

ZPP-C194-123 SparroWatch USB Datalink Installation & Operating Instructions

Rev 2, 11/26/07

Introduction:

These instructions describe how to install the SparroWatch USB Datalink (ZPP-C282-439) on your PC.



PC Requirements:

Windows 2000, NT, ME, or XP
256 MB (256,000 KB) RAM minimum

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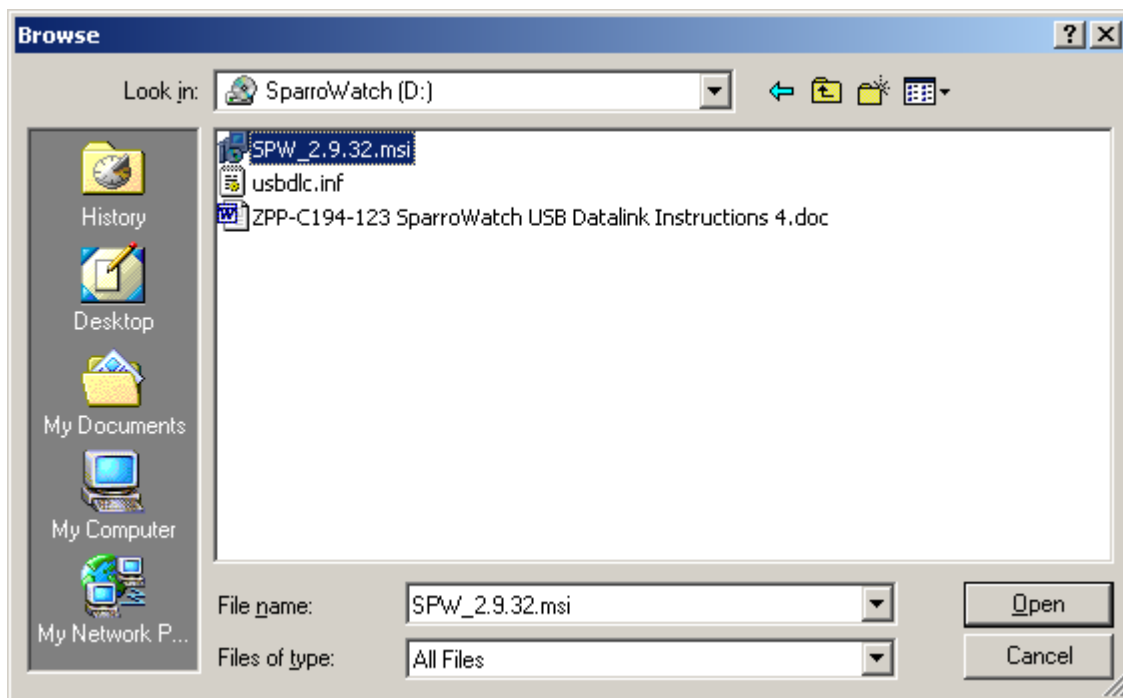
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Installation Instructions:

1. If an earlier version of SparroWatch is already installed on the PC, uninstall it using “Settings> Control Panel > Add/Remove Programs”.
2. Close all other Windows applications.
3. Insert the SparroWatch Installer CD into the CD/DVD drive.

Install SparroWatch:

1. Click Start > Run
2. Set “Files of type” to “All Files”, then browse to D:\ SPW_XXXX.msi.



3. Click the Open button, then the OK button.

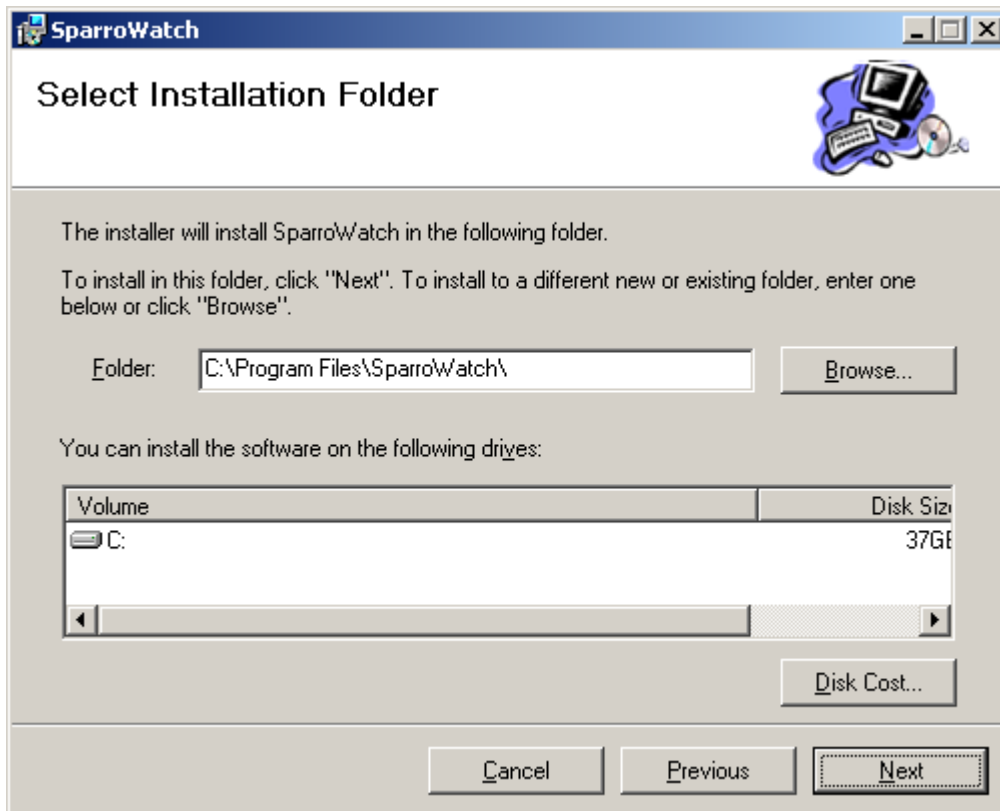
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- Click the Next button.



