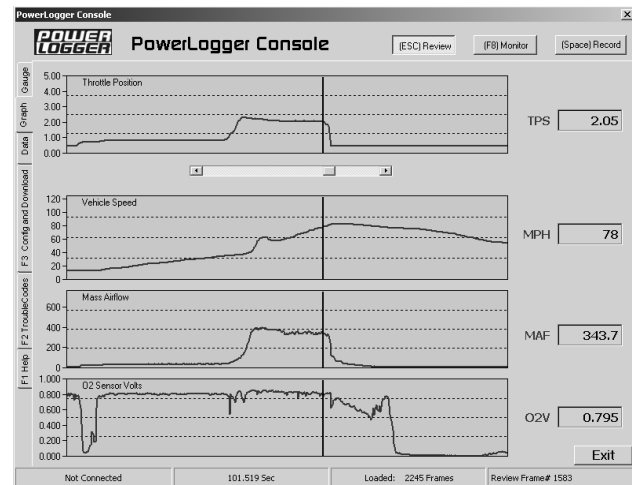
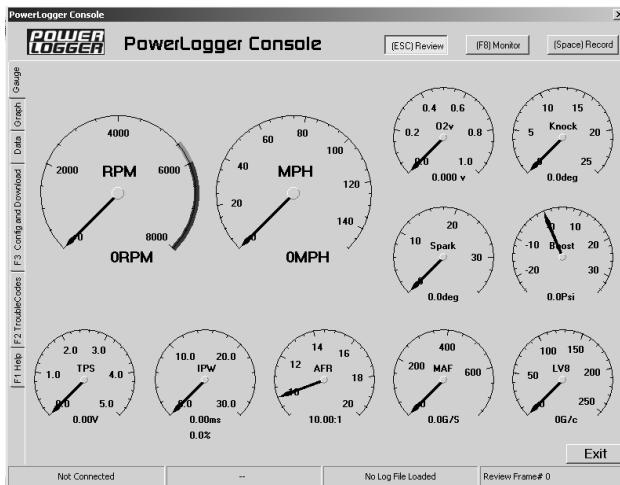


POWERLOGGER

DATALOGGING INSTRUMENT

FOR

BUICK TURBO V6 EQUIPPED VEHICLES



USER GUIDE

POWERLOGGER KIT CONTENTS

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- Connection unit cable
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Cautions:

Do not attempt to manipulate the laptop computer while driving, doing so is extremely dangerous.

Testing on public roadways is Extremely Dangerous. Please perform testing at the appropriate racing facility.

SECTION 1, SOFTWARE INSTALLATION

The PowerLogger kit includes a CDROM with the “PowerLogger Console” (PLC) software and driver files. The following procedure will copy the software to your PC. The software is not “installed” in the traditional manner. So to uninstall PLC, just delete it and its associated files. The USB drivers are standard, so they do get “installed”, and would need to be “uninstalled” to remove them.

1: Insert the CDROM into the CDROM drive. If the file window does not open, open **My Computer** and click on the CD icon.

2: Click the PowerLogger folder and drag it (while holding the mouse button) onto the **My Documents** folder on your desktop. (then let go of the mouse button) This will create a PowerLogger folder inside the My Documents folder.

3: Open the My Documents folder, and then open the PowerLogger folder. In this folder is a PDF copy of the instructions, the PLC software files, and the USB driver folders. During the USB driver installation, you will need to select the appropriate driver folder (“Win98” or “2000 and XP”).

4: Right click on the PLC.exe file and select “Send To” and then “Desktop (as Shortcut)”. This will create a shortcut on the desktop that you can click to run the PLC software.

5: If the hardware is installed, then connect the USB cable to the computer and turn the car ignition on. Wait for the PowerLogger to be detected by Windows, then when the driver installation procedure requests the driver disk, browse to the PowerLogger folder and select the folder that matches the version of Windows on your computer. Note that this procedure happens twice, select the same folder each time.

6: Congratulations, the software is now installed.

SECTION 2, PLC SCREENS

The PLC software is organized into 6 main screens, these screens can be selected using the “F Keys” or clicking on the tabs at the left of the screen.

F1: Help – Contains details about using the PLC software.

F2: Trouble Codes – This screen displays any codes stored in the ECM

F3: Config and Download – This screen is for setting the operating modes of PLC and saving and loading the datalog files.

F4: This key toggles between the 3 display screens. (Data, Gauge, Graph)

F8: Starts the communication between PLC and the PowerLogger (Monitor Mode)

F9: - Toggles the first graph selection on the graph page

F10: - Toggles the second graph selection on the graph page

F11: - Toggles the third graph selection on the graph page

F12: - Toggles the fourth graph selection on the graph page

Note: holding the Shift key toggles the graph in reverse order.

Left Arrow, Right Arrow – Move the review cursor right or left when reviewing

Pg Up, Pg Dn – Move the view to the right or left while reviewing

Home – Moves the view to the beginning of a log

End – Moves the view to the end of the log

C – moves the review cursor to the center of the view window

Ctrl-B – captures the MAP reading for barometer correction (key on, engine off)

Alt-X – Exits the PLC software.

SECTION 3, CONFIGURING PLC

The F3 page is for saving and loading logfiles. It is also where the PLC program is configured. Configure the operation of PLC as follows:

Communication Setup:

Select Com Port: click the arrows or enter the port number for the PowerLogger. The number can be determined by trying all of them, or by looking at the “Device Manager – Ports” in the “Control Panel – System” program that can be found in “My Computer”.

