

SENTRY 100

FLUORESCENCE POLARIZATION INSTRUMENT

OPERATION MANUAL

FOR DIAGNOSTIC APPLICATIONS



diachemix®
Rapid Definitive Detection®

SENTRY 100 OPERATION MANUAL

SENTRY 100 OPERATION MANUAL

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Using this Manual

The logic underlying the SENTRY 100 user interface is simple, straightforward and intuitive. The instrument's relative simplicity should become apparent after a short introductory period.

This Operation Manual provides detailed instructions for performing specific functions on the SENTRY 100. Become familiar with the instrument's operation by initially following these step by step instructions. You should quickly learn the common procedures for text entry and understand the intuitive logic of how to move between menu items.

THE WARRANTY ON THE SENTRY 100 IS INCLUDED AT THE END OF THIS MANUAL. PLEASE NOTE THAT THE WARRANTY MAY BE VOIDED IF THE INSTRUMENT OR ANY PART THEREOF HAS BEEN SUBJECT TO ACCIDENT, ALTERATION, ABUSE, MISUSE, POWER SURGE, UNUSUAL VOLTAGE CONDITIONS, TAMPERING, OR DAMAGE DURING REPAIR WORK OR ATTEMPTED REPAIR WORK MADE BY ANYONE OTHER THAN PERSONNEL EXPRESSLY AUTHORIZED BY SELLER.

SENTRY 100 OPERATION MANUAL

TABLE OF CONTENTS

FEATURES OF THE SENTRY 100 INSTRUMENT	6
Electrical Power	6
Power On/Off	6
Operating Environment	6
Keyboard	7
Screen	7
Main Screen	7
SETUP OF THE SENTRY 100	8
Main Screen	8
Setup Screen	9
Time	9
Date	9
Contrast	9
PMT	9
Assay Time	9
CALIBRATION OF THE SENTRY 100	10
Calibrate Screen	10
Low Intensity Buffer(Blank)	10
Low Polarization Sample Intensity	11
High Polarization Sample Intensity	13
TESTING A SINGLE SAMPLE	14
Main Screen	14
Run Assay Screen	14
Run Assay....Single Screen	16
TESTING IN BATCH MODE	18
Main Screen	18
Run Assay Screen	18
Run Assay....Batch Screen	20
TESTING IN INHIBITOR MODE	23
Main Screen	23
Run 'Assay Screen'	23
Run Assay....Inhibitor Screen	24
DATA MANAGER	26
Data Management Screen	26
Viewing test data on the SENTRY 100 Screen	26
Erasing Data	27
Available Memory	27
Data Transfer	28
Installation of Assay Retrieval Tool Program on Personal Computer	28
Using the Diachemix Assay Retrieval Tool	29
TROUBLESHOOTING	30
PRINCIPLES OF FLUORESCENCE POLARIZATION	31
SENTRY 100 FP INSTRUMENT SPECIFICATIONS	32
WARRANTY	33
Contact Addresses	33

SENTRY 100 OPERATION MANUAL

SENTRY 100 OPERATION MANUAL

FEATURES OF THE SENTRY 100 INSTRUMENT

The SENTRY 100 is a portable instrument used for specific diagnostic tests known as fluorescence polarization assays. This instrument has been designed to provide an easy and accurate method for performing tests on site as well as in a laboratory setting. The SENTRY 100 can be used to perform one test (single assay) or a single type of test for a larger group of samples (batch assay).

The SENTRY 100 is a single well, fluorescence polarization instrument. All necessary optics, electronics and computing capabilities are included within the instrument.

DO NOT OPEN THE INSTRUMENT HOUSING OR REMOVE ANY PARTS. Opening the instrument housing may void the warranty. Please allow Diachemix to perform all maintenance and repair service.

Electrical Power

The SENTRY 100 may be powered by plugging the provided power adapter into a wall outlet (120 volt, alternating current). The instrument also may be powered by its Battery Pack. The Battery Pack requires six AA batteries that provide the needed current to the instrument.

Power On/Off

When plugged into an appropriate power source the SENTRY 100 may be turned on or off by depressing the power key on the keyboard. The power key is identified by the international symbol for power.



Always depress the power key to turn off the Sentry 100. Disconnecting or switching the power source before turning off the instrument can result in the loss of the current test result from memory. **It is recommended it use a surge protector when using the supplied transformer.**

Operating Environment

The SENTRY 100 has been designed as a portable instrument appropriate for both on site and laboratory use. Designed for field conditions, the SENTRY 100 should perform in all reasonable environments provided that the internal optics remains clean and dry.

The instrument will function in environmental temperatures between 39 F and 115 F (4 C and 46 C). The Sentry 100 is neither water resistant nor waterproof. It should not be submerged in any liquids. The exterior of the instrument housing may be cleaned with a soft, damp cloth.

Always prepare a sample before inserting it into the SENTRY 100. **NEVER PIPETTE INTO A TUBE WHEN IT IS INSIDE THE SENTRY 100.** Spilling liquid or breaking glass inside the instrument's optic chamber will damage the SENTRY 100 and likely require repair.

NEVER TRANSPORT THE SENTRY 100 WITH A TEST SAMPLE TUBE INSIDE IT. WHEN FINISHED RUNNING SAMPLES ALWAYS REMOVE THE TEST TUBE AND CLOSE THE TOP OF THE OPTICS CHAMBER TO PREVENT THE ACCUMULATION OF DUST.

SENTRY 100 OPERATION MANUAL

Always use clean glass borosilicate test tubes with the SENTRY 100. Use a '10 mm by 75 mm' or a '12 mm X 75 mm' borosilicate test tube depending on how your SENTRY 100 was originally configured.

Keyboard

All information necessary to performed single or batch tests can be entered using the instrument's alpha-numeric keyboard.



The keyboard consists of seventeen (17) keys displayed on the top surface of the instrument.

