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TracWise II[®]

***Modern GPS Receiver and High-Capacity
Datalogger for Commercial Vehicles***

Installation and Operation



For Windows 98/NT/2000/ME/XP[®]

This manual is also on the CD-ROM disk that came with *TracWise II*[®]

Company Web Site: <http://www.tracwise.com/>

Download Web Site: <http://www.tracwise.com/download/>

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What is TracWise II®?

TracWise II® is a modern system for logging and analyzing vehicle usage. It automatically records exact vehicle routes, stops, idle time, mileage, speed, and other information. The system is designed to work continuously – 24 hours a day, seven days a week. **TracWise II®** builds a detailed database of vehicle activity over days, weeks, and months. The results can be displayed by popular computer mapping programs and analyzed by spreadsheet and database programs.

The information that **TracWise II®** collects is intended for vehicle management. The system helps eliminate mileage questions, documents travel, improves efficiency, aids in optimizing routes, and increases profitability through more accurate accounting and billing. In brief, **TracWise II®** lets you know precisely what your vehicles have been doing and where they have been doing it.

TracWise II® is intended for use in commercial trucks, vans, and vehicle fleets. It is simple to install, setup, and use. The system is flexible so that it can be rotated between vehicles as desired.

TracWise II® is provided complete with all cables, plugs, hardware, and software. Simply place it in your vehicle, install the software on your office computer, and you are ready to begin logging actual vehicle usage.

The included software is compatible with Microsoft Windows 98/NT/2000/ME/XP. The **TracWise II®** vehicle unit operates on a DC voltage between 9 and 32 volts. It draws a current of approximately 130 ma.

Quick Start

For those in a hurry, here is a quick guide to setting up and using **TracWise II®**.

- Connect the GPS antenna cable to **TracWise II®**.
- Connect the power cord to **TracWise II®**. This is the cable with the (optional) cigarette lighter plug on one end. *(For permanent installations, it is recommended that **TracWise II®** be connected directly to a fused connection on the vehicle's fuse block.)*
- Place **TracWise II®** in a convenient location.
- Place the antenna on the dashboard just behind the windshield. Its magnetic base will hold it securely.
- Connect the power cord to the vehicle's 12 Volt power system (cigarette lighter power plug supplied as an option).
- Route the connecting cables so they are out of the way
- If the power is always "on", **TracWise II®** is now running and recording data. Otherwise, it will be necessary to start the vehicle in order to supply power to the unit. **TracWise II®** is running if the red and/or green light on the cable connected to it is blinking. When first turned on, **TracWise II®** may take several minutes to acquire stable GPS satellite signals..

That's all! *TracWise II*[®] is now operating. It will continue to run until you disconnect it from power. At this point, *TracWise II*[®] is using its default settings, recording GPS data every 6 seconds.

Software Installation

The software for configuring *TracWise II*[®] and analyzing data from it is located on the included CD-ROM disk. You should install the software on the office computer or computers that will be used to analyze *TracWise II*[®] data. To install the programs, start the program called "setup.exe" that is located on the CD-ROM disk. After a few moments a menu will appear, offering to install the software and documentation on your computer. You will be asked to read and agree to the license agreement before installation takes place

Simply follow the prompts to install the software on your computer. An entry called "TracWise" will appear within the Programs menu of Windows. You can run "TracWise Programmer" to change the configuration of the TracWise hardware (See **Configuring TracWise II**[®]). You can run "TracWise Converter 2.0" to process data from the Compact Flash Card used by TracWise (See **Using TracWise Converter 2.0**). Finally, you can run "TracWise Report 1.0" to use the included analytical reports with Microsoft Excel under MS Office 2000 or Office XP (see **Using TracWise Report 1.0**).

The included software is compatible with Microsoft Windows 98/NT/2000/ME/XP.

Note: Be sure to read the file called "readme.txt" on the CD-ROM disk. It contains the latest information about the files on the CD-ROM disk and program installation.

Overview of TracWise II[®]

TracWise II[®] consists of four *hardware components* and three *software programs*.

Hardware Components

- Antenna with connecting cable and plug;
- The *TracWise II*[®] unit which houses the GPS receiver, the Data Logger, and a Compact Flash Card in a single unit;
- Power cable (connector for a vehicle cigarette lighter optional);
- Programming cable with AC power supply.



Software Programs

TracWise II[®] is supplied with three software programs. The programs are run from **Start → Program → TracWise**.

- **TracWise Programmer.** This program is used to configure the features of the TracWise hardware. The program is started by pressing **Start → Programs → TracWise → TracWise Programmer**. See *Configuring TracWise II*[®] for details about using the program.
- **TracWise Converter 2.00.** This program is used to process data recorded by TracWise onto the Compact Flash Card. The program is started by pressing **Start → Programs → TracWise → TracWise Converter 2.0**. See *Using TracWise Convert 3.0* for details about the operation of the program. **When operating this program, be sure that you have transferred the data file called “File1.d16” from the Compact Flash Card to your computer.** Do not attempt to process the file that is on the Compact Flash Card – there is not enough room.
- **TracWise Report 1.0.** This program is used to process data from the Compact Flash Card to prepare reports for use in Microsoft Excel[®] under Microsoft Office 2000 or Office XP. This powerful program verifies and filters the GPS data (user controllable) and it generates detailed and summary tables showing vehicle use by date, day, and time of day. All the features of Microsoft Excel[®] are available to you, including full data manipulation and graphing. A separate section in this manual explains the use of **TracWise Report 1.0**.

Detailed Description of TracWise II[®]

Antenna

The antenna is supplied ready to connect to the *TracWise II*[®] unit. The antenna has a magnetic base so it can be placed securely on a metal surface. Simply position the antenna on the dashboard behind the windshield, route the cable in a convenient manner, and attach the plug to the *TracWise II*[®] unit.

Caution: Do Not over tighten the antenna connector – use **finger pressure** only. The cable from the antenna has special characteristics. Do Not cut or alter it.

TracWise II[®] uses an active antenna to improve reception in less-than-optimum conditions. The antenna can be used at working temperatures between -40° F (-40° C) and +185° F (85° C). It is 100% waterproof, making it suitable for placement on a metal cab roof in rain, snow, or fog.



Caution: Do Not place the antenna in an area that will exceed the maximum or minimum temperature ratings: -40° F (-40° C) and +185° F (85° C). In hot summer climates do not place the antenna behind the front windshield when the vehicle faces the sun longer than several minutes. Excessive temperatures may damage the antenna.

TracWise II[®] DataLogger Unit

The *TracWise II[®] DataLogger Unit* consists of a sturdy metal enclosure that houses the electronic components of the unit.




The components inside the metal enclosure are as follows. **Note:** DO NOT open the unit or the warranty will be voided. There are no user-serviceable parts inside the unit.

