TrackCoach™ ProShift User Guide

For Mini Cooper R50, R52, R53, R55 and R56

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READ THIS!

Thanks for purchasing the TrackCoach™ ProShift. You have bought the most capable shift light ever offered to the general public. It is, in fact, a rather powerful little computer. This is the good, but with this power comes some complexity. Don't let the size of this manual intimidate you. It's very easy to use the ProShift as a simple shift light. A lot of this manual covers things like problems with driver installation in Windows environments and the like. We also cover the use of the digital outputs (that aren't even available in other shift lights).

- **If you want to just use the ProShift as shipped:**
  - **Start with hardware installation and drive!**
- **If you want to set custom shift points:**
  - **Install the software;**
  - **Upload your configuration to the ProShift**
  - **Install the ProShift and drive!**
- **If you want to set up custom colors:**
  - **Install the software;**

Table of Contents

CHAPTER 1 WELCOME!

Designed specifically for cars with RPM and Vehicle Speed signals (Mini Coopers R50, R52 and R53), the FES TrackCoach™ ProShift I/O Shift Light uses several new features that create simply the most advanced automotive shift light ever. We have combined multi-color LED technology with a high-performance microcontroller to create a small, yet powerful, control package that can do more than any shift light short of a full race computer.

FEATURES

- User selectable colors for Warning, Alarm and Redline
- Gear dependant shift points
- 4 Digital control outputs programmable using RPM and/or Speed
- USB Interface for easy access
- Intuitive PC software to configure the ProShift device
- Save and Load of Configurations
- Real Time charting and logging of RPM and Speed Values
- Demo Modes to verify settings
- Ability to upgrade firmware

USER GUIDE ORGANIZATION

This guide is divided in two sections. The first deals with the installation of the TrackCoach™ ProShift in your car. The second goes through the installation and usage of the PC software that allows you to configure the TrackCoach™ ProShift.

CHAPTER 2 DISCLAIMER

TrackCoach™ ProShift DISCLAIMER

THIS IS A HIGH PERFORMANCE PRODUCT, USE AT YOUR OWN RISK

Do not use this product until you have carefully read the following agreement. This sets forth the terms and conditions for the use of this product. The installation of this product indicates the BUYER has read and understands this agreement and accepts its terms and conditions. This agreement takes precedence.

DISCLAIMER OF LIABILITY

FES, LLC (hereafter SELLER) shall in no way be responsible for the product's proper use and service. **THE BUYER HEREBY WAIVES ALL LIABILITY CLAIMS.**

The BUYER acknowledges that he/she is not relying on the SELLER's skill or judgment to select or furnish goods suitable for any particular purpose and that there are no liabilities which extend beyond the description on the face hereof and the BUYER hereby waives all remedies or liabilities, expressed or implied, arising by law or otherwise, (including without any obligations of the SELLER with respect to fitness, merchantability, and consequential damages) or whether or not occasioned by the SELLER's negligence.

The SELLER disclaims any warranty and expressly disclaims any liability for personal injury or damages. The BUYER acknowledges and agrees that the disclaimer of any liability for person injury is a material term for this agreement and the BUYER agrees to indemnify the SELLER and to hold the SELLER harmless from any claim related to the item of the equipment purchased. Under no circumstances will the SELLER be liable for damages or expenses by reason of use or sale of any such equipment.

The SELLER assumes no liability regarding the improper installation or misapplication of its products. It is the installer's responsibility to check for proper installation and if in doubt, contact the manufacturer.

LIMITATION OF WARRANTY

FES, LLC (hereafter "SELLER") gives Limited Warranty as to description, quality, merchantability, fitness for any product's purpose, productiveness, or any other matter of SELLER's product sold herewith. The SELLER shall be in no way responsible for the product's open use and service and the BUYER hereby waives all rights other than those expressly written herein. This Warranty shall not be extended or varied except by written instrument signed by SELLER and BUYER.

The Warranty is Limited to one (1) year from the date of sale and limited solely to the parts contained in within the product's kit. All products that are in question of Warranty must be returned shipping prepaid to the SELLER and must be accompanied by a dated proof of purchase receipt. All Warranty claims are subject to approval by FES, LLC.

Under no circumstances shall the SELLER be liable for any labor charged or travel time incurred in diagnosis for defects, removal or reinstallation of this product, or any other contingent expenses.

If the BUYER sends back a failed unit that is out of warranty and chooses to buy a refurbished unit, the refurbished unit will only carry a 60 day warranty. If the BUYER purchases a new unit at a predetermined discounted rate, it will have the standard 1 year warranty.

Under no circumstances will the SELLER be liable for any damage or expenses insured by reason of the use or sale of any such equipment.

IN THE EVENT THAT THE BUYER DOES NOT AGREE WITH THIS AGREEMENT: THE BUYER MAY PROMPTLY RETURN THIS PRODUCT, IN A NEW AND UNUSED CONDITION, WITH A DATED PROOF OF PURCHASE, TO THE PLACE OF PURCHASE FOR A FULL REFUND.

THE INSTALLATION OF THIS PRODUCT INDICATES THAT THE BUYER HAS READ AND UNDERSTANDS THIS AGREEMENT AND ACCEPTS ITS TERMS AND CONDITION

CHAPTER 3 INSTALLATION IN YOUR CAR

The ProShift can be used in gear dependant and gear independent mode. For the most basic operation (not using gear position information) only +12V, Ground and the RPM signal need to be connected. These signals can be easily taken from the OBD2 connector, under the dash of the driver side.

If you want to use gear dependant shift points, you need to also connect the speed signal. The speed signal can be found under the plastic frame cover on the passenger side.

> **Note:** The speed signal that we use is only available on R50, R52 and R53 chassis. R56 generation cars no longer have the vehicle speed signal. For these cars, the current ProShift can be used as a conventional shift light. Install as normal, but don't connect the Vehicle Speed signal. There is a setting in the software to set the unit to use gear independent settings.

Configuration of the shift light is done via the USB interface using the supplied configuration software. You do not need to have the ProShift hooked up to your car if you want to connect it to your computer. In this case the ProShift is powered via the USB port.

WHAT'S IN THE BOX

All TrackCoach™ ProShift packages contain the following items:

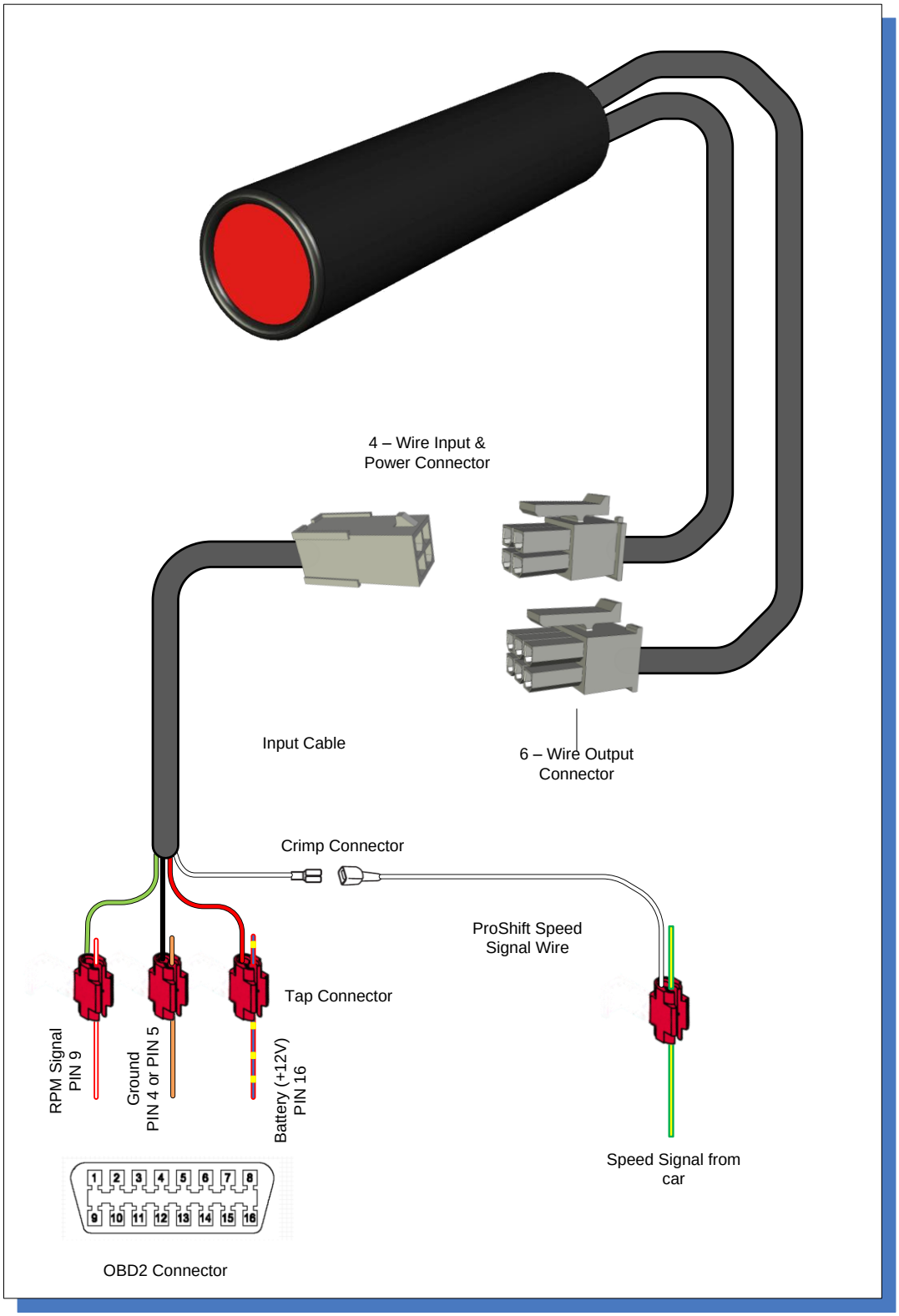
- 1 TrackCoach™ ProShift
- 1 Mounting Clip
- 1 USB communication cable
- 4-Wire Cable (Power, Ground, Vehicle Speed and RPM)
- 4 Tap Connectors
- 1 Vehicle speed signal wire

ProShift I/O only:

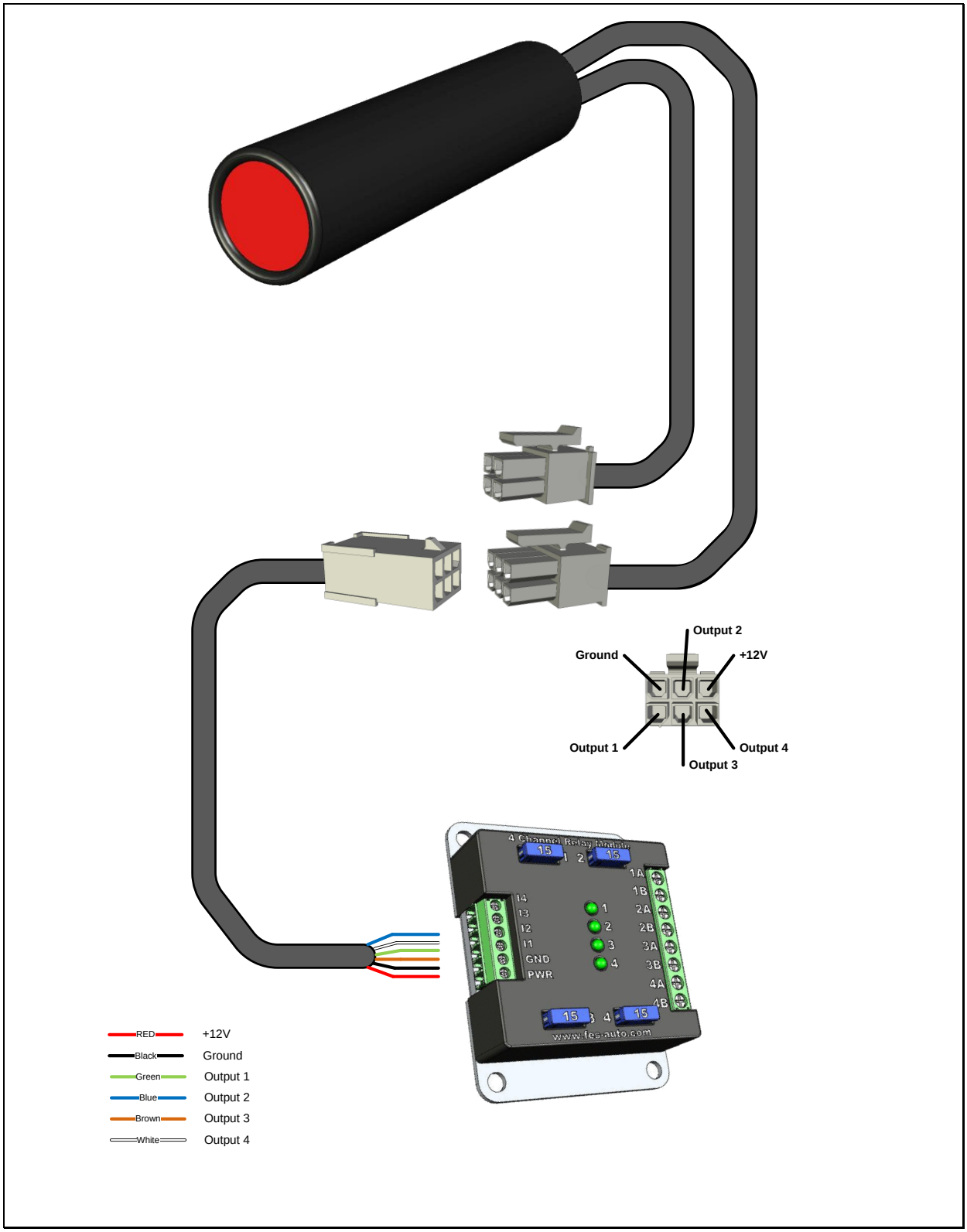
- 1 Output control cable (Digital outputs 1-4, V_{batt} and ground)

WIRING DIAGRAM

RPM and Speed Signal:



Output Signals (I/O version only):



Note: Output Relay Module not included

R50, R52 & R53 DETAILED WIRING INSTRUCTIONS

Step 1 Mount the ProShift

Put the mounting clip on the tachometer using the double sided tape.

