Getting Started with the R4 Software

The R4 software is the user interface for all programmable Split Second products. There is a complete R4 data sheet which goes into great detail about how the use the software. This application note is intended to give you a step-by-step procedure to follow in order to begin using the software. It is strongly recommended that you also look over the R4 data sheet, the product data sheet and installation instructions before getting started.

The R4 program is used to program the PSC1, AIC1 and FTC1 families of products. Before you go any further, be sure that you know the family and specific version of the product that you are working with. Most products will have a label on the bottom that indicates the complete part number. There are specific System Settings that you need to select depending on the product. You will also have to know how the specific product you are using makes use of the map tables and the Output Settings.

To help you get started, here are some of the critical steps when using the R4 software.

1) Install the R4 program by running the setup.exe program. On the R4 disc the setup.exe file is located in the folder labeled R4 Software. Follow the prompts and install the program in the default location under program files on the C: drive.

2) You can find the file under Program Files and R4 Controller. If you want to have an icon on your desktop, right click on the desktop and click on New and Shortcut. Browse to the R4 Controller located under My Computer, Local Disk (C:), Program Files and R4 Controller. Highlight the R4 Controller and click OK and follow the prompts. Double click the R4 Controller icon on the desktop to launch the program.

3) A splash screen will be displayed for 5 seconds showing the version of the program. The current version is 1.5.0.

4) When you first open the R4 program, most of the features are inactive. To do anything with the program, you have to open a file to work in. You will have to open an existing file or create one. If you are connecting to a Split Second box for the first time and it already has a map, it is a good idea to save a copy of that map on your hard drive so you can reload it in the future if necessary. In order to do that, create a new file.

5) To create the file, click File and New Customer. Type in an appropriate file name. Choose a name for the file that is descriptive like start map, base map, etc. You can put the file in the My Documents directory or the same location as the R4 program. Use the navigation tools to navigate to the directory where you want to create the file. After you type in the name and define the location, click Save.

6) Open the file you have created by clicking on File and Open Customer. Navigate to the directory where the file is located if it is not already pointing to that location. Find the file you created and click it to highlight it. Click Open to open the file.

7) The main screen of the R4 program should now be displayed with the name of the file shown in the colored bar at the top of the window.

8) Whenever you open a file for the first time, you need to set the System Settings. Click on Options and System Settings. Select the settings that match your hardware. The correct settings are usually noted in the installation instructions for the particular product you have. Typical settings are Vacuum/Pressure and Programmable Signal Calibrator.

9) To establish a data connection, you will need either a straight-through, 9-pin serial extension cable, or a USB-to-serial adapter cable. Note that a 9-pin null cable looks just like a straight-through cable, but will not work. If you are using a USB-to-serial adapter, make sure that you install the correct software driver for it on your computer. It is a good idea to look under Ports (COM & LPT) in the Device Manager to see what COM port setting the computer chose for the USB-to-serial adapter. If it is not between COM 1 and 8 you will have to change it.

10) Turn on the ignition on the vehicle to power up the Split Second box.

11) Select the correct COM port from the pull-down menu on the main screen and plug in the cable.

12) Click the Connect to ECU icon on the main screen.

13) If the program is able to connect, the icon you just clicked will become inactive and the Disconnect from ECU icon next to it will become active. This is how you will know that you have a data connection. If you are unable to connect, double check to make sure the unit has power. If you are using a serial cable, make sure it is a straight-through cable. Make sure the COM port setting in the Device Manager is between 1 and 8. Finally make sure that the COM port selection in R4 matches the COM port shown in the Device Manager. For more information about adapter cables refer to the Split Second application note titled "Making a USB-to-Serial Adapter Work".

14) Once you are connected, click on Maps and Fuel Maps to go to the Map Table screen.

15) Click on the icon all the way to the left which is Read Data from ECU. The label for the icon will appear when you position the cursor over it. If the icon is not active, you do not have a data connection.

16) The program will ask - Are you sure? Make sure that the program is going to overwrite the file data with the data from the ECU then click Yes.

17) The program will read the configuration data, and the contents of maps A and B. When it is done, you will see the cell values appear on the map table.

18) If you intend to make changes to the programming, it is best to close the file to save it in its current state. That way you can always open that file and write it to the ECU in order to get back to the original tune. To do that, close the map table screen, disconnect from the ECU and click File and Close Customer.

19) If you would like to make changes, create a second file and repeat the instructions starting at step 5 above. Give the file a descriptive name like initial tune or tune1. Go though all the steps again until you have the ECU data in the second file. At that point you can make changes to the cell values in the map tables to change the tune.

20) To change the mapping in the Split Second box, click the Write Data to ECU icon on the map table screen. The program will ask - Are you sure? Make sure that it is going to overwrite the ECU data with data from the file and click Yes. In order to write the file the ignition has to be on and the engine off.

21) Tune the engine by making progressive changes to the mapping, writing the file and evaluating how the engine runs. As you make progress, periodically close the file you are in and create a new one. Use descriptive names for the files like tune2, tune3, etc. That way you can go back to a previous tune if you want to by writing that file to the ECU.

22) Use the Notes field on the main screen to record information that is specific to that tune such as 50 psi fuel pressure, 10 psi boost, etc. When you have several files that were done under different circumstances your notes are a good way to keep your files straight.

These steps will get you going with the R4 program. There are a number of other features in the R4 software that may or may not be used by a specific product. Refer to the R4 data sheet and product specific documentation for more information.