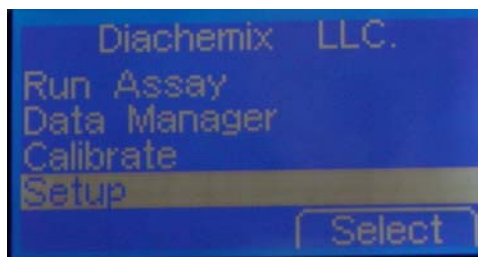
Numbers can be entered by pressing the appropriate numeric key (1 for 1, 2 for 2, 3 for 3, etc.). Alphabetical characters can be entered by depressing the corresponding key repeatedly to cycle through the associated numbers and letters. For example, the screen will display the lower case letter 'n' by depressing the 6 key five times, cycling through the following entries (6 M m N n O o P p). Press the right or left arrow keys to move to the adjacent space to enter the next letter or correct an adjacent letter.

Screen

All information necessary to operate the SENTRY 100 is displayed on its Liquid Crystal Display screen. The contrast between the screen and displayed information may be adjusted by accessing the SETUP menu, explained later in this Manual.

Main Screen

When powered on, the SENTRY 100 will sequence through a series of computer diagnostics. The Main screen will then appear. 'Diachemix LLC.' appears at the top of the main screen, followed by four lines of text displaying the Run Assay, Data Manager, Calibrate and Setup commands.



SENTRY 100 OPERATION MANUAL

SETUP OF THE SENTRY 100

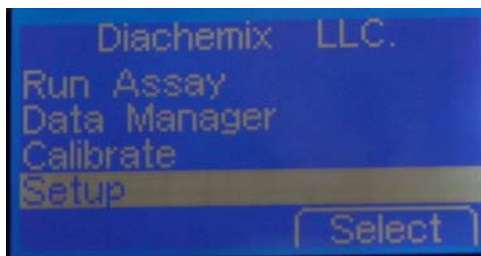
The Setup process is used to input or adjust basic information (such as time and date) or settings (such as screen contrast) used thereafter by the SENTRY 100.

The Setup process includes the following steps:

1. Make certain the SENTRY 100 is connected to an appropriate power source. Turn on the SENTRY 100 by depressing the power key on the keyboard. The power key is identified by the international symbol for power.
2. The SENTRY 100 will initially check to make certain it is working properly. The screen will sequence through a series of diagnostic self-checks during this process (Battery, Keyboard, RS232 port, USB port, Time/Date, HVPS, File system and Memory).
3. The Main screen will be displayed. 'Diachemix LLC.' appears at the top of the main screen, followed by four lines of text displaying the Run Assay, Data Manager, Calibrate and Setup commands.

MAIN SCREEN

1. Beginning on the main screen, use the up or down arrows on the instrument keyboard to highlight the 'Setup' line.
2. Press the button associated with the 'Select' command on the screen to move to the '...Setup'



screen.

SENTRY 100 OPERATION MANUAL

'...SETUP' SCREEN'

1. Use the up or down arrows on the instrument's keyboard to highlight the information you wish to enter or change on a screen. Time, Date, Contrast, or PMT entries are displayed on the first '...Setup' screen. Assay Time is displayed on the second '...Setup' screen.



2. Press the button associated with the 'Edit' command on the screen to edit the selected information (Time, Date, PMT, or Assay Time lines). Please note that the left and right arrows, rather than the 'Edit' command, are used to adjust the Contrast.

Time: Use the keyboard to enter the current hour. Then press the up or down arrow to select the minute entry. Use the keyboard to enter the current number of minutes past the hour. Press the button associated with the 'Done' command. Please note that the current time is displayed on a 24 hour basis without indication of a.m. or p.m. For example, 1 p.m. is displayed as 13:00.

Date: Use the keyboard to enter the current month, day or year. Then press the up or down arrow to move between the month, date and year entries. When the proper date has been entered press the button associated with the 'Done' command.

Contrast: Repeatedly press the left or right arrow key to decrease or increase the contrast between text displayed on the screen and the intensity of the background. When the best screen contrast is achieved, press the up or down key to move to an adjacent item to be edited.

PMT: The displayed value is the voltage received by the Photomultiplier Tube, an optics component of the machine. This value should always be 127. Do not adjust the PMT value unless instructed by Diachemix or other authorized service personnel.

Assay time: The displayed value is the amount of time (in seconds) instrument readings are performed in each plane of light. This value should never be less than 05. **Note that the entered value (amount for assay time) represents approximately one half of the total time (in seconds) needed by the instrument to complete both the horizontal and vertical reads.**

3. Use the up arrow to return to the first '...Setup' screen if further edits are necessary.
4. Select the button associated with the 'Back' command to return to the 'Main' screen.

SENTRY 100 OPERATION MANUAL

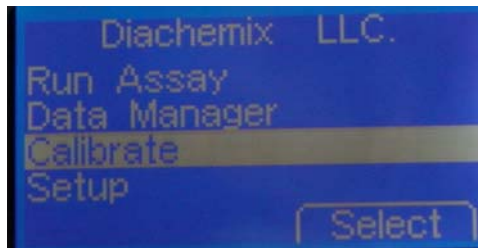
CALIBRATION OF THE SENTRY 100

The SENTRY 100 needs to be calibrated before its first use, every four to six months or when there is evidence of a performance problem.

A Low Polarization Standard, High Polarization Standard and Low Intensity Buffer are supplied with each instrument. The Low Intensity Buffer is used to determine that the light source is activated and that the light path is unobstructed. It also used to zero the back ground. The Low Polarization Standard is used to determine that the instrument is seeing the correct dye (fluorescein). The High Polarization Standard confirms the polarizer is functioning properly.

The Setup process includes the following steps:

1. Beginning on the main screen, use the up or down arrow to highlight the 'Calibrate' line.
2. Press the button associated with the 'Select' command on the screen to move to the '...Calibrate' screen.



'...Calibrate' Screen

Blank Low Intensity Buffer Sample

1. Use the up or down arrow if needed to highlight the 'Blank Int.' line.
2. Pour at least 1 ml of the Low Intensity Buffer into a clean glass borosilicate tube. Insert the tube



containing the Low intensity Buffer sample in the chamber and close the top of the chamber.