	<p>GPS Receiver. This unit receives GPS information via the antenna from up to 16 GPS satellites at a time. It decodes the date, time of day, longitude, latitude, and other data.</p>
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	<p>Data Logger. This unit records data from the GPS Receiver onto the Compact Flash Card.</p> <p>The Data Logger can be configured and programmed using a personal computer. This lets the user assign an identification to each unit, decide the time interval for recording data, and specify what the unit should do when the Compact Flash Card becomes full (stop recording or record over data, starting from the beginning).</p> <p>The Compact Flash Card can be removed from the unit as needed to transfer data to the office computer. <u>It is not necessary to disconnect the unit from power when removing or inserting the Compact Flash Card.</u></p> <p>Important: The Compact Flash Card easily inserts into the <i>TracWise II[®]</i> Data Logger unit. It fits only one way – with the label side up. Do not force the card into the unit, as damage may result.</p>
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Power Cable

The power cable is supplied with a 15-pin serial connector on one end. The 15-pin connector has a green and a red light that show the status of the unit. The other end of the cable has a blue (+) and a brown (-) wire to connect to the vehicle battery supply.

	<p>Power Cable. The 15-pin connector has two lights: red and green. Flashing lights indicate the status of the unit..</p> <ol style="list-style-type: none">1. When first connected to power, the red light will glow for several seconds while TracWise II® verifies the Compact Flash Card. If necessary, TracWise II® will format the Compact Flash Card.2. The green light shows the status of the signal received by the GPS unit. If the duration of the flash is short (under 1 second), the signal is not being received reliably. This typically occurs for the first several minutes after the unit is connected to power and while it is locking onto signals from the GPS satellites. If the duration of the flash is longer (1 second), then the GPS signal is being received normally.3. The red lamp will flash once for every 32 flashes of the green lamp. This means that data is being recorded to the Compact Flash Card.4. The red lamp will glow continuously when the Compact Flash Card is full.5. If both the green and red lamps glow at the same time, this signifies that there is no Compact Flash Card inserted in the unit or that it has not been inserted correctly.
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Programming Cable

The programming cable has an AC power supply connected to one end. This cable is used when programming the **TracWise II**® unit with the office computer (usually infrequently).

	<p>Programming Cable. Use the Programming Cable along with the program TracWise Programmer to change the configuration stored inside TracWise II® .</p> <ol style="list-style-type: none">1. Connect the end with the red and green lights to TracWise II® .2. Connect the other 9-pin connector to Serial Port 1 on the computer.3. Plug the power supply into a 110-120VAC wall socket.4. You are now ready to program TracWise II® .5. Programming is done with the program called TracWise II Programmer. See the section called Configuring TracWise II® for details on operating that program.
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Connecting Power

TracWise II[®] operates on a DC voltage between 9 and 32 volts. It draws a current of approximately 130 ma.

To connect power, attach the wires on the power chord to a convenient location (fused) on the vehicle wiring block. Be sure to observe voltage polarity: the blue wire connects to +, while the brown wire connects to -. The unit will not work if connected incorrectly. If that happens, reverse the wires. Alternately, a cigarette lighter connector can be attached and the power chord and plugged into the vehicles cigarette lighter socket..

Installation Recommendations

Antenna Installation

GPS signals are sent by satellites at a frequency of 1,277 or 1,575 Ghz. Such signals can pass through many materials, but they are blocked by metal, some plastics, wood, concrete, and similar substances. They can pass through glass in windshields provided the glass is not metallized (e.g., wire mesh in the glass, metal tints, etc.). The antenna will usually work fine if it is placed on center of the dashboard behind the windshield inside the cab. Try to mount the antenna so that it has a clear “view” of the sky.

If this does not work satisfactorily, the antenna can be placed on the cab roof. The antenna is weatherproof and it has a magnetic mount for use on metal roofs. Be sure to remove the antenna when the system is not in use to guard against theft.

Caution: Do Not place the antenna in an area that will exceed the maximum or minimum temperature ratings: -40° F (-40° C) and +185° F (85° C). In hot summer climates be careful of placing the antenna behind the front windshield when the vehicle faces the sun for more than several minutes.

Installing the TracWise II[®] Data Logger

The *TracWise II*[®] Data Logger unit can placed in any convenient location. There should be access to the Compact Flash Card so that it can be removed easily when needed.

The Data Logger should be placed so that the Compact Flash Card is in an upright or horizontal position (not down). This will ensure that the Compact Flash Card does not come loose or fall out due to vibration.

Supplying Power

TracWise II[®] can be connected to 9-32 VDC via the vehicle’s cigarette lighter or it may be wired directly to the fuse block for a more permanent installation.

If the unit is connected to a switched circuit (on/off controlled by the ignition key), then data will be recorded only when the vehicle ignition is turned on. This is satisfactory for some uses; however, data will not be recorded at stops when the vehicle is turned off, and GPS signal acquisition may take several minutes after the unit turns on.

The unit can also be connected to a non-switched circuit (always on). In that instance, the unit will operate continuously. Since the unit’s power requirement is low (130 ma), it will not drain

the vehicle battery over reasonably short periods (days to weeks, depending on the battery capacity). The always-on connection permits recording of all stops and their duration whether the vehicle is on or off. When possible, **it is recommended that *TracWise II*[®]** be permanently installed to the vehicle's fuse block so that it is always on.

Working with the Compact Flash Card

Data from ***TracWise II***[®] is saved on the included 16 Mb Compact Flash Card. To use the Compact Flash Card with ***TracWise II***[®], simply insert it into the slot at one end of ***TracWise II***[®], making sure the label side is up. If you find it difficult to insert the Flash Card, it is probably upside down. Try turning it over. Do not force the Compact Flash Card — it should insert with little effort.

If needed, ***TracWise II***[®] will automatically format the Compact Flash Card. The Compact Flash Card may also be formatted on your computer the same way that you would format any disk – be **careful** to specify the Compact Flash Card as the drive you want to format.

After you have placed the Compact Flash Card into the slot of ***TracWise II***[®], it is ready for use.

Whenever you wish, you can transfer data from the Compact Flash Card to your computer, following the steps below:

- Remove the Compact Flash Card from ***TracWise II***[®]. It is **not** necessary to disconnect ***TracWise II***[®] from power before removing the card.
- Insert the Compact Flash Card into your computer's Compact Flash Card reader (the reader should already be installed with any required drivers, if needed).
- Access the Compact Flash Card as you would any hard disk or floppy disk.
- Transfer the file named "File1.d16" from the Compact Flash Card to any directory you wish on your computer's hard disk. It is recommended that you decide and create a permanent directory or directories (one for each vehicle) for ***TracWise II***[®] files – this will make it easier to remember where the files are located.
- After transferring the file, you may leave the original file on the Compact Flash Card or erase it. If you leave the file on the Compact Flash Card, new GPS data will simply be added to the end of any existing data. If you erase the file from Compact Flash Card, ***TracWise II***[®] will create a new file when the card is re-inserted. In general, you would erase File1.d16 after it has been read so that a new and separate recording period can be started. It is recommended that you establish a regular schedule and procedure for reading and processing TracWise files.

Note: The file "File1.d16" has a fixed size of 16 Mb (16,250,880 bytes) regardless of the amount of data in the file. The size does not indicate the amount of data recorded in the file.

- After transfer, the data is ready for further processing on your computer, using the included programs, ***TracWise Converter 2.0*** and/or ***TracWise Report***.

Using TracWise II[®] Programmer

The **TracWise II[®] Programmer** is used to configure the Data Logger unit. *TracWise II[®]* is supplied pre-configured as follows:

- It records data from the GPS receiver onto the Compact Flash Card every 6 seconds;
- When the Compact Flash Card becomes full, *TracWise II[®]* records over existing data, starting from the oldest data and working toward the newest.
- This default configuration may be satisfactory to many users.

