

# Product Information

## AccuLite™ Mini Fluorometer

### Catalog Number:

E90000 AccuLite™ 350

E90001 AccuLite™ 470

### 1. Product Description

#### 1.1 Overview

The AccuLite™ Mini Fluorometer is a portable instrument designed for multipurpose fluorescence measurements. The instrument is simple to use, lightweight, and can be powered by either DC power adaptor or battery, making it an excellent choice for field studies and laboratory measurements. AccuLite™ meters can be used for general fluorescence measurements. AccuLite™ 350 detects blue fluorescence, with 365-370 nm LED excitation and 460+/-20 nm emission filter. AccuLite™ 470 detects green fluorescence, with 465-475 nm LED excitation and 540+/-30 nm emission filter.

In addition to general use, the meters include programs for use with Biotium's AccuBlue™, AccuClear™, and AccuOrange™ assays. AccuLite™ 350 is compatible with the AccuBlue™ Broad Range dsDNA Quantitation assay, while AccuLite™ 470 is compatible with AccuBlue™ High Sensitivity dsDNA Quantitation, AccuClear™ Ultra High Sensitivity dsDNA Quantitation, and AccuOrange™ Protein Quantitation assays. See related products on page 3 for more information.

#### 1.2 Key Features

- Accepts 200 µL PCR tubes or mini glass tubes (catalog no. 22019)
- LCD touch-screen display
- User-friendly software with "touch and test" operation
- USB interface for data management
- Compact and robust
- Greater than 6 logs of dynamic range with proper calibration

#### 1.3 Packing List

- The AccuLite fluorometer
- 5V DC power adaptor
- USB cable
- USB driver/data management software CD
- Product Information sheet

#### 1.4 Battery Installation

- Slide off the battery compartment cover on the back of the instrument.
- Install 4 AA alkaline batteries into the appropriate spaces with correct polarization.
- Slide on the battery compartment cover.

### 2. System Operation

#### 2.1 Power Up

The AccuLite Fluorometer can be powered with 4 AA alkaline batteries or a power adaptor (5VDC). Do not use power adaptors other than the one supplied with the meter. Switch the ON/OFF button to turn on the fluorometer. A welcome screen will appear (Fig. 1), followed by the Main Menu (Fig. 2). See page 4 for the complete Menu Tree.

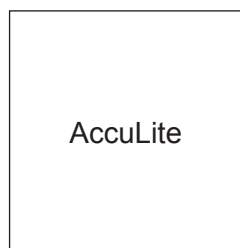


Figure 1. Welcome screen

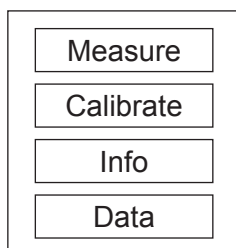


Figure 2. Main Menu

#### 2.2 Sample Preparation

- Prepare sample solutions within the concentration range that can be read by the fluorometer. You can use the RFU Hi or RFU Lo mode in the Measure function to measure samples to determine whether they fall within the range of the meter.
- Use clear, thin-walled 0.2 mL PCR tubes. Biotium also offers mini glass tubes (catalog no. 22019), which offer higher sensitivity than plastic tubes, allowing measurement of only 100 µL sample compared to 200 µL with plastic tubes.
- Fill the tube with 200 µL sample solution or to a minimum of 80% of the tube height. 100 µL sample can be used with mini glass tubes.
- Make sure the outside of the tube is clean and dry. Any materials on the outside of the tube may cause measurement error.
- Make sure there are no bubbles in the sample solution.

#### 2.3 Calibration

Note: For general fluorescence measurement, choose Assay 3. For fluorescence measurement without calibration, proceed to section 2.4. Instructions for using the Biotium assay programs in the meter (AccuBlue, AccuClear, and AccuOrange) can be found in the Appendix section of the specific assay protocol.

