

DataMaster™ Analyzer Version 3.5 - Instructions

Overview

Our DataMaster™ Analyzer software allows you to download the memory contents from a memory bank in the DataMaster™ unit to an IBM or compatible computer for detailed analysis. Graphs are provided where you may place the cursor on any part of the run and see the actual data values on the screen. You also have the ability to overlay one run directly on top of another in order to quickly analyze variances between runs. After installing the DataMaster™ Analyzer to your hard drive, the program may be started from the Windows desktop by clicking on the DataMaster Icon.

Hard Drive Installation

The install program will create a directory named **Datamast** on your hard drive and the files are copied from the program disk this new directory.

For Windows 95/98/XP, Vista

To install the program, put **Disk #1** in your floppy drive, or the CD into your CD-ROM drive. The CD is self-starting and will boot in about 10 seconds. Otherwise, Click on **Start**, Point to **Settings**, Click on **Control Panel**, and double-click on **Add/Remove Programs**. Next, Click on **Install** and Windows will find the file **Setup.exe**. Click on **Finish** and then follow the instructions that appear on the screen. For best operation, it should be installed into the default installation directory shown:

C:\Datamaster

During installation, you can choose to add a shortcut icon to the Windows desktop.

Getting Started

When you click on the DataMaster desktop icon, a Title window opens offering these choices:

Download

Clicking on this button brings up the DataMaster Download Facility. This program supersedes the old Transfer function in the DataMaster Analyzer. Select your Com Port 1, 2, 3, 4, 5, or 6 and your desired baud rate 4800, 9600, or 19200. These settings are now saved for you each time you exit the program. Make sure you have connected your download cable between the DataMaster unit and the RS-232 port on your PC. Then click on **Open Com Port**. When the Status reads, **'Ready'** you can begin transferring data by pressing the **Send** key on the DataMaster unit. Be sure to adjust the baud speed shown to match the baud rate you have selected for the transfer 48 (for 4800), 96 (for 9600), or 192 (for 19200), then press the **Enter** key on the DataMaster. After your download is complete, click on the Save button and enter a filename for your data. After your data has been saved, close the facility by clicking on **Exit**.

Run Analyzer

Clicking on this button will start the DataMaster Analyzer. The program will automatically open the last data file used, or the last downloaded data file. *See DataMaster Analyzer - Main Screen below.*

Using With RaceLog Pro

If you have our RaceLog Pro weather station/log book software, you can run the DataMaster Download Facility and DataMaster Analyzer program directly from RaceLog Pro. In RaceLog, click on **File**, then click on **Shell**, and change to the **C:\Datamaster** directory. Then double-click on **DataMaster.exe**. While in DataMaster, make sure you **Edit** your **Time Slip data** and re-save the data file. When you return to RaceLog Pro, your Vehicle Reaction Time and Drive Shaft count data will be imported directly into the current record displayed in RaceLog Pro.

DataMaster Analyzer Main Screen

The Main Screen has a command line at the top of the display showing the functions: **Transfer**, **Directory**, **Save Data**, **Open File**, **View**, **Print**, and **Graphs**. To access any of these functions from the keyboard, press the Alternate (Alt) key and the corresponding highlighted letter of the command. We call this an Alternate key combination. For example, to go to the Graphs Function, press the Alt key and the G key simultaneously. Using a mouse, these functions are accessed by placing the mouse cursor over the command and clicking the left mouse button.

The name of the current data file always appears at the top right of the screen next to our copyright notice. Below the command line, the Main Screen displays the **Time Slip Box**, a **Function Box**, and the **Inputs Box**.

Time Slip Box - The Time Slip box displays the Vehicle Reaction Time (VRT) and the Elapsed Time and MPH for the distances of 60, 170, 330, 500, 660, 830, 1000, 1160, and 1320 feet based on the Shaft Pulse settings stored in the recorder. The current pulse settings being used are listed in the column labeled Shaft and may be adjusted using the Edit Time Slip Function to match the time slip information to the racetrack. The recorder pulse settings may then be edited in order to calibrate the recorder.

Function Box - The Function Box shows the following functions: F1- Edit Time Slip, F2 - Select DS Pulses, F3 - Select VRT Pulses, and F6- Exit.

