# Using the API with your PC SignalHawk (SH-36S-PC)

**By Gregg Moffett**
**Bird Technologies Group Application Engineer**

Bird offers an Application Programming Interface (API) to use with the PC Hawk Spectrum Analyzer allowing the user to customize a sweep specific to their need. It is included with the PC Hawk application software.

The API is written in C and provides a C calling interface to a Windows DLL. There are several sample projects provided that demonstrate how to set up a measurement using the PC Hawk and the API, acquire data, and write the data to your console. These examples are written in C++ and Visual Basic.

The Signal Hawk Applications Programming Interface Operations Manual, (920-SH-API.pdf), is available from our web page, www.bird-technologies.com. Once on our web site, go to the SH-36S-PC page. Get there by doing a Product Search by Part number by entering **SH-36S-PC** and clicking **GO**. The page for the SH-36S-PC appears and on the right hand side of the page under DOWNLOADS click on the Manual [API] to download to your PC. This manual contains all of the functions available for you to set up a measurement, acquire data, and write to your console.

Once you have installed your PC Hawk software you can find the API sample projects at:

*C:\Program Files\Bird Technologies Group\PC SignalHawk API\api samples.*

**API Setup**
The steps required to perform a sweep are as follows:

1. Initialize the API at application startup
2. Establish a connection to the PC Hawk
3. Set the parameters for a measurement sweep
4. Start the sweep
5. Get the data from the sweep (Single or Continuous)
6. Stop the sweep
7. Disconnect from the PC Hawk
8. Finalize the API on application exit

**C++ Sample Projects**
ACPMeasureConsole – Adjacent Channel Power Sweep demonstrates the use of the Bird PC Hawk API to get adjacent channel power measurements from the PC Hawk. A sweep is performed and at the completion of the sweep a power measurement is taken. This sample project mirrors the display when selecting Adjacent Channel Power mode from the Start Menu.

CPMeasureConsole – This sample sets up a Channel Power measurement, performs the measurement, and writes the measurement data to the console. This project mirrors the display when selecting Channel Power mode from the Start Menu.

DefaultSAMeasureConsole - This function demonstrates how to initialize the API application, get the device list for all attached PC Hawks, selects which PC Hawk to connect to, connects to the selected PC Hawk, start the SpecAn sweep, and finalize the API. This is an example of how to connect to multiple PC Hawk's connected to the same computer.

DemodSignalMeasureConsole - This function demonstrates how to initialize the API application, establish connection to the PC Hawk, start an AM/FM demodulation, disconnect from the PC Hawk, and finalize the API. This project utilizes Birdshwave to connect to the API and mirrors the SignalHawk selection of Demodulate Signal from the Start Menu.

SaCountersConsole - This function demonstrates how to initialize the API application, establish connection to the PC Hawk, enable counters and start the default SpecAn sweep, retrieve the sweep data, disconnect from the PC Hawk, and finalize the API Application. This project mirrors turning on the frequency counters from the Mark & Limit menu.

Birdshwave – This is a sound DLL interface for demod signal measurement. This example converts the wave data to sound and then sends it to CODEC.

ZeroSpanMeasureConsole – This function demonstrates how to start the Zero Span Sweep. It initializes the API application, establishes connection to the PC Hawk, starts a Zero Span measurement, retrieves the sweep data, disconnects from the PC Hawk, and finalizes the API Application. This project mirrors the display when selecting Time Domain mode from the Start Menu.

**Visual Basic sample projects**
BirdShVb – This DLL is a Visual Basic interface to the main API and the BirdShWave to convert data to sound. Visual Basic applications will use the DLL to interface with the main C API.

DemodSignal - This is a Visual Basic application equivalent to the C++ DemodSignalMeasureConsole application. This project utilizes BirdShVb to connect to the C API.

ZeroSpan – This is a Visual Basic application equivalent to the C++ ZeroSpanMeasureConsole application. This project utilizes BirdShVb to connect to the C API.

**Summary**
By using the functions described in the Signal Hawk Applications Programming Interface Operations Manual, following the steps outlined above to perform a sweep, and referring to the examples included with the API, you can customize your PC Hawk sweeps as your needs require.