TRAKPRO™ v5
DATA ANALYSIS SOFTWARE

USER'S GUIDE

P/N 6009993 REVISION A
AUGUST 2016

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Introduction

TrakPro™ Data Analysis Software is an instrument programming control and data analysis program for select monitoring equipment manufactured by TSI Incorporated.

TrakPro v5 software has been designed to have a more intuitive user interface for reading and saving test data to a file, displaying the results graphically and in tables, and printing the data and reports. Statistics are available on discrete test data and graphical data and all results can be sent to a printer. It also allows for remotely setting a defined set of instrument functions and parameters.

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TrakPro v5 software was compiled using Microsoft Visual C++® V8.

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FTDI is a manufacturer of the USB interface chip used in the SidePak™ monitor
Future Technology Devices International Ltd.
93 - 97 St George's Road,
Glasgow G3 6JA
Scotland U.K.

File extensions used by TrakPro software consist of the **.TPX* extension, which is the new native format, and **.TKP* which is the format used by previous versions of TrakPro and has been retained for backward compatibility. New data files should always be given the *.TPX* extension.

Data Report file generated by TrakPro v5 software is in PDF format.

System Requirements

TrakPro v5 software is designed to run on a PC having a 1 GHz or faster 32-bit (x86) or 64-bit (x64) processor and at least 1 GB of RAM.

Other Requirements

- Video display capable of a screen resolution of at least 1280 x 720.
- Mouse or other pointing device
- At least one free serial port or USB port (the type of port depends on the instruments) for communication with instruments
- A printer if hard copies are required

TrakPro v5 software requires Windows® 7 or above operating system, with Microsoft® .Net 4.5.1 framework.

Backward Compatibility

TrakPro v5 software maintains a minimal backwards compatibility with previous TrakPro software versions by allowing only the import of .TKP data files. Data files from some instruments may not be supported.

Installing TrakPro v5 Data Analysis Software

Download TrakPro v5 software from the TSI.com website in the Service/Support page. Once downloaded onto your PC, click the application file to begin installation. Follow the on-screen instructions to install the software.

TrakPro v5 Software Instrument Compatibility

TrakPro v5 software supports the following TSI instruments:

- SidePak™ AM520/AM520i Personal Aerosol Monitor

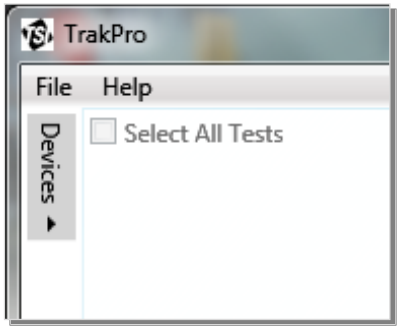
Support for additional instruments will be added on future TrakPro software releases.

Using TrakPro v5 Data Analysis Software

Connecting an Instrument to TrakPro v5 software

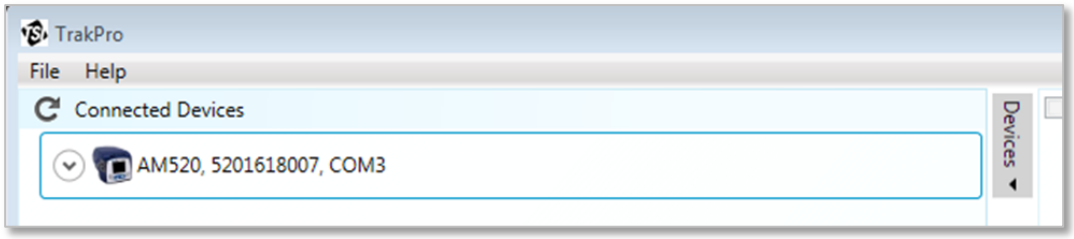
1. Connect the TSI instrument to your computer using the instructions and cables supplied with the instrument.
2. Turn on the instrument.
3. Start the TrakPro v5 software on your computer by clicking on the

icon.
4. TrakPro will open to its home page with controls in the upper-left corner as shown below.



5. Open the device pane by clicking the **Devices** tab in the upper left corner.
6. TrakPro software will scan for connected devices and will recognize the instrumentsconnected to the computer and list them in the “Connected Devices” pane as shown below.

Note
Multiple instruments can be connected to the computer at the same time, in this event, TrakPro software lists them in the Devices pane allowing you to select a specific instrument from the list.

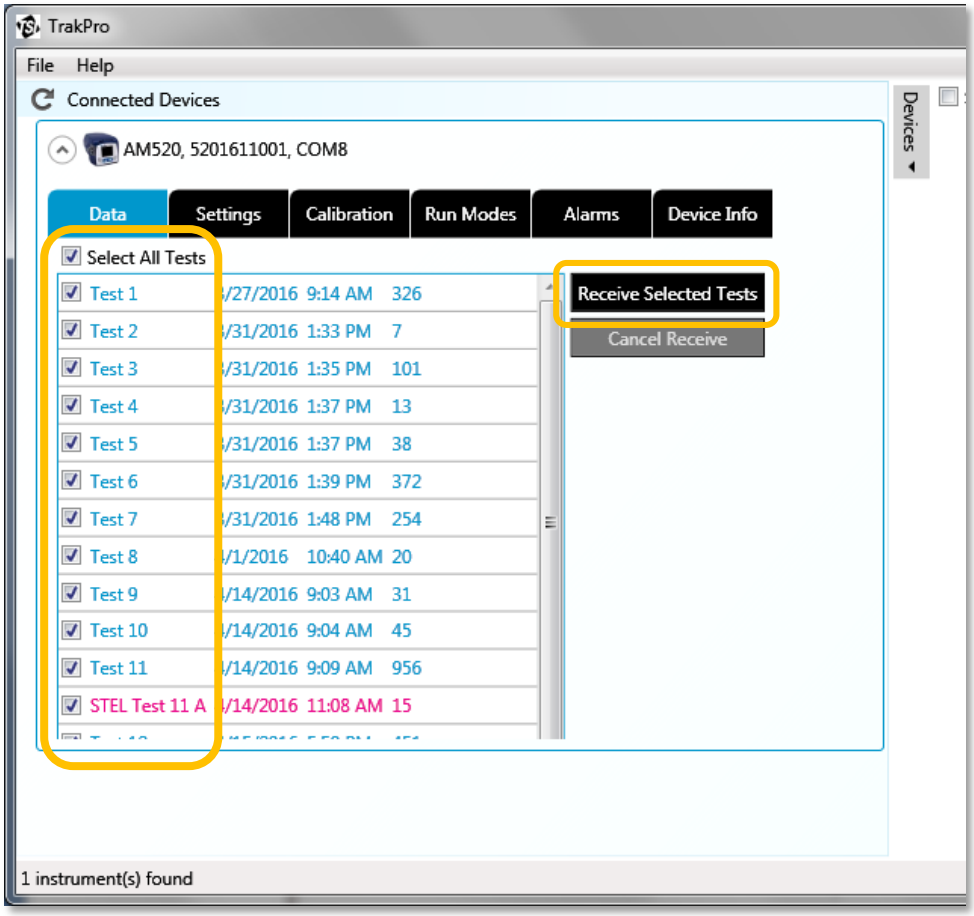


7. Select an instrument from list to view the data logs of the instrument.

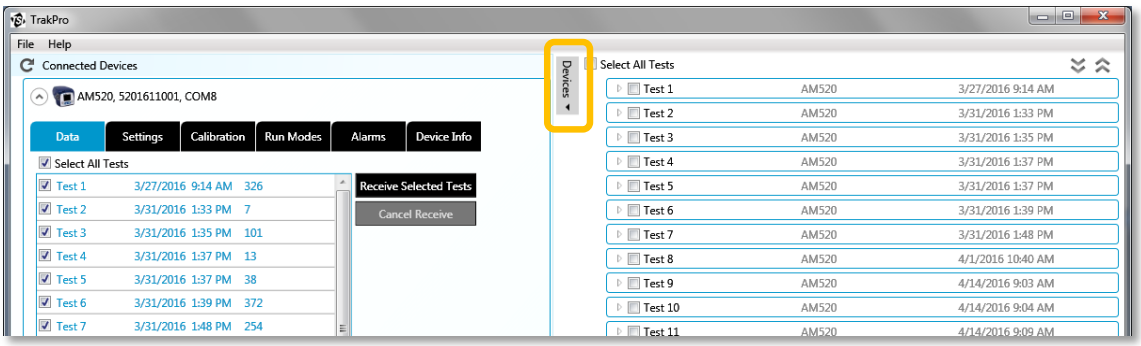
Receiving and Viewing Data from the Instrument

By selecting an instrument from the list, the pane will expand showing a number of tabs for programing the instrument along with the data menu to view a list of all the tests logged in the instrument as shown below.

(For details on each tab, see Programming AM520 Instrument Parameters from TrakPro v5 Data Analysis Software later in this manual).

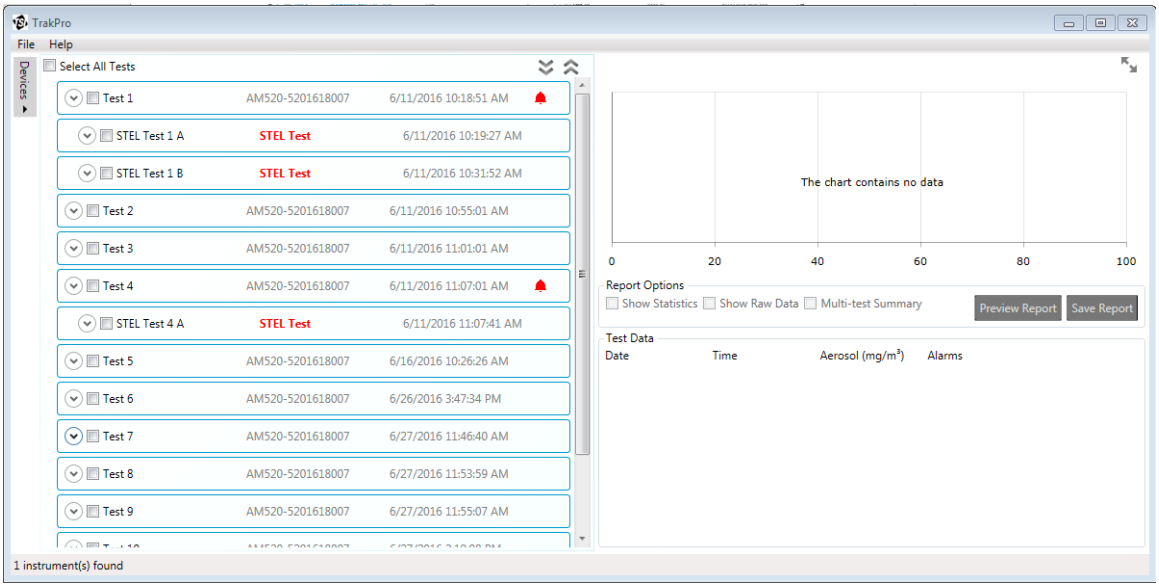


1. Check **Select All Tests** or select individual tests from the list.
2. Click **Receive Selected Tests** to receive test data from the instrument into the software.



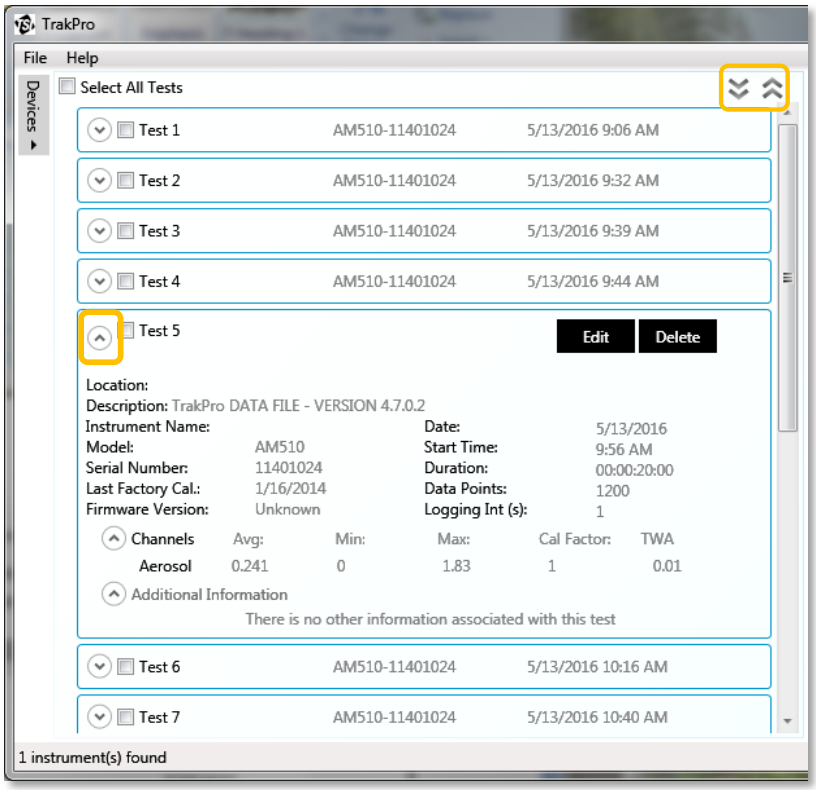
Open Test Data Records

Once the Test data files are imported to TrakPro software, select **Devices** again to hide the devices panel and display the following:



To view a summary of any Test data record:

1. Click the arrow next to the desired Test record to expand the window and show a summary about that particular test.
2. Use the navigation arrows to expand/collapse all of the Test Data records.
3. Click **Edit** to add or update the Name, Location and/or the Description of the selected test record, then click **Save**. If no changes are made, click **Save** to exit.
4. Click **Delete** to delete the test record from the list. The test record is **NOT** deleted from your instrument; it is only deleted from the list of test files available to the program.