SENTRY 100 OPERATION MANUAL

3. Read the low intensity buffer blank by pressing the button associated with the 'Execute' or 'Read' command on the screen. 'Please Wait' will appear on the screen.
4. Use the up arrow to again highlight the 'Blank Int.' line.
5. Perform another read by pressing the button associated with the 'Execute' or 'Read' command on the screen again. 'Please Wait' will appear on the screen.
6. Repeat steps 4 and 5 twice, or as needed to assure a stable read. A stable read would be a series of consistent results (for example, 660...590...620...630). An unstable read would be a series with a substantial variance in results (for example, 660...590...79,000).

'...Calibrate' Screen

Low Polarization Sample Intensity

1. Use the up or down arrow if needed to highlight the 'Sample Int.' line.
2. Pour at least 1 ml of Low Polarization Standard into a clean glass borosilicate tube. Insert the tube containing the Low Polarization Standard sample in the chamber and close the top of the chamber.



3. Read the Low Polarization Standard by pressing the button associated with the 'Execute' or 'Read' command on the screen. 'Please Wait' will appear on the screen.
4. Record the value displayed on the 'Sample mP' line on a piece of paper.
5. Leave the Low Polarization Standard sample in the chamber with the top of the chamber closed.
6. Press the button associated with the 'Execute' or 'Read' command on the screen and then record the resulting 'Sample mP' value. Repeat this step eight more times.
7. Average the resulting 'Sample mP' values from the last five of the ten reads. (Add the last five values together and divide by five.)
8. The average for the last five 'Sample mP' values should be between 22 to 28 mP (25 ± 3 mP).
9. If the average for the last five 'Sample Int.' values is not between 22 to 28 mP, use the up or down arrow keys to highlight the 'G Factor' line on the screen.

SENTRY 100 OPERATION MANUAL



10. Press the button associated with the 'Edit' command on the screen.
11. Use the numeric keys to change the G Factor value displayed on the screen. The G Factor (Gain Factor) assists in calibrating the internal optics.
12. Every one one-thousand of a point change (0.001) in the G Factor value inversely adjusts the instrument's milliP values by 1 mP.

By raising the G Factor value one one-thousand of a point (0.001) the instrument's milliP values are lowered by 1 mP.

By lowering the G Factor value one one-thousand of a point (0.001) the instrument's milliP values are raised by 1 mP.

Please note that the instrument automatically inserts a decimal point when all four numbers are input (for example, entering 1 0 0 2 and pressing the button associated with the 'Edit' command on the screen inputs the value '1.002').

13. Press the button associated with the 'Edit' command on the screen to accept the edited G Factor.
14. Repeat steps 1 through 13 until the average for the last five 'Sample Int.' values is between 22 to 28 mP (25 ± 3 mP).

SENTRY 100 OPERATION MANUAL

'...Calibrate' Screen

High Polarization Sample Intensity

1. Use the up or down arrow if needed to highlight the 'Sample Int.' line.
2. Pour at least 1 ml of High Polarization Standard into a clean glass borosilicate tube. Insert the High Polarization Standard sample in the chamber and close the top of the chamber.
3. Read the High Polarization Standard by pressing the button associated with the 'Execute' or 'Read' command on the screen. 'Please Wait' will appear on the screen.
4. Record the value displayed on the 'Sample mP' line on a piece of paper.
5. Leave the High Polarization Standard sample in the chamber with the top of the chamber closed.
6. Press the button associated with the 'Execute' or 'Read' command on the screen and record the resulting 'Sample mP' value. Repeat this step eight more times.



7. Average the resulting 'Sample mP' values from the last five of the ten reads. (Add the last five values together and divide by five.) The average for the last five 'Sample Int.' values should be greater than 340 mP. If the values are greater than 340 mP, the instrument has passed this quality control check. Please skip to Step 9.
8. The instrument has failed an important quality control check if the average for the last five 'Sample mP' values is not greater than 340 mP. If this failure does occur, repeat the High Polarization Standard calibration protocol (Steps 1 through 7 above). If the instrument fails again, then repeat the full Calibration of the Sentry 100 (beginning on page 8). If the High Polarization Standard fails again during the full calibration process, contact Diachemix Technical Assistance and provide a description of the problem, including the 'Sample mP' values from the Calibration process.
9. Carefully pour the Buffer, Low Polarization Standard and High Polarization Standard from each sample tube back into its appropriate bottle.
10. Press the button associated with the 'Back' command to return to the main screen.

SENTRY 100 OPERATION MANUAL

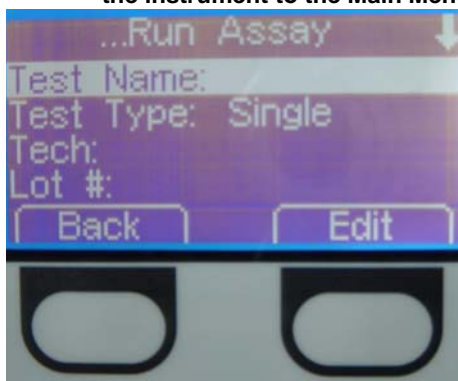
TESTING A SINGLE SAMPLE

MAIN SCREEN

1. Beginning on the main screen, use the up or down arrow to highlight the 'Run Assay' line.
2. Press the button associated with the 'Select' or 'Read' command on the screen to move to the '...Run Assay' screen

'...RUN ASSAY' SCREEN

PLEASE NOTE: Pressing the button associated with the 'Back' command on the screen at any point in the Editing process will erase the data entered in the current screens and return the instrument to the Main Menu screen.