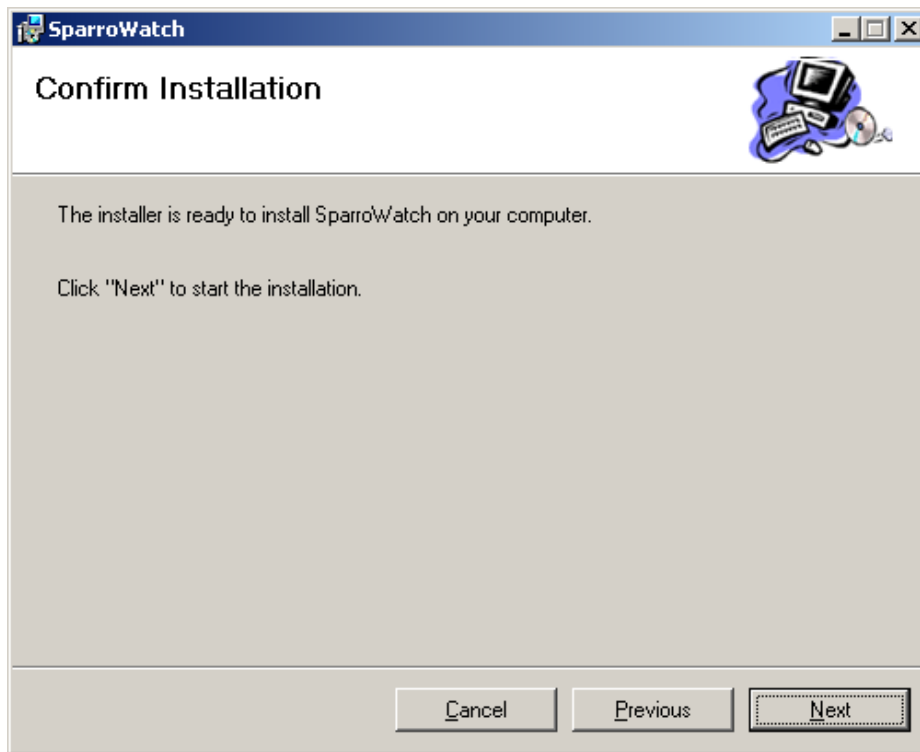
- Click the Next button.



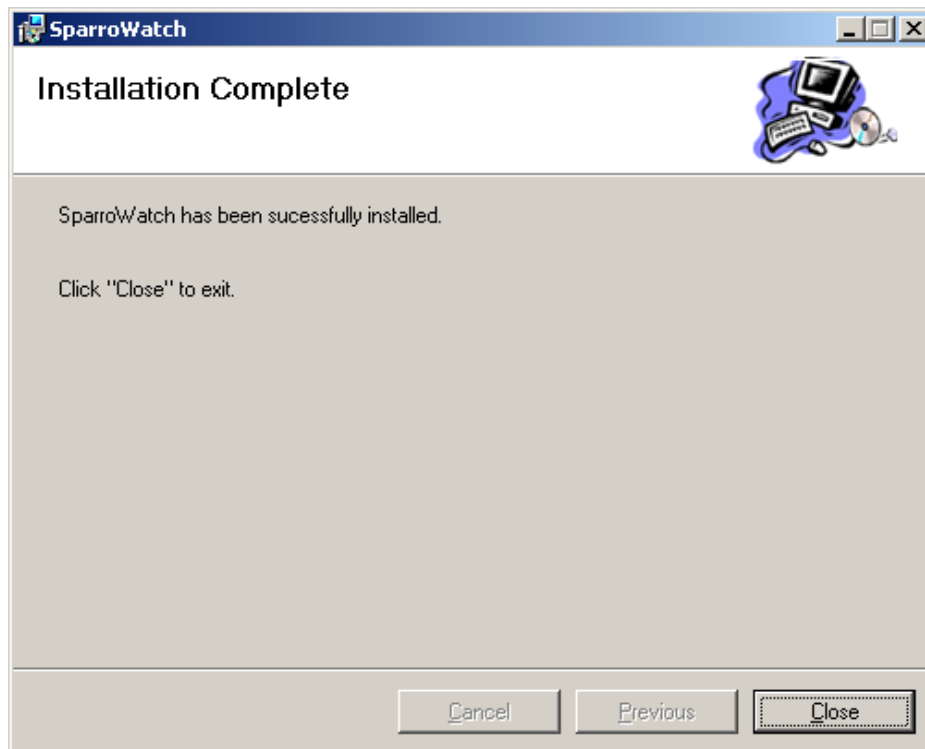
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- Click the Next button.



- The installer should display the following window to confirm that SparroWatch has been successfully installed. If this window is displayed, click the Close button. If not, go back to step 1 of "Install SparroWatch".



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4. Connect the USB connector to one of your PC's USB ports as shown below.



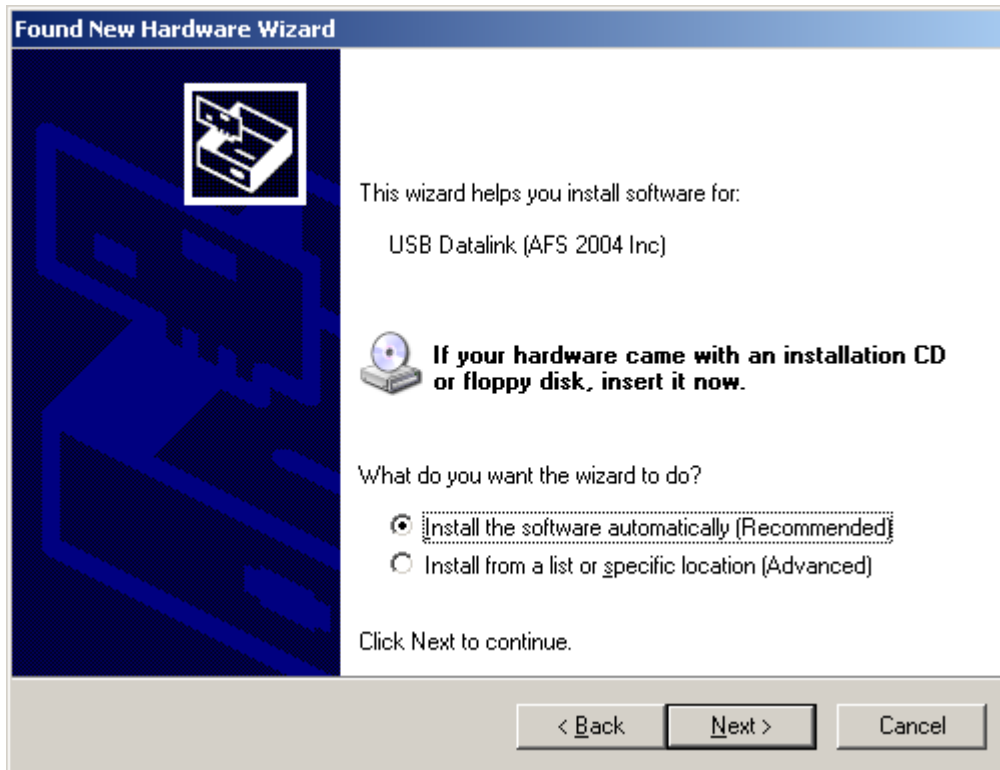
5. A "Found New Hardware Wizard" window should open on your PC. Select "No, not this time", then click the Next button.



