

# **SUPERPRESSURE**

## **SCIP** ***Smoke Chamber Interface Program***

Catalog No. 4-5802

Version 3.07  
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**Customer Name:** \_\_\_\_\_

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**Serial #:** \_\_\_\_\_

**Date of Manufacture:** \_\_\_\_\_

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## Table of Contents

1. What is SCIP? .....	3
2. Setting up Your Computer for SCIP .....	4
3. Setting up the Smoke Density Chamber .....	4
4. Running SCIP... ..	5
5.0 Running a Smoke Density Test .....	9

## 1. What is SCIP?

The Smoke Chamber Interface Program (SCIP) is a software application which captures the data from a smoke density test performed in the Newport Scientific Smoke Density Chamber.

SCIP can capture several different types of data depending on the configuration of the smoke chamber that it is being used with.

The measurements are taken by an Analog Devices 6B11 interface which is installed in the Smoke Density Chamber and attached to a serial port on your computer with an RS-232 cable.

Below is a list of the channels that may be available and the configuration of the Analog Devices module that is required to measure a channel of that particular type.

Optical Density	±50 mV
Radiometer Temperature	J Thermocouple
Radiometer Voltage	±50 mV
Back Wall Temperature	J Thermocouple
Heat Flux Gage	±50 mV
Calorimeter	±50 mV

The modules that come with the smoke chamber should already be configured for you.

The 6B11 Interface has the following accuracy specifications according to Analog Devices:

Temperature: +/- 2°F
Voltage: 0.049 mV

If you need information about configuring the Analog Devices 6B11 units, refer to your Analog Devices User's Guide or contact Analog Devices directly. Newport Scientific, Inc. does not provide technical support for the Analog Devices 6B11 units.

SCIP samples the Smoke Density Chamber channels approximately 2 times per second.

SCIP is provided only in compiled form. Contact Newport Scientific, Inc. to report bugs or to suggest additional functionality. A source code license may be obtained from Newport Scientific, Inc. at additional cost.

## **2. Setting up Your Computer for SCIP**

This section describes the setup which you must perform before you can run the SCIP software on your computer. Be sure to read this section entirely before attempting to capture the data from a smoke density test.

### **2.1.1 Requirements**

SCIP v3.0 requires an IBM PC compatible computer running Windows 98, Windows ME, Windows NT, Windows 2000, or Windows XP. Although it has not been tested with Windows Vista, it should work with no problems. It takes up less than 1 megabyte of space on your hard disk, not including space for data files to be saved. It requires an unused serial port to communicate with the Smoke Chamber.

## **2.2 Installing SCIP on Your Computer**

To install SCIP on your computer, first insert the floppy disk into the floppy disk drive. Then, from the 'Start' menu, click on 'Run...'. A window will pop up with a place to enter a line of text. Enter "a:setup.exe" in the text area and click on the 'Ok' button.

If you are installing SCIP from a CD-ROM, simply insert the CD-ROM and close the CD-ROM drawer and the installation program should start automatically. If it does not start automatically, simply open Windows Explorer and browser to the folder containing the contents of the CD-ROM and click on the setup.exe program.

The setup program will start. The user will first be prompted for which components to install. These should normally not need to be changed. Next the user will be prompted the user for a location for the SCIP program files. Choose a directory and click 'Next'. Follow the other instructions and finally click 'Finish'. After the setup program has completed, you should be able to run SCIP by choosing SCIP from the Start menu under 'Programs' submenu – under the Newport Scientific submenu.

## **3. Setting up the Smoke Density Chamber**

Connect the Smoke Density Chamber's RS-232 cable to an available serial port. Remember the serial port (COM1, COM2, COM3, or COM4) to which you attach the smoke density chamber. You will need to tell SCIP this information before you can run a smoke density test.

Turn the Smoke Density Chamber power switch on and allow it to warm up for five minutes.

Zero the dark current as described in the Smoke Density Chamber documentation.