Clip the ProShift into the mount.

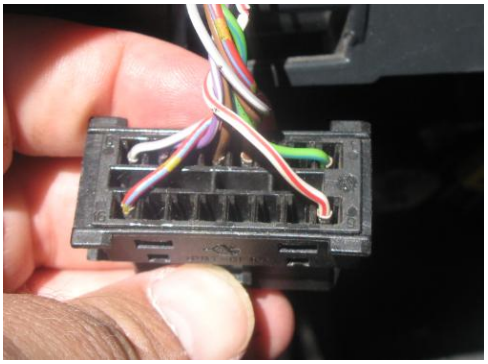
Note: Do not connect the Input Cable to the ProShift at this time.

Step 2 Run the Input Cable to the OBD2 connector

The OBD2 connector can be found under the dash on the driver side. The ProShift does not come with an OBD2 plug; you need to connect to the wires on the back of the connector.

- Remove the knee bolster (just clips in) or the Euro parcel shelf (two Torx screws).
- Push the blue retaining clip backwards to release the connector insert.

- Open the diagnostic connector cover, and push the connector insert upwards to release it from the connector housing. This makes access to the wires easier.



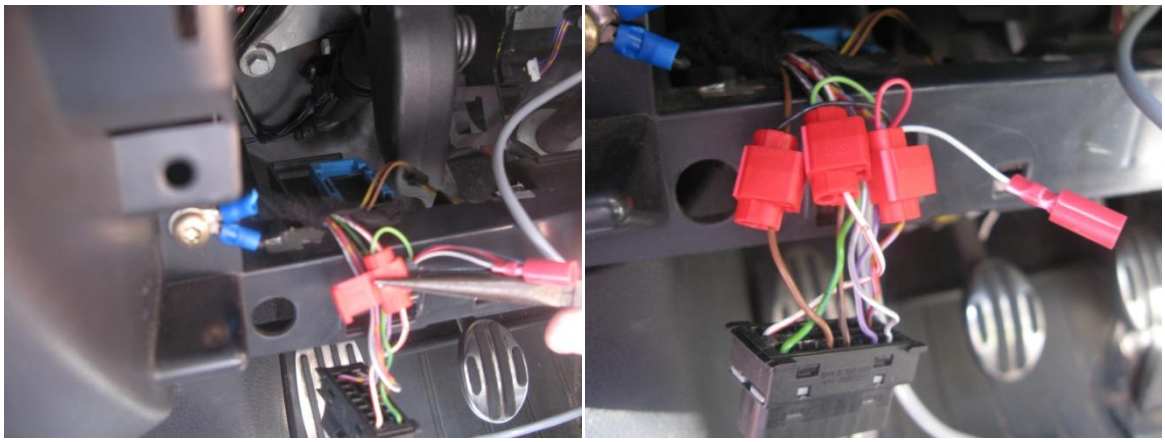
Step 3 Connect the Input Cable to the OBD2 connector

Connect the following 3 wires from the Input Cable

- **Black** to **PIN 4** or **PIN5** (Ground)
- **Red** to **PIN 16** (Battery / +12V)
- **Green** to **PIN 9** (RPM Signal)

Connection to the wires is best done using the Tap Connectors:

- Place unstripped run wire inside run channel
- Insert unstrapped tap wire completely
- Crimp the u-contact down flush with the top of the plastic insulator
- Close top hinged cover until latched



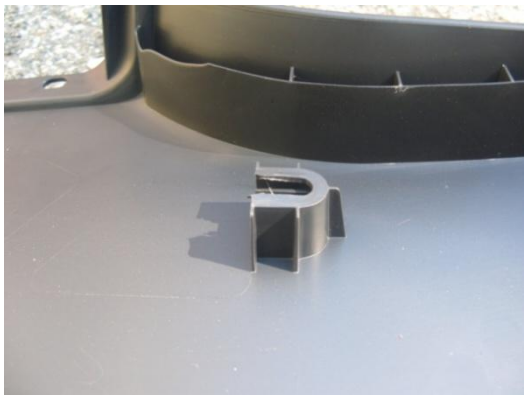
- Re-install the connector insert into the housing, move the blue retaining clip back into the locked position, and close the diagnostic connector cover.
- If you will not be connecting the speed signal, re-install the knee bolster or the parcel shelf, as appropriate.

Step 4 Tap into the speed signal (optional)

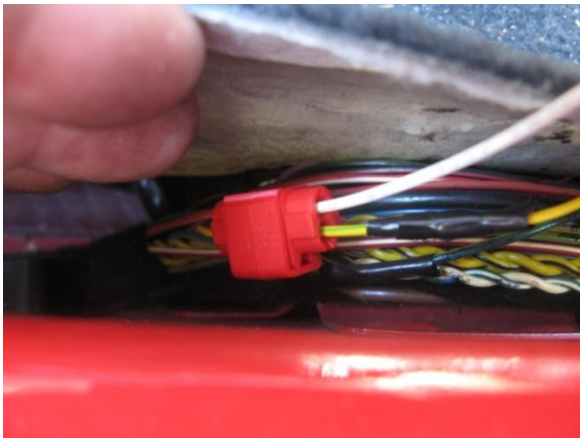
NOTE: The R55 and R56 Mini Coopers no longer have the vehicle speed signal wire. If you have one of these models, skip the sections that cover installing this wire, and run the TrackCoach™ ProShift in *gear-independent* mode.

- Remove the passenger side seatbelt anchor from the rear passenger foot well. Once the Torx fastener is removed, lift the anchor up from the front and it will come out of the bulkhead hole.


- Pull up on the weather stripping at the base of the passenger door to gain access to the plastic frame cover.
- The cover is held in place with some clips that take some force to unclip. Fight the panel loose and remove it from the car. Don’t worry if some of the clips stay in the frame, they are easy to remove and re-mount onto the cover.



- Plug the Vehicle Speed wire into the ProShift power harness at the OBD-II cable and route the wire to the passenger side of the car (need to add photos here).
- Run the speed signal wire behind the body control module and then along the wiring harness. You may have to loosen the 10mm nut to get the speed signal wire to fit behind the module. (Need Photo here)
- Locate the speed signal under the plastic frame cover on the right side of the passenger side. The speed signal is a yellow wire with a green stripe. Tap into the wire using one of the supplied tap connectors and the TrackCoach™ ProShift Speed Signal Wire.



- Replace the frame cover and the seat belt anchor.
- Replace the knee bolster or parcel shelf as needed.

Step 5 Connect the Input Cable to the ProShift

This concludes the ProShift Installation! Turn on the engine and rev up the RPM to above 6000 RPM (default Warning level). You should see the ProShift flashing green.

R55, R56 AND R57 DETAILED WIRING INSTRUCTIONS

Step 1 Mount the ProShift

Put the mounting clip on the tachometer using the double sided tape. Make sure to check the sight lines so that the ProShift is in clear view and not blocked by the steering wheel. Here we show two popular locations.

Clip the ProShift into the mount.

Note: Do not connect the Input Cable to the ProShift at this time.

Step 2 Run the Input Cable to the OBD2 connector

The OBD2 connector can be found under the dash on the driver side. The ProShift does not come with an OBD2 plug; you need to connect to the wires on the back of the connector.

- Remove the knee bolster by removing three Torx™ screws from the lower edge.

- Gently pull the lower edge away from the dash and remove the panel.

- Remove the two Torx™ screws that hold the OBD-II connector in place, and lower the connector slightly.

- Undo the two Torx™ screws that hold the tachometer in place. Move the tach slightly forward to release it from the steering column. The wiring harness does not need to be removed.

- Run the input harness down through the same hole that the tachometer wiring harness goes through. Leave just a couple of inches exposed. (NOTE: You do not have to remove the dash cover to do this! I didn't know that when I took the photo!) After you have run the wire through the access hole, re-install the tachometer.

- We found that there is a plastic pocket that you can route the wire through. This will keep it from rattling behind the dash.

- Run the end of the wire out by the OBD-II connector and cut to length (it's longer than needed for the R55, R56 and R57). If you don't want to cut it, you can wrap the extra up and leave it behind the dash.

- Strip back the insulation to expose the four wires.

Step 3 Connect the Input Cable to the OBD2 connector

Connect the following 3 wires from the Input Cable

- **Black** to **PIN 4** or **PIN5** (Ground)
- **Red** to **PIN 16** (Battery / +12V)
- **Green** to **PIN 9** (RPM Signal)

Connection to the wires is best done using the Tap Connectors:

- Place unstripped run wire inside run channel
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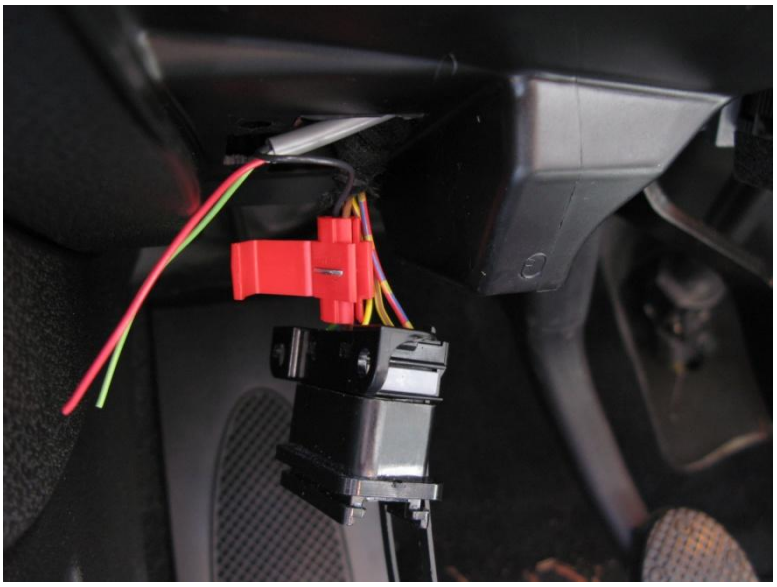
- Close top hinged cover until latched



- After attaching the power, ground and RPM signal, re-install the OBD-II connector into the dash support.
- Replace the knee bolster and installation is complete.

NOTE: The R55. R56 and R57 don't support gear dependant shift points. This is because BMW/MINI eliminated that vehicle speed wire from the new chassis.

Step 4 Connect the Input Cable to the ProShift

This concludes the ProShift Installation! Turn on the engine and rev up the RPM to above 6000 RPM (default Warning level). You should see the ProShift flashing green.

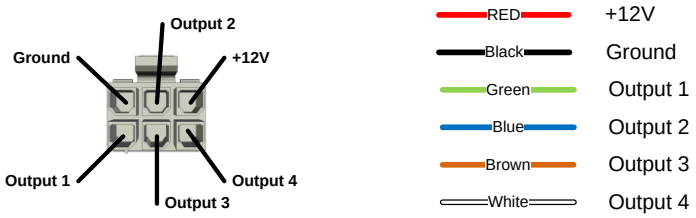
DETAILED OUTPUT SIGNAL INSTRUCTIONS

The ProShift I/O has 4 digital controlled open collector outputs that can be for example used to switch a relay. The FES Auto Relay Module was designed exactly for that purpose. Of course, you can build your own application too (examples shown below).