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6. Select "Install the software automatically", then click the Next button.



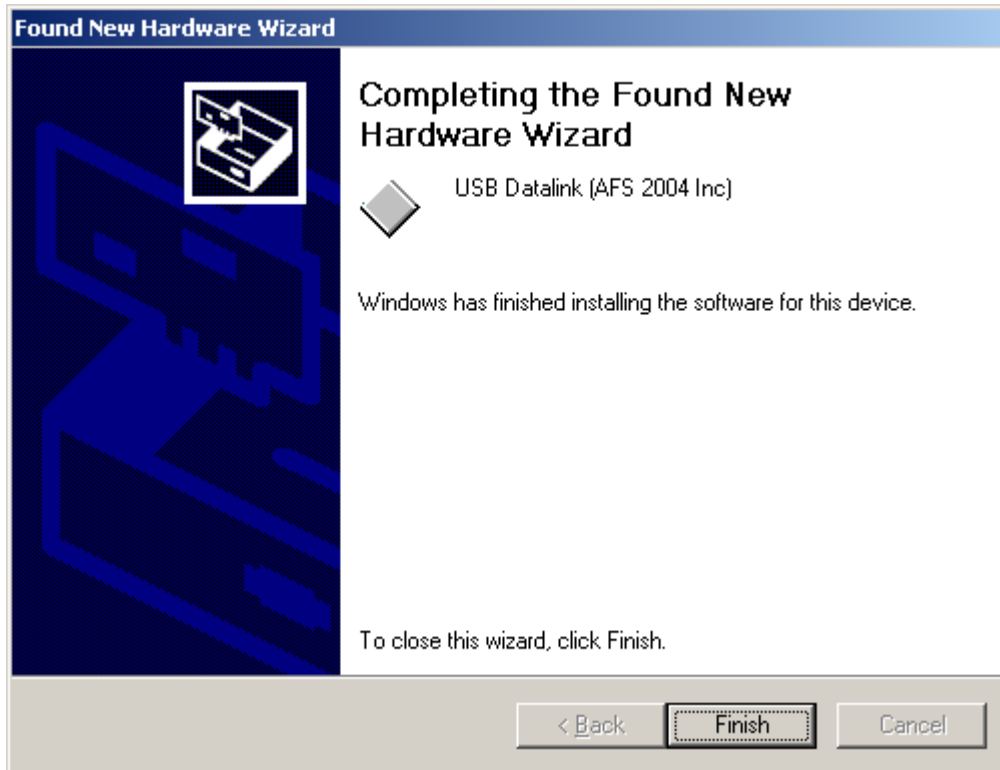
7. If the message below is displayed, click on the "Continue Anyway" button.



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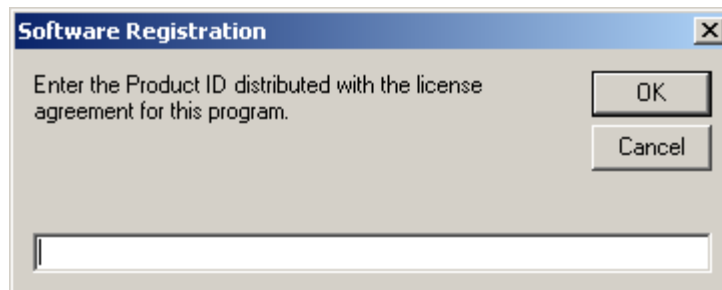
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- The Wizard should then display the following confirmation window.
If the window below is displayed, click the Finish button.
If the USB Datalink driver does not install successfully, unplug the USB Datalink and go back to step 1.



- Make a note of which USB port you used for the driver installation. You either need to use the same port each time you connect the datalink, or repeat the driver installation for each port that you expect to use.
- Open SparroWatch. When the "Enter Product ID Code" window appears, enter the Product ID code supplied to you by your distributor or Zenith.

If you do not have a Product ID Code, contact your distributor or Zenith (276/669-5555) and request one.



This completes your SparroWatch installation. SparroWatch is now ready to be used. Refer to the "Operating Instructions" on the next page if needed.

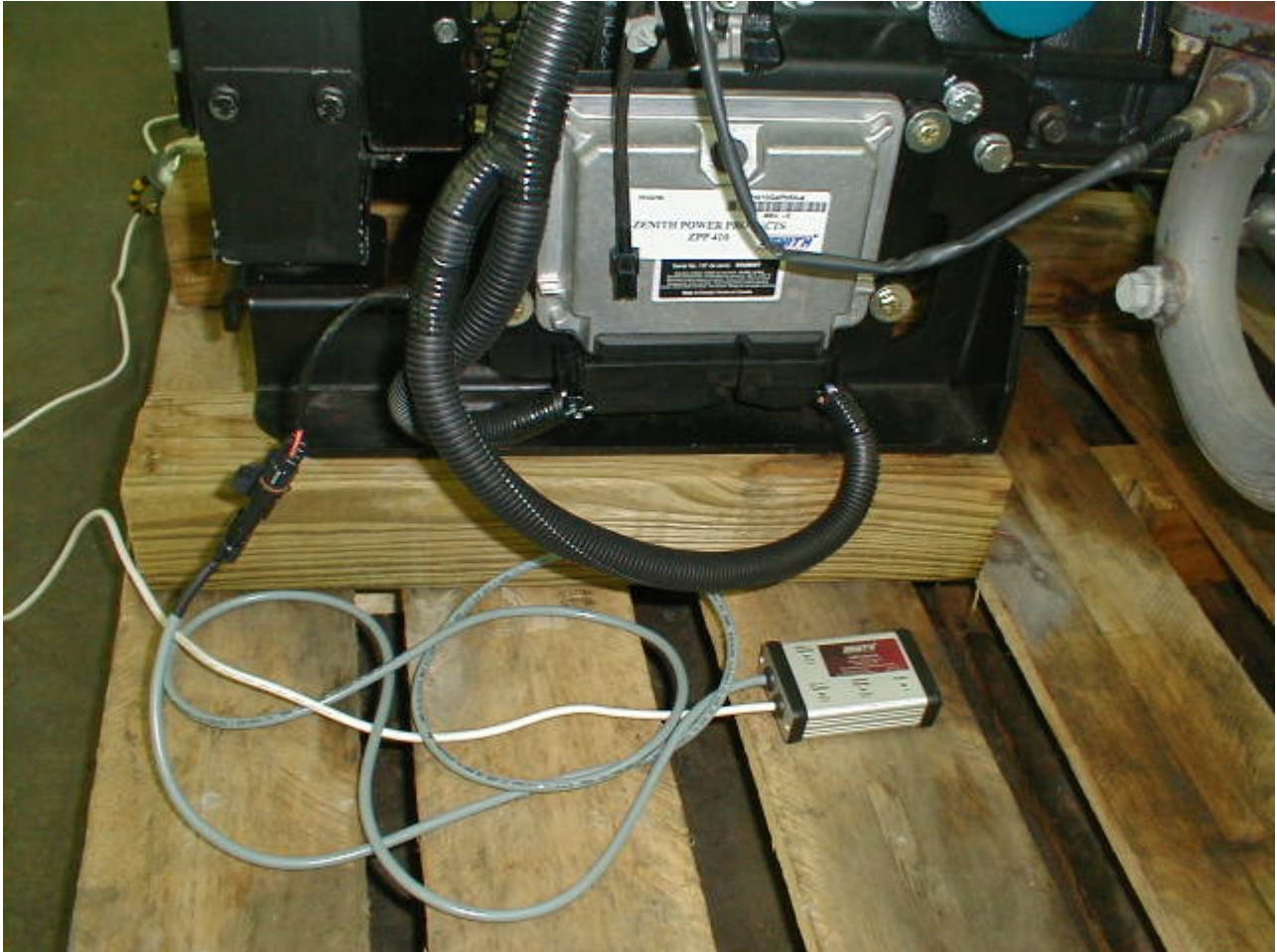
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Operating Instructions:

1. Install the datalink box and communications cable.

- Remove the dust cap from the 4-pin datalink connector on the wiring harness.
- Connect the datalink to the 4-pin connector on the wiring harness.
- Connect the USB connector to an USB port on your PC. Make sure that you use a port that has the USB Datalink driver installed.



2. Open SparroWatch by double-clicking on the SparroWatch short-cut on your PC's desktop.



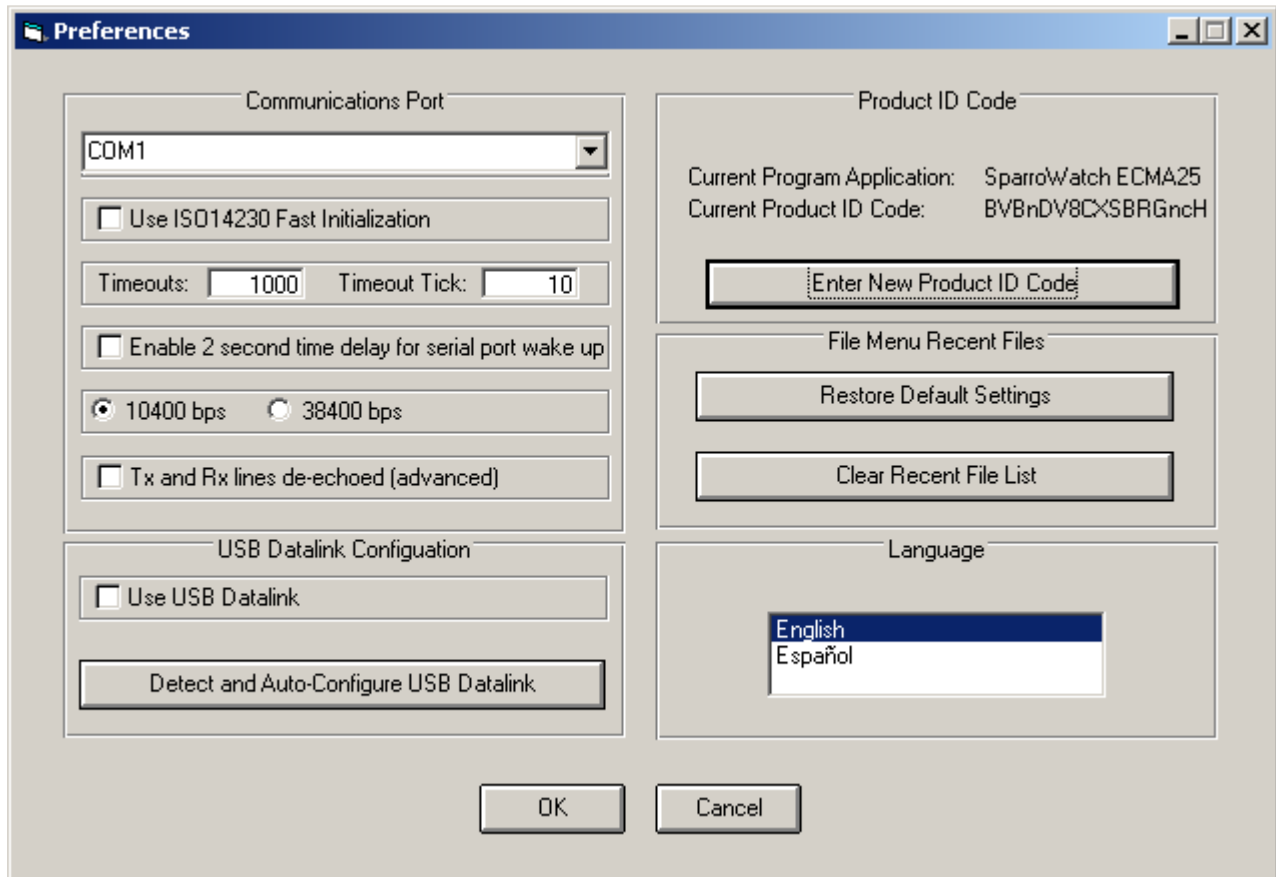
SparroWatch.Ink

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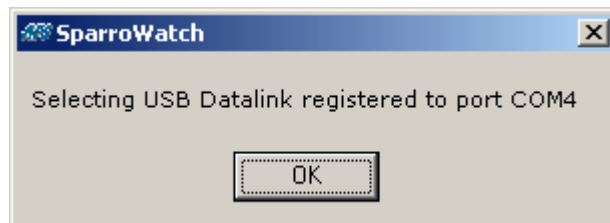
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3. Configure SparroWatch for your PC.

- Click “Options” > “Preferences” on the SparroWatch menu. The “Preferences” window below should appear.
- Click the “Detect and Auto-Configure USB Datalink” button.