MAF Display Option:

Select 255 for all standard range chips (the EPROM chip in the ECM)
This includes “Commander” chips
Select 512 for “Extender” chips
Select 768 for “Extender Extreme”, “Extender Pro”, or “Extender Extreme G” chips

Analog Input Settings

These drop-down boxes select the interpretation of the analog signals that are attached to the connection unit. Input 1 is dedicated to Wideband Air/Fuel Ratio monitoring. Input 2 is dedicated to MAP (Manifold Absolute Pressure), Input 3 is dedicated to EGT (Exhaust Gas Temp) and requires an optional adapter. Inputs 4 and 5 can be used for several different signals. If “Air Temp Sensor” is selected, you must connect a 2.2K resistor from that input terminal to the +5 terminal on the connection unit. Connect the air temp sensor wiring to the input terminal and ground. This selection is compatible with any GM style air temp sensor.

Data Display Settings

The Graph Skip-Frames setting causes the Graph screen update to happen after more than one frame is received. All the data is displayed, it is just refreshed less often. This can help slower computers log data at full speed.

Logging Frames/Sec is a feature that will be included in a future release of PLC

PLC Recording Triggers

The settings in this window can trigger recording (must be in monitor mode). If the TPS checkbox is checked, then a TPS reading above the set threshold initiates recording. If the Knock checkbox is checked then a reading of Knock Retard above the threshold will trigger recording. If both are checked then BOTH thresholds must be exceeded to trigger recording. If the Trouble Code box is checked, then if a trouble code is detected recording is initiated.

The Min Record Sec setting controls the number of seconds PLC will continue to record when the trigger settings are no longer satisfied. This keeps the log from stopping in cases where you lift off the accelerator due to wheelspin.

Logging can also be started and stopped using the SpaceBar. Since the monitor buffer is 22 seconds long, you can hit the spacebar after a run and still capture it in a log.

SECTION 4, M ODES

The PLC software has 3 modes. Review, Monitor, and Record.

In Review mode a logfile is viewed on the 3 display screens. On the graph screen the view can be moved thru the log data by dragging the scrollbar with the mouse or using the Home,End,PgUp, and PgDn keys. The review cursor (vertical line) can be moved by clicking in the graph and dragging the cursor. The cursor can be centered in the view window by pressing the C key. The data located at the review cursor in the graph screen occurred at the same time as the data displayed in the Gauge and Data screens. So you can find a point on the graph that is of interest, then switch to the Data screen to see the rest of the data, or toggle the graphs to see what occurred with the other data items.

In Monitor mode the PLC software receives ECM data from the PowerLogger interface unit and displays it on the 3 display screens. The triggering thresholds are monitored, if triggering conditions are met, then the mode is changed to Record (as long as the internal buffer is empty). The ECM data is checked for troublecodes, and if detected the titlebar of the PLC window is changed to alert the user. Trouble codes can be viewed on the F2 page.

Record mode captures ECM data from the PowerLogger interface unit and stores it in memory. Up to 400 previously received data frames are stored at the beginning of the log. Recording is triggered by the Spacebar or automatically when the log trigger conditions occur (See the F3 page). The maximum log length is approximately 45 minutes. Be sure there is plenty of hard drive space to ensure that the recorded log can be saved. To save the record log, press F3, the press S or click the save button. Select the location to save the logfile and enter a filename, then click Save. Enter a file comment and click Ok (or press Enter). The file is then saved. Load a logfile in a similar fashion.

SECTION 5, TUNING HINTS

The PowerLogger is a full featured datalogging and data playback system. With turbocharged vehicles the engine is easily damaged by detonation by running too lean (insufficient fuel delivered to match the airflow), too much boost pressure, or insufficient octane. This detonation (also called knock) is detected by the ECM and the spark timing is “retarded”, i.e. the spark plugs are fired later, to try to stop the detonation.

When tuning you must start with safe settings. Turn the boost down, and test the full throttle performance. Watch the O2 sensor voltage to ensure it stays high enough 750 mv (.750 Volts) or higher. Watch that the knock retard stays at 0 or close to zero. If audible detonation (knock) is heard LIFT YOUR FOOT. As the engine tune is tested and corrected, boost pressure can be added a little at a time. Change only one thing at a time (like adding a few % fuel using whatever tuning hardware is installed) and retest.

Once you have made the adjustments, set PowerLogger to record using the trigger settings or hitting the spacebar and make a test run. Then stop the vehicle, stop the recording, save the log, then review it. Do not attempt to manipulate the laptop computer while driving, doing so is extremely dangerous. Stop the vehicle, use the computer, and then continue. Tuning with a “copilot” helps tremendously when tuning. Testing on public roadways is Extremely Dangerous. Please perform testing at the appropriate racing facility.

In case you missed them, here they are again:

Do not attempt to manipulate the laptop computer while driving, doing so is extremely dangerous.

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SECTION 7, DATA FOR CHIP PROGRAMMERS

The analog inputs to the PowerLogger are accessible from within the ECM software. Chip programmers can access this data for use with software modifications. Additionally, additional RAM locations within the PowerLogger hardware can be used.

In version 1.0 the following are the analog addresses:

In 1 can be read at \$2100

In 2 can be read at \$2102

In 3 can be read at \$2104

In 4 can be read at \$2106

In 5 can be read at \$2108

Additional RAM is located from \$2200 - \$22FF, this RAM is cleared at power-on and will contain 0.