F1 - Edit Time Slip - This function is a fine tuning device that allows you to calibrate this program to the racetrack. It is used to adjust the Elapsed Times shown in the Time Slip box to the Elapsed Times from an actual time card. In accordance with the varying amounts of traction available, the drive shaft pulse data will vary. Therefore, the Time Slip data will not always match the time card exactly. This fact however, allows you to effectively measure the traction available. By editing the ET's to match your time card, the new Shaft data shown can be compared to other runs at different tracks or to runs in a different lane at the same track. Careful examination of this data will allow you to monitor and even predict traction changes!

To access this function, select with the mouse pointer and click the left button, or press the F1 key. Use the arrow up, arrow down, and Enter keys to move the cursor from field to field. Use the arrow left and arrow right keys to move the cursor within each field. Use the number keys, spacebar, and decimal point keys to change the value shown. Modify each value for the Elapsed Time at the distance points of 60, 330, 660, 1000, and 1320 feet. Be sure to press Enter after changing the last value. Then press the Escape key to re-calculate and store the new Shaft pulse and MPH data. To save the changes made, use the Save File function.

F2 - Select DS Pulses - This function is used to select the number of drive shaft pulses you want the program to simulate. Even though you may have less pickup points on your drive shaft, the program can easily simulate having more. This setting must be set to the number of DS Pulses that is being used in the recorder. So, if you have the recorder set to 12, then you must also select 12 for this setting. This setting is saved and only has to be set one time.

F3 - Select VRT Pulses - This function is used to select the number of shaft pulses that the program will use to measure Vehicle Reaction Time (VRT). This setting can also be made in the recorder and will be downloaded with all other data. At a test & tune you can take your car to the starting line and very carefully stage. Then slowly push the car forward, counting the number of pickup points that pass the drive shaft pickup, until the bottom stage light goes out. That will be your roll out distance. The program then uses this count to report the roll out time.

F6 - Exit - This function is used to exit the program.

Inputs Box - This box displays the results of the digital inputs # 4 through # 9. When a switch has triggered one of these inputs during a run, the exact time of each event is shown in its respective column. Switches may be connected to the brake pedal, accelerator, shifter, etc. to see when these actions are occurring.

Command Line Functions - Main Screen

Transfer

Note: Transfer is a DOS function. It has been replaced in Version 2.1, by the DataMaster Download Facility which supports data transfer rates up to 19,200 BPS. This function can be used, but only at the slower baud rates.

This function is used to download data from the recorder and save it in a permanent file. You must first connect the download cable from the RS-232 port on your computer to the phone jack on the data recorder and turn on the power to the data recorder. After selecting this function, you must enter the number of the COM Port your computer uses for RS-232 data transfer (1-3). If the number shown is correct, just press Enter to continue. Next, you have the opportunity to select the baud rate 1200, 2400, or 4800. The baud rate entered must match the baud rate that you are using in the data recorder. If the baud rate shown is correct, just press Enter to continue. The program is now ready to accept data and will display 'OK' in the Status Box. Next, press the Send button on the recorder, and enter the baud rate/100 12, 24, or 48 at the data recorder and press Enter. If the baud rate shown is correct, just press Enter. The recorder will now begin to send

data. If you are running this program from DOS, you can use a 4800-baud rate. From Windows, or with Windows running in the background, you may have to choose a lesser baud rate, such as 2400. When finished downloading, the program will ask you to enter a filename for the new data file. After pressing Enter, the data will be saved and the new file name will appear above the command line. See Save Data for information on naming data files.

Directory

This function lists the filenames, time and dates, and other directory information for all the data files currently saved. If you can't remember a particular file name, locate it here.

Save Data

This function is used to save all the current data into a permanent file. When naming a file, you never need to enter the .dat suffix. The program assumes that all files will have this suffix and appends it to every file name that you enter. File names may be up to eight characters long. When saving a file, the program puts the current date in the file name box so you can use the date as a prefix for your file name. For example, 082199T1 could be used for your first time run on 8/21/99. Use 082199E1 for your first round of eliminations, etc. In this manner, you can always match the data file to a particular run. After pressing Enter, the data is saved and the new file name appears above the command line.

Open File

This function is used to read data into the program from a previously saved file. Type in the file name for the file you wish to access and press Enter.

View

This function is used to view the tabular data for the run. There are two different screens available for tabular data. One for Engine RPM and one for Shaft RPM. To scroll through the data, use the Page Up, Page Down, arrow up, and arrow down keys. To quickly return to line 1, press the Home key. To return to the Main Screen, press the Esc key or click the left mouse button. Each column of data is labeled at the top of the screen. The following is a description of each label:

Line - This is the line number for a particular row of data. Each line, or row, of data represents one (1) revolution of the crankshaft or one (1) revolution of the drive shaft. Therefore, the line number is also the rev count.

