

451 Assistant for Excel

Operators Manual

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General Information

Introduction

The 451 Assistant for Excel is an Excel Add-In. An Excel Add-In is a program that adds optional commands and features to Microsoft Excel. The 451 Assistant provides remote control for many of the Model 451's functions such as its internal data log and integrated dose measurement functions. The 451 Assistant also provides real-time computer controlled data logging in an Excel spreadsheet. Since the 451 Assistant for Excel is an Excel Add-In, it is automatically loaded with Excel once it is installed.

System Requirements

The minimum system requirements are as follows:

- Windows XP or later
- Microsoft Excel 97 or later
- One serial port (COM1 through COM4)

Customer Service / Technical Support

For application support or answers to technical questions, visit the web page at <https://www.flukebiomedical.com/support/technical-support>

Version Information

The 451 Assistant version information can be viewed by clicking on “**About 451 Assistant**” in the Help menu.

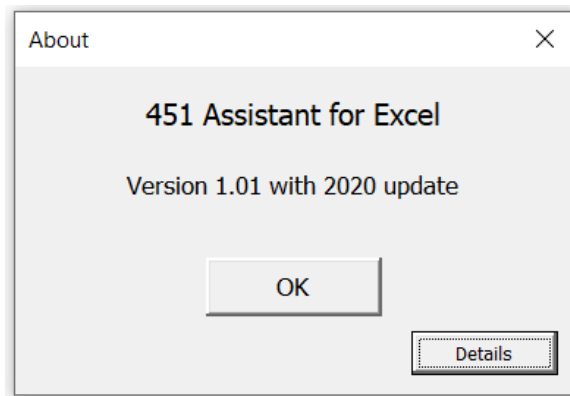


Figure 1. The About window

Tip! Press Details to view connection status. The serial number of the device will be seen if connected.

Installation

Installing the 451 Assistant for Excel

Follow the installation instructions included with the setup files.

Using the 451 Assistant for Excel

Connecting the 451 to a PC

To use the 451 Assistant for Excel, the 451 must be connected to a serial communications (RS-232) port.

To connect the 451 to a computer, follow the steps below:

1. Turn ON the 451 and the computer.
2. Plug the 4-pin round connector of the RS-232 cable into the 4-pin round connector jack on the side of the 451.
3. Plug the female 9-pin cable connector into the 9-pin RS-232 connector on the personal computer. If multiple connectors exist, consult the computer's user manual to determine which connector to use.

Starting the 451 Assistant for Excel

The installation program should have installed the add-in to Excel, meaning that Excel will load the 451 Assistant automatically. The plugin will be shown directly as a "451" menu for Excel versions older than 2007. For newer versions, there is an "Add-ins" menu to press, which will open the 451 Assistant menu.

If the plugin does not appear, please consult the installation documents provided with the setup.

The 451 Assistant Menu and Toolbar

The 451 Assistant Menu and Assistant Tool Bar provide an interface for the user to remotely control the 451, configure the 451, download the internal data log, start real time data logging, and start an integrated dose measurement. All of the menu items are described below.



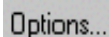
Figure 3. 451 Assistant Tool Bar



Figure 2. 451 Assistant Menu

Connect: Opens the communications port and instructs the 451 Assistant to read configuration information such as the alarm settings, unit type, and ranges.

Disconnect: Disables communications and closes the communications port.

Options...

Options

The options dialog allows for the configuration of the 451 Assistant's options. In addition, the 451 settings can be modified or viewed from the options dialog. Some of the general options are: setting the alarm sound, the real time alarm acknowledge, the real time alarm color, and the COM port. Some of the 451 settings are: setting the blink alarm and the 451 logging parameters.



Start Real Time Data Log

Starts real time data logging. Real time means the 451 is connected to the computer during the entire logging process. See real time data log properties for information about configuring real time data logging.



Stop Real Time Data Log

Stops real time data logging.



Real Time Data Log Properties

Displays the real time data logging properties. The sample interval, logging duration, and the real time alarm value are configured through this properties dialog.



Integrated Dose

Starts the 451's dose integration process.

Download log

Download Internal Data Log

Starts downloading the internal data log from the 451. All data stored in the 451 is inserted into the active Excel workbook.



Chart

Creates a line chart from the data selected on the worksheet. Select the data you want to chart then click on the Chart button.

