** to transfer the plate definition file which includes the plate formats from the computer to the instrument.

5.4 Importing and Exporting Test Definition Files

The ADAP Prisma software stores all test definitions in the ADAP database. Test definitions created and used by the Zenyth 200st standalone software are stored as individual *.dwr files. The functions in Import/Export Test Files converts test definitions into the desired format so that they may be transferred between the computer and instrument.
Note: Test definitions may be imported to and exported from the ADAP Basic software; however, upgrading to the ADAP Prisma software is required to create, read, or modify test definitions.
• Import to Database imports test definition files (*.dwr) created by the Zenyth 200st standalone software into the ADAP software database (refer to Section 5.4.1, Importing Test Definitions to the Test Database).
• Export from Database exports test definitions stored in the ADAP software database to individual test definition files (*.dwr) that can be read by the Zenyth 200st standalone software (refer to Section 5.4.2, *Exporting* Test Definitions from the Test Database).
Note: Use a local area network, floppy disk, or Microsoft ActiveSync® to transfer test definition files (*.dwr) between the Zenyth 200st and computer (refer to Section 5.5, Transferring Data Between the Zenyth 200st and Computer Using Microsoft

Windows®).
Figure 5-13. Down/Upload — Import/Export Test Files
Import/export
test files
Transferring Data Between the Instrument and Computer 5-15
ADAP Software for Zenyth 200 Operating Manual
5.4.1 Importing Test Definitions to the Test Database

Test definition files that have been uploaded from the Zenyth 200st can be imported into the ADAP database.

Note: Before the test definition can be imported to the database, it must have already been uploaded to the computer from the Zenyth 200st (refer to Section 5.5, Transferring Data Between the Zenyth 200st and Computer Using Microsoft Windows®).

To import a test definition into the test database:

1. In the ADAP software, choose **Instrument** from the Setup menu. Instrument appears (Figure 5-1).
2. Choose **Down/Upload** (Figure 5-13).
3. In Import/Export Test Definition, choose **Import to Database**. Open appears (Figure 5-14).

Figure 5-14. Opening a test definition to import into database

4. Browse to and select the test definition to import to the test database.
5. Choose **Open**. The selected test definition file is imported to the ADAP software database.

5.4.2 Exporting Test Definitions from the Test Database

Test definition files stored in the ADAP software database can be exported to a test definition file that can be downloaded to the Zenyth 200st.

To export a test definition from the database to a file:

1. In the ADAP software, From the Setup menu, choose **Instrument**. Instrument appears (Figure 5-1).
2. Select the **Down/Upload** tab to display it (Figure 5-13).

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Anthos Labtec Instruments GmbH

3. In Import/Export Test Definition, choose **Export from Database**. Selection appears (Figure 5-15).

Figure 5-15. Select test to export

4. Select the test definition to export from the test database.

Note: Choose **Matchcode** to search for test definitions containing specific test definitions (refer to Section 7.2.1.1, *Using Matchcode to* Search for Saved Measurement Results).

5. Choose **OK**. The selected test definition file is exported from the ADAP software test database as a test definition file that can be downloaded to the instrument.

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ADAP Software for Zenyth 200 Operating Manual
5.5 Transferring Data Between the Zenyth 200st and Computer Using Microsoft Windows®

Test definitions, measurement results, and software upgrades may be transferred between the computer and the Zenyth 200st over a local area network, via floppy disk, or by using Microsoft ActiveSync®. Data transfers conducted with these methods use the Windows® operating systems installed on the computer and instrument, and do not require the ADAP software or the Zenyth onboard software to be running at the time of the transfer.

Note: The ADAP software currently does not support transferring test definitions, measured plate data, and standalone software updates between the computer and Zenyth 200st using the options in the Down/Upload tab.

Instead of using the Down/Upload tab to transfer test definitions, measured plate data, and standalone software updates between the computer and Zenyth 200st, test definitions stored in the ADAP software database must be exported to individual test definition (*.dwr) files before they can be transferred to the Zenyth 200st (refer to Section 5.4, Importing and Exporting Test Definition Files).

Data transfer methods:

• Local area network (LAN) — Connect the Zenyth 200st standalone instrument to a local area network (LAN) using the built-in Ethernet adaptor on the instrument and copy data between shared folders on the computer and instrument. Refer to the instrument user's manual for more information.

• Floppy disk — Copy files from the instrument to a floppy disk. Refer to the instrument user's manual for more information about connecting a USBcompatible floppy drive to the instrument.

• Microsoft ActiveSync® — Use ActiveSync® to synchronize data stored on a PC and an instrument running the Windows® CE operating system, such as the Zenyth 200st. For the most recent information about ActiveSync®, visit the Microsoft website (http://www.microsoft.com) and perform a search for *ActiveSync*.

5.5.1 Importing Measurement Results From the Zenyth 200st to the ADAP Software Database

Measurement results from tests defined and performed using the Zenyth 200st standalone software may be imported to the ADAP software database for future evaluation.

To import measurement results:

1. On the Zenyth 200st instrument, use Windows® CE to browse to the directory where the measured plate (*.plt) and test definition (*.dwr) files are stored.

Note: Both the measured plate (*.plt) and test definition (*.dwr) files must be transferred to the computer before importing them into the database. For multiwavelength, kinetic and area, linear, and spectral scan measurements, the raw data file (*.raw or *.txt) must also be transferred.

2. Transfer the measured plate file (*.plt), test definition file (*.dwr), and, if necessary, the raw data file (*.raw or *.txt) to the *same directory* on the computer using a Local Area Network (LAN), floppy disk, or Microsoft ActiveSync (refer to Section 5.5, Transferring Data Between the Zenyth 200st and Computer Using Microsoft Windows®).

3. In the ADAP software, choose **Instrument** from the Setup menu. Instrument appears.
4. Choose **Down/Upload** (Figure 5-13).
5. In Import/Export Test Definition, choose **Import to Database**. Open appears (Figure 5-16).
Figure 5-16. Selecting Evaluated Plates
6. In File of type, select Evaluated Plates File (*.plt).
7. Select the desired measured plate file (*.plt) and choose **Open**. The selected measured plate file, test definition file (*.dwr), and, if required, raw data file (*.raw or *.txt) are automatically imported to the ADAP software database.

Performing Quick Measurements

6.1 Overview

The ADAP software is capable of performing photometric Quick measurements. Quick measurements are configured in Quick-Read, which is designed to allow measurement parameters to be changed quickly and easily (Figure 6-1). Quick measurements do not require defining tests.

Note: Tests may only be defined and run in the ADAP Prisma software. Tests offer additional measurement parameters that are configured in test definitions which may be saved, reused, and modified. Test definitions are created in both the ELISA and Quantitation modules. Refer to Chapter 8, *Defining and Running Tests In the ELISA Module* and Chapter 10, Defining and Running Tests In the Quantitation Module for more information about defining tests.

Configuration options in Quick-Read change depending on which format is selected: microplate or cuvette. To learn about how configuration options vary between formats:

• Refer to Section 6.1.1, Configuration Options for Microplates for more information about configuring Quick measurements for microplate samples.

OR

• Refer to Section 6.1.2, Configuration Options for Cuvettes for more information about configuring Quick measurements for cuvette samples.

This chapter breaks down the process of configuring and performing Quick measurements into three tasks:

• Selecting the sample format: microplate or cuvette, and the type of Quick measurement to perform (refer to Section 6.2.1, *Selecting Plate Format and Measurement Mode*).
• Configuring the options for the chosen Quick measurement (refer to Section 6.2, Configuring Photometric Quick Measurements).
• Running the Quick measurement on microplate samples and save the measurement results (refer to Section 6.3, *Running and Saving Quick Measurements on Microplate Samples*).

OR

• Running the Quick measurement on cuvette samples and save the measurement results (refer to Section 6.4, *Running and Saving Quick*

Measurements on Cuvette Samples).
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6.1.1 Configuration Options for Microplates
For Quick measurements performed on microplate samples, Quick-Read provides options to configure (Figure 6-1):
• Load Plate & Eject Plate — Loads and unloads microplates into the Zenyth 200.
• Plate Type — Chooses the type of microplate used in the Quick measurement.
• Measurement Position — Permits the user to select which wells on a microplate are read in a Quick measurement.
• Measurement Mode — Selects the type of Quick measurement performed and configures measurement options.
• Shaking — Shakes microplates at a user-selected Intensity and period of Time. Shaking occurs at the beginning of a Quick measurement, or immediately when Shake Now is selected.
Figure 6-1. Quick-Read — configuration options for microplate samples
Measurement Mode
Choose the type of Quick measurement to perform and configure measurement-specific options.
Sample Format
Choose microplate and configure Plate Type and wells to measure.
Shaking
Only microplates may be shaken in a Quick measurement.
Load Plate & Eject Plate
Loads and unloads the microplate into the Zenyth 200.
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6.1.2 Configuration Options for Cuvettes
For Quick measurements performed on cuvette samples, Quick-Read provides options to configure (Figure 6-2):
• Measurement Mode — Selects the type of Quick measurement performed and configures measurement options.
Note: Linear and area scan measurements are not available for cuvette samples.
• Transmission — Measures the percentage transmission instead of the optical density (OD) of cuvette samples.
.
Figure 6-2. Quick-Read — configuration options for cuvette samples
Measurement Mode
Choose the type of Quick

measurement to perform and configure measurement-specific options.

Sample Format

Choose **Cuvette**. No additional format parameters need to be configured.

Load Plate & Eject Plate

Both functions are available in case microplates need to be loaded or ejected from the instrument.

6.2 Configuring Photometric Quick Measurements

Photometric Quick measurements can be performed on microplate and cuvette samples. Configuring a quick measurement requires:

- Selecting the format: microplate or cuvette (refer to Section 6.2.1, *Selecting* Plate Format and Measurement Mode).
- Configuring the measurement mode:
- Endpoint photometric (refer to Section 6.2.2, *Configuring an Endpoint* Photometric Quick Measurement).
- Multiwavelength (refer to Section 6.2.3, *Configuring a Multiwavelength* Photometric Quick Measurement).
- Kinetic photometric (refer to Section 6.2.4, *Configuring a Kinetic* Photometric Quick Measurement).
- Spectral scan (refer to Section 6.2.5, *Configuring a Spectral Scan* Photometric Quick Measurement).
- Area scan (refer to Section 6.2.6, *Configuring an Area Scan Quick* Measurement).
- Linear scan (refer to Section 6.2.7, *Configuring a Linear Scan Quick* Measurement).

Note: To perform Quick measurements on a standalone Zenyth 200st using the ADAP software, put the instrument in Remote Control mode. Refer to the instrument user's manual for more information about Remote Control mode.

6.2.1 Selecting Plate Format and Measurement Mode

Quick measurements can be configured to read microplate or cuvette samples. The configuration options available change depending on which format is selected. When Microplate is the selected Format, Plate Type and Measurement Position must be configured; cuvettes require no additional formatting parameters be configured. After configuring formatting parameters, the Measurement Mode, or type of Quick measurement, is selected.

Note: Refer to Section 6.1.1, *Configuration Options for Microplates* and Section 6.1.2, *Configuration Options for Cuvettes* for an overview of which how configuration options change depending on which sample Format is selected.

To configure the Format and select Measurement Mode:
1. From the Reading menu, choose **Quick**.
OR
Choose **Quick-Read**. Quick-Read appears (Figure 6-3).
Figure 6-3. Quick-Read
2. Choose the Format: **Microplate** or **Cuvette**.
3. If Microplate is the selected Format, in Plate Type, select the plate definition of the plate being measured.
Note: Selecting a new Plate Type automatically invalidates the current layout selected in Set Sample because well dimensions and the number of wells on the plate may have changed.
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4. In Measurement Position, select **All** to perform measurements on samples in all wells on the microplate.
Note: When Cuvette is the selected Format, Measurement Position options are not available.
Note: Deselecting All does not automatically deselect all previously selected wells; they must be deselected manually in Set Sample.
OR
Choose **Set Sample** to select which wells on the microplate are measured. Set Sample appears (Figure 6-4).
Note: Before selecting wells in Set Sample, deselect **All** if it is currently selected.
Figure 6-4. Set Sample
5. Click and drag over the wells to be measured.
6. Select a command from the Edit menu or by right-clicking on the selected wells:
• **Set/De-select all wells** — Selects/deselects all wells on the microplate.
• **Set/De-select actual row** — Selects/deselects all wells in the same row as the initial well selected (Figure 6-4).
• **Set/De-select actual column** — Selects/deselects all wells in the same column as the initial well selected (Figure 6-4).
• **Set/De-select selected well** — Selects/deselects wells selected by dragging.
Wells selected by
dragging mouse.
Choosing Set actual
column selects all
wells in column 5.
Choosing Set actual row
selects all the wells in row 4.
Initial well selected.
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7. Choose **OK** to close Set Sample.
Note: The Measurement Position layout defined in Set Sample is

saved after a measurement is run. If the next measurement requires a different layout, reset it by selecting and deselecting **All**. Then, in Set Sample, select the wells to measure in the new measurement.

8. In Measurement Mode, select the type of Quick measurement to perform:

• **Endpoint Photometric** — performs a single-wavelength or bichromatic endpoint measurement (refer to Section 6.2.2, *Configuring* an Endpoint Photometric Quick Measurement).

• **Multiwavelength** — performs up to eight absorbance or transmission measurements at different user-specified wavelengths (refer to Section 6.2.3, Configuring a Multiwavelength Photometric Quick Measurement).

• **Kinetic Photometric** — performs a series of single-wavelength or bichromatic measurements over a specified time interval for each sample (refer to Section 6.2.4, Configuring a Kinetic Photometric Quick Measurement).

• **Scan Wavelength** — performs a spectral scan measurement at all wavelengths within a user-specified bandwidth (refer to Section 6.2.5, Configuring a Spectral Scan Photometric Quick Measurement).

• **Scan Area** — performs a series of absorbance or transmission measurements at a number of points across each well (refer to Section 6.2.6, Configuring an Area Scan Quick Measurement).

Note: Scan Area Quick measurements are only available when reading microplates.

• **Scan Linear** — performs a series of transmission measurements along a linear axis that crosses the center of each well (refer to Section 6.2.7, Configuring a Linear Scan Quick Measurement).

Note: Scan Linear Quick measurements are only available when reading microplates.

9. Configure the Quick measurement selected in Measurement Mode by following the steps listed in its respective section.

6.2.2 Configuring an Endpoint Photometric Quick Measurement

An endpoint photometric Quick measurement performs a single absorbance or transmission measurement on samples at a user-specified wavelength between 190 and 1000 nm. If desired, a bichromatic endpoint measurement may also be performed. Bichromatic measurements perform a second measurement using a Reference Filter. This measurement is subtracted from the first to calculate the final result.

Note: Endpoint photometric transmission measurements may be performed only on cuvette samples.

To configure an endpoint photometric Quick measurement:

1. Choose the Format, Plate Type, Measurement Position, and Measurement Mode following the steps in Section 6.2.1, *Selecting Plate Format and* Measurement Mode.

2. If Cuvette is the selected Format, select **Measure Transmission** to measure

transmission instead of absorbance, if desired.
Note: Endpoint photometric transmission measurements may only be performed on cuvette samples.
3. In Wavelength, enter the desired measurement wavelength (Figure 6-5).
Figure 6-5. Quick-Read — Endpoint Photometric measurement
4. To perform a bichromatic endpoint measurement, in Reference Filter, enter the desired wavelength.
Note: When a Reference filter is selected, the final measurement result is calculated by subtracting the Reference Filter measurement from that of the Measurement filter.

5. If desired, select **Shaking** to shake the microplate prior to the measurement. Quick-Read expands to display Shaking options (Figure 6-6).
Note: Shaking may only be performed with microplates.
Note: If shaking is not desired, go to step 8.
Figure 6-6. Quick-Read — Shaking
6. In Intensity, select the intensity of the shaking: **Low**, **Medium**, or **High**.
7. In Time, select the length of time to shake in seconds.
Note: Choose **Shake Now** to immediately shake the plate for the Intensity and Time specified.
8. To perform the Quick measurement on microplate samples, follow the steps in Section 6.3, Running and Saving Quick Measurements on Microplate Samples.
OR
To perform the Quick measurement on cuvette samples, follow the steps in Section 6.4, Running and Saving Quick Measurements on Cuvette Samples.

6.2.3 Configuring a Multiwavelength Photometric Quick Measurement

A multiwavelength photometric Quick measurement performs up to eight absorbance or transmission measurements for each well or cuvette sample at different userspecified wavelengths between 190 and 1000 nm.
To perform a multiwavelength photometric Quick measurement:
1. Choose the Format, Plate Type, Measurement Position, and Measurement Mode following the steps in Section 6.2.1, *Selecting Plate Format and* Measurement Mode.
2. If Cuvette is the selected Format, select **Measure Transmission** to measure transmission instead of absorbance, if desired.
Note: Multiwavelength photometric transmission measurements may only be performed on cuvette samples.
3. Choose the **Number of Wavelengths** to measure. A field for each Wavelength appears (Figure 6-7).
Figure 6-7. Quick-Read — Multiwavelength photometric measurement
4. In Wavelength, enter a measurement wavelength in each field.

5. If desired, select **Shaking** to shake the microplate prior to the measurement. Quick-Read expands to display Shaking options.
Note: Shaking may only be performed with microplates.
Note: If shaking is not desired, go to step 8.
6. If Shaking is selected, in Intensity, select the intensity of the shaking: **Low**, Medium, or High.
7. If Shaking is selected, in Time, select the length of time to shake in seconds.
Note: Choose **Shake Now** to immediately shake the plate for the Intensity and Time specified.
8. To perform the Quick measurement on microplate samples, follow the steps in Section 6.3, Running and Saving Quick Measurements on Microplate Samples.
OR
To perform the Quick measurement on cuvette samples, follow the steps in Section 6.4, Running and Saving Quick Measurements on Cuvette Samples.
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6.2.4 Configuring a Kinetic Photometric Quick Measurement
A kinetic photometric Quick measurement performs a user-specified series of absorbance or transmission measurements on each sample at user-specified intervals. Single or bichromatic measurements may be performed at user-specified wavelengths between 190 and 1000 nm. Bichromatic measurements perform a second measurement in each cycle using a Reference Filter. This measurement is subtracted from the first, then final measurement results are calculated using a data reduction method.
Note: Kinetic photometric transmission measurements may only be performed on cuvette samples.
To perform a kinetic photometric Quick measurement:
1. Choose the Format, Plate Type, Measurement Position, and Measurement Mode following the steps in Section 6.2.1, *Selecting Plate Format and* Measurement Mode.
2. If Cuvette is the selected Format, select **Measure Transmission** to measure transmission instead of absorbance, if desired.
Note: Kinetic photometric transmission measurements may only be performed on cuvette samples.
Figure 6-8. Quick-Read — Kinetic Photometric measurement
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3. In Wavelength, enter the desired measurement wavelength (Figure 6-8).
4. To perform a bichromatic kinetic measurement, in Reference Filter, enter the desired wavelength.
Note: When a Reference filter is selected, the second measurement is subtracted from the first before calculating the final measurement results using a data reduction method.
5. If desired, select **Shaking** to shake the microplate prior to the measurement. Quick-Read expands to display Shaking options.
Note: Shaking may only be performed with microplates.
Note: If shaking is not desired, go to step 11.

6. If Shaking is selected, in Intensity, select the intensity of the shaking: **Low**, Medium, or High.
7. If Shaking is selected, in Time, select the length of time to shake in seconds.
Note: Choose **Shake Now** to immediately shake the plate for the Intensity and Time specified.
8. In Interval, enter the amount of time in seconds between measurement cycles.
Note: The Interval may range from 1 to 65,535 seconds.
9. In Cycle, enter the number of measurements to perform on each sample.
Note: Kinetic measurements may be set to perform 2 to 100 Cycles.
10. In Data Reduction, select the data reduction method. Refer to Section 6.2.4.1, *Data Reduction Methods*, for descriptions of the Data Reduction methods.
Note: The configuration parameters Smoothing Points, Lower Limit, Upper Limit and In/Decrease become available depending on which data reduction method is selected. Refer to the Additional Configuration column in Table 6-1 for details.
11. To perform the Quick measurement on microplate samples, follow the steps in Section 6.3, Running and Saving Quick Measurements on Microplate Samples.
OR
To perform the Quick measurement on cuvette samples, follow the steps in Section 6.4, Running and Saving Quick Measurements on Cuvette Samples.
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6.2.4.1 Data Reduction Methods
In kinetic measurements, data reduction methods are used to determine a single value per sample based on the results of a sequence of measurements over a period of time. Table 6-1 describes the twelve data reduction methods supported by the ADAP software.
Table 6-1. Data Reduction Methods

Data Reduction Method	Description	Additional Configuration
Average Slope	Determines the average slope of the reaction curve by calculating the average of all linear regressions calculated over each group of Smoothing Points in the kinetic reading sequence. A decreasing slope shows a decline.	Smoothing Points
Delta OD	Difference between the first and last kinetic measurements in optical density (OD).	N/A
Delta OD — Max. Slope	Difference in OD between the first measurement and the center point of the maximum slope. **Note:** The center point of the maximum slope is calculated by determining the center point between the smoothing points of the regression line with the maximum slope.	Smoothing Points

Delta Time — Absolute Time elapsed from one preselected OD value to another. Lower Limit
Upper Limit
Delta Time — Max. Slope
Time difference in seconds between the first measurement and the occurrence of the center point of the maximum slope.
Note: The center point of the maximum slope is calculated by determining the center point between the smoothing points of the regression line with the maximum slope.
Smoothing Points
Delta Time — Relative
Time elapsed in seconds from the first measurement to reaching a set increase/decrease amount from the first OD measurement.
In-/Decrease
Maximum Declining Slope
Determines the maximum declining rate of the reaction curve by calculating a linear regression over each group of Smoothing Points in the kinetic reading sequence.
Smoothing Points
Maximum Inclining Slope
Determines the maximum inclining rate of the reaction curve by calculating a linear regression over each group of Smoothing Points in the kinetic reading sequence.
Smoothing Points
Maximum Slope
Maximum slope of the curve in OD/min. The line with the highest slope is calculated. Also the maximum reaction speed.
Note: The accuracy of this calculation depends on the number of measurement cycles selected.
Smoothing Points
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Mean Determines the mean value per sample within a sequence of measurements. N/A
Time Peak Value Used to detect the time elapsed until the peak value is reached. Smoothing Points
Peak Value Used to detect the highest value per sample within a sequence of measurements. Smoothing Points
Table 6-1. Data Reduction Methods
Data Reduction Method Description Additional Configuration
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6.2.5 Configuring a Spectral Scan Photometric Quick Measurement

A spectral scan Quick measurement performs absorbance or transmission measurements at all wavelengths within a user-specified bandwidth.

To perform a spectral scan photometric Quick measurement:

1. Choose the Format, Plate Type, Measurement Position, and Measurement Mode following the steps in Section 6.2.1, *Selecting Plate Format and* Measurement Mode.
2. Select **Measure Transmission** to measure transmission instead of absorbance, if desired.
3. In **Start Wavelength**, enter the shortest wavelength to be measured in the spectral scan (Figure 6-9).

Note: Spectral scan measurements can be made within the range of 190 to 1000 nm.

Figure 6-9. Quick-Read — Scan Wavelength measurement

4. In **End Wavelength**, enter the longest wavelength to be measured in the spectral scan.
5. If desired, select **Shaking** to shake the microplate prior to the measurement. Quick-Read expands to display Shaking options (Figure 6-9).

Note: Shaking may only be performed with microplates.

Note: If shaking is not desired, go to step 8.

6. If Shaking is selected, in Intensity, select the intensity of the shaking: **Low**, Medium, or High.
7. If Shaking is selected, in Time, select the length of time to shake in seconds.

Note: Choose **Shake Now** to immediately shake the plate for the Intensity and Time specified.

8. To perform the Quick measurement on microplate samples, follow the steps in Section 6.3, Running and Saving Quick Measurements on Microplate Samples.

OR

To perform the Quick measurement on cuvette samples, follow the steps in Section 6.4, Running and Saving Quick Measurements on Cuvette Samples.

6.2.6 Configuring an Area Scan Quick Measurement

Area scan Quick measurements perform absorbance or transmission measurements at a number of points across each well. Area scans can measure samples on 6-, 12-, 24-, 48-, and 96-well microplates, and are performed at the maximum resolution allowed by the plate type.

Note: Area scan measurements may be performed only on microplate samples.

To perform an area scan Quick measurement:

1. Choose the Format, Plate Type, Measurement Position, and Measurement Mode following the steps in Section 6.2.1, *Selecting Plate Format and* Measurement Mode.
2. If desired, select **Measure Transmission** to measure transmission instead of

absorbance.
Note: Linear scan measurements perform only transmission measurements.
3. In Wavelength, enter the desired measurement wavelength (Figure 6-10).
Figure 6-10. Quick-Read — Scan Area measurement

4. If desired, select **Shaking** to shake the microplate prior to the measurement. Quick-Read expands to display Shaking options.
Note: If shaking is not desired, go to step 7.
5. If Shaking is selected, in Intensity, select the intensity of the shaking: **Low**, Medium, or High.
6. If Shaking is selected, in Time, select the length of time to shake in seconds.
Note: Choose **Shake Now** to immediately shake the plate for the Intensity and Time specified.
7. Run the Quick measurement following the steps in Section 6.3, *Running and Saving Quick Measurements on Microplate Samples*.

6.2.7 Configuring a Linear Scan Quick Measurement

Linear scan Quick measurements perform transmission measurements at 25 points along a linear axis crossing the center of each measured well. Linear scans may be performed only on 96-well plates.
To perform a linear scan Quick measurement:
1. Choose the Format, Plate Type, Measurement Position, and Measurement Mode following the steps in Section 6.2.1, *Selecting Plate Format and Measurement Mode*.
2. In Wavelength, enter the desired measurement wavelength (Figure 6-11).
Figure 6-11. Quick-Read — Scan Linear measurement
3. If desired, select **Shaking** to shake the microplate prior to the measurement. Quick-Read expands to display Shaking options.
Note: If shaking is not desired, go to step 6.
4. If Shaking is selected, in Intensity, select the intensity of the shaking: **Low**, Medium, or High.
5. If Shaking is selected, in Time, select the length of time to shake in seconds.
Note: Choose **Shake Now** to immediately shake the plate for the Intensity and Time specified.
6. Run the Quick measurement following the steps in Section 6.3, *Running and Saving Quick Measurements on Microplate Samples*.

6.3 Running and Saving Quick Measurements on Microplate Samples

After configuring microplate and measurement parameters, Quick measurements are run from Quick-Read.
Note: Refer to Section 6.4, Running and Saving Quick Measurements on Cuvette

Samples for information about running Quick measurements on cuvette samples.

1. In Quick-Read, choose **Eject Plate** to eject the plate carrier from the instrument (Figure 6-12). Place the microplate to be read onto the carrier, and choose **Load Plate** to load the microplate into the instrument.

Figure 6-12. Quick-Read

2. Choose **Start** to begin the measurement. When the measurement is complete, Plate-ID appears (Figure 6-13).

Note: To stop a measurement in progress before it completes, choose STOP Measurement.

OR

In Quick-Read, choose **Cancel** to return to the ADAP software main screen without performing the measurement.

Figure 6-13. Plate-ID

3. In Input Plate-ID, rename the plate, if desired.
4. Choose **OK** to save the measurement results to the database.

Note: The default name format for saved measurement results is YYYYMMDD-N, where YYYY is the year, MM the month, DD the day, and N the number of the measurement made that day.

6.4 Running and Saving Quick Measurements on Cuvette Samples

Cuvette samples are manually loaded into the cuvette holder at the back of the instrument *after* the Quick measurement is configured and the light output from the lamp has stabilized. Up to 50 cuvette samples can be processed, one at a time, in a single Quick measurement.

Running cuvette measurements is controlled from Cuvette Reading, which includes options to perform blank measurements and re-read samples. When the measurement is complete, the results are previewed in Cuvette Reading.

Note: Refer to Section 6.4.1, *Reading Cuvette Blank Samples* for more information about reading blank samples.

To run a cuvette measurement:

1. In Quick-Read, choose **Start** (Figure 6-14). Cuvette Reading appears (Figure 6-15).

Figure 6-14. Quick-Read — cuvette spectral scan

2. In Samples to read, select the sample ID for the first sample to read.

Note: Action provides instructional prompts throughout the reading.

Note: Do not insert the cuvette into the cuvette holder until prompted.

Note: The instrument can be initialized by choosing **Initialize Instrument** from the Option menu. Refer to Table 4-1 for more information about initializing the instrument.

Figure 6-15. Cuvette Reading — Select sample to read

3. Choose **Read** to start the measurement. Before inserting the cuvette into the cuvette holder, allow the instrument to initialize and stabilize the light output of the lamp (Figure 6-16). Place Cuvette appears in Action when the cuvette may be loaded.
Note: To perform a blank measurement before reading cuvette samples, refer to Section 6.4.1, *Reading Cuvette Blank Samples*.
Note: Time left displays the time remaining until lamp stabilization is complete. Lamp stabilization may take up to 60 seconds.
After 10 minutes of inactivity, the Zenyth 200 automatically turns the lamp off. The next cuvette measurement performed will require the maximum 60-second lamp stabilization time.
Figure 6-16. Cuvette Reading — Lamp stabilization

4. When Place Cuvette appears in Action, insert the cuvette into the cuvette holder with the clear sides facing the left and right sides of the instrument (Figure 6-17). The measurement begins automatically once the cuvette is loaded.
Note: For all types of measurements except kinetic, the cuvette must be placed in the holder within 20 seconds after Place Cuvette appears. Time left displays the time remaining to insert the cuvette. If the 20 seconds expires before the cuvette is inserted in the cuvette holder, the error, Bright measurement not valid any longer, appears. Choose **Read** to perform a new lamp stabilization.
Note: The cuvette holder door does not need to be closed during the measurement. Refer to the instrument user manual for more details on inserting cuvettes into the cuvette holder.
Note: Choose Stop Measurement or File>Cancel to cancel a measurement in progress.
Figure 6-17. Cuvette Reading — Place Cuvette
5. When the measurement is complete, remove the cuvette. Samples Read displays sample IDs and the status of the measurement: OK or Error. Kinetic, multiwavelength, and spectral scan Quick measurements display a Graph Preview of the measurement results (Figure 6-18). Endpoint measurements display OD in Actual Value (Figure 6-19).
Note: Endpoint and Kinetic measurement results are displayed immediately. Wavelength measurement results are displayed after the cuvette is removed from the cuvette holder.

