

## PicoScope6 Automotive Startup Settings

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The PicoScope software controls many important settings for capture, display, and storage of your FirstLook® Signature data. The key parameters are shown in Figure 1. This document is focused on use of the PicoScope to obtain Engine Polygraph® Assessment reports on engine physical integrity.

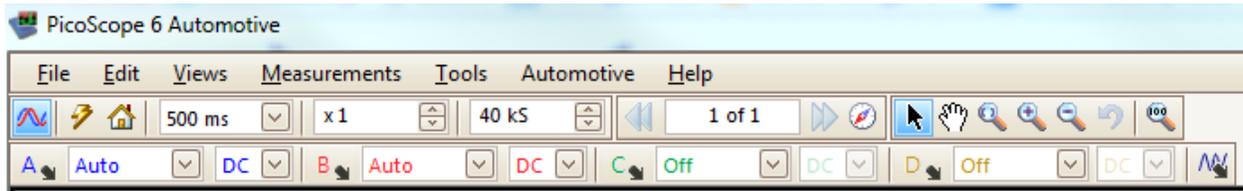


Figure 1. Image of the PicoScope screen with settings that we recommend for most signatures.

The values of the PicoScope screen with settings that we recommend for most signatures are shown in Figure 1 above; hence we suggest that you might want to put these values into your settings and preferences and store them as defaults. In those cases when other settings are appropriate, you can make the needed changes; and when done, re-load the default settings.

We provide our recommended settings as a download from the website, [www.EnginePolygraph.com](http://www.EnginePolygraph.com). When you download the 'suggested.pssettings' and store it (**Save As**) somewhere on your PC, you can start your PicoScope6 Automotive application and chose **File > Open** to select the downloaded suggested.settings. This will import the settings to your session. From there, you may want to go to **File > Startup Settings > Save User Default Settings** and also check the box: **Load User Default Settings on Startup**.

We now will discuss why we provide the recommendations that we do and how you may modify them as needed. This is not meant to replace your use of the PicoScope6 Automotive documentation.

The settings and preferences screens are where you control some of these the settings. First, let's look at the 'preferences':

1. The time interval displayed on the screen can be controlled on the **Tools > Preferences > General** screen. The choices are to set the time interval across the screen (Total collection time), or to set the total sweep interval in terms of the time between the 10 equi-distant vertical bars (Times per Division).

This parameter is critical for obtaining a meaningful report since the software that generates the signature Assessment report requires at least 2.7 cycles of all cylinders firing. For a 4-stroke engine, that is 5.4 rotations of the crankcase. If the engine is running at 1500 rpm, one 4-stroke cycle takes 80ms, so the time (duration) on the screen should be 216 ms, and longer if the engine is running slower. We recommend 500 ms which should be acceptable until about 650 rpm (typical idle).

2. The **Preferences > General** screen also controls the Waveform Buffer. This parameter controls the number of waveforms that may be stored in the buffers.

Although having up to 32 buffers is very useful for some analyses, we recommend that you set it to 1 for signatures that are to be analyzed by the SSM application. The reason is to make it easier to save

the signature on your PC and then sending it to Engine Polygraph for analysis. Engine Polygraph cannot take the set of signatures as a group for analyses, but can only process one at a time.

Figure 2 shows the layout of the Preferences > General screen. You may want to review the settings on the other Preference tabs also.

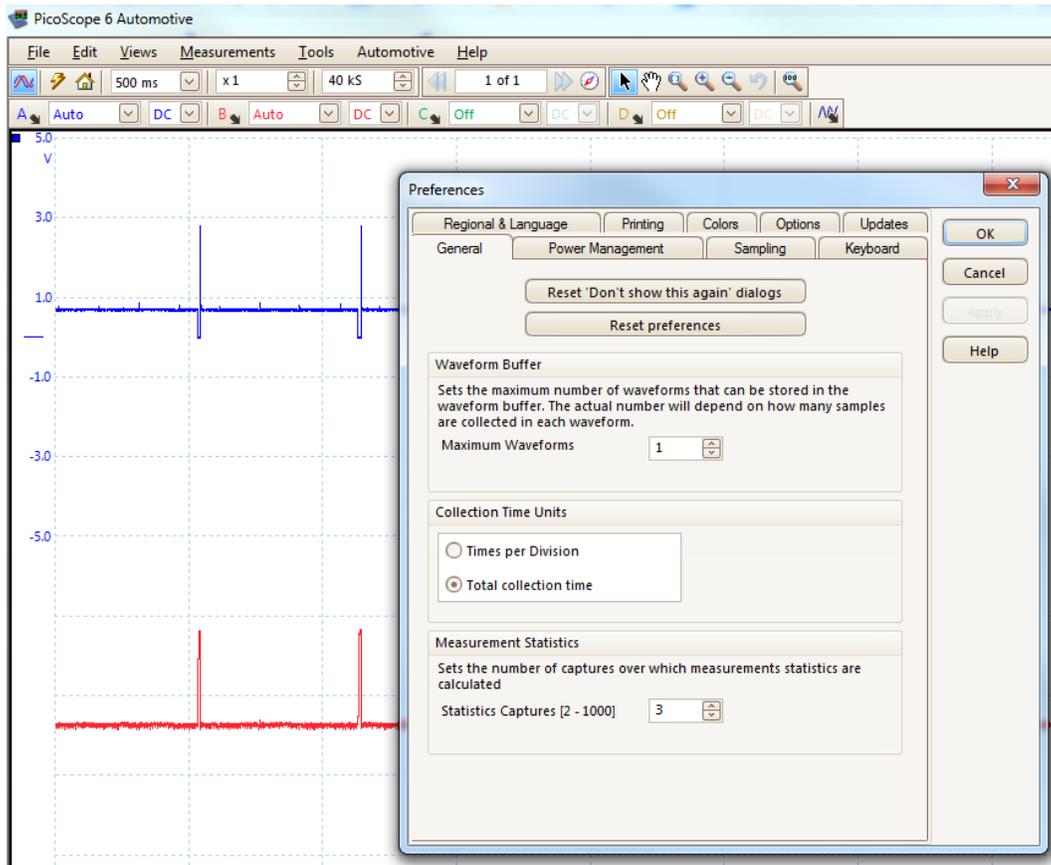


Figure 2. The **PicoScope6 Tools > Preferences > General** screen for controlling important parameters to get SSM Assessment reports on engine physical integrity.