451 Connection Status Message Box




Figure 4. 451 Connection Status Message Box

From time to time you will see the Connection Status message box. This message box provides the user with feedback on the current operation and its status.

Data Logging

Computer Data logging

Once Microsoft Excel has been started and the 451 Assistant has been loaded, data logging can be started and the data recorded in the active Excel worksheet. When a measurement is performed the 451 Assistant automatically places the measured data in the active worksheet cell, then moves down to the next row of cells where it will place the next measured data.

The 451 Assistant data logging properties may be accessed by clicking on the data logging properties button. 

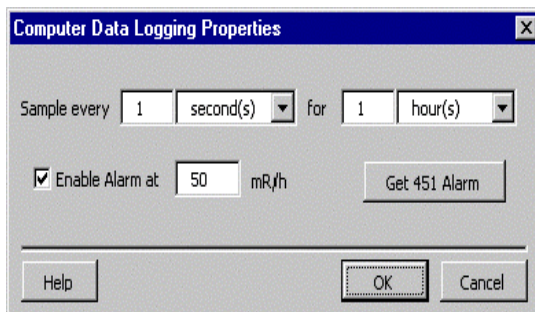



Figure 5. Data Logging Properties

The properties dialog allows you to set the length of time to record data and the time interval between recording data points. The alarm level for computer data logging may also be set from the properties dialog.

Note! The time interval and the alarm level are independent of the 451s' internal functions. The total sample period is limited to 49 days.

Computer data logging is started by pressing the Start Log button. 

Computer data logging is stopped by pressing the Stop Log button. 

Note! Decimal separator in Windows is temporary set to dot during logging.

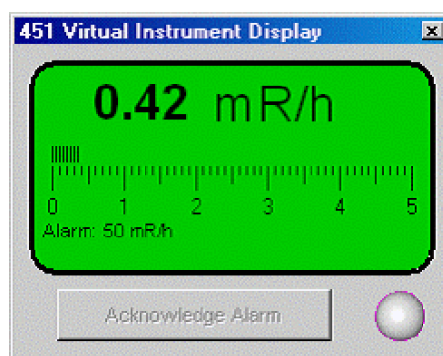


Figure 6. Virtual Instrument Display

During data logging, the Virtual Instrument Display shows the real time rate measurements from the 451. Also displayed are the alarm setting, Acknowledge Alarm button and an alarm indicator.

	A	B	C	D
1				
2	Creation date: 2/9/2001 11:11:51 AM			
3	Created by: bjones			
4	Time Stamp	mR/h		
5	2/9/2001 11:12	0.07		
6	2/9/2001 11:12	0.06		
7	2/9/2001 11:12	0.06		
8	2/9/2001 11:12	1390		
9	2/9/2001 11:12	1340		
10	2/9/2001 11:12	1280		
11	2/9/2001 11:12	2400		
12	2/9/2001 11:12	1510		
13	2/9/2001 11:12	390		
14	2/9/2001 11:12	24		
15	2/9/2001 11:12	98		
16	2/9/2001 11:12	28		
17	2/9/2001 11:12	14.1		
18	2/9/2001 11:12	8.8		
19	2/9/2001 11:12	5.6		
20	2/9/2001 11:13	3		
21	2/9/2001 11:13	2.33		
22				
23				
24				

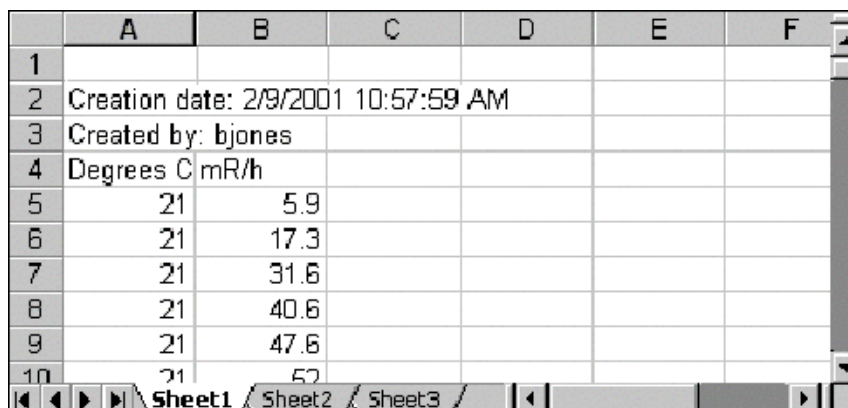
Figure 7. Real Time Data Logged to Excel

The different colors displayed in the data log shown above correspond to different alarm and alarm action levels. Measurements that are below the alarm threshold are displayed in black. Measurements that are above the alarm level and while the alarm is in an unacknowledged state are displayed in red. Measurements that are still above the alarm level after the alarm has been acknowledged are displayed in yellow. Measurements that are below the alarm level after an unacknowledged alarm state are displayed in blue. These alarm state colors and other alarm options may be changed through the 451 Assistant options menu.