Figure 6-18. Cuvette Reading — spectral scan results with Graph Preview
Note: Kinetic graphs are updated after removing the cuvette because the instrument makes a second bright measurement and recalculates the results.
Figure 6-19. Cuvette Reading — endpoint results with Actual Value
Graph Preview
Displays a preview graph of

measurement results for
kinetic, multiwavelength and
spectral scan measurements.
Actual Value
Displays OD after an
endpoint measurement.
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Note: OD is displayed in Actual Value even if the Quick measurement is configured to measure transmission. Actual Value is also displayed for kinetic endpoint measurements.
6. If desired, in Samples to read, select another sample and repeat steps 3 – 5 to perform the Quick measurement again.
Note: Up to 50 samples can be read in a single Quick measurement.
OR
If desired, in Samples read, select a sample, choose **Reread**, and repeat steps 4 and 5 to perform the Quick measurement on that sample again.
OR
From the File menu, choose **End** to close Cuvette Reading and save the measurement results. Plate-ID appears (Figure 6-20).
Figure 6-20. Plate-ID for a cuvette measurement
7. In Input Plate-ID, rename the measurement results, if desired.
8. Choose **OK** to save the measurement results to the database.
Note: The default name format for saved cuvette measurements is YYYYMMDDNc, where YYYY is the year, MM the month, DD the day, N the number of the measurement made that day, and c denotes cuvette.
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6.4.1 Reading Cuvette Blank Samples
A blank sample may be run before performing Quick measurements on cuvette samples. The blank value is subtracted from the measurement results for subsequent samples read in the Quick measurement.
Note: If desired, a new blank sample can be read at any point during a Quick measurement. The new blank value is then subtracted from subsequent measurements.
To read a blank sample:
1. Choose **Read Blank**. Before inserting the blank sample into the cuvette holder, allow the instrument to initialize and stabilize the light output of the lamp. Place Cuvette appears in Action when the cuvette may be loaded.
Note: Time left displays the time remaining until lamp stabilization is complete. Depending on the type of Quick measurement being performed, lamp stabilization may take up to 60 seconds.
Figure 6-21. Cuvette Reading — Lamp stabilization time
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2. When Place Cuvette appears in Action, insert the cuvette into the cuvette holder with the clear sides facing the left and right sides of the instrument. The

blank measurement begins automatically once the cuvette is loaded.
Note: For all types of measurements except kinetic, the cuvette must be placed in the holder within 20 seconds after Place Cuvette appears. Time left displays the time remaining to insert the cuvette. If the 20 seconds expires before the cuvette is inserted in the cuvette holder, the error, Bright measurement not valid any longer, appears. Choose **Read Blank** to perform a new lamp stabilization.
Note: The cuvette holder door does not need to be closed during the measurement. Choose **Stop Measurement** to cancel a blank measurement in progress.
3. When the blank measurement is complete, remove the cuvette. The blank value obtained will be automatically subtracted from following cuvette measurements.
Note: The Read Blank button displays *Blank Active* when a blank measurement is being used in the calculation of measurement results.
4. To perform measurements on cuvette samples and save the measurement results, follow steps 2–8 in Section 6.4, Running and Saving Quick Measurements on Cuvette Samples.

Viewing Quick Measurement Results

7.1 Overview

After a Quick measurement is performed and saved, the measurement results are displayed in a series of tabs in the ADAP software main window. The tabs displayed vary depending on the type of measurement performed.
Note: Refer to Chapter 6, *Performing Quick Measurements* for detailed information about performing Quick measurements.
The layout of information displayed in measurement results tabs varies depending on whether the Quick measurement was performed on microplate or cuvette samples:
• Measurement results for microplate samples are displayed in rows and columns that correspond to the layout of wells on the plate (refer to Section 7.1.1, Viewing Measurement Results for Microplate Samples).
• Measurement results for cuvette samples are displayed in columns, one cuvette measurement per column (refer to Section 7.1.2, *Viewing* Measurement Results for Cuvette Samples).
All Quick measurement results are stored in the ADAP software database and may be:
• Opened for viewing, printing, or exporting (refer to Section 7.2, *Viewing* Saved Quick Measurement Results).
• Viewed in the ADAP software main window (refer to Section 7.3, *Viewing* Quick Measurement Results).
• Printed as a hard copy or data file such as an Acrobat® PDF (refer to Section 7.4, Printing Quick Measurement Results).
• Exported to another application such as a word processor or spreadsheet (refer to Section 7.5, Exporting Quick Measurement Results to Other Applications).

7.1.1 Viewing Measurement Results for Microplate Samples

Measurement results for microplate samples are displayed in rows and columns that correspond to the layout of wells on the plate; for example, Figure 7-1 displays results for samples on a 96-well plate. To easily identify specific samples, rows and columns use the same well labels imprinted on the microplate.

Figure 7-1. Measurement results for a 96-well microplate

7.1.2 Viewing Measurement Results for Cuvette Samples

Measurement results for cuvette samples are displayed in columns, one cuvette per column. Measurement results for up to 50 cuvette samples may be displayed—the maximum number of cuvette samples that can be read in a single Quick measurement. Column labels correspond to the sample ID chosen for the cuvette sample when the Quick measurement was run; for example, column 4 displays the result for cuvette PR4 (refer to Section 6.4, Running and Saving Quick Measurements on Cuvette Samples).

Note: Use the scroll bar at the bottom of the tab to access measurement results for samples not visible onscreen.

Figure 7-2. Measurement results for cuvette samples

7.2 Viewing Saved Quick Measurement Results

All Quick measurement results are saved in the ADAP software database and may be opened for viewing, printing, and exporting (refer to Section 7.2.1, *Opening Saved* Quick Measurement Results).

Searching for saved measurement results by name is possible with Matchcode, the search feature built into the ADAP software (refer to Section 7.2.1.1, *Using* Matchcode to Search for Saved Measurement Results).

7.2.1 Opening Saved Quick Measurement Results

All Quick measurement results are saved in the ADAP software database and may be opened at any time.

To view saved measurement results:

1. From the Database menu, select **Open Saved Plate**. Selection appears (Figure 7-3).

Note: Open Saved Plate also accesses cuvette measurement results. Cuvette measurement results saved with the default file name provided by the ADAP software are identified by the *c* at the end of the filename; for example, 20030530-4c.

Note: Saved measurement results are listed in descending chronological order by measurement date.

Figure 7-3. Selection — saved Quick measurements

2. Select the measurement results to view. Only one plate may be viewed at a time.
Note: To narrow the list by date, select dates in from and to, and choose update list.
To search for a specific plate ID by characters in the Plate ID name, choose **Matchcode** (refer to Section 7.2.1.1, *Using Matchcode to* Search for Saved Measurement Results).
3. Choose **OK** to view the measurement results.
OR
Choose **Cancel** to close Selection without opening a saved plate
OR
Choose **Delete** to delete the selected measurement results from the database.

7.2.1.1 Using Matchcode to Search for Saved Measurement Results

Matchcode is the search feature that appears in Selection. Depending on from which screen or tab Selection is accessed, Matchcode performs searches for saved measurement results or test definitions. Matchcode provides wildcard operators, * and ?, which simplify searching by allowing users to search for a set of possible characters in the filename (see Table 7-1).
Note: A valid licence code for the ADAP Prisma software is required to view test definitions located by Matchcode. Refer to Chapter 8, *Defining and Running Tests In* the ELISA Module and Chapter 10, Defining and Running Tests In the Quantitation *Module* for more information about test definitions.
To search for measurement results by plate ID:
1. From Selection, choose **Matchcode**. Plate-ID appears (Figure 7-4).
Figure 7-4. Plate-ID

2. In Input Plate-ID, enter a plate ID or test definition name.
Note: Input Plate-ID also refers to saved measurement results for cuvette samples and test definition names.
3. Choose **OK**. Plate IDs or test definition names that match the search query appear in Selection.
Note: If Matchcode finds no matches to the search query, choose **update list** to display the entire list of plate IDs or test definitions again.
Table 7-1. Matchcode wildcard operators

Wildcard Pattern	Result
a	Lists all plate IDs or test definition names with an *a* in the ID or name.
a*	Lists all plate IDs or test definition names with an *a* at the beginning of the ID or name.
*a	Lists all plate IDs or test definition names with an *a* at the end of the ID or name.
alph?	Lists all plate IDs or test definition names with *alph* followed by an additional character. For example, *alpha* or *alphb*.

Quick measurement results are displayed in a series of tabs in the ADAP software main window. The tabs displayed vary for each measurement type:
• Endpoint photometric — Displays OD (optical density) and Status for absorbance measurements; Transmission and Status for transmission measurements performed on cuvette samples (refer to Section 7.3.1, *Viewing* Endpoint Photometric Measurement Results).
• Kinetic photometric — Displays Reduced Data, Status, Raw Data, and Kinetic Graph (refer to Section 7.3.2, *Viewing Kinetic Photometric* Measurement Results).
• Multiwavelength — Displays Raw Data, Graphic, Status, and Curve Info (refer to Section 7.3.3, Viewing Multiwavelength Photometric Measurement Results).
• Spectral scan — Displays Graphic, Status, and Curve Info (refer to Section 7.3.4, Viewing Spectral Scan Measurement Results).
• Linear scan — Displays Raw Data Scan, Scan, Status, and Curve Info (refer to Section 7.3.5, Viewing Linear Scan Measurement Results).
• Area scan — Displays Raw Data, Scan, and Status (refer to Section 7.3.7, Viewing Area Scan Measurement Results).

7.3.1 Viewing Endpoint Photometric Measurement Results
Measurement results for endpoint photometric measurements are displayed in two tabs:
• OD — Displays the optical density measurement for each well or cuvette sample (refer to Section 7.3.1.1, *Viewing Optical Density (OD)* Measurement Results).
OR
Transmission — If transmission for cuvette samples was measured, displays percentage of transmission (refer to Section 7.3.1.2, *Viewing* Transmission Measurement Results)
• Status — Displays which wells or cuvette samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.3, *Viewing Sample Status*).

7.3.1.1 Viewing Optical Density (OD) Measurement Results
OD displays the optical density measurement for each well or cuvette sample (Figure 7-5). For bichromatic measurements, OD is calculated by subtracting measurements made with the reference filter from the measurements made with the primary filter.
Note: Refer to Section 7.4.1, *Printing General Measurement Results* for information about printing OD measurement results.
Figure 7-5. Measurement results — OD (microplate)

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7.3.1.2 Viewing Transmission Measurement Results
For transmission measurements performed on cuvette samples, Transmission displays percentage transmission values, not absorbency (Figure 7-6). For example, 0.000 refers to no transmission of light, which in terms of optical density (OD) is overflow. 100.000 refers to 100% transmission, which is 0 OD. 10.000 equals 10% transmission, which is 1 OD.
Note: When Transmission is measured in an endpoint photometric measurement, optical density (OD) results are not reported in the measurement results.
Note: Refer to Section 7.4.1, *Printing General Measurement Results* for information about printing Transmission measurement results.
Figure 7-6. Measurement results — Transmission (cuvette)

7.3.1.3 Viewing Sample Status
Status displays which wells or cuvette samples were measured successfully and which were not because of errors during the measurement (Figure 7-7):
• OK — The well was measured successfully.
• Error — The well was not measured because an error occurred.
• Calc Error — The well was not measured because an error occurred; for example, division by zero in a transformation formula.
Note: Calc Error appears only in measurement results from tests run in the ADAP Prisma software.
• Overflow — A measurement could not be made because the optical density (OD) was above the indication limit.
• Underflow — A measurement could not be made because reduced data could not be calculated.
• Not Used — The well was not selected to be measured in the plate layout.
Note: Not Used appears only in measurement results from tests run in the ADAP Prisma software.
Note: Refer to Section 7.4.1, *Printing General Measurement Results* for information about printing Status results.
Figure 7-7. Measurement results — Status (microplate)

7.3.2 Viewing Kinetic Photometric Measurement Results
Results for kinetic photometric Quick measurements are displayed in four tabs:
• Reduced Data — Displays the results for each well or cuvette sample calculated using the data reduction method configured for the Quick measurement (refer to Section 7.3.2.1, *Viewing Kinetic Measurement* Reduced Data).
• Status — Displays which wells or cuvette samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.3, *Viewing Sample Status*).
• Raw Data — Displays measurement results for each cycle performed in the measurement (refer to Section 7.3.2.2, *Viewing Kinetic Measurement Raw*

Data).
• Kinetic Graph — Displays a graph of the kinetic measurement results for each well or cuvette sample (refer to Section 7.3.2.4, *Viewing the Kinetic* Graph for an Individual Well or Cuvette Sample).
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7.3.2.1 Viewing Kinetic Measurement Reduced Data
Reduced Data displays the results for each well or cuvette sample calculated using the data reduction method configured in the Quick measurement (Figure 7-8). The actual tab name changes to reflect what type of results have been calculated. For example, most Slope reduction methods display OD/min, while Time reduction methods display t(sec) (refer to Section 6.2.4.1, *Data Reduction Methods*).
Note: When no data reduction method is configured in the Quick measurement, the tab is labeled N/A and no data is displayed in the tab.
Note: Refer to Section 7.4.1, *Printing General Measurement Results* for information about printing Reduced Data measurement results.
Figure 7-8. Measurement results — reduced data (microplate)
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7.3.2.2 Viewing Kinetic Measurement Raw Data
Raw Data displays measurement results for each cycle of a photometric kinetic measurement (Figure 7-9). The cycle currently displayed and number of cycles in the measurement are shown to the right of Next Cycle.
To view results from a different cycle:
Choose **Previous Cycle** to view the measurement results from the preceding cycle.
OR
Choose **Next Cycle** to display results from the following cycle.
To print Raw Data for *all* cycles:
Choose **Print Raw Data** (refer to Section 7.4.2, *Printing Raw Data and Curve* Info).
Figure 7-9. Measurement results — kinetic measurement raw data (microplate)
Currently displayed cycle
Number of cycles in measurement
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7.3.2.3 Viewing Kinetic Measurement Graphs
Kinetic Graph displays graphs of the kinetic measurement results for all wells or cuvette samples. The time or cycle number is plotted on the x-axis; Raw Data is plotted on the y-axis. The resulting graph shows how the measurement value varied over time.
To change the Kinetic Graph view:
• Use the scroll bars to view graphs for all wells or cuvette samples, if necessary.
• Click on a well to view a detailed graph of the individual well or cuvette

sample (refer to Section 7.3.2.4, Viewing the Kinetic Graph for an Individual Well or Cuvette Sample).

To print Kinetic Graph:

Choose **Print Graph** to print the graphs for all wells or cuvette samples measured on a single page (refer to Section 7.4.3, *Printing Graphs*).

Figure 7-10. Measurement results—Kinetic Graph (microplate)

7.3.2.4 Viewing the Kinetic Graph for an Individual Well or Cuvette Sample

Kinetic Graphs for individual wells or cuvette samples can be viewed in detail. Positioning the cursor over any point on the curve displays the x and y coordinate values of that position in the upper right corner of the tab.

To display the Kinetic Graph for a single well or cuvette sample:

In Kinetic Graph, click on the desired well to view. Kinetic Graph displays the detailed kinetic graph for the selected well or cuvette sample (Figure 7-11).

To return to the main Kinetic Graph view:

Click on the detailed kinetic graph. Kinetic Graph displays kinetic graphs for all wells or cuvette samples (Figure 7-10).

Note: Print Graph prints kinetic measurement graphs for all measured wells and cuvette samples, not the individual well or cuvette sample being viewed in detail (refer to Section 7.4.3, *Printing Graphs*).

Figure 7-11. Kinetic graph for a single well or cuvette sample

y-axis
Raw data values
x-axis
Time or number of cycle
Curve
Displays the x- and y-axis values corresponding to the location of the cursor when positioned over the graph.

7.3.3 Viewing Multiwavelength Photometric Measurement Results

Results for multiwavelength photometric Quick measurements are displayed in four tabs:

- Raw Data — Displays measurement results for each wavelength chosen in the Quick measurement (refer to Section 7.3.3.1, *Viewing Multiwavelength* Measurement Raw Data).
- Graphic — Displays a graph of multiwavelength measurement results for each well or cuvette sample (refer to Section 7.3.3.1, *Viewing* Multiwavelength Measurement Raw Data).
- Status — Displays which wells or cuvette samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.3, *Viewing Sample Status*).
- Curve Info — Displays optical density and percentage transmission values

for a single sample at each wavelength measured. In the ADAP Prisma software, more detailed information about the curve, including peak and valley data, is also displayed (refer to Section 7.3.3.4, *Viewing* Multiwavelength Measurement Curve Info).

7.3.3.1 Viewing Multiwavelength Measurement Raw Data

Raw Data displays the optical density (OD) for each well or cuvette sample at each wavelength measured (Figure 7-12). Results for each measured wavelength are displayed separately. The wavelength currently being displayed is indicated near the center of the tab.

Note: For transmission measurements performed on cuvette samples, Raw Data displays transmission results instead of optical density.

To view results from a different measurement wavelength:

Choose **Previous Filter** to view the results from the previous measured wavelength.

OR

Choose **Next Filter** to display results from the next measured wavelength.

To print Raw Data measurement results for all wavelengths:

Choose **Print Raw Data** (refer to Section 7.4.2, *Printing Raw Data and Curve* Info).

Figure 7-12. Measurement results — multiwavelength Raw Data (cuvette)

Wavelength currently displayed

Number of wavelengths measured

7.3.3.2 Viewing Multiwavelength Measurement Graphs

Graphic displays graphs of multiwavelength measurement results for all wells or cuvette samples (Figure 7-13). The measurement wavelength is plotted on the x-axis; the OD or transmission values are plotted on the y-axis.

To change the Graphic view:

• Use the scroll bars to view graphs for all samples, if necessary.
• Click on a sample. Choose an option from the menu that appears:
• Curve Info — Displays the Curve Info tab (refer to Section 7.3.3.4, Viewing Multiwavelength Measurement Curve Info)
• Zoom Graph — Displays a detailed graph of the results for the selected sample (refer to Section 7.3.3.3, Viewing the Multiwavelength Graph for an Individual Sample).
• Show Graph — Displays the Graph window where curves for all samples can be studied in greater detail with additional viewing and calculation options (refer to Section 7.3.6, *Viewing and Performing* Calculations on Curves in the Graph Window).

Note: Show Graph is only availible in the ADAP Prisma software.

To print Graphic:
Choose **Print Graph** to print the graphs for all wells or cuvette samples measured (refer to Section 7.4.3, *Printing Graphs*).
Figure 7-13. Measurement results — multiwavelength Graphic (cuvette)
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7.3.3.3 Viewing the Multiwavelength Graph for an Individual Sample
The multiwavelength Graphic for an individual well or cuvette sample can be viewed in detail. Positioning the cursor over any point on the curve displays the x and y coordinate values of that position in the upper right corner of the tab.
To display the multiwavelength Graphic for a single well or cuvette sample:
1. In Graphic, click on the desired well to view.
2. Choose Zoom Graph from the menu that appears. Graphic displays the detailed multiwavelength graph for the selected well or cuvette sample (Figure 7-14).
To return to the main multiwavelength Graphic view:
Click on the detailed multiwavelength graph. Graphic displays multiwavelength graphs for all wells or cuvette samples (Figure 7-13).
Note: Print Graph prints multiwavelength graphs for all measured wells and cuvette samples, not the individual well or cuvette sample being viewed in detail (refer to Section 7.4.3, *Printing Graphs*).
Figure 7-14. Multiwavelength Graphic for a single well or cuvette sample
y-axis
OD or transmission values
x-axis
Wavelength
Curve
Displays the x- and y-axis values corresponding to the location of the cursor when positioned over the graph.
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7.3.3.4 Viewing Multiwavelength Measurement Curve Info
Curve Info displays the OD and transmission values at each wavelength measured for a single sample (Figure 7-15). The ADAP Prisma software also displays more detailed information about the curve, including values of peaks, valleys, and average slope.
To view Curve Info for a different well or cuvette sample:
Choose **Previous Sample** to view Curve Info for the previous sample.
OR
Choose **Next Sample** to view Curve Info for the next sample.
To print Curve Info measurement results for all samples:
Choose **Print**.
To print Curve Info tables for the displayed sample:
Right click in a Curve Info table and choose the desired printing option (refer to Section 7.4.2.1, Printing Curve Info Data Tables).

Figure 7-15. Measurement results — multiwavelength Curve Info (cuvette)
Curve Info
This data appears only in the
ADAP Prisma software.

7.3.4 Viewing Spectral Scan Measurement Results

Results for spectral scan Quick measurements are displayed in three tabs:

• Graphic — Displays graphs of spectral scan measurement results for all samples (refer to Section 7.3.4.1, *Viewing Spectral Scan Graphs*).

• Status — Displays which wells or cuvette samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.3, *Viewing Sample Status*).

• Curve Info — Displays optical density and percentage transmission values for a single sample at all points measured. In the ADAP Prisma software, more detailed information about the curve, including peak and valley data, is also displayed (refer to Section 7.3.4.3, *Viewing Spectral Scan Curve Info*).

7.3.4.1 Viewing Spectral Scan Graphs

Graphic displays graph of spectral scan measurement results for all samples (Figure 7-16). The wavelengths measured are plotted on the x-axis; OD values are plotted on the y-axis.

To change the Graphic view:

• Use the scroll bars to view graphs for all samples, if necessary.

• Click on a sample. Select an option from the menu that appears:

• Curve Info — Displays the Curve Info tab (refer to Section 7.3.4.3, Viewing Spectral Scan Curve Info).

• Zoom Graph — Displays a detailed graph of the results for the selected sample (refer to Section 7.3.4.2, Viewing the Spectral Scan Graph for an Individual Sample).

• Show Graph — Displays the Graph window where curves for all samples can be studied in greater detail with additional viewing and calculation options (refer to Section 7.3.6, *Viewing and Performing* Calculations on Curves in the Graph Window).

Note: Show Graph is only availible in the ADAP Prisma software.

To print Graphic:

Choose **Print Graph** to print the graphs for all wells or cuvette samples measured (refer to Section 7.4.3, *Printing Graphs*).

Figure 7-16. Measurement results — spectral scan Graphic

7.3.4.2 Viewing the Spectral Scan Graph for an Individual Sample

The spectral scan Graphic for an individual well or cuvette sample can be viewed in

detail. Positioning the cursor over any point on the curve displays the x and y coordinate values of that position in the upper right corner of the tab.
To display the spectral scan Graphic for a single well or cuvette sample:
1. In Graphic, click on the desired well to view.
2. Choose Zoom Graph from the menu that appears. Graphic displays the detailed spectral scan graph for the selected well or cuvette sample (Figure 7-17).
To return to the main spectral scan Graphic view:
Click on the detailed spectral scan graph. Graphic displays spectral scan graphs for all wells or cuvette samples (Figure 7-16).
Note: Print Graph prints spectral scan graphs for all measured wells and cuvette samples, not the individual well or cuvette sample being viewed in detail (refer to Section 7.4.3, *Printing Graphs*).
Figure 7-17. Spectral scan Graphic for a single well or cuvette sample
x-axis
Wavelength
y-axis
OD value
Curve
Displays the x- and y-axis values
corresponding to the location of the
cursor when positioned over graph.
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7.3.4.3 Viewing Spectral Scan Curve Info
Curve Info displays the OD and transmission values at all wavelengths measured across the selected spectrum for a single sample (Figure 7-18). The ADAP Prisma software also displays more detailed information about the curve, including values of peaks, valleys, and average slope.
To view Curve Info for a different well or cuvette sample:
Choose **Previous Sample** to view Curve Info for the previous sample.
OR
Choose **Next Sample** to view Curve Info for the next sample.
To print Curve Info measurement results for all samples:
Choose **Print**.
To print Curve Info tables for the displayed sample:
Right click in a Curve Info table and choose the desired printing option (refer to Section 7.4.2.1, Printing Curve Info Data Tables).
Figure 7-18. Measurement results — spectral scan Curve Info (cuvette)
Curve Info
This data appears only in the
ADAP Prisma software.
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7.3.5 Viewing Linear Scan Measurement Results
Results for linear scan Quick measurements are displayed in four tabs:
• Raw Data Scan — Displays values from the 25 measurement points across center of each well (refer to Section 7.3.5.1, *Viewing Linear Scan*

Measurement Raw Data).
• Scan — Displays graphs of the linear transmission profiles for all wells measured (refer to Section 7.3.5.2, *Viewing Linear Scan Graphs*).
• Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.3, Viewing Sample Status).
• Curve Info — Displays the transmission values for a single sample at all 25 measurement points. In the ADAP Prisma software, more detailed information about the curve, including peak and valley data, is also displayed (refer to Section 7.3.5.4, *Viewing Linear Scan Curve Info*).

7.3.5.1 Viewing Linear Scan Measurement Raw Data
Raw Data Scan displays values from the 25 measurement points across the center of each well (Figure 7-19).
Note: Raw data values displayed are percentage transmission values, not absorbency. For example, 0.000 refers to no transmission of light, which in terms of OD is overflow. 100.000 refers to 100% transmission, which is 0 OD. 10.000 equals 10% transmission, which is 1 OD.
The currently displayed measurement point and total number of measurement points are shown to the right of Next Cycle.
To view results from a different measurement point:
Choose **Previous Cycle** to view the measurement results from the previous measurement point.
OR
Choose **Next Cycle** to display results from the next measurement point.
To print Raw Data Scan measurement results for all cycles:
Choose **Print Raw Data** (refer to Section 7.4.2, *Printing Raw Data and Curve* Info).
Figure 7-19. Raw Data tab for a Linear Scan Measurement
Currently displayed
measurement point
Number of
measurement points

7.3.5.2 Viewing Linear Scan Graphs
Scan displays graphs of the linear transmission profile for all wells on the plate (Figure 7-20). A linear transmission graph displays the transmission measured at 25 points across the center of the well. The y-axis refers to transmission percentage; the x-axis refers to measurement positions.
Note: Data in the graphs are percentage transmission values, not absorbency. For example, 0.000 refers to no transmission of light, which in terms of OD is overflow. 100.000 refers to 100% transmission, which is 0 OD. 10.000 equals 10% transmission, which is 1 OD.
Figure 7-20. Measurement results — linear scan graphs

To change the Scan view:
• Use the scroll bars to view graphs for all wells on the plate, if necessary.
• Click on a sample. Choose an option from the menu that appears:
• Curve Info — Displays the Curve Info tab (refer to Section 7.3.5.4, Viewing Linear Scan Curve Info).
• Zoom Graph — Displays a detailed graph of the results for the selected sample (refer to Section 7.3.5.3, Viewing the Linear Scan Graph for Individual Wells).
• Show Graph — Displays the Graph window where curves for all samples can be studied in greater detail with additional viewing and calculation options (refer to Section 7.3.6, *Viewing and Performing* Calculations on Curves in the Graph Window).
Note: Show Graph is only availible in the ADAP Prisma software.
To print Scan:
Choose **Print Graph** to print the graphs for all wells measured (refer to Section 7.4.3, Printing Graphs).

7.3.5.3 Viewing the Linear Scan Graph for Individual Wells

Linear scan graphs for individual wells can be viewed in detail.
To display the linear scan graph for an individual well:
1. In Scan, click on the desired well to view.
2. Choose Zoom Graph from the menu that appears. Scan displays the detailed linear scan graph for the selected well (Figure 7-21).
To return the main Scan view:
Click on the detailed linear scan graph. Scan displays linear scan graphs for all wells (Figure 7-21).
Note: Print Graph prints linear scan graphs for all measured wells, not the individual well being viewed in detail (refer to Section 7.4.3, *Printing Graphs*).
Figure 7-21. Linear scan graph for a single well
y-axis
% transmission
x-axis
Measurement position

7.3.5.4 Viewing Linear Scan Curve Info

Curve Info displays the transmission values at all 25 measurement points for a single sample (Figure 7-22). The ADAP Prisma software also displays more detailed information about the curve, including values of peaks, valleys, and average slope.
To view Curve Info for a different well:
Choose **Previous Sample** to view Curve Info for the previous sample.
OR
Choose **Next Sample** to view Curve Info for the next sample.

To print Curve Info measurement results for all samples:
Choose **Print**.
To print Curve Info tables for the displayed sample:
Right click in a Curve Info table and choose the desired printing option (refer to Section 7.4.2.1, Printing Curve Info Data Tables).
Figure 7-22. Measurement results — linear scan Curve Info
Curve Info
This data appears only in the
ADAP Prisma software.

7.3.6 Viewing and Performing Calculations on Curves in the Graph Window
In the ADAP Prisma software, Graph provides options to view, compare, and perform curve fitting on graphs for multiwavelength, spectral scan, and linear measurement results. Graphs for all samples measured are displayed simultaneously and color coded for differentiation (Figure 7-23).
Note: Graph is available only with a valid ADAP Prisma software license.
Figure 7-23. Graph
To open Graph:
From the Graph tab in multiwavelength measurement results, the Graphic tab in spectral scan measurement results, or the Scan tab in linear scan measurement results, click on a sample graph and choose **Show Graph** from the menu that appears.
To close Graph:
From the File menu, choose **End**.
Note: To save smoothed curves before closing Graph, from the File menu, choose **Save Calc Contain**er (refer to Section 7.3.6.4.2, Saving Smoothed Curves).
Note: To clear Graph, from the Options menu, choose **Clear Graph**.

Graph provides the ability to:
• View individual curves (refer to Section 7.3.6.1, *Viewing Individual Curves*).
• View the properties of individual curves in text form (refer to Section 7.3.6.2, Viewing the Properties of an Individual Curve).
• Change the graph view by zooming in on specific areas of Graph (refer to Section 7.3.6.3, Changing the Graph View by Zooming).
• Smooth curves using curve fitting methods (refer to Section 7.3.6.4, *Using* Curve Fitting Methods to Smooth Curves).
• Calculate the area under curves (refer to Section 7.3.6.5, *Calculating the* Area Under Curves).
• Copy Graph as a bitmap image that can be pasted into other software applications (refer to Section 7.3.6.6, *Copying the Contents of Graph*).
• Print the contents of Graph (refer to Section 7.3.6.7, *Printing the Contents* of Graph).

7.3.6.1 Viewing Individual Curves
When Graph is opened, curves for all samples measured are displayed. Individual curves can be selected and viewed.
To view an individual curve:
1. From the Options menu, select **Draw Single Line**.
2. In Select Line, choose the individual curve to view. Graph displays only the chosen curve (Figure 7-24).
Figure 7-24. Graph displaying an individual curve
Note: To view the X and Y values for a point on the curve, position the cursor over the desired point. Actual Values displays the X and Y values at that position.
Curve Value displays the OD or transmission value at the curve peak or valley nearest to the current cursor position.
Area under Curve displays the calculated value for the area under a curve (refer to Section 7.3.6.5, Calculating the Area Under Curves).
To display all curves after viewing an individual curve:
From the Options menu, choose **Restore Graph 1:1**. Graph displays all curves in the measurement results.
Note: Draw Single Line remains enabled until it is toggled off by selecting it again. When enabled, each time a curve is chosen in Select Line, Graph displays the chosen curve individually.
Select Line
Choose an individual curve
curve to display.
Position the cursor over the curve
to view the X and Y values for that
point on the curve in Actual Values.
Actual Values
Displays the X and Y values at
the cursor position, Curve
Value, and Area under Curve.
The peak or valley nearest to the current
cursor position is displayed in Actual
Values as Curve Value.
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7.3.6.2 Viewing the Properties of an Individual Curve
Detailed information about curve properties, including OD and transmission values, curve peak and valley values, and average slope, may be viewed in text form for any curve displayed in Graph. Curve properties may also be:
• Copied to other applications (refer to Section 7.3.6.2.1, *Copying Curve* Properties to Other Applications).
• Saved as text files (refer to Section 7.3.6.2.2, *Saving Curve Properties as* Text Files).
• Printed (refer to Section 7.3.6.2.3, *Printing Curve Properties*).
To view curve properties:
1. In Select Line, choose the desired curve.

2. From the File menu, choose **Curve Properties**. Information appears (Figure 7-25).

Figure 7-25. Information — curve properties

To close Information:

From the File menu, choose **End**.

7.3.6.2.1 Copying Curve Properties to Other Applications

Curve properties displayed in Information can be copied to the clipboard. The properties can then be pasted into another application for storage or further analysis.

To copy curve properties:

1. From the File menu, choose **Copy**.
2. Open or switch to the application where the curve properties will be pasted.
3. Paste the curve properties into a new or existing file using the Paste command for the application.

Note: Most applications have CTRL+V assigned as the Paste command keyboard shortcut.

