

AbraScan Test Strip Reader

Digital Reading of Test Strips for the Determination of Cyanotoxins in Contaminated Water Samples

Product No. 475025

1. General Description

The AbraScan RDS-1500 Test Strip Reader is a second generation digital test strip interpretation device used with the Abraxis Cyanotoxin Strip Test Kits. The reader provides a digital photographic record of the test strips and an objective analysis and interpretation of line intensities. Used in combination, the reader and test strips provide semi-quantitative and/or qualitative evaluation of Microcystins in contaminated water samples. Positive samples should be confirmed by HPLC, GCMS, or other conventional methods.

2. Reader Features

The AbraScan RDS-1500 Test Strip Reader has a color touchscreen interface and a rugged IP67-compliant design and features a rechargeable internal lithium-ion battery, expandable SD card memory, and WiFi and printer connectivity options.

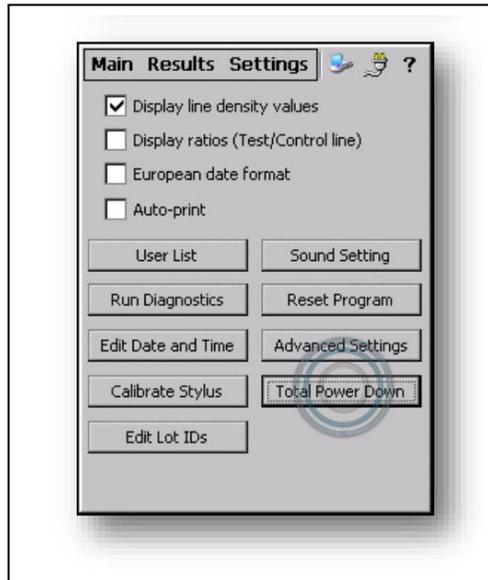


3. Materials Provided

- 3.1 AbraScan RDS-1500 Test Strip Reader
- 3.2 USB Data Connection Cable
- 3.3 Power Supply Adapter
- 3.4 Test Strip Cartridge Adapter
- 3.5 Data Manager Software
- 3.6 Calibration Cartridge

4. Reader Charging

- 4.1 Plug the power cord connector into the port on the USB cable.
- 4.2 Attach the USB cable to the reader.
- 4.3 Plug the power cord into the power source.
Note: Please ensure that the reader is allowed to fully charge for 2 hours prior to first use.
- 4.4 When the battery is fully drained, all data and settings will be preserved, however, upon startup the user will be prompted to reset the date and time if the reader was without power for an extended period.
- 4.5 For peak battery life and performance, it is recommended to use the Total Power Down feature to shut off the device at the end of each testing session. Total Power Down exits all programs, conserving battery life and ensuring that the unit recalibrates upon startup.
 - 4.5.1 From the User Control Menu located at the top of the screen, select **Settings**.
 - 4.5.2 Select **Total Power Down**.



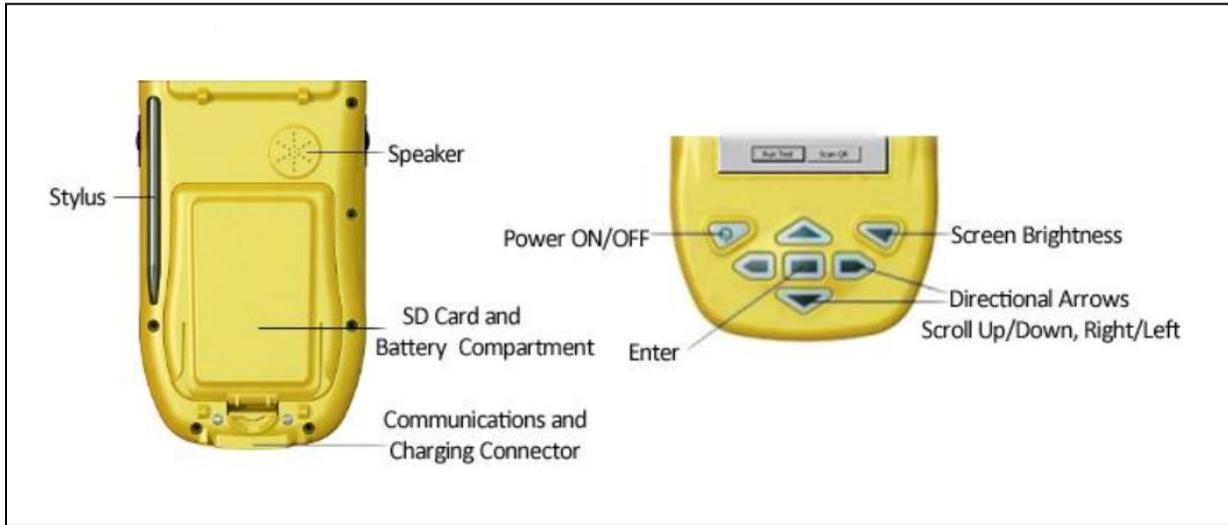
- 4.5.3 Select **Yes**.