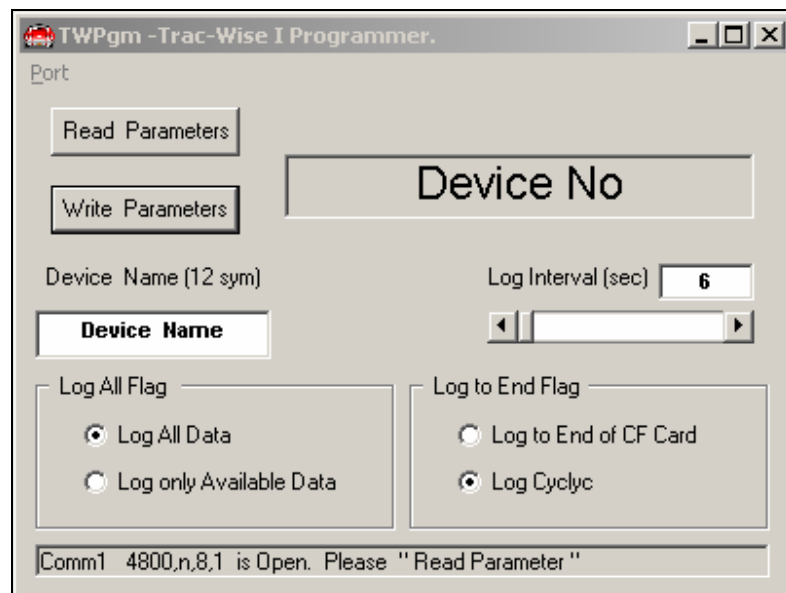
You can change the configuration settings by connecting the *TracWise II[®]* unit to a computer and running *TracWise II[®] Programmer*. The process has the following steps:

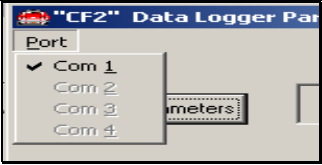

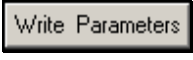



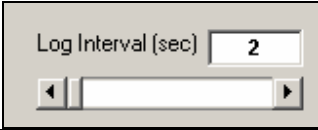
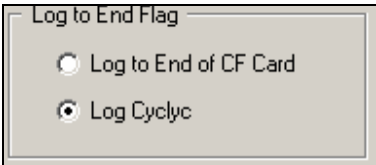
- Connect the cable with the AC power block to *TracWise II[®]*. The end with the two lights connects to *TracWise II[®]*.
- Connect the end of the cable marked Com Port to COM Port 1 on your computer (this is a serial port).
- Plug the power block connected to the cable into a wall socket.

Now that TracWise II is connected and has power, carry out the following steps to program *TracWise II[®]*:

- Make sure a Compact Flash Card is plugged into the *TracWise II[®]* unit.
- Start the *TracWise II Programmer* program: **Start → Programs → TracWise → TracWise Programmer**.

The Following screen will appear on the computer monitor:

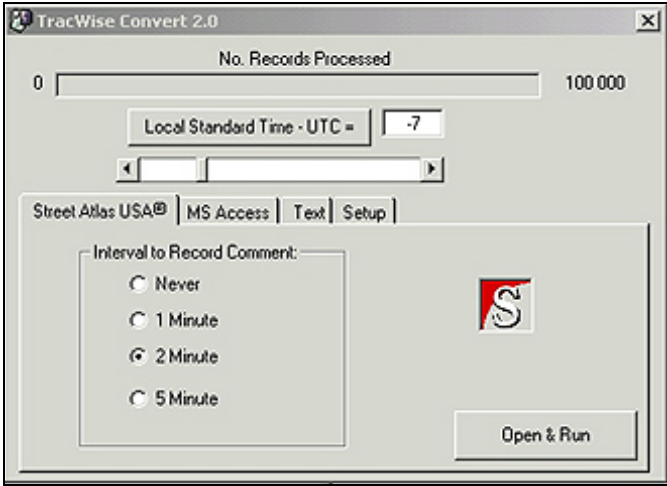


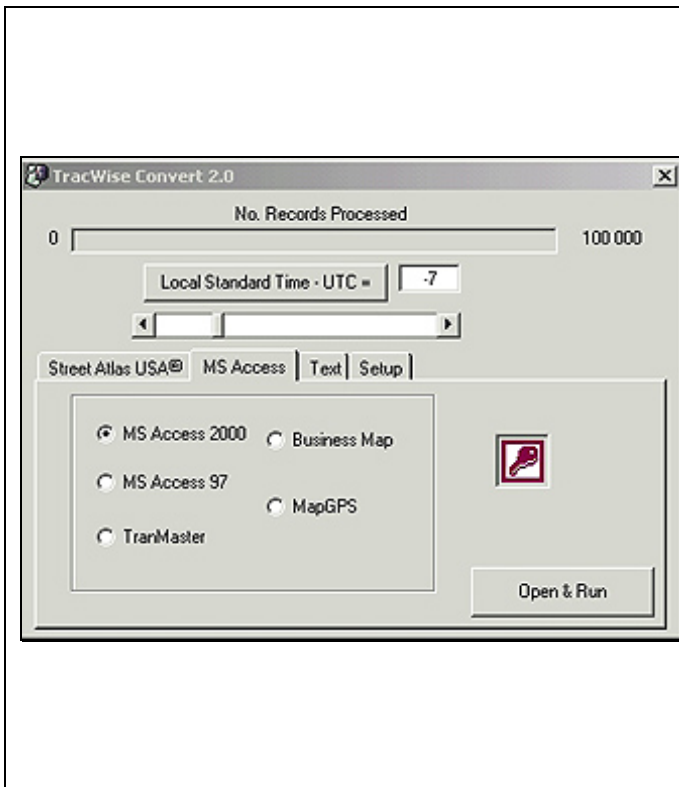
	<p>Clicking on “<i>Port</i>” at the top left of the screen will bring up a menu to let you choose the COM port number that connects to <i>TracWise II</i>[®]. For simplicity, it is recommended that you use COM 1 (the default) whenever possible.</p>
	<p>Clicking this button will read the parameters currently in <i>TracWise II</i>[®] and show them on the screen. <i>This is recommended so that you can see how the unit is currently configured.</i></p>
	<p>Clicking this button will write the parameters on the screen to <i>TracWise II</i>[®]. You would normally do this operation last, after making any changes in the configuration.</p>
	<p>Type any name you wish (12 characters maximum). Follow naming rules for files in Windows (no spaces or non-letter/number symbols). This becomes the name used by the device. It is sometimes desirable to use a vehicle license plate or other ID number. The name becomes part of the file name for data transferred from the Compact Flash Card to your computer.</p>
	<p>Choose one of the two options. The first option will direct the unit to record all data, including data when a satellite signal cannot be read. The second option records all data except when a satellite signal is not available.</p>
	<p>This windows displays the device’s serial number. The number cannot be changed. It is recommended that you record this number for accounting or auditing purposes.</p>
	<p>Drag the lever at the bottom to change the interval for recording GPS data on the Compact Flash Card. The default is 6 seconds.</p>
	<p>This selection lets you determine what happens if the Compact Flash Card becomes full before it can be read on your office computer. The first option simply stops all recording once the card is full. The second option directs the system to record over existing data, starting from the oldest data to the most recent.</p>

Using TracWise Converter 2.0

- The included program, *TracWise Converter 2.0*, provides a convenient way to convert the data from *TracWise II*[®] into formats that can be used by a variety of popular programs. You can start the program by **Start → Program → TracWise → TracWise Converter 2.0**.