7.3.6.2.2 Saving Curve Properties as Text Files

Curve properties displayed in Information can be saved as text files which can be viewed in any text editor or imported into many statistical software packages or spreadsheet applications.

To save curve properties as a text file:

1. From the File menu, choose **Save**. Save As appears (Figure 7-26).

Figure 7-26. Save As

2. Browse to the desired location to save the text file.
3. Enter a **File name** for the text file.
4. Choose **Save** to save the file

OR

Choose **Cancel** to return to the ADAP software without saving the curve properties as a text file.

7.3.6.2.3 Printing Curve Properties

Curve properties displayed in Information can be printed. Printing may output hard copies or files; for example, Acrobat® PDF documents.

To print curve properties:

1. In the File menu, choose **Print**. Print appears (Figure 7-27).

Figure 7-27. Print

2. In Printer, select the desired printer to print the information. All printers that are properly installed and configured on the computer are listed.
3. In Options, select the desired **Font** and text **Size**.

Note: Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

4. Choose **OK** to print curve properties.

Note: If the selected printer is configured to print to a file, such as an Acrobat PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the

ADAP software home directory.
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7.3.6.3 Changing the Graph View by Zooming
Graph provides two methods of zooming to change the graph view:
• Zooming in and out by fixed percentages (refer to Section 7.3.6.3.1, Zooming by Fixed Percentages).
• Zooming in by dragging over the desired region (refer to Section 7.3.6.3.2, Zooming by Dragging Over the Desired Region).
7.3.6.3.1 Zooming by Fixed Percentages
The graph view may be changed by zooming in and out at fixed increments between 50% and 200%.
Note: The ability to zoom in or out is disabled when the option the option to calculate the area under a curve is enabled (refer to Section 7.3.6.5, *Calculating the* Area Under Curves).
To zoom in or out:
From the Options menu, choose **Zoom**, and then the desired fixed percentage to zoom.
Note: When zoomed in, use the scroll bars to access regions of the graph view not visible.
To reset the original graph view:
From the Options menu, choose **Zoom>100%**.
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7.3.6.3.2 Zooming by Dragging Over the Desired Region
Zooming in on a section of the graph view may be accomplished by dragging over the desired region to enlarge.
Note: The ability to zoom by dragging is disabled when the option to calculate the area under a curve is enabled (refer to Section 7.3.6.5, *Calculating the Area Under* Curves).
To zoom in by dragging:
1. Position the cursor at the desired starting position for the selection, then depress and hold the mouse button down.
2. Drag the mouse until the desired region is selected (Figure 7-28). The selected region is highlighted in blue.
3. Release the mouse button. Graph displays a zoomed view of the selected region.
Note: When zoomed in by selection, regions of the graph not visible are not accessible. To view regions not included in the zoom selection, choose **Restore Graph 1:1** to reset the graph view to 100%.
Figure 7-28. Selecting a zoom region
To reset the original graph view:
From the Options menu, choose **Restore Graph 1:1**.
Selected Region
The graph view will zoom so that
the selected region fills Graph.
Starting position
for selection

Ending position
for selection
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7.3.6.4 Using Curve Fitting Methods to Smooth Curves
Curves can be smoothed using one of the five curve fitting methods available in the ADAP software.
Smoothed curves may also be:
• Deleted (refer to Section 7.3.6.4.1, *Deleting Smoothed Curves*).
• Saved (refer to Section 7.3.6.4.2, *Saving Smoothed Curves*).
• Opened (refer to Section 7.3.6.4.3, *Opening Saved Smoothed Curves*).
To apply a curve fitting method to a curve:
1. In Select Line, choose the curve to smooth.
Note: If desired, the curve to smooth can be viewed individually (refer to Section 7.3.6.1, Viewing Individual Curves).
2. From the Edit menu, choose the curve fitting method to apply:
• **Smooth Curve Linear** — Curve is smoothed by a linear regression calculation (refer to Section 8.2.3.2.1, *Curve Fitting Models*).
• **Smooth Curve Mean** — Curve is smoothed using mean values.
• **Smooth Curve Cubic Spline Low** — Curve is smoothed by a cubic spline calculation (refer to Section 8.2.3.2.1, *Curve Fitting Models*).
Note: Choose this option when the deviation of measurement points is low.
• Smooth Curve Cubic Spline Medium — Curve is smoothed by a cubic spline calculation (refer to Section 8.2.3.2.1, *Curve Fitting* Models).
Note: Choose this option when the deviation of measurement points is medium.
• **Smooth Curve Cubic Spline High** — Curve is smoothed by a cubic spline calculation (refer to Section 8.2.3.2.1, *Curve Fitting Models*).
Note: Choose this option when the deviation of measurement points is high.
The smoothed curve is calculated and displayed with the original curve. In Select Line, smoothed curves are labeled using the format curve fitting method (original curve label); for example Mean (Well 1.1).
3. To smooth additional curves, repeat steps 1 and 2 above.
7.3.6.4.1 Deleting Smoothed Curves
Smoothed curves displayed in Graph can be deleted. Deleting a smoothed curve removes it from the graph view, but does not delete smoothed curve data saved in Calc Container files.
To delete smoothed curves:
From the Edit menu, choose **Delete Calc Container**. Smoothed curves are removed from the graph view.
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7.3.6.4.2 Saving Smoothed Curves
Smoothed curve data can be saved for further evaluation. Smoothed curves are stored

in a Calc Container, a text file that may be opened by most word processors, spreadsheets, and database applications.

To save a Calc Container:

1. From the File menu, choose **Save Calc Container**. Save As appears (Figure 7-29).

Figure 7-29. Save As — Calc Container

2. Browse to the desired location to save the text file.
3. Enter a **File name** for the file.
4. In Save as type, select the type of file to save:

• **TXT** — Saves the smoothed curve data in a text file that can be opened by many word processing, spreadsheet, and database applications.

• **XML** — Saves the smoothed curve data in an XML file. XML is a format designed for sharing information over the Web.

Note: The DWR file type is also available. DWR Calc Containers are designed to save test definition data, and should not be used to save smoothed curves.

5. Choose **Save** to save the file.

OR

Choose **Cancel** to return to the ADAP software without saving the Calc Container.

7.3.6.4.3 Opening Saved Smoothed Curves

Saved Calc Containers with smoothed curve data can be opened and viewed in Graph.

To open a Calc Container:

1. From the File menu, choose **Open**. Open appears (Figure 7-30).

Figure 7-30. Opening a saved Calc Container

2. Browse to and select the Calc Container file to open.

Note: If necessary, select the File of type that stores the Calc Container data: Result Container TXT (*.txt) or Result Container **XML (*.xml)**. Only files of the selected type are displayed in Open.

3. Choose **Open** to open the Calc Container.

OR

Choose **Cancel** to close **Open** without opening a Calc Container.

7.3.6.5 Calculating the Area Under Curves

The area under a curve can be calculated. The actual area calculated can be modified by dragging the start and/or endpoint of the straight line that indicates the bottom border of the area calculated.

Note: The ability to calculate the area under a curve is disabled when the graph view is zoomed in or out (refer to Section 7.3.6.3, *Changing the Graph View by Zooming*).

To calculate the area under a curve:

1. In Select Line, choose the desired curve.

Note: If desired, select an individual curve to view in Graph (refer to Section 7.3.6.1, Viewing Individual Curves).

2. From the Options menu, choose **Calculate Area under Curve**. A blue straight line with endpoints appears (Figure 7-31). The calculated area under the curve is displayed in Actual Values.

Figure 7-31. Graph — calculating the area under a curve

To move the endpoints of the straight line and recalculate the area under a curve: Click on an endpoint and drag it to a new location on the curve. The area under the curve is automatically recalculated based on the new position of the straight line.

To turn off Calculate Area under Curve:

From the Options menu, deselect **Calculate Area under Curve**.

Calculated value for the
area under the curve

Area under curve
(shading does not appear
in the ADAP software)

7.3.6.6 Copying the Contents of Graph

The contents of Graph can be copied as a bitmap image that can be pasted into other software applications such as word processors.

To copy the contents of Graph to another software application:

1. From the Edit menu, choose **Copy**. The contents of Graph are copied to the clipboard as a bitmap image.
2. Open or switch to the application where the bitmap image will be pasted.
3. Paste the bitmap image into a new or existing file using the Paste command for the application.

Note: Most applications have CTRL+V assigned as the Paste command keyboard shortcut.

7.3.6.7 Printing the Contents of Graph

Graph may be printed. Printing may create either hard copies or files, such as Acrobat PDF documents.

To print Graph:

1. In the File menu, choose **Print**. Print appears (Figure 7-27).

Figure 7-32. Print

2. In Printer, select the desired printer to print the information. All printers that are properly installed and configured on the computer are listed.
3. In Options, select the desired **Font** and text **Size**.

Note: Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

4. Choose **OK** to print Graph.

Note: If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

7.3.7 Viewing Area Scan Measurement Results

Results for area scan Quick measurements are displayed in three tabs:
• Raw Data Scan — Displays values from all measurement points across the well (refer to Section 7.3.7.1, Viewing Area Scan Measurement Raw Data).
• Scan — Displays graphs of the area scan transmission profiles for all wells measured (refer to Section 7.3.7.2, *Viewing Area Scan Transmission* Profiles).
• Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.3, Viewing Sample Status).
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7.3.7.1 Viewing Area Scan Measurement Raw Data
For area scan measurements, Raw Data displays results for measurement points one well at a time (Figure 7-33). Results are displayed in a matrix that corresponds to the layout of the measurement points for each well.
Note: Raw data values displayed are percentage transmission values, not absorbency. For example, 0.000 refers to no transmission of light, which in terms of OD is overflow. 100.000 refers to 100% transmission, which is 0 OD. 10.000 equals 10% transmission, which is 1 OD.
To view results from a different well:
Choose **Previous Well** to view the measurement results from the preceding well.
OR
Choose **Next Well** to display results from the following well.
To print Raw Data measurement results for all wells:
Choose **Print Raw Data** (refer to Section 7.4.2, *Printing Raw Data and Curve* Info).
Figure 7-33. Raw Data for an area scan measurement of Well A1
Currently
displayed well
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7.3.7.2 Viewing Area Scan Transmission Profiles
For area scan measurements, Scan displays three-dimensional transmission profiles for all measured wells on the plate (Figure 7-34). The values presented are a percentage of transmission. Two yellow lines indicate 0% and 100% transmission (Figure 7-35).
Note: Data presented in the profiles are percentage transmission values, not absorbency. For example, 0.000 refers to no transmission of light, which in terms of OD is overflow. 100.000 refers to 100% transmission, which is 0 OD. 10.000 equals 10% transmission, which is 1 OD.
Figure 7-34. Measurement results — area scan transmission profiles
Figure 7-35. Transmission profile detail
3d View
Use the scroll bars to
rotate the viewing angle.
100%

transmission
0%
transmission
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To print area scan transmission profiles:
Choose **Print Graph** to print the profiles for all wells measured (refer to Section 7.4.3, Printing Graphs).
To change the absorbance profile view:
• Use the main scroll bars to view the graphs for all wells on the plate, if necessary.
• Use the 3d View scroll bars in the upper left of the Scan tab to change the angle for all wells on the plate (refer to Section 7.3.7.2.1, *Changing the* Viewing Angle for All Wells).
• Click on an individual well to view a detailed three-dimensional rendering of the transmission profile that can be rotated, zoomed, and viewed with different colors and textures applied (refer to Section 7.3.7.2.2, *Viewing the* Transmission Profile of a Single Well).
Note: The ADAP Prisma software is required to view transmission profiles of single wells.
7.3.7.2.1 Changing the Viewing Angle for All Wells
The 3d View controls in the upper left of Scan allow the transmission profiles for all wells to be viewed from different angles.
To change the viewing angle:
1. Use the horizontal scroll bar to rotate the view left and right, if desired.
2. Use the vertical scroll bar to rotate the view up and down, if desired.
3. Choose **Refresh Graph** to update the display of the absorbance profiles to the new viewing angle.
7.3.7.2.2 Viewing the Transmission Profile of a Single Well
Note: The ADAP Prisma software is required to view transmission profiles of single wells.
A detailed view of the transmission profile for each measured well is available in View3D. This 3-D image can be rotated, zoomed, and viewed with different textures and colors applied.
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To display View3D:
1. In Scan, click on the desired well to view. View 3D appears (Figure 7-36).
Figure 7-36. View3D
2. To change the viewing angle of the transmission profile, click and hold the left mouse button, and move the mouse in the desired direction of rotation.
OR
To zoom in or out, click and hold the right mouse button, and move the mouse left or right, or up or down.
Note: When zooming, moving the mouse up and down produces the same zoom effect as moving the mouse left and right.
3. If desired, change the texture and brightness of the 3-D image by choosing

options in the View menu:
• **Light** — Brightens the 3-D image.
• **Wireframe** — Hides the surface layer so that only the underlying wireframe, or skeleton, of the 3-D image is visible.
• **Solid** — Displays the 3-D image as a solid object.
• **Shaded** — Divides the surface layer into sections differentiated by color.
• **Transparent** — Displays the 3-D image with a translucent surface layer.
• **Outlined** — Displays only the outer outline of the 3D image.
• **Metallic** — Displays the surface texture of the 3D image with a simulated metallic finish.
• **Atmosphere** — Subtly modifies the brightness and texture of the surface layer.

If desired, change the color of the surface layer by choosing options in the Edit menu:
• **Color White** — Displays the surface color of the 3-D as white.
• **Color Gradient** — Blends the surface layer color of the 3-D image using a gradient.

7.3.7.2.3 Saving Transmission Profiles

3-D images of transmission profiles can be saved as image files separate from the measurement results. Images are saved in Dex3D (*.dex) format.

To save a 3-D image of an transmission profile:

1. From the File menu, select **Save**. Save as appears (Figure 7-37).

Figure 7-37. Saving an transmission profile

Browse to directory where the file will be saved and choose a **File name**.

2. Choose **Save** to save the file.

OR

Choose **Cancel** to return to View3D without saving the image.

7.3.7.2.4 Loading Transmission Profiles

3-D images of transmission profiles saved in Dex3D (*.dex) format can be loaded into the ADAP software for viewing.

View3D must be open to load a 3-D image.

To load a 3-D image of an transmission profile:

1. From the File menu, select **Load**. Open appears (Figure 7-38).

Figure 7-38. Loading a transmission profile

2. Browse to directory where the desired image is saved and select it.
3. Choose **Open** to load the image.

Note: Selecting Open as read-only prevents the 3-D image from being modified while the file is open.

OR

Choose **Cancel** to return to View3D without opening the image.

7.4 Printing Quick Measurement Results

For record-keeping purposes, the ADAP software has the ability to print Quick measurement results and information. The printing procedure varies depending on which measurement results or information tab is being printed.

To print:

• OD, Transmission, Reduced Data, and Status — From the Setup menu or toolbar, choose **Print** (refer to Section 7.4.1, *Printing General* Measurement Results).

• Raw Data and Curve Info — Depending on the button available within the tab, choose **Print Raw Data** or **Print** (refer to Section 7.4.2, *Printing Raw* Data and Curve Info).

• Graphs — In the tab itself, choose **Print Graph** to print graphs for all measured wells or cuvette samples (refer to Section 7.4.3, *Printing Graphs*).

7.4.1 Printing General Measurement Results

General measurement results and information from OD, Transmission, or Reduced Data are combined with Status into a single printout.

To print results and information:

1. From the Setup menu, choose **Print**. Print appears (Figure 7-39).

OR

Choose **Print**. Print appears (Figure 7-41).

Note: Choosing Print from the toolbar opens a simplified type of Print (Figure 7-41).

Figure 7-39. Print chosen from Setup menu

2. In Printer, select the desired printer to print the information. All printers that are properly installed and configured on the computer are listed.

3. In Options, select the desired **Font**, text **Size**, and number of **Copies**.

Note: If printing from the simplified Print (Figure 7-41), in Options, select the desired **Font** and text **Size**. A single copy is printed automatically.

Note: Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

Note: In range, selecting **All Tests** or **Single Test** produces the same printout for Quick measurements.

4. Choose **OK**.

Note: If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

7.4.1.1 Viewing General Measurement Results Printouts

Printouts generated from OD, Transmission, Reduced Data, and Status display measurement results and information in a matrix that matches the plate layout (Figure 7-40). For each well, the first line lists the plate layout label assigned to the well, the second OD, Transmission, or Reduced Data results, and the third Status.

Figure 7-40. General measurement results — OD and Status (excerpt)

Note: A general measurement results printout of kinetic measurement results includes kinetic graphs for measured wells. Kinetic graphs can also be printed separately by choosing **Print Graph** in Kinetic Graph (refer to Section 7.4.3, Printing Graphs).

To print kinetic raw data, in Raw Data, choose **Print Raw Data** (refer to Section 7.4.2, Printing Raw Data and Curve Info).

7.4.2 Printing Raw Data and Curve Info

Raw Data, Raw Data Scan, and Curve Info can be printed from measurement results that include any of these tabs.

Note: Information in the OD, Transmission, Reduced Data and Status tabs are printed by choosing **Print** in the Setup menu (refer to Section 7.4.1, *Printing* General Measurement Results).

To print kinetic or scan graphs, choose **Print Graph** in Kinetic Graph or Scan respectively (refer to Section 7.4.3, *Printing Graphs*).

To print Raw Data or Curve Info:

1. In Raw Data or Raw Data Scan, choose **Print Raw Data**.

OR

In Curve Info, choose **Print**. Print appears (Figure 7-41).

Note: Curve Info data tables may also be printed by right-clicking on a table within the Curve Info tab.

Figure 7-41. Print

2. In Printer, select the desired printer to print the information. All printers that are properly installed and configured on the computer are listed.
3. In Options, select the desired **Font** and text **Size**.

Note: Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

4. Choose **OK** to print the raw data.

Note: If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

7.4.2.1 Printing Curve Info Data Tables

Measurement results displayed in Curve Info tables may be printed using the print options built into the Curve Info tab (Figure 7-42).

Figure 7-42. Curve Info print options

To print complete tables:

1. Right click on a results table. A menu with print, copy, and text file options appears (Figure 7-42).
2. Choose a printing option:

- **Print this Table** — Prints only the table right-clicked on.
- **Print all Tables** — Prints both tables.

Note: Print all Tables is available only in the ADAP Prisma

Software.
3. Follow steps 2–4 in Section 7.4.2, *Printing Raw Data and Curve Info*, to print the tables.
Curve Info
This table appears only in the
ADAP Prisma software.
Print options
Right-click on a results table
to display print options.

7.4.2.2 Viewing Kinetic Raw Data Printouts
Kinetic measurement raw data printouts display measurement results from all cycles sequentially for each well or cuvette sample (Figure 7-43).
Figure 7-43. Kinetic raw data printout with three cycles (excerpt)
Note: Wells are labeled in Row-Column format. For example, A2 represents the well in the first row of the second column.
7.4.2.3 Viewing Linear Scan Raw Data Printouts
Linear scan raw data printouts display the 25 measurement points in a column for each well (Figure 7-44).
Figure 7-44. Linear scan raw data printout (excerpt)
Note: Wells are labeled in Row-Column format. For example, A2 represents the well in the first row of the second column on the plate.
Measurement points
for well A2

7.4.2.4 Viewing Area Scan Raw Data Printouts
Area scan raw data printouts display the measurement points for each well in a matrix that represents the layout of the measurement points (Figure 7-43).
Figure 7-45. Area scan raw data printout (excerpt)
Note: Wells are labeled in Row-Column format. For example, A2 represents the well in the first row of the second column.
7.4.2.5 Viewing Curve Info Printouts
Curve Info printouts for multiwavelength, spectral scan, and linear scan measurement results present data in the same column format displayed when viewing Curve Info onscreen.
Note: The ADAP Prisma software is required to print Curve Info other than OD and transmission results.
Figure 7-46. Curve Info printout for a
multiwavelength measurement (ADAP Prisma excerpt)
Peak, valley, and slope data
is available only with a valid
ADAP Prisma license.

7.4.3 Printing Graphs

Measurement result graphs can be printed from all Graphic tabs.
To print a graph:
1. Choose **Print Graph**. Print appears (Figure 7-47).
Note: When Print Graph is chosen from a Graphic tab displaying the results for an individual sample, graphs for all measured samples are printed.
Figure 7-47. Print
2. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.
3. In Options, select the desired **Font** and text **Size**.
Note: Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.
4. Choose **OK** to print the information.
Note: If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.
Note: Kinetic graphs can also be printed with OD, Reduced Data, Transmission, and Status information by choosing **Print** from the Setup menu or toolbar (refer to Section 7.4.1, Printing General Measurement Results).

7.4.3.1 Viewing Kinetic Graph Printouts
Kinetic graph printouts display kinetic graphs for all measured wells or cuvette samples (Figure 7-48).
Figure 7-48. Kinetic graph printout (excerpt)
Note: Wells are labeled in Row-Column format. For example, C2 represents the well in the third row of the second column.
7.4.3.2 Viewing Linear Scan Graph Printouts
Linear scan graph printouts display linear scan graphs for all measured wells on the plate. (Figure 7-49).
Figure 7-49. Linear scan graph printout (excerpt)
Note: Wells are labeled in Row-Column format. For example, C2 represents the well in the third row of the second column.

7.4.3.3 Viewing Area Scan Graph Printouts
Area scan graph printouts display area scan graphs for all measured wells on the plate (Figure 7-50).
Figure 7-50. Area scan graph printout (excerpt)
Note: Well labels are not printed in area scan graph printouts. However, the layout matches the Row-Column format used by kinetic and linear scan graph printouts, so the well in the third row of the second column is C2.
W Well C2
W Well A1

7.5 Exporting Quick Measurement Results to Other Applications

Quick measurement results can be exported to other applications for further analysis or manipulation. The ADAP software provides two methods to export data:

- Data can be copied and pasted into another application such as a word processor (refer to Section 7.5.1, Copying and Pasting Measurement Results Into Another Application).
- Data can be saved to a text file and then opened by or imported into another application (refer to Section 7.5.2, *Saving Measurement Results as Text* Files).

7.5.1 Copying and Pasting Measurement Results Into Another Application

Measurement results displayed in any tab can be copied to the clipboard. These results can then be pasted into another application for storage or further analysis.

Note: For example, data from the ADAP software could be pasted into a spreadsheet with formulas or macros already configured to perform preliminary analysis on measurement results data.

Note: The Curve Info tab for multiwavelength, spectral scan, and linear scan measurements includes additional options for copying data (refer to Section 7.5.1.1, Copying and Pasting Curve Info Results Into Another Application).

To copy measurement results to the clipboard:

1. Select the desired results tab to copy to the clipboard.
2. From the Options menu, choose **Copy displayed data into clipboard** to copy only the displayed results to the clipboard.

OR

Choose Copy displayed data into clipboard from the toolbar.

OR

From the Options menu, choose **Copy all data into clipboard** to copy all results from a kinetic or scan measurement to the clipboard.

Note: When copying Raw Data, choosing **Copy displayed data into clipboard** copies only the cycle or well displayed. To copy raw data results for all cycles or wells measured, choose **Copy all data** into clipboard.

3. Open or switch to the application where the measurement results will be pasted.
4. Paste the measurement results into a new or existing file using the Paste command for the application.

Note: Most applications have CTRL+V assigned as the Paste command keyboard shortcut.

7.5.1.1 Copying and Pasting Curve Info Results Into Another Application

Measurement results displayed in Curve Info tables may be copied and pasted using the copy options built into the Curve Info tab (Figure 7-51).

Figure 7-51. Curve Info copy options

To copy complete tables into another application:

1. Right click on a results table. A menu with print, copy, and text file options

appears (Figure 7-51).
2. Choose a copy option:
• **Copy this Table** — Copies all data in the table clicked on to the clipboard.
• **Copy all Tables** — Copies all data from both tables to the clipboard.
Note: Copy all Tables is available only in the ADAP Prisma Software.
3. Open or switch to the application where the measurement results will be pasted.
4. Paste the measurement results into a new or existing file using the Paste command for the application.
Note: Most applications have CTRL+V assigned as the Paste command keyboard shortcut.
Curve Info
This table appears only in the ADAP Prisma software.
Copy options
Right-click on a results table to display copy options.

To copy selected data from a table into another application:
1. Click and drag over the table data desired to copy. The selected data is highlighted.
2. Right click on a results table. A menu with print, copy, and text file options appears (Figure 7-51).
3. Choose **Copy Selection**. The selected data is copied to the clipboard.
4. Open or switch to the application where the measurement results will be pasted.
5. Paste the measurement results into a new or existing file using the Paste command for the application.
Note: Most applications have CTRL+V assigned as the Paste command keyboard shortcut.

7.5.2 Saving Measurement Results as Text Files
Measurement results can be saved as text files which can be viewed in any text editor or imported into many statistical software packages or spreadsheet applications.
Note: Table data in the Curve Info tab for multiwavelength, spectral scan, and linear scan measurements can be saved to a text file from within the Curve Info tab (refer to Section 7.5.2.1, Saving Curve Info Table Data as a Text File).
To save measurement results to a text file:
1. Select the desired results tab to save as a text file.
2. From the Options menu, choose **Save displayed data as TXT** to save only the displayed results as a text file.
OR
From the Options menu, choose **Save all data as TXT** to save all measurement results as one text file.
Note: When saving Raw Data to a text file, choosing **Save**

displayed data as TXT copies only the cycle or well displayed. To save raw data results for all cycles or wells measured, choose **Save all** data as TXT.

3. Save As appears. Browse to the desired location to save the data.

Note: If the ADAP software is configured in Setup-System to automatically save measurement results as text files, these files may also be opened in a text editor or other application. Refer to Section 3.3, *Configuring System Settings* for information about configuring the ADAP software to automatically save measurement results as text files.

7.5.2.1 Saving Curve Info Table Data as a Text File

Table data in the Curve Info tab for multiwavelength, spectral scan, and linear scan measurements can be saved to a text file within the Curve Info tab.

To save table data as a test file:

1. Right click on a results table. A menu with print, copy, and text file options appears (Figure 7-51).
2. Choose **Save all Tables as TXT**. Save As appears (Figure 7-52).

Figure 7-52. Save As

3. Browse to the desired location to save the text file.
4. Enter a **File name** for the text file.
5. Choose **Save** to save the file.

OR

Choose **Cancel** to return to the ADAP software without saving the curve info data as a text file.

Defining and Running Tests In the ELISA Module

8.1 Overview

Note: A valid license code for the ADAP Prisma software is required to access the functions covered in this chapter. Refer to Section 1.3, *Launching the ADAP Software* for information about license codes.

Tests are protocols for performing and evaluating measurements using the Zenyth 200. Tests offer more robust programming and evaluation options than Quick measurements, and may be saved and modified.

Depending on the desired application, test protocols are defined using either the ELISA or Quantitation module (refer to Section 8.1.1, *Choosing the Appropriate* Module For Configuring Test Parameters).

The ELISA module provides options to:

- Define new tests (refer to Section 8.2, *Defining New Tests In the ELISA* Module).
- Save new tests (refer to Section 8.3, *Saving Test Definitions*).
- Run existing tests (refer to Section 8.4, *Running Existing Tests*).
- Edit, copy, or delete test definitions (refer to Section 8.5, *Editing, Copying,* and Deleting Tests).
- Print test definition parameters (refer to Section 8.6, *Printing Test*

Definitions).
Note: Tests may be performed by all authorized users; however, tests may only be defined, edited, and deleted by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System Administration*).

8.1.1 Choosing the Appropriate Module For Configuring Test Parameters
Test protocols may be defined in either the ELISA or Quantitation module. While some functionality is common to both modules, test definition parameters should be configured using the module that best meets the requirements of the test.
Choose the ELISA module to define tests that:
• Perform qualitative evaluations using cutoff formulas (refer to Section 8.2.4, Configuring Qualitative Evaluations).
• Use replicate rejection and/or validation formulas to determine the final measurement value (refer to Section 8.2.8, *Programming Rejection/ Validation Formulas*).
• Can be run in multitest assays (refer to Chapter 9, *Defining and Running Multitest Assays In the ELISA Module*).
Choose the Quantitation module to:
• Quickly and easily define endpoint and kinetic tests that perform quantitative evaluations (refer to Section 10.2, Defining New Tests In the Quantitation Module).
• Define spectral scan measurements (refer to Section 10.2.2, Configuring an Endpoint Photometric Test).
• Perform preconfigured assays on cuvette samples (refer to Chapter 12, Running Cuvette Applications).
Note: This chapter covers defining test protocols in the ELISA module. Refer to Chapter 10, Defining and Running Tests In the Quantitation Module, for information about using the Quantitation module to configure test definition parameters.

8.2 Defining New Tests In the ELISA Module
Test definitions configured in the ELISA module dictate how the Zenyth 200 performs measurements and interprets the resulting data. Tests are defined using a set of tabs that configure different categories of parameters.
To define a new test:
• Configure the options in Define Layout to select the sample format: microplate or cuvette, and configure the use of standards, blanks, controls, replicates, and samples in the test (refer to Section 8.2.1, *Choosing the Sample Format and Configuring Sample Options*).
• Configure the options in the General tab to define basic information about the test, including name, instrument, shaking, measurement filters, and variables (refer to Section 8.2.2, *Configuring General Options*).
After configuring the sample format and options in the General tab, use the remaining tabs to configure the appropriate options for the desired measurement type.
• Quantitative — Configures standard curve data (refer to Section 8.2.3,

Configuring Quantitative Evaluations).
Note: Quantitative evaluations configured in the ELISA module may use standard curves imported from previously-defined tests and multiplication factors. These options are not available in the Quantitation module.
• Qualitative — Configures cutoff groups and formulas (refer to Section 8.2.4, Configuring Qualitative Evaluations).
• Options — Configures measurement results printing options and tools for test evaluation (refer to Section 8.2.5, *Configuring Test Options*).
• Kinetic — Configures kinetic measurement parameters (refer to Section 8.2.7, Configuring Scan Measurements).
• Scan — Configures linear and area scan measurement parameters (refer to Section 8.2.7, Configuring Scan Measurements).
Note: Linear scans configured in the ELISA module have more advanced options available than those configured in the Quantitation module.
• Rejection/Validation — Programs replicate elimination and test validation formulas (refer to Section 8.2.8, *Programming Rejection/Validation* Formulas).
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To open the ELISA module test definition configuration:
1. From the toolbar, toggle the Elisa/Quantitation selection button to **Elisa**, if necessary.
2. From the Setup menu, choose **Test Definition**.
OR
From the toolbar, choose **Create/Edit Calculation**. The ELISA test definition configuration appears with the General tab open (Figure 8-1).
Figure 8-1. ELISA module test definition configuration — General tab
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8.2.1 Choosing the Sample Format and Configuring Sample Options

The Zenyth 200 is capable of performing test measurements on microplate and cuvette samples. The sample format selected for a new test definition affects which test options are available in the configuration tabs. For example, scan measurements may only be performed on microplate samples. For this reason, the sample format and options should be configured before the options available in the other tabs.
Microplate and cuvette parameters are configured in Define Layout, which is divided into four sections:
• Options — Configures sample format parameters including plate type, strip use, filling direction, replicates, and well labeling format (refer to Section 8.2.1.1, Configuring Sample Format Parameters).
• Control-Position — Configures the type and label numbering applied to samples measured during the test (refer to Section 8.2.1.2, *Configuring Well* or Cuvette Types and Labels in Control-Position).
• Plate Layout — Defines the location of standard, control, blank, and

sample wells on the plate. With cuvettes, defines the label of each cuvette measured (refer to Section 8.2.1.3, *Defining Sample Location in Plate* Layout).
• Factor — Configures multiplication factors for samples (refer to Section 8.2.1.4, Entering Multiplication Factors for Samples).
To open Define Layout:
In the ELISA module test definition configuration, choose **Layout**.
OR
In the General tab, under Test Name, choose **Edit/Define Layout**. Define Layout appears (Figure 8-2).
Figure 8-2. Define Layout (microplate)

8.2.1.1 Configuring Sample Format Parameters
Options configures sample format parameters including plate type, strip use, filling direction, replicates, and well labeling format.
To configure plate parameters, in Options:
1. In Plate Type, choose **CUVETTE**, or the type of microplate used in the test.
2. In CAG-Strips, select the location of control antigen strips if they are used in the test. CAG wells are assigned to the plate layout:
• No — Antigen control strips are not used.
• 1st - Horizontal — Antigen control well is located horizontally before the samples.
• 2nd - Horizontal — Antigen control well is located horizontally after the samples.
• 1st - Vertical — Antigen control well is located vertically before the samples.
• 2nd - Vertical — Antigen control well is located vertically after the samples.
Note: When CAG-Strips is selected, the measurement of the control antigen well is automatically subtracted from the full antigen well.
Note: CAG-Strips is disabled when CUVETTE is selected.
3. In Filling Direction, select how samples are numbered based on the filling direction of the plate:
• Vertical — Sample labels are numbered in ascending order column by column.
• Horizontal — Sample labels are numbered in ascending order row by row.
Note: Filling Direction is disabled when CUVETTE is selected.
4. In Replicate No./Direction, select the number of replicates to be used for each sample, and set the filling direction of replicates:
• Vertical — Replicate labels are numbered in ascending order column by column.
• Horizontal — Replicate labels are numbered in ascending order row by row.
Note: When cuvette is the selected format, Replicate No./Direction changes to Replicate Count. Enter the number of replicates for each

sample. Up to 50 samples, including replicates, can be measured in a test.