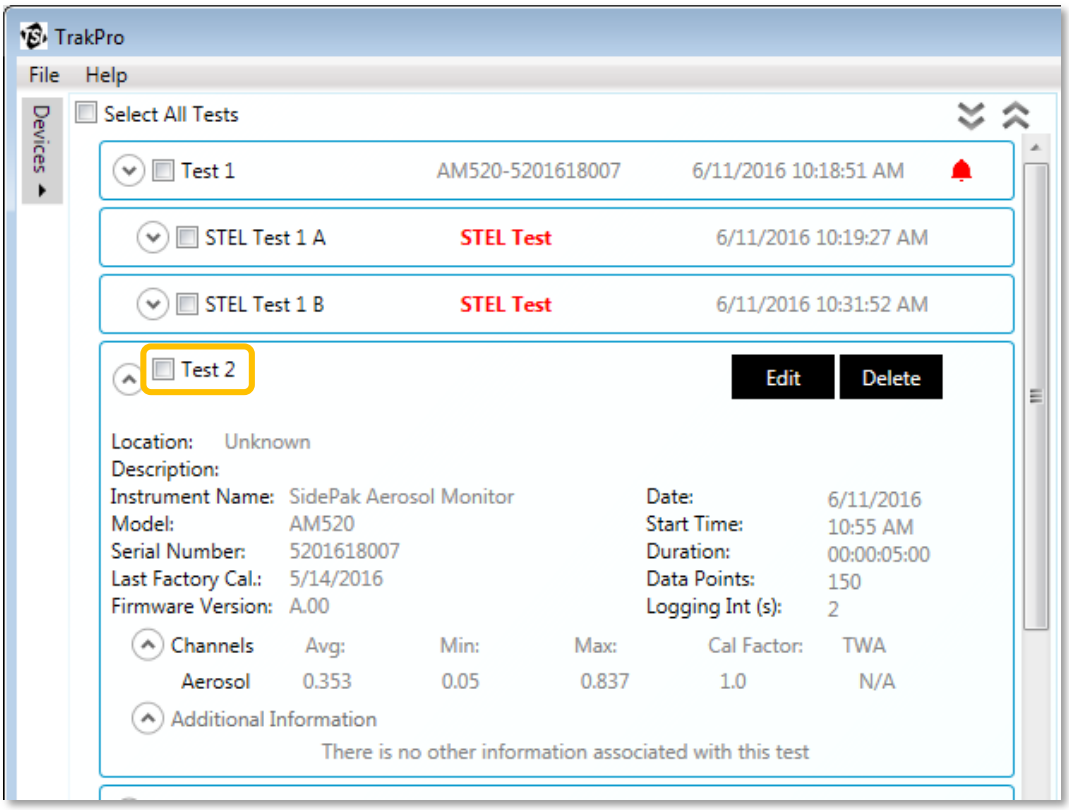


Display Data Graphs

Graphs let you view the relationship between logged particle concentrations and corresponding logging times.

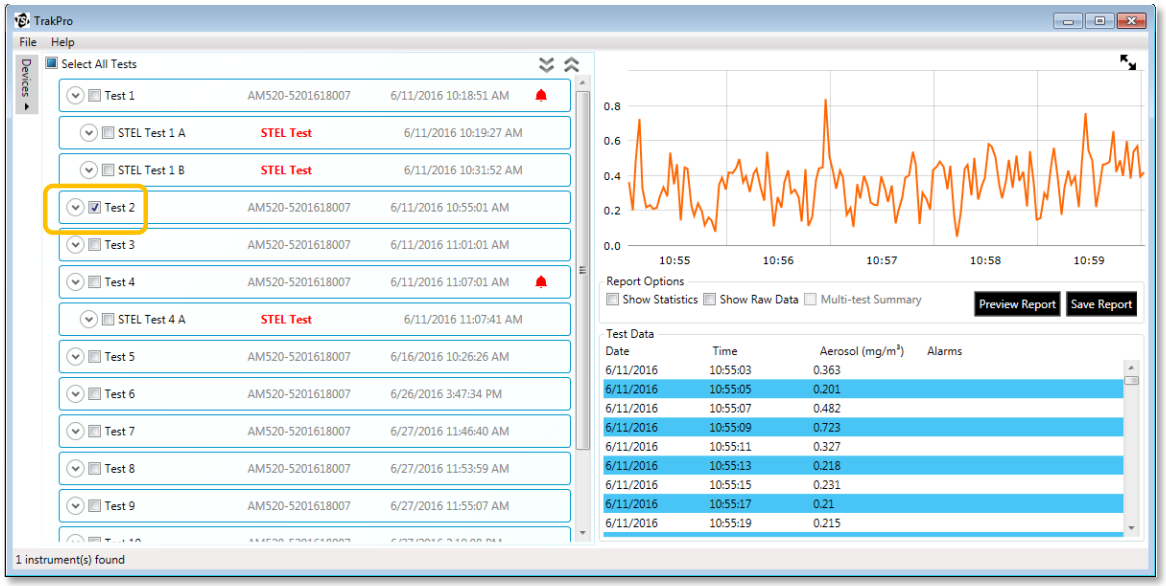
To display test data graphically:

1. Click the box for the test or tests you want displayed. The maximum number that can be displayed at one time is five (5).

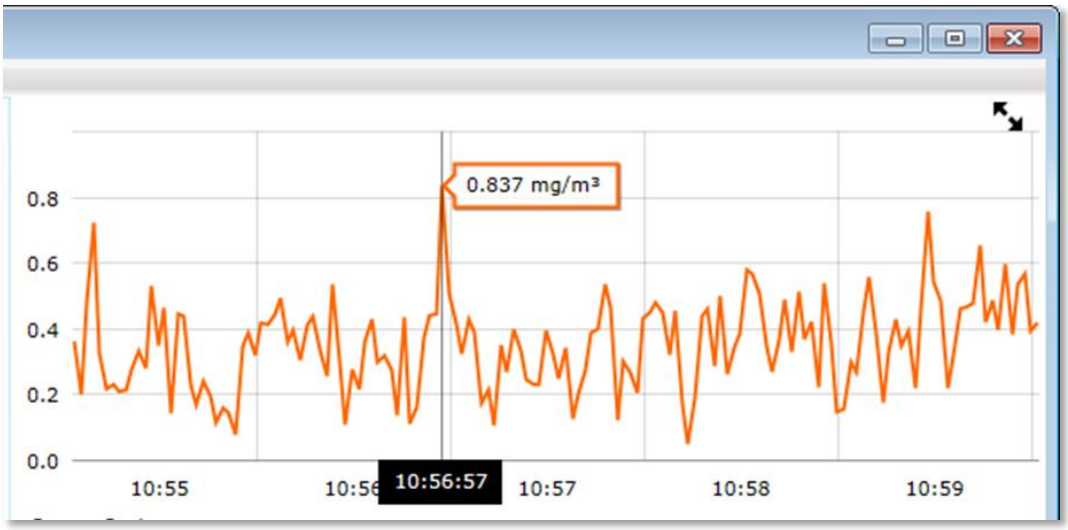


2. The graph(s) of the selected test(s) are displayed on the right panel of the screen.

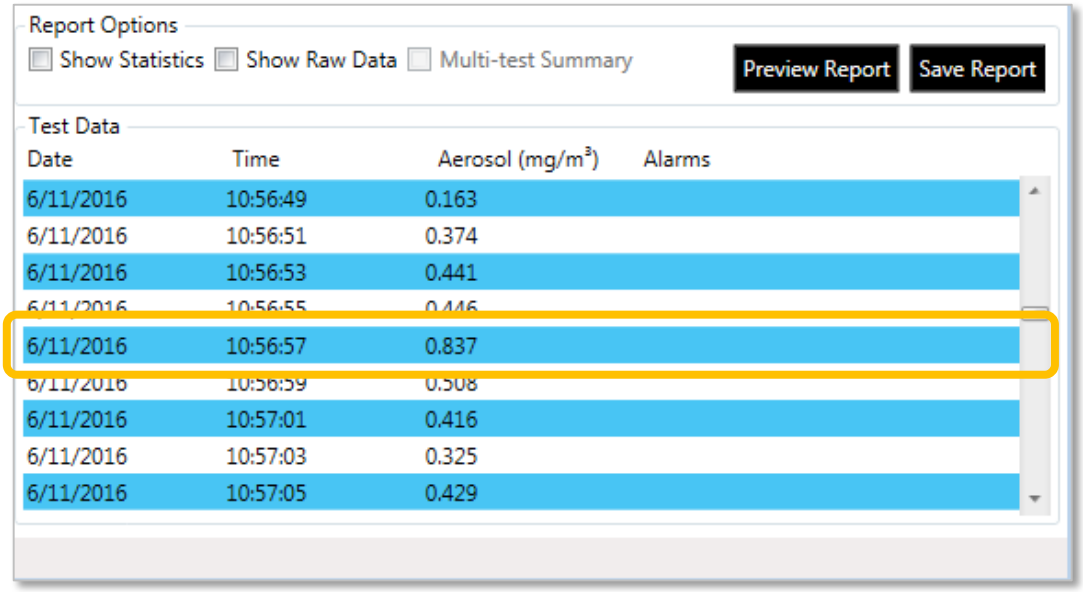
3. **Test Data** detail for that test is displayed by date/time below the graph as shown below.



4. When reviewing the test data, specific data points on the graph can be highlighted by scrolling the computer pointing device at the desired data on the graph as shown below.



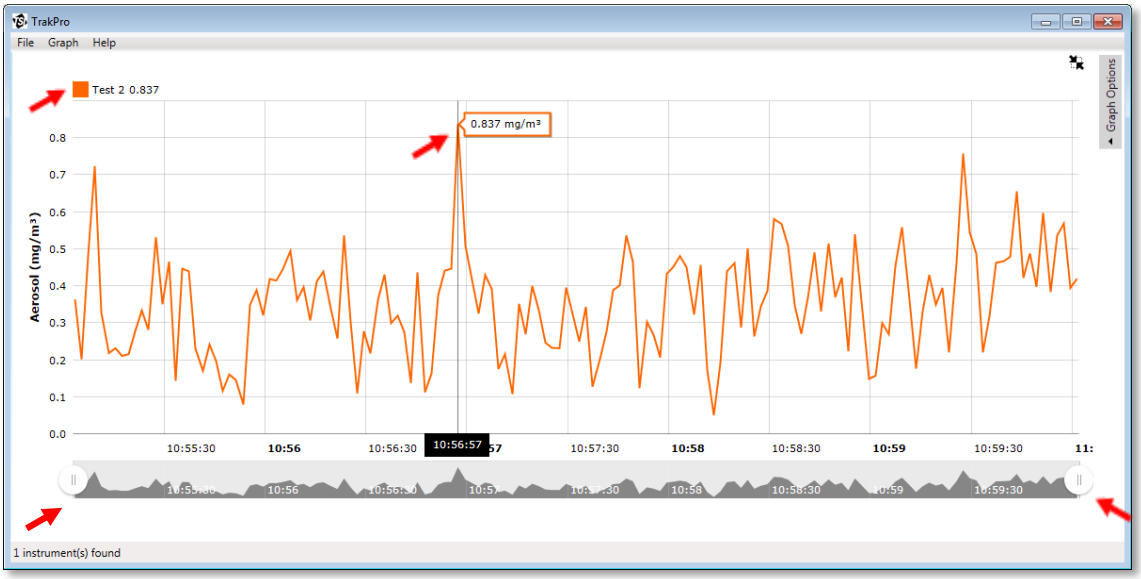
5. Alternatively, the data can be reviewed by scrolling down the data list as shown below.



***Note**: Same data point as shown in the graph above.*

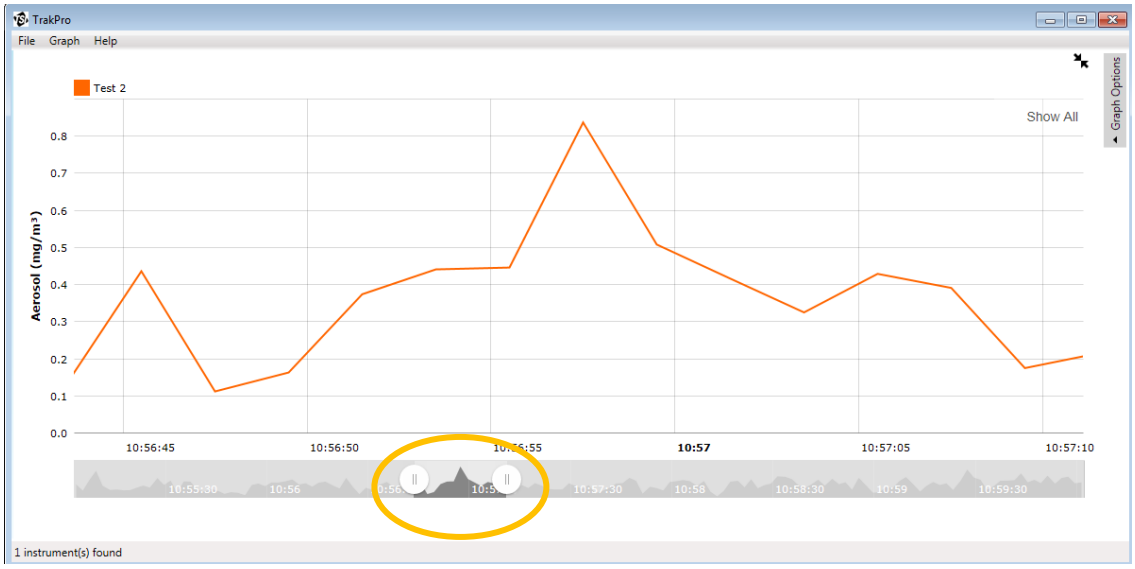
Expanding Graphs for Analysis

Any graph can be expanded to be viewed in a larger format by clicking the expansion/contraction arrows in the upper right corner of the Graph. When expanded, the graph displays as shown below.