Downloading the 451's Internal Data Log

The Model 451 is capable of logging data at a user-defined interval from 1 to 255 seconds. When the 451 has exhausted all of its data log memory, logging is stopped until the user clears the data log memory.

To download the data log, select a cell on a workbook to insert the log data then click on the Download log button. Data download will begin immediately. The assistant will download the entire data log stored in the 451.



	A	B	C	D	E	F
1						
2		Creation date: 2/9/2001 10:57:59 AM				
3		Created by: bjones				
4		Degrees C mR/h				
5		21	5.9			
6		21	17.3			
7		21	31.6			
8		21	40.6			
9		21	47.6			
10		21	52			

Figure 8. Downloaded 451 Data Log

In the downloaded 451 data log shown above, the first spreadsheet column is instrument temperature in degrees Celsius and the second column shows the measured dose rate.

Integrated Dose

The 451 Assistant can also be used to make integrated dose measurements. The integration period can be specified for automatically timed integration or the user may control the integration and the 451 Assistant simply measures the integration period. Click the Integrate button on the toolbar to open the integrated dose menu. From this menu, the user may set the integration timer length, if one is needed, then click start. The 451 Assistant will then start the 451 in the run mode. The 451 has a 30-second reset period after the run mode is started, after which, the instrument will start integrating. After the stop button is pressed or the timer has expired, the assistant will read the integrated dose from the 451 and insert the dose in the active cell and the average dose rate in the next cell to the right.

Note! The average dose rate may be inaccurate at low integrate time samples. The assistant cannot accurately determine the time length; therefore the timer can be off by several seconds.

The following procedure demonstrates the process of making an integrated dose measurement.

Step 1. Click the integrate button to open the integrated dose measurement dialog box.



Step 2. Check the “Use the timer to determine when to stop.” button to have the 451 Assistant control the integration period. If this checkbox remains unchecked, the user must press the **Stop** button to read the integrated dose. Regardless of the timer setting the **Stop** button can be pressed at any time to read the integrated dose. If the timer mode is selected, enter the integration time then press **Start** to begin the measurement.

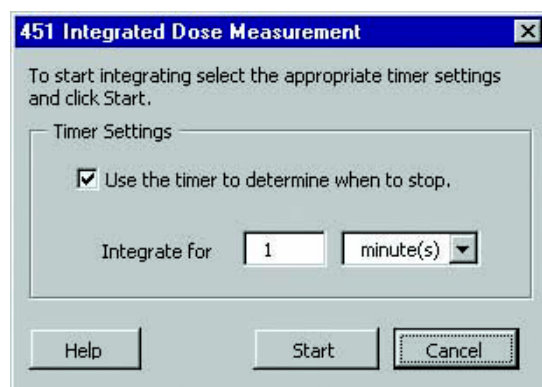


Figure 10. Integrated Dose Measurement Dialog Box

Step 3. The Assistant will start the 451 in run mode. After the run mode is started the 451 will reset the integrated dose for 30 seconds. During this period, the Integrated Dose status message box shows the time remaining in the 30-second reset period. During this period, any radiation detected by the 451 will not be included in the dose measurement.

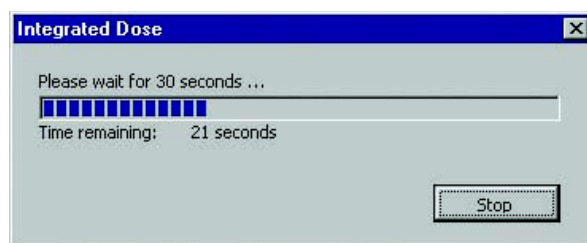


Figure 9. Integrated Dose Status Message Box During Reset

Step 4. After the 30 second reset period, the 451 Assistant will display a status message box indicating that the 451 is integrating. If timer controlled integration has been selected, the 451 Assistant will indicate the elapsed integration time and the integration time remaining. If timer controlled integration has not been selected, the 451 Assistant will only indicate the elapsed integration time. **Stop** can be pressed at any time to stop the integration process and read the integrated dose measurement.