5. In Well Labels, select the format of the well labels:

• A1,A2...B1,B2. — Labels rows by letter, columns by number.

• 1.1,1.2, 1.3...2.1,2.2, 2.3. — Labels rows and columns by number.

Note: Well Labels is disabled when CUVETTE is selected.

8.2.1.2 Configuring Well or Cuvette Types and Labels in Control-Position

The options in Control-Position work in conjunction with Plate Layout to configure well or cuvette types, label numbers, and locations of samples. Standards, controls, and blanks are configured using Control-Position, then placed on the plate or assigned to specific cuvettes using Plate Layout.

Note: Refer to Section 8.2.1.3, Defining Sample Location in Plate Layout for information about defining the actual location of wells on the plate.

To configure well or cuvette types and label numbers:

1. In Type, select the type of wells or cuvettes to configure:

• Standard — A well or cuvette with a known concentration used to develop or correct a standard curve.

• Control — A well or cuvette with a known, expected signal used to verify the results of the plate.

• Quality-Control — A control well or cuvette with a known, expected response value which is used to check lot-dependent variations between kits or reagents.

• Positive-Control — A control well or cuvette in which a known amount of a target reagent is used to generate a signal that verifies positive results measured in sample wells.

• Negative-Control — A control well or cuvette in which the lack of a target reagent produces very little or no signal, which verifies negative results measured in sample wells.

• Blank — A well or cuvette that is left empty or filled only with reagents but no reacting sample, used to measure background noise.

Note: The mean value of Blank samples is automatically subtracted from all other wells or cuvettes (refer to Section 8.2.5.3, Configuring Blank Subtraction).

• Sample — A well or cuvette containing a sample to measure.

Note: The Numbers label below Type changes automatically to reflect the type of well chosen.

2. In Numbers, click and drag the slider to change the well label identification number.

Note: Drag the slider to the right to increase the label number, or to the left to reduce it.

3. Use Plate Layout to define well locations or specific cuvettes for the configured Type (refer to Section 8.2.1.3, Defining Sample Location in Plate Layout).

4. After defining well locations or specific cuvettes for the configured Type, repeat steps 1–3 above for each additional well type desired on the plate.

5. When all standards, controls, and blanks have been configured, choose **Fill Plate With Samples** to populate all remaining wells or cuvettes with samples.
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8.2.1.3 Defining Sample Location in Plate Layout
For microplate samples, Plate Layout defines the location of standard, control, blank, and sample wells on the plate (Figure 8-3). Well locations may also be edited and deleted using the options in Plate Layout.
Figure 8-3. Define Layout — Plate Layout tab (microplate)
For cuvette samples, Plate Layout assigns the sample types and labels to specific cuvettes measured in the test (Figure 8-4).
Figure 8-4. Define Layout — Plate Layout tab (cuvette)
Wells selected by
dragging mouse.
Choosing Set actual
column selects all
wells in column 4.
Choosing Set actual row
selects all the wells in row C.
First well
selected.
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To define cuvette sample types or locations on the plate for wells configured in Control-Position:
1. In Plate Layout, click on the desired well or cuvette to define (Figure 8-3).
Note: Select multiple wells or cuvettes by clicking and then dragging over the desired range.
2. From the **Edit** menu, choose a method for selecting which wells or cuvettes will be defined as the type configured in Control-Position:
OR
Right-click on the selected well(s) or cuvette(s) and choose a method for selecting which wells or cuvettes will be defined as the type configured in Control-Position:
• Set/De-select all wells — Populates or clears all wells on the microplate or all cuvette samples.
• Set/De-select actual row — With microplates, populates or clears all wells in the same row as the first well selected (Figure 8-3). With cuvettes, populates or clears all cuvette samples.
• Set/De-select actual column — With microplates, populates or clears all wells in the same column as the first well selected (Figure 8-3). With cuvettes, populates or clears only the first cuvette sample selected.
• Set/De-select selected wells — Populates or clears the selected wells or cuvette samples.
3. In Control-Position, configure another well Type, if desired, and repeat (refer to Section 8.2.1.2, Configuring Well or Cuvette Types and Labels in Control-Position).

Note: When all standards, controls, and blanks have been configured, in Control-Position, choose **Fill Plate With Samples** to populate the remaining wells or cuvettes with samples.

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8.2.1.4 Entering Multiplication Factors for Samples

Factor allows entering multiplication factors for wells on the plate or cuvette samples (Figure 8-5).

Figure 8-5. Define Layout — Factor (microplate)

To enter multiplication factors:

1. Choose **Factor**.
2. Select a well or cuvette and enter numerical value for the Factor (Figure 8-5).

Note: Select multiple wells or cuvettes by clicking and dragging over the desired range. When a new factor is entered for the first well or cuvette selected, all selected wells or cuvettes are assigned the new factor.

3. Repeat the previous step for all wells or cuvettes desired.

Note: F can be entered in transformation formulas and refers to the individual multiplication factor for each well position entered in Factor. F is typically used in quantitative transformation formulas to correct the concentration of samples for their dilution factor; for example, X' = X * F.

First well selected with
new Factor entered.

Selected group of wells
with new Factor.

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8.2.1.5 Completing the Sample Layout

When all parameters are configured and samples defined, save and close Define Layout and return to the ELISA test definition configuration to continue configuring the test definition.

To close Define Layout:

From the File menu, choose **End** to close Define Layout and save the new plate or cuvette parameters.

OR

From the File menu, choose **Cancel** to close Define Layout without saving the new plate or cuvette parameters.

Note: In the File menu, Print and Open perform their respective functions on the complete test definition, not Define Layout, and may not be accessible if the test definition is not completely configured.

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8.2.2 Configuring General Options

The General tab provides options to set up the basic parameters of a test definition, including name, instrument type, shaking, measurement filters, and variables.

Figure 8-6. ELISA module test definition configuration — General tab

1. In Test Name, enter a name for the test.

Note: Test names are limited to 20 characters in length.
2. In Instrument, select the instrument to be used to perform the test.
Note: The type and serial number of the instrument currently connected or used in the previous test is automatically selected. The instrument setting only needs to be selected manually if a different instrument will be used to perform the test currently being defined.
3. In Data Transfer Mode, if desired, select how measurement results are transferred from the instrument to computer:
• Plate — Transfers data for the entire plate at one time.
• Row — Transfers data one row at a time.
• Well — Transfers data one well at a time.
Note: Selecting a Data Transfer Mode is not required for cuvette measurements. When reading microplates or cuvette samples, the ADAP software automatically chooses the mode that is most applicable to the type of measurement being performed.

4. In Lot# , if desired, enter the lot number of any reagent or kits being used in the test and select **Yes** if the concentration is lot-number dependent.
5. In Shaking, if desired, select **Yes** to shake the plate before the measurement is made.
Note: Shaking is only available for microplate measurements, and is disabled when performing measurements on cuvette samples.
Note: In kinetic measurements, the plate is shaken before each measurement cycle.
6. If Shaking is selected, in Time, select the number of seconds to shake.
7. If Shaking is selected, select **Low**, **Medium**, or **High** shaking intensity.
8. In Measurement Filter, select the desired measurement wavelength.
Note: Any wavelength within the instrument's range of 190–1000 nm may be selected.
9. To perform a bichromatic measurement, in Reference Filter, select a reference wavelength
Note: When a reference filter is selected, the final measurement result is calculated by subtracting the reference filter measurement from that of the measurement filter.
Note: If no reference filter is desired, select **<-->**.
10. In Parameter, enter numeric values for up to eight variables that can be used in any formula defined in the test definition.
Note: Parameter variables are typically used with test kits that have cutoff values or standard correction values based on lot number.
11. In Check Variable, select **Yes** to display the Parameter variables after the measurement, but before the results are evaluated. This allows the variables to be changed to account for variations in lot-dependent reagents.
Note: Changes made to Parameter variables during a test run are automatically saved in the test definition.

8.2.3 Configuring Quantitative Evaluations

Quantitative configures parameters for standard curves, concentration values, and response and transformation formulas. Quantitative is divided into five sections:

• Standards — Configures concentration and response formula parameters for standards (refer to Section 8.2.3.1, *Configuring Standards*).

• Curve — Configures standard curve fitting parameters (refer to Section 8.2.3.2, Configuring Standard Curve Parameters).

• Factor — Sets a multiplication factor which enables the concentration value to be scaled to the desired unit (refer to Section 8.2.3.3, *Configuring the* Factor).

• Use stored Standard Curve — Loads a stored standard curve into the test definition (refer to Section 8.2.3.4, *Opening a Stored Standard Curve*).

• Transformation — Configures a transformation formula to apply to concentrations (refer to Section 8.2.4.3, *Configuring a Transformation* Formula).

To define a standard curve for a quantitative evaluation:

Select the Quantitative tab (Figure 8-7).

Figure 8-7. ELISA module test definition configuration — Quantitative tab

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8.2.3.1 Configuring Standards

Standards configures up to 10 concentration values and response formulas.

Note: To use parameters from a saved test definition, refer to Section 8.2.3.4, Opening a Stored Standard Curve.

To configure concentration values and response formulas:

1. Under Concentration, enter the concentration value to be plotted on the x-axis.

Note: For Concentration values less than 1, enter a leading 0 before the decimal; for example, 0.51. Values entered without the leading 0 produce an error when the measurement is performed.

2. Under Response Formula, enter the response formula to plot the corresponding concentration on the y-axis.

Note: Response formulas may contain any controls, standards, or variables defined in the test, as well as any numerical constants and mathematical operators +,-,*,/,(,),^. Usually, the response formula is just the value of a measured standard and consists only of the corresponding name; for example S1, S2, or S3.

Note: For Response Formula values less than 1, enter a leading 0 before the decimal; for example, 0.51. Values entered without the leading 0 produce an error when the measurement is performed.

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8.2.3.2 Configuring Standard Curve Parameters

Curve configures new standard curve parameters.

Note: To use standard curve parameters from a saved test definition, (refer to Section 8.2.3.4, Opening a Stored Standard Curve).

1. In Curve, select the curve fit method: Point to Point, Linear Regression,

Cubic Spline, or 4-Parameter Fit.
Note: Refer to Section 8.2.3.2.1, *Curve Fitting Models* for detailed information about curve fitting methods.
2. In Axis (X/Y), select the scale to use for the X and Y axes.
• **lin/lin** — Linear/Linear
• **lin/log** — Linear/Logarithmic
• **log/log** — Logarithmic/Logarithmic.
3. In Extrapolation, enter a percentage value to extrapolate the standard curve above and below the highest and lowest standard points in the curve, if desired.
Note: Extrapolation percentages can be used with Linear Regression, Cubic Spline or 4-Parameter Fit curve fitting methods.
Note: The percentage value entered in Extrapolation can be up to 99.9%.
4. In Units, enter the units of measure to be displayed in the test measurement results.
Note: Units are used for documentation purposes only and do not impact the standard curve. Units appears in Transform in the test measurement results window (refer to Section 11.2.3, *Viewing* Concentration Results).
5. In Validate Curve, choose **Yes** or **No** to validate the test based on an acceptable coefficient of correlation.
Note: Validate Curve is only available with the Linear Regression curve fitting method.
6. If Yes is selected in Validate Curve, in Min. Correlation, enter the minimum correlation percentage value for the test to be valid.
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8.2.3.2.1 Curve Fitting Models
Table 8-1 describes the four curve fitting models supported by the ADAP software.
Table 8-1. Curve Fitting Models

Method	Description	Example
Linear regression	Construction of a straight line using the least squares method with the highest possible approximation to all standard points. Requires a minimum of 2 standard points.	
Point to Point	Direct connection of all standard points. Requires a minimum of 2 standard points.	
Cubic Spline	All standard points are connected by the best fitting curve. **Note:** Can only be used for nonlinear and nonsigmoid functions. Requires a minimum of 3 standard points.	
4 Parameter Fit	This procedure can be used only to characterize	

sigmoid curves. The curve is calculated according
to the formula:
a = zero dose response (upper asymptote)
d = infinite dose response (lower asymptote)
c = dose level which results in a response midway
between a and d
b = slope factor
Requires a minimum of 4 standard points.
yi
(a – d)
1
xi
c
⍰----⍰
⍰ ⍰b
+
= ---------- + d
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8.2.3.3 Configuring the Factor
In Factor (Figure 8-7), if desired, enter a multiplication factor to enable the concentration value to be scaled to the desired unit.
8.2.3.4 Opening a Stored Standard Curve
Use stored Standard Curve permits standard curve parameters from saved test definitions to be loaded into the current test definition.
To open standard curve parameters from an existing test definition:
1. In Use stored Standard Curve, choose **Yes**. Selection appears (Figure 8-8):
Figure 8-8. Selection — test definitions
2. Select the desired test and choose **OK**. Fields in Standards and Curve are automatically populated with the standard curve parameters from the selected test. The name of the selected test appears in Use stored Standard Curve.
Note: Selecting **No** after a stored standard curve has been loaded removes the test name from Use stored Standard Curve, but not the parameters loaded in Standards and Curve. Parameters in Standards and Curve must be edited or deleted manually.
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8.2.3.5 Configuring a Transformation Formula
Transformation configures transformation formulas, which, depending on measurement type, are used to transform measurement or reduced data (X) based on an algebraic formula (X'=).
Note: X must be included in a transformation formula.
To configure a transformation formula:
1. Choose **Yes** or **No** to indicate whether a transformation formula will be used.
2. If Yes is selected, in X'=, enter the transformation formula.
Note: The formula may contain any controls, standards, or variables

defined in the test, any numerical constants, as well as mathematical operators ( ) * +, - . / ^, ABS, SQR, L, F, X, and V (refer to Section 8.2.8.3, Logical and Mathematical Operators).
Standards and controls are abbreviated as: S for standard, K for control, QC for quality control, PC for positive control, and NC for negative control.
3. Select **Plate**, **Row**, or **Column** to define how the transformation formula is applied to the wells on the plate:
• Plate — applies the transformation formula to all wells on the plate.
• Row — applies the transformation formula to all wells in a row with a defined control position.
• Column — applies the transformation formula to all wells in a column with a defined control position.
Note: With cuvette samples, the transformation formula is applied to all cuvettes measured in the test.
4. In Units, enter the units of measure to be displayed in the Test measurement results.
Note: Units are used for documentation purposes only and do not impact the standard curve. Units appears in Transform in the test measurement results window (refer to Section 11.2.3, *Viewing* Concentration Results).

8.2.4 Configuring Qualitative Evaluations
Qualitative configures qualitative evaluations that classify measured samples according to defined cutoff values. Up to five groups of samples may be classified using cutoff formulas. Qualitative is divided into three sections:
• Groups — Defines sample group names and cutoff formulas (refer to Section 8.2.4.1, Configuring Groups and Cutoff Formulas).
• Factor — Sets a multiplication factor that enables the measurement value to be scaled to the desired unit (refer to Section 8.2.4.2, *Configuring the* Factor).
• Transformation — Configures a transformation formula to apply to raw data (refer to Section 8.2.4.3, Configuring a Transformation Formula).
To configure qualitative evaluation options:
Select the Qualitative tab (Figure 8-9).
Figure 8-9. ELISA module test definition configuration — Qualitative tab

8.2.4.1 Configuring Groups and Cutoff Formulas
Groups defines group names and cutoff formulas to separate them. Up to five group names and four cutoff formulas may be defined.
1. In Group 1 – Group 5, enter names for the groups to be separated by the cutoff formulas.
2. In Cutoff Formula 1 – Cutoff Formula 4, enter the cutoff formulas that separate the samples into groups.
Note: Each cutoff formula may be defined as one of the well types

defined on the plate or as a mathematical formula. The result of the formula is then used as the related cutoff value.
3. In Interpretation, select the basis for the cutoff calculation: OD (Optical Density), Concentration, Transformation, or Transf. (Conc).
Note: Transformation refers to the result of the qualitative transformation formula based on measurement values. Transf. (Conc) refers to the result of the quantitative transformation formula based on concentrations.
8.2.4.2 Configuring the Factor
In Factor, if desired, enter a multiplication factor to enable the measurement value to be scaled to the desired unit.

8.2.4.3 Configuring a Transformation Formula
Transformation configures transformation formulas, which, depending on measurement type, are used to transform measurement or reduced data (X) based on an algebraic formula (X'=).
Note: X must be included in a transformation formula.
To configure a transformation formula:
1. Select **Yes** or **No** to indicate whether a transformation formula will be used.
2. If Yes is selected, in X'=, enter the transformation formula.
Note: The formula may contain any controls, standards, or variables defined in the test, any numerical constants, as well as mathematical operators ( ) * +, - . / ^, ABS, SQR, L, F, X, and V (refer to Section 8.2.8.3, Logical and Mathematical Operators).
Standards and controls are abbreviated as: S for standard, K for control, QC for quality control, PC for positive control, and NC for negative control.
3. Select **Plate**, **Row**, or **Column** to define how the transformation formula is applied to the wells on the plate:
• Plate — applies the transformation formula to all wells on the plate.
• Row — applies the transformation formula to all wells in a row with a defined control position.
• Column — applies the transformation formula to all wells in a column with a defined control position.
Note: With cuvette samples, the transformation formula is applied to all cuvettes measured in the test.
4. In Units, enter the units of measure to be displayed in the test measurement results.
Note: Units are used for documentation purposes only and do not impact the standard curve. Units appears in Transform in the test measurement results window (refer to Section 11.2.2, *Viewing* Transformation Formula Results).

8.2.5 Configuring Test Options
Options is divided into four sections that configure replicates, printing, validating

blanks, and evaluating controls:
• Replicate Mean Values — Configures how mean values for replicates are calculated (refer to Section 8.2.5.1, *Configuring Replicate Mean Values*).
• Print Options — Configures how test measurement results reports are formatted (refer to Section 8.2.5.2, *Configuring Print Options*).
• Blank Validation — Configures where the mean value of blanks is to be applied (refer to Section 8.2.5.3, *Configuring Blank Subtraction*).
• Evaluate Controls — Configures how standards and controls are evaluated (refer to Section 8.2.5.4, *Configuring Evaluate Controls*).
To configure test options:
Select the Options tab (Figure 8-10).
Figure 8-10. ELISA module test definition configuration — Options tab

8.2.5.1 Configuring Replicate Mean Values
Replicate Mean Values configures how mean values for replicates are calculated.
To select where replicate mean values are calculated:
Select the mean calculation method:
• Plate — Applies the mean calculation to all replicates of a sample or standard across the plate, regardless of well location.
• Row — Applies the mean calculation to replicates of a sample or standard located within an individual row.
• Column — Applies the mean calculation to replicates of a sample or standard located within an individual column.
• none — Turns the mean calculation off. The first value of the replicate group is used for further calculation.
Note: In none, the first value of the replicate group refers to the left most or uppermost replicate in the group.
Note: With cuvette samples, the mean calculation method is applied to all cuvettes measured in the test.
Note: Test results display the mean value in the first replicate position based on filling direction.
Note: If the selected mean calculation does not correspond to the defined replicate order, no mean calculation is performed (refer to Section 8.2.1.1, *Configuring Sample* Format Parameters).
8.2.5.2 Configuring Print Options
Print Options configures how test measurement results reports are formatted and which test measurement results they include.
1. Select how the test results are formatted on the page: **Table**, **Matrix**, or both.
2. Select the measurement data to be printed as part of a test report after a test measurement is completed.
8.2.5.3 Configuring Blank Subtraction
Blank Subtraction configures where the mean value of blanks is applied.
Select how mean values are applied:
• Plate — Across the entire plate.
• Row — Only within the row containing the blanks.
• Column — Only within the column containing the blanks.

Note: With cuvette samples, the mean value of blanks are applied to all samples measured.

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8.2.5.4 Configuring Evaluate Controls

Evaluate Controls configures whether standards and controls are evaluated using quantitative or qualitative methods.

For each type of standard or control, select the evaluation method: **Quantitative** or Qualitative.

Note: In Options, standards and controls are abbreviated as: S for standard, K for control, QC for quality control, PC for positive control, and NC for negative control.

8.2.6 Configuring Kinetic Photometric Measurements

A kinetic photometric measurement performs a specified number of measurements for each selected well on a microplate. The final result of a kinetic measurement is produced by a specified data reduction method. Kinetic is divided into two sections:

• Kinetic Measurement — Configures the basic parameters of a kinetic Measurement (refer to Section 8.2.6.1, *Configuring a Kinetic Measurement*).

• Parameter — Selects and configures the data reduction method (refer to Section 8.2.6.2, Configuring Data Reduction Parameters).

To configure a kinetic photometric measurement:

Select the Kinetic tab (Figure 8-11).

Note: Additional configuration options in Parameter are enabled only as needed by the Data Reduction method chosen.

Figure 8-11. ELISA module test definition configuration — Kinetic tab

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8.2.6.1 Configuring a Kinetic Measurement

The options in Kinetic Measurement configure the basic parameters of a kinetic measurement.

1. In Kinetic Measurement, select **Yes** to perform a kinetic measurement.
2. In Cycles, enter then number of times each well will be measured.
3. In Interval, enter the length of time, in seconds, between each measurement of the same well.
4. In Temperature, set the internal instrument temperature, if desired.

Note: Temperature may only be set for microplate measurements.

8.2.6.2 Configuring Data Reduction Parameters

Parameters selects and configures the data reduction method used to calculate the results of a kinetic measurement. The ADAP software supports 12 data reduction methods (see Table 8-2).

To select and configure a data reduction method:

1. In Data Reduction, select the method of data reduction.

Note: Depending on the data reduction method selected, additional parameters may need to be configured using the four options displayed below Data Reduction. Refer to Table 8-2 for the additional configuration requirements of each data reduction method.

2. Configure the parameters required by the data reduction method.

Table 8-2. Data Reduction Methods

Data Reduction Method	Description	Additional Configuration
Average Slope	Determines the average slope of the reaction curve by calculating the average of all linear regressions calculated over each group of Smoothing Points in the kinetic reading sequence. A decreasing slope shows a decline.	Smoothing Points
Delta OD	Difference between the first and last kinetic measurements in optical density (OD).	N/A
Delta OD — Max. Slope	Difference in OD between the first measurement and the center point of the maximum slope. **Note:** The center point of the maximum slope is calculated by determining the center point between the smoothing points of the regression line with the maximum slope.	Smoothing Points
Delta Time — Absolute	Time elapsed from one preselected OD value to another.	Lower Limit Upper Limit

Delta Time — Max. Slope	Time difference in seconds between the first measurement and the occurrence of the center point of the maximum slope. **Note:** The center point of the maximum slope is calculated by determining the center point between the smoothing points of the regression line with the maximum slope.	Smoothing Points
Delta Time — Relative	Time elapsed in seconds from the first measurement to reaching a set increase/decrease amount from the first OD measurement.	In-/Decrease
Maximum Declining Slope	Determines the maximum declining rate of the reaction curve by calculating a linear regression over each group of Smoothing Points in the kinetic reading sequence.	Smoothing Points
Maximum Inclining Slope	Determines the maximum inclining rate of the reaction curve by calculating a linear regression over each group	

of Smoothing Points in the kinetic reading sequence.
Smoothing Points
Maximum Slope
Maximum slope of the curve in OD/min. The line with the highest slope is calculated. Also the maximum reaction speed.
Note: The accuracy of this calculation depends on the number of measurement cycles selected.
Smoothing Points
Mean Determines the mean value per sample within a sequence of measurements. N/A
Time Peak Value Used to detect the time elapsed until the peak value is reached. Smoothing Points
Peak Value Used to detect the highest value per sample within a sequence of measurements. Smoothing Points
Table 8-2. Data Reduction Methods
Data Reduction Method Description Additional Configuration

8.2.7 Configuring Scan Measurements
Linear and area scan measurements may be performed on microplate samples. A scan measurement makes a series of measurements at defined points within a well. Three types of scan measurements may be configured in the ELISA module:
• Normal Scan Measurement/96 Well Plate — Configures a linear scan with up to 25 user-defined measurement points (refer to Section 8.2.7.1, Configuring a Normal Scan Measurement).
• Area Scan/6, 12, 24, 48 or 96 Well Plate — Configures an area scan with user-defined measurement points and resolution (refer to Section 8.2.7.2, Configuring an Area Scan Measurement).
• Scan All/96 Well Plate — Configures a linear scan with 27 measurement points across the well (refer to Section 8.2.7.3, *Configuring a Scan All* Measurement).
Note: Scan measurements are available only for microplate samples. The message, Selected Plate is not supported, appears when attempting to run a scan measurement on cuvette samples.
Note: Evaluation functions such as qualitative and quantitative analysis, and transformation, rejection, and validation formulas are not available with scan measurements. Any configured evaluation functions are ignored.
To configure a linear or area scan measurement:
1. Define the plate layout if it has not been done (refer to Section 8.2.1, *Choosing* the Sample Format and Configuring Sample Options).
2. Select the Scan tab (Figure 8-12).
Figure 8-12. ELISA module test definition configuration — Scan tab

8.2.7.1 Configuring a Normal Scan Measurement

Normal Scan Measurement/96 Well Plate performs a linear scan of measurement points across the center of each well measured on a 96-well plate. The number and location of measurement points are user defined.
To perform a Normal Scan Measurement/96 Well Plate:
1. Select Perform normal Scan measurement.
2. Select each measurement point to be scanned individually.
Note: 25 measurement points are available and are labeled -12 to +12**,** with point 0 being the center of the well.
OR
Choose a selection option:
• Select all automatically selects all 25 measurement points, if desired.
• Deselect all deselects all measurement points, if desired.
• Invert Selection selects the opposite set of measurement points from those currently selected. Points selected prior to choosing Invert Selection are deselected.
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8.2.7.2 Configuring an Area Scan Measurement
Area Scan Measurement/6, 12, 24, 48, 96 Well Plate performs an area scan of measurement points arranged in grid across the well. The distance between and number of measurement points are user-defined. Area scan measurements may be performed on 6-, 12-, 24-, 48-, and 96-well plates.
Note: The plate format must be defined in Define Plate before configuring an area scan measurement (refer to Section 8.2.1, *Choosing the Sample Format and* Configuring Sample Options).
To perform an Area Scan Measurement/6, 12, 24, 48, 96 Well Plate:
1. Select Perform Area Scan Measurement.
2. In Points (Height and Width), select the number of measurement points.
Note: The number of points selected in Points defines how many points will be measured both vertically and horizontally; for example choosing 6 means that 36 measurement points will be laid out in a 6 x 6 grid across the well.
The number of point selections available depends upon the plate format selected in the plate layout. 12-well plates have a resolution of about 20 x 20 points; 24-well plates about 14 x 14; 96-well plates about 8 x 8. The exact resolution depends on plate type.
3. In Resolution, select the resolution, or space, between each measurement point. The highest resolution value is 1, where the distance between measurement points is the smallest.
Note: Well displays the layout and resolution of measurement points currently selected. Reducing resolution maintains the same coverage, but spaces fewer measurement points further apart; increasing resolution adds measurement points to the same coverage area.
8.2.7.3 Configuring a Scan All Measurement
Scan All Measurement performs a linear scan of 27 measurement points across the center of each well measured on a 96-well plate.
To perform a Scan All Measurement:

Select Perform Scan All Measurement.
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8.2.8 Programming Rejection/Validation
Formulas
Formulas programmed in Rejection/Validation are used to reject replicates or invalidate tests that do not meet certain conditions. After the first replicate elimination, the mean value of the remaining replicates is recalculated and the condition re-evaluated. If necessary, the elimination cycle is repeated. If a minimum number of replicates is still available, the test is considered valid. If not, the test is marked invalid on the printout.
Note: Refer to Section 8.2.8.1.1, *Replicate Rejection Examples* and Section 8.2.8.2.1, *Test Validation Examples* for examples of rejection and validation formulas.
Rejection/Validation is divided into two sections:
• Replicate Rejection — Programs up to 12 replicate rejection formulas (refer to Section 8.2.8.1, Programming Replicate Rejection Formulas).
• Validation — Programs up to 12 validation formulas for tests (refer to Section 8.2.8.2, Programming Test Validation Formulas).
To program replicate rejection or test validation formulas:
Select the Rejection/Validation tab (Figure 8-13).
Figure 8-13. ELISA module test definition configuration — Rejection/Validation tab
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8.2.8.1 Programming Replicate Rejection Formulas
Replicate rejection formulas eliminate individual replicates which do not fulfill conditions defined in the formula.
To program replicate rejection formulas:
1. In Name, enter the type of well to be evaluated by the formula; for example PC1 for wells designated as positive controls.
Note: Well types entered in Name should match those configured in Define Layout (refer to Section 8.2.1, *Choosing the Sample Format* and Configuring Sample Options).
2. In Formula, enter the replicate rejection formula used to evaluate the replicates.
Note: The original measurement value, X, must be used in the replicate rejection formula.
Note: Refer to Section 8.2.8.1.1, *Replicate Rejection Examples* for examples of replicate rejection formulas.
Note: Replicate rejection formulas may contain any controls, standards, or variables defined in the test, any numerical constants, mathematical operators (+,-,*,/,(,),^, <=, >=, =), and the additional mathematical and logical operators listed in Table 8-3.
3. In Min. Repl. (Minimum Replicates), enter the minimum number of replicates that must be left after elimination for the test to remain valid.
Note: If, after elimination, the minimum number of replicates for a well type is not met, the test is marked Invalid.
4. In Base, select the basis for the evaluation:
• OD — The raw data.