In the expanded view the graph contains additional functions for data analysis:

- Graph color legend in the upper left.
- Specific timeline and concentration detail.
- Time-line limiter “bubbles” on each end of the data time-line at the bottom of the graph as shown. These can be moved inward so you can focus on specific points along the time-line as shown below.



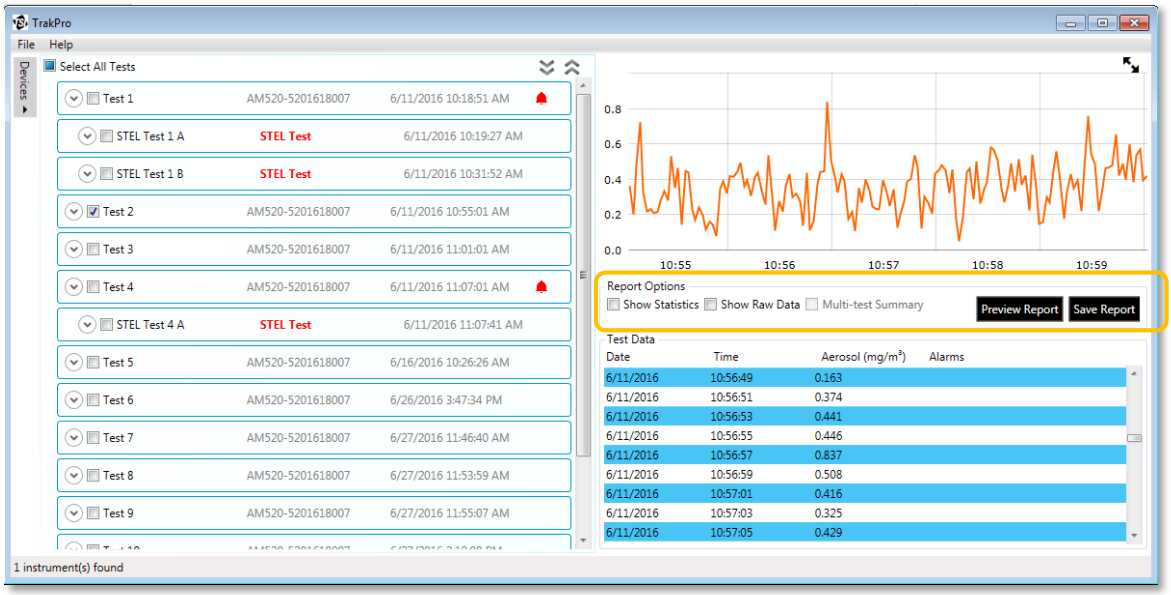
In the example above, the display area has been narrowed with the limiter “bubbles” to show only the time around the peak exposure recorded. This provides a more detailed look at the test results.

Within the expanded view of the graph, use the standard “File” pull down menu to **SAVE**, **RENAME**, **PRINT**, or **ATTACH TO EMAIL** the graph.

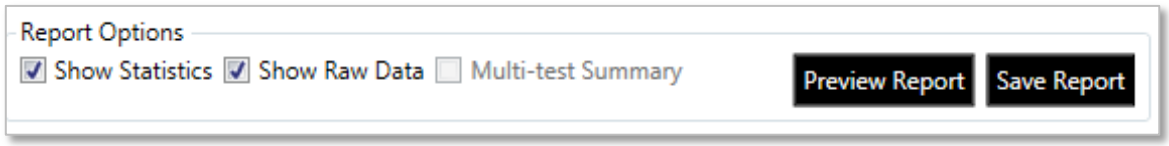
Report Options

When the graph of a single test's data is displayed, the following **Report Options** are available.

- ☐ Show Statistics
- ☐ Show Raw Data



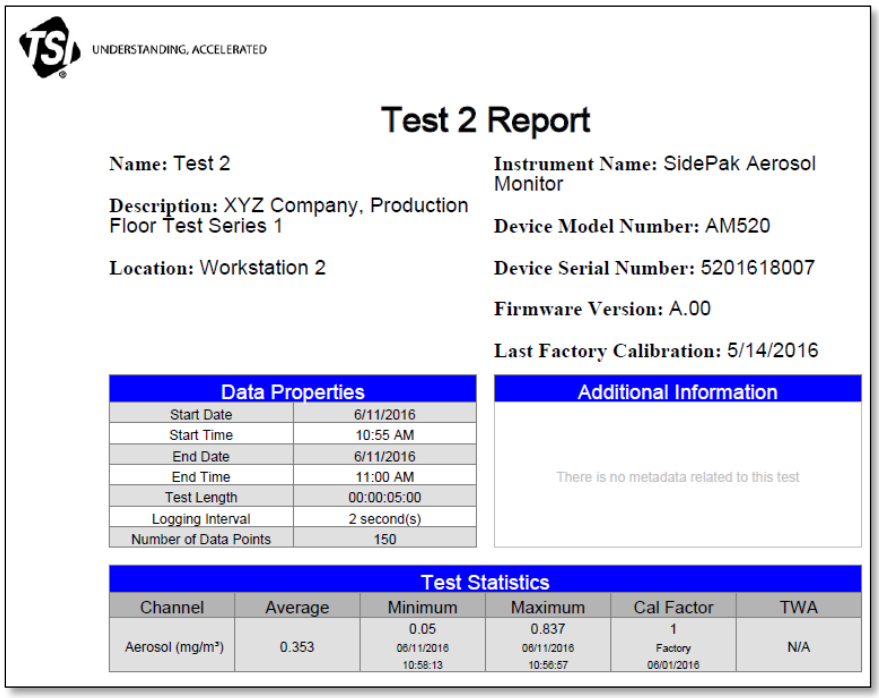
By selecting **either** or **both options** you can generate reports with/without statistics or with/without raw data.



The “Multi-Test Summary” report option will become active when more than one test is selected. More information on this subject can be found in Viewing and Saving Reports from Multiple Studies later in this manual.

Previewing Reports

After selecting the desired data/statistics boxes, you may want to preview the report prior to saving it to a file, printing it, or sending it as an email attachment. Click **Preview Report** to generate the report as a PDF file via a separate window using your default PDF reader software.



UNDERSTANDING, ACCELERATED

Test 2 Report

Name: Test 2

Description: XYZ Company, Production Floor Test Series 1

Location: Workstation 2

Instrument Name: SidePak Aerosol Monitor

Device Model Number: AM520

Device Serial Number: 5201618007

Firmware Version: A.00

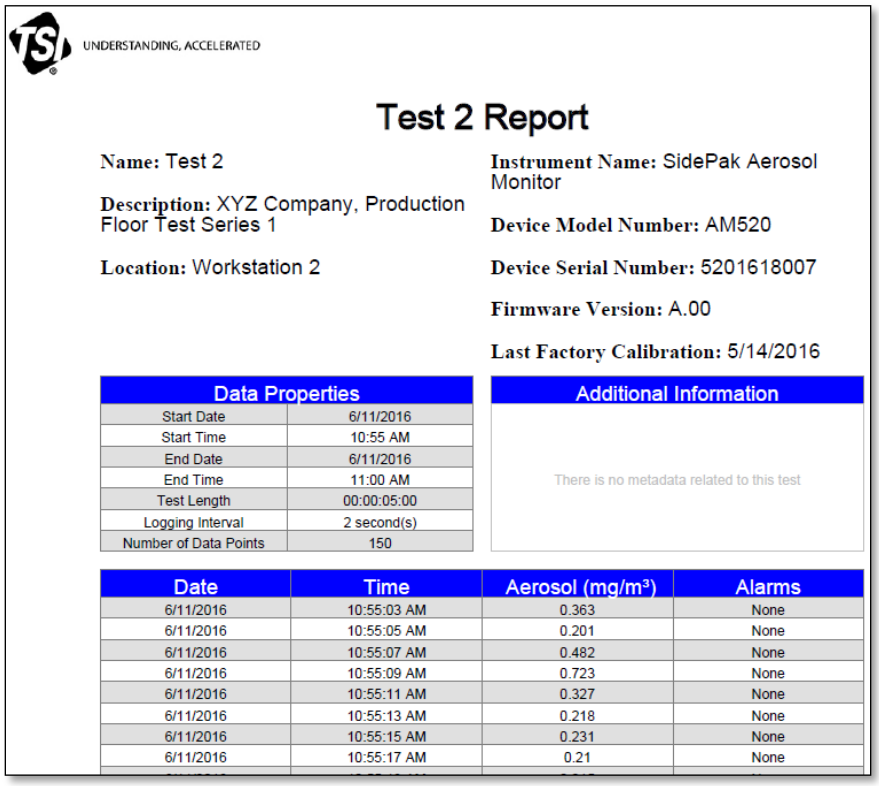
Last Factory Calibration: 5/14/2016

Data Properties	
Start Date	6/11/2016
Start Time	10:55 AM
End Date	6/11/2016
End Time	11:00 AM
Test Length	00:00:05:00
Logging Interval	2 second(s)
Number of Data Points	150

Additional Information
There is no metadata related to this test

Test Statistics					
Channel	Average	Minimum	Maximum	Cal Factor	TWA
Aerosol (mg/m³)	0.353	0.05 06/11/2016 10:58:13	0.837 06/11/2016 10:56:57	1 Factory 06/01/2016	N/A

Example of Preview Report with only Statistics



UNDERSTANDING, ACCELERATED

Test 2 Report

Name: Test 2

Description: XYZ Company, Production Floor Test Series 1

Location: Workstation 2

Instrument Name: SidePak Aerosol Monitor

Device Model Number: AM520

Device Serial Number: 5201618007

Firmware Version: A.00

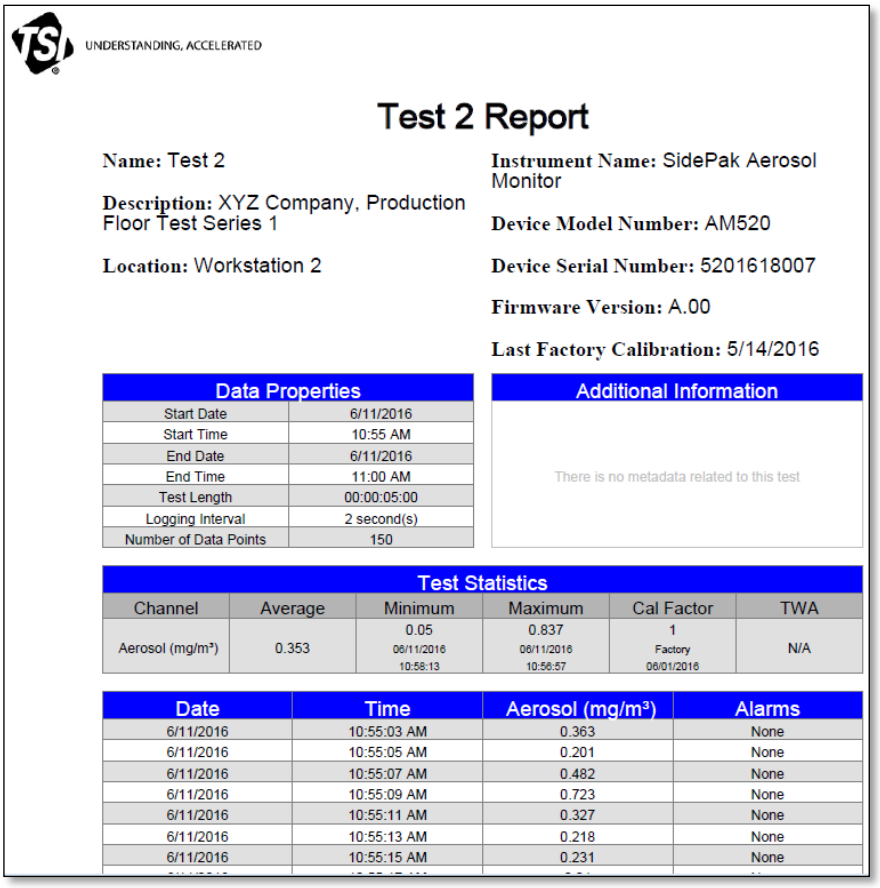
Last Factory Calibration: 5/14/2016

Data Properties	
Start Date	6/11/2016
Start Time	10:55 AM
End Date	6/11/2016
End Time	11:00 AM
Test Length	00:00:05:00
Logging Interval	2 second(s)
Number of Data Points	150

Additional Information
There is no metadata related to this test

Date	Time	Aerosol (mg/m³)	Alarms
6/11/2016	10:55:03 AM	0.363	None
6/11/2016	10:55:05 AM	0.201	None
6/11/2016	10:55:07 AM	0.482	None
6/11/2016	10:55:09 AM	0.723	None
6/11/2016	10:55:11 AM	0.327	None
6/11/2016	10:55:13 AM	0.218	None
6/11/2016	10:55:15 AM	0.231	None
6/11/2016	10:55:17 AM	0.21	None

Example of Preview Report with only Raw Data



UNDERSTANDING, ACCELERATED

Test 2 Report

Name: Test 2

Description: XYZ Company, Production Floor Test Series 1

Location: Workstation 2

Instrument Name: SidePak Aerosol Monitor

Device Model Number: AM520

Device Serial Number: 5201618007

Firmware Version: A.00

Last Factory Calibration: 5/14/2016

Data Properties	
Start Date	6/11/2016
Start Time	10:55 AM
End Date	6/11/2016
End Time	11:00 AM
Test Length	00:00:05:00
Logging Interval	2 second(s)
Number of Data Points	150

Additional Information

There is no metadata related to this test

Test Statistics

Channel	Average	Minimum	Maximum	Cal Factor	TWA
Aerosol (mg/m³)	0.353	0.05 06/11/2016 10:58:13	0.837 06/11/2016 10:56:57	1 Factory 06/01/2016	N/A