Note: When not in use, it is recommended that the reader be kept on charge (i.e. plugged in) to preserve battery life and ensure optimal functioning.

5. Software Installation

- 5.1 The AbraScan RDS-1500 test strip reader uses Windows Mobile Device Center software or Microsoft Active Sync software to connect the reader to a desktop or laptop computer. The software which will be utilized will depend on the version of Windows running on the computer and on whether internet access is available.
Note: In order to initiate the installation process, the reader must be turned on.
Upon initial connection of the reader to the computer using the USB data connection cable provided:
 - 5.1.1 If the computer is running Windows 7 or a more recent version and has internet access, the Windows Mobile Device Center software will automatically download and install. Select “Connect without setting up your device.”
 - 5.1.2 If the computer is running Windows XP, an earlier version, or does not have internet access, a version of Microsoft Active Sync will be installed when the Data Manager CD is installed.
- 5.2 The Data Manager software enables the test results to be transferred from the reader to a desktop or laptop computer. The CD will automatically begin loading and installation of the Data Manager software.

6. Primary Buttons and Controls



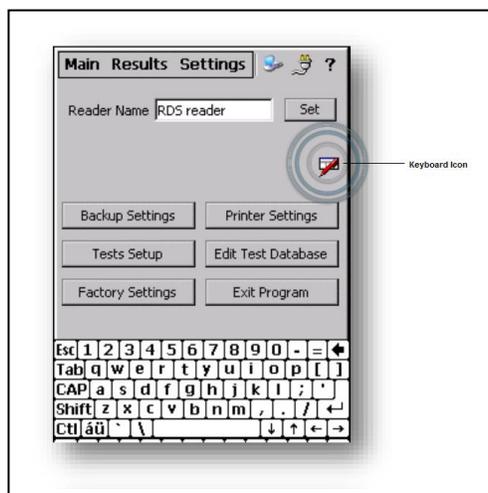
The primary buttons and controls can be used as shortcuts to carry out various operations.

- 6.1 **Screen Brightness** brings up controls for changing the brightness of the touchscreen interface. After pressing the Screen Brightness button, the brightness can be changed using the stylus or the directional arrows.
- 6.2 The **Directional Arrows** allow the user to move between various options on the screen, then select Enter to open the desired option.
- 6.3 **Enter** can be used to run a test when at the Main Menu.
- 6.4 The **Left Side Button** on the reader allows the user to go back to a previous screen.

7. Keyboard

The AbraScan RDS-1500 interface features an onscreen keyboard, allowing the user to input data into the device by touching the desired letters and numbers using the stylus.

- 7.1 Select the **Keyboard Icon** when it is present on the screen to display or hide the keyboard.



- 7.2 Select **CAP** to alternate between uppercase and lowercase letters, numbers, and symbols.
- 7.3 Select **Shift** to temporarily use uppercase letters for a single letter.
- 7.4 Select **áü** to alternate between accented letters and symbols.

8. User Control Menu and Navigation

The User Control Menu is located at the top-left region of the touchscreen interface and displays three menu options: **Main**, **Results**, and **Settings**.

8.1 Main Menu

When the RDS-1500 is powered on, the Main Menu will be displayed. The user may return to the Main Menu at any time by selecting the **Main** tab from the User Control Menu. From the Main Menu, the user may run a test.

8.2 Results Screen

The RDS-1500 stores the results of each test conducted. This data can be viewed at any time by selecting the **Results** tab from the User Control Menu. The Results Screen displays the test name, sample ID, date and time, and result for each test. Results can be sorted by category (Name, Sample ID, Time, or Result) by selecting the desired sorting category with the stylus. Individual test images can be viewed by selecting the desired test from the list of test results, then selecting **View**.

8.3 Settings Screen

Selecting **Settings** from the User Control Menu will bring up the Settings screen from which the user may edit the user list, run diagnostics, edit date and time, change sound settings, reset the program, and access other advanced settings.

