



**CAUTION: CAREFULLY READ INSTRUCTIONS BEFORE PROCEEDING. THE USER IS ASSUMED TO BE FAMILIAR WITH MICROSOFT WINDOWS AND PC OPERATION.**

## OVERVIEW

WEGO Log software runs under Microsoft Windows 98/ME/XP/Vista. This software allows WEGO users to download and display data logged by the unit and to setup certain data logging functions. WEGO Log version 6.0 supports all WEGO units with internal data logging including the new WEGO III and WEGO IV series.

After WEGO Log is launched, the main screen appears blank. Data logged by the WEGO unit must be downloaded before it can be displayed, by using the Download Data From WEGO command on the Communications menu. Once data has been downloaded, it is automatically displayed on a chart recorder type screen. You can save this data by using the Save File command from the File menu. You can also display a previously saved data file by first using the Open File command on the File menu.

A sample data file (Sample.log) for an actual road test is included in the program folder.

## PC REQUIREMENTS

We recommend a laptop with Pentium processor and super VGA display (SVGA with 1024 x 768 pixel resolution) running Windows 98/ME/XP/Vista. Data chart display is graphics intensive and a high speed Pentium processor is recommended. Processors slower than 300 MHz will exhibit sluggish program loading and response. The PC must have a CDROM drive for program loading.

WEGO Log includes print commands to print downloaded data. The program has been tested with Hewlett-Packard laser and inkjet printers and Epson inkjet printers. We recommend using a color inkjet printer.

## New WEGO III and WEGO IV

The new WEGO III and WEGO IV units connect to your PC by means of a USB interface. A USB cable is supplied with the unit. The PC must have a free USB port. If you have an older PC without USB capability, you cannot use the unit.

When launched for the first time, the program uses COM1 as the default port. In most cases, you will have configured the unit's USB interface to use a different COM port, such as COM5. Use the Port Setup command on the Communications menu to select the correct COM port. The program will remember the new port setup.

## WEGO II

Older WEGO II units have a female 9 pin D-sub connector that interfaces to an RS-232 serial port on the laptop PC. In most cases, you will need to use a 9 pin male-to-female extension cable such as our P/N RS232-CBL-10 to reach the PC. Similar cables are available from Belkin ([www.belkin.com](http://www.belkin.com)) as P/N F2N209-06-T or Office Depot as P/N 825851. You can also find the same type of cable at most office and computer supply stores.

Data transfer occurs at 56 kBaud. The high baud rate limits the maximum cable length and the use of an extension cable over 12 feet in length is not recommended. Due to the cable length limitation and the need for portable access, a laptop PC is recommended. The PC must have a free serial port (COM1-255) with a standard 9 pin male D-sub connector. If your laptop does not include a serial port, you can use a USB adapter. However, not all USB adapters will work correctly with the WEGO II. Most of the inexpensive USB adapters are intended for interfacing Palm Pilot type devices and do not support the high baud rate required by our unit.

We sell and recommend a low cost USB adapter (P/N USBG-232) that has been tested with a wide range of system configurations. The USBG-232 adapter comes with correct and updated driver files on CDROM. After installation the USBG-232 adapter will usually appear as COM5.

## USB INSTALLATION

WEGO III and WEGO IV units require installation of USB interface drivers. If you have already installed the USB interface drivers, or you are only using an older WEGO II unit, you can skip this step.

The WEGO III and WEGO IV USB interface is based on the FTDI FT232R chip and VCP (virtual COM port) drivers that allow the units to emulate a standard Windows RS-232 COM port. Updated Windows drivers, installation instructions and troubleshooting tips are available on the FTDI website at [www.ftdichip.com](http://www.ftdichip.com).

You will require the Daytona Sensors CDROM for installation. For Windows 98 and ME, use the drivers in the VCP\_Drivers\_Win98ME folder on the CDROM. For Windows XP and Vista, use the drivers in the VCP\_Drivers\_Win2KXP folder. You can install directly from the CDROM or copy these files to a folder on your hard drive.