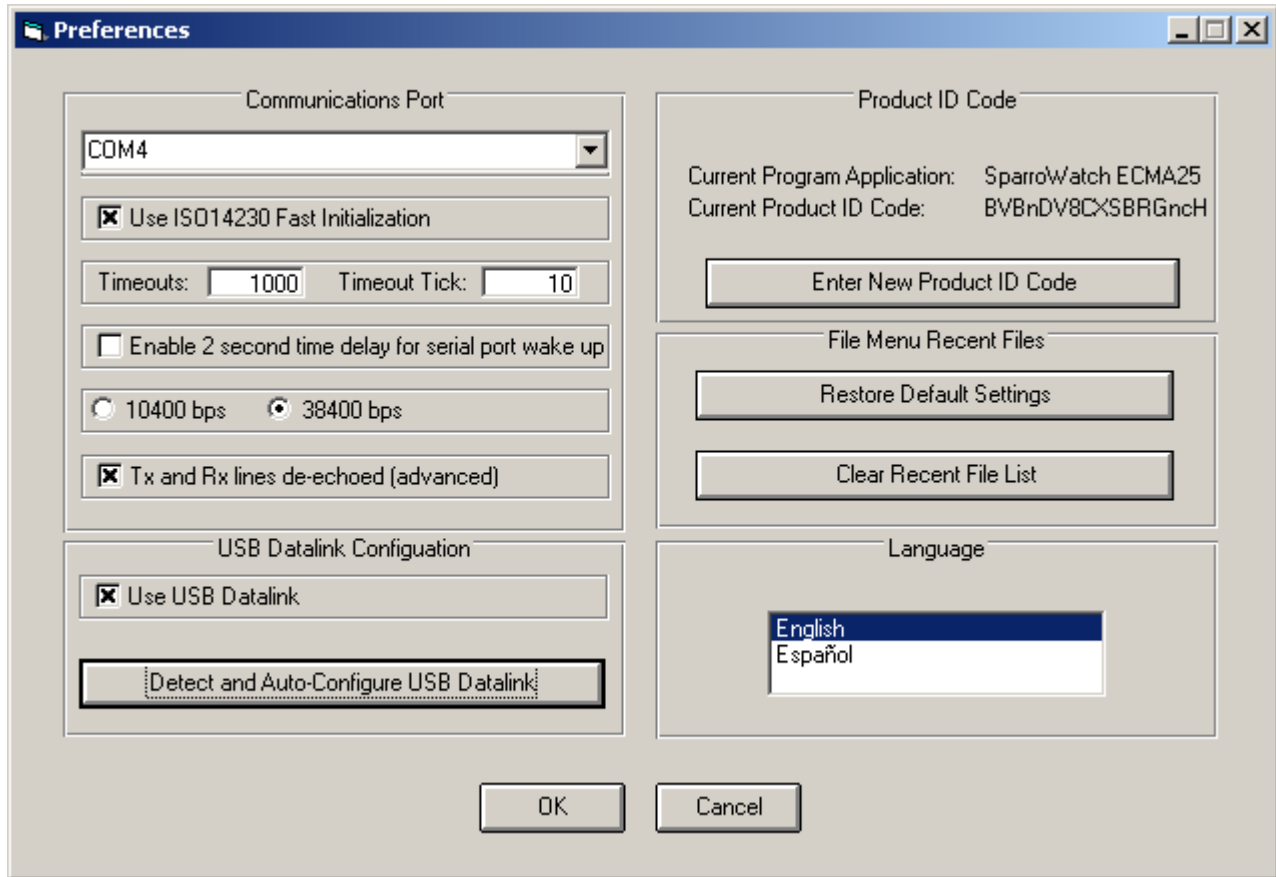
4. SparroWatch should display a window indicating which COM port it selected.



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5. Your Preferences window should then look similar to the one shown below. Your PC will probably have a different COM port selected.



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6. Verify that the ECM is communicating with SparroWatch.

- Turn on the power to the ECM.
- Click on the light bulb in the lower right corner of the SparroWatch window or press the F9 key. The light will turn yellow if SparroWatch is communicating with the ECM.

If the light bulb does not turn yellow, verify the following:

- The USB datalink connections between the PC and ECM is good.
- 12 VDC is getting to pin A of the 16-pin female connector and pin 2 of the ECM.

Once SparroWatch is communicating with the ECM, you can use SparroWatch to program, monitor, calibrate, or retrieve diagnostic codes from the ECM. These features are discussed in the following sections.

The screenshot shows the SparroWatch software interface. The title bar reads "SparroWatch Default.szl [Unmodified] - [System Variables]". The menu bar includes "File", "View", "Diagnostics", "ECM", "Options", and "Help". On the left, there is a tree view for "ECM Data List" with sub-items: "Summary", "Raw Sensors", and "Switches". The main area displays a "Summary" table with two columns of data. The bottom of the window features a toolbar with buttons for "Viewer [F2]", "Editor [F3]", "Log/Graph [F4]", "Setup/Cal [F5]", "DTC [F6]", and a light bulb icon.

Summary					
Engine Speed	1798.5	RPM	Last Injector Pulse Width	0.000	ms
Manifold Absolute Pressure	44.8	kPa Abs	Open / Closed Loop Status, Bank 1	CLOSED	
Engine Coolant Temperature	91.3	°C	Short Term Fuel Trim, Bank 1	-0.026	factor
MIL Lamp	OFF		Long Term Fuel Trim, Bank 1	1.109	factor
STOP Lamp	OFF		O2 Sensor Voltage, Bank 1 Sensor 1	0.707	V
Engine Protection Status	OK		Desired Engine Speed	1800.0	RPM
Intake Air Temperature	39.2	°C	Desired Manifold Pressure	44.5	kPa Abs
Gaseous Fuel Temperature	77.3	°C	Final Command Torque (Normalized)	0.395	factor
Key Power Voltage	14.125	V	Engine Torque Estimate	37.6	Nm
Barometric Pressure	91.1	kPa Abs	Engine Power Estimate	7.0	kW
Final Accelerator Pedal Position	0.000	factor	Oil Pressure Status	OK	
Desired Throttle Position	0.136	factor	Selected Fuel	LPG	
Final Throttle Position	0.131	factor	Fuel Trim Valve Duty Cycle	0.000	factor
Final Ignition Timing	29.1	°BTDC	Total Engine Run Time	326.32	h

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7. SparroWatch Tabs

The SparroWatch tabs allow you to use SparroWatch to view, edit, log/graph variables, or retrieve diagnostics information from the ECM. The tabs are located across the bottom of the SparroWatch window.