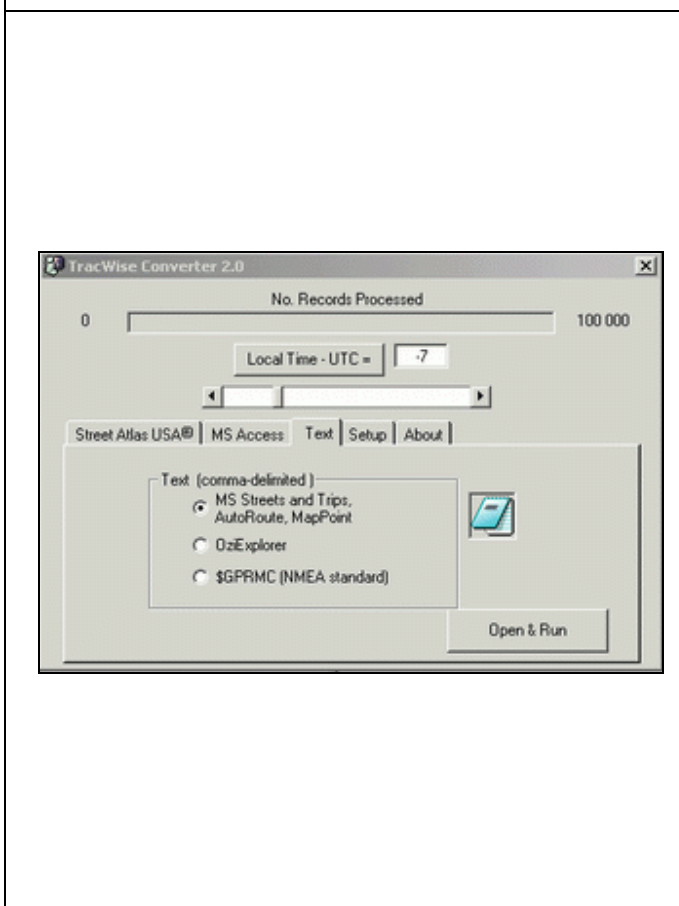
- Before converting, be sure to transfer the file called “File1.d16” from the Compact Flash Card to your computer. Process the copy of the file that you have transferred to the computer, **not** the file on the Compact Flash Card.
- This portion of the manual explains the general operation of *TracWise Converter 2.0*.
- *TracWise Converter 2.0* is updated periodically to provide new conversions, especially for popular mapping and database/spreadsheet programs. Check our Web for updates: <http://www.tracwise.com/download/>

	<p>The opening screen has several information boxes:</p> <ol style="list-style-type: none"> 1. The top box shows the progress of conversion when that process has been started. 2. The box “<i>Local Time – UTC</i>” shows the current time conversion setting. Move the slider below the box to change the setting. The conversion is the difference between UTC (Greenwich Mean Time) and your local time. A suggested setting is made automatically based your configuration of Windows. Setting the conversion to 0 will leave the time in UTC (Greenwich Mean Time). 3. The <i>Street Atlas USA</i>® tab lets you create data files that can be used by <i>Street Atlas USA</i>®. You can set the interval to record the date and time comment (Never, 1 minute interval, 2 minutes, 5 minutes). The default is 2 minutes. Click on your choice, then go to the next step below. The conversion will produce one file per day of data on the Compact Flash Card. The file names will have the format of YYYY_MMDD_DEVICENAME.txt. This format lets the computer display the files names in chronological order when you look in the directory. 4. Press “<i>Open&Run</i>” to carry out the conversion to <i>Street Atlas USA</i>® format (Draw format). You will be prompted for the name of the file to convert. Select the directory where the data from the Compact Flash Card is located and click on the name File1.d16. Then click “Open” on the right side of the window. Processing will then begin.
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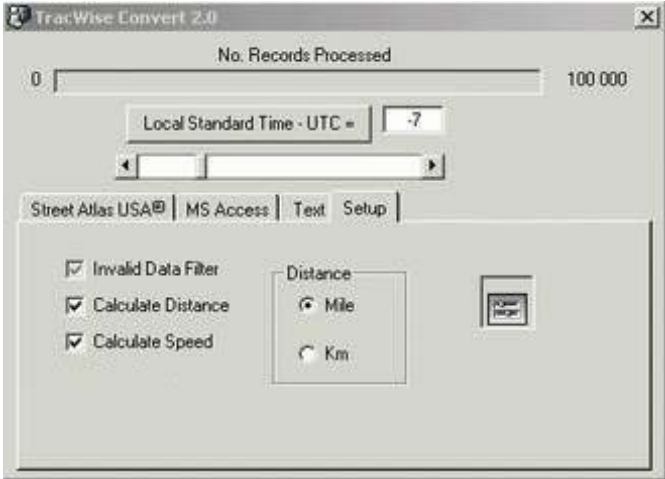
Click on the *MS Access* tab to bring up that screen. The options are as follows:

1. *MS Access 2000*[®]. Converts the data to the format used by *MS Access 2000*[®].
2. *MS Access 97*[®]. Converts the data to *MS Access 97*[®] format.
3. *TranMaster*. Converts the data to *TranMaster* format.
4. *Business Map*. Converts the data to *Business Map* format.
5. *MapGPS*. Converts the data to *MapGPS* format.
6. Click on the desired conversion type, then press **Open & Run** to carry out the conversion. You will be prompted for the name of the file to convert. Select the directory where the data from the Compact Flash Card is located and click on the name File1.d16. Then click “Open” on the right side of the window. Processing will then begin.



Click on the *Text* tab to bring up that screen. The options are as follows:

1. The *MS Streets and Trips* option lets you prepare and save track files for import and use by the indicated Microsoft mapping programs. The conversion will produce one file per day of data from the Compact Flash Card. The file names will have the format of YYYY_MMDD_DEVICENAME.txt. This format lets the computer display the files names in chronological order when you look in the directory.
2. The *OziExplorer* format lets you generate track files (plt extension) for use with OziExplorer mapping software. The conversion will produce one file per day of data on the Compact Flash Card. The file names will have the format of YYYY_MMDD_DEVICENAME.plt. This format lets the computer display the files names in chronological order when you look in the directory.
3. The *\$GPRMC* format provides a comma-delimited text file with full data from the GPS as specified by the NMEA-0183 standard.