- Touch the Calibrate tab on the Main Menu screen to enter the Assay Selection screen (Fig. 3). In the screen you can select the assay on which you want to calibrate your standard. Alternatively, if you do not wish to use calibration, you can use the meter in RFU mode (see section 2.4a).
- After you select the assay and enter the Calibrate screen (Fig. 4), put in a blank sample in the sample chamber. Touch Blank to take the blank value.
- After the blank is read, the Standard screen will appear (Fig. 5).
- In Biotium assay programs, the standard value is pre-set. For manual calibration, use the left and right arrow key on the 2nd row to increase or decrease the nominal value of the calibration standard sample. The nominal value can range from 0.01 to 1000.000 by factors of 10. Prepare a standard with a value within this range.
- Touch the Measure tab to measure the standard. Calibration Finished will show on the screen. Press Return to go back to the Main Menu.
- If the standard measured value is equal or less than the blank, the error message "Reading Too Low!" will appear. Prepare a higher concentration standard and measure again.

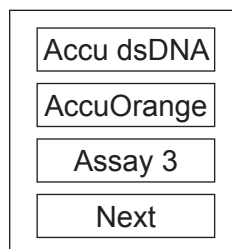


Figure 3. Assay Selection screen

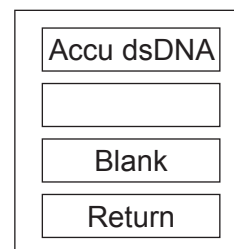


Figure 4. Calibrate screen

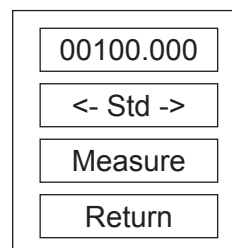


Figure 5. Standard screen

## 2.4 Measurement

Note: For general fluorescence measurement, select Assay 3.

- Touch the Measure tab on the Main Menu screen to enter the assay selection screen. In the screen you can select Assay 1, 2, or 3. This selection will measure the sample and calculate the nominal concentration value using the standard value that you used in the calibration steps. Or you can touch Next to enter the next screen and select RFU Hi or RFU Lo function to measure values in relative fluorescence units (RFU) using high or low optical excitation power settings, respectively. After assay selection, the Measure screen will appear (Fig. 6).
- If you performed calibration (section 2.3), proceed to the next step. If you did not perform calibration, prepare a blank sample, referring to Section 2.2. Insert blank tube into the sample chamber and touch Blank. After the blank has been read, the Measure screen will appear (Fig. 6).
- Prepare sample, and insert sample tube into the sample chamber. Touch Measure to start measurement. After a few seconds, the measurement result will be displayed on the Result screen (Fig. 7). If you used calibration, the value displayed will be in the same units as your standard (for example, if the nominal value of your standard was 1, representing 1  $\mu$ M, then the value displayed will represent  $\mu$ M; if the nominal value of your standard was 10, representing 10 ng/tube, the value displayed will represent ng/tube). The timer clock will start from zero so you can do a follow-up measurement after a certain time if desired.
- If you want to save the measurement data in the meter's on-board memory, you can touch the Save tab. The data will be saved in the memory of the specific assay that you selected earlier. The data will be numbered in sequential order of measurement, with the number displayed on the upper-right corner.
- If the reading is too high and saturates the photo-detector, an "Over Limit" message will display.
- Touch the Measure tab again to repeat the measurement. The timer clock will restart from zero.
- If batteries are used as the power source, and the voltage has dropped too low and the accuracy of the measurement may be affected, a "Battery Low" warning message will show on the bottom of the screen during measurement. The batteries should be replaced as soon as possible.
- Touch Return to return to the "Measure" screen, and touch Return again to go back to the Main Menu.