The standard Windows installation process is used, as with other USB devices. If you have never installed a USB device, you can refer to the appropriate FTDI Windows Installation Guide (in the USB\_Interface folder on the CDROM) for step-by-step details. Individual guides are provided for Windows 98, 2000 (2K), and XP/Vista. The Windows 98 guide is also applicable to Windows ME. Refer to the table of contents in the appropriate guide for Installing FT232R Devices/Installing VCP Drivers.

1. Insert the CDROM. Exit from the Daytona Sensors autorun menu if it appears.
2. Connect the unit to the PC with the supplied USB cable.
3. The Windows Found New Hardware Wizard will appear. Do not click on the option to connect to Windows Update.
4. Click on the option to install from a specific location, click on the option to search for the best driver, and then browse to the VCP\_Drivers folder on the CDROM. Disregard any warnings about drivers that have not passed Windows Logo testing.
5. The wizard will complete installation of the USB serial converter (FTDI chip). This completes the first part of the installation.
6. The wizard will reappear to install the COM port driver. Repeat steps 3-4 above.

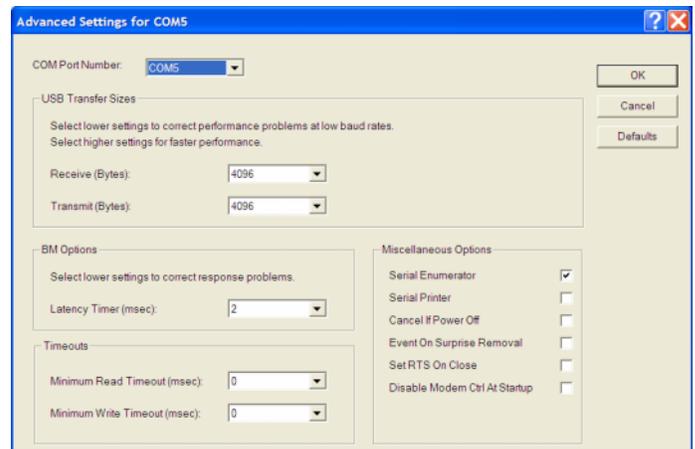
### COM Port Configuration

After completing the installation steps outlined above, you must configure the new COM port using Device Manager.

1. Click Start, Settings, Control Panel, System, Hardware, and then Device Manager. Scroll down to Ports (COM and LPT).

2. The unit will appear as a USB Serial Port. Click on this new port.
3. Click on the Port Settings tab.
4. Click on Advanced. In most cases the wizard will have installed your new unit as COM4 or COM5. For optimum performance, you should change the BM Options Latency Timer to 2 msec as shown in Figure 1.
5. Once you have configured a COM port number for your new unit, make sure that you use this same COM port selection in the WEGO Log software by using the Port Setup command from the Communications menu.

Figure 1 – COM Port Configuration



### SOFTWARE INSTALLATION

The software is supplied on CDROM media or in the form of a compressed file downloaded from our website. The installation process uses InstallShield. This industry standard installer is based on the new Microsoft Windows Installer service that greatly reduces potential problems such as version conflicts and allows for application self-repair. Since Windows 98 systems did not originally include the Windows Installer service, the required installer software is included in the distribution media.

Before proceeding with installation, shutdown any other applications that may be running. For Windows Vista, you must disable the User Account Control (UAC) during installation. If you are not familiar with the UAC, please refer to the Vista UAC Tech Note on our website's Tech FAQ for details.

Use the Windows Explorer or the Run command from the Windows Start Menu to launch setup.exe in the WEGO\_Log folder on the CDROM or the setup.exe file

downloaded from our website. InstallShield will install the software in an appropriate folder under Program Files.

Once InstallShield has completed the installation, WEGO Log will appear on the Windows Start Menu. You can then launch it just as you would any other Windows program.

WEGO Log requires the Monospace 821 BT fixed pitch printer font in order to properly align columns when printing. The Monospace 821 BT font is included in the distribution media and automatically copied to your Windows Fonts folder during installation. A backup copy is also placed in the program folder. If you accidentally delete this font, use the Install New Font command from the Fonts folder File menu. The filename associated with Monospace 821 BT is monos.ttf.