• Transformation — Calculated using the transformation formula configured in Qualitative to operate on the raw data (refer to Section 8.2.4, *Configuring* Qualitative Evaluations).
• Concentration — Calculated using the standard curve configured in Quantitative (refer to Section 8.2.3, *Configuring Quantitative Evaluations*).
5. Repeat steps, 2 – 4 to program additional replicate rejection formulas.
Note: A total of 12 replicate rejection formulas may be entered at one time.
6. Choose **Replicate Rejection 7 - 12** to toggle back and forth between formulas 1–6 and 7–12.
Note: When replicate rejection formulas 7 – 12 are displayed, Replicate Rejection 7 - 12 is named Replicate Rejection 1 - 6.
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8.2.8.1.1 Replicate Rejection Examples
Table 8-3 illustrates several practical applications where replicate rejection formulas are used. All examples use the measurement data as the Base for the evaluation of formulas. The Replicate Rejection formula is applied to all wells of the type specified in Name when evaluating replicates.
Note: In replicate rejection formulas, the variable X can be used to refer to the individual replicates of the control specified by Name. The name itself refers to the mean value of currently valid replicates. Both may be used in the same formula.
Table 8-3. Example replicate rejection formulas

Application	Name	Replicate Rejection Formula
The absorption of a blank well may not exceed 0.020 OD.	BL	**X<=0.02**
The absorption of each negative control well NC1 must be less than or equal to 0.150 OD.	NC1	**X<=0.15**
Each standard well S1 must not deviate from the mean value of all standard wells S1 by more than 20%.	S1	**S1*0.8<X<S1*1.2**
The absorption of each negative control well NC1 must be less than 0.200 OD. Additionally, they must not deviate from the mean value of all negative control wells NC1 by more than 30%.	NC1	X<0.2 AND 0.7*NC1<X<1.3*NC1
The absorption of each positive control well PC1 must be greater than the mean value of the first two standard wells (S1 and S2) and less than the mean value of the last two standard wells (S3 and S4).	PC1	(S1+S2)*0.5<X<(S3+S4)*0.5
This formula uses the logical operator, AND, to examine each individual replicate of PC1 to find if it is smaller than the mean plus 10% and if it is bigger than the mean minus 10%.	PC 1	X<PC1*1.1 AND X>PC1*.09

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8.2.8.2 Programming Test Validation Formulas

Test validation formulas invalidate tests that do not meet certain conditions.
To program test validation formulas:
1. In Formula, enter the validation formula used to evaluate the test.
Note: Refer to Section 8.2.8.2.1, *Test Validation Examples* for examples of validation formulas.
Note: The validation formula may contain any controls, standards, or variables defined in the test, any numerical constants, mathematical operators (+,-,*,/,(,),^, <=, >=, =), and the additional mathematical and logical operators listed in Table 8-3.
2. In Base, select the basis for the evaluation:
• OD — The raw data.
• Transformation — Calculated using the transformation formula configured in Qualitative to operate on the raw data (refer to Section 8.2.4, Configuring Qualitative Evaluations).
• Concentration — Calculated using the standard curve configured in Quantitative (refer to Section 8.2.3, *Configuring Quantitative* Evaluations).
3. Repeat steps, 1 and 2 to program additional test validation formulas.
Note: A total of 12 test validation formulas may be entered at one time.
4. Choose **Validation Formula 7 - 12** to toggle back and forth between formulas 1–6 and 7–12.
Note: When validation formulas 7 – 12 are displayed, Validation Formula 7 - 12 is named Validation Formula 1 - 6.
8.2.8.2.1 Test Validation Examples
Table 8-4 illustrates several practical applications using test validation formulas. All examples use the OD measurement data as the Base for the evaluation of formulas.
Table 8-4. Example test validation formulas
Application Test Validation Formula
The test is valid only if the mean absorption value of the positive control wells PC2 is less than or equal to 0.8 OD.
PC2<=0.8
The test is valid only if both controls are within the linear range of the photometer. **0.1<=K1<=3.0 AND 0.1<=K2<=3.0**
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8.2.8.3 Logical and Mathematical Operators
Replicate elimination and validation conditions may include any of the logical or mathematical operators defined in Table 8-5.
Table 8-5. Logical and mathematical operators
Operator Definition
AND True if all conditions are fulfilled.
OR True if one of more of the conditions are fulfilled.
NOT True if the condition is not fulfilled.
XOR True if exactly one of the conditions

is fulfilled.
ABS Absolute value.
POW Raises a number to the power of an
exponent.
SQR Returns the square root of a number.
L Returns the natural logarithm of a
number.
CV CV% value of replicates
V Variable 1 to variable 6
F (Rejection formulas only) Well factor (dilution)
X (Rejection formulas only) Actual well value of base (OD,
Transformation, or Concentration)
during calculation

8.3 Saving Test Definitions
When the plate layout and all required parameters for a test definition have been properly configured, the test definition may be saved. Test definitions must be saved before measurements can be performed.
To save a test definition and return to the main ADAP screen:
1. From the File menu, choose **Save**. The test definition is saved in the database and may be used to run a test.
2. From the File menu, choose **End** to return to the main ADAP screen.

8.4 Running Existing Tests
Tests may be run as soon as they are defined and saved. All test definitions are stored in the ADAP software database.
To run a test:
1. From the toolbar, toggle the Elisa/Quantitation selection button to **Elisa**, if necessary.
Note: If the Elisa/Quantitation selection button is toggled to
Quantitation, only tests defined in the Quantitation module will be
available to run.
2. From the Reading menu, choose **Single Test**.
OR
Choose **Measure single test**. Selection appears (Figure 8-14).
Figure 8-14. Selection — test definitions

3. Select a test definition and choose **OK**. Numbers of Samples appears (Figure 8-15).
Note: Choose **Matchcode** to search for test definitions by name (refer to Section 8.4.1, Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database).
Figure 8-15. Numbers of Samples
4. Enter the number of samples to be measured on the plate and choose **OK**. The

measurement results screen appears and the measurement procedure begins. After the measurement is complete, the results are displayed (refer to Chapter 11, Viewing Test and Multitest Assay Measurement Results).

8.4.1 Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database

Matchcode is the search feature included in Selection. Depending on from which screen or tab Selection is accessed, Matchcode performs searches for test definitions or measurement results stored in the ADAP database.

Matchcode provides wildcard operators, * and ?, which simplify searching by allowing users to search for a set of possible characters in the plate-ID name (see Table 8-6).

To search for an existing test definition:

1. From Selection, choose **Matchcode**. Plate-ID appears (Figure 8-16).

Figure 8-16. Plate-ID

2. In Input Plate-ID, enter a plate ID or test definition name.

Note: Input Plate-ID also refers to saved measurement results for cuvette samples and test definition names.

3. Choose **OK**. Plate IDs or test definition names that match the search query appear in Selection.

Note: If Matchcode finds no matches to the search query, choose **update list** to display the entire list of test definitions again.

Table 8-6. Matchcode wildcard operators

Wildcard Pattern	Result
a	Lists all plate IDs or test definition names with an *a* in the ID or name.
a*	Lists all plate IDs or test definition names with an *a* at the beginning of the ID or name.
*a	Lists all plate IDs or test definition names with an *a* at the end of the ID or name.
alph?	Lists all plate IDs or test definition names with *alph* followed by an additional character. For example, *alpha* or *alphb*.

8.5 Editing, Copying, and Deleting Tests

Tests stored in the database can be edited, copied, or deleted using the ADAP software.

Note: Tests may edited, copied, and deleted only by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System* Administration).

8.5.1 Editing Tests

Test definition parameters may be edited by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System* Administration).

To edit a test stored in the ADAP software database:
1. From the toolbar, toggle the Elisa/Quantitation selection button to **Elisa**, if necessary.
Note: If the Elisa/Quantitation selection button is toggled to Quantitation, only tests defined in the Quantitation module will be available to edit.
2. From the Setup menu, choose **Test Definition**.
OR
Choose **Create/Edit Calculation**. The ELISA module test definition configuration appears (Figure 8-17).
Figure 8-17. ELISA module test definition configuration
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3. From the File menu, choose **Open**. Selection appears with a list of saved test definitions (Figure 8-18).
Figure 8-18. Selection — test definitions
4. Select a test to edit and choose **OK**. The chosen test definition appears.
Note: Choose **Matchcode** to search for test definitions by name (refer to Section 8.4.1, Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database).
5. Edit the desired test definition parameters.
Note: Refer to Section 8.2, Defining New Tests In the ELISA Module for detailed information about defining test definition parameters.
6. From the File menu, choose **Save**. The test definition is saved in the database and may be used to run a test.
7. From the File menu, choose **End** to return to the ELISA module test definition setup screen.
Note: Refer to Section 8.3, *Saving Test Definitions* for more information about different methods of saving test definition data and returning to the main ADAP screen.

8.5.2 Copying Tests
Test definition parameters may be copied by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System* Administration).
To copy a test definition:
1. From the toolbar, toggle the Elisa/Quantitation selection button to **Elisa**, if necessary.
Note: If the Elisa/Quantitation selection button is toggled to Quantitation, only tests defined in the Quantitation module will be available to copy.
2. From the Setup menu, choose **Test Definition**.
OR
Choose **Create/Edit Calculation**. The Eliza module test definition configuration appears (Figure 8-19).
Figure 8-19. ELISA module test definition configuration

3. From the File menu, choose **Open**. Selection appears with a list of saved tests (Figure 8-20).
Figure 8-20. Selection — test definitions
4. Select a test to copy and choose **OK**. The chosen test definition appears.
Note: Choose **Matchcode** to search for test definitions by name (refer to Section 8.4.1, Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database).
5. In Test Name, enter a new name for the test (Figure 8-19).
Note: Test names are limited to 20 characters in length.
6. From the File menu, choose **Save**. The test definition is saved in the database with the new name and may be used to run a test.
7. From the File menu, choose **End** to return to the ELISA module test definition setup screen.
Note: Refer to Section 8.3, *Saving Test Definitions* for more information about different methods of saving test definition data and returning to the main ADAP screen.

8.5.3 Deleting Tests
Test definition parameters may be deleted by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System* Administration).
To delete a test definition:
1. From the toolbar, toggle the Elisa/Quantitation selection button to **Elisa**, if necessary.
Note: If the Elisa/Quantitation selection button is toggled to Quantitation, only tests defined in the Quantitation module will be available to delete.
2. From the Setup menu, choose **Test Definition**.
OR
Choose **Create/Edit Calculation**.The ELISA module test definition configuration appears (Figure 8-21).
Figure 8-21. ELISA module test definition configuration

3. From the File menu, choose **Open**. Selection appears with a list of saved tests (Figure 8-22).
Figure 8-22. Selection — test definitions
4. Select a test definition(s) to delete.
Note: Choose **Matchcode** to search for test definitions by name (refer to Section 8.4.1, Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database).
Note: To select multiple test definitions, hold **Ctrl** while selecting each test definition name.
5. Choose **Delete**. Message appears (Figure 8-23).

Figure 8-23. Message — Delete selected Tests?
6. Choose **Yes** to delete the test definition, or **No** to cancel the deletion and return to Selection.

8.6 Printing Test Definitions
Test definitions may be printed out to provide a record of the test protocol.
Note: Test definitions may be printed by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System* Administration).
To print a test definition:
1. From the toolbar, toggle the Elisa/Quantitation selection button to **Elisa**, if necessary.
Note: If the Elisa/Quantitation selection button is toggled to Quantitation, only tests defined in the Quantitation module will be available to print.
2. From the Setup menu, choose **Test Definition**.
OR
Choose **Create/Edit Calculation**. The ELISA module test definition configuration appears (Figure 8-24).
Figure 8-24. ELISA module test definition configuration

3. From the File menu, choose **Open**. Selection appears with a list of saved test definitions (Figure 8-25).
Figure 8-25. Selection — test definitions
4. Select a test to be printed and choose **OK**. The chosen test definition appears.
Note: Choose **Matchcode** to search for test definitions by name (refer to Section 8.4.1, Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database).
5. From the File menu, select **Print**. Print appears (Figure 8-26).
Figure 8-26. Print

6. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.
7. In Options, select the desired **Font** and text **Size**.
Note: Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.
8. Choose **OK** print the data.
Note: If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory where the application, database, and support files are stored.

Defining and Running Multitest Assays In the ELISA Module

9.1 Overview

Note: A valid license code for the ADAP Prisma software is required to access the functions covered in this chapter. Refer to Section 1.3, *Launching the ADAP Software* for information about license codes.

Tests created in the ELISA module may be combined in Multitest assays. A Multitest assay may combine up to twelve user-selected tests, with as many as six tests combined on one plate.

To define a Multitest assay, test definitions are selected, sample IDs are assigned, and single or multiple tests are selected to be performed on each sample ID. Based on the parameters of the tests selected, the ADAP software automatically creates plate layouts for the assay, combining tests on plates, if possible.

Note: Multitest assays are ideal for use with commercial ELISA kits that use removable well strips.

Defining and running Multitest assays includes:

- Selecting tests to be performed (refer to Section 9.2, *Defining a Multitest Assay*).
- Assigning sample IDs and tests to specific samples (refer to Section 9.2.2, Assigning Sample IDs).
- Creating and viewing plate layouts (refer to Section 9.2.3, *Creating and Viewing a Multitest Plate Layout*).
- Deleting Multitest configurations (refer to Section 9.3, *Deleting Multitest Configurations*).
- Performing the Multitest assay (refer to Section 9.4, *Running a Multitest Assay Measurement*).

9.2 Defining a Multitest Assay

Defining a Multitest assay is a four-step process:

- Select up to twelve previously defined tests (refer to Section 9.2.1, *Selecting Tests to Use in a Multitest Assay*).
- Assign sample IDs (refer to Section 9.2.2, *Assigning Sample IDs*).
- Select which tests will be performed on each sample ID (refer to Section 9.2.2.3, Selecting Tests to Perform on Sample IDs).
- Creating and Viewing a Multitest Plate Layouts (refer to Section 9.2.3, Creating and Viewing a Multitest Plate Layout).

Note: Multitest definitions are not saved to external files. Instead, all plates configured for a Multitest assay are saved by default after the plate layouts have been determined (refer to Section 9.2.3, Creating and Viewing a Multitest Plate Layout).

To define a Multitest assay:

From the Setup menu, choose **Multitest**.

OR

Choose **Create Multitest**. Multitest appears (Figure 9-1).

Figure 9-1. Multitest assay definition

9.2.1 Selecting Tests to Use in a Multitest Assay

Up to 12 previously defined tests may be selected for use in a Multitest assay. Selected tests are not automatically performed on every sample ID. The tests performed on each sample ID are selected independently.

To select the tests to use:

1. In Select Test, select up to 12 previously defined tests.

Note: All existing tests in the database are available for use in multitest assays.

2. For each test, select **Combine** to combine the tests onto one plate, if desired.

In order for tests to be combined on a single plate, the selected tests must have the following test definition parameters:

• Identical measurement and reference filters (refer to Section 8.2, *Defining* New Tests In the ELISA Module).

• Identical plate type and filling direction (refer to Section 8.2.2, *Configuring* General Options).

• Individual strips must also fit in the same plate frame.

• Identical temperature settings (refer to Section 3.2.3, *Setting the Instrument* Temperature).

Note: From the File menu, choose **End** or the **End** button to return to the ADAP software main screen. Tests selected for the Multitest assay are automatically saved.

9.2.2 Assigning Sample IDs

Sample IDs must be assigned to wells before a Multitest assay can be performed. Sample IDs may be entered manually or imported from text files.

Note: The ADAP software is capable of handling up to 32,000 sample IDs at a time.

9.2.2.1 Entering Sample IDs Manually

To enter sample IDs manually in a Multitest assay configuration:

1. In Select Sample IDs, click a **SampleID** field and enter the sample ID (Figure 9-2).

Note: Sample IDs may not include spaces or exceed 20 characters in length.

Figure 9-2. Multitest assay with tests selected and sample IDs assigned

2. Repeat step 1 for as many sample IDs as desired.

Note: Up to 32,000 sample IDs may be assigned to wells.

9.2.2.2 Importing Sample IDs From Text Files

Sample IDs can be imported from text (*.txt) files. To import correctly, each sample ID must be listed on a separate line in the text file.

Note: The ADAP software is capable of handling up to 32,000 sample IDs at a time.

To import a text file:

1. From the File menu, choose **Open**.

OR

Choose **Open Sample ID File**. Open appears (Figure 9-3).

Figure 9-3. Opening a sample ID text file

2. Browse to and select the desired sample ID text file to import, and then choose

Open. The list of sample IDs is imported to the Multitest assay configuration.

9.2.2.3 Selecting Tests to Perform on Sample IDs

After assigning sample IDs, the specific tests to perform on each must be selected.

To select tests to perform on sample IDs:

1. In Select Sample IDs, click the desired test selection field(s) next to each sample ID. An X indicates the test will be performed on the sample ID.

Note: Deselect a specific test by clicking the X in the test selection field.

A test may be selected or deselected for all sample IDs by clicking the test number in the header line of Select Sample IDs.

2. Repeat until all desired tests are assigned to the desired sample IDs.

3. When all sample IDs and tests are configured, choose **View/Make Plate Layout** to set up and view the plate layout for the Multitest assay (refer to Section 9.2.3, Creating and Viewing a Multitest Plate Layout).

Note: Choose **Select Sample IDs** to toggle to Sort Sample IDs (refer to Section 9.2.2.4, Sorting Sample Sequences).

9.2.2.4 Sorting Sample Sequences

Sample IDs may be sorted into groups based on tests performed.

To sort sample IDs:

1. Choose Select Sample IDs. The mode toggles to Sort Sample IDs.
2. Click the test number header to sort sample IDs by test performed. For example, choosing test **3** sorts all sample IDs on which test 3 will be performed. Sample IDs that meet the sort criteria are grouped to the top of the list.

Note: Sample IDs can only be sorted by one test at a time.

Note: Click the Sample ID column header to sort the list back into ascending order by Sample ID.

Note: Choose **Sort Sample IDs** to toggle to Select Sample IDs (refer to Section 9.2.2.3, Selecting Tests to Perform on Sample IDs).

9.2.3 Creating and Viewing a Multitest Plate Layout

After sample IDs and tests have been assigned, the ADAP software needs to create plate layouts for the Multitest assay. If Combine is selected, multiple tests will be combined on a single plate, if possible (refer to Section 9.2.2.3, *Selecting Tests to Perform on Sample IDs*). To combine tests on a single plate, several test parameters, such as measurement filter and plate orientation, must match. If tests cannot, or are not selected to be combined, several plate layouts are designed for the assay.

To create and view the Multitest plate layout:

From Multitest, choose **View/Make Plate Layout**. Plate Layout appears (Figure 9-4).

Figure 9-4. Plate Layout

The Plate Layout grid displays the optimal plate layout. When tests are combined on a plate, each starts in a new column or row depending on the orientation set in the test definitions.

Information indicates via color and test name, which tests and samples are displayed in the Plate Layout grid. Two colors represent each test on the layout. The darker shade on the left represents samples, while the lighter shade on the right represents standards, controls, and blanks.
The plate ID appears below the color key.
Note: To optimize the use of strips, select a smaller or greater number of sample IDs for each test to avoid empty positions, or to rearrange the sequence of tests.
Note: Choose **OK** to close Plate Layout and return to Multitest.
Samples Standards, controls,
and blanks
Multitest plate ID Test names
A Plate Layout grid
with 4 tests

9.2.3.1 Viewing Additional Multitest Plate Layouts
Multiple plates are designed for the Multitest assay when Combine is not selected, test parameters are incompatible, or there are more samples in the assay than can fit on one plate.
To view all plates in the Multitest assay:
Choose **Next Plate** to display the layout for the following plate.
OR
Choose **Previous Plate** to view the layout for the preceding plate.
Note: Choose **OK** to close Plate Layout and return to Multitest.
9.2.3.2 Printing Multitest Layout Information
Multitest plate layout information can be printed for record-keeping purposes. To print the Multitest layout:
1. Choose **Print**. Print appears (Figure 9-5).
Figure 9-5. Print — Multitest layout
2. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.
3. In Options, select the desired **Font** and text **Size**.
Note: Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.
4. Choose **OK** to print the layout information. The position and plate where each sample ID is located is printed.
Note: If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

9.3 Deleting Multitest Configurations
The current Multitest configuration, which includes selected tests, sample IDs, and plate layouts, can be deleted to start a new Multitest configuration.
Note: Multitest configurations are not saved to an external file. All plates configured for a Multitest assay are saved by default when the Multitest plate layout has been

determined.
To delete the existing selections and layouts,
1. Choose Delete Parameters.
OR
From the File menu, choose **New**. Message appears (Figure 9-6).
Figure 9-6. Message — Delete current Layout
2. Choose **OK** to delete the current configuration.
OR
Choose **Cancel** to return to the current configuration.

9.4 Running a Multitest Assay Measurement
Once a Multitest assay has been configured and the plate layouts designed, the measurement can be performed.
To perform a Multitest assay measurement:
1. In the ADAP software main screen, from the Reading menu, choose **Multitest**.
OR
Choose **Measure Multitest**. Plate Selection appears (Figure 9-7).
Figure 9-7. Plate selection
2. Select the desired plate to measure.
3. Choose **OK** to begin the measurement of all tests on the specified plate.
Note: To manage the sometimes large number of plates designed for Multitest assays, select Delete Plate after Reading from List to delete the plate layout after the measurement has been performed.
OR
Choose **Cancel** to return to the ADAP software main screen.
After the all tests are completed and evaluated, the test results are displayed in the ADAP software main screen.

Defining and Running Tests In the Quantitation Module
10.1 Overview
Note: A valid license code for the ADAP Prisma software is required to access the functions covered in this chapter. Refer to Section 1.3, *Launching the ADAP Software* for information about license codes.
Tests are protocols for performing and evaluating measurements using the Zenyth 200. Tests offer more robust programming and evaluation options than Quick measurements, and may be saved and modified.
Depending on the desired application, test protocols are defined using either the Quantitation or ELISA module (refer to Section 10.1.1, *Choosing the Appropriate* Module For Configuring Test Parameters).
The Quantitation module provides options to:
• Define new tests (refer to Section 10.2, *Defining New Tests In the* Quantitation Module).
• Save new tests (refer to Section 10.3, *Saving New Tests*).
• Run existing tests (refer to Section 10.4, *Running Existing Tests*).

• Edit, copy, or delete test definitions (refer to Section 10.5, *Editing, Copying,* and Deleting Test Definitions).
• Print test definition parameters (refer to Section 10.6, *Printing Test* Definitions).
• Run preconfigured cuvette applications. Refer to Chapter 12, *Running Cuvette Applications* for information about running cuvette applications.
Note: Tests may be performed by all authorized users; however, tests may only be defined, edited, and deleted by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System Administration*).

10.1.1 Choosing the Appropriate Module For Configuring Test Parameters
Test protocols may be defined in either the Quantitation or ELISA module. While some functionality is common to both modules, test definition parameters should be configured using the module that best meets the requirements of the test.
Choose the Quantitation module to:
• Quickly and easily define endpoint and kinetic tests that perform quantitative evaluations (refer to Section 10.2.2, *Configuring an Endpoint* Photometric Test and Section 10.2.4, Configuring a Kinetic Photometric Test).
• Define spectral scan measurements (refer to Section 10.2.2, *Configuring an* Endpoint Photometric Test).
• Perform preconfigured assays on cuvette samples (refer to Chapter 12, Running Cuvette Applications).
Choose the ELISA module to define tests that:
• Perform qualitative evaluations using cutoff formulas (refer to Chapter 8.2.4, Configuring Qualitative Evaluations).
• Use replicate rejection and/or validation formulas to determine the final measurement value (refer to Section 8.2.8, *Programming Rejection/* Validation Formulas).
• Can be run in multitest assays (refer to Chapter 9, *Defining and Running* Multitest Assays In the ELISA Module).
Note: This chapter covers defining test protocols in the Quantitation module. Refer to Chapter 8, Defining and Running Tests In the ELISA Module, for information about using the ELISA module to configure test definition parameters.

10.2 Defining New Tests In the Quantitation Module
Test definitions configured in the Quantitation module dictate how the Zenyth 200 performs measurements and interprets the resulting data. Test type and parameters are defined using two tabs:
• General — Sets test name and defines sample format, test type, and applicable measurement parameters. The parameters available change dynamically based on which sample format and test type are selected.
• Quantitation — Configures standards and standard curve fitting for endpoint and kinetic test measurements (refer to Section 10.2.8, *Configuring*

Quantitative Evaluations).
Note: A third tab, Applications, is also available in the Quantitation module. Use this tab to run preconfigured cuvette tests. Refer to Chapter 12, *Running Cuvette Applications*, for information about running preconfigured cuvette tests.
To define a new test:
• Select the sample format: microplate or cuvette, and configure the use of standards, blanks, controls, replicates, and samples in the test (refer to Section 10.2.1, Choosing the Sample Format and Configuring Sample Options).
• Choose the type of measurement to perform, and configure the measurement parameters available. Available measurement types are:
• Endpoint photometric — performs a single-wavelength or bichromatic endpoint measurement (refer to Section 10.2.2, *Configuring an* Endpoint Photometric Test).
• Multiwavelength photometric — performs up to eight absorbance or transmission measurements at different wavelengths (refer to Section 10.2.3, Configuring a Multiwavelength Photometric Test).
• Kinetic photometric — performs a series of single-wavelength or bichromatic measurements over a specified time interval for each sample (refer to Section 10.2.4, Configuring a Kinetic Photometric Test).
• Spectral scan photometric — performs a spectral scan measurement at all wavelengths within a specified bandwidth (refer to Section 10.2.5, Configuring a Spectral Scan Test).
• Area scan photometric — performs a series of absorbance measurements at a number of points across each well (refer to Section 10.2.6, Configuring an Area Scan Photometric Test).
Note: Area scan test measurements may only be performed on microplate samples.

• Linear scan photometric — performs a series of transmission measurements along a linear axis that crosses the center of each well (refer to Section 10.2.7, Configuring a Linear Scan Photometric Test).
Note: Linear scan test measurements may only be performed on microplate samples.
• For endpoint, multiwavelength, and kinetic test measurements, configure standards and standard curve fitting, if desired (refer to Section 10.2.8, Configuring Quantitative Evaluations).
To open Quantitation Module Test Definition:
1. From the toolbar, toggle the Elisa/Quantitation selection button to **Quantitation**, if necessary.
2. From the Setup menu, choose **Test Definition**.
OR
From the toolbar, choose **Create/Edit Calculation**. Quantitation Module Test Definition appears with the General tab open (Figure 10-1).
Figure 10-1. Quantitation Module Test Definition — General tab

Quantitation Module Test Definition is divided into seven sections with options that automatically change to reflect the sample format selected and the type of measurement being configured:
• Assay — Selects a name for the test.
• Method — Selects the type of test to perform: Endpoint, Kinetic, or Spectrum (spectral scan).
• Plates — Chooses the sample format: Cuvette or Plates (refer to Section 10.2.1, Choosing the Sample Format and Configuring Sample Options).
• Temperature — Sets the internal temperature of the instrument.
Note: Temperature is available only for tests performed on microplate samples.
• Shaking — Sets the time and intensity of microplate shaking.
Note: Shaking is available only for tests performed on microplate samples.
• Set Measurement Parameter — Configures measurement parameters. Options available automatically change to reflect the type of measurement being configured.
• Variable — When defining endpoint and multiwavelength tests, configures numeric values for up to eight variables that can be used in any formula defined in the test definition.

10.2.1 Choosing the Sample Format and Configuring Sample Options
The Zenyth 200 is capable of performing test measurements on microplate and cuvette samples. The sample format selected for a new test definition affects which test options are available in the General tab. For example, scan measurements may be performed only on microplate samples. For this reason, the sample format and options should be configured before the options available in the other sections.
To choose the sample format and configure sample options:
• Choose the sample format in Plates (refer to Section 10.2.1.1, *Choosing the* Sample Format).
• Configure sample options in Define Layout (refer to Section 10.2.1.2, Configuring Sample Options).
10.2.1.1 Choosing the Sample Format
The sample format is chosen in the Plates section of the General tab (Figure 10-2).
Figure 10-2. Quantitation Module Test Definition — configuring sample format
Plates
Choose the sample format, configure Background correction for microplate samples, and access Define Layout.

To choose the sample format:
1. In the General tab, under Plates, choose the desired sample format: **Cuvette** or

Plates.
2. If Plates is the selected format, choose **Background correction**, if desired.
Note: Background correction is available for endpoint, kinetic, and spectral scan (spectrum) measurements.
Note: Background correction removes background noise from measurement values. To remove background noise, the plate is read twice during a test. The first measurement is made with a buffer; the second with the analyte of interest. Two levels of background correction are available: Low and High.
3. If Background correction is chosen, choose **Low**.
Note: Select Low when background noise is relatively constant across the entire plate. Low background correction averages the buffer measure-ment values from all wells read, and then subtracts the average value from the analyte measurement value for each well.
OR
If Background correction is chosen, choose **High**.
Note: Select High when background noise is high and variable across the entire plate; for example when performing measurements in the low UV range on samples on a plastic microplate. High background correction subtracts the buffer measurement value of a well from the analyte measurement value for the same well.
4. Choose **Edit/Define Layout** to configure sample options (refer to Section 10.2.1.2, Configuring Sample Options).
10.2.1.2 Configuring Sample Options
Microplate and cuvette parameters are configured in Define Layout, which is divided into four sections:
• Options — Configures sample format parameters including plate type, strip use, filling direction, replicates, and well labeling format (refer to Section 10.2.1.2.1, Configuring Sample Format Parameters).
Note: Options is only available when configuring tests that are performed on microplate samples.
• Control-Position — Configures the type and label numbering applied to samples measured during the test (refer to Section 10.2.1.2.2, *Configuring* Well or Cuvette Types and Labels).
• Plate Layout — Defines the location of standard, control, blank, and sample wells on the plate. With cuvettes, defines the label of each cuvette measured (refer to Section 10.2.1.2.3, *Defining Sample Location in Plate* Layout).
• Factor — Configures multiplication factors for samples (refer to Section 10.2.1.2.4, Entering Multiplication Factors for Samples).

To open Define Layout:
In the General tab, under Plates, choose **Edit/Define Layout**. Define Layout appears (Figure 10-3).
Figure 10-3. Define Layout (microplate)
10.2.1.2.1 Configuring Sample Format Parameters

Options configures microplate sample format parameters including plate type, strip use, filling direction, replicates, and well labeling format.

Note: Options is only available when configuring sample format parameters for microplates.

To configure plate parameters, in Options:

1. In Plate Type, choose the type of microplate used in the test.
2. In Filling Direction, select how samples are numbered based on the filling direction of the plate:

• Vertical — Sample labels are numbered in ascending order column by column.

• Horizontal — Sample labels are numbered in ascending order row by row.

3. In Replicate No./Direction, select the number of replicates to be used for each sample, and set the filling direction of replicates:

• Vertical — Replicate labels are numbered in ascending order column by column.

• Horizontal — Replicate labels are numbered in ascending order row by row.

4. In Well Labels, select the format of the well labels:

• A1,A2...B1,B2. — Labels rows by letter, columns by number.

• 1.1,1.2, 1.3...2.1,2.2, 2.3. — Labels rows and columns by number.

10.2.1.2.2 Configuring Well or Cuvette Types and Labels

The options in Control-Position work in conjunction with Plate Layout to configure well or cuvette types, label numbers, and locations of samples. Standards, controls, and blanks are configured using Control-Position, then placed on the plate or assigned to specific cuvettes using Plate Layout.

Note: Refer to Section 10.2.1.2.3, *Defining Sample Location in Plate Layout*, for information about defining the actual location of wells on the plate.

To configure well or cuvette types and label numbers:

1. In Type, select the type of wells or cuvettes to configure:

• Standard — A well or cuvette with a known concentration used to develop or correct a standard curve.