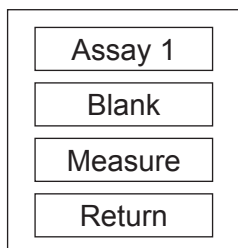


Figure 6. Measure screen

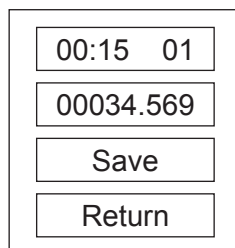


Figure 7. Result screen

## 2.5 Data Retrieval

- Touch the Data tab on the Main Menu screen. Select the assay you used to collect the data. The Data screen will appear (Fig. 8). The first row shows the saved data, and the second row shows the label assigned to the data point according to sequential order of measurement. You can touch the left and right arrow key to scroll through the data points in order of measurement.
- If you want to erase the all saved data for the assay you are viewing, touch Erase All and confirm the action in the next screen. The data of the other assays will not be affected.
- Touch Return to return to Main Menu screen.

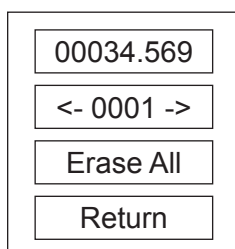


Figure 8. Data Screen

## 3. Maintenance

- Avoid contaminating the outside wall of the tube. If the contamination is transferred to the inside wall of the test chamber, it may cause increased background and reading error. If this happens, use a cotton swab with clean water or alcohol to gently clean the inside wall of the test chamber.
- The touch screen can be periodically cleaned with alcohol or mild detergent.
- Always turn off the meter when not in use when using battery power.
- If the meter will not be used for extended period of time, remove the batteries from the battery compartment before storing the meter.

## 4. Fluorometer Data Manager Application Program

### 4.1 System Requirements

The minimum requirements for the computer are listed below:

OS:	Microsoft Windows 2000/XP/Vista/Windows 7
CPU:	Pentium 4 or later
RAM:	512 MB, recommend 1GB or higher
USB Port:	USB 2.0

### 4.2 Software Installation

- In order to use Fluorometer Data Manager application program, you may need to have the .NET framework version 2.0 or higher version installed on your computer. You may already have the .NET framework installed on your PC, especially if you have already installed other applications, which were built with one of the Visual Studio 2005 .NET languages. If you do not yet have it, the .NET framework can be freely downloaded from Microsoft's website. Users of Windows Vista do not need to install the .NET framework, as it comes pre-installed as part of the OS.
- You also need to install the Microsoft Visual C++ 2005 Redistributable Package "vcredist.exe", which is included in the installation package. Double click "vcredist\_x86.exe" and follow the instructions displayed during the installation.
- Double click "Setup.exe" in the installation package and follow the instructions displayed during the installation to install "FluorometerDataManager.exe" on the your computer. By default, the data manager program will be installed in the directory: C:\Program Files (x86)\Fluorometer\Data Manager - User\A "Data Manager - User (Active)" shortcut will also be created on the computer Desktop.
- Connect the fluorometer to the USB2.0 port of the host computer with a USB cable.
- The "Found New Hardware Wizard" window will pop up. Select "No, not this time" and click "Next" button.
- If the "Found New Hardware Wizard" window does not pop up, go to Step k to install USB driver manually.
- In the next window, select "Install from a list or specific location (Advanced)", then click "Next" button.
- In the next window, check "Include this location in the search". Click "Browse" to find in the folder of installation CD "USB Device Drivers". Then click "Next".
- In the next window, Windows will search and download the USB driver for the fluorometer into the operating system.
- In the next window, click "Finish" button to complete the USB driver's installation.
- If "Found New Hardware Wizard" window does not pop up, proceed to Section. 4.4 to start the Application Program and see if the fluorometer can be recognized by the computer. If not, click "Start", select "My Computer", right click to get drop-down menu, select "Manage" tab to bring up "Computer Management" window.
- Expand the "Device Manger" tab and then "Universal Serial Bus controllers", then "Custom USB Devices". Right click "Microchip WinUSB Device" to bring up drop-down menu, select "Update Driver..." tab to invoke "Hardware Update Wizard" window. Follow the instructions from Step e to Step j to install USB driver.
- After the USB driver has installed successfully, the "Computer Management" window will appear.