- **Viewer [F2]**

Click on the Viewer tab at the bottom-left corner of the SparroWatch window or type "F2".

There are three monitor screens: "Summary", "Raw Sensors", and "Switches". Click on the screen that you want to use.

- **Editor [F3]**

OEM customers can edit the engine speed settings by clicking on the Editor tab or typing "F3".

The speed settings that can be edited are detailed at the end of this document.

- **Log/Graph [F4]**

The Log/Graph utility is useful for troubleshooting intermittent problems. If you need assistance using this utility, contact Zenith for instructions.

- **Setup/Cal [F5]**

Normally, you should not need to use any of the features in Setup/Cal unless requested to do so by Zenith personnel.

- **DTC [F6]**

To retrieve Diagnostic Trouble Codes (DTC) click on the DTC tab or type F6.

There are three status levels for the trouble codes, which are listed in the table below.

Fault Status	Meaning
Current Faults	Fault that caused the code is still occurring.
Faults this key cycle	Fault occurred earlier this key cycle, but is not occurring now
Previous or History Faults	Fault occurred on a previous key cycle, but is not occurring now.

Contact Zenith if you need assistance interpreting the DTC or correcting the problem that caused the DTC.

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6. SparroWatch Menu

Use the SparroWatch menu to retrieve or save calibration files, program the ECM, or clear trouble codes. The commonly used menu items are documented below.

- **File > Open Calibration from Disk**
Loads a calibration file into SparroWatch (not the ECM).
- **File > Save Calibration to Disk**
Saves the calibration in SparroWatch to a file on your PC.
- **Action > Display Current Diagnostic Trouble Codes (Cntrl+D)**
Displays current trouble codes (same as clicking on the DTC tab or typing F6).
- **Action > Clear Diagnostic Trouble Codes (Shift+F12)**
Clears the trouble codes in the ECM's memory. If a fault is active, the ECM will store the trouble code again.
- **ECM > Read ECM Calibration Tables**
Uploads the calibration tables from the ECM to the PC. Use this if you want to see the calibration that is stored in the ECM.
- **ECM > Send Calibration Tables to Temporary ECM RAM**
Downloads the calibration from SparroWatch to the ECM. The calibration will be downloaded to the ECM's temporary memory (RAM). The calibration will be lost when the ECM is turned off, unless the calibration is saved to Flash memory.
- **ECM > Send and Save Calibration Tables to Permanent ECM FLASH**
Downloads the calibration from SparroWatch to the ECM and saves it in the ECM's "permanent" FLASH memory. This command is equivalent to "Send Calibration Tables to Temporary ECM RAM" and then "Save ECM RAM to Permanent FLASH Memory".
- **ECM > Save ECM RAM to Permanent FLASH Memory**
Saves the calibration that is stored in temporary ECM RAM to "permanent" FLASH memory. This means that the calibration will be retained until it is overwritten with another calibration. FLASH memory will retain the calibration data when the ECM is turned off.
- **ECM > Read ECM/Firmware Version**
Reads the version of the program that is stored in the ECM.
- **ECM > Reset ECM**
This causes the ECM to do a "soft" reset, similar to a quick key-off/key-on. It is not necessary to reset the ECM unless requested to do so by Zenith personnel.
- **ECM > Program ECM/Vehicle Serial Numbers**
Zenith programs the ECM and engine serial numbers. The OEM or End customer can program the "Customer Note".
- **ECM > Program Firmware**
Downloads a new program to the ECM and saves it in permanent (FLASH) memory. This should only be done when requested by Zenith personnel. After downloading a new program to the ECM, it is usually necessary to download and save a new calibration file.

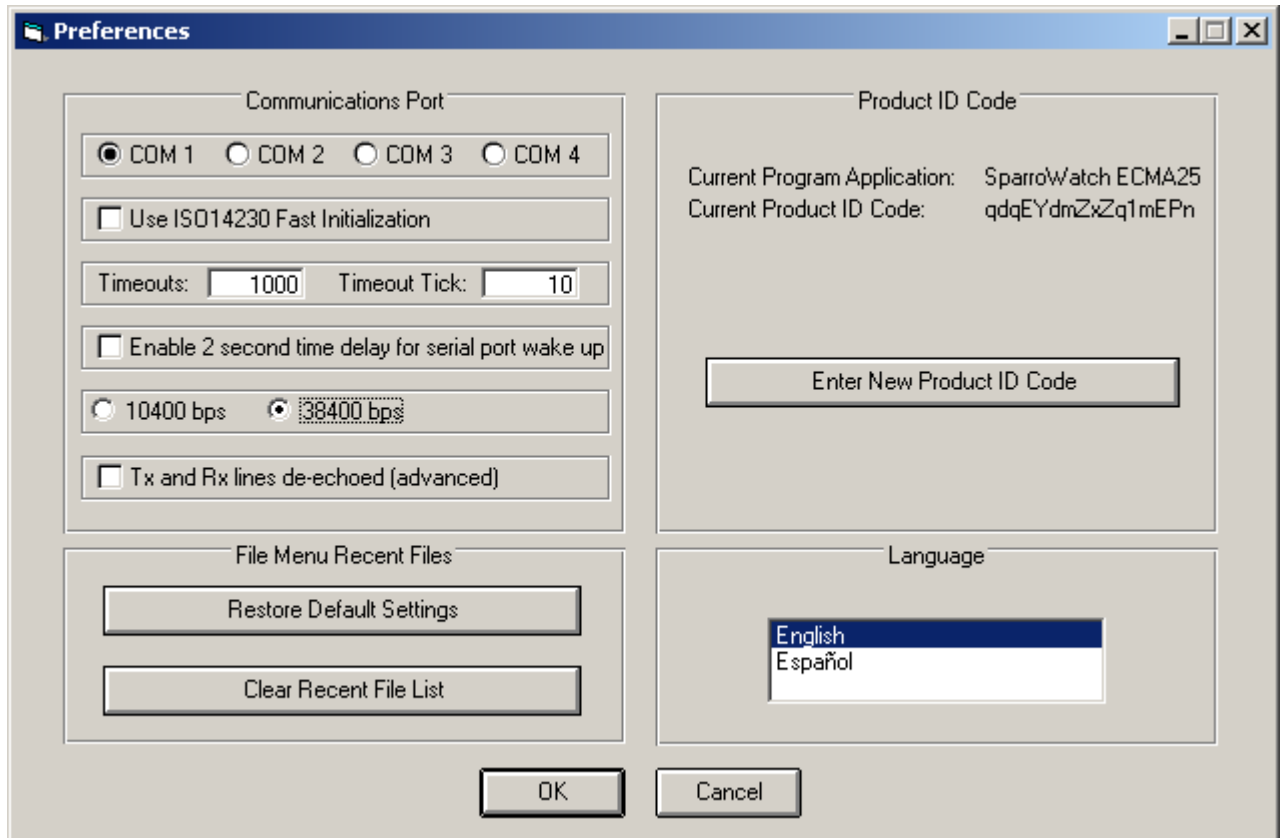
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- **Options > Preferences**

The Preferences screen is discussed in Step 3 of the Operating Instructions.