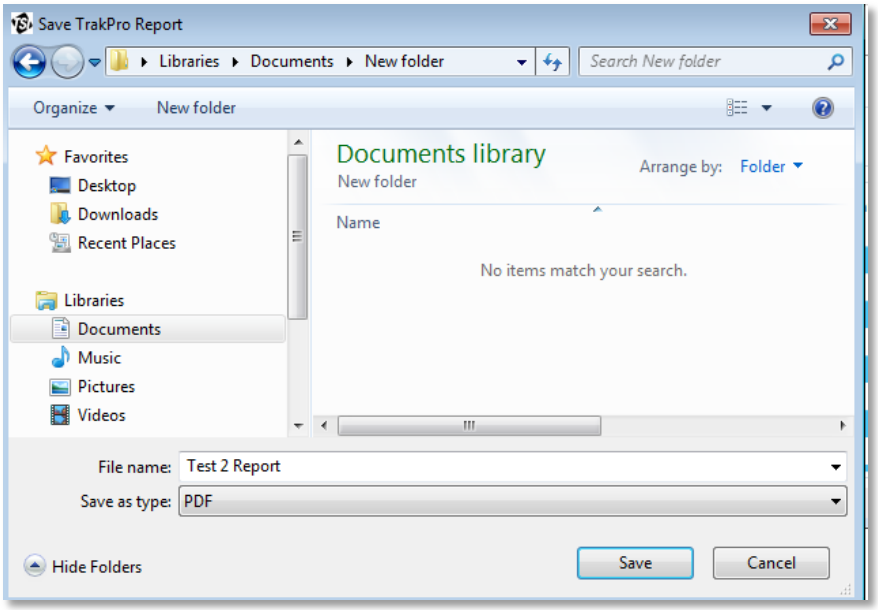
Date	Time	Aerosol (mg/m³)	Alarms
6/11/2016	10:55:03 AM	0.363	None
6/11/2016	10:55:05 AM	0.201	None
6/11/2016	10:55:07 AM	0.482	None
6/11/2016	10:55:09 AM	0.723	None
6/11/2016	10:55:11 AM	0.327	None
6/11/2016	10:55:13 AM	0.218	None
6/11/2016	10:55:15 AM	0.231	None

Example of Preview Report with both Statistics and Raw Data

Saving Reports

In all cases above, the Report Preview PDF can be saved as a file; attached to an email, or printed. Use the standard “File” drop-down menu commands in your PDF viewing software to execute any of these options.

To save a report without previewing it first, simply click **Save Report** and the standard file saving dialog window will appear.



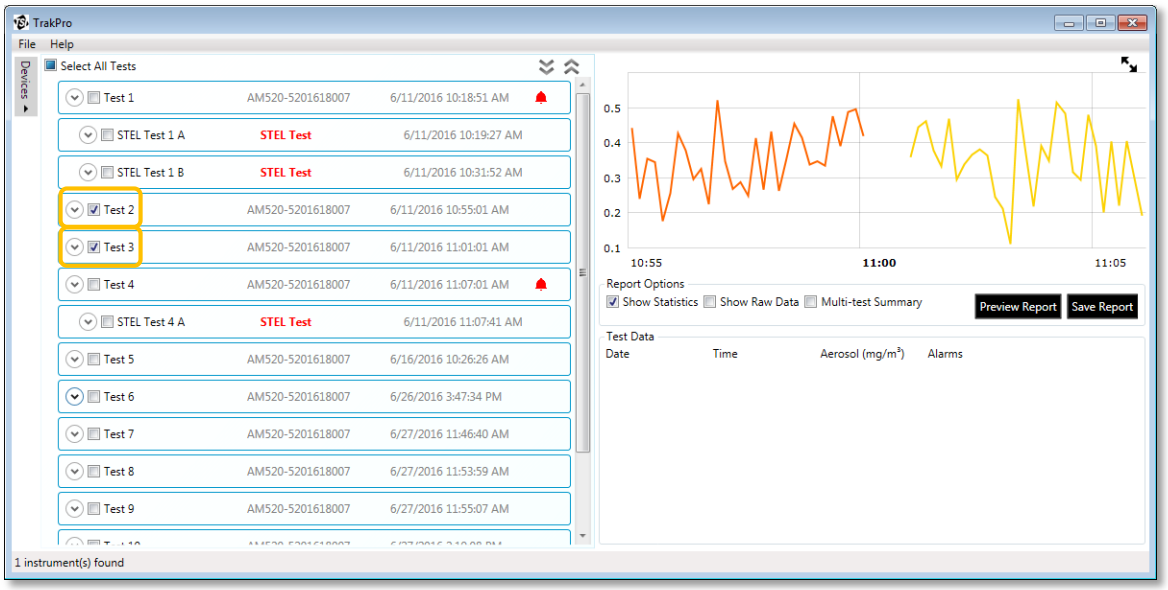
Viewing and Saving Reports from Multiple Studies

When multiple tests are selected, only the graphs are displayed in the right-hand panel as shown below.

Scrolling across the graph displays the time-stamp and mass concentration level for analysis just as it does when only a single test is selected.

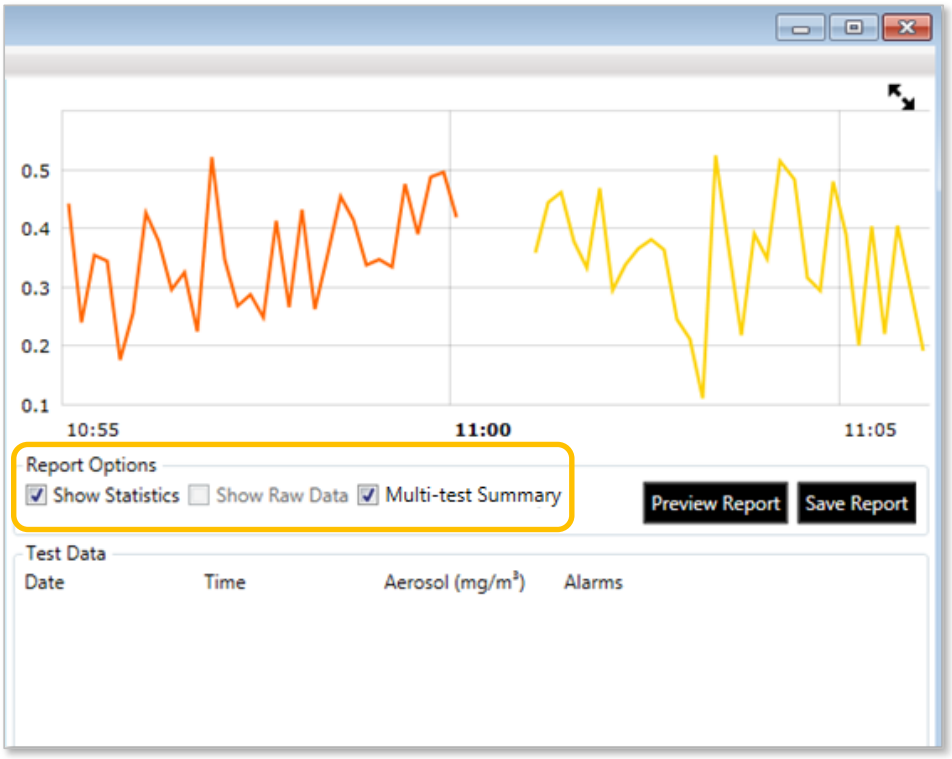
Note

Test data is not displayed in the table as it is when only one test is selected. Data from multiple tests cannot be displayed in a single table. These tables can only be viewed through **Preview Report** function.



Also, when multiple tests are selected and displayed in the graph, you can select **Show Statistics** and /or **Show Raw Data** and preview that report. However, when **Multi-test Summary** is selected, the "Show Raw Data" option is no longer available.

When **Show Statistics** and/or **Show Raw Data** are selected and the report is previewed, the report(s) look very much like they did when only one report was selected. However, the two separate reports are now displayed on separate pages within the same PDF.

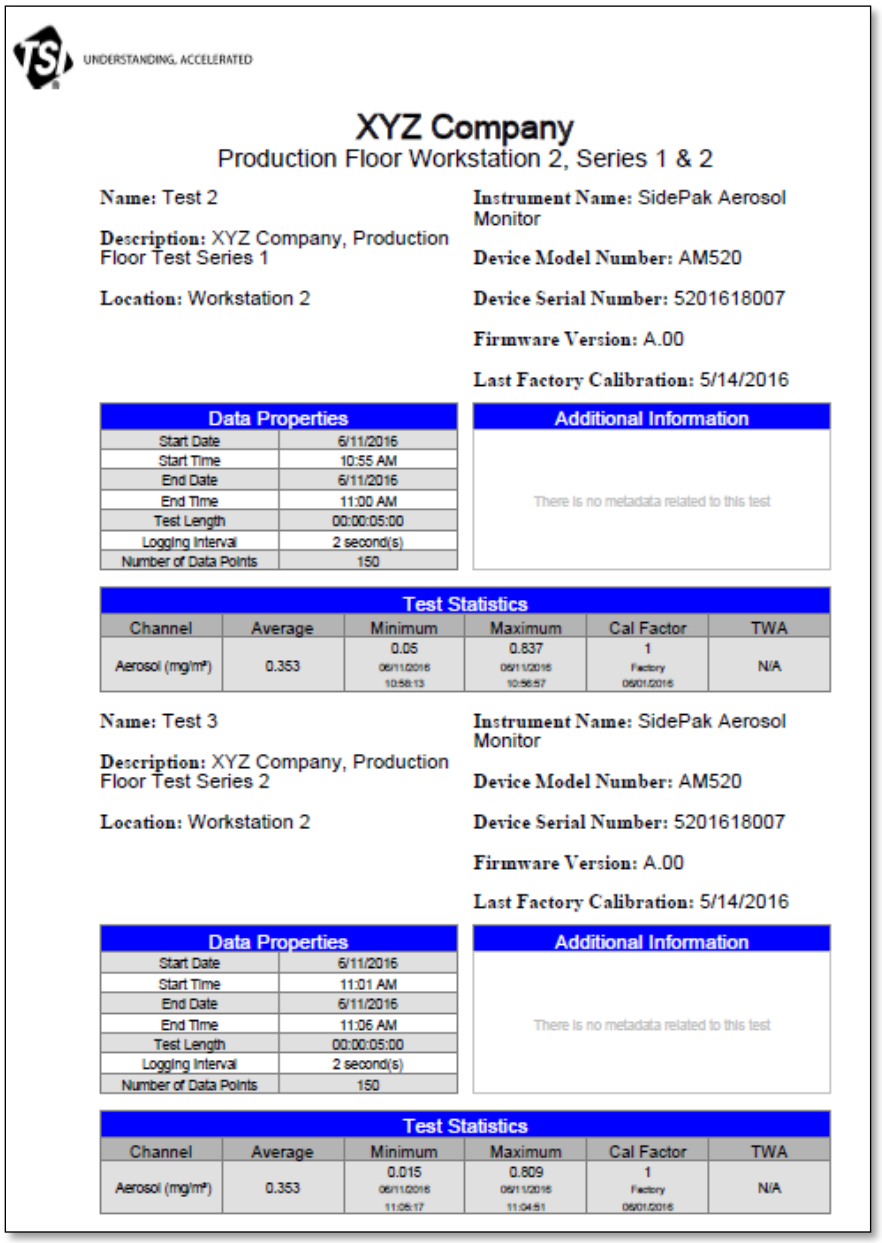


Previewing Reports with Multiple Tests

The previewing and saving of reports multiple tests is the same as with single test reports.

1. Select **Show Statistics**.
2. Select **Multi-test Summary**.
3. Select **Preview Report**. You will be asked to enter a title and subtitle. TSI recommends that you title your reports. However, if you do not want to do so, simply press **OK**.

A PDF of the multi-test summary report will be displayed. Save, eMail, or print this PDF as previously described.



UNDERSTANDING. ACCELERATED

XYZ Company

Production Floor Workstation 2, Series 1 & 2

Name: Test 2

Description: XYZ Company, Production Floor Test Series 1

Location: Workstation 2

Instrument Name: SidePak Aerosol Monitor

Device Model Number: AM520

Device Serial Number: 5201618007

Firmware Version: A.00

Last Factory Calibration: 5/14/2016

Data Properties	
Start Date	6/11/2016
Start Time	10:55 AM
End Date	6/11/2016
End Time	11:00 AM
Test Length	00:00:05:00
Logging Interval	2 second(s)
Number of Data Points	150

Additional Information
There is no metadata related to this test

Test Statistics					
Channel	Average	Minimum	Maximum	Cal Factor	TWA
Aerosol (mg/m³)	0.353	0.05 06/11/2016 10:58:13	0.637 06/11/2016 10:56:57	1 Factory 05/01/2016	N/A

Name: Test 3

Description: XYZ Company, Production Floor Test Series 2

Location: Workstation 2

Instrument Name: SidePak Aerosol Monitor

Device Model Number: AM520

Device Serial Number: 5201618007

Firmware Version: A.00

Last Factory Calibration: 5/14/2016

Data Properties	
Start Date	6/11/2016
Start Time	11:01 AM
End Date	6/11/2016
End Time	11:06 AM
Test Length	00:00:05:00
Logging Interval	2 second(s)
Number of Data Points	150

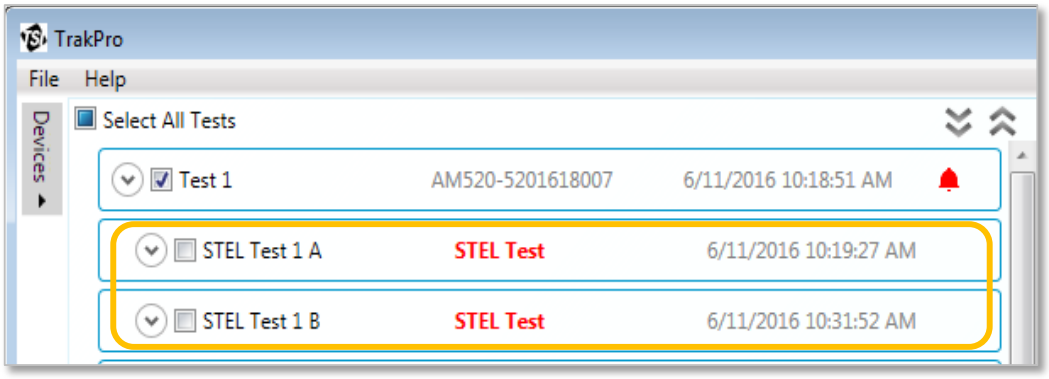
Additional Information
There is no metadata related to this test