	<p>This file can be imported by any program that can work with comma-delimited text files – i.e., spreadsheets programs, database programs, and many others.</p> <p>Press Open&Run to carry out the conversion. You will be prompted for the name of the file to convert. Select the directory where the data from the Compact Flash Card is located and click on the name File1.d16. Then click “Open” on the right side of the window. Processing will then begin.</p>
	<p>Click on the Setup tab to bring up that screen. The options are as follows:</p> <ol style="list-style-type: none"> 1. Invalid Data Filter. Removes invalid GPS measurements as reported by the GPS receiver (“A” tag). 2. Calculate Distance. Computes distance in miles or kilometers (as selected in the “Distance in” box). This information is included in output files for <i>Street Atlas USA</i> and <i>MS Access</i>®. 3. Calculate Speed. Computes speed in miles or kilometers per hour (as selected in the “Distance in” box). This information is included in output files for <i>Access</i>® and the Text tab. <p>Note: Some criteria are automatically selected by the program as needed.</p> <ol style="list-style-type: none"> 4. Distance in (Miles/Km). Reports will be generated in Miles or Kilometers, depending on your choice.

After making a conversion, the file or files with the converted data will be located in the same directory as “File1.d16.”. The original “File1.d16” from *TracWise II*® remains on your computer for further use and other conversions.

Information about using the files with mapping programs is detailed in a separate manual called “TracWise II©: Importing Data for use in Microsoft MapPoint®, Street Atlas USA®, OziExplorer®, and similar mapping programs.”

If you want to use the data with *MS Access 2000*® or 97, then open the converted MS-Access file as you normally would in those programs.

Many other database and spreadsheet programs can also work with data from *TracWise II*®. Use the conversion option “Text” to create a comma-delimited text file. Then import the file into your database or spreadsheet using its “import” function.

Using TracWise Report[©]

TracWise Report[©] is a program that generates management reports from data collected by the **TracWise II[©]** GPS data logging system. The reports display in Microsoft *Excel[®]* under Office 2000 or Office XP, **one of which is required for operation.**

TracWise Report[©] generates the following kinds of information:

1. **Totals by day of week**, including travel time, travel distance, and time stopped.
2. **Totals by date** -- start of work day, end of work day, time traveled, distance traveled, and time stopped.
3. **Date and time of day detail**, showing time traveled, distance traveled, time stopped, and interruptions to GPS signals in detail by time of day.

The input data used for the reports can be filtered at the user's option to eliminate irrelevant and spurious GPS readings. Numerous user-controllable options are provided.

The user can further process the report data by using Microsoft *Excel[®]* to create custom tables and to make graphs. All the features of Microsoft *Excel[®]* are available for use. Hamilton Global Management, Ltd. is also available to prepare custom reports or reporting systems for the user.

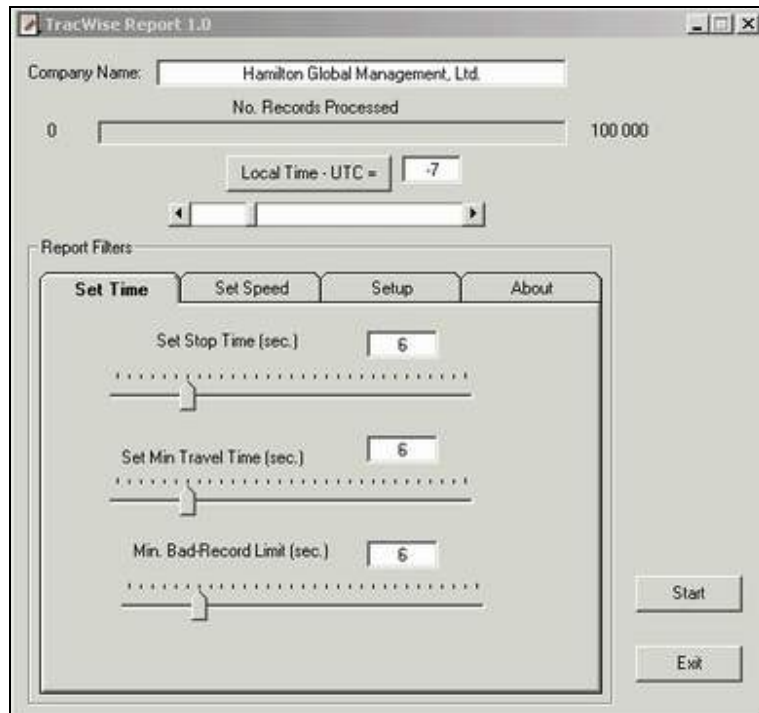
In addition, some versions of Microsoft *Excel[®]* can prepare Web pages for display on the Internet.

Instructions for Using TracWise Report[©]

Start **TracWise Report 1.** by pressing **Start → Programs → TracWise Report → TracWise Report.**

The program will begin and show the screen(s) that follow. The various default settings are used to filter ambiguous GPS data or to eliminate details about minor vehicle stops. This allows **TracWise[©]** to determine more accurately relevant stops, travel time, and speeds. The defaults can be left as they are or they can be adjusted by you based on the experience you gain over time.

The program is normally operated by just pressing the **Start** button in the lower right corner. It is not necessary to change any of the filter settings.



General Settings

1. **Company Name.** Type the name of your company in this blank. The name will be displayed in the Excel reports. The program remembers the name. It can be changed whenever your wish.
2. **No. of Records Processed.** This bar shows the progress of program operation **after** you have pressed the “Start” button at the bottom right of the screen.
3. The box “**Local Time – UTC**” shows the current time conversion setting. Move the **slider below the box** to change the setting. The conversion is the difference between UTC (Greenwich Mean Time) and your local time. A suggested setting is made automatically based your configuration of Windows. Setting the conversion to 0 will leave the time in UTC (Greenwich Mean Time). It is necessary to alter the setting when your region changes from standard to daylight savings time or back. To do that, left click on the “Local Time – UTC =” box to determine the time difference, then adjust the slider in the box.

Set Time Tab

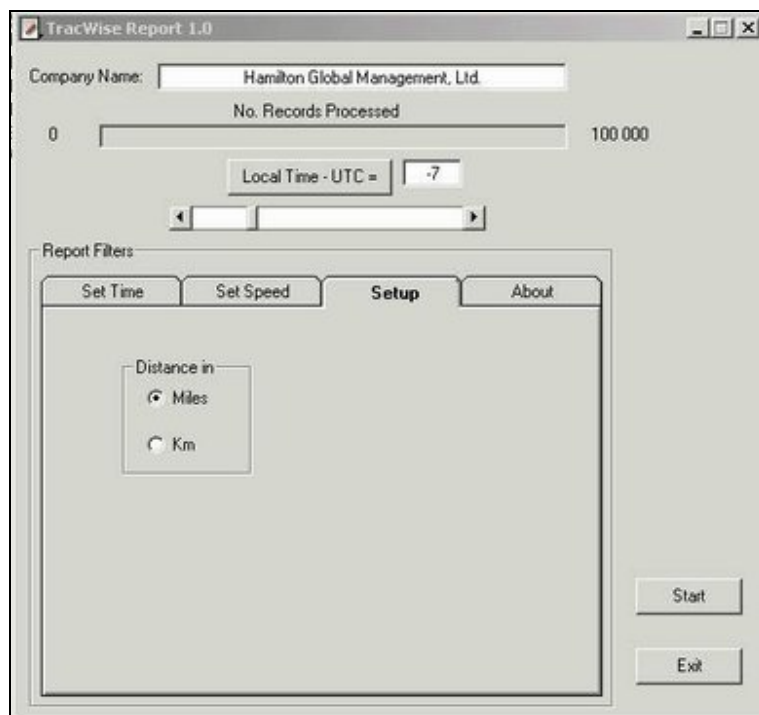
The settings in this and other boxes of the program filter data to eliminate irrelevant and spurious readings from the GPS. Depending on the settings made, the resulting data is used to tailor the precision and usefulness of reports in Microsoft *Excel*[®]. The default values are based on our experience. Your needs or experience may be different.