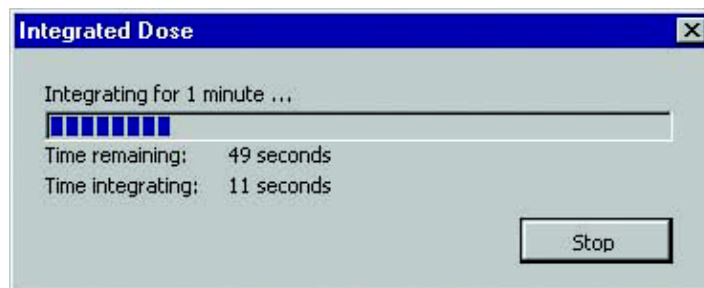


Figure 11. Integrated Dose Status Message Box During Integration

Step 5. After the specified timer duration or stop is pressed, the Assistant will query the instrument for the integrated dose.

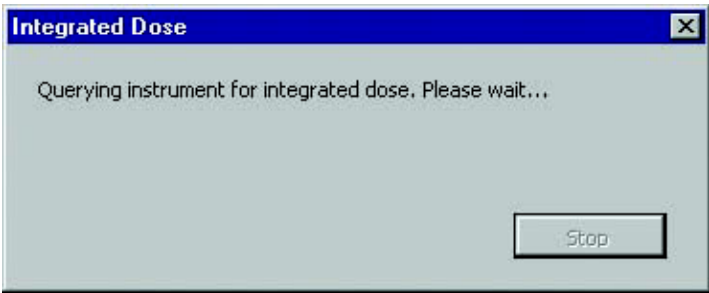


Figure 13. Integrated Dose Status Message Box, Integration Complete

After integration is complete, the integrated dose measurement and the average dose rate will be inserted at the active worksheet cell in Excel as shown below.

	A	B	C	D	
1	34.2	2018.361			
2					
3					
4					
5					
6					

Figure 12. Integrated Dose and Average Dose Rate

The first worksheet cell (A-1) contains the final integrated dose measurement of 34.2 mR or uSv, the next worksheet cell (B-1) contains the average dose rate for the integration time interval 2018.361 mR/h or uSv/h. The measured units correspond to the instrument’s default measurement units, mR and mR/h or uSv and uSv/h.

Options

The 451 Assistants' properties and a few of the 451s' properties can be changed from the Options menu. The options dialog contains two tabs; the first tab labeled General contains options for the 451 Assistant, the other tab labeled 451 Settings contains options for the 451.

Options (General)

Several 451 Assistant parameters can be changed from the general options menu, including COM port and alarm configurations.

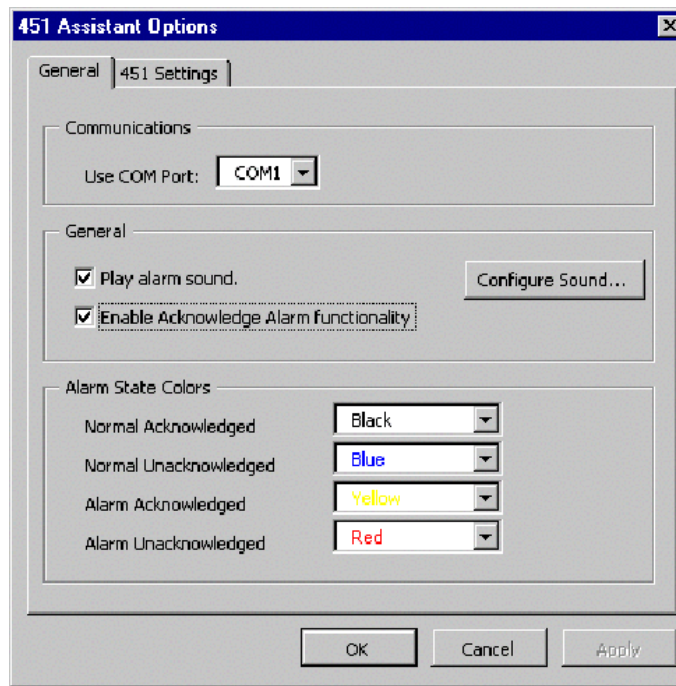


Figure 14. 451 Assistant General Options Menu

Communications: Is used to select the communication port used by the 451 (default is COM1). To change the communications port used, click on the “Use COM Port” drop down box and select the desired port. Click **OK** to start using that port.