## WEGO CONNECTION

### New WEGO III and WEGO IV

The new WEGO III and WEGO IV units connect to your PC by means of a USB interface. A USB cable is supplied with the unit. Turn on power to the WEGO unit. We recommend that you do not run the engine while you are downloading data.

### WEGO II

Use an extension cable to connect the WEGO II to a serial port on your laptop PC or USB adapter. Turn on power to the WEGO unit. We recommend that you do not run the engine while you are downloading data.

COM1 is used as the default port. If you connected the WEGO II to a different COM port, use the Port Setup command on the Communications menu.

## WEGO SETUP

Prior to using the WEGO, you must set up the data logging parameters. Use the Edit WEGO Parameters command from the Edit menu. A dialog box will appear as shown in Figure 2. You can set the data logging interval and RPM pulses per revolution and additional parameters for newer WEGO units.

The WEGO data buffer stores the **last** 8000 data points. If you set the data logging interval to 0.50 seconds, the unit will log over one hour of data. Data logging intervals of 0.2-1.0 seconds are suitable for on-road tests; a shorter interval of 0.10 seconds is recommended for dyno tuning. You can clear the data within the WEGO by using the Clear WEGO Data Buffer command from the Communications menu. If you change the data logging interval, you should also clear the WEGO data buffer.

Figure 2 – WEGO Setup

The screenshot shows a dialog box titled "WEGO Parameters". It contains the following settings:

- Data Logging Interval (0.1-1.0 sec): 0.10
- RPM Pulses/Rev (0.5-12): 1
- RPM Debounce (0.1-9.9 msec): 0.50
- WEGO III/IV Only section:
  - Minimum LED Brightness (5-100%): 6

At the bottom of the dialog are three buttons: "Restore Defaults", "Upload To WEGO", and "OK".

If you are logging engine RPM, you must set the correct value for RPM pulses per revolution (PPR). Some general guidelines follow, based on what type of signal you have connected to the WEGO brown wire:

**Tach signal.** In most cases  $PPR = N/2$  where N is the number of cylinders. For example a V-twin motorcycle engine would require  $PPR=1$  and a V8 automotive engine would require  $PPR=4$

**Harley-Davidson® dual fire** ignition with connection to Coil- terminal. Use  $PPR=1$

**Harley-Davidson® single fire** ignition with connection to either Coil- terminal. Use  $PPR=0.5$

**Distributor type ignition** with connection to Coil-terminal. Same as for a tach signal. Use  $PPR = N/2$  where N is the number of cylinders.

**Wasted spark coil pack** (distributorless system) with connection to Coil- terminal. Use  $PPR=1$ .

**Coil on plug** (no wasted spark) with connection to Coil- terminal. Use  $PPR=0.5$

**Capacitive Discharge (CD) ignition** using tach adapter. For one cylinder engines, use  $PPR=1$

**RPM Debounce** – RPM signal filtering in milliseconds (msec). Use the default value of 0.50 msec for most applications. Ford 4.6L modular V8 engines will require a value of 3.5 msec. Suzuki® Hayabusa models will require a value of 3.0 msec. If the RPM trace appears noisy, try a higher RPM debounce value. **The RPM debounce parameter is only supported on WEGO II units with firmware revision 4.0 and higher (and on all WEGO III and WEGO IV units). The WEGO firmware revision is reported as part of the firmware ID whenever you upload to the WEGO.**

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**If you have an older WEGO II unit, it can be upgraded to the latest firmware revision. Please contact our tech support for details.**

### **WEGO III and WEGO IV Only**

These units support an additional parameter related to the LED display:

**Minimum LED Brightness** - This parameter sets the minimum LED brightness under low light (night) conditions. A value of 5% is reasonable for most applications. 100% represents maximum brightness.

After you have entered the correct parameters, you must upload them to the WEGO unit. Please note that clicking on Restore Defaults only displays default values and does not affect the WEGO unless you then upload the restored values.