1. To input the Test Name:
 - a. Use the up or down arrow to highlight the 'Test Name:' line.
 - b. Press the button associated with the 'Edit' command on the screen.
 - c. Use the alpha-numeric keyboard to enter the name of the test being performed (what is being testing for) using the text entry procedures as explained in the General Features section of this manual. (An asterisk will appear at the end of the entry if it exceeds nine characters in length.)
 - d. Press the button associated with the 'Done' command on the screen.
2. To input the Test Type:
 - a. Use the up or down arrow to move to select the 'Test Type:' line.
 - b. Use the left or right arrow to change the Test Type to 'Single' by switching the displayed text between 'Single' and 'Batch'.

SENTRY 100 OPERATION MANUAL

3. To input the Technician Name:
 - a. Use the up or down arrow to move to select the 'Tech:' line.
 - b. Press the button associated with the 'Edit' command on the screen.
 - c. Use the alpha-numeric keyboard to enter the name of the individual or technician performing the test using the text entry procedures. (An asterisk will appear at the end of the entry if it exceeds nine characters in length.)
 - d. Press the button associated with the 'Done' command on the screen.

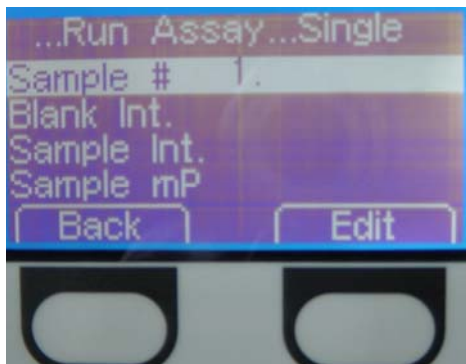
4. To input the Reagent Lot #:
 - a. Use the up or down arrow to move to select the 'Lot #:' line.
 - b. Press the button associated with the 'Edit' command on the screen.
 - c. Use the alpha-numeric keyboard to enter the Reagent Lot # used to perform the test using the text entry procedures. (An asterisk will appear at the end of the entry if it exceeds nine characters in length.)
 - d. Press the button associated with the 'Done' command on the screen to go to the second data entry screen.

5. To input the Location where the test is being performed:
 - a. Use the up or down arrow to move to select the 'Location:' line.
 - b. Press the button associated with the 'Edit' command on the screen.
 - c. Use the alpha-numeric keyboard to enter the location where the test is performed or an appropriate lab code using the text entry procedures. (An asterisk will appear at the end of the entry if it exceeds nine characters in length.)
 - d. Press the button associated with the 'Done' command on the screen.

6. To Perform A Single Assay
 - a. Use the up or down arrow to move to select the 'Run Assay' line on the second '...Run Assay' screen.
 - b. Press the button associated with the 'Select' command on the screen to move to the '...Run Assay...Single' screen.

SENTRY 100 OPERATION MANUAL

'...RUN ASSAY...SINGLE' SCREEN



1. To input the Sample #:
 - a. Use the up or down arrow to move to select the 'Sample #' line.
 - b. Press the button associated with the 'Done' command on the screen if the default Sample # value of '1' is acceptable, or
 - c. Press the button associated with the 'Clear' command on the screen to clear the default Sample # value.
 - i. Use the alpha-numeric keyboard to enter an appropriate sample # using the text entry procedures. The Sample # would usually be some form of unique sample or animal identification. (An asterisk will appear at the end of the entry if it exceeds nine characters in length.)
 - ii. Press the button associated with the 'Done' command on the screen.
2. To measure the Blank Intensity:
 - a. Use the up or down arrow to move to select the 'Blank Int.' line.
 - b. Insert the sample in the chamber and close the top of the chamber.
 - c. Press the button associated with the 'Read' command on the screen.
 - d. The screen will display the 'Please Wait' dialogue box for a few seconds while the instrument performs a measurement.
 - e. A numeric value will then be displayed on the 'Blank Int.' line.
 - f. The instrument will automatically advance to the 'Sample Int.' line.
3. To measure the Sample Intensity:

SENTRY 100 OPERATION MANUAL

- a. Use the up or down arrow to move to select the 'Sample Int.' line if it is not already highlighted.
- b. Open the top of the chamber and remove the sample.
- c. Add tracer to the sample.
- d. Reinsert the sample in the chamber and close the top of the chamber.
- e. Press the button associated with the 'Read' command on the screen.

The screen will display the "Please Wait" dialogue box for a few seconds while the instrument performs a measurement.

A numeric value will then be displayed on the 'Sample Int.' line.

Pressing the button associated with the 'Read' command on the screen may be repeated to perform additional measurements on the same sample, if necessary.

4. Determining the Sample's test result:

Fluorescent Polarization test results are based on calculations from measurement of units of polarized light known as a 'milliP' or 'mP'.

THE SENTRY 100 WILL AUTOMATICALLY DISPLAY THE NUMERIC TEST RESULT (MILLIP VALUE) ON THE 'SAMPLE MP' LINE AFTER THE BLANK INTENSITY AND SAMPLE INTENSITY MEASUREMENTS HAVE BEEN COMPLETED.

The product insert provided with your test kit provides instruction on determining test results.

5. Press the button associated with the 'Back' command on the screen to return to the '...Run Assay' screen to perform another Single assay.

SENTRY 100 OPERATION MANUAL

TESTING IN BATCH MODE

MAIN SCREEN

1. Beginning on the main screen, use the up or down arrow to highlight the 'Run Assay' line.
2. Press the button associated with the 'Select' command on the screen to move to the '...Run Assay' screen.

'...RUN ASSAY' SCREEN

PLEASE NOTE: Pressing the button associated with the 'Back' command on the screen at any point in the Editing process will erase the data entered in the current screens and return the instrument to the Main Menu screen.