### 4.3 Uninstall the Handheld Fluorometer Application Program

- Click "Start", and then click "Control Panel".
- Double click "Add or Remove Programs".
- Find "FluorometerDataManager" tab and click "Remove" button to uninstall the application program from the host computer.

### 4.4 Handheld Fluorometer Application Program

- Double click "Data Manager - User (Active)" shortcut icon on Desktop to bring up "Handheld Fluorometer Data Manager" window, as shown in Figure 9.
- Click "Connect" to set up the USB communication between the fluorometer and the host computer. After connected successfully, "Read All Data", and "Erase All Data" buttons are enabled.
- Click "Read All Data" to read and display all saved data in the fluorometer as shown in Figure 10. The example shows that Assay#1 has 2 data points, Assay#2 has 3, and Assay#3 has 2 stored in the memory.
- Click "Save Data" to bring "Save As" window as shown in Figure 11. Type in the file name to save data into \*.csv format file which can be opened in Microsoft Excel spreadsheet.
- Click "Erase All Data" to erase all saved data in the fluorometer.
- Click "Clear Information" to clear all contents shown in the Window.
- Click "Exit" to close the Handheld Fluorometer Data Manager application program.

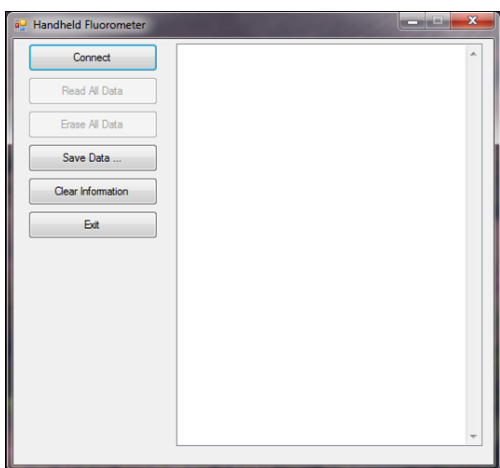


Figure 9. Fluorometer Data Manager window.