## 4. Running SCIP...

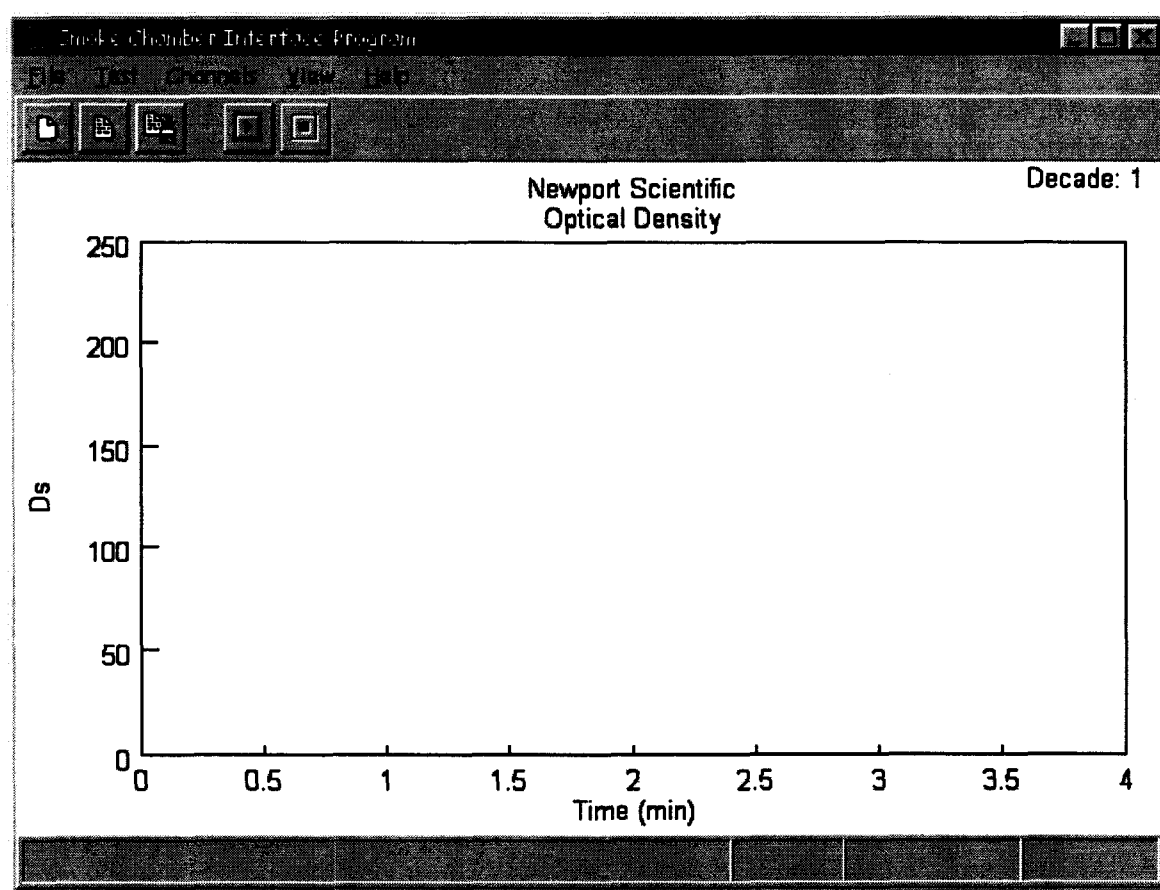
### 4.1 Starting SCIP

You must setup the Smoke Density Chamber as described in the previous section before you can use SCIP to capture the data values from a smoke density test.

To start SCIP, click on the SCIP icon in the Start menu.

### 4.2 The SCIP Main Window

The main window for SCIP consists of a menu bar, a toolbar, a graph area, and a status bar. The menu bar contains pull-down menus that can be used to choose many SCIP options. Below is a sample display of the SCIP application window.



#### 4.2.1 The File Menu

Below is a list of the menu options in the File menu and a description of each.

**New** – Choose New to start a new file

**Open** – Choose Open to load a file from disk  
**Save** – Choose Save to save the current data to disk  
**Save As** – Choose 'Save As' to save the current data to disk under a different filename  
**Print** – Choose Print to print the current graph and statistics  
**Exit** – Choose Exit when you are finished using SCIP and wish to close the window.

## 4.2.2 The Test Menu

Below is a list of the menu options in the Test menu and a description of each.