If SparroWatch and the ECM communicate reliably at 10400 bps, you may be able to speed communications by going to 38400 bps. This mainly will speed programming the ECM and uploading/downloading calibration files. You can try 38400 bps by clicking on the 38400 button. If the SparroWatch-ECM communications becomes unreliable, go back to 10400 bps.



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7. Calibration Parameters

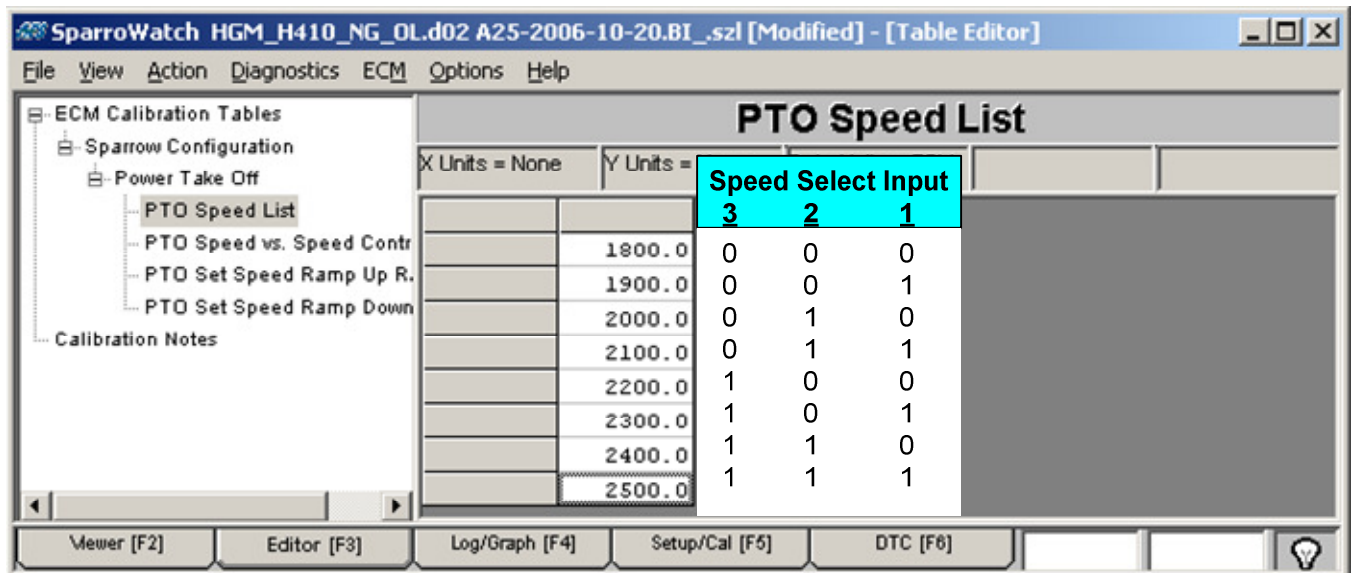
The following procedure should be used for making calibration changes. Failure to follow this procedure could result in incorrect engine operation.

1. Upload the calibration from the ECM into the PC.
(ECM > Read ECM Calibration Tables)
2. Modify the calibration as needed.
3. Download the calibration from the PC to the ECM and save it in the ECM's permanent FLASH memory.
(Send and Save Calibration Tables to Permanent ECM FLASH)
4. Save a copy of the calibration changes on your PC.
(File > Save Calibration to Disk)

The following is a list of the calibration parameters and how to calibrate them.

PTO Speed List:

This calibration parameter determines the RPM setpoint based on the Speed Select 1, 2, and 3 inputs on the male 16-pin connector. A "0" indicates an OFF state, and a "1" indicates an "ON" state. Typically, ON is 12 VDC, and OFF is 0 VDC. Zenith can define ON to be 0 VDC and OFF to be 12 VDC if required.



The screenshot shows the SparrowWatch software interface. The title bar reads "SparrowWatch HGM_H410_NG_OL.d02 A25-2006-10-20.BI_.szl [Modified] - [Table Editor]". The menu bar includes File, View, Action, Diagnostics, ECM, Options, and Help. On the left, a tree view shows "ECM Calibration Tables" expanded to "Sparrow Configuration" > "Power Take Off" > "PTO Speed List". The main window displays a table titled "PTO Speed List". The table has columns for "X Units = None", "Y Units =", and "Speed Select Input" with sub-columns for 3, 2, and 1. The data rows show RPM setpoints from 1800.0 to 2500.0 and their corresponding input states.

X Units = None	Y Units =	Speed Select Input		
		3	2	1
		0	0	0
	1800.0	0	0	1
	1900.0	0	1	0
	2000.0	0	1	1
	2100.0	1	0	0
	2200.0	1	0	1
	2300.0	1	1	0
	2400.0	1	1	1
	2500.0			

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PTO Speed vs. Speed Control Input:

This function defines the relationship between “Speed Control Pot Signal” (pin R on the female 16-pin connector) and the RPM setpoint. The X input is the Speed Control Pot voltage scaled between 0 and 1. The Y output is the RPM setpoint.

The screenshot shows the SparrowWatch software interface with the title bar "SparrowWatch HGM_H410_NG_OL.d02 A25-2006-10-20.BI_.szl [Unmodified] - [Table Editor]". The menu bar includes File, View, Action, Diagnostics, ECM, Options, and Help. The left sidebar shows a tree view of "ECM Calibration Tables" with "PTO Speed vs. Speed Control" selected. The main window displays a table with the following data:

X Units = None	Y Units = factor	Data Units = RPM
0.000	1000.0	
0.050	1000.0	
0.950	3000.0	
1.000	3000.0	
1.000	3000.0	
1.000	3000.0	
1.000	3000.0	
1.000	3000.0	
1.000	3000.0	
1.000	3000.0	
1.000	3000.0	

The bottom of the window features a toolbar with buttons for "Viewer [F2]", "Editor [F3]", "Log/Graph [F4]", "Setup/Cal [F5]", and "DTC [F6]".