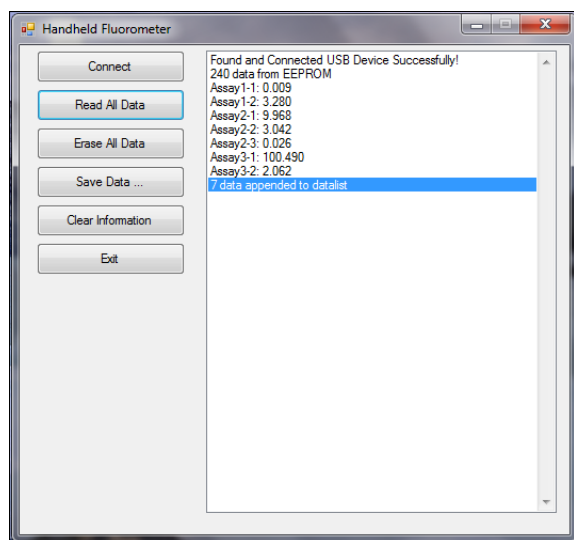


Figure 10. Access and manage saved data

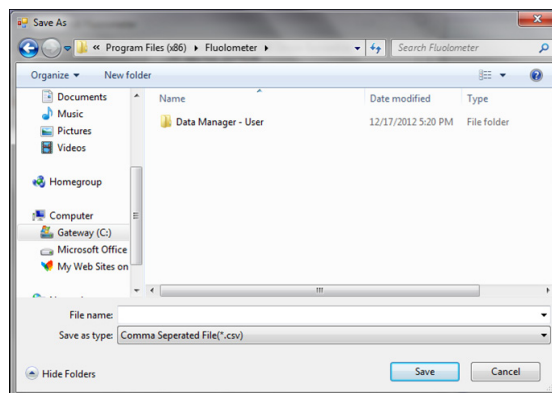


Figure 11. Save As window

## 5. Technical Specifications

Power Supply:	4 AA batteries or a 5VDC adapter
Excitation Source:	AccuLite 350: 365-370 nm LED AccuLite 470: 465-475 nm LED
Emission Filter:	AccuLite 350: 460+/-20 nm AccuLite 470: 540+/-30 nm
User Interface:	LCD Touch Screen
Data Output:	USB Port
Sample Tube:	200 µl clear, thin-walled PCR tube
Warm-Up Time:	Less than 10 seconds
Dimensions:	185mm x 90mm x 35mm
Weight:	10 oz (0.28kg)

