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Software Installation

Introduction

DeviceManager is designed for use with SpeedCheck devices manufactured after January of 2002. Field upgrades are available for all units manufactured before that date.

The installer is found on the enclosed CD.

Note before installing - previous DeviceManager users: the installer will preserve your previous data files and Scheduler settings. The installer will prompt you to make a backup copy of your files if you so desire. All files in the My Documents\SpeedCheck folder will be moved to the new directory location of:
   XP systems - C:\Documents and Settings\All Users\Shared Documents\SpeedCheck\Data Files.
   System 7 & Vista – C:\Users\Public\Public Documents \ SpeedCheck \ Data Files

The Excel based TrafficAnalyzer has been replaced with a version which does not require Excel. The old Excel based Traffic Analyzer program and data has been saved in the Data Files folder in a folder named “Old Data files”.

Users without administrative privileges must have the computer’s Administrator install DeviceManager.

System Requirements:

1. PC running Windows XP or later operating system.
2. The installer will check for the presence of .NET Framework V2.0 or higher, required to run DeviceManager. .NET Framework V2.0 is a free upgrade available from the Microsoft website.
3. The installer will check for the presence of Microsoft .NET Framework 4, required to run the TrafficAnalyzer application. .NET Framework 4 is available from Microsoft as a free download.

DeviceManager Software Overview

1. DeviceManager: this software runs on a PC device enabling the user to set up the various functions of the SpeedCheck display or flasher, scheduler and to download vehicle speed data.
2. TrafficAnalyzer: this software is loaded on the PC to processes the raw data to provide visual aids for analysis of the traffic speed data gathered by the SpeedCheck display.

Note: Using a Palm to Set Parameters and Download Data: The Palm E2 and TX are not compatible with the new firmware and software. Palm is no longer selling new PDA devices.

How to Install

STEP 1: The person running the installer must have Administrative rights.
STEP 2: Check to insure you have the following:
   Windows XP or later operating system
   DeviceManager Software installation CD or downloaded file set
STEP 3: Insert the SpeedCheck Software installation CD.
   Double Click the file "DeviceManager Installer", and follow the prompts on the screen to complete the install. If the installer does not detect .NET Framework 2 the installer will quit. If .NET Framework 4 is not detected, a warning will appear.
STEP 4: Confirm that each user has a desktop icon for DeviceManager and TrafficAnalyzer.
Upgrading Firmware in Previous SpeedCheck PC signs:

**Previous SpeedCheck PC users** – must install new firmware on the sign controller board to insure full compatibility. The installer program has loaded the latest firmware version ready for uploading to the sign. You must be connected with a sign to install the new firmware.

You must first connect to your sign with Bluetooth, cable or wireless modem. On the System tab choose “Install New Firmware”

DeviceManager automatically looks in the Firmware Upgrade folder for the latest firmware file, select the file and click on “Open”. Firmware files have the extension .hex. Firmware files are placed in the following folder:

- XP - C:\Documents and Settings \ All Users \ Shared Documents\SpeedCheck\Firmware Upgrade\n- Or
- System 7 & Vista – C:\Users\Public\Public Documents \ SpeedCheck \ Firmware Upgrade

Click on “Upload Firmware”. If more than one firmware file is located in the Firmware Upgrade folder, choose the file with the larger numeric value.

After a successful uploading of a firmware file, the sign resets and rolls up. A firmware reload will reset the time and date to the default of January 1, 2001, 12:00 AM. Before setting the time and date, you should download any vehicle speed data you want to keep (see page 20).

**Note:** if an operating schedule was active at the time of firmware uploading, that schedule will remain active. If the scheduler was not being used, the operating modes remain as they were set in the Operating Modes tab prior to firmware uploading.

Peculiar installation situation: for security reasons some work place networks move the My Documents folder to a location other than the PC’s hard drive. DeviceManager saves and references files stored in the Speedcheck folder located in the My Documents folder. The My Documents folder must be available for the installer to work successfully. After installation, the My Documents folder can be moved (i.e. to a network location) – then use the “Select Home Folder” in the Tools – Options menu to point to the new folder location.
Introduction to DeviceManager

Overview

The DeviceManager application is produced by Information Display Company and provides communication between a Windows-based personal computer and Information Display Company’s SpeedCheck brand speed display signs and flashers.

The DeviceManager application is designed to communicate directly with a sign or flasher via Bluetooth wireless, a direct cable connection, (built into a PC laptop or USB plug-in). A DeviceManager Central Office version is used with wireless cell modem or radio connections.

Requirements

The DeviceManager application will run on any Windows operating system from Win98 on. DeviceManager requires that the NET Framework v2.0 or later is installed. The NET Framework V2.0 is a free upgrade available from the Microsoft® website and the newest version is included on all new PCs. The communication method must be one of the following: Bluetooth, RS232 cable, or Internet.

Cable connection requires that your laptop have a RS232 com port available. USB to RS232 adapters are available at most computer stores. The Cable option also requires custom installation of a cable port in the sign.