The purpose of the filters is to define when a vehicle has stopped and when it has started in motion. This is necessary because GPS signals sometimes contain small ambiguities and errors that incorrectly indicate motion or stops. The filters also let you exclude very short stops (e.g., at crosswalks , turns, etc.). The filters allow you to define and fine tune “stop” times, “start” times, and “start-stop” speeds.

1. **Set Stop Time (sec.).** Move the slider to set the Stop time. This regulates when the vehicle is considered to be stopped. If during the interval (6 seconds default) the vehicle has not exceeded the value in **Set (Start-Stop) Speed**, then the vehicle is considered to be stopped and it is reported as such in the Excel tables. For example, if the vehicle has a speed of 5 mph (or

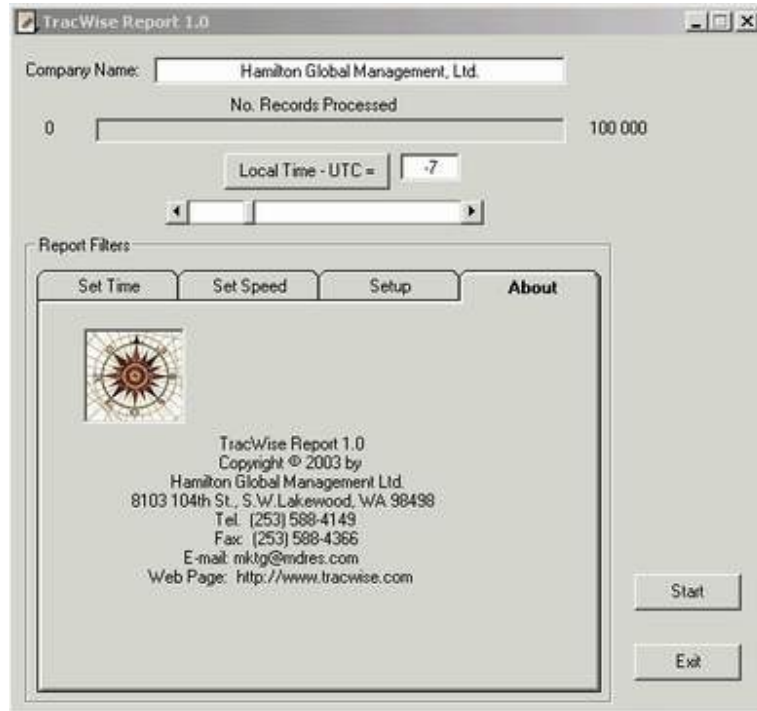
less) for 6 seconds (or less), it is considered to be stopped (given the default parameters). This filter is used to remove short stops that are not of interest and variations in the GPS signal. Increasing the value of the Set Stop Time has the effect of eliminating longer stops.

2. **Set Min. Start Time (sec.).** Move the slider to set the Minimum Start Time. This regulates when the vehicle is considered to have started in motion. If during the interval (6 seconds default) the vehicle has exceeded the value in **Set (Start-Stop) Speed**, then the vehicle is considered to have started in motion. For example, if the vehicle exceeds a speed of 15 mph for 6 seconds (the default values), then is it considered to be in motion and is reported as such in the Excel tables.
3. **Min. Bad-Record Limit (sec.).** Move the slider to set the Minimum Bad Record Limit. This setting defines when a satellite signal is considered to be present or absent. If a signal is not present for less than the setting, then the records are not counted. If a signal is absent for a time equal to or greater than the setting, then the signal is recorded with a no-signal indicator.



Setup Tab

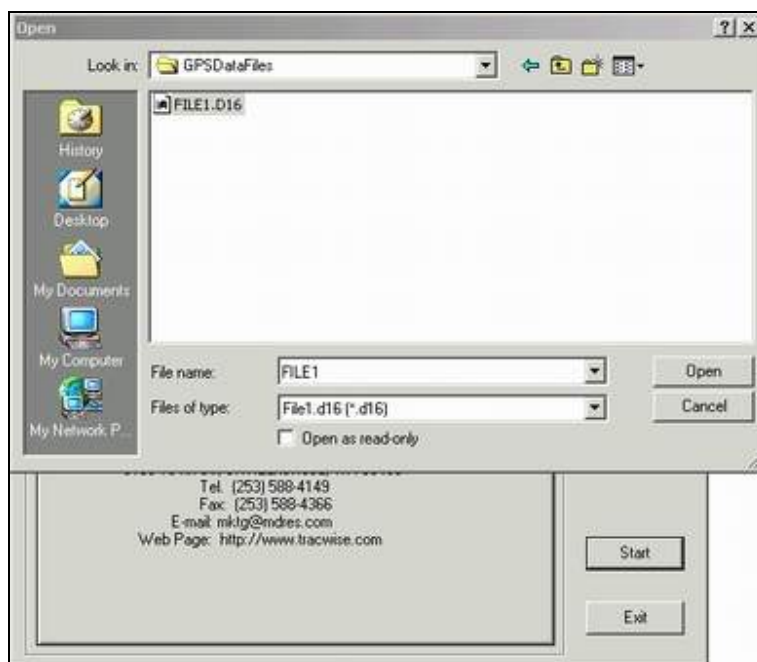
- This tab allows you to set distances in miles or kilometers. The setting you make will become the default until you change it again.
- For North America, the program comes with the default value set to miles.
- To change the default, simply click the mouse cursor on Miles or Km.



About

The screen above shows contact and copyright information.

Be sure to check our Web site from time to time, as we may put updated information and/or programs on it: <http://www.tracwise.com/download/> You can also send us your comments or questions by e-mail, fax, or telephone.



This screen appears after you have pressed the **Start** button in the lower right corner. You should select the file to process as you would in any Windows program: Indicate the directory that contains the **TracWise**© data file, click on the file name or type it in the “File name:” box, then press “Open.” Processing will then begin, with progress being shown on the “Progress Bar.” Note: the TracWise file always has the name of File1.D16. You can change the name of the file, but leave the extension as D16.



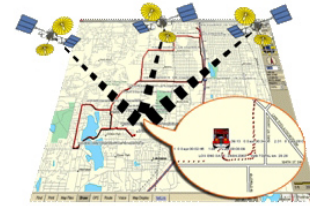
This window will appear after processing has been completed. Click “**Yes**” to see the results in Excel or “**No**” to view them later. It is a good idea to make a note of the file name and its location so that you can easily find it later.

Understanding and Using the Output Reports

The screen on the next page shows the **Title Page** of the report. It displays your company’s name (as entered in **TracWise Report**). It also shows the vehicle or other identification number (as entered in the TracWise hardware, using **TracWise Programmer**). The report period shows the dates of the data recorded on the Compact Memory Flash Card. The dates are automatically generated by the GPS satellite system.

TracWise I© GPS Data Logging System

Report Prepared for: Municipal Transport
Vehicle No: AR-2831
Report Period: 4/9/2003 Thru 5/13/2003



This report has been prepared using GPS data received and recorded by *TracWise I©*.