8.3.1 To customize settings, select the appropriate check boxes for the desired displays:

8.3.1.1 When checked, **Display Line Density Values** will display an exact value of the line densities for both the control and test lines in the result of a test.

8.3.1.2 When checked, **Display Ratios (Test/Control line)** will enable the unit to show the ratio of the intensity of the test line to the intensity of the control line.

8.3.1.3 When checked, **Display European Date Format** will display the date in the “Day-Month-Year” format.

8.3.1.4 When checked, **Auto-print** will enable automatic printing of the results for each test that is run.

Note: A printer must be connected to the unit to use this feature.

8.3.2 To add, edit, or delete user names, from the Settings Screen, select **User List**, make desired changes, then select **Back**.

8.3.3 If it is necessary to calibrate the stylus, from the Settings Screen, select **Calibrate Stylus**. This will bring up the Stylus Properties screen.

8.3.3.1 The double-tap speed can be set and tested by following the instructions under the **Double-Tap** tab.

8.3.3.2 The **Calibration** tab allows the user to recalibrate the screen to properly respond to the stylus. Selecting **Recalibrate** will bring up a screen that asks the user to carefully press and briefly hold the stylus on the center of the target, repeating as necessary to ensure calibration.

9. Notification Icons

To the right of the User Control Menu, in the top-right corner of the display interface, are the three notification icons:

9.1 The Connection Status icon  is displayed when the RDS-1500 is connected to a computer via the USB cable. This icon indicates that the unit is ready to transfer data to the desktop.

9.2 Power Properties icons display information regarding battery charge percentage and power scheme.

9.2.1 The AC power icon  is displayed when the unit is charging, connected to a computer, and is using the main battery.

9.2.2 The Battery icon  is displayed when the device is not charging and is using the main battery.

Selecting either of the Power Properties icons will bring up the Power Properties menu:



9.2.3 Selecting **Battery** displays the status of the main and backup batteries and the percentage of remaining power.

9.2.3.1 The main battery powers the unit and will perform several hundred tests per session before needing to be charged.

9.2.3.2 The backup battery functions to maintain the time and date for an additional period after the main battery is completely discharged. If the unit is without power for an extended period, the time and date will need to be re-entered.

Note: The AbraScan RDS-1500 strip reader will maintain all data and user settings even after all battery power is lost.

9.2.4 **Schemes** allows the user to determine whether the unit will run on AC power or battery power and to change settings for time frames after which the unit switches to user idle, system idle, or suspends.

9.3 The Help icon  features tips and key information for any particular screen or function. When navigating to any particular screen, select the Help icon to get assistance in using the features of that particular screen.

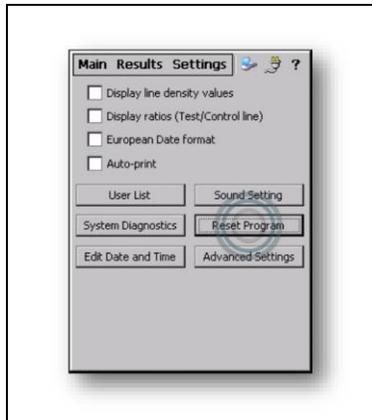
10. Resetting and Rebooting

10.1 Resetting the Program

10.1.1 The program reset will restart the operating system and will, in most cases, fix any issues which may occur. The program reset will close any open applications. The reset will not erase any saved data or saved settings, however any unsaved data will be lost.

10.1.2 To reset the program, from the User Control Menu, select **Settings**, then **Reset Program**.

Note: The reader will take a few seconds to reset.



10.2 Rebooting the Reader

10.2.1 In cases where resetting the program does not fully solve a software or hardware issue, a reboot may be necessary. The reboot will exit the operating system and shut down the reader, then restart both the reader and the program.

10.2.2 Press and hold the **Power** button and the **Screen Brightness** button until the screen turns white, then release.

Note: The reader will take a few seconds to exit the operating system, reboot the device, and restart both the device and the program. Once the reboot is complete, the Main Menu will display.

11. Diagnostics and Calibration

Run Diagnostics checks to ensure that the unit's hardware is operating correctly and that the calibration status is current.

11.1 To run diagnostics, select **Settings** to view the settings screen, then select **Run Diagnostics**. The System Hardware Check for Optics and Illumination will display "Passed" or "Failed." The Calibration Status will display "Current" or "Out of Date."