Please note that the WEGO only logs data when the heater element in the sensor has warmed up to normal operating temperature. If you use WEGO Log to communicate with the WEGO (i.e. upload parameters or download data), data logging stops. The display on new WEGO III and WEGO IV units will also show "PC." You must cycle power to the WEGO off and on again before data logging will resume.

### **DATA LOGGING CHART DISPLAY**

Data logged by the WEGO unit is displayed on a chart recorder type screen. Data logged by the WEGO unit must be downloaded before it can be displayed, by using the Download Data From WEGO command on the Communications menu. Once data has been downloaded, it is automatically displayed. **The last data logged will appear at the right end of the chart.** You can save this data by using the Save File command from the File menu. You can display a previously saved data file by first using the Open File command on the File menu. Note that WEGO data files use a .log extension. You should create a separate folder to store these files.

You have a range of capabilities for analyzing downloaded data displayed in the chart recorder format. You can select two parameters for display. Trace 1 is displayed in red with its Y axis legends on the left side of the chart. Trace 2 is displayed in green with its Y axis legends on the right side of the chart.

The X axis is always elapsed time. You can select from one of four time scales. You can use the scroll bar to move the chart display window in terms of elapsed time. If you hold the left mouse button down within the chart area, a cursor line appears. The exact values of the parameters displayed on trace 1 and

trace 2 and the elapsed time appear in windows above the chart.

If you want to analyze the elapsed time between two events, you can move the cursor to the first event and then click on the Reset Time Display button. You can print the displayed chart to any Windows printer by clicking on the Print button (a color inkjet printer is recommended for best results).

Data parameters include:

**RPM** – engine crankshaft RPM

**AFR** – air/fuel ratio (10:1 to 20:1 for gasoline)

**ANALOG INPUT** – analog signal input that can be scaled and displayed in user selected units (as explained further on).

You can use the Maximum RPM command from the Edit menu to change the maximum RPM value displayed on the chart.

Additional data is displayed at the lower right side of the screen. This data includes:

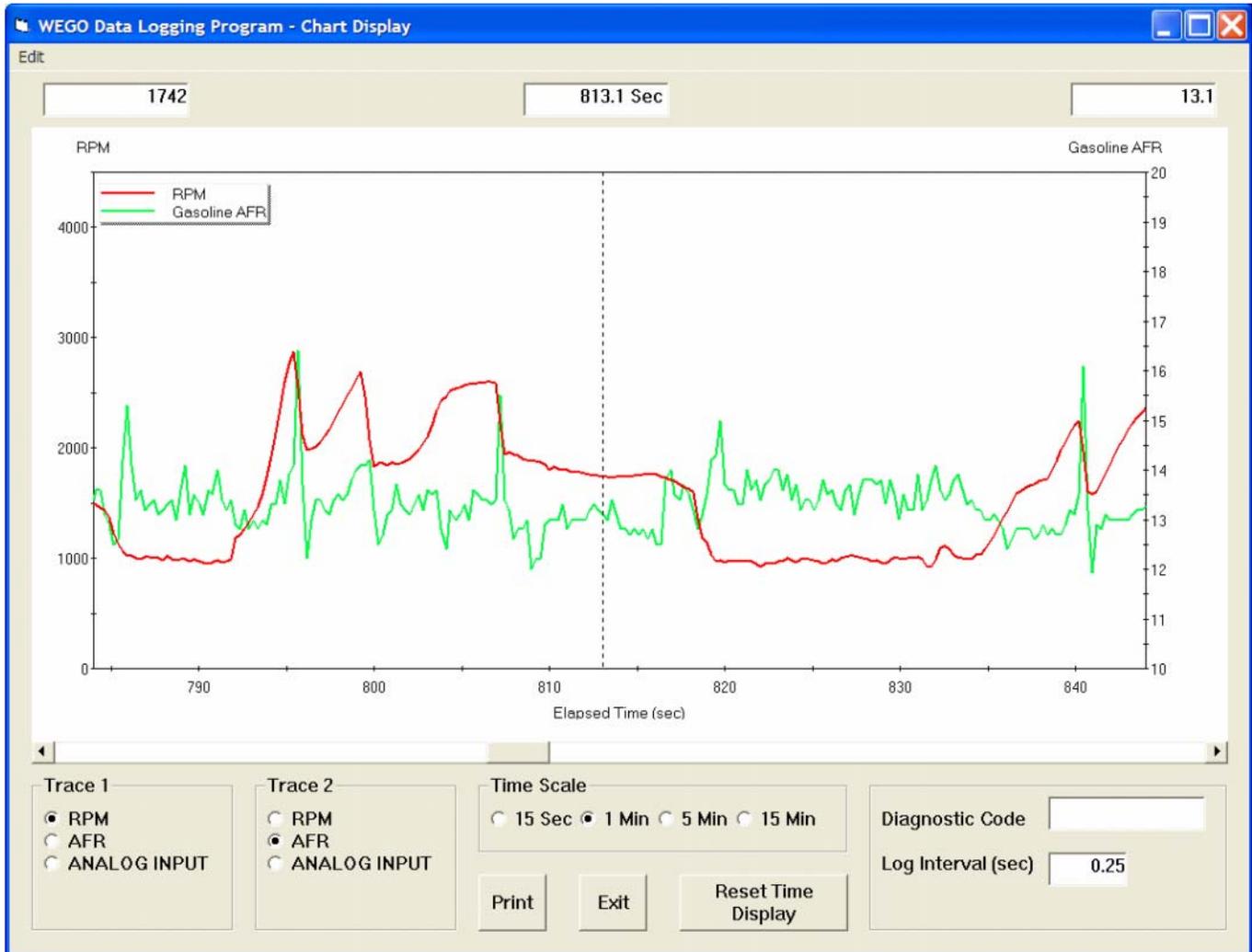
**Diagnostic Code** – normally blank unless a diagnostic code is set. Diagnostic codes include battery low, battery high, sensor open, sensor short, and over temperature (WEGO III and WEGO IV only). Over temperature means that the WEGO unit (not the sensor) has become too hot.