• Positive-Control — A control well or cuvette in which a known amount of a target reagent is used to generate a signal that verifies positive results measured in sample wells.

• Negative-Control — A control well or cuvette in which the lack of a target reagent produces very little or no signal, which verifies negative results measured in sample wells.

• Blank — A well or cuvette that is left empty or filled only with reagents but no reacting sample, used to measure background noise.

• Sample — A well or cuvette containing a sample to measure.

Note: The Numbers label below Type changes automatically to reflect the type of well chosen.

2. In Numbers, click and drag the slider to change the well label identification number.

Note: Drag the slider to the right to increase the label number, or to the left to reduce it.

3. Use Plate Layout to define well locations or specific cuvettes for the configured Type (refer to Section 10.2.1.2.3, Defining Sample Location in Plate Layout).

4. After defining well locations or specific cuvettes for the configured Type, repeat steps 1–3 above for each additional well type desired on the plate.

5. When all standards, controls, and blanks have been configured, choose **Fill Plate With Samples** to populate all remaining wells or cuvettes with samples.

10.2.1.2.3 Defining Sample Location in Plate Layout

For microplate samples, Plate Layout defines the location of standard, control, blank, and sample wells on the plate (Figure 10-4). Well locations may also be edited and deleted using the options in Plate Layout.

Figure 10-4. Define Layout — Plate Layout tab (microplate)

For cuvette samples, Plate Layout assigns the sample types and labels to specific cuvettes measured in the test (Figure 10-5).

Figure 10-5. Define Layout — Plate Layout tab (cuvette)

Wells selected by
dragging mouse.
Choosing Set actual
column selects all
wells in column 4.
Choosing Set actual row
selects all the wells in row C.
First well
selected.

To define cuvette sample types or locations on the plate for wells configured in Control-Position:

1. In Plate Layout, click on the desired well or cuvette to define (Figure 10-4).

Note: Select multiple wells or cuvettes by clicking and then dragging over the desired range.

2. From the **Edit** menu, choose a method for selecting which wells or cuvettes will be defined as the type configured in Control-Position:

OR

Right-click on the selected well(s) or cuvette(s) and choose a method for selecting which wells or cuvettes will be defined as the type configured in Control-Position:

- **Set/De-select all wells** — Populates or clears all wells on the microplate or all cuvette samples.
- **Set/De-select actual row** — With microplates, populates or clears all wells in the same row as the first well selected (Figure 10-4). With cuvettes, populates or clears all cuvette samples.
- **Set/De-select actual column** — With microplates, populates or clears all wells in the same column as the first well selected (Figure 10-

4). With cuvettes, populates or clears only the first cuvette sample selected.

• **Set/De-select selected wells** — Populates or clears the selected wells or cuvette samples.

3. In Control-Position, configure another well Type, if desired, and repeat (refer to Section 10.2.1.2.2, Configuring Well or Cuvette Types and Labels).

Note: When all standards, controls, and blanks have been configured, in Control-Position, choose **Fill Plate With Samples** to populate the remaining wells or cuvettes with samples.

10.2.1.2.4 Entering Multiplication Factors for Samples

Factor allows entering multiplication factors for wells on the plate or cuvette samples (Figure 10-6).

Figure 10-6. Define Layout — Factor (microplate)

To enter multiplication factors:

1. Choose **Factor**.
2. Select a well or cuvette and enter numerical value for the Factor (Figure 10-6).

Note: Select multiple wells or cuvettes by clicking and dragging over the desired range. When a new factor is entered for the first well or cuvette selected, all selected wells or cuvettes are assigned the new factor.

3. Repeat the previous step for all wells or cuvettes desired.

Note: F can be entered in transformation formulas and refers to the individual multiplication factor for each well position entered in Factor. F is typically used in quantitative transformation formulas to correct the concentration of samples for their dilution factor; for example, X' = X * F.

First well selected with
new Factor entered.

Selected group of wells
with new Factor.

10.2.1.2.5 Completing the Sample Layout

When all parameters are configured and samples defined, save and close Define Layout and return to the General tab to continue configuring the test definition.

To close Define Layout and continue configuring the test:

1. From the File menu, choose **End** to close Define Layout and save the new plate or cuvette parameters.

OR

From the File menu, choose **Cancel** to close Define Layout without saving the new plate or cuvette parameters.

Note: In the File menu, Print and Open perform their respective functions on the complete test definition, not Define Layout. Both functions may not be accessible if the test definition is not completely configured.

2. Configure the desired measurement type by following the steps listed in its respective section:

• Endpoint photometric (refer to Section 10.2.2, *Configuring an Endpoint* Photometric Test).
• Multiwavelength photometric (refer to Section 10.2.3, *Configuring a* Multiwavelength Photometric Test).
• Kinetic photometric (refer to Section 10.2.4, *Configuring a Kinetic* Photometric Test).
• Spectral scan photometric (refer to Section 10.2.5, *Configuring a* Spectral Scan Test).
• Area scan photometric (refer to Section 10.2.6, *Configuring an Area* Scan Photometric Test).
Note: Area scan test measurements may only be performed on microplate samples.
• Linear scan photometric (refer to Section 10.2.7, *Configuring a Linear* Scan Photometric Test).
Note: Linear scan test measurements may only be performed on microplate samples.

10.2.2 Configuring an Endpoint Photometric Test
An endpoint photometric test performs a single absorbance or transmission measurement on samples at a user-specified wavelength between 190 and 1000 nm. If desired, a bichromatic endpoint measurement may also be performed. Bichromatic measurements perform a second measurement using a Reference Filter. This measurement is subtracted from the first to calculate the final result.
Note: Endpoint photometric transmission measurements may be performed only on cuvette samples.
To configure an endpoint photometric test measurement:
1. Choose the sample format and configure sample options following the steps in Section 10.2.1, Choosing the Sample Format and Configuring Sample Options.
2. In Assay, enter a **Name** for the test.
3. In Method, choose **Endpoint**. Options available in the General tab change to include only those applicable for endpoint measurements and the selected sample format (Figure 10-7).
Figure 10-7. Configuring an endpoint photometric test (microplate)

4. In Temperature, if desired, enter an incubation temperature for the test.
Note: Temperature is available only for tests performed on microplate samples.
Note: The incubation temperature must be a minimum of 4° C (7.2° F) above ambient. The maximum incubation temperature is 45° C (113° F).
Note: To turn temperature control off, in Set Temperature, enter **0**.
5. In Shaking, if desired, choose **Yes** to shake the microplate before performing the measurement.
Note: Shaking may be performed only on microplate samples.
Note: If shaking is not desired, go to step 8.
6. If Shaking is enabled, select the **Time** to shake, in seconds.

7. If Shaking is enabled, select the intensity: **Low**, **Medium**, or **High**.
8. In Set Measurement Parameter, leave Wavelength set at the default **1**.
Note: Changing the Wavelength configures a multiwavelength measurement (refer to Section 10.2.3, *Configuring a Multiwavelength* Photometric Test).
9. Under Set Measurement Parameter, in WL1, enter the desired measurement wavelength.
10. To perform a bichromatic measurement, under Set Measurement Parameter, in Reference, enter the desired wavelength.
11. If configuring a cuvette measurement, under Set Measurement Parameter, select **Transmission** to perform a transmission measurement, if desired.
12. In Variable, enter numeric values for up to eight variables that can be used in any formula defined in the test definition.
Note: Variables are typically used with test kits that have cutoff values or standard correction values based on lot number.
13. Under Set Measurement Parameter, in X'=, enter a transformation formula, if desired.
Note: The formula may contain any controls, standards, or variables defined in the test, any numerical constants, as well as mathematical operators ( ) * +, - . / ^, ABS, SQR, L, F, X, and V (refer to Section 8.2.8.3, Logical and Mathematical Operators).
Standards and controls are abbreviated as: S for standard, PC for positive control, and NC for negative control.
14. If desired, use the Quantitation tab to configure standards and standard curve fitting (refer to Section 10.2.8, *Configuring Quantitative Evaluations*).
15. Save the test definition following the steps in Section 10.3, *Saving New Tests*.

10.2.3 Configuring a Multiwavelength Photometric Test
A multiwavelength photometric test performs up to eight absorbance or transmission measurements at different user-specified wavelengths between 190 and 1000 nm.
To perform a multiwavelength photometric test measurement:
1. Choose the sample format and configure sample options following the steps in Section 10.2.1, Choosing the Sample Format and Configuring Sample Options.
2. In Assay, enter a **Name** for the test.
3. In Method, choose **Endpoint**. Options available in the General tab change to include only those applicable for multiwavelength measurements and the selected sample format (Figure 10-8).
Figure 10-8. Configuring a multiwavelength photometric test (microplate)
4. In Temperature, if desired, enter an incubation temperature for the test.
Note: Temperature is available only for tests performed on microplate samples.
Note: The incubation temperature must be a minimum of 4° C (7.2° F) above ambient. The maximum incubation temperature is 45° C (113° F).
Note: To turn temperature control off, in Set Temperature, enter **0**.

5. In Shaking, if desired, choose **Yes** to shake the microplate before performing the measurement.
Note: Shaking may be performed only on microplate samples.
Note: If shaking is not desired, go to step 8.
6. If Shaking is enabled, select the **Time** to shake, in seconds.
7. If Shaking is enabled, select the intensity: **Low**, **Medium**, or **High**.
8. Under Set Measurement Parameter, in Wavelength choose the number of wavelengths to measure. A field for each wavelength appears (Figure 10-8).
9. Under Set Measurement Parameter, enter the desired wavelength for each measurement.
10. If configuring a cuvette measurement, under Set Measurement Parameter, select **Transmission** to perform a transmission measurement, if desired.
11. In Variable, enter numeric values for up to eight variables that can be used in any formula defined in the test definition.
Note: Variables are typically used with test kits that have cutoff values or standard correction values based on lot number.
12. Under Set Measurement Parameter, in X'=, enter a transformation formula, if desired.
Note: The formula may contain any controls, standards, or variables defined in the test, any numerical constants, as well as mathematical operators ( ) * +, - . / ^, ABS, SQR, L, F, X, and V (refer to Section 8.2.8.3, Logical and Mathematical Operators).
Standards and controls are abbreviated as: S for standard, PC for positive control, and NC for negative control.
13. If desired, use the Quantitation tab to configure standards and standard curve fitting (refer to Section 10.2.8, *Configuring Quantitative Evaluations*).
14. Save the test definition following the steps in Section 10.3, *Saving New Tests*.

10.2.4 Configuring a Kinetic Photometric Test
A kinetic photometric test performs a user-specified series of absorbance or transmission measurements on each sample at user-specified intervals. Single or bichromatic measurements may be performed at user-specified wavelengths between 190 and 1000 nm. Bichromatic measurements perform a second measurement in each cycle using a reference filter. This measurement is subtracted from the first, then final measurement results are calculated using a data reduction method.
Note: Kinetic photometric transmission measurements may only be performed on cuvette samples.
To perform a kinetic photometric test measurement:
1. Choose the sample format and configure sample options following the steps in Section 10.2.1, Choosing the Sample Format and Configuring Sample Options.
2. In Assay, enter a **Name** for the test.
3. In Method, choose **Kinetic**. Options available in the General tab change to include only those applicable for kinetic measurements and the selected sample format (Figure 10-9).
Figure 10-9. Configuring a kinetic photometric test (microplate)

4. In Temperature, if desired, enter an incubation temperature for the test.
Note: Temperature is available only for tests performed on microplate samples.
Note: The incubation temperature must be a minimum of 4° C (7.2° F) above ambient. The maximum incubation temperature is 45° C (113° F).
Note: To turn temperature control off, in Set Temperature, enter **0**.
5. In Shaking, if desired, choose **Yes** to shake the microplate during the measurement.
Note: Shaking may be performed only on microplate samples.
Note: If shaking is not desired, go to step 9.
6. If Shaking is enabled, select the **Time** to shake, in seconds.
7. If Shaking is enabled, select the intensity: **Low**, **Medium**, or **High**.
8. If Shaking is enabled, select when microplates are shaken:
• **Before Measurement** — The microplate is shaken for the selected time and intensity before the instrument reads the plate.
• **Between Cycles** — The microplate is shaken for the selected time and intensity before the instrument reads the plate, and in between each measurement cycle.
9. Under Set Measurement Parameter, in Wavelength choose the measurement wavelength.
10. To perform a bichromatic measurement, under Set Measurement Parameter, in Reference, enter the desired wavelength.
11. Under Set Measurement Parameter, in Data Reduction, choose a data reduction method. Refer to Table 10-1 for more information about data reduction methods.
Note: Depending on the data reduction method selected, additional parameters, such as smoothing points and in-/decrease, may need to be configured in the field below Data Reduction. Refer to Table 10-1 for the additional configuration requirements of each data reduction method.
12. If configuring a cuvette measurement, under Set Measurement Parameter, select **Transmission** to perform a transmission measurement, if desired.
13. Under Set Measurement Parameter, in X'=, enter a transformation formula, if desired.
Note: The formula may contain any controls or standards defined in the test, any numerical constants, as well as mathematical operators ( ) * +, - . / ^, ABS, SQR, L, F, X, and V (refer to Section 8.2.8.3, *Logical* and Mathematical Operators).
Standards and controls are abbreviated as: S for standard, PC for positive control, and NC for negative control.

14. Under Set Measurement Parameter, enter a **Name** for the results calculated by the transformation formula, if desired. The name is displayed in the kinetic measurement results tab.

15. If desired, use the Quantitation tab to configure standards and standard curve fitting (refer to Section 10.2.8, *Configuring Quantitative Evaluations*).
16. Save the test definition following the steps in Section 10.3, *Saving New Tests*.

10.2.4.1 Data Reduction Methods

In kinetic measurements, data reduction methods are used to determine a single value per sample based on the results of a sequence of measurements over a period of time. Table 10-1 describes the twelve data reduction methods supported by the ADAP software.

Table 10-1. Data Reduction Methods

Data Reduction Method	Description	Additional Configuration
Average Slope	Determines the average slope of the reaction curve by calculating the average of all linear regressions calculated over each group of Smoothing Points in the kinetic reading sequence. A decreasing slope shows a decline.	Smoothing Points
Delta OD	Difference between the first and last kinetic measurements in optical density (OD).	N/A
Delta OD — Max. Slope	Difference in OD between the first measurement and the center point of the maximum slope. **Note:** The center point of the maximum slope is calculated by determining the center point between the smoothing points of the regression line with the maximum slope.	Smoothing Points
Delta Time — Absolute	Time elapsed from one preselected OD value to another.	Lower Limit Upper Limit
Delta Time — Max. Slope	Time difference in seconds between the first measurement and the occurrence of the center point of the maximum slope. **Note:** The center point of the maximum slope is calculated by determining the center point between the smoothing points of the regression line with the maximum slope.	Smoothing Points
Delta Time — Relative	Time elapsed in seconds from the first measurement to reaching a set increase/decrease amount from the first OD measurement.	In-/Decrease
Maximum Declining Slope	Determines the maximum declining rate of the reaction	

curve by calculating a linear regression over each group of Smoothing Points in the kinetic reading sequence.
Smoothing Points
Maximum Inclining Slope
Determines the maximum inclining rate of the reaction curve by calculating a linear regression over each group of Smoothing Points in the kinetic reading sequence.
Smoothing Points

Maximum Slope
Maximum slope of the curve in OD/min. The line with the highest slope is calculated. Also the maximum reaction speed.
Note: The accuracy of this calculation depends on the number of measurement cycles selected.
Smoothing Points
Mean Determines the mean value per sample within a sequence of measurements. N/A
Time Peak Value Used to detect the time elapsed until the peak value is reached. Smoothing Points
Peak Value Used to detect the highest value per sample within a sequence of measurements. Smoothing Points
Table 10-1. Data Reduction Methods
Data Reduction Method Description Additional Configuration

10.2.5 Configuring a Spectral Scan Test
A spectral scan test performs absorbance or transmission measurements at all wavelengths within a user-specified bandwidth.
To perform a spectral scan test measurement:
1. Choose the sample format and configure sample options following the steps in Section 10.2.1, Choosing the Sample Format and Configuring Sample Options.
2. In Assay, enter a **Name** for the test.
3. In Method, choose **Spectrum**. Options available in the General tab change to include only those applicable for spectral scan measurements and the selected sample format (Figure 10-10).
Figure 10-10. Configuring a spectral scan photometric test (microplate)
4. In Temperature, enter an incubation temperature for the test, if desired.
Note: Temperature is available only for tests performed on microplate samples.
Note: The incubation temperature must be a minimum of 4° C (7.2° F) above ambient. The maximum incubation temperature is 45° C (113° F).
Note: To turn temperature control off, in Set Temperature, enter **0**.

5. In Shaking, if desired, choose **Yes** to shake the microplate during the measurement.
Note: Shaking may be performed only on microplate samples.
Note: If shaking is not desired, go to step 8.
6. If Shaking is enabled, select the **Time** to shake, in seconds.
7. If Shaking is enabled, select the intensity: **Low**, **Medium**, or **High**.
8. Under Set Measurement Parameter, in Start Wavelength, enter the shortest wavelength to be measured in the spectral scan.
9. Under Set Measurement Parameter, in End Wavelength, enter the longest wavelength to be measured in the spectral scan.
10. Under Set Measurement Parameter, select **Transmission** to measure transmission instead of absorbance, if desired.
11. Under Set Measurement Parameter, select a Data Reduction method, if desired:
• **Maximum Peak** — The highest optical density (OD) or transmission value measured.
• **Maximum Peak Wavelength** — The wavelength of the maximum optical density (OD) or transmission measured.
• **Minimum Valley** — The lowest optical density (OD) or transmission value measured.
• **Minimum Valley Wavelength** — The wavelength of the minimum optical density (OD) or transmission measured.
12. If a data reduction method is selected, enter the number of **Smoothing Points** to use in the calculation.
13. Save the test definition following the steps in Section 10.3, *Saving New Tests*

10.2.6 Configuring an Area Scan Photometric Test
Area scan test measurements perform absorbance or transmission measurements at a number of points across each well. Area scans can measure samples on 6-, 12-, 24-, 48-, and 96-well microplates, and are performed at the maximum resolution allowed by the plate type.
Note: Area scan test measurements may be performed only on microplate samples.
To perform an area scan test measurement:
1. In Plates, choose **Plates** and configure sample options following the steps in Section 10.2.1, Choosing the Sample Format and Configuring Sample Options.
2. In Assay, enter a **Name** for the test.
3. In Method, choose **Endpoint**. Options available in the General tab change to include only those applicable for endpoint scan measurements and the selected sample format.
4. In Set Measurement Parameter, choose **Area Scan**. The applicable configuration options for an area scan measurement appear in Set Measurement Parameter (Figure 10-11).
Figure 10-11. Configuring an area scan photometric test

5. In Temperature, enter an incubation temperature for the test, if desired.

Note: Temperature is available only for tests performed on microplate samples.
Note: The incubation temperature must be a minimum of 4° C (7.2° F) above ambient. The maximum incubation temperature is 45° C (113° F).
Note: To turn temperature control off, in Set Temperature, enter **0**.
6. In Shaking, if desired, choose **Yes** to shake the microplate during the measurement.
Note: Shaking may be performed only on microplate samples. If shaking is not desired, go to step 9.
7. If Shaking is enabled, select the **Time** to shake, in seconds.
8. If Shaking is enabled, select the intensity: **Low**, **Medium**, or **High**.
9. In Set Measurement Parameter, leave Wavelength set at the default **1**.
Note: Changing the Wavelength configures a multiwavelength measurement (refer to Section 10.2.3, *Configuring a Multiwavelength* Photometric Test).
10. Under Set Measurement Parameter, in WL1, enter the desired measurement wavelength.
11. Under Set Measurement Parameter, in Points (Height and Width), select the number of measurement points.
Note: The number of points selected in Points defines how many points will be measured both vertically and horizontally; for example choosing 6 means that 36 measurement points will be laid out in a 6 x 6 grid across the well.
The number of point selections available depends upon the plate format selected in the plate layout. 12-well plates have a resolution of about 20 x 20 points; 24-well plates about 14 x 14; 96-well plates about 8 x 8. The exact resolution depends on plate type.
12. Under Set Measurement Parameter, in Resolution, select he resolution, or space, between each measurement point. The highest resolution value is 1, where the distance between measurement points is the smallest.
Note: The graphic depicting a well displays the layout and resolution of measurement points currently selected. Reducing resolution maintains the same coverage, but spaces fewer measurement points further apart; increasing resolution adds measurement points to the same coverage area.
13. Save the test definition following the steps in Section 10.3, *Saving New Tests*

10.2.7 Configuring a Linear Scan Photometric Test
Linear scan test measurements perform transmission measurements at 25 points along a linear axis crossing the center of each measured well on a 96-well microplate.
Note: Area scan test measurements may be performed only on microplate samples.
To perform a linear scan test measurement:
1. In Plates, choose **Plates** and configure sample options following the steps in Section 10.2.1, Choosing the Sample Format and Configuring Sample Options.
2. In Assay, enter a **Name** for the test.
3. In Method, choose **Endpoint**. Options available in the General tab change to

include only those applicable for endpoint scan measurements and the selected sample format.
4. In Set Measurement Parameter, choose **Linear Scan**. The applicable configuration options for a linear scan measurement appear in Set Measurement Parameter (Figure 10-12).
Figure 10-12. Configuring a linear scan photometric test
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5. In Temperature, enter an incubation temperature for the test, if desired.
Note: Temperature is available only for tests performed on microplate samples.
Note: The incubation temperature must be a minimum of 4° C (7.2° F) above ambient. The maximum incubation temperature is 45° C (113° F).
Note: To turn temperature control off, in Set Temperature, enter **0**.
6. In Shaking, if desired, choose **Yes** to shake the microplate during the measurement.
Note: Shaking may be performed only on microplate samples.
Note: If shaking is not desired, go to step 9.
7. If Shaking is enabled, select the **Time** to shake, in seconds.
8. If Shaking is enabled, select the intensity: **Low**, **Medium**, or **High**.
9. In Set Measurement Parameter, leave Wavelength set at the default **1**.
Note: Changing the Wavelength configures a multiwavelength measurement (refer to Section 10.2.3, *Configuring a Multiwavelength* Photometric Test).
10. Under Set Measurement Parameter, in WL1, enter the desired measurement wavelength.
11. Save the test definition following the steps in Section 10.3, *Saving New Tests*
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10.2.8 Configuring Quantitative Evaluations
For endpoint, multiwavelength, and kinetic measurements, the Quantitation tab configures parameters for standard curves, concentration values, and response formulas.
Note: Quantitation is available only when endpoint, multiwavelength, or kinetic measurements are being configured.
Quantitation is divided into two sections:
• Standards — Configures concentration and response formula parameters for standards (refer to Section 10.2.8.1, *Configuring Standards*).
• Standard curve — Configures standard curve fitting parameters (refer to Section 10.2.8.2, Configuring Standard Curve Parameters).
To configure quantitative parameters:
Select the Quantitation tab (Figure 10-13).
Figure 10-13. Quantitation Module Test Definition — Quantitation tab
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10.2.8.1 Configuring Standards
Standards configures up to 10 concentration values and response formulas.

To configure concentration values and response formulas:
1. Under Concentration, enter the concentration value to be plotted on the x-axis.
Note: For Concentration values less than 1, enter a leading 0 before the decimal; for example, 0.51. Values entered without the leading 0 produce an error when the measurement is performed.
2. Under Response Formula, enter the response formula to plot the corresponding concentration on the y-axis.
Note: Response formulas may contain any controls, standards, or variables defined in the test, as well as any numerical constants and mathematical operators +,-,*,/,(,),^. Usually, the response formula is just the value of a measured standard and consists only of the corresponding name; for example S1, S2, or S3.
Note: For Response Formula values less than 1, enter a leading 0 before the decimal; for example, 0.51. Values entered without the leading 0 produce an error when the measurement is performed.

10.2.8.2 Configuring Standard Curve Parameters
Standard curve configures new standard curve parameters.
To configure standard curve parameters.
1. Under Standard curve, select the curve fitting method: Point to Point, Linear Regression, Cubic Spline, or 4-Parameter Fit.
Note: Refer to Section 10.2.8.2.1, *Curve Fitting Models* for detailed information about curve fitting methods.
2. In Axis (X/Y), select the scale to use for the X and Y axes:
• **lin/lin** — Linear/Linear
• **lin/log** — Linear/Logarithmic
• **log/log** — Logarithmic/Logarithmic.
3. In Extrapolation, enter a percentage value to extrapolate the standard curve above and below the highest and lowest standard points in the curve, if desired.
Note: Extrapolation percentages can be used with Linear Regression, Cubic Spline or 4-Parameter Fit curve fitting methods.
Note: The percentage value entered in Extrapolation can be up to 99.9%.
4. In Units, enter the units of measure to be displayed in the test measurement results.
Note: Units are used for documentation purposes only and do not impact the standard curve. Units appears in Transform in the test measurement results window (refer to Section 11.2.3, *Viewing* Concentration Results).
5. In Validate Curve, choose **Yes** or **No** to validate the test based on an acceptable coefficient of correlation.
Note: Validate Curve is only available with the Linear Regression curve fitting method.
6. If Yes is selected in Validate Curve, in Min. Correlation, enter the minimum correlation percentage value for the test to be valid.

10.2.8.2.1 Curve Fitting Models
Table 10-2 describes the four curve fitting models supported by the ADAP software.
Table 10-2. Curve Fitting Models

Method	Description	Example
Linear regression	Construction of a straight line using the least squares method with the highest possible approximation to all standard points. Requires a minimum of 2 standard points.	
Point to Point	Direct connection of all standard points. Requires a minimum of 2 standard points.	
Cubic Spline	All standard points are connected by the best fitting curve. **Note:** Can only be used for nonlinear and nonsigmoid functions. Requires a minimum of 3 standard points.	
4 Parameter Fit	This procedure can be used only to characterize sigmoid curves. The curve is calculated according to the formula: a = zero dose response (upper asymptote) d = infinite dose response (lower asymptote) c = dose level which results in a response midway between a and d b = slope factor Requires a minimum of 4 standard points.	yi (a – d) 1 xi c ?----? ? ?b + = ---------- + d

10.3 Saving New Tests
When the plate layout and all required parameters for the test have been properly configured, the test definition may be saved. Test definitions must be saved before measurements can be performed.
To save a test definition during configuration:
From the File menu, choose **Save**. The test definition remains open for further

editing.
Note: Before a test definition can be saved, the test must be named and samples must be configured in Define Layout.
To save a test definition and return to the main ADAP screen:
From the File menu, choose **Close**. The test definition is saved in the database and may be used to run a test.
To return to the main ADAP screen without saving the test definitions:
1. From the File menu, choose **Cancel**. Message appears (Figure 10-14)
Figure 10-14. Message — Save Data
2. Choose **No** to close Quantitation Module Test Definition without saving the test definition.
OR
Choose **Yes** to save the test definition to the database and close Quantitation Module Test Definition.
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10.4 Running Existing Tests
Tests may be run as soon as they are defined and saved. All test definitions are stored in the ADAP software database.
To run a test:
1. From the toolbar, toggle the Elisa/Quantitation selection button to **Quantitation**, if necessary.
Note: If the Elisa/Quantitation selection button is toggled to Elisa, only tests defined in the ELISA module will be available to run.
2. From the Reading menu, choose **Single Test**.
OR
Choose **Measure single test**. Selection appears (Figure 10-15).
Figure 10-15. Selection — test definitions
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3. Select a test definition and choose **OK**. Numbers of Samples appears (Figure 10-16).
Note: Choose **Matchcode** to search for test definitions by name (refer to Section 10.4.1, Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database).
Figure 10-16. Numbers of Samples
4. Enter the number of samples to be measured on the plate and choose **OK**. The measurement results screen appears and the measurement procedure begins. After the measurement is complete, the results are displayed (refer to Chapter 11, Viewing Test and Multitest Assay Measurement Results).
10.4.1 Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database
Matchcode is the search feature included in Selection. Depending on from which screen or tab Selection is accessed, Matchcode performs searches for test definitions or measurement results stored in the ADAP database.
Matchcode provides wildcard operators, * and ?, which simplify searching by

allowing users to search for a set of possible characters in the plate-ID name (see Table 10-3).

Table 10-3. Matchcode wildcard operators

Wildcard Pattern	Result
a	Lists all plate IDs or test definition names with an *a* in the ID or name.
a*	Lists all plate IDs or test definition names with an *a* at the beginning of the ID or name.
*a	Lists all plate IDs or test definition names with an *a* at the end of the ID or name.
alph?	Lists all plate IDs or test definition names with *alph* followed by an additional character. For example, *alpha* or *alphb*.

To search for an existing test definition:

1. From Selection, choose **Matchcode**. Plate-ID appears (Figure 10-17).

Figure 10-17. Plate-ID

2. In Input Plate-ID, enter a plate ID or test definition name.
3. Input Plate-ID also refers to saved measurement results for cuvette samples and test definition names.
4. Choose **OK**. Plate IDs or test definition names that match the search query appear in Selection.

Note: If Matchcode finds no matches to the search query, choose **update list** (Figure 10-15) to display the entire list of test definitions again.

10.5 Editing, Copying, and Deleting Test Definitions

Tests stored in the database can be edited, copied, or deleted using the ADAP software.

Note: Tests may be edited, copied, and deleted only by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System* Administration).

10.5.1 Editing Tests

Test definition parameters may be edited by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System* Administration).

To edit a test stored in the ADAP software database:

1. From the toolbar, toggle the Elisa/Quantitation selection button to **Quantitation**, if necessary.

Note: If the Elisa/Quantitation selection button is toggled to Elisa, only tests defined in the ELISA module will be available to edit.

2. From the Setup menu, choose **Calculation**.

OR

Choose **Create/Edit Calculation**. Quantitation Module Test Definition appears (Figure 10-18).

Figure 10-18. Quantitation Module Test Definition

3. From the File menu, choose **Open**. Selection appears with a list of saved test definitions (Figure 10-19).
Figure 10-19. Selection — test definitions
4. Select a test to edit and choose **OK**. The chosen test definition appears.
Note: Choose **Matchcode** to search for test definitions by name (refer to Section 10.4.1, Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database).
5. Edit the desired test definition parameters.
Note: Refer to Section 10.2, Defining New Tests In the Quantitation *Module* for detailed information about defining test definition parameters.
6. From the File menu, choose **Save**. The test definition is saved in the database and may be used to run a test.
7. From the File menu, choose **End** to return to the ELISA module test definition setup screen.
Note: Refer to Section 10.3, *Saving New Tests* for more information about different methods of saving test definition data and returning to the main ADAP screen.

10.5.2 Copying Tests
Test definition parameters may be copied by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System* Administration).
To copy a test definition:
1. From the toolbar, toggle the Elisa/Quantitation selection button to **Quantitation**, if necessary.
Note: If the Elisa/Quantitation selection button is toggled to Elisa, only tests defined in the ELISA module will be available to copy.
2. From the Setup menu, choose **Calculation**.
OR
Choose **Create/Edit Calculation**. Quantitation Module Test Definition appears (Figure 10-20).
Figure 10-20. Quantitation Module Test Definition

3. From the File menu, choose **Open**. Selection appears with a list of saved tests (Figure 10-21).
Figure 10-21. Selection — test definitions
4. Select a test to copy and choose **OK**. The chosen test definition appears.
Note: Choose **Matchcode** to search for test definitions by name (refer to Section 10.4.1, Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database).
5. In Test Name, enter a new name for the test (Figure 10-20).
Note: Test names are limited to 20 characters in length.