Test Statistics					
Channel	Average	Minimum	Maximum	Cal Factor	TWA
Aerosol (mg/m³)	0.353	0.015 06/11/2016 11:05:17	0.809 06/11/2016 11:04:51	1 Factory 05/01/2016	N/A

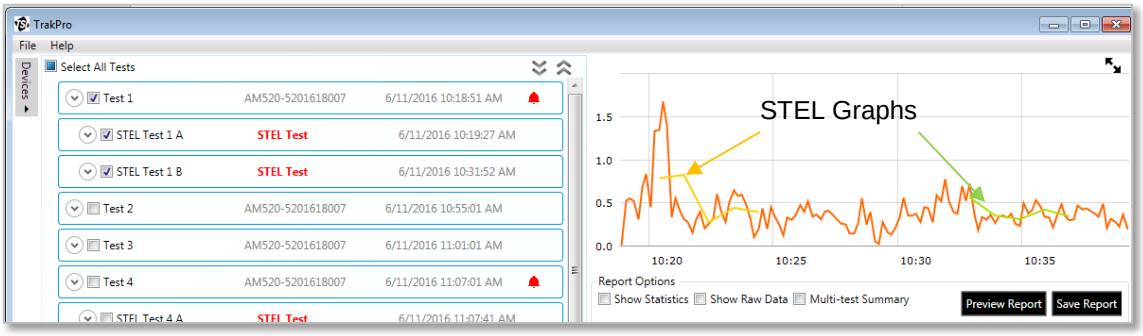
Example of Multi-Test Summary Report PDF

Reviewing Tests with STEL Alarms

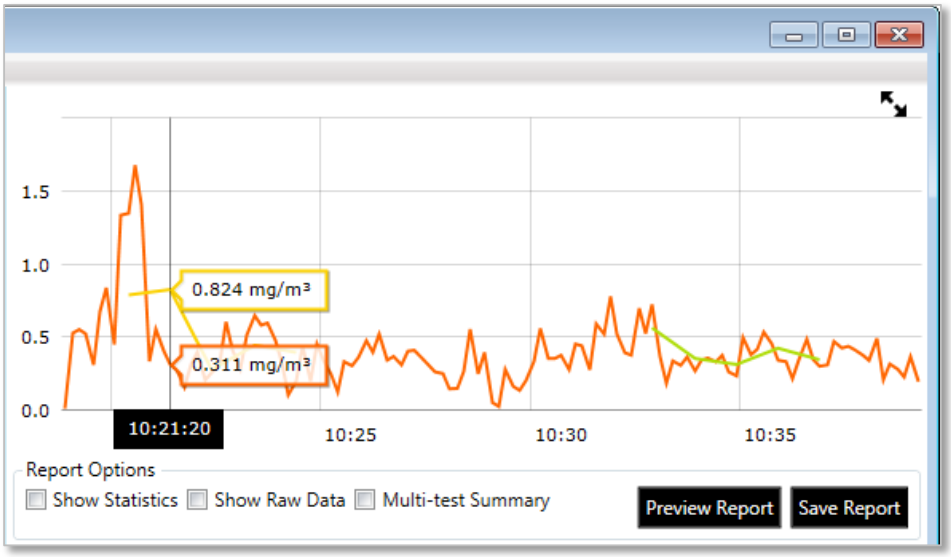
Tests with STEL Alarms are displayed with a red bell as shown below. Each STEL alarm the instrument will capture a 15 minute “subset” of data following the STEL. Although this data resides within the test, it will also be displayed as an indented separate set of date resembling separate tests.



When the STEL tests are selected along with the test data, the STEL data is displayed in the graph much like it is when multiple tests are selected, however in this case they are intermixed with the primary test data with different color graphs as shown below.

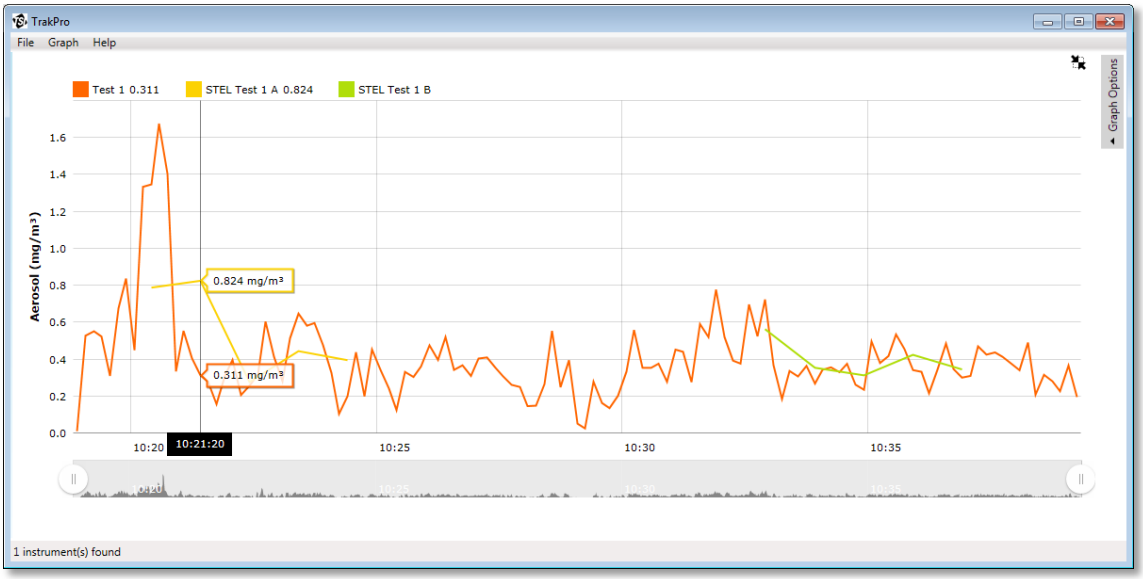


Also, when STEL tests are selected and displayed on the Graph, the scrolling graphing analysis function which displays the time / date stamp, also shows both data points at any high or low point of the STEL data as shown below.



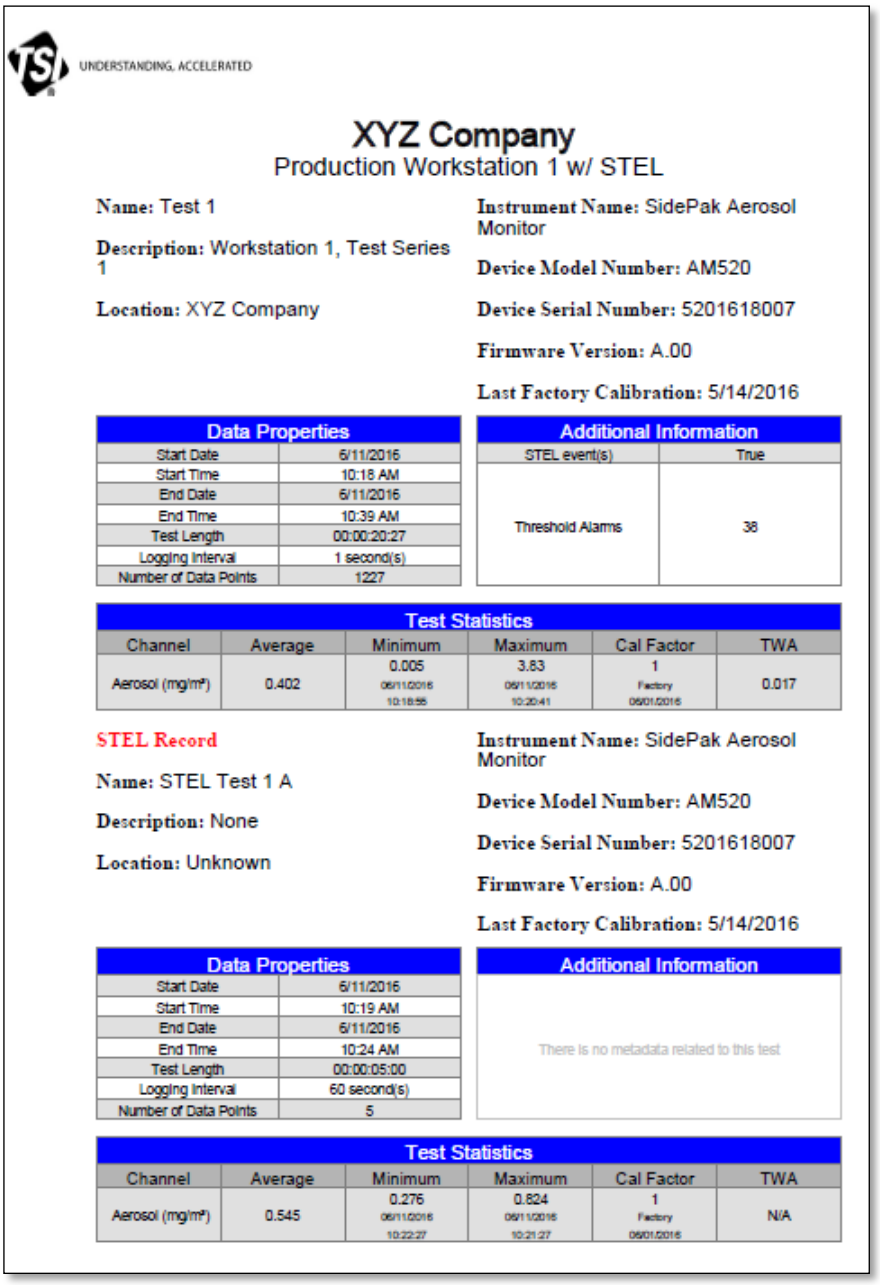
As described earlier in this manual, viewing graphs in the expanded view includes additional features for analysis.

- Graph contains a legion in the upper left
- Movable timeline analysis “bubbles” below the graph so the user can focus on specific area of the graph.



Reports Including STEL Data

Reports with STEL data are displayed much like the reports showing multiple tests. The STEL Data in separated out from the main test data for analysis as shown.



UNDERSTANDING, ACCELERATED

XYZ Company

Production Workstation 1 w/ STEL

Name: Test 1

Description: Workstation 1, Test Series 1

Location: XYZ Company

Instrument Name: SidePak Aerosol Monitor

Device Model Number: AM520

Device Serial Number: 5201618007

Firmware Version: A.00

Last Factory Calibration: 5/14/2016

Data Properties	
Start Date	6/11/2016
Start Time	10:18 AM
End Date	6/11/2016
End Time	10:39 AM
Test Length	00:00:20:27
Logging Interval	1 second(s)
Number of Data Points	1227

Additional Information	
STEL event(s)	True
Threshold Alarms	38

Test Statistics					
Channel	Average	Minimum	Maximum	Cal Factor	TWA
Aerosol (mg/m³)	0.402	0.005 06/11/2016 10:18:55	3.83 06/11/2016 10:20:41	1 Factory 05/01/2016	0.017

STEL Record

Name: STEL Test 1 A

Description: None

Location: Unknown

Instrument Name: SidePak Aerosol Monitor

Device Model Number: AM520

Device Serial Number: 5201618007

Firmware Version: A.00

Last Factory Calibration: 5/14/2016

Data Properties	
Start Date	6/11/2016
Start Time	10:19 AM
End Date	6/11/2016
End Time	10:24 AM
Test Length	00:00:05:00
Logging Interval	60 second(s)
Number of Data Points	5

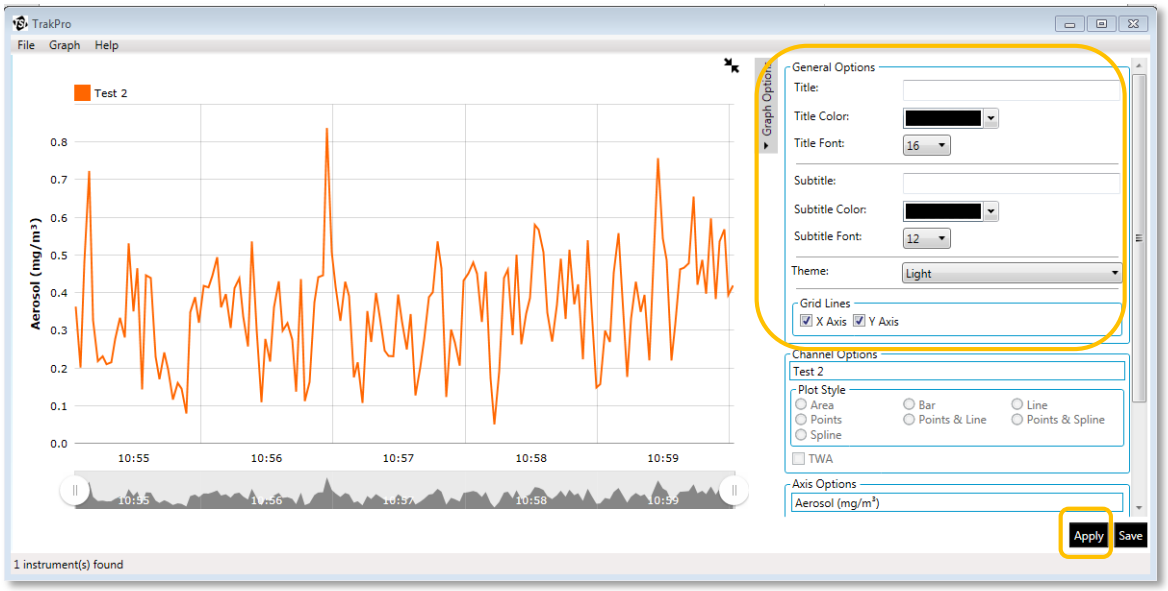
Additional Information
There is no metadata related to this test

Test Statistics					
Channel	Average	Minimum	Maximum	Cal Factor	TWA
Aerosol (mg/m³)	0.545	0.276 06/11/2016 10:22:27	0.824 06/11/2016 10:21:27	1 Factory 05/01/2016	N/A

Graph Options

TrakPro v5 software provides a number of options for how graphs are displayed. To access these options, display the graph in “Full-Screen” or “Expanded” mode by clicking the arrows located on the top right side of the graph. This displays the graph full-screen and the **Graph Options** menu link will be shown.