Time - This is the time elapsed from the beginning of the run to this particular revolution expressed as a decimal number with a resolution of 1-1/1000ths of a second.

Feet - This is the distance in feet that the rear wheels have traveled to this point.

PW - This is the Pulse Width, or elapsed time for this one revolution. Each revolution is measured with an accuracy of 1-1/100,000ths of a second. To conserve space on the screen, this value is rounded to 1-1/10,000ths of a second.

CRPS & SRPS - Crankshaft Revolutions Per Second and Shaft Revolutions Per Second.

CRPM & SRPM - Crankshaft Revolutions Per Minute and Shaft Revolutions Per Minute.

DIFF - This number represents the difference from the preceding row to the current row for the column directly to the left. For example, if on line 7 the CRPM is 5000 and on line 8 the CRPM is 5084, then the DIFF is 84. This can be a positive or negative number. Negative numbers are preceded by a minus sign.

SHAFT - On the Engine RPM screen this number represents the rev count for the drive shaft. On the Drive Shaft RPM screen it represents the number of pulses the program is seeing for each revolution of the drive shaft.

EFF% - This is the efficiency percentage of Engine RPM versus Drive Shaft RPM. This number is effected by transmission gear ratios, converter or clutch slippage, and tire growth.

FPS - Vehicle speed expressed in Feet Per Second.

MPH - Vehicle speed expressed in Miles Per Hour.

Print

This function is used to print tabular data using a printer attached to your parallel port. After selection this function, you first choose whether you want to print Engine RPM data or Shaft RPM data. You then enter the number for the printer port you wish to use (1-3) and the starting line number and ending line number for the range of data you wish to print.

Graphs

This function provides color VGA graphs with the ability to overlay one run on top of another to quickly see variances between runs. After selecting this function, a Graphs Screen is displayed. Similar to the Main Screen, there is a command line at the top of the display. The commands available are:

Main Screen - This command returns you to the Main Screen.

Directory - A directory of currently stored data files.

Overlay - This command allows you to specify an overlay file. The program will graph the current file in green, then if an overlay file is specified, will graph the second file in red.

Open File - Same as on the Main Screen. Allows you to open a new main file.

Currently there are graphs for Engine RPM vs Time, Drive Shaft RPM vs Time, Distance vs Time, and Miles Per Hour vs Time, Engine/Shaft RPM vs Time, and Drive Shaft Sensor Pulse Count vs Time. After selecting a particular graph, you can specify how it will be drawn. The variables are:

Starting Time - This is the time, in seconds (whole numbers only), where you want the graph to start.

Ending Time - This is the time in the run, in seconds (whole numbers only), where you want the graph to end. These two variables allow you to look at the run in its entirety or magnify the graph by looking at any portion of the run.

Starting RPM - Specifies at what RPM the graph is to start plotting data.

Expand RPM (0-1) - This allows the graph to be expanded in height to view small amounts of variation. Enter 1 to turn expansion on and 0 to turn it off. The Drive Shaft Pulse Count graph will accept 0-2 expansion.

RPM Filtering (1-4) - Filtering is used to smooth the graph if required. The higher the number, the smoother the graph will appear. The default setting is 2. Enter 1 to turn filtering off. Excessive smoothing will remove important details from the graph and is therefore not recommended.

You can scroll between the above variables by using the up and down arrow keys. After editing this variables, press the right mouse button or the F-10 key to display the graph. Once, the graph is displayed, you can place the mouse cursor on any part of the run. The actual data values for that plotting position will be displayed at the bottom right of the display. The main file is displayed in green. If an overlay file has been specified, it will be displayed in red. To switch the data being displayed between the two runs, click the left and right mouse buttons. Clicking the left mouse button will display the main file's data, while clicking the right mouse button will display the overlay file's data. To move the mouse cursor one pixel at a time horizontally, press the left and right arrow keys. To move the mouse cursor one pixel at a time vertically, press the up and down arrow keys. After viewing the graph, press Escape to exit, or click on the "X" located at the upper right hand corner of the screen.

Printing Graphs - In Windows 95/98/XP, simply copy the screen to the clipboard by pressing the **Print Screen** key, and then paste into the Paint program (or any graphics program) provided by Windows. In DOS or Windows 3.1, graphs may be printed using the Print Screen utility by loading **graphics.com** prior to running this program.

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