6. From the File menu, choose **Save**. The test definition is saved in the database with the new name and may be used to run a test.
7. From the File menu, choose **End** to return to the ELISA module test definition setup screen.
Note: Refer to Section 10.3, *Saving New Tests* for more information about different methods of saving test definition data and returning to the main ADAP screen.

10.5.3 Deleting Tests
Test definition parameters may be deleted by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System* Administration).
To delete a test definition:
1. From the toolbar, toggle the Elisa/Quantitation selection button to **Quantitation**, if necessary.
Note: If the Elisa/Quantitation selection button is toggled to Elisa, only tests defined in the ELISA module will be available to delete.
2. From the Setup menu, choose **Calculation**.
OR
Choose **Create/Edit Calculation**. Quantitation Module Test Definition appears (Figure 10-22).
Figure 10-22. Quantitation Module Test Definition

3. From the File menu, choose **Open**. Selection appears with a list of saved tests (Figure 10-23).
Figure 10-23. Selection — test definitions
4. Select a test definition(s) to delete.
Note: Choose **Matchcode** to search for test definitions by name (refer to Section 10.4.1, Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database).
Note: To select multiple test definitions, hold **Ctrl** while selecting each test definition name.
5. Choose **Delete**. Message appears (Figure 10-24).
Figure 10-24. Message — Delete selected Tests?
6. Choose **Yes** to delete the test definition.
OR
Choose **No** to cancel the deletion and return to Selection.

10.6 Printing Test Definitions
Test definitions may be printed out to provide a record of the test protocol.
Note: Test definitions may be printed by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System* Administration).
To print a test definition:

1. From the toolbar, toggle the Elisa/Quantitation selection button to **Quantitation**, if necessary.
Note: If the Elisa/Quantitation selection button is toggled to Elisa, only tests defined in the ELISA module will be available to print.
2. From the Setup menu, choose **Calculation**.
OR
Choose **Create/Edit Calculation**. Quantitation Module Test Definition appears (Figure 10-25).
Figure 10-25. Quantitation Module Test Definition
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3. From the File menu, choose **Open**. Selection appears with a list of saved test definitions (Figure 10-26).
Figure 10-26. Selection — test definitions
4. Select a test to be printed and choose **OK**. The chosen test definition appears.
Note: Choose **Matchcode** to search for test definitions by name (refer to Section 10.4.1, Using Matchcode to Search for Test Definitions Stored In the ADAP Software Database).
5. From the File menu, select **Print**. Print appears (Figure 10-27).
Figure 10-27. Print
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6. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.
7. In Options, select the desired **Font** and text **Size**.
Note: Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.
8. Choose **OK** print the data.
Note: If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory where the application, database, and support files are stored.
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11-1
Viewing Test and Multitest Assay Measurement Results
11.1 Overview
Note: A valid license code for the ADAP Prisma software is required to access the functions covered in this chapter. Refer to Section 1.3, *Launching the ADAP Software* for information about license codes.
After performing a test configured in the ELISA or Quantitation module, or a series of tests in a Multitest assay, the measurement results are displayed in a series of tabs in the ADAP software main window. The tabs displayed vary depending on the module used to configure the test definition, the type of measurement performed, and the options selected in the test definition (refer to Chapter 8, *Defining and Running Tests In the ELISA Module* and Chapter 10, Defining and Running Tests In the

Quantitation Module).
Test measurement results are stored in the ADAP software database and may be exported to another application or printed.
Measurement results can be:
• Viewed in the ADAP software (refer to Section 11.2, *Viewing Test* Measurement Results and Section 11.3, Viewing Multitest Measurement Results).
• Recalculated with different parameters following the measurement (refer to Section 11.4, Recalculating Test Results).
Note: Only tests configured in the ELISA module may be recalculated; tests configured in the Quantitation module may not.
• Printed to view and store a hard copy (refer to Section 11.5, *Printing* Measurement Results).
• Exported to view in another application (refer to Section 11.6, *Exporting* Measurement Results to Other Applications).
• Stored in the ADAP software database (refer to Section 11.7, *Working with* Measurement Results Stored in the ADAP Database).

11.2 Viewing Test Measurement Results
Test measurement results are displayed in a series of tabs in the ADAP software main window. The tabs displayed depend on the module used to configure the test definition, the type of measurement performed, and the options selected in the test definition.
Test measurement results include:
Note: The following tabs also appear in Quick measurement results. Which tabs appear depends on the type of measurement performed. Refer to Chapter 7, *Viewing Quick Measurement Results*, for more information about each tab.
• OD — In photometric measurement results, displays the optical density measurement for each well measured (refer to Section 7.3.1, *Viewing* Endpoint Photometric Measurement Results).
• Status — In all measurements, displays the status for all measured wells (refer to Section 7.3.1.2, Viewing Transmission Measurement Results).
• Raw Data Kinetic — In kinetic measurements, displays measurement results for each cycle of a kinetic photometric measurement (refer to Section 7.3.2, Viewing Kinetic Photometric Measurement Results).
• Kinetic Graph — In kinetic measurements, displays a graph of the kinetic results over time for each well (refer to Section 7.3.2.3, *Viewing Kinetic* Measurement Graphs).
• Raw Data Scan — In linear scan measurements, displays the values for each of the 25 points measured across wells (refer to Section 7.3.5.1, Viewing Linear Scan Measurement Raw Data). In area scan measurements, displays the values for all points measured within wells on the plate (refer to Section 7.3.7.1, Viewing Area Scan Measurement Raw Data).
• Scan — In linear scan measurements, displays a graph of the linear absorption profile for each well on the plate (refer to Section 7.3.5.2, *Viewing Linear Scan Graphs*). In area scan measurements, displays a threedimensional

graph of the results of the area scan from each well (refer to Section 7.3.7.2, Viewing Area Scan Transmission Profiles).

• Curve Info — In multiwavelength measurements, displays the OD and transmission values at each wavelength measured (refer to Section 7.3.3.4, Viewing Multiwavelength Measurement Curve Info). In spectral scan measurements, displays the OD and transmission values at all wavelengths measured (refer to Section 7.3.4.3, *Viewing Spectral Scan Curve Info*).

Note: The following results screens appear depending on the module used to configure the test definition, the type of measurement performed, and the options selected in the test definition.

• Mean — Displays mean values of replicates based on the mean calculation mode selected in the test definition (refer to Section 11.2.1, *Viewing Mean* Results Data).

• Transform — Displays calculated measurement values for each well based on the transformation formula entered in the test definition (refer to Section 11.2.2, Viewing Transformation Formula Results).

• Concentration — Displays calculated concentration of each well based on the standard curve data entered in the test definition (refer to Section 11.2.3, Viewing Concentration Results).

• Concentration Transformation — Displays calculated concentration values for each well based on the concentration transformation formula entered in the test definition (refer to Section 11.2.4, *Viewing Concentration* Transformation Results)

• Qualitative — Displays the cutoff group name for each well if cutoff formulas and groups are configured in the test definition (refer to Section 11.2.5, Viewing Qualitative Results).

• Plate Layout — Displays the layout of the plate as defined in the test definition (refer to Section 11.2.6, *Viewing Plate Layout*).

• Sample ID — In Multitest assays, displays the sample identification number for each well (refer to Section 11.3.1, *Viewing Sample IDs For* Multitest Assays).

• CV% — Displays the coefficient of variation of the mean values of a replicate group (refer to Section 11.2.7, *Viewing CV% Results*).

• Factor — Displays multiplication factors for each well as defined in the test definition (refer to Section 11.2.8, *Viewing Factor*).

• Standard Curves — Displays the standard curve of the measurement if quantitative parameters are configured in the test definition (refer to Section 11.2.9, Viewing Standard Curves)

• Test Status — Displays a summary of all steps in a test definition, indicating if each step was performed correctly or if there was an error (refer to Section 11.2.10, Viewing Test Status Information).

• Evaluation Summary — Displays a summary of test evaluation data (refer to Section 11.2.11, Viewing Evaluation Summary Results).

Note: In any measurement result screen that displays the results in plate layout format, double-click on a well position to see a summary of measurement results for

the well.
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11.2.1 Viewing Mean Results Data
Mean displays the mean value of each replicate group on the plate (Figure 11-1). The mean value is displayed in the first position of the replicate group.
Note: For a kinetic measurement, the Mean value represents the mean of the data reduction value for each replicate group.
Note: If replicates are not used in the test definition, the Mean tab displays the same values as OD (Figure 7-1).
Figure 11-1. Measurement results — Mean
Replicate group — mean value
displayed in the first position
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11.2.2 Viewing Transformation Formula Results
Transform (Figure 11-2) displays measurement values for each well calculated using the transformation formula configured in Qualitative (refer to Section 8.2.4, *Configuring Qualitative Evaluations*) or in a kinetic test defined in the Quantitation module (refer to Section 10.2.4, Configuring a Kinetic Photometric Test).
Note: Transform is the default label for this tab. If Units for the transformation formula is defined, that name appears instead (refer to Section 8.2.4.3, *Configuring a* Transformation Formula).
Figure 11-2. Measurement results — Transformation
11-6 Viewing Test and Multitest Measurements
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11.2.3 Viewing Concentration Results
If standard curve parameters were configured in Quantitative, Concentrat displays the calculated concentration of each well based on the standard curve data results (refer to Section 8.2.3, Configuring Quantitative Evaluations).
Note: Values outside of the valid range of the standard curve are displayed as < or >.
Note: Concentrat is the default label for this tab. If Units for the standard curve is defined, that name appears instead (refer to Section 8.2.3.2, *Configuring Standard* Curve Parameters).
Figure 11-3. Measurement results — Concentrat
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11.2.4 Viewing Concentration Transformation Results
Index Conc displays the calculated concentration values for each well as a result of the transformation formula entered in the Quantitative parameters of a test definition configured in the ELISA module (refer to Section 8.2.3, *Configuring Quantitative* Evaluations).
Note: Index Conc is the default label for this tab. If Units for the transformation formula is defined, that name appears instead (refer to Section 8.2.3.5, *Configuring a* Transformation Formula).

Figure 11-4. Measurement results — Index Conc

11.2.5 Viewing Qualitative Results
Results displays cutoff group names for each well (Figure 11-5). Cutoff groups are created by configuring cutoff formulas in Qualitative (refer to Section 8.2.4, Configuring Qualitative Evaluations).
Figure 11-5. Measurement results — Results

11.2.6 Viewing Plate Layout
Plate Layout (Figure 11-6) displays the layout of the plate as defined in the test definition (refer to Section 8.2.1, Choosing the Sample Format and Configuring Sample Options).
Figure 11-6. Measurement results — Plate Layout

11.2.7 Viewing CV% Results
CV% displays the coefficient of variation of the mean values of a replicate group (Figure 11-7). To calculate a CV, a sample or well type must have at least 2 replicates. The CV% value is displayed in the first position of the replicate group. If there are no replicates for a well type, the CV for the well is displayed as 0.
Note: The formula for CV% is standard deviation divided by mean value, multiplied by 100.
Figure 11-7. Measurement results — CV%

11.2.8 Viewing Factor
Factor (Figure 11-8) displays the multiplication factors for each well configured in Define Layout in the test definition (refer to Section 8.2.1.4, *Entering Multiplication* Factors for Samples).
Figure 11-8. Measurement results — Factor

11.2.9 Viewing Standard Curves
Graphic (Figure 11-9) displays the standard curve based on the results of the concentration and response formula configured in Quantitative in the test definition (refer to Section 8.2.3, Configuring Quantitative Evaluations).
Note: If the ADAP software main window is resized, choose Refresh Graph to redraw the graph display so that it fits the new window size properly.
Note: To copy the standard curve graph, right-click on the graph and choose **Copy graph into clipboard**. The graph can then be pasted into another application such as a word processor.
Figure 11-9. Standard curve displayed in measurement results — Graphic tab

11.2.10 Viewing Test Status Information

Info-Calculation displays a summary of each step in the test definition and indicates if each step was successful or failed (Figure 11-10). Results are displayed as OK or Error.

Figure 11-10. Measurement results — Info-Calculation

11.2.11 Viewing Evaluation Summary Results

Result-List (Figure 11-11) displays a summary of test evaluation data including standard curve results, cutoff groups, replicate rejection and test validation formula summaries, and individual well data (Figure 11-11).

Note: Use the scroll bar to view all information displayed in Result-List.

Note: This Result-List contains different data than the Result-List for individual sample IDs (refer to Section 11.3.1.3, Viewing, Printing, and Copying Individual Sample ID Information).

Figure 11-11. Measurement results — Result-List

11.3 Viewing Multitest Measurement Results

After a Multitest measurement is completed, all applicable measurement results are displayed for each test performed. Measurement results are displayed one test at a time (Figure 11-12).

Note: Sample IDs assigned during the Multitest configuration are displayed in the Sample-ID tab (refer to Section 11.3.1, *Viewing Sample IDs For Multitest Assays*).

Figure 11-12. Multitest measurement results

Note: Refer to Section 7.3, *Viewing Quick Measurement Results*, and Section 11.2, *Viewing Test Measurement Results*, to learn more about the individual measurement result tabs.

To view results from another test on the plate:

Choose **next Test** to view the following test results.

OR

Choose **previous Test** to view the preceding test results.

11.3.1 Viewing Sample IDs For Multitest Assays

In measurement results for Multitest assays, Sample-ID (Figure 11-13) displays the sample IDs assigned when the Multitest assay was defined (refer to Section 9.2.2, *Assigning Sample IDs*). Existing sample IDs may be edited in Sample-ID.

In measurement results for a single test, sample IDs must be added after the test is performed; they cannot be assigned in the test definition. Sample IDs may be assigned manually or imported from a text (*txt) file, and can be saved and edited as desired.

Note: In Multitest assay measurement results, sample IDs are displayed one test at a time. The name of the displayed test appears in the title bar. Choose **previous Test** or **next Test** to view sample IDs from other tests in the assay.

Figure 11-13. Measurement results — Sample-ID

Sample ID data may be:

• Manually entered in Sample-ID (refer to Section 11.3.1.1, *Manually*

Entering Sample IDs).
• Imported from text files (refer to Section 11.3.1.2, *Importing Sample IDs* From Text Files).
• Viewed in detail on an individual well basis (refer to Section 11.3.1.3, Viewing, Printing, and Copying Individual Sample ID Information).
• Printed out or copied to another application (refer to Section 11.3.1.3.1, Printing Sample ID Information).
Viewing Test and Multitest Measurements 11-17
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11.3.1.1 Manually Entering Sample IDs
Sample IDs may be entered one at a time for individual wells.
To manually enter sample IDs:
1. Choose Sample-ID.
2. From the Options menu, choose **Edit Sample-ID>Manual** (Figure 11-14).
Note: The Edit Sample-ID function is only available when Sample-ID is the tab displayed.
Figure 11-14. Edit Sample-ID
3. Click the desired well in the layout and enter the new sample ID.
4. Repeat step 3 until all desired sample IDs are entered.
11.3.1.2 Importing Sample IDs From Text Files
Sample IDs may be imported from standard text files or text files configured specifically for 96-well plates.
To import sample IDs from a text file:
1. Choose Sample-ID.
2. In the Option menu, select **Edit Sample-ID>**:
• **File H12 x V8** to import a text file specifically configured for a 96-well plate with 12 horizontal positions and 8 vertical positions.
OR
• **File H8 x V12** to import a text file specifically configured for a 96-well plate with 8 horizontal positions and 12 vertical positions.
OR
• **List of Sample-ID** to import any text file.
Note: Sample IDs in a standard text file must be listed on separate lines.
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11.3.1.3 Viewing, Printing, and Copying Individual Sample ID Information
Test information relevant to each sample ID well may be viewed, printed or copied to another file. Sample ID information that may be viewed includes sample ID, test name, well data results, plate layout position, plate number, and validation status.
To view individual sample ID information:
1. Choose **List Sample-ID**. Selection appears (Figure 11-15).
Figure 11-15. Selection — sample IDs
Viewing Test and Multitest Measurements 11-19
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2. Select the desired sample ID to view and choose **OK**. Result-List appears

(Figure 11-16)
Note: To select several sample IDs to display in Result-List, hold Ctrl while selecting sample IDs.
Note: Choose **Matchcode** to search for specific sample IDs by characters in the sample ID name (refer to Section 8.4.1, *Using* Matchcode to Search for Test Definitions Stored In the ADAP Software Database).
Figure 11-16. Sample ID information in Result-List
Note: If a sample ID has been used in several tests, results for all tests are displayed by date in Result-List.
Note: Choose **Close** to return to the test measurement results.
The sample ID data in Result-List can be printed or copied into another application.
• To print the contents of Result-List, refer to Section 11.3.1.3.1, *Printing* Sample ID Information.
• To copy the contents of Result-List so that it can be used in another application, refer to Section 11.3.1.3.2, *Copying Sample ID Information to* Another Application.

11.3.1.3.1 Printing Sample ID Information
Sample ID data displayed in Result-List may be printed.
To print sample ID data:
1. Choose **Print**. Print appears (Figure 11-17).
Figure 11-17. Print — Result-List
2. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.
3. In Mode, select **Form feed after each Sample-ID** to print each sample ID on a separate page, if desired.
4. In Options, select the desired **Font** for the report, the **Size** of the printed text, and the number of **Copies** to print.
Note: Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.
5. Choose **OK** to print the raw data.
6. Choose **OK** to print the sample ID data, or **Cancel** to abort printing.
Note: If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

11.3.1.3.2 Copying Sample ID Information to Another Application
Sample ID data can be copied into another application, such as a word processor, using the clipboard.
To copy sample ID data to the clipboard:
1. Choose **Clipboard**. Sample ID data is copied to the clipboard.
2. Open or switch to the application you want to paste the sample ID data to, and

paste the data.
Note: Most applications have CTRL+V assigned as the Paste command keyboard shortcut.
Note: Choose **Close** to return to the Multitest results.

11.4 Recalculating Test Results
After the completion of tests configured in the ELISA module, raw data associated with the test can be recalculated with different parameters, such as cutoff formulas, validation formulas, standards, and standard curve fits.
Individual wells may be rejected as outliers. Tests can be recalculated with these outliers eliminated.
Note: Only tests configured in the ELISA module may be recalculated; tests configured in the Quantitation module may not.
11.4.1 Recalculating Test Results
To recalculate results:
1. From the Options menu, select **Formula**.
OR
Right-click on the displayed measurement results, and select **Formula**. The name of the most recently run test appears (Figure 11-18).
Figure 11-18. Choosing Point_2, the most recently run test, to recalculate

2. Choose the test definition name. A window named for the test definition name appears (Figure 11-19).
Figure 11-19. Point_2 to recalculate
3. In Cutoff Formula, if desired, enter up to four new formulas to create new cutoff groups (refer to Section 8.2.4.1, Configuring Groups and Cutoff Formulas).
4. In Validation, if desired, enter up to five new test validation formulas to use to validate the measurement results (refer to Section 8.2.8, *Programming Rejection/* Validation Formulas).
5. In Standards, if desired, enter new response formulas and concentrations to create a new standard curve and recalculate concentration values (refer to Section 8.2.3.1, Configuring Standards).
6. In Standards, if desired, choose a new Curve fit method to plot a new standard curve and recalculate the concentration values (refer to Section 8.2.3.2, Configuring Standard Curve Parameters).
7. In Standards, if desired, select a new Axis scale to plot the standard curve on a new scale (refer to Section 8.2.3.2, *Configuring Standard Curve Parameters*).

8. When the new parameters have been entered as desired, choose **OK**. The test is automatically recalculated and the new measurement results displayed.
Note: A message may appear stating that the plate data exists (Figure 11-1). Choose **Yes** to overwrite the existing plate data with the recalculated plate data, **No** to enter a new plate ID and save the recalculated plate data as a separate plate, or **Cancel** to cancel any

changes and return to the measurement results of the test.
Figure 11-1. Plate exists message
OR
Choose **Cancel** to cancel any changes and return to the original test measurement results.
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11.4.2 Rejecting Outliers and Recalculating Results
Individual wells may be rejected as outliers. Tests can be recalculated with these outliers eliminated.
Note: Only tests configured in the ELISA module may be recalculated with outliers eliminated; tests configured in the Quantitation module may not.
To reject outliers and recalculate test results:
1. In any measurement results tab that displays well data in plate format, click the well to reject.
2. From the Options menu, choose **Delete Well**.
OR
Right click the well to reject and select **Delete Well**. The selected well is labeled Rejected.
Note: To reject multiple wells simultaneously, click and drag over the wells to be rejected and choose **Delete Well** as described in step 2 above.
3. When all wells to be rejected have been marked as such, on the toolbar, choose **Calculate**. Message appears (Figure 11-20).
Figure 11-20. Message — Are you sure you want to recalculate?
4. Choose **Yes** to recalculate the test measurements.
OR
Choose **No** to cancel the recalculation.
Note: A message appears stating that the plate data exists (Figure 11-1). Choose **Yes** to overwrite the existing plate data with the recalculated plate data, **No** to enter a new plate ID and save the recalculated plate data as a separate plate, or **Cancel** to cancel any changes and return to the original measurement results of the test.
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11.4.3 Restoring Wells Rejected in Prior Calculations
Raw data from wells rejected as outliers is not included in recalculated measurements. However, this raw data has not been deleted from the database and may be restored in future calculations, if desired.
To restore a rejected well:
1. In any measurement results tab that displays well data in plate format, click the well to restore.
Note: Wells can be restored in any test measurement tab that displays well data in plate format. To easily find out which wells have been rejected, view the Plate Layout or Sample-ID display.

2. From the Options menu, choose **Restore Well**.
OR
Right-click the well to restore and choose **Restore Well**. The selected well is labeled Restored.
Note: To restore multiple wells simultaneously, click and drag over the wells to restore and choose **Restore Well** as described in step 2 above.
3. When all wells to be restored have been marked as such, on the toolbar, choose **Calculate**. Message appears (Figure 11-20).
4. Choose **Yes** to recalculate the test measurements.
OR
Choose **No** to cancel the recalculation.
Note: A message may appear stating that the plate data exists (Figure 11-1). Choose **Yes** to overwrite the existing plate data with the recalculated plate data, **No** to enter a new plate ID and save the recalculated plate data as a separate plate, or **Cancel** to cancel any changes and return to the measurement results of the test.

11.5 Printing Measurement Results
A summary of the measurement results can be printed to any connected printer or to a file; for example, a PostScript® or Acrobat® PDF file.
The summary printout includes information about who performed the measurement, when it was performed, and when the results were printed. Figure 11-21 shows how the actual measurement results are laid out on the page. Results for each well are laid out according to the Legend.
Note: The measurement results that are included in the printout are selected in Options when configuring the test definition (refer to Section 8.2.5, *Configuring Test* Options).
Figure 11-21. Test measurement results printout (excerpt)

To print out the measurement results summary:
1. From the Setup menu, select **Print**. Print appears (Figure 11-22).
Figure 11-22. Print
2. In Printer, select the desired printer to use to print the measurement results summary. All printers that are properly installed and configured on the computer are listed.
3. In range, select whether to print **All Tests** or a **Single Test**.
Note: Selecting All Tests is only applicable for Multitest assays.
4. In Test, select the Test to print summary results for.
5. In Options, select the desired **Font,** text **Size**, and number of **Copies**.
Note: Body text is printed in the selected Font and Size. Headlines and headings are printed using formatting defined by the ADAP software.
6. Choose **OK** to print the measurement results summary.
Note: If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The

printed file is saved to the ADAP software home directory.

11.6 Exporting Measurement Results to Other Applications

Measurement results can be exported to other applications for further analysis or manipulation. The ADAP software provides three methods to export test measurement data:

• Data can be copied to the clipboard and pasted into another application such as a word processor (refer to Section 11.6.1, *Copying Measurement Results* to Clipboard).

• Data can be saved to a text file and then opened by or imported into another application (refer to Section 11.6.2, *Saving Measurement Results as Text* Files).

• The entire test measurement database can be exported and opened in Microsoft® Access or a compatible database application (refer to Section 11.6.3, Exporting the Database).

11.6.1 Copying Measurement Results to Clipboard

The measurement results displayed in any tab can be copied to the clipboard. The data in the clipboard can then be pasted into any other application for storage or further analysis.

Note: For example, the clipboard data could be pasted into a Microsoft® Excel spreadsheet with formulas or macros already created such that some preliminary analysis is automatically performed once the data is pasted into the document.

To copy measurement results to the clipboard:

1. Select the desired results tab to copy to the clipboard.

Note: When copying the Raw Data tab, only the measurement results shown for the cycle are copied. To copy all raw data results, each cycle needs to be copied individually, or Copy all data into clipboard needs to be selected.

2. From the Options menu, choose **Copy displayed data into clipboard** to copy only the displayed results to the clipboard.

OR

Choose **Copy all data into clipboard** to copy all measurement results to the clipboard.

3. Open or switch to the application where measurement results will be pasted.
4. Paste the measurement results into a new or existing file using the Paste command for the application.

Note: Most applications have a standard shortcut of CTRL+V assigned to the Paste command.

11.6.2 Saving Measurement Results as Text Files

Measurement results can be saved to text files which can be viewed in any text editor or imported into many statistical software packages or spreadsheet applications.

To save measurement results to a text file:

1. Select the desired results tab to save as a text file.
2. From the Options menu, choose **Save displayed data as TXT** to save only the displayed results as a text file.
OR
From the Options menu, choose **Save all data as TXT** to save all measurement results in one text file.
OR
Select the desired command from the toolbar.
Note: When saving Raw Data to a text file, choosing **Save displayed data as TXT** copies only the cycle or well displayed. To save raw data results for all cycles or wells measured, choose **Save all** data as TXT.
3. Save As appears. Browse to the desired location to save the data.
Note: If the ADAP software is configured in Setup-System to automatically save measurement results as text files, these files may also be opened in a text editor or other application. Refer to Section 3.3, *Configuring System Settings* for information about configuring the ADAP software to automatically save measurement results as text files.

11.6.3 Exporting the Database

To preserve data integrity, all measurement results are stored in a database that can only be accessed by the ADAP software. However, the database can be exported in Microsoft® Access format and opened by Access or a compatible database application.
To export the database:
1. From the Database menu, choose **Export Database**. A copy of the database named PlateDataReplica.mdb is exported to the ADAP software default directory.
2. Choose **OK** when prompted to complete the export.
3. Open PlateDataReplica in Access or a compatible database application.

11.7 Working with Measurement Results Stored in the ADAP Database

The ADAP software automatically saves raw data from all measured plates and cuvettes in a database. Saved data for any measured plate or cuvette can be accessed from the Database menu.
The Database menu contains options to:
• Open or delete saved measurement results (refer to Section 11.7.1, *Opening* or Deleting Measurement Results Stored In the Database).
• Save plate data to the database (refer to Section 11.7.2, *Saving Measurement* Results to the Database).
• Repair the database (refer to Section 11.7.3, *Repairing and Compressing the* Database).
• Compress the database (refer to Section 11.7.3, *Repairing and Compressing* the Database).

11.7.1 Opening or Deleting Measurement Results Stored In the Database

To open or delete measurement results from the database:
1. From the Database menu, select **Open Saved Plate**. Selection appears and displays a list of all the stored plates and cuvettes (Figure 11-23).
Figure 11-23. Selection — stored plates and cuvettes
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2. Select the desired plate or cuvette to open or delete.
Note: To narrow the list by date, select dates in from and to, and choose update list.
To search for a specific plate ID by characters in the Plate ID name, choose **Matchcode** (refer to Section 8.4.1, *Using Matchcode to Search* for Test Definitions Stored In the ADAP Software Database).
3. Choose **OK** to open the measurement results for viewing.
OR
Double-click the desired plate. The measurement results appear in the main window.
OR
Choose **Delete** to remove the measurement results for the selected plate or cuvette from the database.
11.7.2 Saving Measurement Results to the Database
Raw data of measured plates and cuvettes is automatically saved to the database when a measurement is complete. Measurement results can also be saved to the database manually or to a text file outside the database.
To save measurement results to the database:
From the Database menu, choose **Save Actual Data**. The plate data is saved to the database.
To save measurement results as a text file separate from the database:
From the Database menu, choose **Save as TXT-File**. The measurement results are saved as a text file that is separate from the database and can be opened by many applications such as text editors, word processors, and spreadsheets.
11.7.3 Repairing and Compressing the Database
When measurement results or test definitions are removed from the database, only the data is deleted from the fields. The empty data fields remain, which increases the size of the database, which may slow down access. Periodically, it is recommended to remove empty fields using Compress Database. Repair Database removes unassigned entries from the database before compressing it.
To repair or compress the database:
From the Database menu, choose **Repair Database** to remove unassigned entries and empty fields. The database is repaired.
OR
From the Database menu, select **Compress Database** to remove empty fields. The database is compressed.
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12-1
Running Cuvette Applications
12.1 Overview

Note: A valid license code for the ADAP Prisma software is required to access the functions covered in this chapter. Refer to Section 1.3, *Launching the ADAP Software* for information about license codes.

The ADAP software provides a set of predefined cuvette applications. All nine applications are configured and run from the Applications tab in the Quantitation Module Test Definition (Figure 12-1). All authorized users may configure and perform cuvette applications.

Figure 12-1. Cuvette Applications

To configure, run, and view measurement results for a cuvette application:

• Open the Applications tab, choose the desired application, and configure Application Parameters (refer to Section 12.2, *Configuring Cuvette Applications*).

• Run the application (refer to Section 12.3, *Running Cuvette Applications*).

• View the measurement results (refer to Section 12.4, *Viewing Cuvette Application Measurement Results*).

12.2 Configuring Cuvette Applications

Cuvette applications are selected, configured, and run from the Applications tab in Quantitation Module Test Definition.

To open the Applications tab:

1. From the toolbar, toggle the Elisa/Quantitation selection button to **Quantitation**, if necessary.
2. From the Setup menu, choose **Test Definition**.

OR

From the toolbar, choose **Create/Edit Calculation**. Quantitation Module Test Definition appears (Figure 12-2).

Note: For users with User Level 1 access, Quantitation Module Test Definition opens with only the Applications tab visible. For users with higher access levels, Quantitation Module Test Definition opens to the General tab.

Figure 12-2. Quantitation Module Test Definition

3. If the General tab is displayed, choose the **Applications** tab to configure cuvette applications.

Applications tab

4. Choose the desired Application and configure Application Parameters following the steps listed in its respective section:

• Cell counting (refer to Section 12.2.1, *Configuring a Cell Counting Cuvette Application*).

• DNA — Concentration and Purity (refer to Section 12.2.2, *Configuring a DNA — Concentration and Purity Cuvette Application*).

• DNA — Oligo Long Concentration Melting Point (refer to Section 12.2.3, Configuring a DNA — Oligo Long Concentration Melting Point Cuvette

Application).
• DNA — Oligo Short Concentration Melting Point (refer to Section 12.2.4, Configuring a DNA — Oligo Short Concentration Melting Point Cuvette Application).
• DNA — pure dsDNA Concentration (refer to Section 12.2.5, *Configuring* a DNA — Pure dsDNA Concentration Cuvette Application).
• DNA — pure ssDNA Concentration (refer to Section 12.2.6, *Configuring* a DNA — Pure ssDNA Concentration Cuvette Application).
• UV-Quantitation Protein (refer to Section 12.2.7, *Configuring a UVQuantitation* Protein Cuvette Application).
• RNA — Oligo Concentration (refer to Section 12.2.8, *Configuring an RNA* — Oligo Concentration Cuvette Application).
• RNA — pure RNA Concentration (refer to Section 12.2.9, *Configuring an* RNA — Pure RNA Concentration Cuvette Application).
Note: To perform cuvette applications on a standalone Zenyth 200st using the ADAP software, put the instrument in Remote Control mode. Refer to the instrument user's manual for more information about Remote Control mode.