**Setup** - Allows the user to set options for the test

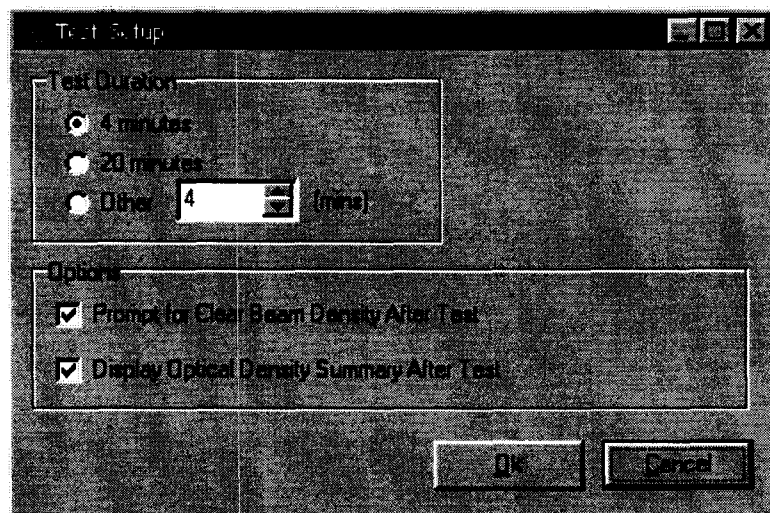
**Support Info** – This pops up a window that lets the user enter information to be included on optical density graph printouts. This extra information may include such things as customer name, sample, sample number, run number, etc.

**Comms Setup** – This menu option pops up a window that allows the user to configure the serial port to communicate with the smoke chamber.

**Start** – Clicking on this menu item causes SCIP to start measuring and recording data

**Stop** – Clicking on this menu item stop the test currently in progress.

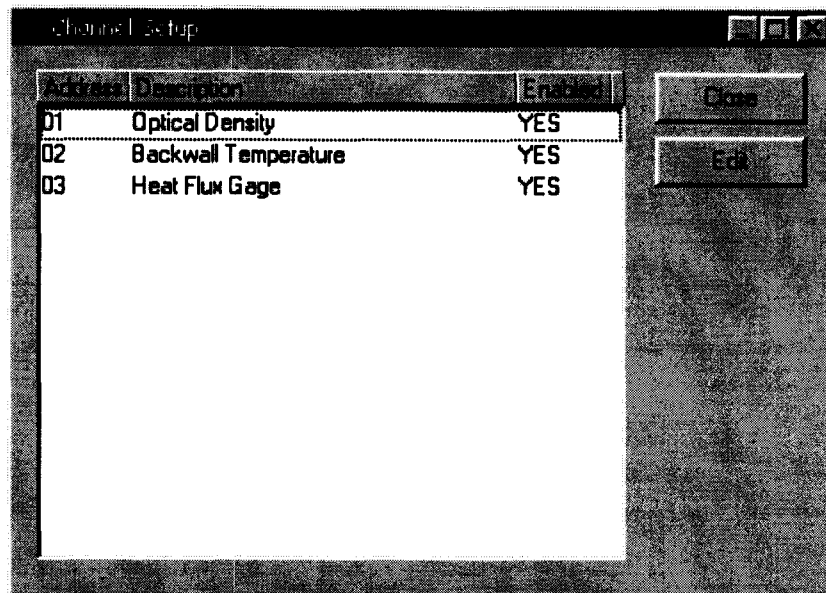
Below is the Test Setup window which allows the user to set several test options.



## 4.2.3 The Channels Menu

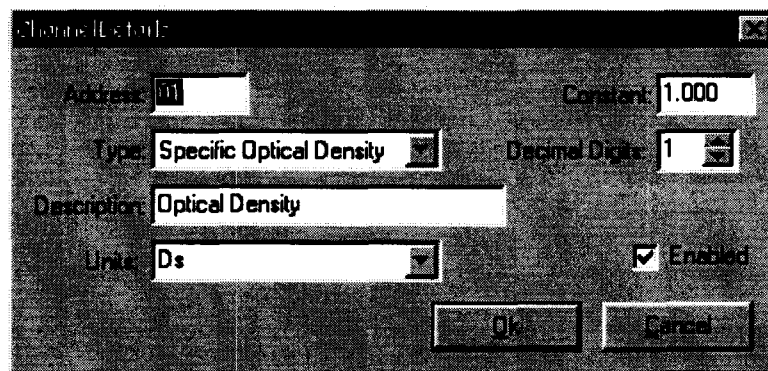
Depending on the configuration of the smoke chamber and SCIP software, there may be one or more menu options in the Channels menu. The first menu item is the 'Edit' option. Clicking on this item will bring up a window that allows the user to set up the different channels that will be measured. The window that lists the channels that are

currently configured is shown below:



This window displays the Analog Devices I/O board address, the description of the what channel, and whether or not the channel is enabled (whether or not it will be measured).

If the user double-clicks the mouse on one of the channels in the list, another window will pop up that allows the user to set several options:



This window allows the user to customize the description of the channel and choose the units. It also allows the user to set the number of decimal digits that will be displayed in the data table. Additionally, the user can configure whether or not the channel will be measured (enabled). For certain types of channels, the user can set the constant which will be used to convert to the proper units.