**Log Interval** – the actual data logging interval in seconds

The data logging interval is displayed at the lower right side of the screen. The WEGO data buffer stores the **last** 8000 samples. You can clear the data within the WEGO by using the Clear WEGO Data Buffer command from the Communications menu. If you change the data logging interval, you should also clear the WEGO data buffer.

Please note that the WEGO only logs data when the heater element in the sensor has warmed up to normal operating temperature. If you use WEGO Log to communicate with the WEGO (i.e. upload parameters or download data), data logging stops. The display on new WEGO III and WEGO IV units will also show "PC." You must cycle power to the WEGO off and on again before data logging will resume.

Figure 3 – Data Logging Chart Display



## **ANALOG INPUT SCALING**

When a chart display is active, you can use the Analog Input Scaling command on the Edit menu to setup the scaling and units display for the analog input.

In general, you will enter the minimum and maximum input voltages and corresponding scaled values displayed on the chart along with the desired chart legend. The minimum and maximum voltages must be in the range of 0.0-5.0 volts. The scaled values must be in the range of 0-10,000. Once entered, analog input scaling values are saved with the data. Clicking on Restore Defaults causes the program to revert to direct 0.0-5.0 volt display on the chart.

Figure 4 shows settings for a typical throttle position sensor (TPS), with 0.4 volts corresponding to 0% and 4.5 volts corresponding to 100%.

Figures 5 and 6 show settings for standard GM/Delphi 1 bar and 2 bar manifold pressure (MAP) sensors. Most GM vehicles and all Harley-Davidson® motorcycles with Twin-Cam 88® engines use GM 1 bar type MAP sensors. GM 2 bar MAP sensors are often used with aftermarket engine controls for turbo/supercharger applications.