11.2 The RDS-1500 is programmed to renew calibration after 365 days or 1000 tests, whichever comes first. When the number of days and/or tests run on the unit reaches the specified threshold and calibration is necessary, the reader will display a notification message in the test results, prompting the user to calibrate the unit. The need for calibration will also be indicated on the System Diagnostics screen. If the device is due for calibration (Calibration Status will show "Out of Date" and Next Calibration Due and Tests Remaining will show "Please Calibrate"). When these notifications are present, the unit calibration routine must be run. The unit calibration routine verifies that the unit meets factory calibration standards. The white calibration cartridge is necessary to verify and update the unit's calibration status. To run the calibration routine:

11.2.1 Select **Calibrate Now**.



11.2.2 Insert the calibration cartridge into the reader.

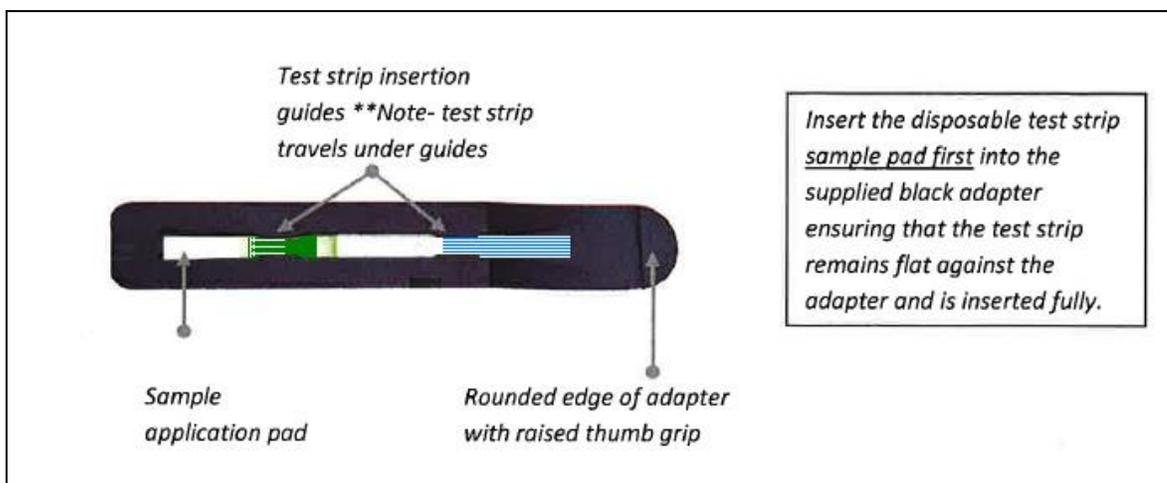
11.2.3 After ensuring that the white calibration cartridge is properly inserted into the reader, select **Run Calibration**.

11.2.4 In the event of a successful calibration check, a message will read "Offset check is valid. The unit's calibration status is renewed." Select **OK**.

11.2.5 In the event of an unsuccessful calibration check, a message will read "Offset difference of more than 15px. Calibration error found." If an error in calibration is found, the reader must be returned for factory recalibration.

12. Running the Test

- 12.1 Select the **Main** tab, which will bring up the Main Menu and display the reader ID and time and date as well as the drop-down boxes for the Category, Test Name, and User Name.
- 12.2 Using the drop-down menu for each field, select the Category, Test Name, and User Name.
- 12.3 Select **Run Test**. A sample ID can be added to uniquely identify the test (optional) or the field may be left blank.
- 12.4 Select **OK**. The Test Name will then be displayed at the top of the screen.
- 12.5 Insert the test strip into the cartridge adapter as described and shown below:



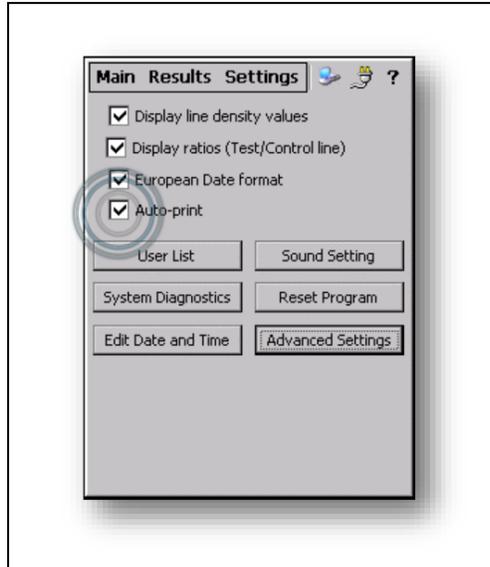
- 12.6 With the test strip facing the user, hold the adapter by the raised thumb grip and insert the adapter into the reader until the cartridge stops and actuates the internal switch.
- 12.7 After the strip is read, the results are displayed with the captured images of the control line and the test line. The user may then select **Re-test** to re-read the test strip. **New Sample ID** can be selected to assign a new sample ID before re-testing, if desired. **View Image** can be selected to view the image of the test strip. Select **Back** to return to the test strip result screen.
- 12.8 To read additional strips, remove the cartridge from the reader, remove the previous test strip, and replace with the new test strip to be read. A sample ID for the new strip to be read can be entered by selecting **New Sample ID**, entering the appropriate sample ID, then pressing **OK**. The test strip can then be read (step 12.6 above).
Note: If using only time and date information for sample identification (no sample ID), test strips can be read in immediate succession (no additional commands necessary).
Please see section 13, Sample ID, below for additional information regarding the use of sample IDs.

13. Sample ID

A unique sample ID can be entered for each test strip to allow the user to name and track specific tests. To use a unique sample ID for each sample, **New Sample ID** must be selected and a new sample ID must be entered before each sample result is read. If running a series of tests which can be grouped sequentially under a single sample ID, for example, if running a series of test strips on "Smith Lake," the tests can be linked together under a common Sample ID by entering the single sample ID ("Smith Lake"), then reading the strips sequentially (i.e. without selecting **New Sample ID**). Each subsequent test will then be assigned a sequential number value along with the group sample ID (Smith Lake, Smith Lake-1, Smith Lake-2, etc.), allowing for the differentiation of samples within a group without having to re-enter the group ID (Smith Lake) for each sample.

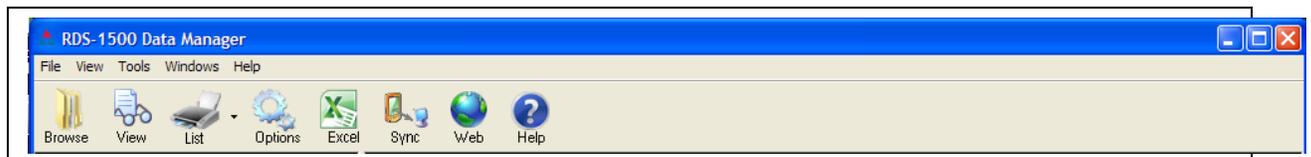
14. Printer

The RDS-1500 is compatible with several brands of external printers that have parallel port connectivity. When the reader is connected to the printer using the 13-pin cable, the user may print out test results. If Auto-print is checked on the settings screen, the printer, when connected to the device via USB cable, will print the test results automatically after each test.