Reports in this spreadsheet:

Day of Week: Totals by day of week, including travel time, travel distance, time stopped.
Detail by Date: Detailed totals by date -- start of work day, end of work day, time traveled, distance traveled, and time stopped.
Source Data: Detail by date and time of day, showing time traveled, distance traveled, time stopped, and interruptions in GPS signals.

Suggestions:

1. For best results, establish a standard reporting period (e.g., monthly, weekly, etc.) and set up a corresponding schedule to transfer data from the TracWise© Compact Flash Cards to the computer used to prepare the reports.
2. All reports may be printed for distribution and retention in a history notebook or file.
3. Depending on your version of Excel, it may also be possible to publish the reports on a Web page in your firm's Internet system.
4. All functions of Excel may be used to create you own tables and/or to make graphs.

Prepared by Trac-Wise I
Hamilton Global Management
8103 104th St., S.W.
Lakewood, WA 98498
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Webpage: <http://www.tracwise.com>

The next report is the **Day of Week** report. It summarizes all the data into travel activity for each day of the week for the period contained on the Compact Flash Card.

No. of Days: The total number of days that were recorded on the Compact Flash Card.

Count of Day of Week: The number of times each day of the week was recorded on the Compact Flash Card during the period that the Compact Flash Card was in the *TracWise*© unit. In the example, 5 Sundays were recorded.

Sum of Travel Time: The total number of hours, minutes, and seconds that the vehicle was in motion during the period for that day of the week. In the example, the vehicle was in motion for a total of 0 hours 18 minutes 24 seconds for the 5 Sundays recorded.

Sum of Distance (Miles/Km): The total distance (in miles or kilometers, depending on your settings) that the vehicle traveled during the period for that day of the week. In the example, the vehicle traveled a total of 9.69 miles for the 5 Sundays recorded.

Sum of Time Stopped: The total number of hours, minutes, and seconds that the vehicle was stopped (not in motion) during the period for that day of the week. In the example, the vehicle was stopped for a total of 39 hours 33 minutes 47 seconds for the 5 Sundays recorded. If *TracWise*© is set to operate 24 hours a day, then the Time Stopped will include all non-work time.

Sum of No Signal (Time): The total number of hours, minutes, and seconds that the GPS receiver did not receive a signal from GPS satellites during the period for that day of the week. In the example, it received a signal all the time. Large values in this column (hours) may indicate that the vehicle was inside an enclosed parking area which blocked GPS signals.

Sum of No Record (Time): Total hours, minutes, and seconds between valid GPS observations (records) if a break in reception occurs. This includes the time during which *TracWise*® could not receive a valid GPS signal, as well as the time it was disconnected from power. To find the actual time that *TracWise*® was disconnected from power, subtract **No Signal (Time)** from **No Record (Time)**. Brief outages usually indicate a loose power connection. Extended periods may indicate a bad connection or intentional disconnection of *TracWise*®.

TracWise I© GPS Data Logging System							
Company Name:		Municipal Transport					
Day of Week Totals for Vehicle:		AR-2832					
Period:		4/9/2003		Thru		5/13/2003	
No. Days:		35					
Data							
Day of Week	Count of Day of Week	Sum of Travel Time	Sum of Distance (Miles)	Sum of Time Stopped	Sum of No Signal (Time)	Sum of No Record (Time)	
Sunday	5	0:18:24	9.69	39:33:47	0:00:00	0:04:19	
Monday	5	17:12:19	758.20	51:50:04	0:01:00	0:02:09	
Tuesday	5	12:32:06	560.10	54:35:36	0:00:42	0:00:54	
Wednesday	5	13:36:40	622.84	65:45:45	0:08:24	0:14:42	
Thursday	5	6:50:08	280.39	94:35:31	0:02:54	0:14:07	
Friday	5	17:34:25	800.52	56:23:20	0:18:24	0:20:26	
Saturday	5	3:19:06	154.32	41:12:41	0:00:36	0:00:44	
Grand Total	35	71:23:08	3186.06	403:56:44	0:32:00	0:57:21	
<small>Right click on any heading above. Then select "Field Settings" to change statistic.</small> Prepared by Trac-Wise I Hamilton Global Management 8103 104th St., S.W. Lakewood, WA 98498 Tel. (253) 588-4149 Fax: (253) 588-4366 E-mail: mktg@mdres.com Web page: http://www.tracwise.com/							

Next follows the **Detail by Date** report. It shows vehicle activity for each date recorded on the Compact Flash Card.

Date: The calendar date when the information in the row was recorded on the Compact Flash Card. This value is supplied by the GPS satellites.

Day of Week: The name of the day of the week when the information in the row was recorded.

Work Day Start: The time of day (24 hour time format) that the vehicle was first detected to be in motion on that date. Motion is defined according to the settings you made in the program *TracWise Report*.

Work Day End: The time of day (24 hour time format) that the vehicle stopped being in motion for that date. This value is determined according to the settings you made in the program *TracWise Report*.

Travel Time: The amount of time (hours:minutes:seconds) that the vehicle was in motion for that date. This value is determined according to the settings you made in the program *TracWise Report*.

Distance (Miles/Km): The distance traveled (in Miles or Kilometers) during the **Travel Time** given above. This value is determined according to the settings you made in the program *TracWise Report*.

Time Stopped: The amount of time (hours:minutes:seconds) that the vehicle was not in motion during the date. This value is determined according to the settings you made in the program *TracWise Report*. It generally will include time parked, as well as other extended stops.

No Signal (Time): The total number of hours, minutes, and seconds that the GPS receiver did not receive a signal from the GPS satellites for that date. Large values in this column (hours) may indicate that the vehicle was inside an enclosed parking area which blocked GPS signals or that the GPS antenna was covered for some reason.

No Record (Time): Total hours, minutes, and seconds between valid GPS observations (records) if a break in reception occurs. This includes the time during which *TracWise*® could not receive a valid GPS signal, as well as the time it was disconnected from power. To find the actual time that *TracWise*® was disconnected from power, subtract **No Signal (Time)** from **No Record (Time)**. Brief outages usually indicate a loose power connection. Extended periods may indicate a bad connection or intentional disconnection of *TracWise*®.