Following the 'Edit' menu item in the 'Channels' menu will be one or more predefined channel configurations. For example one configuration may not include measuring any temperature and another configuration may include measuring temperature. In this case, there would be two different menu items. By clicking on one of these menu items, the user would be choosing a channel configuration that will be used for testing.

## 4.2.4 The View Menu

Below is a list of item in the 'View' menu:

**Graph Setup** – This menu option displays a window that lets the user configure the ranges, labels, titles, and ticks marks for the graph currently being displayed.

**Track Mouse** – This menu option causes the mouse cursor to change into a '+' sign. When you move the mouse over the graph, the time and measurements will be displayed in the lower right corner of the SCIP main window. This menu option only works when there is no test in progress.

**Data** – This menu item will pop up a window that displays all of the data recorded (after a test), including all of the times for each sample and the measurement for each channel at that particular time.

**Test Summary** – This menu item will pop up a window containing a summary of the test that was just run, including minimum, maximum, etc.

Following the 'Test Summary' menu item and a horizontal line, there should appear one or more menu items, one for each channel configured. Clicking on one of these menu items causes the graph of the corresponding channel's data to be displayed.

## 4.2.5 The Toolbar

The toolbar contains some shortcut buttons that allow the user to perform certain tasks using the mouse, without having to open up a menu. Below is a picture of the button on the toolbar and the menu item that it corresponds to:

-  File:New
-  File:Open
-  File:Save
-  Test:Start
-  Test:Stop

## 4.2.6 The Graph

The graph displays the measured values while a test is in progress. The user can customize various graph settings by choosing 'Graph Setup' from the 'View' menu. When the optical density graph is being displayed, the decade will be displayed in the upper right hand corner.

## 4.2.7 The Status Bar

The status bar has four areas that each display something different. The leftmost part of the status bar displays messages to the user. The next area displays the word 'modified' if the current file has been changed without being saved. It is empty if nothing



has been modified. The next panel displays either the current test time in minutes and seconds (if running a test), or if 'Track Mouse' is currently enabled, then it displays the time where the mouse cursor '+' is located on the graph. The rightmost area on the status bar displays either the last measurement of the currently running test, or the measured value at the given time where the mouse cursor '+' is located (if 'Track Mouse' is enabled).


## 5.0 Running a Smoke Density Test

Before attempting to run a test, you should make sure that all of the com port settings are correct. To do this, choose 'Comm Setup' from the 'Test' menu. This window lets you select which serial port to use, the baud rate, parity, stop bits, and number of data bits. Currently the smoke chamber only supports 9600 for Baud Rate, N (none) for parity, 8 data bits, and 1 stop bit. If you change any of these settings, then the computer will not be able to communicate with the smoke chamber and will not be able to take any measurements. The user can choose which serial port to use, 1-4.

Next, make sure that the proper channel setup is selected (if there are more than one). To do this, click on the 'Channels' menu and make a note of which channel setup is selected. If there is only an 'Edit' menu item, then there is only one channel setup and it is always selected.

Before you run the first test you need to enter the constant for the Heat Flux Gage. The constant to be used can usually be located with the calibration information that came with the gage. The units of the constant should be in  $W/cm^2/mV$ . To enter the parameter, bring up the Channel List by clicking on 'Edit...' in the Channels menu. Then double-click on the Heat Flux Gage channel. Enter the constant in the box in the upper right corner of the window. Then click the 'Ok' button to continue. Then click the 'Save' button on the bottom right corner of the Channel List window.

Next, choose 'Setup' from the 'Test' menu. Choose the length of the test and choose other options. Click the 'OK' when ready to continue.


Now you are ready to start measuring. To start a test, either click on the  button or choose 'Start' from the 'Test' menu. SCIP will then start measuring the channels that you have set up. SCIP reads each channel about twice per second. While the test is in progress, The status bar will be updated with the test time and the measurement value for the current channel. You can view any channel by choosing the channel you want to view from the 'View' menu. This can be done during the test.

### 5.1 During the Test

While measuring optical density that is changing, the user will sometimes need to change the decade of the photometer. In most cases, the SCIP software will automatically detect that the decade setting has changed and will automatically adjust it's own decade setting. The operator can also manually change the decade setting by pressing the appropriate number (1-6) on the keyboard. The current decade setting is displayed in the upper right corner of the SCIP window, but is only displayed when the

optical density graph is being viewed.