Clicking **Graph Options** will expand the option pane and its controls. For the most part, these options are self-explanatory.



General options include:

- Title, Title color, Title font
- Subtitle, Subtitle color, Subtitle font
- Theme
- Grid Lines (X axis; Y axis)

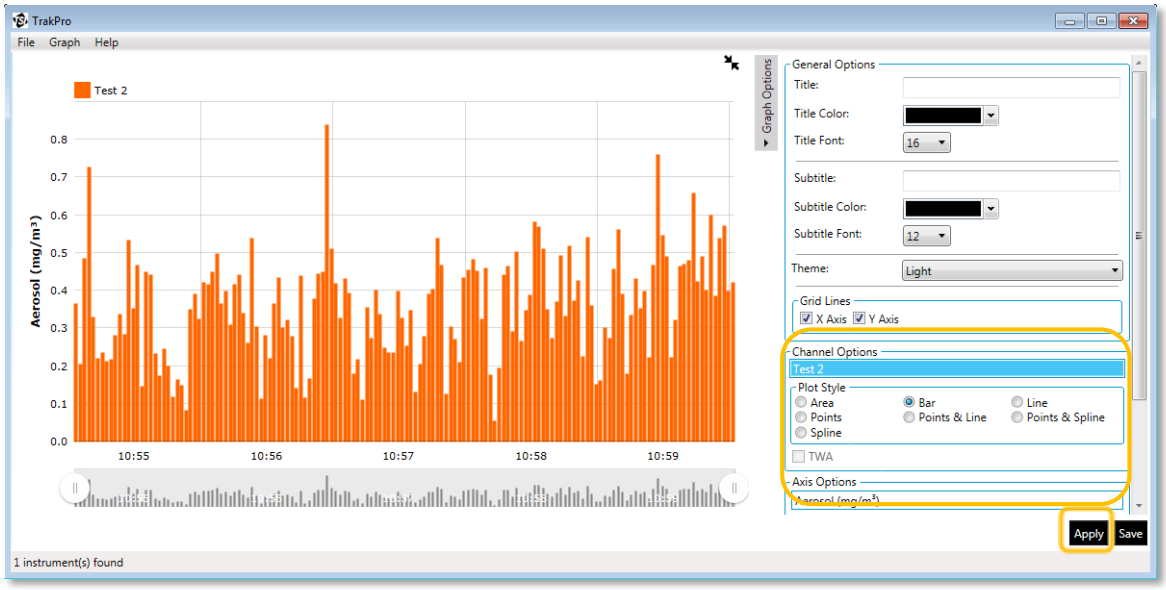
Select the option(s) you want and click **Apply**.

***Note**: In the example above, the "theme" setting was changed to create a higher contract graph.*

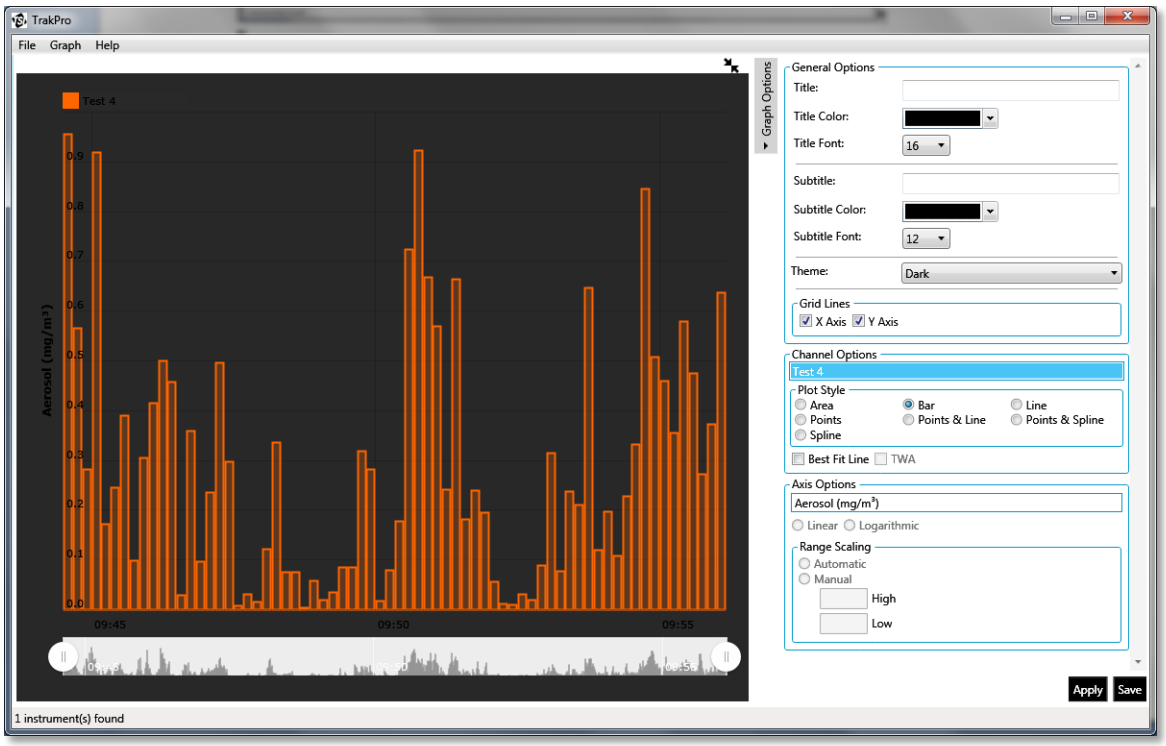
Channel Options include:

- Plot Style
- Best Fit Line, TWA, STEL
- Axis Options

Example: Graph changed to a bar chart using the “channel options” panel.

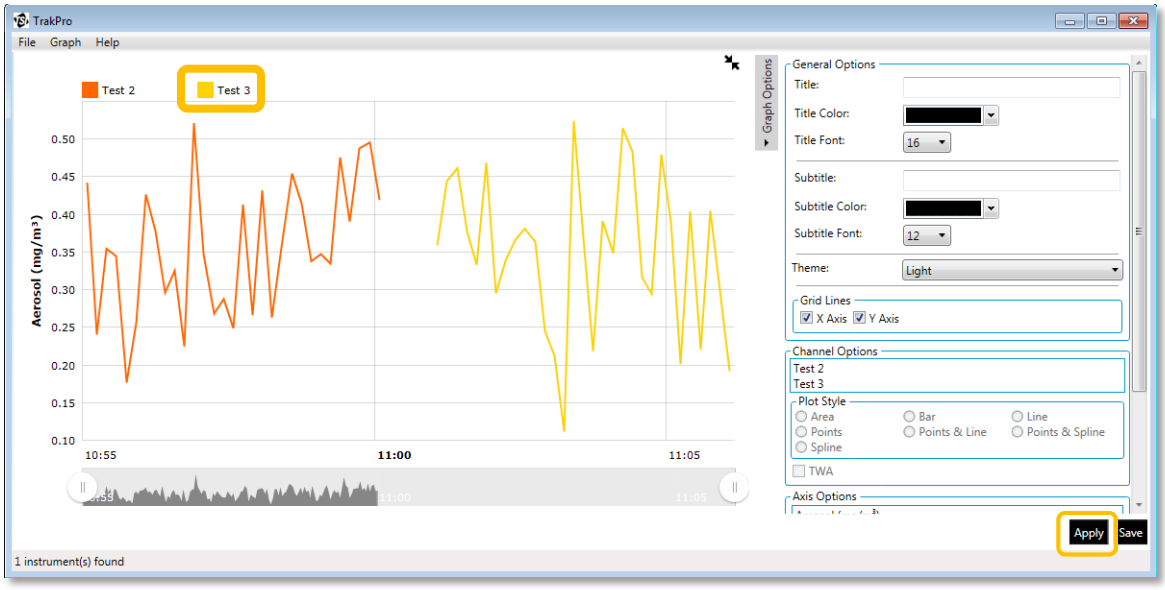


Select the option or options you want and click **Apply**. An example graph is shown below.

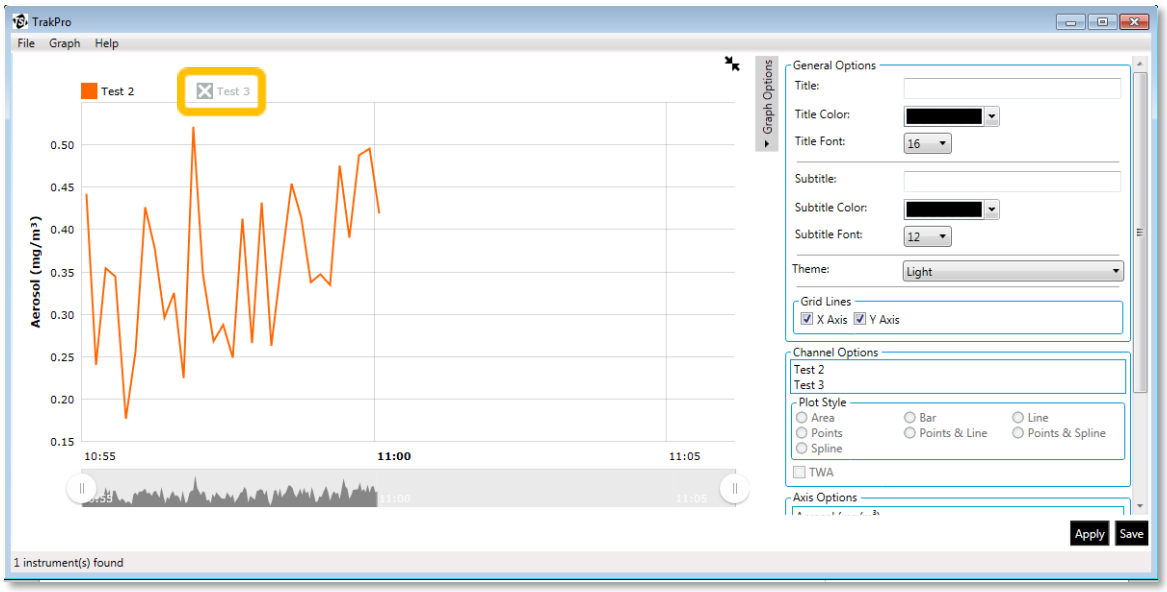


Showing Multiple Tests on a Graph

To enable/disable a graph, click the Test number from the graph legend.



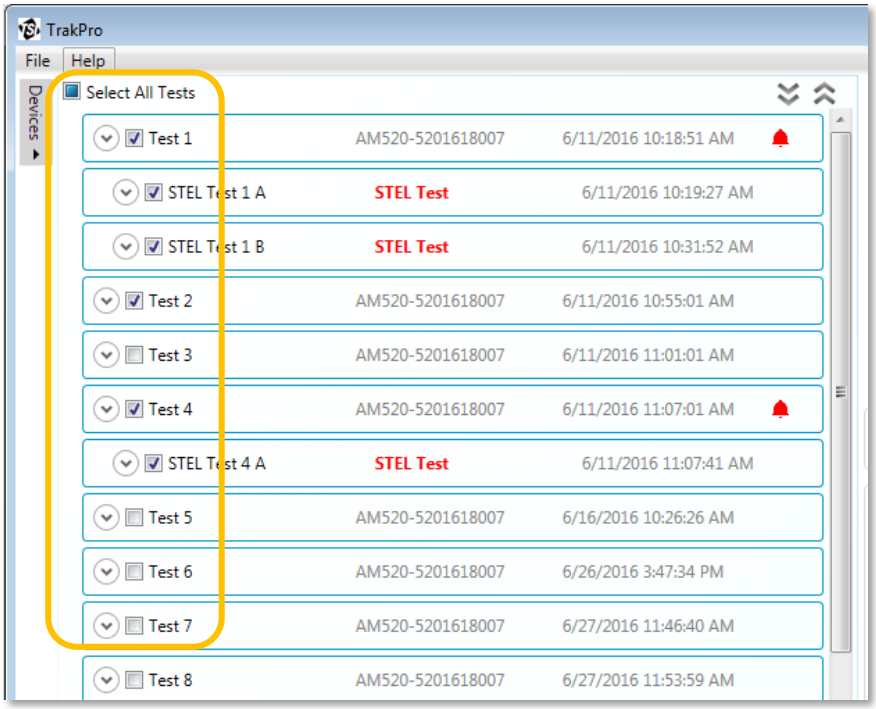
In the example below, the data graph for Test 3 has been closed and only Test 2 is displayed.



Saving Test Record(s) as Files to be Viewed Later

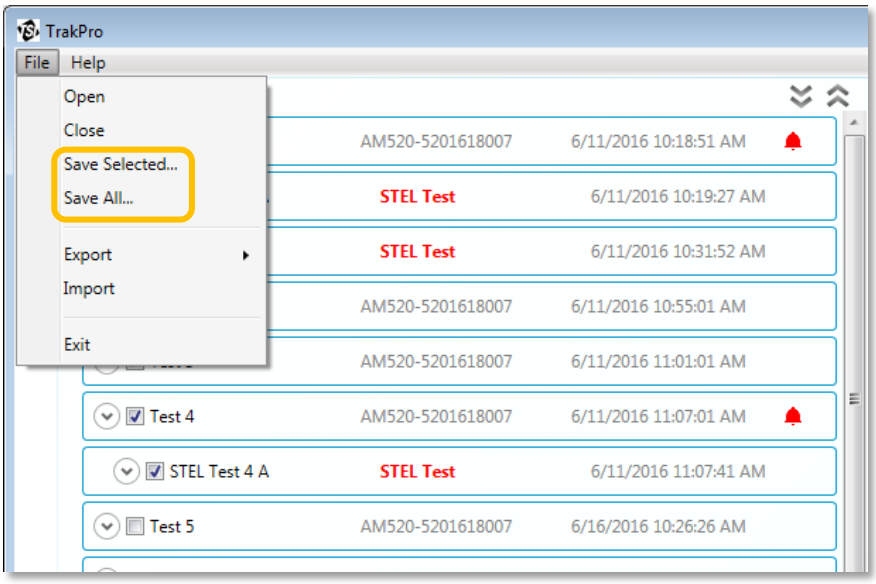
TrakPro Software lets you save test records so they can be viewed at a later date. Any number of tests can be saved for future viewing.