NOTE: The drive current per output must be limited to max. 50mA. Current in excess of 50mA can damage the

ProShift I/O. Use relays or solid state switches to switch high current loads.

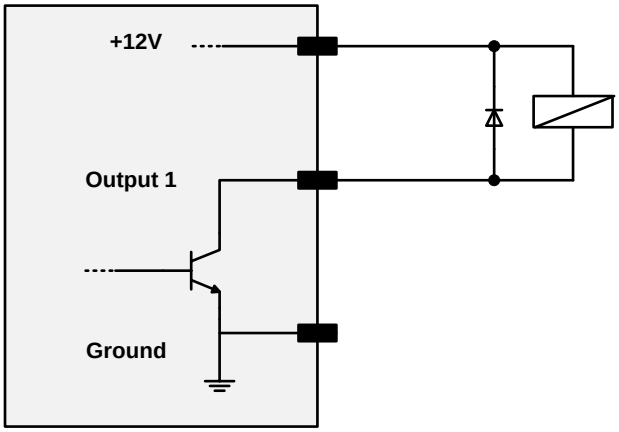
ProShift I/O Output Signal Connector and Cable Pin-Out



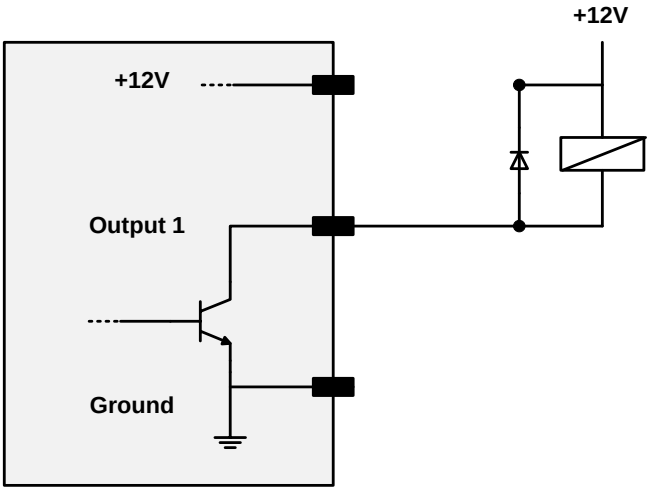
Note: 12V is only supplied by the ProShift I/O when connected to the car. If only connected to the USB of your computer, the 12V is not present.

Configuration Examples

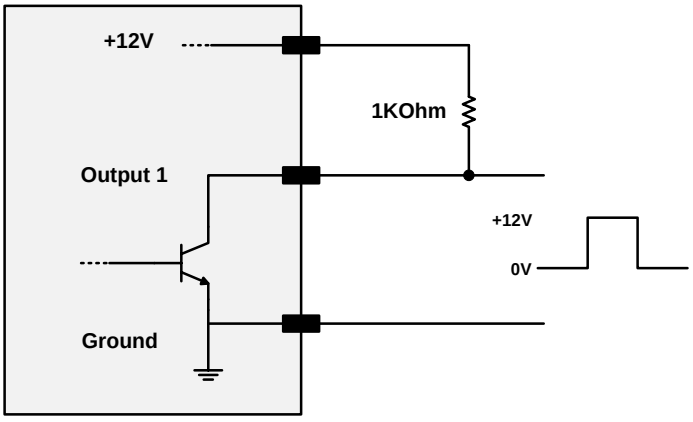
Switching a relay using 12V supplied by the ProShift:



Switching a relay using 12V from the car:



Using a pull-up resistor to create digital outputs:



CHAPTER 4 SOFTWARE INSTALLATION

While you can use the TrackCoach™ ProShift without customization, the real power of the ProShift is unlocked via the software. Installation is straightforward, with both the application and the driver appropriate to your OS installed with simple mouse clicks.

SYSTEM REQUIREMENTS:

Supported Operating Systems:
- Windows XP
- Windows Vista

Required PC Hardware:
- An open USB port.

Other:
Microsoft .Net framework 2.05 or higher (if not part on your system already, this will be installed automatically)

INSTALLATION

Step 1 Install the device driver

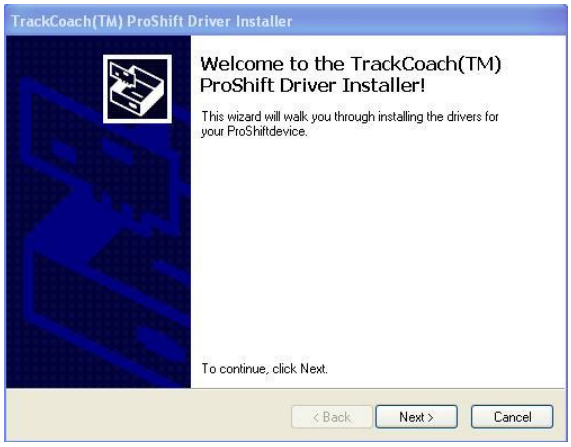
Note: Do not connect the ProShift to your computer until you have installed the device driver. Don't worry, it's easy!

Note: This chapter will outline the automatic driver installation using the supplied CD. It is also possible to do a manual driver install, see the appendix for detailed instructions for Windows XP and Windows Vista.

When the CD is first read by the CD/DVD drive, you will see the following screen:

- Click on the "Driver Install" button.

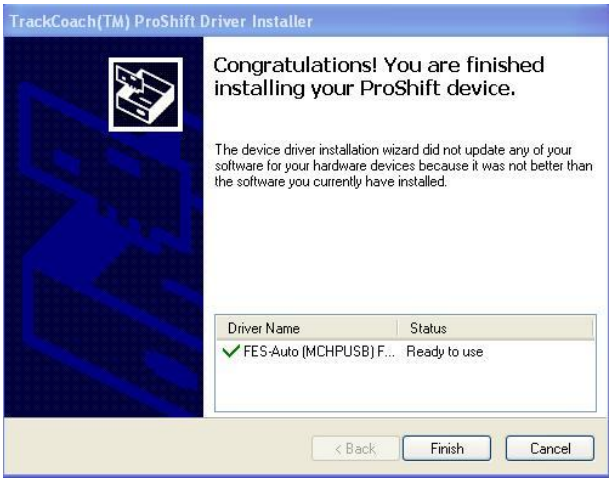
The following screen will appear:



Click on Next to proceed with the installation.

Carefully read the end-user license agreement, check "I accept this EULA" when you agree with the terms and click Next to continue with the Driver installation.

The driver will now be installed on your system. When successfully done, the following screen appears:



Click OK to finish with this part of the installation.

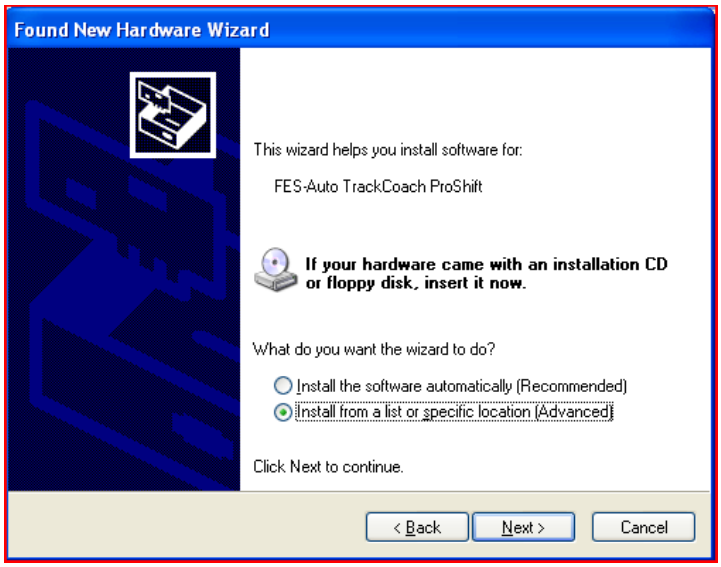
- Plug the ProShift device to your computer.

  Note: The ProShift does not have to be connected to your car during the driver installation, but it's no problem if it is.

- On the next screen select "Install the software automatically (Recommended)" and click next. The driver will be installed.

- The device will be detected by your system. For Windows Vista installations, no further actions have to be done. The driver installation will complete automatically. For installations under Windows XP, the "Found New Hardware" wizard will appear. On the first screen select "No, not this time" and click Next.

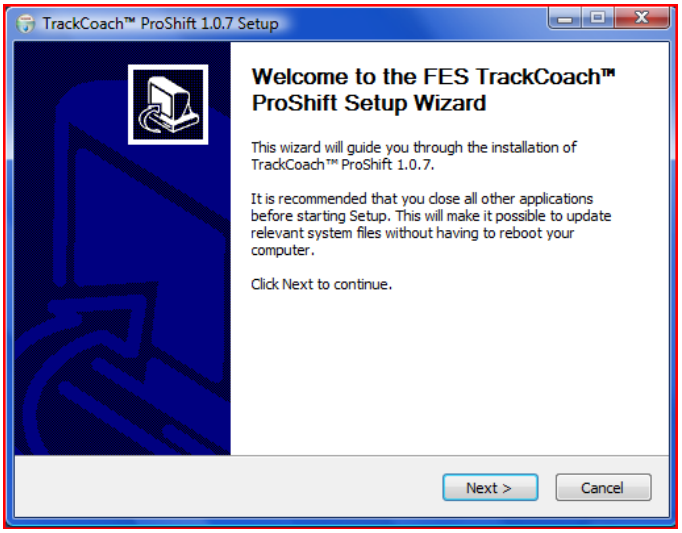
- On the next screen select "Install the software automatically (Recommended)" and click next. The driver will be installed.



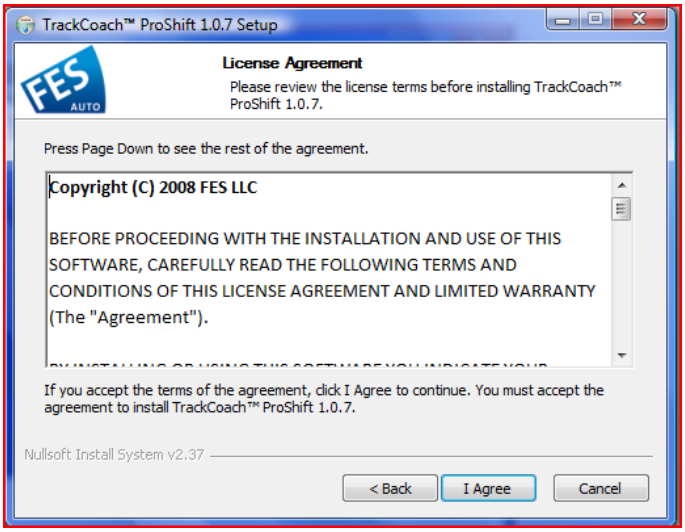
Step 2 Application Installation

- Unplug the ProShift from your Computer.

- Click on the "Install Software" button. The following screen will appear:

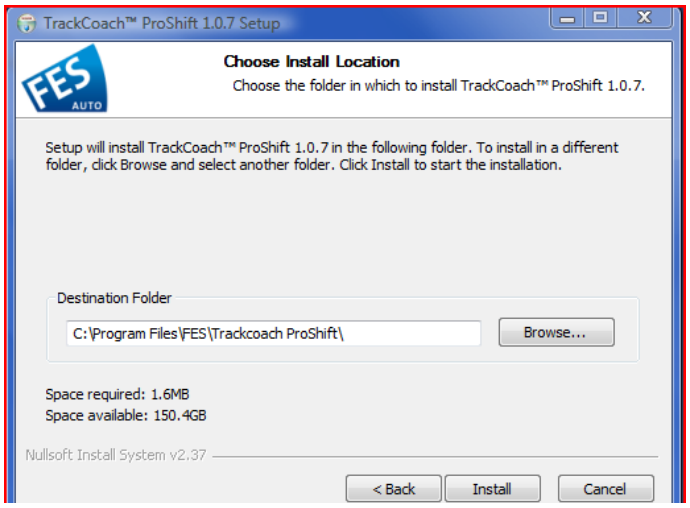


Click "Next" and the license agreement will be displayed:



Read the license agreement and if you agree click "I Agree" to proceed with the installation. If you do not agree, click "Cancel", the installation process will not continue.