15. Transferring and Viewing Results (on PC)

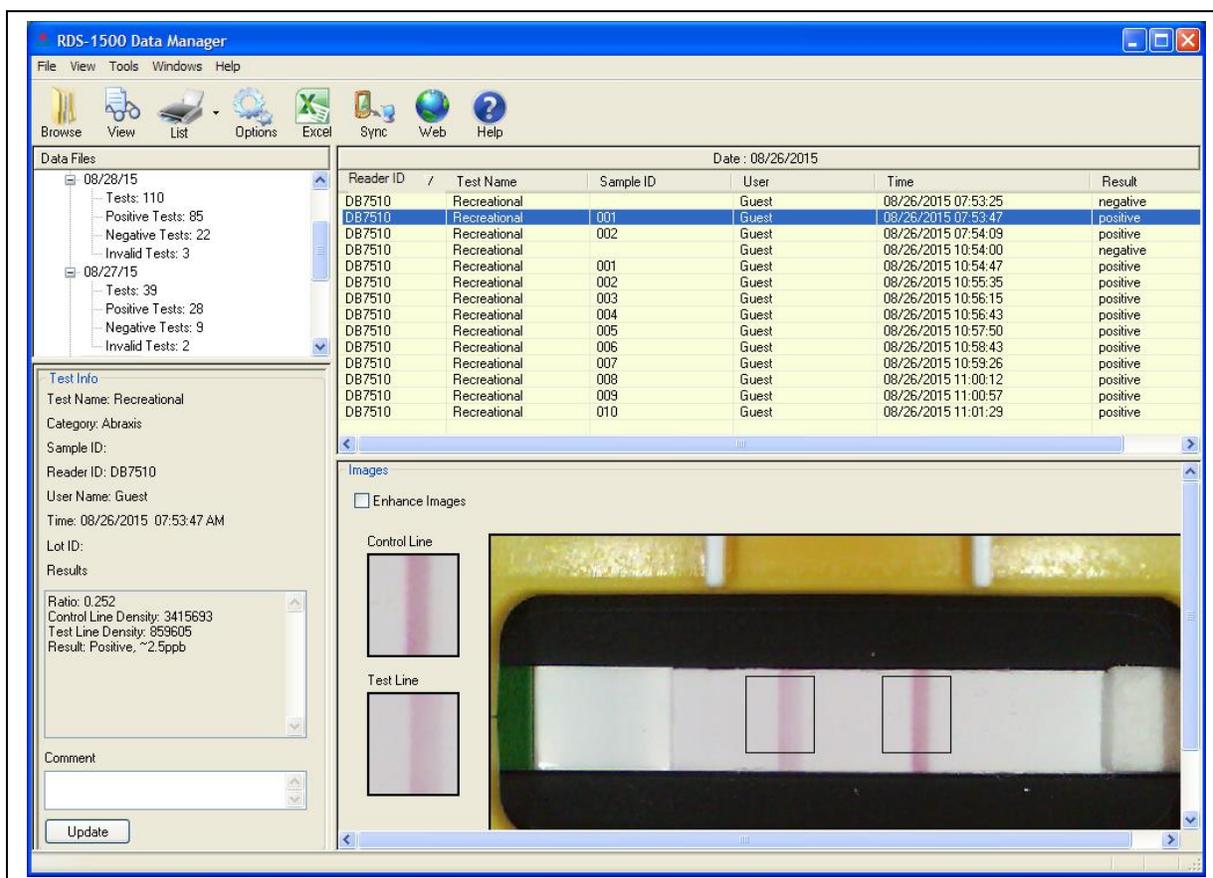
- 15.1 Install the RDS-1500 Data Manager Software (see section 5, Software Installation, above). The Data Manager Software is capable of having multiple RDS-1500 units synchronized with it and will place each unit's data into a unique folder labeled with the unit's name. Data from multiple units can be sorted and compared. Additionally, the Data Manager allows the user to enter comments for each test, if desired.
- 15.2 Connect the reader to the PC using the USB cable provided.
- 15.3 Activate the program by selecting the RDS-1500 Data Manager icon on the desktop.
- 15.4 A Tool Bar is located at the top of the Data Manager screen:



Select **Sync** from the toolbar. Results will then be copied from the reader (results will not be deleted from the reader and will appear in both the reader and the PC until deleted from the reader).

- 15.5 The previous 14 days of test results will be listed on the upper left panel. Information older than 14 days will be listed in the Previous Tests section at the bottom of this panel.
- 15.6 Dates displaying a "+" can be selected to display the total number of tests run, number of positive tests, negative tests, and invalid tests on that date. By clicking on the actual date, the data will be displayed in the panel on the right side of the screen.
- 15.7 Test results data can be sorted by selecting any of the categories listed in the panel on the right side of the screen. Each row on the table represents a single test. Scroll through the data by using the computer's mouse or keyboard arrow keys.

- 15.8 Select a test for review by clicking on its row. The pertinent data and images will be displayed below. Detailed test information can be found in the lower left of the screen. Comments can be added/updated and stored for the test displayed by scrolling down in the Test Info area. Test images are located on the lower right side.



- 15.9 Additional features shown on the toolbar include:
- 15.9.1 Browse. Use to select the Data Manager result files to load.
 - 15.9.2 View. Use to open My Documents on the PC.
 - 15.9.3 List. Use to produce a hard copy of the data files list or the data currently displayed.
 - 15.9.4 Options. Use to access additional options, such as displaying the data format as dd/mm/yy instead of mm/dd/yy.
 - 15.9.5 Excel. Use to export the current data file to a Microsoft Excel format.

16. Abraxis Cyanotoxin Strip Test Kits

Microcystins Strip Test for Finished Drinking Water

PN 520016 (5 Test) and PN 520017 (20 Test)

For use with treated drinking water samples (detection range up to 5 ppb).

Microcystins Strip Test for Source Drinking Water

PN 520019 (5 Test) and PN 520020 (20 Test)

For use with untreated drinking water samples (detection range up to 5 ppb).

Microcystins Strip Test for Recreational Water

PN 520023 (5 Test) and PN 520022 (20 Test)

For use with recreational water samples (detection range up to 10 ppb).

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