1. To input the Test Name: **(NOTE: a new image will replace this one. The Test Type is Batch not single.)**



- a. Use the up or down arrow to highlight the 'Test Name:' line.
 - b. Press the button associated with the 'Edit' command on the screen.
 - c. Use the alpha-numeric keyboard to enter the name of the test being performed (what is being testing for) using the text entry procedures as explained in the General Features section of this manual. (An asterisk will appear at the end of the entry if it exceeds nine characters in length.)
 - d. Press the button associated with the 'Done' command on the screen.
2. To input the Test Type:
 - a. Use the up or down arrow to move to select the 'Test Type:' line.
 - b. Use the left or right arrow to change the Test Type to 'Batch' by switching the displayed text between 'Single' and 'Batch'.
 3. To input the Technician Name:

SENTRY 100 OPERATION MANUAL

- a. Use the up or down arrow to move to select the 'Tech:' line.
 - b. Press the button associated with the 'Edit' command on the screen.
 - c. Use the alpha-numeric keyboard to enter the name of the individual or technician performing the test using the text entry procedures. (An asterisk will appear at the end of the entry if it exceeds nine characters in length.)
 - d. Press the button associated with the 'Done' command on the screen.
4. To input the Reagent Lot #:
- a. Use the up or down arrow to move to select the 'Lot #:' line.
 - b. Press the button associated with the 'Edit' command on the screen.
 - c. Use the alpha-numeric keyboard to enter the Reagent Lot # used to perform the test using the text entry procedures. (An asterisk will appear at the end of the entry if it exceeds nine characters in length.)
 - d. Press the button associated with the 'Done' command on the screen.
 - e. Press the down arrow to advance to the second data entry screen.
5. To input the Location where the test is being performed:
- a. Use the up or down arrow if necessary to move to select the 'Location:' line.
 - b. Press the button associated with the 'Edit' command on the screen.
 - c. Use the alpha-numeric keyboard to enter the location where the test is performed or an appropriate lab code using the text entry procedures. (An asterisk will appear at the end of the entry if it exceeds nine characters in length.)
 - d. Press the button associated with the 'Done' command on the screen.
6. To Run Batch Assays
- a. Use the up or down arrow to move to select the 'Run Assay' line.
 - b. Press the button associated with the 'Select' command on the screen to move to the '...Run Assay...Batch' screen.

SENTRY 100 OPERATION MANUAL

'...RUN ASSAY...BATCH' SCREEN



1. To input the Sample #:
 - a. Use the up or down arrow to move to select the 'Sample #' line.
 - b. Press the button associated with the 'Edit' command on the screen.
 - c. Use the alpha-numeric keyboard to enter an appropriate sample # using the text entry procedures. The Sample # would usually be some form of unique sample or animal identification. (An asterisk will appear at the end of the entry if it exceeds nine characters in length.)
 - d. Press the button associated with the 'Done' command on the screen.
2. The first Blank # is automatically assigned the value of '0001'. The blank will automatically increment to the next number after each read.
3. To measure Blank Intensity in Batch Mode:
 - a. Use the up or down arrow to move to select the 'Blank Int.' line.
 - b. Insert the first sample in the chamber and close the top of the chamber.
 - c. Press the button associated with the 'Read' command on the screen.

The screen will display the "Please Wait" dialogue box for a few seconds while the instrument performs a measurement.

The screen will increment to the next Blank #.

SENTRY 100 OPERATION MANUAL

4. To input the Sample #:
 - a. Use the up or down arrow to move to and select the 'Sample #' line; select 'Edit' now or the previous Sample # will be used.

5. To measure the next Blank Sample:
 - a. Insert the next blank sample in the chamber and close the top of the chamber.
 - b. Press the button associated with the 'Read' command on the screen.

The screen will display the "Please Wait" dialogue box for a few seconds while the instrument performs a measurement.

6. Repeat steps 3, 4 and 5 until Blank intensity reads have been completed for the complete sequence of all of the blank samples in your batch series.

7. To measure the Sample Intensity in Batch Mode:
 - a. From any line, press the #1 key or use the left arrow to increment back to the first 'Blank Sample #'.
 - b. Use the up or down arrow to move to select the 'Sample Int.' line if it is not already highlighted.
 - c. Insert appropriate sample with Tracer added.
 - d. Close the top of the chamber.
 - e. Press the button associated with the 'Read' command on the screen.

The screen will display the "Please Wait" dialogue box for a few seconds while the instrument performs a measurement.
 - f. The program will increment to the next 'Blank #' automatically.
 - g. Repeat above procedure for next sample(s) or until finished.

SENTRY 100 OPERATION MANUAL

PLEASE NOTE THAT INDIVIDUAL TEST RESULTS ARE AVAILABLE WHEN PROGRESSING THROUGH BATCH MODE. PRESS THE LEFT ARROW TO VIEW THE TEST RESULT FOR THE PREVIOUS SAMPLE. PRESS THE RIGHT BUTTON ON THE SCREEN TO RETURN TO AND SELECT THE 'SAMPLE #' LINE TO COMPLETE THE NEXT SAMPLE.

- h. Use the up or down arrow to move to select the 'Sample Int.' line if it is not already highlighted.
- i. Continue reading samples as previously described.

SENTRY 100 OPERATION MANUAL

TESTING IN INHIBITOR MODE

MAIN SCREEN

1. Beginning on the main screen, highlight the 'Run Assay' line, use the up or down arrow if necessary.
2. Press the 'Select' button to move to the 'Run Assay' screen.

'Run Assay' SCREEN

PLEASE NOTE: Pressing the 'Back' button at any point during the editing process will erase the data entered on the current screen and return the instrument to the Main Menu screen.