12.2.1 Configuring a Cell Counting Cuvette Application

The cell counting cuvette application is useful for monitoring the growth of bacterial cultures. An absorbance measurement is made at 600 nm. The measurement value is multiplied by a dilution factor and conversion factor to determine the concentration of cells per ml.
To configure the cell counting cuvette application:
1. Open the Applications tab following the steps in Section 12.2, *Configuring* Cuvette Applications
2. In the Applications pane, if a + appears to the left of Cells, choose the **+** or **Cells** to open the tree view. Cell counting appears under Cells.
3. Choose **Cell counting**. Application Parameters displays parameters that can be configured and information about the application (Figure 12-3).
Figure 12-3. Cell counting cuvette application

4. In Application Parameters enter a **Sample Count**.
Note: Up to 50 cuvette samples may be measured in a single cuvette application.
5. Enter a new **Dilution Factor**, if desired.
Note: The dilution factor specifies the dilution of the samples measured, which the ADAP software uses to calculate the concentration of an undiluted sample.
Note: The dilution factor is the same for all samples run in a measurement.
6. Enter a new **Conversion factor**, if desired.
Note: The conversion factor is multiplied by the absorbance measurement and dilution factor to calculate the concentration of cells

per ml.
Note: The default conversion factor is 5*10^8 (5x108). Use this format for exponential notation.
7. Follow the steps in Section 12.3, *Running Cuvette Applications* to start the application.
Note: Refer to Section 12.4.1, Viewing Cell Counting Measurement Results, for information about how measurement results for this application are reported.

12.2.2 Configuring a DNA — Concentration and Purity Cuvette Application

The DNA — Concentration and Purity cuvette application measures the approximate purity of nucleic acid preparations by calculating the ratio between absorbance at 260 nm and 280 nm. Pure DNA preparations have ratios of about 1.8; pure RNA preparations have ratios of about 2.0. If desired, background correction may be applied to measurements.
To configure the DNA — Concentration and Purity cuvette application:
1. Open the Applications tab following the steps in Section 12.2, *Configuring* Cuvette Applications
2. In the Applications pane, if a + appears to the left of DNA, choose the **+** or **DNA** to open the tree view. Concentration and Purity appears in the list under DNA.
3. Choose **Concentration and Purity**. Application Parameters displays parameters that can be configured and information about the application (Figure 12-4).
Figure 12-4. DNA — Concentration and Purity cuvette application

4. In Application Parameters enter a **Sample Count**.
Note: Up to 50 cuvette samples may be measured in a single cuvette application.
5. Enter a new **Dilution Factor**, if desired.
Note: The dilution factor specifies the dilution of the samples measured, which the ADAP software uses to calculate the concentration of an undiluted sample.
Note: The dilution factor is the same for all samples run in a measurement.
6. Select **Background Correction**, if desired.
Note: Background Correction performs a third measurement at 320 nm. This value is subtracted from the 260 nm and 280 nm values before the ratio between them is calculated.
7. Follow the steps in Section 12.3, *Running Cuvette Applications* to start the application.
Note: Refer to Section 12.4.2, Viewing DNA — Concentration and Purity *Measurement Results*, for information about how measurement results for this application are reported.

12.2.3 Configuring a DNA — Oligo Long Concentration Melting Point Cuvette Application

The DNA — Oligo Long Concentration Melting Point cuvette application calculates the concentration and melting point of oligos with base sequences containing a minimum of 25 base pairs. If desired, background correction and a salt factor may be applied to measurements.

Note: Use the DNA — Oligo Short Concentration Melting Point cuvette application to calculate concentration and melting points of oligos with base sequences containing fewer than 25 base pairs (refer to Section 12.2.4, *Configuring a DNA — Oligo Short Concentration Melting Point Cuvette Application*).

To configure the DNA — Oligo Long Concentration Melting Point cuvette application:

1. Open the Applications tab following the steps in Section 12.2, *Configuring Cuvette Applications*
2. In the Applications pane, if a + appears to the left of DNA, choose the **+** or **DNA** to open the tree view. Oligo Long Concentration Melting Point appears in the list under DNA.
3. Choose Oligo Long Concentration Melting Point. Application Parameters displays parameters that can be configured and information about the application (Figure 12-5).

Figure 12-5. DNA — Oligo Long Concentration Melting Point cuvette application

4. In Application Parameters enter a **Sample Count**.

Note: Up to 50 cuvette samples may be measured in a single cuvette application.

5. Enter a new **Dilution Factor**, if desired.

Note: The dilution factor specifies the dilution of the samples measured, which the ADAP software uses to calculate the concentration of an undiluted sample.

Note: The dilution factor is the same for all samples run in a measurement.

6. Enter the **Base Sequence** of the oligo; for example, **ctagctgtagtcgatcgattagatgcgca**. The base sequence must contain a minimum of 25 base pairs.

Note: Use the DNA — Oligo Short Concentration Melting Point cuvette application to calculate concentration and melting points on oligos with base sequences containing fewer than 25 base pairs (refer to Section 12.2.4, Configuring a DNA — Oligo Short Concentration Melting Point Cuvette Application).

7. Enter a new **Salt factor**, if desired.

Note: The salt factor compensates for the salinity of the DNA solution. The default salt factor is 10.

8. Select **Background correction**, if desired.

Note: Background Correction performs a second measurement at 320 nm. This value is subtracted from the 260 nm measurement value

before calculating the final measurement results.
9. Follow the steps in Section 12.3, *Running Cuvette Applications* to start the application.
Note: Refer to Section 12.4.3, Viewing DNA and RNA Oligo Measurement Results, for information about how measurement results for this application are reported.

12.2.4 Configuring a DNA — Oligo Short Concentration Melting Point Cuvette Application

The DNA — Oligo Short Concentration Melting Point cuvette application calculates the concentration and melting point of oligos with base sequences containing fewer than 25 base pairs. If desired, background correction and a salt factor may be applied to measurements.
Note: Use the DNA — Oligo Long Concentration Melting Point cuvette application to calculate concentration and melting points of oligos with base sequences containing 25 or more base pairs (refer to Section 12.2.3, *Configuring a DNA — Oligo Long Concentration Melting Point Cuvette Application*).
To configure the DNA — Oligo Short Concentration Melting Point cuvette application:
1. Open the Applications tab following the steps in Section 12.2, *Configuring Cuvette Applications*
2. In the Applications pane, if a + appears to the left of DNA, choose the **+** or **DNA** to open the tree view. Oligo Short Concentration Melting Point appears in the list under DNA.
3. Choose Oligo Short Concentration Melting Point. Application Parameters displays parameters that can be configured and information about the application (Figure 12-6).
Figure 12-6. DNA — Oligo Short Concentration Melting Point cuvette application

4. In Application Parameters enter a **Sample Count**.
Note: Up to 50 cuvette samples may be measured in a single cuvette application.
5. Enter a new **Dilution Factor**, if desired.
Note: The dilution factor specifies the dilution of the samples measured, which the ADAP software uses to calculate the concentration of an undiluted sample.
Note: The dilution factor is the same for all samples run in a measurement.
6. Enter the **Base Sequence** of the oligo; for example, **agctagctagctagctagct**. The base sequence must contain a fewer than 25 base pairs.
Note: Use the DNA — Oligo Long Concentration Melting Point cuvette application to calculate concentration and melting points on oligos with base sequences containing 25 or more base pairs (refer to Section 12.2.3, Configuring a DNA — Oligo Long Concentration Melting Point Cuvette Application).

7. Enter a new **Salt factor**, if desired.
Note: The salt factor compensates for the salinity of the DNA solution. The default salt factor is 10.
8. Select **Background correction**, if desired.
Note: Background Correction performs a second measurement at 320 nm. This value is subtracted from the 260 nm measurement value before calculating the final measurement results.
9. Follow the steps in Section 12.3, *Running Cuvette Applications* to start the application.
Note: Refer to Section 12.4.3, Viewing DNA and RNA Oligo Measurement Results, for information about how measurement results for this application are reported.
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12.2.5 Configuring a DNA — Pure dsDNA Concentration Cuvette Application
The DNA — Pure dsDNA Concentration cuvette application measures nucleic acid concentrations of dsDNA by performing a measurement at 260 nm, and then multiplying the measurement value by a conversion factor and a dilution factor. If desired, background correction may be applied to measurements.
To configure the DNA — Pure dsDNA Concentration cuvette application:
1. Open the Applications tab following the steps in Section 12.2, *Configuring* Cuvette Applications.
2. In the Applications pane, if a + appears to the left of DNA, choose the **+** or **DNA** to open the tree view. pure dsDNA Concentration appears in the list under DNA.
3. Choose **pure dsDNA Concentration**. Application Parameters displays parameters that can be configured and information about the application (Figure 12-7).
Figure 12-7. DNA — Pure dsDNA Concentration cuvette application
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4. In Application Parameters enter a **Sample Count**.
Note: Up to 50 cuvette samples may be measured in a single cuvette application.
5. Enter a new **Dilution Factor**, if desired.
Note: The dilution factor specifies the dilution of the samples measured, which the ADAP software uses to calculate the concentration of an undiluted sample.
Note: The dilution factor is the same for all samples run in a measurement.
6. Enter a new **Conversion Factor**, if desired.
Note: The default conversion factor is 50.
7. Select **Background correction**, if desired.
Note: Background Correction performs a second measurement at 320 nm. This value is subtracted from the 260 nm measurement value before calculating the final measurement results.
8. Follow the steps in Section 12.3, *Running Cuvette Applications* to start the

application.
Note: Refer to Section 12.4.4, Viewing Pure dsDNA, ssDNA, and RNA *Concentration Measurement Results*, for information about how measurement results for this application are reported.

12.2.6 Configuring a DNA — Pure ssDNA Concentration Cuvette Application
The DNA — Pure ssDNA Concentration cuvette application measures nucleic acid concentrations of ssDNA by performing a measurement at 260 nm, and then multiplying the measurement value by a conversion factor and a dilution factor. If desired, background correction may be applied to measurements.
To configure the DNA — Pure ssDNA Concentration cuvette application:
1. Open the Applications tab following the steps in Section 12.2, *Configuring* Cuvette Applications
2. In the Applications pane, if a + appears to the left of DNA, choose the **+** or **DNA** to open the tree view. Pure ssDNA Concentration appears in the list under DNA.
3. Choose **Pure ssDNA Concentration**. Application Parameters displays parameters that can be configured and information about the application (Figure 12-8).
Figure 12-8. DNA — Pure ssDNA Concentration cuvette application

4. In Application Parameters enter a **Sample Count**.
Note: Up to 50 cuvette samples may be measured in a single cuvette application.
5. Enter a new **Dilution Factor**, if desired.
Note: The dilution factor specifies the dilution of the samples measured, which the ADAP software uses to calculate the concentration of an undiluted sample.
Note: The dilution factor is the same for all samples run in a measurement.
6. Enter a new **Conversion Factor**, if desired.
Note: The default conversion factor is 37.
7. Select **Background correction**, if desired.
Note: Background Correction performs a second measurement at 320 nm. This value is subtracted from the 260 nm measurement value before calculating the final measurement results.
8. Follow the steps in Section 12.3, *Running Cuvette Applications* to start the application.
Note: Refer to Section 12.4.4, Viewing Pure dsDNA, ssDNA, and RNA *Concentration Measurement Results*, for information about how measurement results for this application are reported.

12.2.7 Configuring a UV-Quantitation Protein

Cuvette Application

The UV-Quantitation Protein cuvette application calculates protein concentrations in nucleic acid backgrounds such as crude cell extracts. The application performs measurements at 260 and 280 nm. A background reading is made at 320 nm, and is subtracted from both measurements. Two conversion factors are required—one for each measurement result—and multiplied by the measurement results.

To configure the UV-Quantitation Protein application:

1. Open the Applications tab following the steps in Section 12.2, *Configuring* Cuvette Applications

1. In the Applications pane, if a + appears to the left of Protein, choose the **+** or **Protein** to open the tree view. UV-Quantitation Protein appears under Protein.
2. Choose **UV-Quantitation Protein**. Application Parameters displays parameters that can be configured and information about the application (Figure 12-9).

Figure 12-9. UV-Quantitation Protein cuvette application

3. In Application Parameters enter a **Sample Count**.

Note: Up to 50 cuvette samples may be measured in a single cuvette application.

4. Enter a new **Dilution Factor**, if desired.

Note: The dilution factor specifies the dilution of the samples measured, which the ADAP software uses to calculate the concentration of an undiluted sample.

Note: The dilution factor is the same for all samples run in a measurement.

5. Enter a new **Conversion factor 1**, if desired.

Note: The default value for conversion factor 1 is 1.55.

6. Enter a new **Conversion factor 2**, if desired.

Note: The default value for conversion factor 2 is 0.76.

7. Follow the steps in Section 12.3, *Running Cuvette Applications* to start the application.

Note: Refer to Section 12.4.5, Viewing UV-Quantitation Protein Measurement *Results*, for information about how measurement results for this application are reported.

12.2.8 Configuring an RNA — Oligo Concentration Cuvette Application

The RNA — Oligo Concentration cuvette application calculates the concentration of oligos. If desired, background correction may be applied to measurements.

To configure the RNA — Oligo Concentration cuvette application:

1. Open the Applications tab following the steps in Section 12.2, *Configuring* Cuvette Applications

2. In the Applications pane, if a + appears to the left of RNA, choose the **+** or **RNA** to open the tree view. Oligo Concentration appears in the list under RNA.
3. Choose **Oligo Concentration**. Application Parameters displays parameters

that can be configured and information about the application (Figure 12-10).
Figure 12-10. RNA — Oligo Concentration cuvette application

4. In Application Parameters enter a **Sample Count**.
Note: Up to 50 cuvette samples may be measured in a single cuvette application.
5. Enter a new **Dilution Factor**, if desired.
Note: The dilution factor specifies the dilution of the samples measured, which the ADAP software uses to calculate the concentration of an undiluted sample.
Note: The dilution factor is the same for all samples run in a measurement.
6. Enter the **Base Sequence** of the oligo; for example, **acgacgacuuacgacagc**.
7. Select **Background correction**, if desired.
Note: Background Correction performs a second measurement at 320 nm. This value is subtracted from the 260 nm measurement value before calculating the final measurement results.
8. Follow the steps in Section 12.3, *Running Cuvette Applications* to start the application.
Note: Refer to Section 12.4.3, Viewing DNA and RNA Oligo Measurement Results, for information about how measurement results for this application are reported.

12.2.9 Configuring an RNA — Pure RNA Concentration Cuvette Application
The RNA — Pure RNA Concentration cuvette application measures nucleic acid concentrations of RNA by performing a measurement at 260 nm, and then multiplying the measurement value by a conversion factor and a dilution factor. If desired, background correction may be applied to measurements.
To configure the RNA — Pure RNA Concentration cuvette application:
1. Open the Applications tab following the steps in Section 12.2, *Configuring* Cuvette Applications.
2. In the Applications pane, if a + appears to the left of RNA, choose the **+** or **RNA** to open the tree view. Pure RNA Concentration appears in the list under RNA.
3. Choose **Pure RNA Concentration**. Application Parameters displays parameters that can be configured and information about the application (Figure 12-11).
Figure 12-11. RNA — Pure RNA Concentration cuvette application

4. In Application Parameters enter a **Sample Count**.
Note: Up to 50 cuvette samples may be measured in a single cuvette application.
5. Enter a new **Dilution Factor**, if desired.
Note: The dilution factor specifies the dilution of the samples measured, which the ADAP software uses to calculate the concentration

of an undiluted sample.
Note: The dilution factor is the same for all samples run in a measurement.
6. Enter a new **Conversion Factor**, if desired.
Note: The default conversion factor is 40.
7. Select **Background correction**, if desired.
Note: Background Correction performs a second measurement at 320. This value is subtracted from the 260 nm measurement value before calculating the final measurement results.
8. Follow the steps in Section 12.3, *Running Cuvette Applications* to start the application.
Note: Refer to Section 12.4.4, Viewing Pure dsDNA, ssDNA, and RNA *Concentration Measurement Results*, for information about how measurement results for this application are reported.
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12.3 Running Cuvette Applications
Cuvette samples are manually loaded into the cuvette holder at the back of the instrument *after* the cuvette application is configured and the light output from the lamp has stabilized.
Running cuvette measurements is controlled from Cuvette Reading, which includes options to perform blank measurements and re-read samples. When the measurement is complete, the results are previewed in Cuvette Reading.
Note: Refer to Section 12.3.1, *Reading Cuvette Blank Samples* for more information about reading blank samples.
To run a cuvette application:
1. After configuring the Application Parameters, in the Applications tab, choose **Run Application** (Figure 12-12). Cuvette Reading appears (Figure 12-13).
Figure 12-12. Applications tab
Run Application
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2. In Samples to read, select the sample ID for the first sample to read.
Note: Action provides instructional prompts throughout the reading.
Note: Do not insert the cuvette into the cuvette holder until prompted.
Note: The instrument can be initialized by choosing **Initialize Instrument** from the Option menu. Refer to Table 4-1 for more information about initializing the instrument.
Figure 12-13. Cuvette Reading — Select sample to read
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3. Choose **Read** to start the measurement. Before inserting the cuvette into the cuvette holder, allow the instrument to initialize and stabilize the light output of the lamp (Figure 12-14). Place Cuvette appears in Action when the cuvette may be loaded.
Note: To perform a blank measurement before reading cuvette samples, refer to Section 12.3.1, *Reading Cuvette Blank Samples*.

Note: Time left displays the time remaining until lamp stabilization is complete. Lamp stabilization may take up to 60 seconds.
After 10 minutes of inactivity, the Zenyth 200 automatically turns the lamp off. The next cuvette measurement performed will require the maximum 60-second lamp stabilization time.
Figure 12-14. Cuvette Reading — Lamp stabilization
4. When lamp stabilization is complete, insert the cuvette into the cuvette holder within 20 seconds (Figure 12-15). The measurement begins automatically.

5. When Place Cuvette appears in Action, insert the cuvette into the cuvette holder with the clear sides facing the left and right sides of the instrument (Figure 12-15). The measurement begins automatically once the cuvette is loaded.
Note: For all types of measurements except kinetic, the cuvette must be placed in the holder within 20 seconds after Place Cuvette appears.
Time left displays the time remaining to insert the cuvette. If the 20 seconds expires before the cuvette is inserted in the cuvette holder, the error, Bright measurement not valid any longer, appears. Choose **Read** to perform a new lamp stabilization.
Note: The cuvette holder door does not need to be closed during the measurement. Refer to the instrument user manual for more details on inserting cuvettes into the cuvette holder.
Note: Choose Stop Measurement or File>Cancel to cancel an application in progress.
Figure 12-15. Cuvette Reading — Place Cuvette

6. When the measurement is complete, remove the cuvette. Samples Read displays sample IDs and the status of the measurement: OK or Error. The OD measured is displayed in Actual Value (Figure 12-16).
Figure 12-16. Cuvette Reading — endpoint results with Actual Value
7. In Samples to read, select the next sample to read and repeat steps 3 – 6 to perform the cuvette application again.
Note: The number of samples to read is entered in Sample Count in the Applications tab.
OR
If desired, in Samples read, select a sample, choose **Reread**, and repeat steps 4 and 6 to perform the cuvette application on that sample again.
OR
From the File menu, choose **End** to close Cuvette Reading and save the measurement results. Plate-ID appears (Figure 12-17).
Figure 12-17. Plate-ID for a cuvette measurement
Actual Value
Displays OD after an endpoint measurement.

8. In Input Plate-ID, rename the measurement results, if desired.
9. Choose **OK** to save the measurement results to the database.
Note: The default name format for saved cuvette measurements is YYYYMMDDNc, where YYYY is the year, MM the month, DD the day, N the number of the measurement made that day, and c denotes cuvette.
Note: Refer to Section 12.4, Viewing Cuvette Application Measurement Results for information about how measurement results are reported.

12.3.1 Reading Cuvette Blank Samples
A blank sample may be run before running the cuvette application on samples. The blank value is subtracted from the measurement results for subsequent samples measured in the cuvette application.
Note: If desired, a new blank sample can be read at any point during a cuvette application. The new blank value is then subtracted from subsequent measurements.
To read a blank sample:
1. Choose **Read Blank**. Before inserting the blank sample into the cuvette holder, the instrument must stabilize the light output of the lamp.
Note: Time left displays the time remaining until lamp stabilization is complete. Lamp stabilization may take up to 60 seconds.
Figure 12-18. Cuvette Reading — Lamp stabilization time

2. When Place Cuvette appears in Action, insert the cuvette into the cuvette holder with the clear sides facing the left and right sides of the instrument. The blank measurement begins automatically once the cuvette is loaded.
Note: For all types of measurements except kinetic, the cuvette must be placed in the holder within 20 seconds after Place Cuvette appears. Time left displays the time remaining to insert the cuvette. If the 20 seconds expires before the cuvette is inserted in the cuvette holder, the error, Bright measurement not valid any longer, appears. Choose **Read Blank** to perform a new lamp stabilization.
Note: The cuvette holder door does not need to be closed during the measurement. Refer to the instrument user manual for more details on inserting cuvettes into the cuvette holder.
Note: Choose **Stop Measurement** to cancel a blank measurement in progress.
3. When the blank measurement is complete, remove the cuvette. The blank value obtained will be automatically subtracted from following cuvette measurements.
Note: *Blank Active* is displayed onscreen when a blank measurement is being used in the calculation of measurement results.
4. To perform measurements on cuvette samples and save the measurement results, follow steps 2–8 in Section 6.4, Running and Saving Quick Measurements on Cuvette Samples.

12.4 Viewing Cuvette Application Measurement

Results
After measurements are performed on all samples in a cuvette application, the measurement results are displayed in a series of tabs in the ADAP software main window. The tabs displayed vary depending on which cuvette application was performed:
• Cell Counting — Displays OD, Info-Calc, Result-List, and Status (refer to Section 12.4.1, Viewing Cell Counting Measurement Results)
• DNA Concentration and Purity — Displays Status, Graphic, Info-Calc, Result-List, and Curve Info (refer to Section 12.4.2, *Viewing DNA — Concentration and Purity Measurement Results*).
• DNA and RNA Oligo — Displays OD, Info-Calc, Result-List, and Status (refer to Section 12.4.3, Viewing DNA and RNA Oligo Measurement Results).
• Pure dsDNA, ssDNA, and RNA Concentration — Displays OD, Info-Calc, Result-List, and Status (refer to Section 12.4.4, *Viewing Pure dsDNA,* ssDNA, and RNA Concentration Measurement Results).
• UV-Quantitation Protein — Displays Status, Graphic, Info-Calc, Result-List, and Curve Info (refer to Section 12.4.5, *Viewing UV-Quantitation* Protein Measurement Results).
This chapter covers only tabs that present information unique to cuvette applications. Tabs that appear identical to Quick or test measurement results are covered in detail in Chapter 7, Viewing Quick Measurement Results, and Chapter 11, Viewing Test and Multitest Assay Measurement Results.
Cuvette application measurement results are stored in the ADAP software database and may be:
• Printed to view and store a hard copy (refer to Section 11.5, *Printing* Measurement Results).
• Exported to view in another application (refer to Section 11.6, *Exporting* Measurement Results to Other Applications).
• Opened for viewing at any time (refer to Section 11.7, *Working with* Measurement Results Stored in the ADAP Database).

12.4.1 Viewing Cell Counting Measurement Results
Measurement results for the cell counting cuvette application are displayed in four tabs:
• OD — Displays the optical density for each sample measured (refer to Section 7.3.1.1, Viewing Optical Density (OD) Measurement Results).
• Info-Calc — Displays a summary of each step performed in the cuvette application and indicates the success or failure of each step (refer to Section 11.2.10, Viewing Test Status Information).
• Result-List — Displays a summary of the data evaluated by the application, including parameters and measurement results (refer to Section 12.4.1.1, Viewing the Result-List For the Cell Counting Cuvette Application).
• Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.3,

Viewing Sample Status).

12.4.1.1 Viewing the Result-List For the Cell Counting Cuvette Application

Result-List displays a summary of data evaluated by the cell counting cuvette application, including parameters and measurement results (Figure 12-19).

Figure 12-19. Result-List for the cell counting cuvette application

12.4.2 Viewing DNA — Concentration and Purity Measurement Results

Measurement results for the cell counting cuvette application are displayed in five tabs:

• Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.3, Viewing Sample Status).

• Graphic — Displays graphs of measurement results for each sample measured (refer to Section 7.3.3.2, Viewing Multiwavelength Measurement Graphs).

• Info-Calc — Displays a summary of each step performed in the cuvette application and indicates the success or failure of each step (refer to Section 11.2.10, Viewing Test Status Information).

• Result-List — Displays a summary of the data evaluated by the application, including parameters and measurement results (refer to Section 12.4.2.1, Viewing the Result-List For the DNA — Concentration and Purity Cuvette Application).

• Curve Info — Displays detailed information about the curve, including peak and valley data. Optical density and percentage transmission values for samples at each wavelength measured are also displayed (refer to Section 12.4.2.2, Viewing Curve Info For the DNA — Concentration and Purity Cuvette Application).

12.4.2.1 Viewing the Result-List For the DNA — Concentration and Purity Cuvette Application

Result-List displays a summary of data evaluated by the DNA — Concentration and Purity cuvette application, including parameters and measurement results (Figure 12-20).

Figure 12-20. Result-List for the DNA — Concentration and Purity cuvette application

Note: Formulas used in calculations:

DNA concentration = abs(260-320)*62.9 +abs(280-320)*-36.0

protein concentration = abs(260-320) *-757.29 + abs(280-320)*1552

Warburg, O., Christian, W. (1941). *Biochem.* Z. 310, 384.

12.4.2.2 Viewing Curve Info For the DNA — Concentration and Purity Cuvette Application

Curve Info displays detailed information about the curve, including peak and valley data. Optical density and percentage transmission values for samples at each wavelength measured are also displayed (Figure 12-21).
Figure 12-21. Curve Info for the DNA — Concentration and Purity cuvette application
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12.4.3 Viewing DNA and RNA Oligo Measurement Results
Measurement results for the DNA and RNA oligo cuvette applications are displayed in four tabs:
• OD — Displays the optical density for each sample measured (refer to Section 7.3.1.1, Viewing Optical Density (OD) Measurement Results).
• Info-Calc — Displays a summary of each step performed in the cuvette application and indicates the success or failure of each step (refer to Section 11.2.10, Viewing Test Status Information).
• Result-List — Displays a summary of the data evaluated by the application, including parameters and measurement results (refer to Section 12.4.3.1, Viewing the Result-List For DNA and RNA Oligo Cuvette Applications).
• Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.3, Viewing Sample Status).
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12.4.3.1 Viewing the Result-List For DNA and RNA Oligo Cuvette Applications
Result-List displays a summary of data evaluated by the DNA and RNA oligo cuvette applications, including parameters and measurement results (Figure 12-22).
Figure 12-22. Result-List for DNA and RNA oligo cuvette applications
Note: Formulas used in calculations:
Molecular Weight:
DNA: MW= (#A*312.2)+(#C*288.2)+(#G*328.2)+(#T*303.2)-61
RNA: MW= (#A*312.2)+(#C*288.2)+(#G*328.2)+(#U*289.2)-61
Molar Extinction Coefficient: (ε): liter/mole/cm
DNA:ε = (#A*15480)+(#C*7340)+(#G*11760)+(#T*8850) liter/mole/cm
RNA: ε = (#A*15480)+(#C*7340)+(#G*11760)+(#U*9000) liter/mole/cm
Concentration = A/ε* 106 pmole/µl=(µg/ml) *(1000)/MW
Concentration = A/ε* MW*103µg/ml= (pmol/µl)*(MW)/1000
Fasman, G. D., ed. (1975). Sequence: See optical properties of nucleic acids, absorption, and circular dichroism spectra, *CRC Handbook of Biochemistry* and Molecular Biology 3rd Edition, Nucleic Acids: Volume I. (p. 589). CRC Press.
Melting Point (DNA oligo long)
TM = 81.5 +16.6 log10[Na] + 0.41(%GC)-600/size
Bolton, E. and McCarthy, B.J. (1962). *PNAS* 48:139-1397.
Melting Point (DNA oligo short)
TM = (#A+#T)*2+(#G+#C)*4=°C

Melting Point
Appears only in DNA
oligo results
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12.4.4 Viewing Pure dsDNA, ssDNA, and RNA
Concentration Measurement Results
Measurement results for the Pure dsDNA, ssDNA, and RNA Concentration Measurement cuvette applications are displayed in four tabs:
• OD — Displays the optical density for each sample measured (refer to Section 7.3.1.1, Viewing Optical Density (OD) Measurement Results).
• Info-Calc — Displays a summary of each step performed in the cuvette application and indicates the success or failure of each step (refer to Section 11.2.10, Viewing Test Status Information).
• Result-List — Displays a summary of the data evaluated by the application, including parameters and measurement results (refer to Section 12.4.4.1, Viewing the Result-List For dsDNA, ssDNA, and RNA Concentration Measurement Cuvette Applications).
• Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.3, Viewing Sample Status).
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12.4.4.1 Viewing the Result-List For dsDNA, ssDNA,
and RNA Concentration Measurement Cuvette
Applications
Result-List displays a summary of data evaluated by the DNA and RNA oligo cuvette applications, including parameters and measurement results (Figure 12-23).
Figure 12-23. Result-List for Pure dsDNA, ssDNA,
and RNA Concentration cuvette applications
Note: Formulas used in calculations:
Pure ssDNA Concentration:
OD value x 37 = ssDNA in µg/ml
Pure dsDNA Concentration:
OD value x 50 = dsDNA in µg/ml
Pure RNA Concentration:
OD value x 37 = RNA in µg/ml
Maniatis, T., Fritch, E. F., Sambrook, J. (1989). *Molecular cloning: A* laboratory handbook (p. 3).
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12.4.5 Viewing UV-Quantitation Protein
Measurement Results
Measurement results for the UV-Quantitation Protein cuvette application are displayed in five tabs:
• Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.3,

Viewing Sample Status).
• Graphic — Displays graphs of measurement results for each sample measured (refer to Section 7.3.3.2, Viewing Multiwavelength Measurement Graphs).
• Info-Calc — Displays a summary of each step performed in the cuvette application and indicates the success or failure of each step (refer to Section 11.2.10, Viewing Test Status Information).
• Result-List — Displays a summary of the data evaluated by the application, including parameters and measurement results (refer to Section 12.4.5.1, Viewing the Result-List For the UV-Quantitation Protein Cuvette Application).
• Curve Info — Displays detailed information about the curve, including peak and valley data. Optical density and percentage transmission values for samples at each wavelength measured are also displayed (refer to Section 12.4.5.2, Viewing Curve Info For the UV-Quantitation Protein Cuvette Application).
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12.4.5.1 Viewing the Result-List For the UV-Quantitation Protein Cuvette Application
Result-List displays a summary of data evaluated by the UV-Quantitation Protein cuvette application, including parameters and measurement results (Figure 12-24).
Figure 12-24. Result-List for the UV-Quantitation Protein cuvette application
Note: Source for formulas used in calculations: Warburg, O., Christian, W. (1941). *Biochem.* Z. 310, 384.
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12.4.5.2 Viewing Curve Info For the UV-Quantitation Protein Cuvette Application
Curve Info displays detailed information about the curve, including peak and valley data. Optical density and percentage transmission values for samples at each wavelength measured are also displayed (Figure 12-25).
Figure 12-25. Curve Info for the UV-Quantitation Protein cuvette application
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