From the list of tests that have been “received” from an instrument as described previously in this manual, select any or all the test files to be saved.



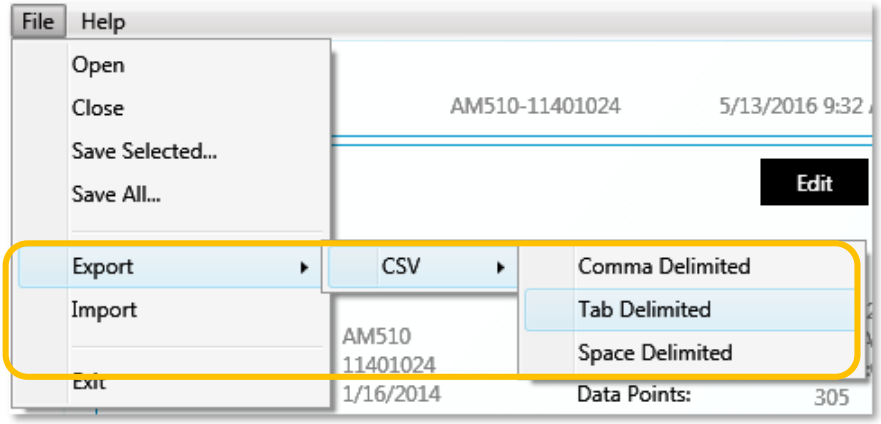
With the desired Test Records selected, use the **File | Save Selected** pull-down menu to save and name each Test as an individual .tpx file in any folder on your computer system.

The “**Save All...**” function will save all tests in the test list, not only those selected. The Save functions also save graph preseferences and other settings associated with the test records.



Exporting Test Record Data

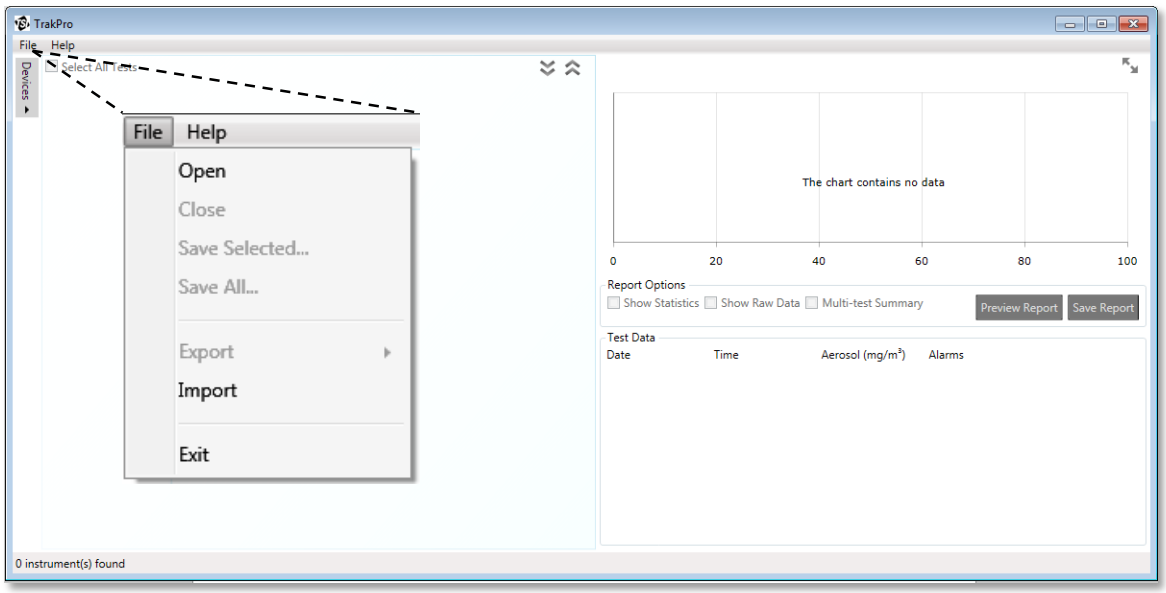
From the same menu above, selected test records can be exported as a **.csv** file for viewing and customizing the data in most any common spreadsheet program.



The file can be saved in several delimited formats as shown above. When the desirec delimited format is selected, each file can then be named and saved to a user selected folder on the hard drive.

Viewing Data from Previously Saved Files

When the TrakPro software first opens, it displays the TrakPro home page as shown below.



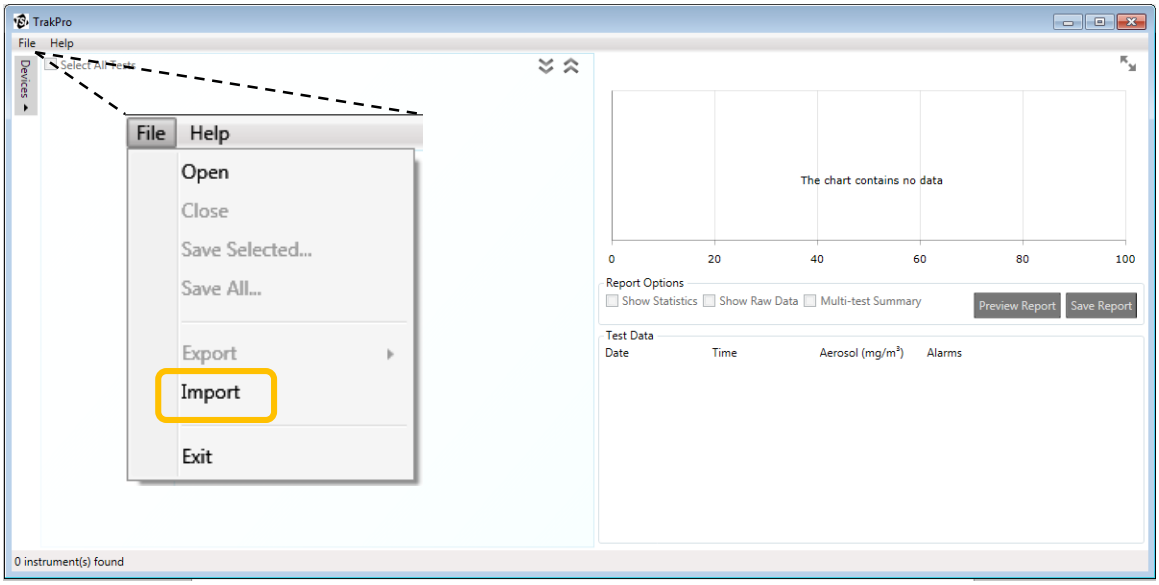
Use the **File | Open** pull-down menu in the upper-left to navigate to a previously saved TrakPro software .tpx file.

Importing Files from Previous Versions of TrakPro Software

TrakPro software allows the import of saved .tkp files from previous TrakPro software versions.

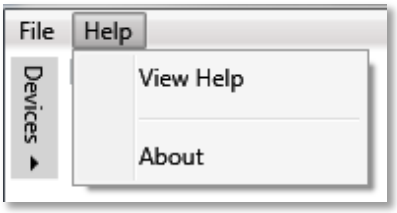
To import data files from previous TrakPro software versions, use the **File | Import** pull-down menu as shown. A standard pop-up navigation window for locating the file on your hard drive will appear.

***Note**: Not all previous instrument data is currently supported.*



TrakPro Software Help

The TrakPro software **Help** menu contains the following options:



View Help	Opens a PDF file of this manual.
About	Opens a window that displays the TrakPro software title and version number.

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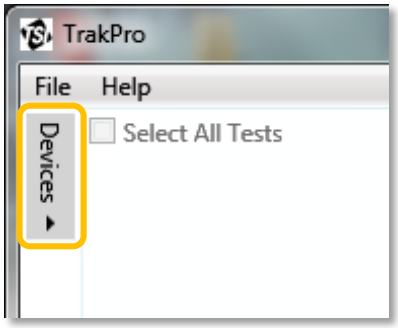
Programming AM520 Instrument Parameters from TrakPro v5 Data Analysis Software

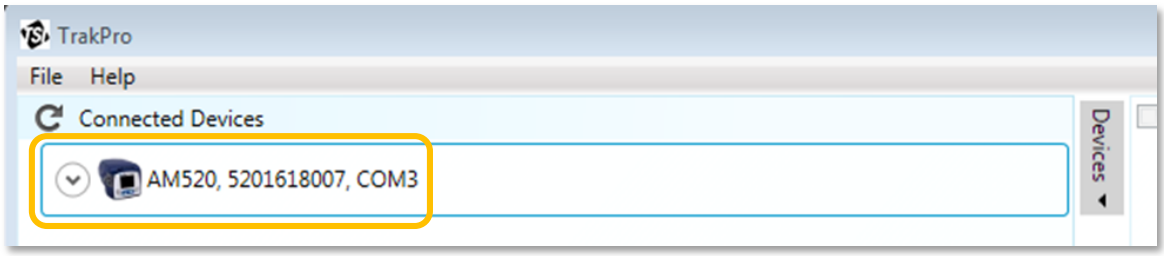
In addition to viewing test data and creating reports and graphs, one key function of TrakPro software is to program instruments for performing tests. Programing instrument tests parameters from TrakPro software provides access to options that may not be configurable through the control panel on the instrument. This also allows for faster and repeatable set-up of multiple instruments.

1. From the TrakPro software Home Page, click the **Devices** button in the upper-left corner to expand the Device pane.

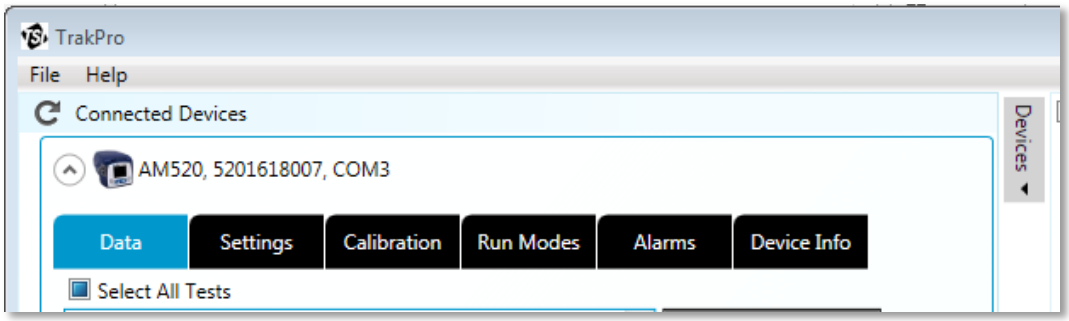


2. TrakPro software will scan for connected devices and will recognize the instruments connected to the computer and list them in the “Connected Devices” pane as shown below.

Note
Multiple instruments can be connected to the computer at the same time. In this event, TrakPro software lists them in the Devices pane allowing for a specific instrument to be selected from the list.



3. When an instrument is selected, the device pane expands to include the **Instrument Programming Tabs** as shown below.



The following AM520 parameters are user configurable from the expanded device listing:

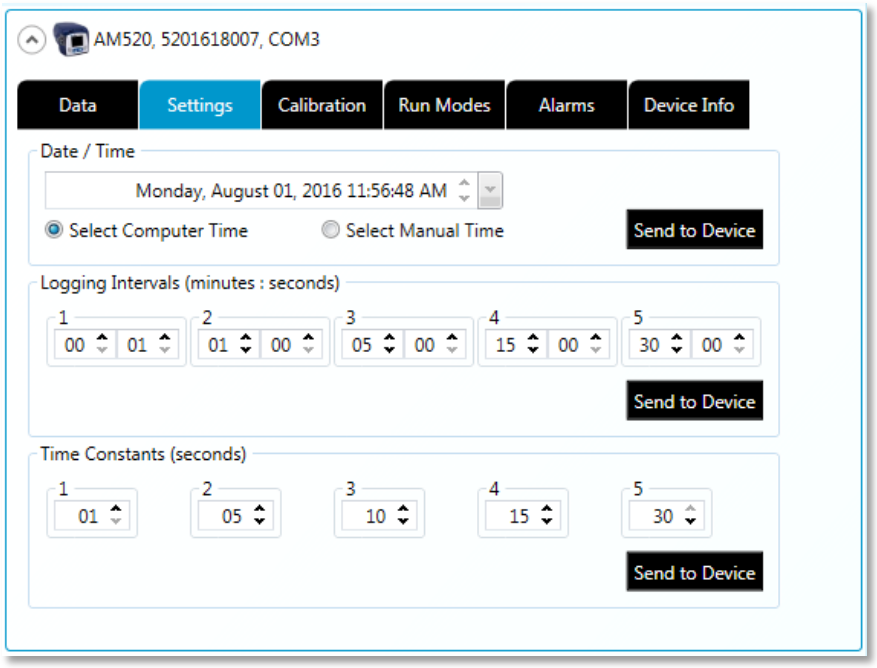
Settings	• Set Instrument Date/Time • Set the Time constant • Logging Intervals
Calibration	• Calibration factor • Calibration name
Logging Protocols (Run Modes)	• Program name • Test Length • Log Interval • Test Interval • Starting Date • Starting Time • Number of Tests
Alarms	• Select / Set Alarm threshold • Select / Set STEL Alarm • Set LEDs • Set Audible • Set Screen • Set Ring-back

Select the desired tab to access the page for that category of instrument programming.