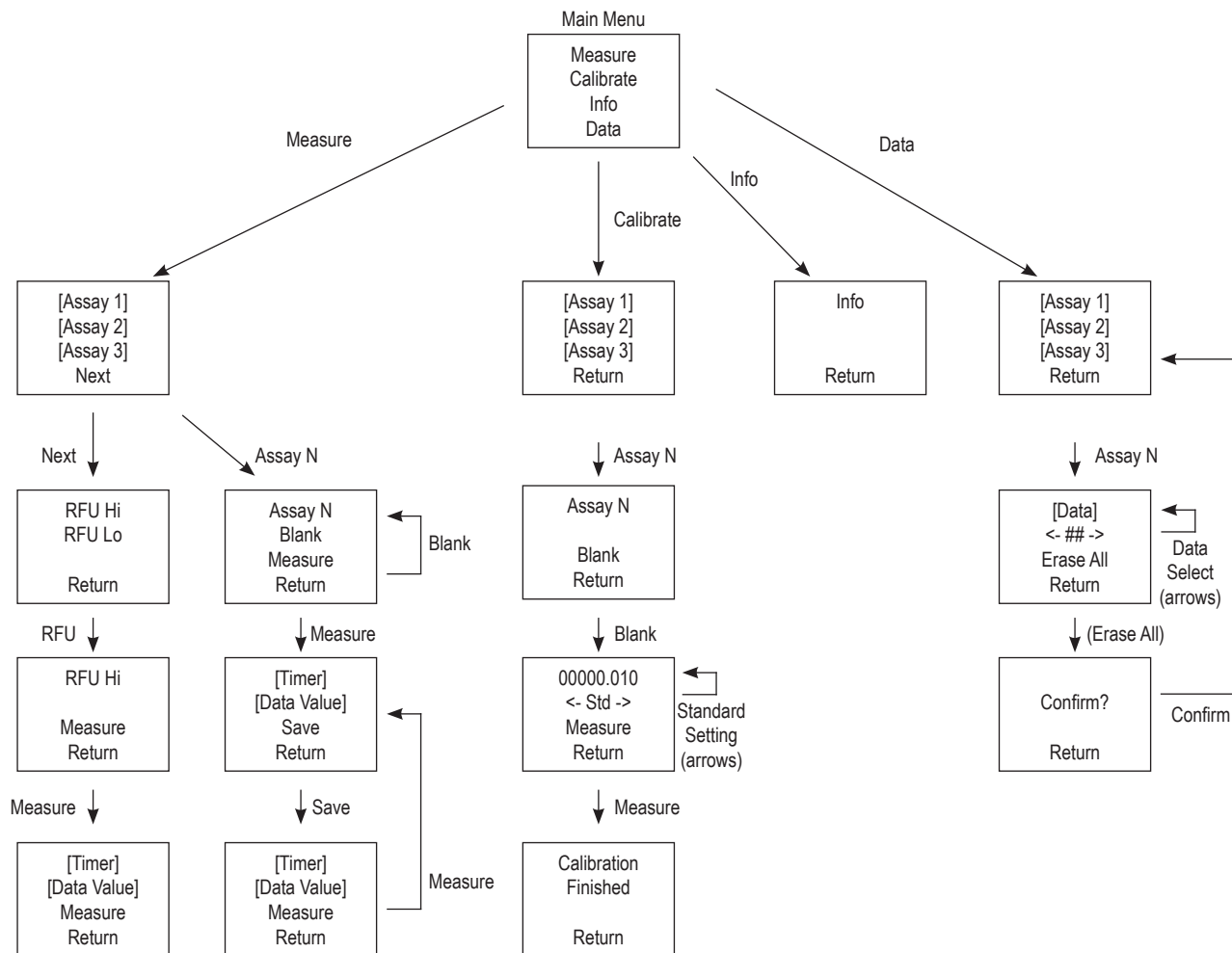
## Related Products

Catalog number	Product
22019	Mini Glass Tubes (pack of 100)
31027-T	AccuClear™ Ultra High Sensitivity dsDNA Quantitation Solution, trial size (200 assays)
31027	AccuClear™ Ultra High Sensitivity dsDNA Quantitation Solution (1000 assays)
31028	AccuClear™ Ultra High Sensitivity dsDNA Quantitation Kit with 7 DNA Standards (1000 assays)
31029	AccuClear™ Ultra High Sensitivity dsDNA Quantitation Kit with 1 DNA Standard (2000 assays)
31006-T	AccuBlue™ High Sensitivity dsDNA Quantitation Kit with DNA Standard, trial size (200 assays)
31006	AccuBlue™ High Sensitivity dsDNA Quantitation Kit with 8 DNA Standards (1000 assays)
31007-T	AccuBlue™ Broad Range dsDNA Quantitation Kit with DNA Standard (200 assays)
31007	AccuBlue™ Broad Range dsDNA Quantitation Kit with 9 DNA Standards (1000 assays)
31008-T	AccuBlue™ High Sensitivity dsDNA Quantitation Solution, trial size (200 assays)
31008	AccuBlue™ High Sensitivity dsDNA Quantitation Solution (1000 assays)
31009-T	AccuBlue™ Broad Range dsDNA Quantitation Solution, trial size (200 assays)
31009	AccuBlue™ Broad Range dsDNA Quantitation Solution (1000 assays)
30071-T	AccuOrange™ Protein Quantitation Kit, trial size (200 assays)
30071	AccuOrange™ Protein Quantitation Kit (2000 assays)

Please visit our website at [www.biotium.com](http://www.biotium.com) for information on our life science research products, including environmentally friendly EvaGreen® qPCR master mixes, fluorescent CF™ dye antibody conjugates and reactive dyes, apoptosis reagents, fluorescent probes, and kits for cell biology research.

Disclaimer: Materials from Biotium are sold for research use only, and are not intended for food, drug, household, or cosmetic use. Biotium is not liable for any damage resulting from handling or contact with this product.

## 6. Menu Tree



## 7. Warranty

Biotium warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of purchase. If a defect is present, Biotium will, at its option, repair, replace, or refund the purchase price of this product at no charge to you, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. For your protection, items being returned must be insured against possible damage or loss. Biotium cannot be responsible for damage incurred during shipment of a repair instrument; it is recommended that you save the original packing material in which the instrument was shipped. This warranty shall be limited to the replacement of defective products. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

## 8. Obtaining Service

Contact Biotium Technical Support at 800-304-5357 or send an email to [techsupport@biotium.com](mailto:techsupport@biotium.com) and describe the problem(s) you are experiencing. Carry out any suggested modifications or tests. DO NOT ship an instrument to us without first obtaining a Return Authorization from us. If it is determined by the Biotium Technical Support representative that the instrument should be returned for repair, a Return Authorization number will be assigned and you will receive instructions for the return. If the instrument is under warranty, Biotium will repair or replace the unit, and pay for return shipment. If the instrument is not under warranty, Biotium will give you a cost estimate before repairing the unit. Repair and shipping costs both ways are your responsibility if the instrument is not under warranty.