1. To input the Test Name:
 - a. Highlight the 'Test Name' line, use the up and down arrow keys.
 - b. Press the 'Edit' button, below the screen.
 - c. Use the alpha-numeric keyboard to enter the name of the test being performed (what is it being tested for) using the text entry procedures as explained in the General Features section of this manual. Entries should not exceed nine characters in length.
 - d. When finished push the 'Done' button.
2. To input the Test Type:
 - a. Highlight the 'Test Type' line using the up and down arrows.
 - b. Use the left and right arrows to switch the 'Test Type' to Inhibitor. (The arrow keys will switch the display between 'Single', 'Batch', and 'Inhibitor')
3. To input the Technician Name:
 - a. Highlight the 'Tech' line using the up and down arrow keys.
 - b. Press the 'Edit' button, below the screen.
 - c. Use the alpha-numeric keyboard to enter the name of the individual or technician performing the test using the text entry procedures. (Text is limited to nine characters.)
 - d. When finished press the 'Done' button.
4. To input the Reagent lot #:
 - a. Highlight the 'Lot #' line using the up and down arrow keys.
 - b. Press the 'Edit' button below the screen.
 - c. Use the alpha-numeric keyboard to enter the Reagent Lot # used to perform the test, using the text entry procedures. (Text is limited to nine characters.)
 - d. When finished press the 'Done' button.
5. To input the Location the test is being performed:
 - a. Highlight the 'Location' line using the up and down arrow keys.
 - b. Press the 'Edit' button below the screen.
 - c. Use the alpha-numeric keyboard to enter the 'Location' where the Test is performed or an appropriate lab code using the text entry procedures. (Text is limited to nine characters.)

SENTRY 100 OPERATION MANUAL

- d. When finished press the 'Done' button.
6. To run the Inhibitor Assay:
 - a. Highlight the 'Run Assay' line using the up and down arrow keys.
 - b. Press the 'Select' button below the screen.
 - c. This will take you to the 'Run Assay...Control' screen.
 7. To run Controls to Calculate a Standard Curve:
 - a. Prepare your controls (antibody solution plus sample), a minimum of Five controls are needed. Two zero PPM controls and three other PPM values. Up to ten controls can be calculated.
 - b. Place first control in reader.
 - c. Highlight the 'Sample PPM' line using the up and down arrow keys.
 - d. Press the 'Edit' button below the screen. Enter the appropriate value, using the text entry procedures. (Text is limited to nine characters.) Press the 'Done' button when finished.*Caution pressing the 'Done' button when associated with the 'Edit' button will cause prompt 'Exit Control?' Press No to continue.
 - e. Highlight the 'Blank Int.' line using the up and down arrow keys. Then press the 'Read' button below the screen. A dialog box will appear that says 'Please Wait'. After the read the instrument will display the value for two seconds and then increment to the next control.(1,2,3,ect,)
 - f. Continue the above procedure until all controls have been read.
 - g. Add tracer to all control samples and wait the prescribed incubation period.
 - h. Press the '1 key' or use the arrow keys to return to the first Blank Int. read.
 - i. Highlight the 'Sample Int.' line using the up and down arrow buttons.
 - j. Insert the corresponding control tube into instrument.
 - k. Press the 'Read' button below the display a dialog box will appear that says 'Please Wait'. After the read the instrument will display the values for two seconds then increment to the next 'Sample Int.' (1,2,3,ect) .
 - l. Continue the above procedure until all controls have been read .
(i thru k)
 - m. When all controls have been read press the 'Done' button below the screen. A dialog box will appear with the R squared value also 'Exit Control?'. * If the R squared is .95 or greater (Max is 1.000) press yes and you go to the 'Run Assay...Inhibitor' screen. If the R squared is less than .95 press 'No' and use the arrow keys to check the values of the controls. (mP and PPM) Redo any controls that are out of parameter, then recheck the R square number.
 8. To run samples in 'Inhibitor Mode':
 - a. Prepare samples to be tested.(antibody solution plus sample)
 - b. Insert first sample into the instrument.
 - c. Highlight the 'Sample #' line using the up and down arrow keys.
 - d. Press the 'Edit' button below the screen. Enter the sample number or the appropriate code, using the text entry procedures. (Text is limited to nine characters.) Press 'Done' when finished.
 - e. Highlight the 'Blank Int.' line using the up and down arrow keys.
 - f. Press the 'Read' button below the screen. A dialog box will appear which says 'Please Wait'. After the read is complete the instrument will display the results for two seconds and then increment to the next 'Blank #'.
 - g. Scroll up to enter the next 'Sample #' using the up and down arrow keys.
 - h. Insert the next sample into the instrument.
 - i. Highlight the 'Blank Int.' line using the up and down arrow keys. Press the 'Read' button below the screen and wait for the instrument to finish reading.
 - j. Continue the above procedure until all sample blanks have been read.
 - k. Add tracer to all the samples and wait the appropriate incubation period.

SENTRY 100 OPERATION MANUAL

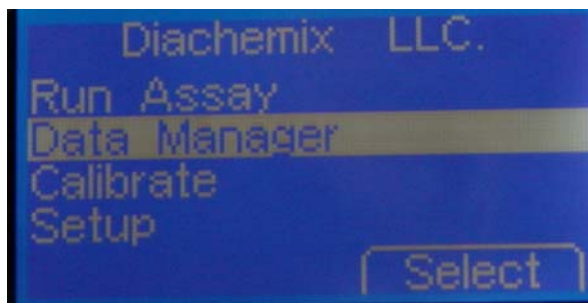
- l. Return to the first 'Blank #' by using the number '1' key or the left and right arrow keys.
- m. Insert the first sample (antibody solution plus sample plus tracer) into the instrument
- n. Highlight the 'Sample Int.' line using the up and down arrow keys. Press the 'Read' button below the screen. A dialog box will appear that says 'Please Wait'. After the read is complete the instrument will display the results for two seconds and then increment to the next 'Blank #' to be read.
- o. Insert the next sample into the instrument and continue the above procedure until all samples have been read.
- p. When all samples have been read press the 'Done' button below the screen. A dialog box will appear that says 'Exit Inhibitor?'. Press 'Yes' to exit to 'Run Assay' screen or Press 'No' to continue to run 'Inhibitor Mode'.
- q. At the 'Run Assay' screen you can press the 'Back' button to exit to the main menu or chose a new test to perform.

SENTRY 100 OPERATION MANUAL

DATA MANAGER

Test results are stored in the SENTRY 100 memory until they are erased or memory capacity is exceeded. Approximately 1,000 accumulated test results will be stored in memory. Test results may be reviewed on the SENTRY 100 LCD screen. **Warning: Down load data or erase data after 500 reads: After 500 reads the data may become corrupt.**

Reviewing test results using the Data Manager includes the following steps:



1. Beginning on the main screen, use the up or down arrow to highlight the 'Data Manager' line.
2. Press the button associated with the 'Select' command on the screen to move to the '...Data Management' screen.