General Options (Settings)

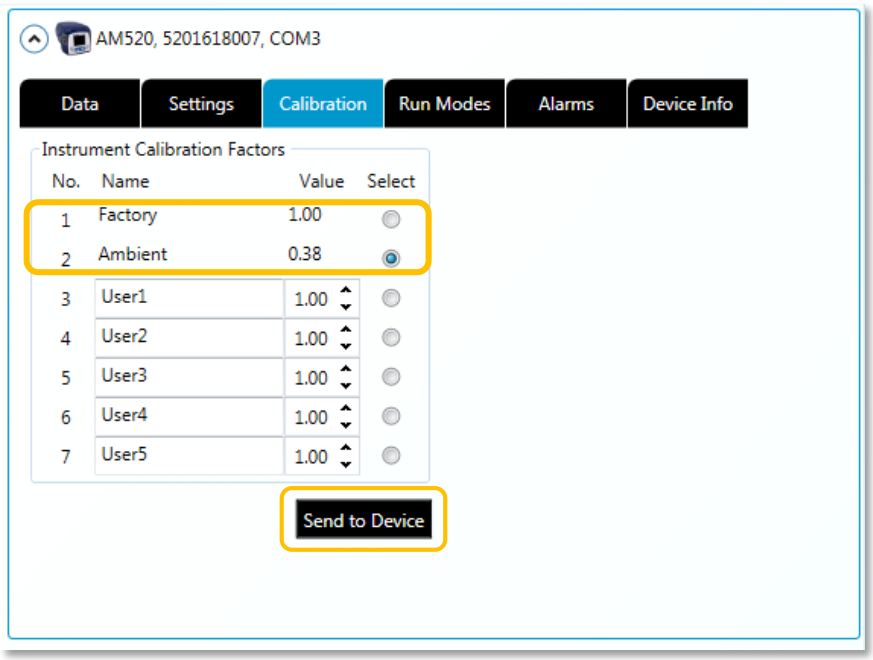
Use this tab to set the "date and time" for the instrument as well as "logging intervals" and "time constants".

Click **Send to Device** when you have completed setting up options. Refer to the *SidePak™ AM520/AM520i Personal Aerosol Monitor User Guide* (P/N 6009829) for more information.



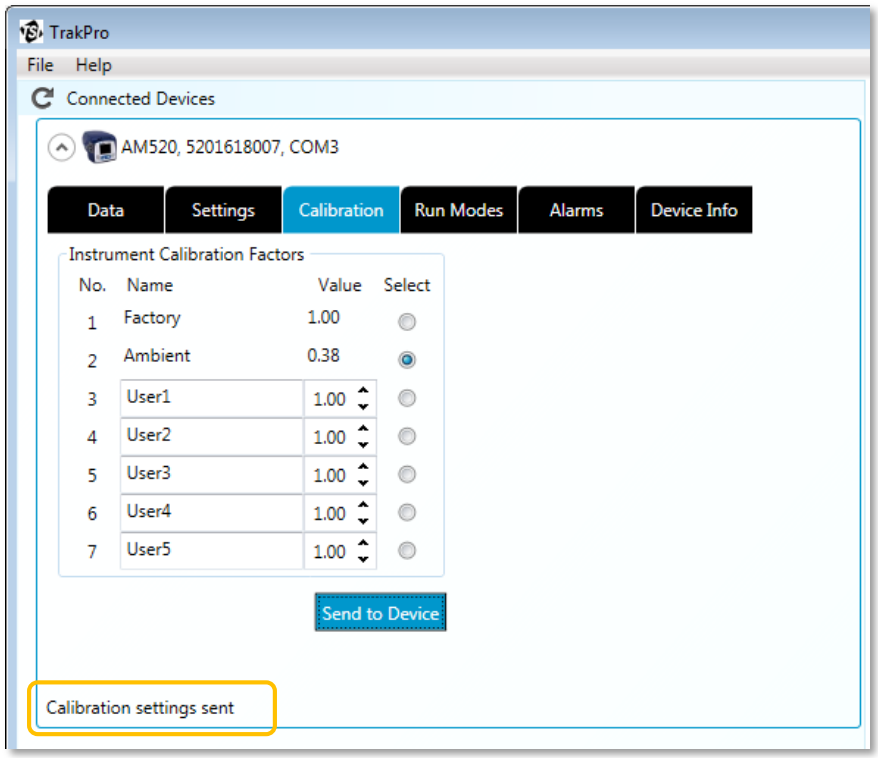
Calibration

Use this tab to set or change the calibration factors for the instrument. There are two (2) factory set calibration factors and five (5) user definable or "custom" calibration factors. ***Note**: Custom calibration factors cannot be changed through the display on the instrument.*



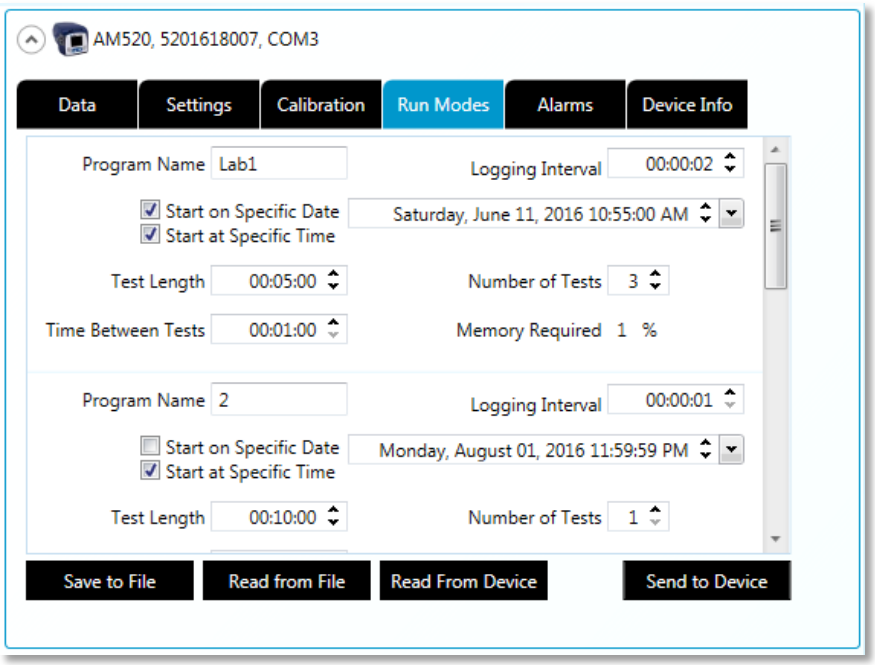
Once you have entered or changed the desired factor, click **Send to Device**. After the calibration settings have been sent to the instrument, they can be selected from control panel on the instrument. Refer to the *SidePak™ AM520/AM520i Personal Aerosol Monitor User Guide* (P/N 6009829) for more information.

Anytime a setting change is sent to the device, a message ***"….. settings sent"*** will appear in the lower-left corner of the screen (as shown) confirming that the information has been sent/received by the instrument.

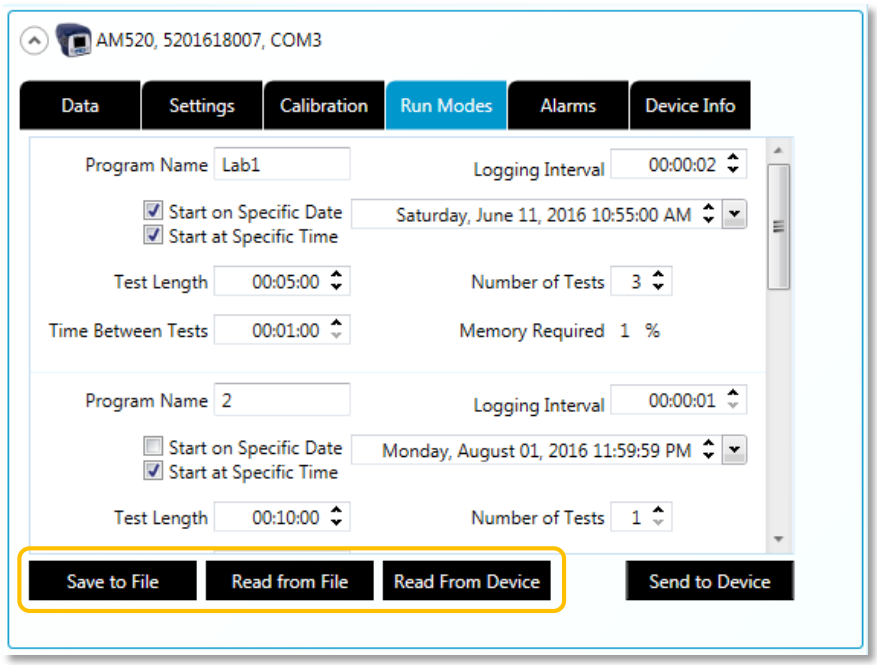


Logging Protocols (Run Modes)

Use this tab to set up the Run Modes for the instrument. In this tab custom Run Mode settings can be created and sent to the instrument.



There are also three options for setting-up Run Modes that can be used when programing one or multiple instruments.



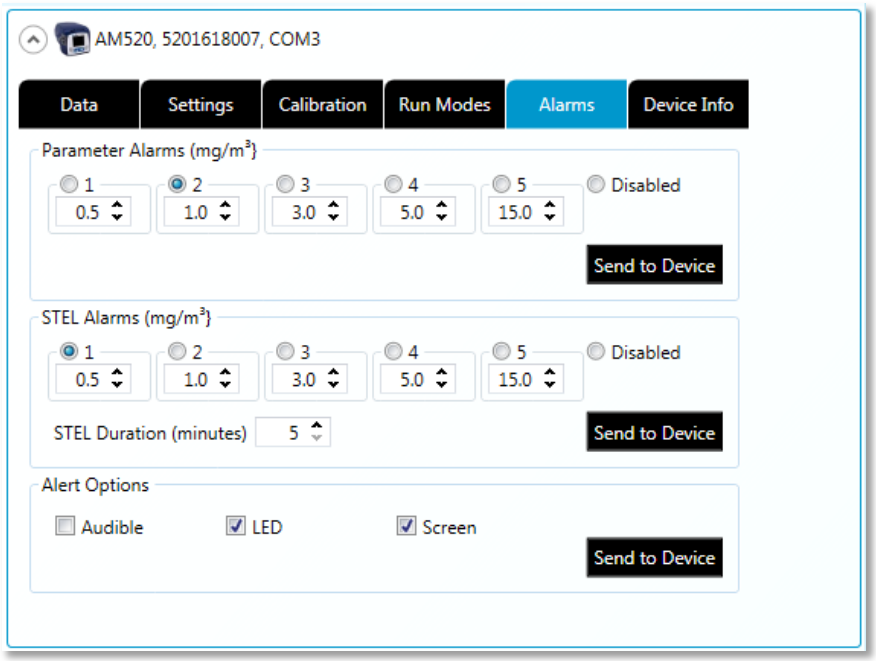
1) **Save to File** – save your settings to a file so they can be easily used to repeat the device settings. This is helpful to duplicate the settings for future use or when using multiple AM520/AM520i instruments.
2) **Read from File** – access a file of previously stored settings and set the new instrument to the same parameters.
3) **Read From Device** – reads the settings currently in the device and make adjustments if needed.

Once the desired settings are completed, click **Send to Device** to transfer them to the instruments internal memory. Refer to the *SidePak™ AM520/AM520i Personal Aerosol Monitor User Guide* (P/N 6009829) for more information.

Alarms

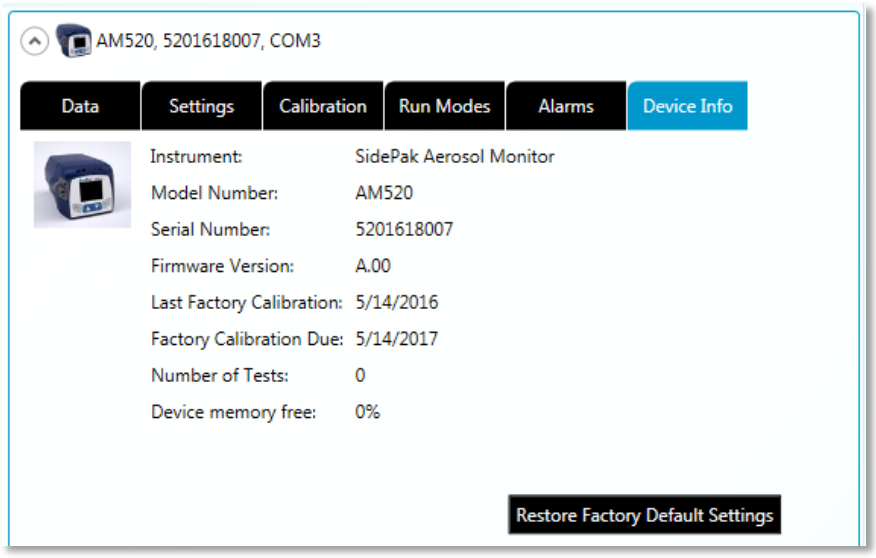
Use this tab to set up the Alarm Parameters for both the General and STEL Alarms. The alarm notification options are selectable as shown. Click **Send to Device** when you have completed setting up the alarms.

Refer to the *SidePak™ AM520/AM520i Personal Aerosol Monitor User Guide* (P/N 6009829) for more information.



Device Info Tab

The **Device Info** provides more detailed information about the instrument such as the number of tests in memory and the percent of free memory on the device. It also provides a function to reset an instrument to its factory default settings.



In case of a connection failure during a software session (for example, if the cable becomes disconnected), this tab page will open and indicate the nature of the error. To try and reconnect to the instrument, click the instrument icon image—the software will attempt to reconnect and report whether the attempt is successful or not.

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