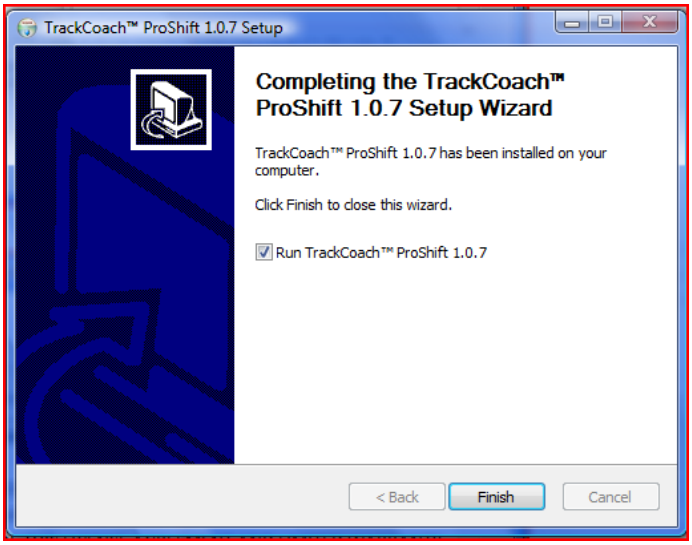
You can choose a custom location or accept the default:



The default location is

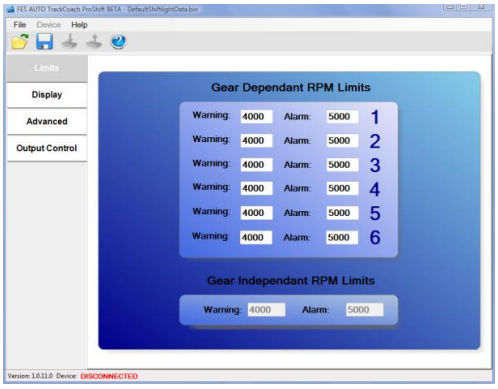
"C:\Program Files\FES\TrackCoach ProShift".

Once a location has been selected, click "Next" to commence the installation



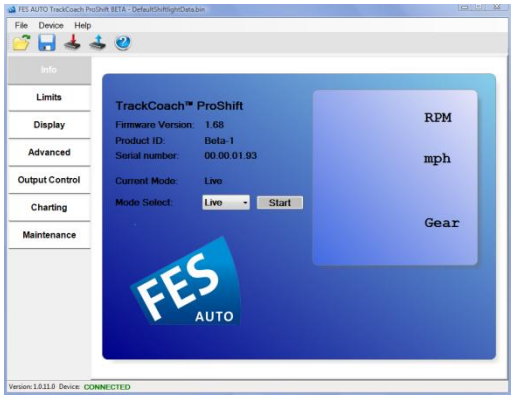
This completes the installation of the application. The application will be started automatically with the "Run TrackCoach" checkbox selected. Alternatively you can follow the desktop shortcut or locate TrackCoach ProShift in the Start menu.

- At the end of the installation, the application will start automatically. The following screen will appear:



- With the application running, connect the ProShift to your computer.

- The application will automatically connect to the ProShift. You will be asked to import settings from the ProShift. Click "yes". You should now see the following screen:



Step 3 Test

If the ProShift is connected to your car and the engine is running, you will see live RPM readings on the screen.

If the ProShift is not connected to your car, you can switch it to a demo mode, simulating RPM and speed data:

- On the main screen select "Demo 1" and click "Start"

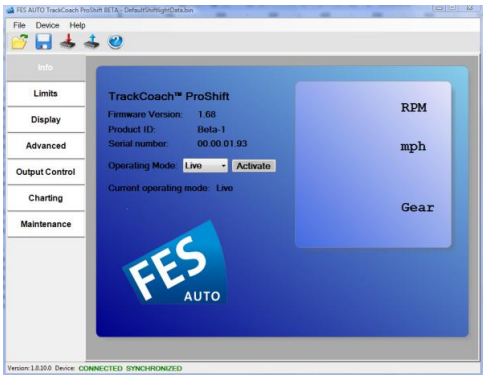
You should now see RPM, MPH and the Gear position displayed on the screen.

CHAPTER 5 PC SOFTWARE USAGE

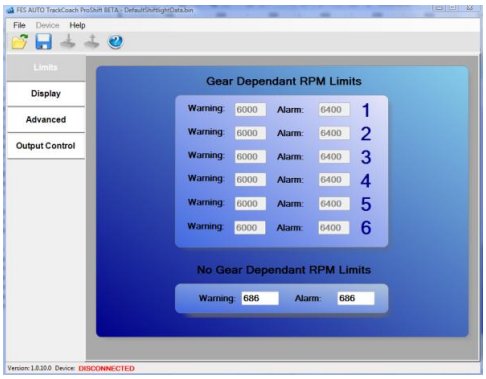
RUNNING THE APPLICATION

You can run the application with the ProShift connected or disconnected.

With the ProShift not connected you're only able to edit configurations (such as warning and alarm limits) and write them to a file. Screens requiring a live connection to the ProShift will be disabled.

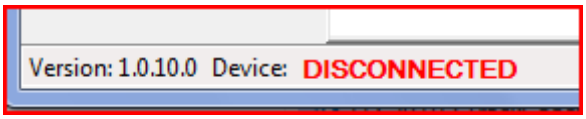


Connected

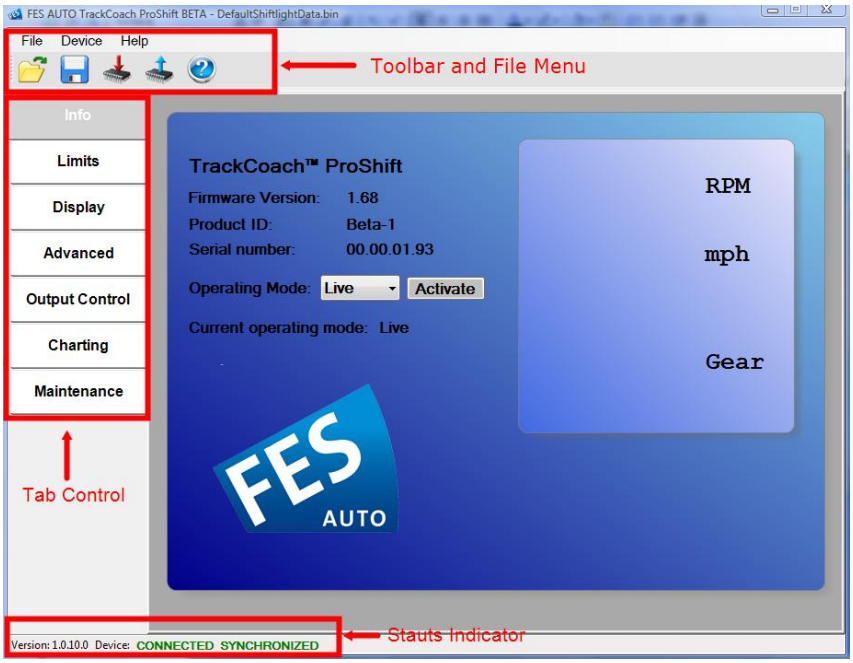


Disconnected

You will also find indication about the connection state in the statusbar at the bottom of the application:



MAIN WINDOW OVERVIEW



Toolbar and File Menu

Via the toolbar and file menu you can load and save configurations to/from a file or import and export configurations to/from the ProShift.

Load a configuration

Save the current settings to a file

Export current settings to the ProShift

Import configurations from the ProShift

Open the help menu

Tab Control

Via the tab control, you can switch between the different screens. See the following chapters for detailed explanations on each screen.

Status Indicator

The following information is displayed:

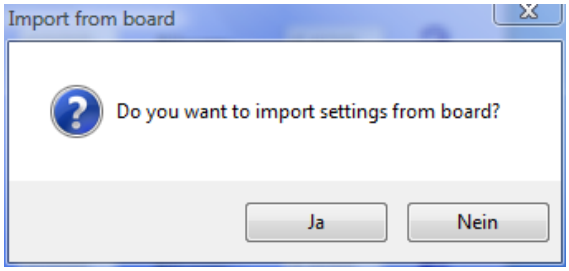
- The current version of the application
- The connection state (Connected / Disconnected)
- The Synchronization state (Synchronized / Not synchronized)

Synchronization

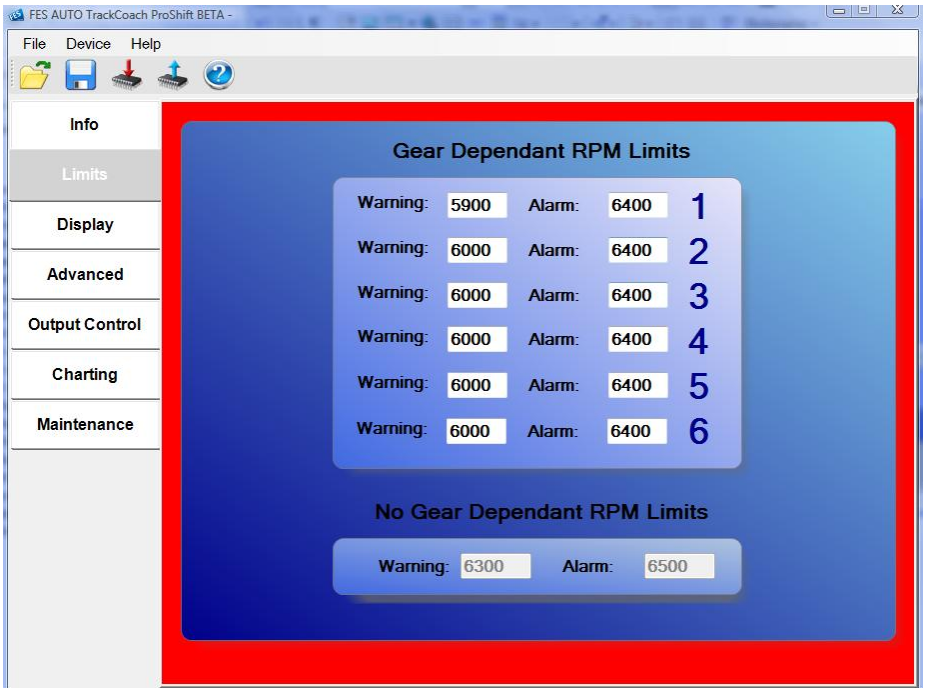
The application and the ProShift can be synchronized in two ways:

- Exporting the Configurations from the application to the ProShift - Settings on the ProShift will be overwritten
- Importing the configurations from the ProShift to the Application - Settings in the application will be overwritten

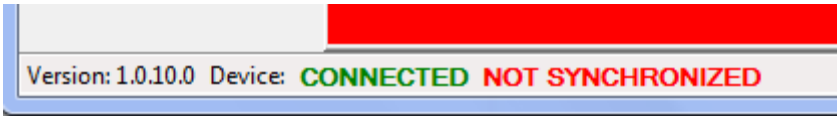
When connecting the ProShift to your computer with the application already running, you will be asked if you want to import the settings from the ProShift or keep the current configuration:



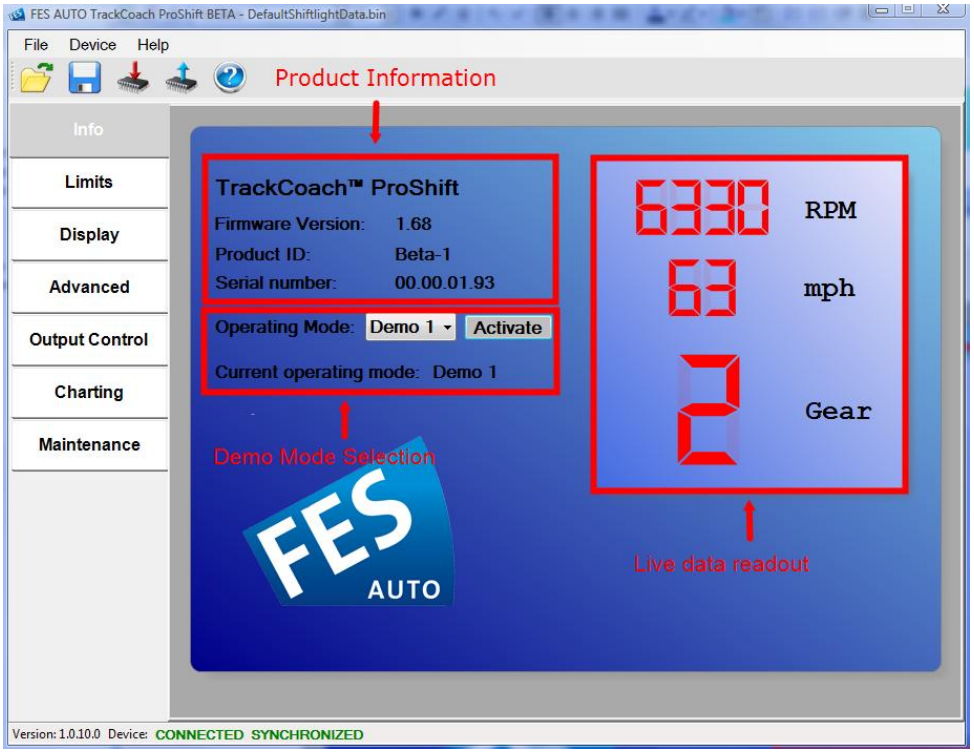
To indicate that the configurations in the application are not yet written to the ProShift (not synchronized) a red background will appear:



You will also find information about the synchronization state at the bottom of the window:



THE INFO WINDOW



Product Information
Basic information about the current firmware running on the ProShift, the serial number and the Product-ID

Live Data Readout
This part of the screen display the current RPM, MPH and Gear Position readings. If there is no input (for example the ProShift is not connected to a car) nothing will be displayed. If there is no speed signal input, only RPM will be displayed.