PTO Set Speed Ramp Up Rate:

This calibration parameter defines how quickly the RPM setpoint ramps up (RPM/sec) when controlling RPM with an increment/decrement switch.

The screenshot shows the SparrowWatch software interface with the title bar "SparrowWatch HGM_H410_NG_OL.d02 A25-2006-10-20.BI_.szl [Modified] - [Table Editor]". The menu bar includes File, View, Action, Diagnostics, ECM, Options, and Help. The left sidebar shows a tree view of "ECM Calibration Tables" with "PTO Set Speed Ramp Up Rate" selected. The main window displays a table with the following data:

X Units = None	Y Units = None	Data Units = RPM/s
	100.0	

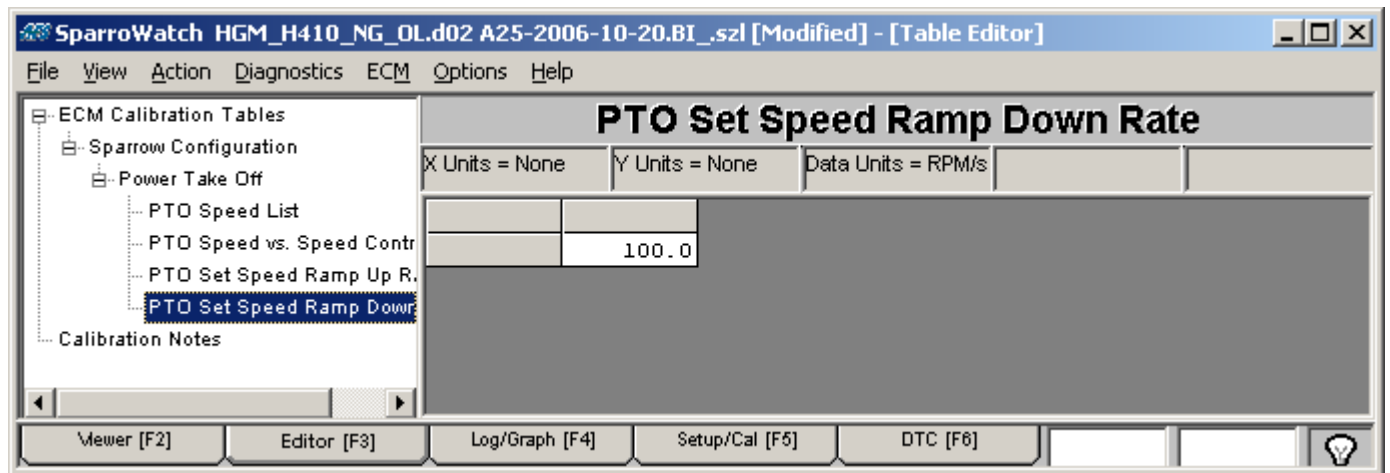
The bottom of the window features a toolbar with buttons for "Viewer [F2]", "Editor [F3]", "Log/Graph [F4]", "Setup/Cal [F5]", and "DTC [F6]".

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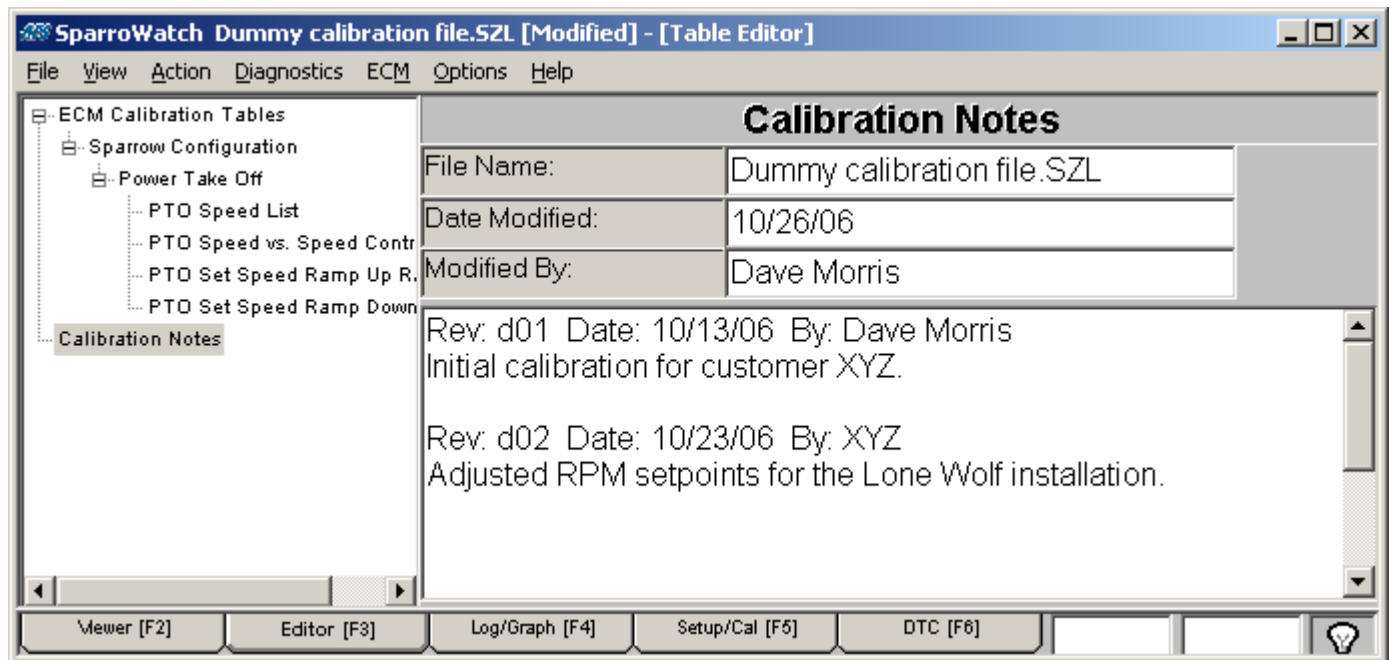
PTO Set Speed Ramp Down Rate:

This calibration parameter defines how quickly the RPM setpoint ramps down (RPM/sec) when controlling RPM with an increment/decrement switch.




Calibration Notes:

You can record your comments about the calibration changes in the "Calibration Notes". It is a good idea to note what you changed, when, and why.



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REL	NEW RELEASE			E00164	Prepared by:	Approved by:
LTR	REVISION	CK	APPL	ECO	DAM	