Other parameters that can be stored in your Default settings can be altered immediately below the menu bar. Under Tools, is the sample frequency. We recommend about 40kS (40,000 samples per second) to get good detail of what is going on in the engine. We do not have any properties that we consider in the analysis that interpret data at a higher frequency, but higher frequency of sampling increases the file size and slows down the ability of the PC to do any other work.

On the next row under the menu bar, the voltage range for each channel is displayed; it can be changed and stored in the Default settings.

For channel A (which we use for the exhaust), we recommend 'Auto', which allows the system to sample the input to select a range appropriate to the incoming data. If the voltage actually exceeds the range, the data file will record the value as Inf (infinity). The program will try to

estimate such 'missing' values, but if there are too many, it will 'give up' and give an 'Exception report', indicating that an Assessment is not reliable.

For channel B (which we usually use for the crankcase sensor), we also recommend 'Auto'. Usually the voltage (pressures) are lower in the crankcase than in the exhaust.

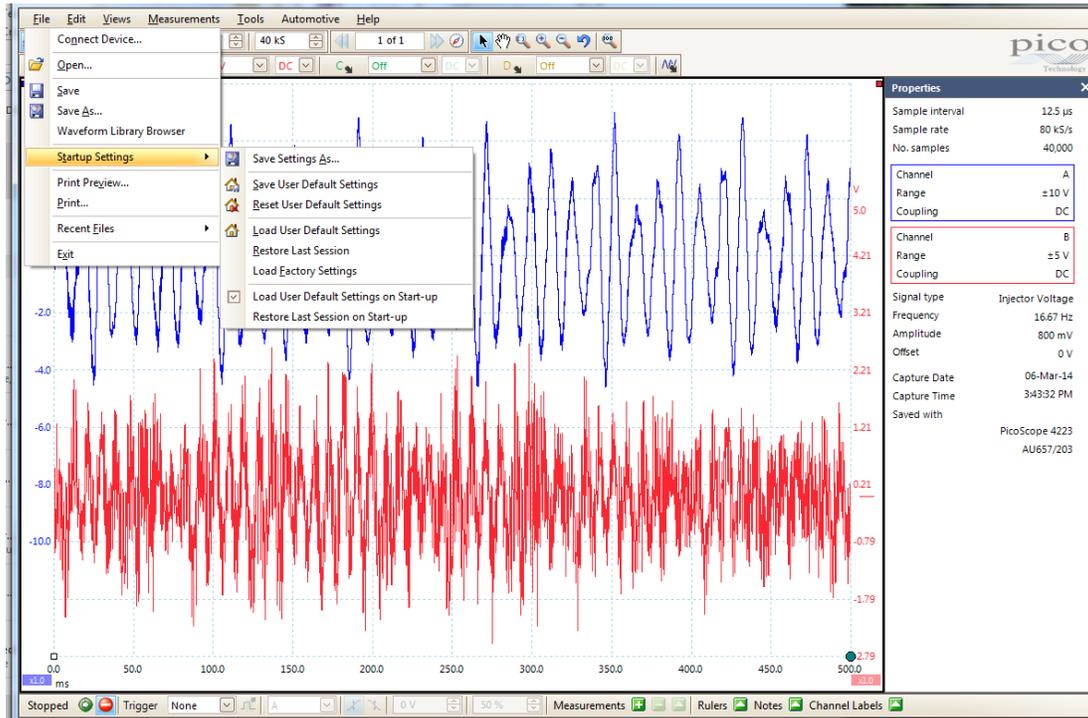


Figure 3. These are the Startup Settings on the PicoScope6 **File > Setup Settings** Menu.

Once you have selected the settings that you want to use going forward, we recommend that you click 'Save User Default Settings' to save them. But we also recommend that you click on 'Load User Default Settings on Startup' to simplify future use of this PC for use with SSM. Below is a short description of the behavior for each of the menu items of the **File > Startup Settings** list.

1. The 'Save Settings As ...' allows you to save the settings under a unique name in a specific directory of your choice for future reference.
2. 'Save User Default Settings' is used to save the current settings as your Defaults in the future.
3. 'Reset User Default Settings' can be used to go back to the last saved Default Settings in case you have changed the settings during the session, but now want to go back to the Default Settings.
4. Use 'Load User Default Settings' to read the Default Settings and use them going forward.
5. 'Restore Last Session' will reload the settings from your previous session.
6. 'Load Factory Settings' will reset the current settings to the values from the download of your PicoScope software.
7. Checking 'Load User Default Settings on Startup' will cause the system to load the default settings in the future on start-up.

8. Or you may check 'Restore Last Session on Startup', if that is what you prefer.

If you are not fully trained on the use of your PicoScope, you will want to use the Pico literature and Help screens to get full value from your investment. The material above is presented to focus on the capabilities important for using your PicoScope to obtain Engine Polygraph signatures for Engine Integrity Reports.

We wish you great success on the use of your PicoScope and the Predictive Fleet Technologies ([www.EnginePolygraph.com](http://www.EnginePolygraph.com)). Engine Polygraph® is a product of Predictive Fleet Technologies, Inc.