'...Data Management' Screen

1. From the '...Data Management' screen you can proceed to the 'View Data' screen, choose to erase all stored data ('Erase Data' command) or determine the available memory for storing additional test results.



Viewing test data on the SENTRY 100 screen

1. Use the up or down arrow to move to select the 'View Data' line.
2. Press the button associated with the 'Execute' or 'View' command on the screen to move to the '...View' screen.

SENTRY 100 OPERATION MANUAL

Use the down or up arrows to scroll through the initial '...View' screen to the second and third '...View' screens.

The initial '...View' screen displays the 'Test Name', 'Test Type', 'Tech' and 'Lot #' entries for the first sample.

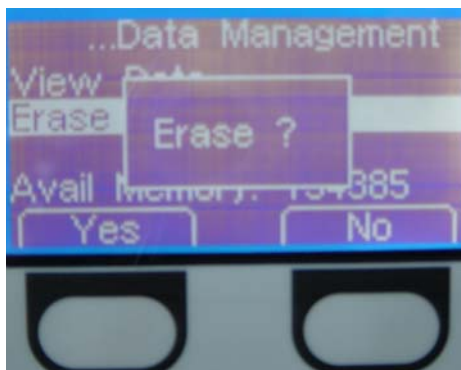
The second '...View' screen displays the 'Location', 'Time', 'Date' and 'Sample #' entries for the first sample.

The third '...View' screen displays the 'Blank #', 'Blank Int.', 'Sample Int.' and 'Sample mP' values for first sample.

3. Within any '...View' screen you can use the left or right arrow to sequence through the results for recent tests performed on the SENTRY 100.
4. Within any '...View' screen you can press the button associated with the 'Back' command to return to the '...Data Management' screen.

Erasing Data

1. Use the up or down arrow to move to select the 'Erase Data' line.
2. Press the button associated with the 'Execute' or 'Erase' command on the screen to erase the test results data presently contained in the SENTRY 100 instrument.
3. Respond to the 'Erase ?' dialogue screen by confirming your intention to erase the data by selecting the button associated with the 'Yes' command. Selecting the button associated with the 'No' command returns you to the '...Data Management' screen.
4. Repeat the above procedure. **It is recommended to Erase at least two times, to avoid data corruption.**



Available Memory

The available memory remaining to store additional test results is displayed on the 'Avail Memory:' line of the '...Data Management' screen. Results from approximately 1,000 prior tests are retained in memory unless erased or overwritten. **Warning: Down load data or erase data after 500 reads.**

SENTRY 100 OPERATION MANUAL

Data Transfer

Data transfer is possible from the SENTRY 100 instrument to a personal computer running a Microsoft Windows Operating system (Windows 98 or above). Either a USB or RS232 connection may be used to transfer test result data to the computer.

A special software program needs to be installed on your personal computer in order to transfer data. Please complete the following steps to install the program.

Installation of Assay Retrieval Tool Program on the Personal Computer

1. Insert the Assay Retrieval Tool CD disc into the personal computer. (The computer's operating system must be Windows 98 or above.)
1. Open the 'Assay' file folder on the disc.
2. Double click on 'setup.exe'.
3. The Installshield Wizard dialogue box will be displayed. Click 'Next'.
4. The License Agreement dialogue box will be displayed. Click on "I accept terms in license agreement." Then click 'Next'.
5. The Customer Information dialogue box will be displayed. Enter appropriate data in each field. Click 'Next'.
6. The Setup Type dialogue box will be displayed. Select 'Typical Installation'. Click 'Next'.
7. The Ready to Install Program dialogue box will be displayed. Review information, then click 'Install'.
8. The Installshield Wizard Completed dialogue box will be displayed. Click on 'Finish'.
9. The software program is now installed as "Diachemix> Assay Retrieval Tool".
10. If you are going to use a RS232 connection, the software installation process is complete.
11. If, however, you wish to use the USB port on the Sentry 100 for data retrieval, connect the Sentry 100 to the computer via a USB cable. Turn on the instrument, leaving on the Main Menu screen on the SENTRY 100.
12. Follow the installation instructions displayed on the personal computer from the 'New Device Found' screen. From the CD disk open the USB file, and then the Driver file to locate and install the appropriate driver.
13. After installation is complete the computer will assign a "Com Number" for the USB connection.
14. Use this 'Com Number' whenever using the USB connection with the Diachemix Assay Retrieval Tool program. If you are going to use a USB connection, the software installation process is now complete.

With the Assay Retrieval Tool Program installed on your personal computer, you are now able to use the Retrieval Tool. Please use the following steps when retrieving assay data.

SENTRY 100 OPERATION MANUAL

Using the Diachemix Assay Retrieval Tool

1. To run the program, click on 'Diachemix > Assay Retrieval Tool' in the "Start" - "All Programs" menus from your personal computer.
2. The 'X Diachemix Assay Retrieval Tool' dialogue box is displayed.
3. Connect the Sentry 100 to the computer via a 232 cable. Alternatively, a USB cable can be used provided the 'com number' that was assigned it after installation is used. In either case, turn on the Sentry 100 unit, leaving on the Main Menu screen on the Sentry 100.
4. Select appropriate com port in Box 1. Then click on Open Port. A dialog box saying device found will open. Click on Ok. If the dialogue box does not open check com port and then retry.
5. In Box 2 click on the 'Browse' button to select or change the directory in which you want the data stored. The default file location is: 'C:\assaydat.txt'.
6. In Box 3 click on the 'Retrieve' button to download the data. When the transfer is finished a dialog box will open that displays 'Done', click on Ok.