TracWise I© GPS Data Logging System								
Company Name:		Name of Your Company						
Summary Table for Vehicle:		ES_996						
Period:		4/9/2003		Thru		5/13/2003		
No. Days:		35						
Date	Day of Week	Work Day Start	Work Day End	Travel Time	Distance (Miles)	Time Stopped	No Signal (Time)	No Record (Time)
4/9/2003	Wednesday	20:04:50	23:43:09	2:53:25	113.58	0:44:54	0:04:00	0:04:12
4/10/2003	Thursday	0:00:09	20:58:50	1:46:59	66.54	19:11:42	0:00:00	0:03:31
4/11/2003	Friday	2:23:38	18:14:26	2:43:06	107.87	13:07:42	0:00:00	0:00:00
4/12/2003	Saturday	0	0	0:00:00	0.00	0:00:00	0:00:00	0:00:00
4/13/2003	Sunday	12:30:50	23:54:32	0:15:48	8.56	11:07:54	0:00:00	0:00:00
4/14/2003	Monday	1:24:20	20:13:50	6:38:06	298.00	12:11:24	0:00:00	0:00:00
4/15/2003	Tuesday	2:20:38	20:43:38	0:54:12	30.05	17:28:48	0:00:24	0:00:30
4/16/2003	Wednesday	6:53:09	23:46:18	3:05:51	186.01	13:47:18	0:01:18	0:04:51
4/17/2003	Thursday	2:12:42	18:28:48	0:44:00	25.11	15:32:06	0:00:24	0:00:30
4/18/2003	Friday	11:30:41	21:19:00	1:56:30	86.64	7:51:49	0:00:00	0:00:07
4/19/2003	Saturday	4:51:11	18:34:15	0:00:42	0.28	13:42:22	0:00:36	0:00:44
4/20/2003	Sunday	2:36:33	18:01:34	0:00:42	0.25	15:24:19	0:00:00	0:00:07
4/21/2003	Monday	7:56:28	7:57:52	0:00:12	0.06	0:01:12	0:00:00	0:00:00
4/22/2003	Tuesday	8:02:05	18:46:59	0:53:12	28.56	9:51:42	0:00:00	0:00:00
4/23/2003	Wednesday	6:58:47	23:56:50	4:13:24	191.45	12:44:39	0:00:30	0:00:39
4/24/2003	Thursday	0:40:20	22:40:57	1:09:45	37.70	20:50:52	0:01:12	0:04:20
4/25/2003	Friday	4:35:44	16:20:03	2:57:48	140.64	8:46:31	0:00:00	0:00:07
4/26/2003	Saturday	16:09:20	16:11:44	0:00:12	0.06	0:02:12	0:00:00	0:00:00
4/27/2003	Sunday	0	0	0:00:00	0.00	0:00:00	0:00:00	0:00:00

The **Source Data** report shows details by date of the data received from the GPS for each period of time recorded on the Compact Flash Card. Each line in the main body of the report represents a period of time when there was travel or a stop. This report is the foundation for the other reports. In general it can be used to check details when questions arise. Otherwise it is not normally consulted due to the large amount of detail it contains.

The settings **Log All, Recording, and Interval** show that configuration of the *TracWise II* unit as set with the aid of the program *TracWise Programmer*.

The settings **Set (Start-Stop) Speed, Set Maximum Speed, and Local Time – UTC** show the configuration that was used by the program *TracWise Report*. *This information is provided so that you can review the consistency of settings between reports, if you desire.*

The next two lines after **Set (Start-Stop) Speed**, etc. are for internal use and can be ignored.

The headings in the table are as follows:

Log Date: The day of week and date for the data that follows this heading.

Start Time: The time (hours:minutes:seconds) that the vehicle began to move.

End Time: The time that the vehicle stopped moving.

Travel Time: The time that the vehicle was in motion (End Time – Start Time).

Distance (Miles/Km): The distance traveled (Miles/Kilometers) during the **Travel Time**.

Time Stopped: The amount of time (hours:minutes:seconds) that the vehicle was stopped.

No Signal (Time): The amount of time during which a signal was not received from the GPS satellites.

Large values in this column (hours) may indicate that the vehicle was inside an enclosed parking area which blocked GPS signals or that the GPS antenna was covered for some reason.

No Record (Time): Total hours, minutes, and seconds between valid GPS observations (records) if a break in reception occurs. This includes the time during which TracWise could not receive a valid GPS signal, as well as the time it was disconnected from power. To find the actual time that TracWise was disconnected from power, subtract **No Signal (Time)** from **No Record (Time)**. Brief outages usually indicate a loose

power connection. Extended periods may indicate a bad connection or intentional disconnection of *TracWise*®.

TracWise II® GPS Data Logging System						
Company Name:			Name of Your Company			
Mileage Report for Vehicle:			ES_996			
Period:	4/9/2003	Thru	5/13/2003	No. Days:	35	
LOG ALL=TRUE	Recording: Cyclic			INTERVAL: 6 SEC		
Set Stop Time (sec.) 6		Set Min Travel Time (sec.) 6		Min. Bad-Record Limit (sec.) 6		
Set (Start-Stop) Speed 15		Set Maximum Speed 180		Local Time - UTC = 3		
12/30/1899 00:00:00 - Recording Interrupted						
4/9/2003 20:04		- Recording Resumed		4166.53	0:09:18	#####
LOG DATE:	Wednesday	4/9/2003				
Start Time	End Time	Travel Time	Distance (Miles)	Time Stopped	No Signal (Time)	No Record (Time)
20:04:50	20:04:56	0:00:06	0.03	0:02:24		
20:07:20	20:07:26	0:00:06	0.03	0:02:06		
20:09:32	20:09:38	0:00:06	0.04	0:05:54		
4/9/2003 20:10 - Recording Interrupted						
4/9/2003 20:12		- Recording Resumed		0.01	0:02:18	0:02:24
4/9/2003 20:12 - Recording Interrupted						
4/9/2003 20:14		- Recording Resumed		0.01	0:01:42	0:01:48
20:15:32	20:15:38	0:00:06	0.09	0:00:12		
20:15:50	20:15:56	0:00:06	0.03	0:01:00		
20:16:56	20:17:02	0:00:06	0.06	0:06:48		
20:23:50	20:23:56	0:00:06	0.03	0:00:42		
20:24:38	20:25:08	0:00:30	0.24	0:00:12		

Limited Warranty Information

TracWise II® is hardware and software intended for use in commercial vehicles.

TracWise II® and the components supplied with it are warranted to be free of defects and to perform substantially as stated in the documentation provided with the unit when used as specified in the instructions and under the following conditions:

30-Day Warranty Terms: Should *TracWise II*®, including the components supplied with it, prove to be defective or not to perform substantially as stated, the vendor will replace the defective unit or refund the purchase price (less shipping fees) at the option of the purchaser upon return to the vendor of the unit originally purchased. A warranty claim under these terms must be made in writing within 30 days of purchase.

1-Year Warranty Terms: Should *TracWise II*®, including the components supplied with it, prove to be defective within 12 calendar months of purchase, the vendor will replace the defective unit or, at its option, refund a prorated amount of the original purchase price upon return to the vendor of the unit originally purchased. A warranty claim under these terms must be made in writing within 12 calendar months of purchase.

The warranty extends only to the original purchaser. The warranty excludes any form of physical damage or defect to the unit not caused by the manufacturer or vendor

The warranty specifically excludes any damages or claims resulting from the use of data from *TracWise II*[®] with third-party software programs, from the use of data beyond the limits of stated accuracy, or from errors inherent in the technology of GPS satellite systems.

Hamilton Global Management Ltd.'s cumulative liability for damages for any cause whatsoever, and regardless of the form of the action, will be limited to no greater than the amount of money paid to Hamilton Global Management Ltd. for the software or hardware that caused the damages

To the maximum extent permitted by applicable law, Hamilton Global Management Ltd. and its suppliers disclaim all other warranties and conditions, either express or implied, including, but not limited to, implied warranties or conditions of merchantability, fitness for a particular purpose, title and non-infringement, with regard to *TracWise II*[®], and the provision of or failure to provide support services. This limited warranty gives you specific legal rights. You may have others, which vary from state/jurisdiction to state/jurisdiction.

Warranty claims must be made in writing in a timely manner to:

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