Demo Mode Selection
Here you can switch between Live Mode (inputs are taken from the car) and one of the two demo modes (inputs are simulated on the ProShift:

- Select the desired mode via the drop-down menu
- Click "Start"

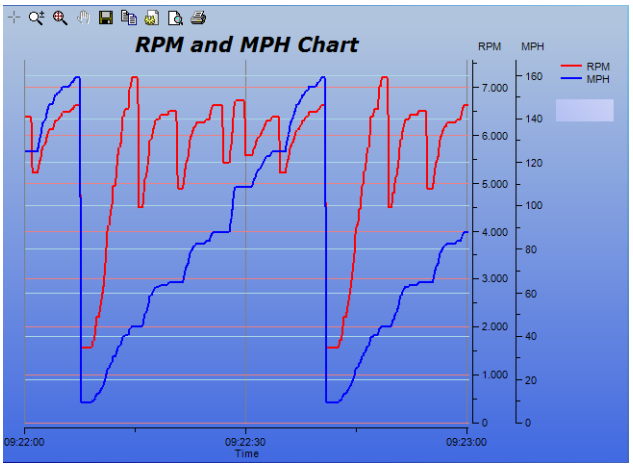
DEMO MODES

The ProShift has two demo modes build in. Each mode will simulate RPM and MPH curves on the ProShift device. This is a very convenient feature to verify your settings, without the need to connect the ProShift to the car.

DEMO Mode 1

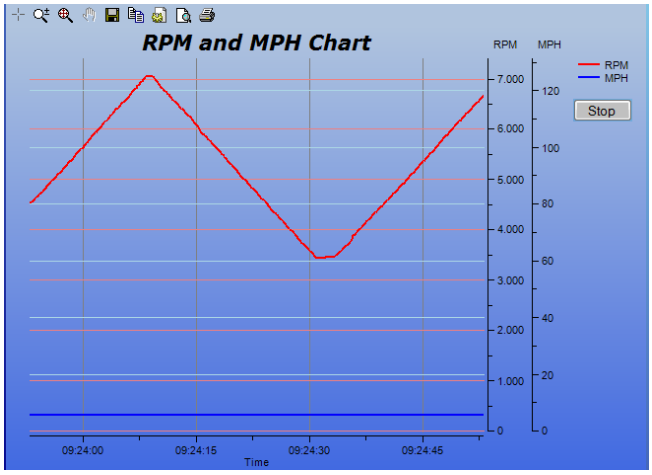
In demo mode 1, the ProShift will cycle through all 6 gears.

> **Note:** RPM and MPH values are based on the factory default overall gear ratios, if you use different ratios the gear position will not be calculated correctly.



DEMO Mode 2

In demo mode 2, the MPH remains constant at about 10 mph and the RPM will loop from 3500 to 7100.

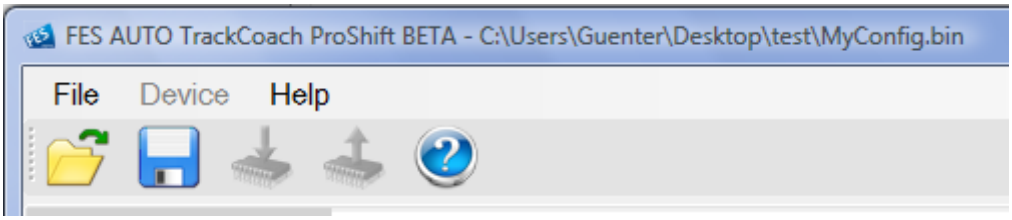


LOAD AND SAVE OF CONFIGURATIONS

You can define and store multiple configurations files. Each file contains all configuration data. A configuration file can be loaded at any time.

Load a configuration file

Click "File" -> "Load Configuration". Alternatively you can click the  button. The file selection window will appear. Browse to the file you want to load and click "OK"
Once successfully saved, the file name of the current active configuration is displayed:



Save a configuration file

Click "File -> Save Configuration". Alternatively you can click the  button. The file will be saved under its current filename

Save a configuration as a new file

Click "File -> Save Configuration As". The file selection window will appear .Define the new file name or select a file to be overwritten and click "OK"

IMPORT AND EXPORT CONFIGURATIONS

You can export and import configurations to/from the ProShift.

Export Configurations

To save the configuration changes you made in the application you need to export them to the ProShift:

- Click "Device - Export Settings to ProShift" or select the  button

The configuration will be written to the ProShift

Import Configurations

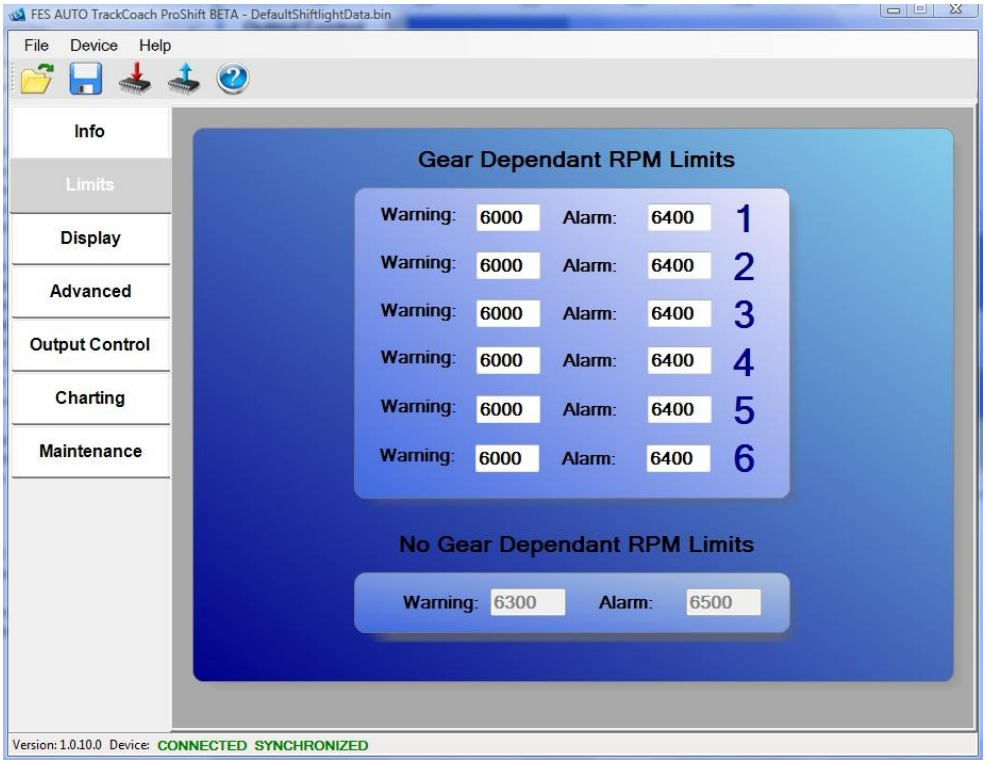
- Click "Device - Import" or select the  button.

You will be asked if you want to overwrite or save the current configuration.

THE LIMITS WINDOW

On the Limits tab you can define the warning and alarm shift points.

If gear dependent mode is selected, you can define the shift points for each gear. If gear independent mode is selected you can define only one warning and alarm limit.



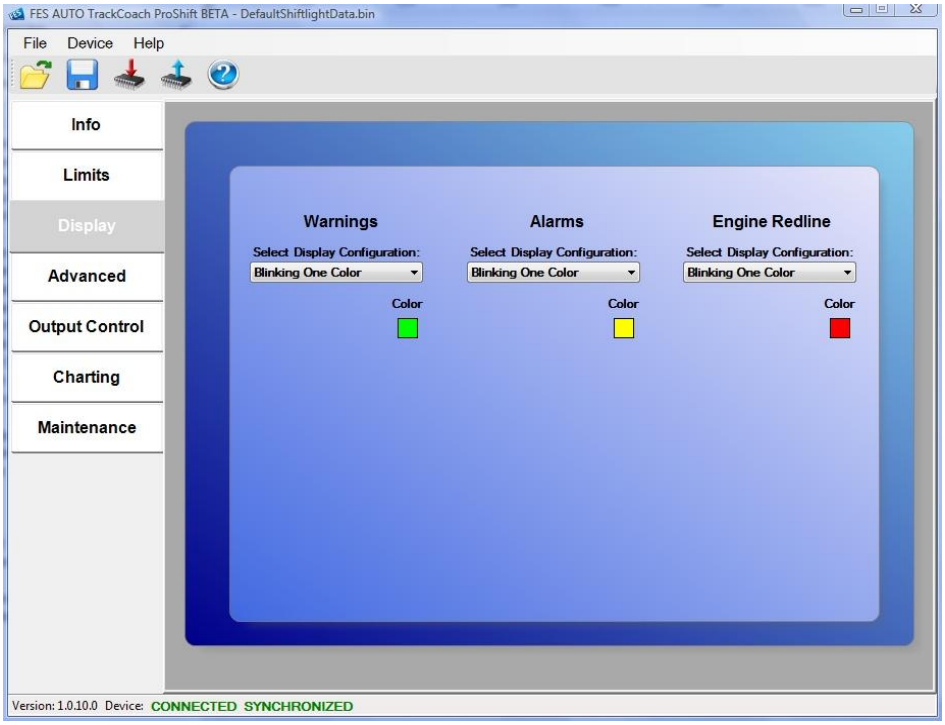
Valid ranges for RPM are from 750 RPM to 9999 RPM.

The software will verify the limits when you export the data or save to a file.

THE DISPLAY WINDOW

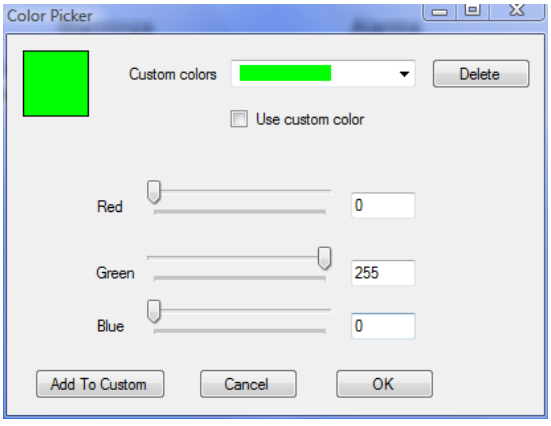
On the display tab you can define the color for the warning, alarm and redline shift points.

You can also define the display mode (for example blinking or fast blinking).



Color Selection

Clicking on the color symbol on any of the states will open the color picker:



With the color picker, you can define new colors by using the sliders or select an already defined color (using the custom color drop down)

While the color picker is open, the selected color is displayed on the ProShift.

Display Modes

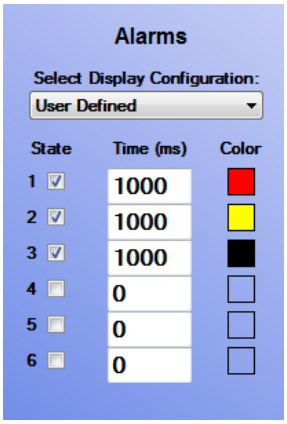
The application comes with 5 pre-defined display modes:

- Solid Color Display
- Blinking One Color
- Fast Blinking One Color
- Blinking two Colors
- Fast Blinking Two Colors

All these states have predefined timings. The color(s) can be controlled individually.