Figure 4 – Input Scaling for Typical TPS

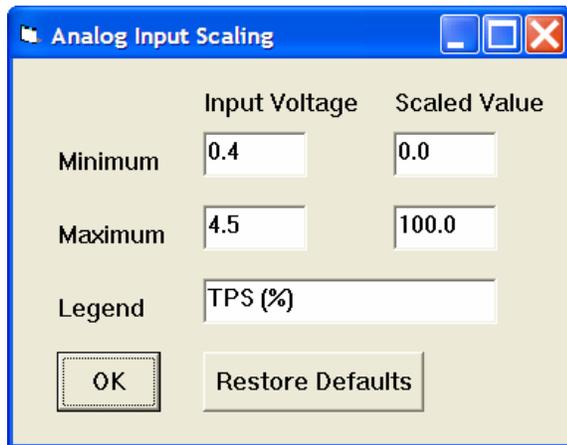


Figure 5 – Input Scaling for GM 1 Bar MAP

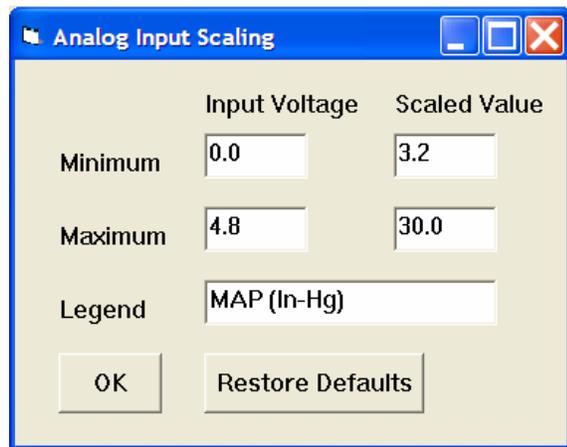
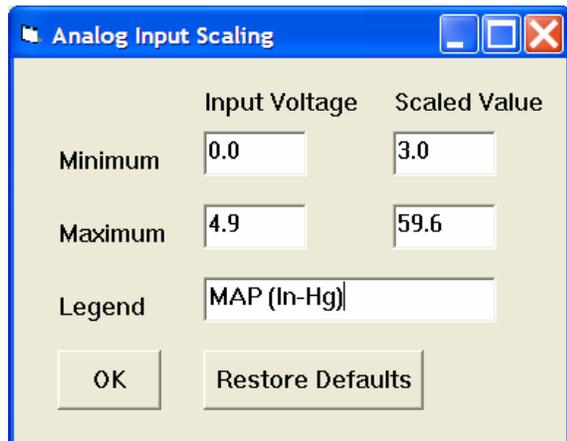


Figure 6 – Input Scaling for GM 2 Bar MAP



For other types of sensors, we suggest that you check the sensor output waveform with a scope meter. Verify that the sensor output is an analog voltage within the 0.0-5.0 volt range. Some Ford MAP sensors and GM mass airflow (MAF) sensors use a frequency output that is not compatible with the WEGO analog input. Once you verify that the sensor has an analog output, you still have to determine the output scaling. You may find this information in the service manual or you may have to do some reverse engineering with a scan tool.

## FUEL TYPE

When a chart display is active, you can use the Fuel Type command on the Edit menu to setup the scaling of AFR values for either gasoline or methanol fuel. All WEGO units will log data correctly for either gasoline or methanol fuel, however, only special WEGO "M" units will show the correct methanol AFR values on the display.

The program initially defaults to gasoline fuel, but remembers the type of fuel last selected.

## IMPORTING DATA INTO EXCEL

Data files saved from WEGO Log are in comma delimited ASCII format. You can easily import a data file into other programs such as Microsoft Excel for further analysis. You can also view data files with a text editor such as Windows WordPad. To import a data file into Excel:

1. Start Excel. In the File Open dialog box, select Files of type: All Files (\*.\*). Then browse for the data file.
2. The Text Import Wizard appears. For step 1, select delimited file type. For step 2, select comma delimiter. For step 3, select general column data format. Then click on Finish.
3. You can then format the data and save the spreadsheet as an Excel file.

AFR data is saved as gasoline AFR values regardless of fuel type setting. To convert to methanol AFR values, use the formula:

$$\text{AFR Methanol} = .4354 \times \text{Gasoline AFR}$$

## TROUBLESHOOTING FLOWCHART

Follow the troubleshooting flowchart shown on the next page. Experience has shown that most communication problems are user error or PC compatibility issues.

## Troubleshooting Flowchart