Play Alarm Sound: A check in this box indicates that the 451 Assistant will generate an alarm sound for every data point received by the 451 that is in the alarm state.

Configure Sound: Opens the sound control panel, which is used to configure Windows' sounds. To change the alarm sound, select the “**Inovision 451 Alarm**” in the **Sound Events** list. The name box will display the wave file currently used to generate the alarm sound. Change the sound by typing the filename into the name box or select **Browse** to search for a wave file. Pressing the play button in the sound control panel will play the sound in the name box.

Enable Acknowledge Alarm Functionality: A check in this box enables the alarm acknowledge button during real time data logging.

Alarm State Colors: The 451 Assistant can be configured to use 2 or 4 alarm states. The four alarm states are normal acknowledged, normal unacknowledged, alarm acknowledged and alarm unacknowledged. If “Enable Acknowledge Alarm Functionality” is not checked, then only two alarm states are allowed: alarm unacknowledged and normal acknowledged.

Alarm Definitions

Normal Acknowledged: The previous alarm has been acknowledged and the radiation rate is below the alarm level.

Normal Unacknowledged: The previous alarm has NOT been acknowledged and the radiation rate is below the alarm level.

Alarm Acknowledged: The alarm has been acknowledged and the radiation rate is above the alarm level.

Alarm Unacknowledged: The alarm has NOT been acknowledged and the radiation rate is above the alarm level.

Options (451 Settings)

The 451 Settings menu contains information about the 451 currently connected to the PC. These settings pertain to the 451 only and have no impact on the operation of the 451 Assistant. These settings allow the user to change the configuration of the 451.

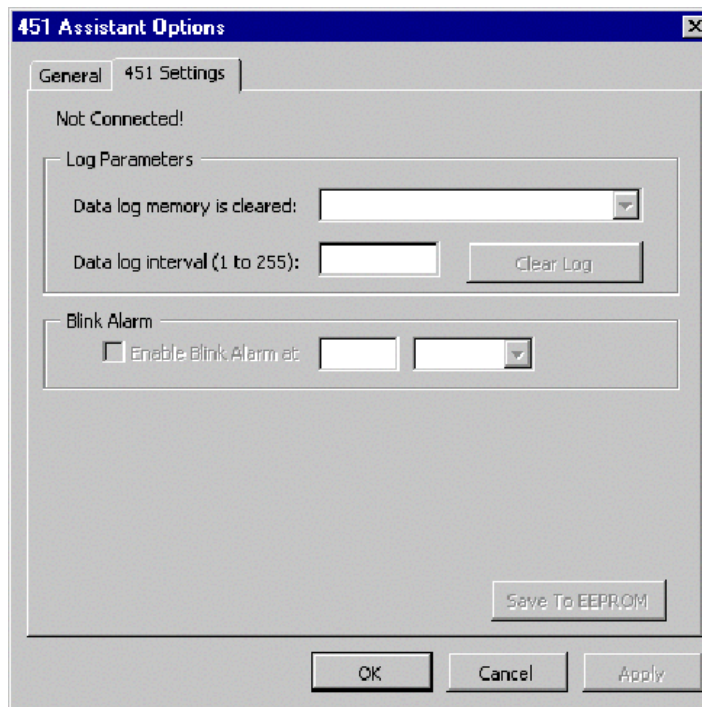


Figure 15. 451 Assistant General Options Menu

Serial Number: Displays the serial number of the 451 that is connected.

Log Parameters

Data Log Memory is Cleared: Allows the user to select when the 451 internal data log should be cleared:

At Turn On Only: The 451 will only clear its internal data log when the unit is first turned on.

At Turn On and integrate reset: The 451 will clear its internal data log at turn on and at integrate reset.

Data Log Interval (1 to 255): The 451 is capable of storing measured rate data in its internal memory. The data log interval is the period, in seconds, at which the 451 adds a new data point to its internal data log.

Clear Log: Pressing the Clear Log button clears the contents of the 451's internal data log.

Blink Alarm

Enable Blink Alarm At: A check in this box enables the Model 451's blink alarm. The blink alarm level and units may be entered in the boxes to the right.

SaveToEEPROM: Saves the configuration to the permanent EEPROM in the 451.