User Defined Display Mode

If you want to define your own display mode, select "User Defined":



You can define up to 6 different states, each state can have its own time (max 1000 ms) and color. The above example will turn on Red for 1s, then Yellow for 1s and then turn off the LED (black) for another 1s. Only the states checked will be used, other states are disregarded.

THE ADVANCED WINDOW

Engine Redline
This value is used for the redline display.

RPM Off Limit
The RPM off limit is used to calculate the off value for the warning, alarm and redline display.For example, when using and off limit of 50 RPM and a warning limit of 6000 RPM, the display will turn off if the RPM is less than 5950 RPM. The RPM off limit is used for the warning, alarm and redline display and for the Output conditions.

MPH Off Limit
The MPH off limit is used to calculate the off value for the output conditions. For example, when using and off limit of 5 MPH and an output condition to turn on when MPH > 50, the output will turn off at 45 MPH.

Tire Diameter
The tire diameter is used to calculate the MPH value and should match your real tire diameter as closely as possible.

Gear Dependent / Gear Independent

With this selection you can define if you want to use gear dependent shift points. If you want to do so, you need to make sure that the speed signal is connected to the ProShift.

5/6 Speed

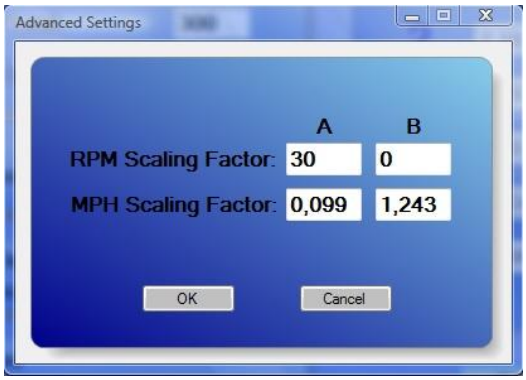
Here you can define your transmission type. This applies only for gear dependent mode.

Overall Gear Ratios

If you're running the ProShift in gear dependent mode, you need to make sure that the overall gear ratios match the ones of your car. The gear ratios are used to determine the gear positions.

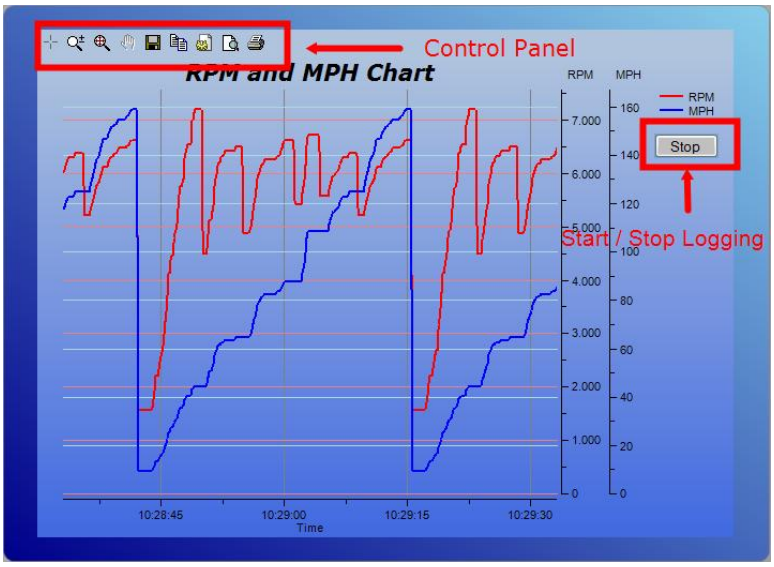
Scaling Factors

The scaling factors are used to scale the raw data readings from the car (RPM and speed signal input) to real world units. The default values work fine with MINI models R53 and R55. Do not change them.



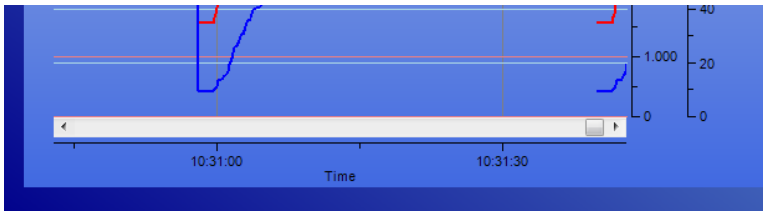
THE CHARTING WINDOW

The charting displays the trend chart of the RPM and MPH values over time.



Start / Stop of the Charting

The charting can be controlled using the start/stop button. If stopped, a horizontal scroll bar will appear, allowing viewing historical data:



The Control Panel

The control panel is only available with the charting stopped.

 Display the cross-hair cursor

 Zoom into a region

 Zoom out all

 Pan

 Save image

 Export data to file

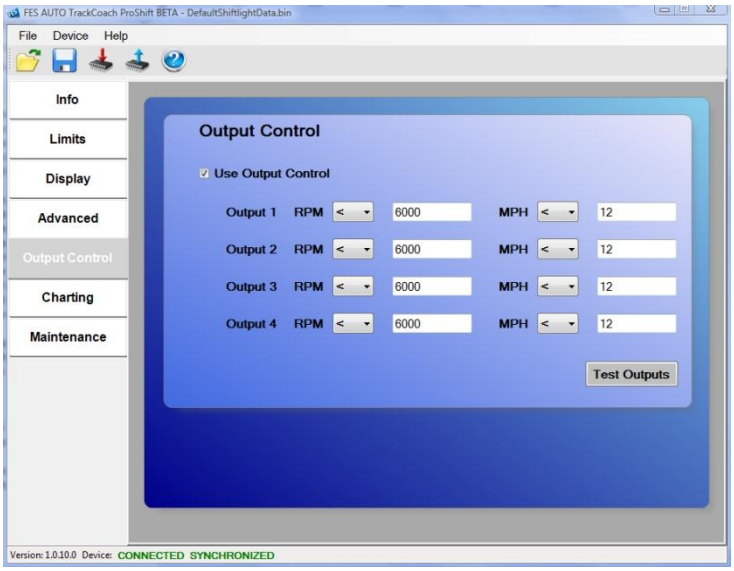
 Page setup

 Print preview

 Print chart

THE OUTPUT CONTROL WINDOW

The TrackCoach ProShift I/O has 4 digital outputs build-in. You can define conditions to turn on/off the outputs based on the current RPM and MPH values.



Enable/Disable all Outputs

You can enable or disable all outputs using this checkbox:

Define Conditions

Conditions to turn on/off the outputs are defined by using RPM and MPH. An output will be turned on if the condition is true. If you want to use only RPM or only MPH, chose the condition such that either RPM or MPH is always true.

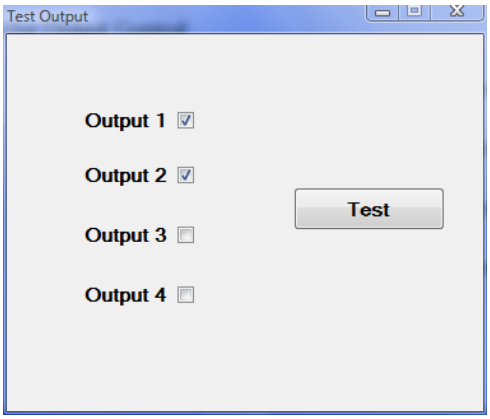
For example:

Output 1 will be turned on if RPM > 6000 AND if MPH is less than 250 mph.

Test Outputs

Each output can be tested individually.

- Click the "Test Outputs" button.
- A pop-up will appear:



- Select the state for each output and click "Test"

The outputs will stay in the selected mode as long as the pop-up is open. When the pop-up is closed the outputs return to their previous state.

THE MAINTENANCE WINDOW

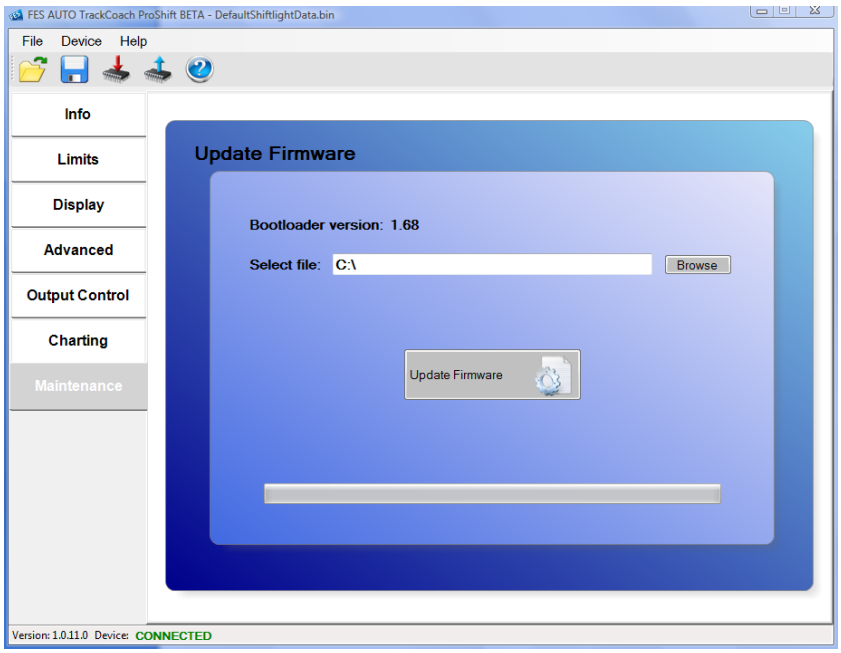
The Firmware Update feature allows you to load the latest version of the ProShift firmware. Firmware updates are supplied in a "*.hex" format. Check out our website, www.fes-auto.com , to see if updates for your product are available.

STEP 1 Save the new firmware on your computer

- Save the new firmware (*.hex file) in a directory on your computer (for example on your desktop)

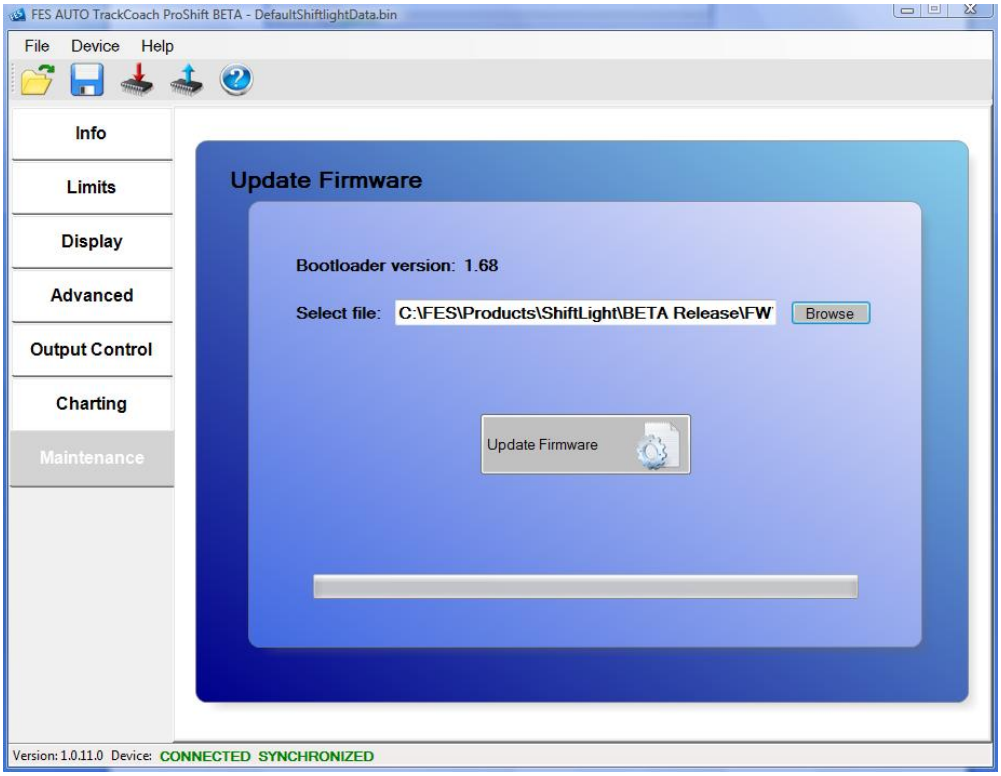
STEP 2 Go to maintenance tab

- Connect the ProShift via the USB port to your computer
- Start the ProShift Application
- Select the "Maintenance Tab"
- You will see the following screen:



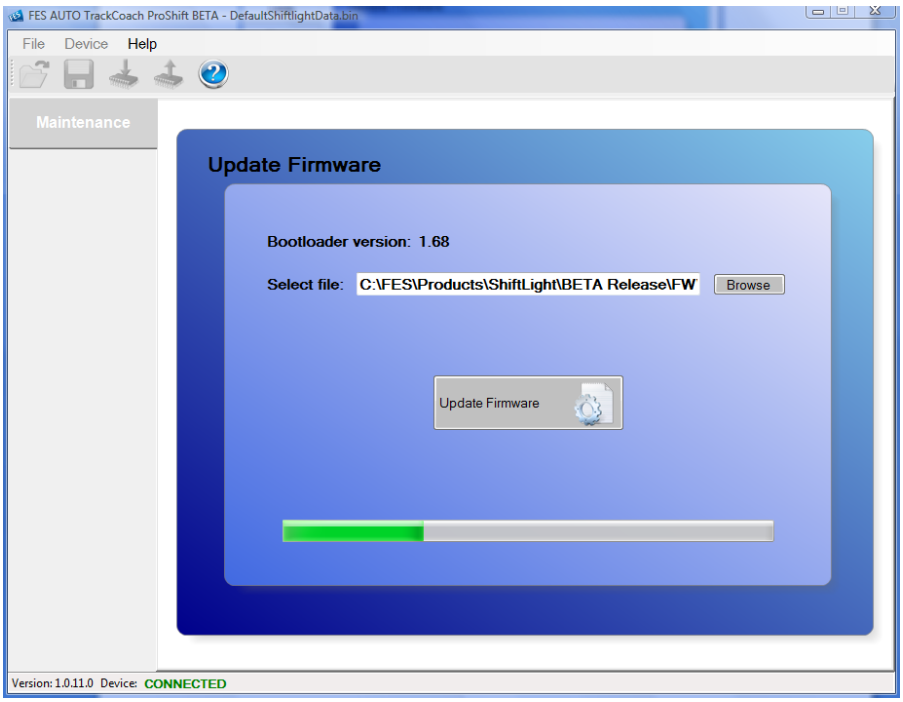
STEP 3 Select new firmware file

- Browse to the new firmware file by clicking on the "Browse" button.
- Once selected, the filename and path will be shown:



STEP 4 Initiate firmware upgrade

- Click on "Update Firmware"
- The ProShift will start flashing Green (indicating that it's in firmware upgrade mode)
- After a few seconds, the firmware is written to the ProShift. The progress is shown in the Progress bar:



NOTE: if this is the first time you're using the firmware upgrade feature, the software will ask you to install the necessary driver. Follow the instructions from the Driver Installation Manual to do this.

APPENDIX A SPECIFICATION

Power		
Operating Current	30mA (min) / 110mA (max)	
Stand-by Current	2mA	
Input Voltage Range	6V – 20V (continuous)	
	60V (transient)	
Inputs		
RPM Signal Frequency	20Hz - 200Hz	(50% Duty Cycle)
RPM Signal Input Voltage Range	3V-15V	
Speed Signal Frequency	100Hz – 500Hz	(50% Duty Cycle)
Speed Signal Input Voltage Range	3V-15V	
Outputs		
Type	Open Collector	
Collector-Emitter Voltage	80V	
Collector Current	50mA	
Size		
Weight		

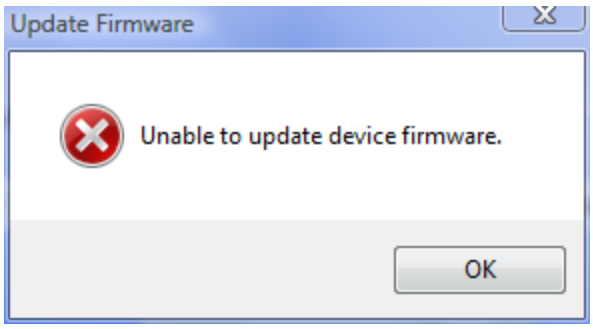
APPENDIX B FACTORY DEFAULT SETTINGS

Parameter	Value
Warning Limit	6000 RPM
Alarm Limit	6400 RPM
Engine Redline	6800 RPM
Warning Display	Blinking Green
Alarm Display	Blinking Yellow
Redline Display	Blinking Red
Tire Diameter	24”
Speed Signal	Not used
RPM Off Limit	50 RPM
MPH Off Limit	5 MPH
5/6 Speed	6 Speed
Gear Ratio 1	11.425 : 1
Gear Ratio 2	7.181 : 1
Gear Ratio 3	5.397 : 1
Gear Ratio 4	4.407 : 1
Gear Ratio 5	3.656 : 1
Gear Ratio 6	2.986 : 1
Use Outputs	Disabled
Output 1	RPM > 6000 AND MPH > 10
Output 2	RPM > 6000 AND MPH > 10
Output 3	RPM > 6000 AND MPH > 10
Output 4	RPM > 6000 AND MPH > 10

APPENDIX C FAQ

FIRMWARE UPDATE FAILS

In rare conditions the firmware update will fail with the following error message:



Resolution:

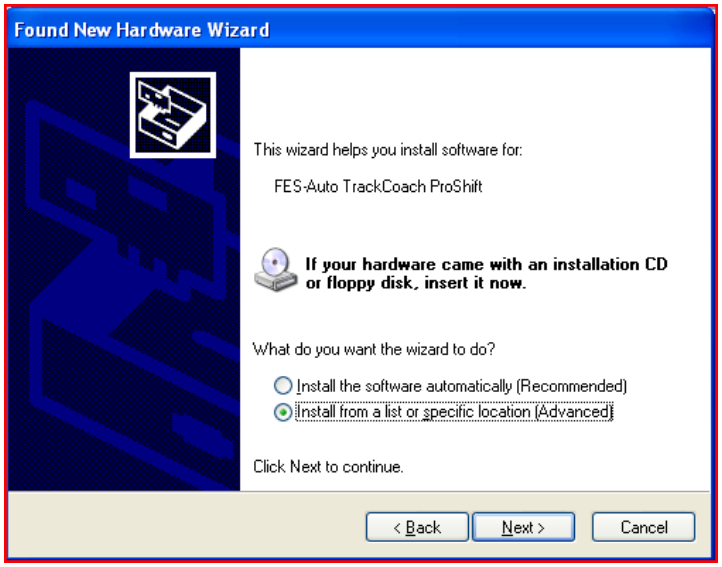
- Unplug the ProShift from your computer
- If the ProShift is powered from the Car, unplug it from the car too
- Close the application
- Reconnect the ProShift to your Computer again
- Restart the application. The application will start in bootload mode
- Start the firmware update again

APPENDIX D WINDOWS XP DRIVER INSTALL

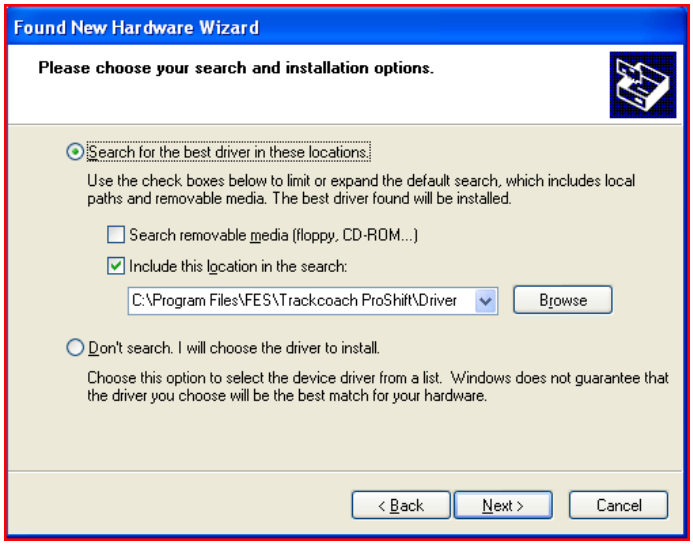
Connect the ProShift to a spare USB port on your PC. Once the ProShift is detected by Windows XP, the Found New hardware Wizard will launch. If there is no available Internet connection or Windows XP is configured to ask before connecting to Windows update, the screen below is shown.

Select "No, not this time" from the options available and the click "Next" to proceed with the installation.

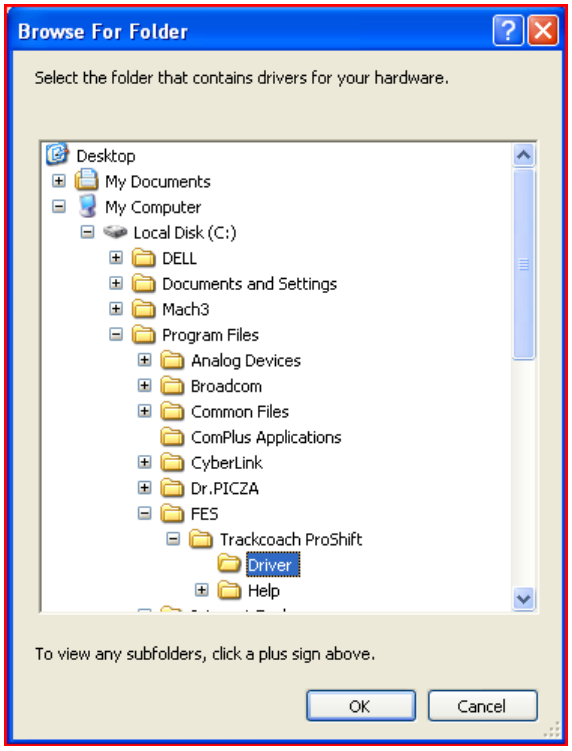
Select "Install from a list or specific location (Advanced)" as shown below and then click "Next"



Select "Search for the best driver in these locations" and enter the file path in the combo-box.



The default driver locations is: "C:\Program Files\FES\TrackCoach ProShift". You can also browse to the directory by clicking the browse button.

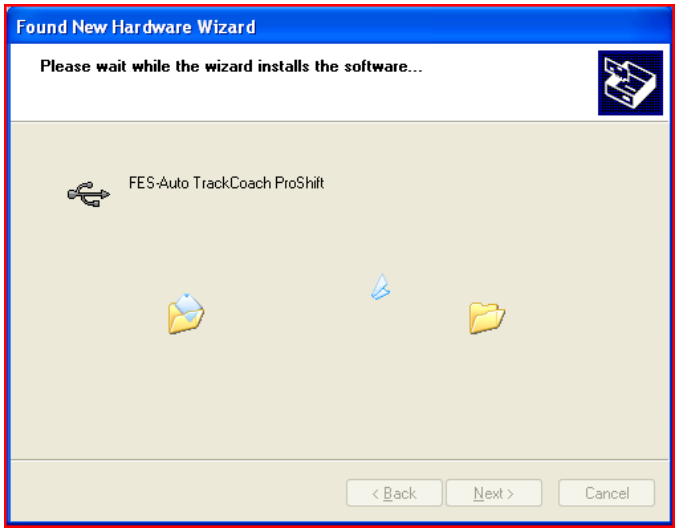


Click "OK" to proceed

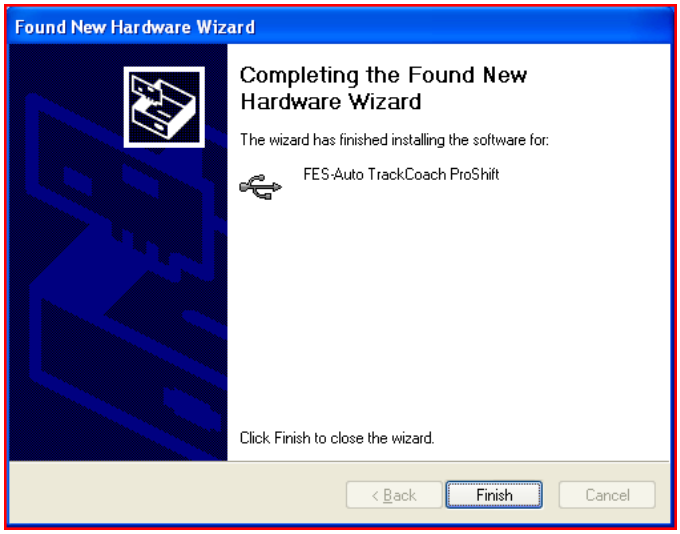
If Windows XP is configured to warn when unsigned drivers are about to be installed a warning screen will be displayed.

Click on "Continue Anyway" to continue with the installation. If Windows XP is configured to ignore file signature warnings, no message will appear.