SENTRY 100 OPERATION MANUAL

TROUBLE SHOOTING

If after identifying the problem and trying the suggested solution, the problem persists, call the Diachemix Technical Service at 1-847-548-2339 or E-mail to

techassist@diachemix.com

Intermittent or no power

Check the power adapter plug connection to the wall outlet as well as the power adapter cable connection to the instrument. Be certain power is provided to the wall outlet. If you are using the battery pack, make certain all batteries are properly and firmly inserted and that the battery pack cable is connected to the instrument.

Sudden, dramatic change in expected values

The sample may have become contaminated or the sample tube scratched.

Be certain the top of the optics chamber is completely closed. Wait 5 seconds after top is closed before measuring.

Recalibrate the instrument and retest.

If the housing of the instrument had been removed and the optics compromised, stray light may have found its way into the chamber. Such actions VOID the WARRANTY.

Principles of Fluorescence Polarization

When a fluorescent molecule (tracer) is excited with plane polarized light, the fluorescent molecule emits light in the same polarized plane provided that the molecule remains stationary throughout the excited state. However, if the excited molecule rotates during the excited state, then light emitted is in a plane different from the excitation plane. If vertically polarized light is used to excite the fluorophore, the emission light intensity can be monitored in both the original vertical plane and also the horizontal plane. If the labeled molecule is very large, it rotates very little during the lifetime of the excited state. If the labeled molecule is small, it rotates faster, and the resulting emitted light is depolarized relative to the excitation plane. Thus polarization (P) is defined as:

$$P = \frac{V - H}{V + H}$$

Where **V** is the intensity of the emission light parallel to the excitation light plane and **H** is the intensity of the emission light perpendicular to the excitation plane. Molecular rotation has been shown to be related to viscosity, absolute temperature, molecular volume, and the gas constant. If viscosity and temperature are held constant, then polarization is directly related to molecular volume. Changes in molecular volume may be due to molecular binding or dissociation, synthesis or degradation, or conformational changes of the labeled molecule. From the equation it can be seen that a rapidly rotating molecule, i.e., a small uncomplexed molecule, will have similar V and H values and the ratio P will be small. Conversely, a large complexed molecule rotating slowly will have significantly different V and H values and the P ratio will be large.

Program Calculations

$$P = \frac{V - HG}{V + HG}$$

$$\text{Intensity} = (2GH) + V$$

$$MP = 1000 \times (V - GH) / (V + GH)$$

H = Horizontal Reading

V = Vertical Reading

G = Correction Factor for Optics Balancing

SENTRY 100 OPERATION MANUAL

DIACHEMIX SENTRY 100 FP INSTRUMENT SPECIFICATION LIST *Fluorescence Polarization Diagnostic Instrument*

INSTRUMENT SPECIFICATIONS:

Light Source:	Light Emitting Diode
Detector:	Photomultiplier Tube
Operating Temperature:	4 to 46 degrees C (39 to 115 degrees F)
User Interface:	Custom Membrane Keypad Graphic LCD Display (128 x 64 dots)
Data Storage:	135 kb (approximately 1,000 tests)
Data Interface:	Download to PC: RS232 or USB
Power Requirements:	12V DC, 150 mA
Dimensions:	Width: 4.2 inches (107 mm) Length: 8.0 inches (203 mm) Height: 2.2 inches (56 mm) + 1.7 inch tube stack Weight: 2.7 pounds (1.1 kg)
Filters:	Excitation: 485 nm Emission: 535 nm
Tube Format:	Size (10mm or 12mm) x 75 mm borosilicate glass
Precision:	< 2 mP standard deviation at 1 nM fluorescein
Measurement Time:	5 second minimum
Case:	Hard-cover carrying case available
Product Use:	Compliant with USDA licensed <i>B. abortus</i> FP Test
CE Product Compliance:	CE Declaration of Conformity (EN 45014 : 1998)
SUGGESTED BASE PRICE:	(Subject to accessories and reagent order)
For further information:	Ed Corrigan (edcorrigan@diachemix.com)

Rev. 12-2004

SENTRY 100 OPERATION MANUAL

Sentry 100 Fluorescence Polarization Instrument

Warranty

Diachemix, LLC (Diachemix) warrants to the original purchaser that Diachemix instruments will be of high standards of workmanship and materials and will be free of defects when shipped for a period of one year.

The foregoing is Diachemix's sole warranty with respect to the instrument. THIS WARRANTY IS EXPRESSLY IN LIEU OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE AND ALL OTHER EXPRESS OR IMPLIED REPRESENTATIONS AND WARRANTIES.

The warranties will not apply if it is determined by Diachemix that the Instrument became defective due to accident or because the purchaser failed to exercise due responsibility, abused, misused, misapplied or permitted alterations of the Instrument, power surge, unusual voltage conditions, tampering, or damage during repair work or attempted repair work made by anyone other than personnel expressly authorized by seller. Removing the cover of the instrument voids this Warranty.

THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY AGAINST Diachemix shall be for the repair or replacement of defective original parts after it is determined by Diachemix that the parts are indeed defective. In addition, the above warranty does not cover any costs connected with removing or replacing any defective part or the costs to transport the defective part or instrument back to the manufacturer. All replacement parts are sent out F.O.B. factory.

Nothing in the above warranties shall make Diachemix liable for any incidental or consequential damages, including damages to any object used in this Instrument, injury to personal property, or any other form of economic loss which results from defective Instrument or any part thereof.

This Warranty will be governed by the laws of the State of Wisconsin.

This Warranty is not transferable, nor assignable by the purchaser.

CONTACTS

If after identifying the problem and trying the suggested solution, the problem persists, call the Diachemix Technical Service at 1-847-548-2339 or E-mail to techassist@diachemix.com.

Corporate offices for Diachemix LLC are located at:

Diachemix LLC
223 N. Water Street, Suite 500
Milwaukee, WI 53202-5707
USA

(414) 902-6770 General
(414) 902-6771 Fax

Laboratory facilities are located at:

Diachemix LLC
683 E. Center Street, Unit H
Grayslake, IL 60030-1686
USA

(847) 548-2339 General Lab
(847) 548-2984 Fax