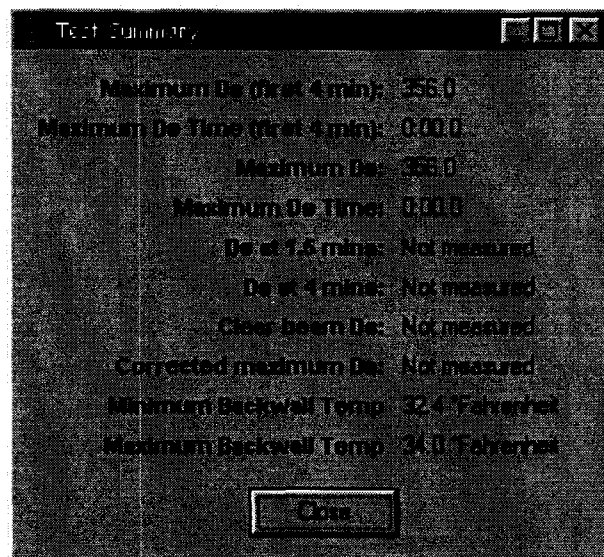
## 5.2 After the Test

If you want to end a test before the pre-selected time is up, you can do so by choosing 'Stop' from the test menu or clicking on the  button. If the 'Prompt User For Clear Beam Density After Test' option was selected in the Test Setup window, then the user will then be prompted for whether or not to measure the clear beam optical density. If the user clicks the 'Yes' button, then SCIP will measure the clear beam optical density immediately after the user clicks on the 'Yes' button. Before clicking 'Yes', the user should make sure that the Decade is set to 1.

If the 'Display Optical Density Summary After Test' option was selected on the Test Setup window, then a summary window will be displayed containing the following:

- The maximum optical density and the time at which it was measured
- The maximum optical density in the first four minutes of the test and the time at which it was measured
- The optical density reading at 1 minute, 30 seconds.
- The optical density reading at 4 minutes.
- The minimum and maximum backwall temperature

Below is a sample of what the summary window will look like:



If the user prints the optical density graphs, then this summary info will be printed at the bottom.


## 5.3 Display Data

By choosing the 'Data' menu item from the 'View' menu, the user can view all of the times and measurements for each channel in a table format. This table can then be printed or copied to the Windows clipboard and pasted into another Windows application.


## 5.4 Printing Graphs

At any time after a test is run, the user can print the graph that is currently displayed by choosing 'Print' from the 'File' menu. This will print all of the support information that the user has entered as well as the graph. If the user prints the optical density graph, then it will also include the test summary (minimums, maximums, times, etc). A sample graph printout is included at the end of this document.

## 5.5 Saving The Test

To save the test that was recently run, the user can click on the  button or choose 'Save' or 'Save As' from the 'File' menu. If the file does not already have a name, the user will be prompted for the name of the file and the directory to store the file in. All of the times and measurements will be saved in the file as well as the support info, the summary info, the channel setup, and the graph setup for each channel.

## 5.6 Loading a Test

To load a test that was previously saved to disk, the user can choose 'Open' from the file menu or click on the  button. This will prompt the user for the name of the file to open. If there is already a test loaded and the current test has not been saved, the user will be asked whether or not to save the current test before proceeding. After loading a test, the user can view the data in a table, view the graphs for the different channels, print out graphs, etc, just as if the test had just been run.

## 5.7 Quitting SCIP

To close SCIP, choose 'Exit' from the 'File' menu.

**PROCEDURES FOR WIRING NIST SMOKE CHAMBER  
TO COMPUTER CONNECTIONS  
Model No. 4-5804**

THE FOUR CHANNELS ARE:

1) PHOTOMETER mV

Run a coaxial patch cord from the photometer recorder output jack to the Analog Devices board (module addressed 01).

2) Back Wall Temperature

Install a separate J Type thermocouple to the back wall. Run wires through the conduit on the back of the chamber. Connect wires to Analog Devices board (module addressed 02).

3) Radiometer, Heat Flux Gage, Calorimeter mV

Connect a coaxial cable from the Radiometer mV jack inside the chamber control box to the Analog Devices board (module addressed 03).

4) Radiometer Temperature

Run J Type thermocouple wires through the conduit on the back of the chamber. Leave thermocouple in chamber with enough slack to move it around inside chamber. Connect wires to Analog Devices board (module addressed 04).

For more information, see wiring diagram 4-5804WD98.