The following screen will be displayed as Windows XP copies the required driver files:



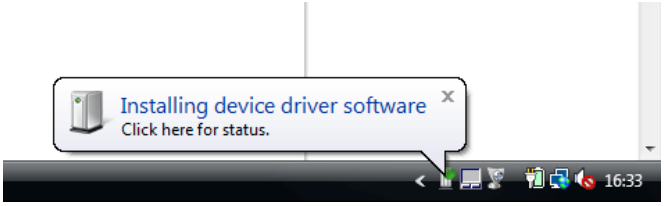
Windows should then display a message indicating that the installation was successful. Click "Finish" to complete the installation of the driver.



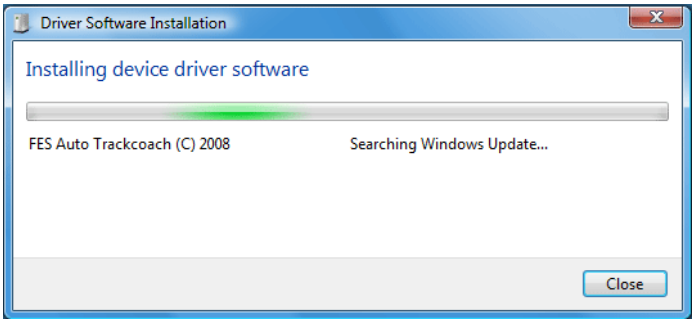
APPENDIX E WINDOWS VISTA DRIVER INSTALL

Connect the ProShift to a spare USB port on your PC. Once the device is detected by Windows VISTA, the Found New Hardware Wizard will launch:

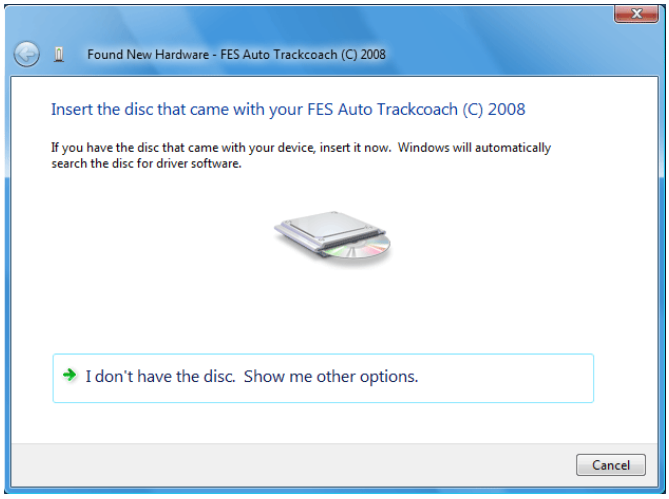
Select: "Locate and install driver software". Windows Vista will start searching the Windows Update site for a suitable driver. This is also indicated like this:



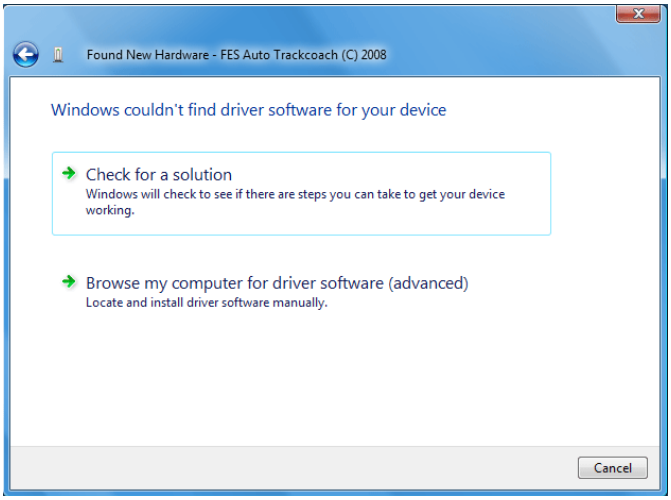
To get more information, click on the bubble:



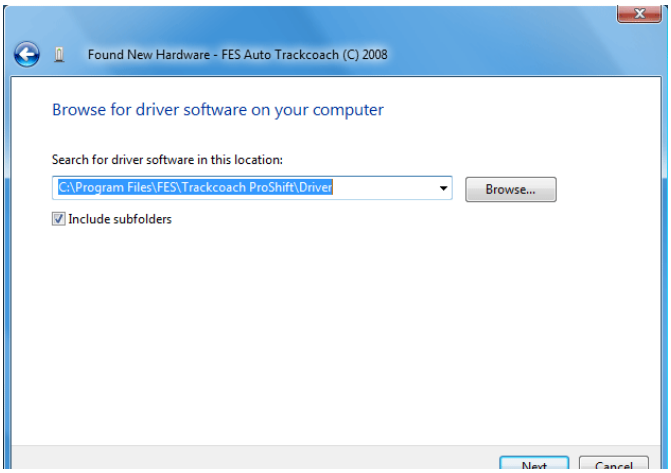
When done searching the Windows update site, the following screen will appear:



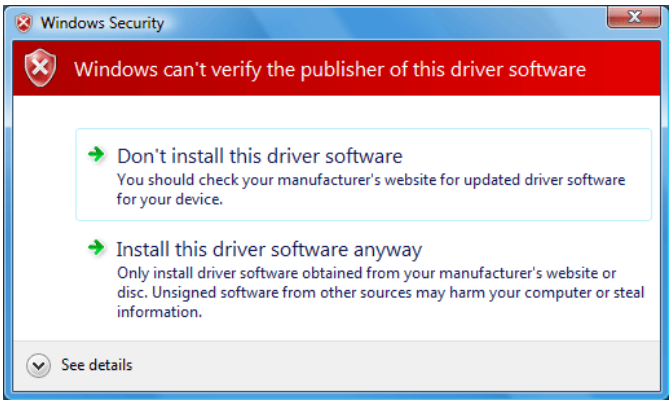
Click on "I don't have the disc..." and the following screen will appear:



Click on "Browse my computer for driver software".Browse to the following directory: "*C:\Program Files\FES\TrackCoach ProShift\Driver*" and click "Next".

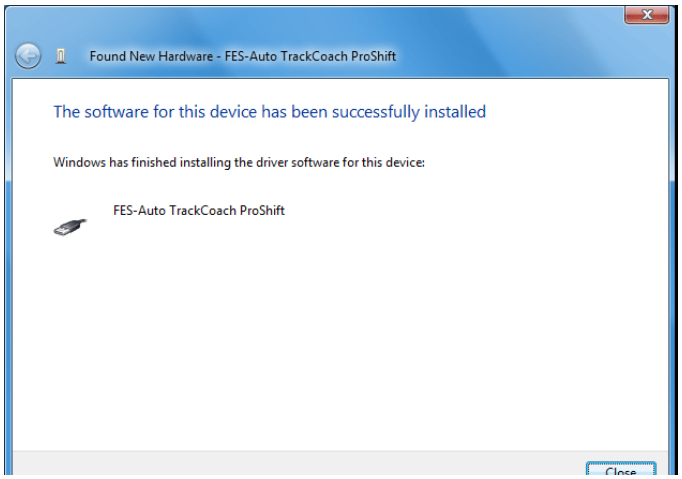


A warning will appear, indicating that the driver is not signed with Microsoft:



Click "Install this driver software anyway"

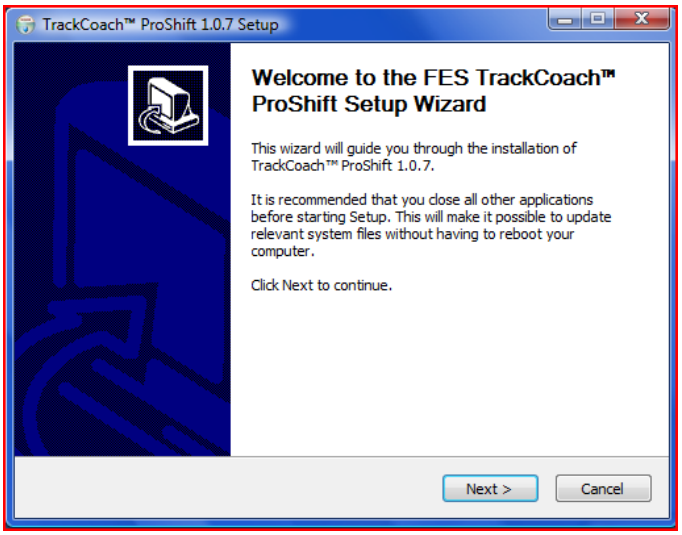
Windows Vista will proceed with the installation. Once finished, you will see the following screen:



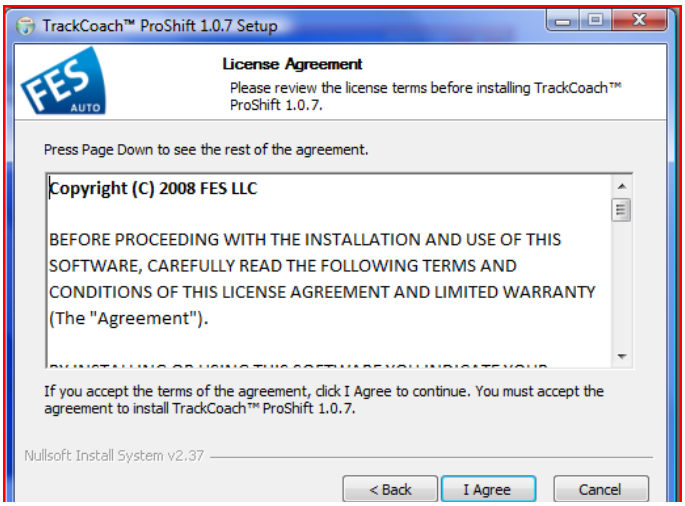
The driver installation is now complete.

APPENDIX F PC SOFTWARE INSTALLATION

The latest version of the PC software can be downloaded from the FES-Auto website (www.fes-auto.com) in a zipped setup executable. Extract the file, run the setup executable file and the following screen should appear:

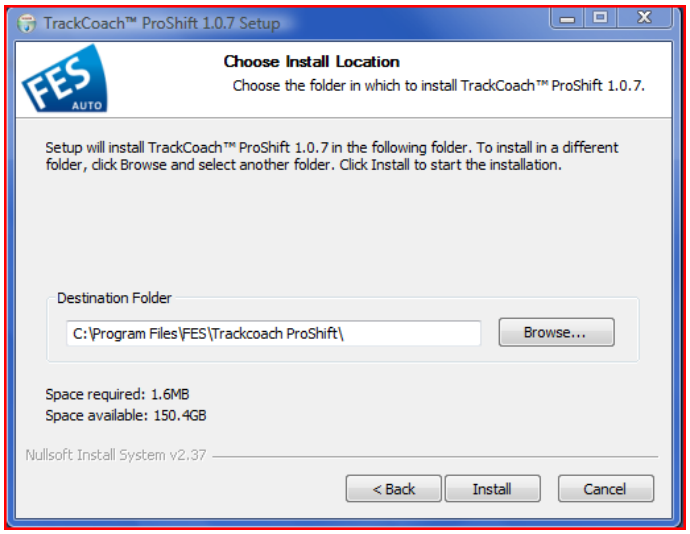


Click "Next" and the license agreement will be displayed:

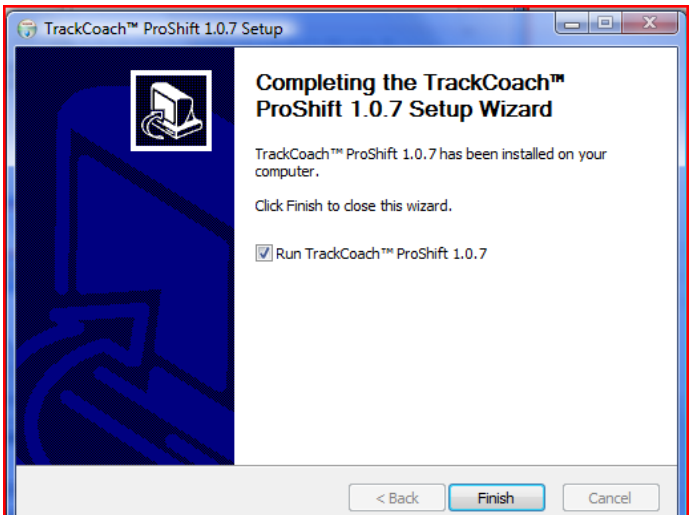


Read the license agreement and if you agree click "I Agree" to proceed with the installation. If you do not agree, click "Cancel", the installation process will not continue.

You can choose a custom location or accept the default:



The default location is "C:\Program Files\FES\TrackCoach ProShift". Once a location has been selected, click "Next" to commence the installation



This completes the installation of the application. The application will be started automatically with the "Run TrackCoach" checkbox selected. Alternatively you can follow the desktop shortcut or locate TrackCoach ProShift in the Start menu.