A compatible external Cirago Bluetooth device is shipped with all new software packages. Bluetooth communication hardware is built into many laptops and is also available as an external USB plug-in device. Not all built in Bluetooth modules will communicate with SpeedCheck devices. Laptops using the Motorola Bluetooth driver will not work with DeviceManager.

The external Cirago Bluetooth is a Class 1 Bluetooth device capable of communication distances of up to 100 feet. Laptop computers with internal Bluetooth usually use a Class 2 or 3 device with limited communication distances of 30 feet or less. For best results always use the provided Cirago Bluetooth with DeviceManager. See instructions included with the Cirago to choose between internal or external Bluetooth.

DeviceManager Operation

DeviceManager allows the setting of communication and operation parameters of the SpeedCheck system. There are six basic steps in using DeviceManager:

1. Select the communication method (Bluetooth, Cable, or Internet)
2. Establish communications with the SpeedCheck display
3. Set the display’s internal clock-calendar and provide an alphanumeric name for the display
4. Select whether one set or two sets of speed settings will be used, or if the Scheduler is to be used
5. Enter the desired parameters for the choice selected in #4 above
6. Apply the settings to program the display. If the Scheduler is to be used, send the schedule to the display
Initial System Screen

Upon starting DeviceManager, the initial screen appears as shown below, before connecting with a particular SpeedCheck display.

You will note that several tabs are displayed, which allow setting of the program options. The Scheduler tab is displayed to allow for creating and editing Schedules without being connected to a sign. Schedules are then sent to a sign when a connection is established. When connected to a sign that is not configured for Scheduler, the Scheduler tab will not display.

All other tabs require a connection be established before changes can be made.

DeviceManager Version

The version number of DeviceManager currently installed can be found by clicking on “Help” and choosing “About DeviceManager”.

Communications: Bluetooth, Cable, Internet

A communications method must be chosen before establishing a connection. Each communication method requires its own unique hardware setup.

- Bluetooth requires a PC laptop with internal or external Bluetooth capabilities (external preferred). You must be within range of the receiving device to send and receive information using Bluetooth technology. The maximum range is approximately 100 feet however, the shorter the range, the more quickly and accurately you can send information. For the best results position yourself in front of the sign using the external Bluetooth.
- Cable connection requires a RS-232 serial port connection. Most laptops manufactured today do not have a RS-232 com port. USB to RS232 adapters are available at most computer stores. The Cable option also requires custom installation of a cable port in the sign.
- Internet requires each sign be in an area with cell phone coverage, configured with an activated cell modem, and Internet access for the PC connecting with the sign.
Bluetooth Connection Setup
The Bluetooth choice allows you to “find” the Bluetooth communications module in the desired display, and connect with it. SpeedCheck devices will appear as “SpeedCheck ###” to distinguish the sign from cell phones and other Bluetooth devices, this number is assigned to the Bluetooth receiver and cannot be changed.

1. Insert the USB Bluetooth dongle provided in a USB port on your laptop. Wait for recognition, Bluetooth icon will appear in the task bar icons at the bottom of the screen.

2. Open Display Manger - window should show Not Connected, the background is red.

3. Click on the “Bluetooth” radio button.

4. Click on “Establish Connection”.

5. Bluetooth devices within range will appear in the window, choose the correct device and click on Connect.

When connected the background is green, DeviceManager will show:

- The name assigned to the sign
- Sign type and operating mode
- Current firmware version
- Voltage supplied to the controller board
- Date and time on the controller board
- Status line showing successful communication with the sign
Cable RS-232 Serial Connection Setup
A Cable connection requires a RS-232 cable at least 6 to 8 feet in length. Most laptops manufactured today do not have a RS-232 port. A USB to RS232 adapter would have to be purchased. The Cable option also requires installation of a cable port in the sign allowing you to connect to the display using the serial cable.

1. Connect the serial cable to the PC and sign

2. Window should show Not Connected

3. Click on the “Cable” radio button and choose the correct COM port number if your PC has multiple ports.

4. Click on “Establish Connection”

DeviceManager will connect immediately to the sign, the background is green when successfully connected, see “Communication Successful” on page 9.

Internet Connection Setup
Using the features of wireless modems and Internet access, each sign can be programmed, updated or changed and data downloaded without leaving your office or having to travel to the sign location.

Internet connection requires a cell modem in each sign with a dedicated IP address, and Internet access for the computer running DeviceManager. The sign must be in an area with usable cell signal strength for the cell modem to receive and send information.

Resources required:
- Sign, active wireless cell modem with IP address or DNS name, all properly configured
- PC with DeviceManager installed and Internet connectivity
- Knowledge of IP address and associated sign location

Each modem has a unique IP address which is already programmed in the wireless modem. The Device ID (Set Time & ID) must also be unique and descriptive enough for you to identify each sign – no two signs can have the same Device ID.
Initial connection of Internet enabled signs

1. The wireless modem must be activated and configured with a valid IP address. Make sure the sign is powered on for at least 2 minutes before trying to connect.

2. From the Communications screen choose the Internet button and select “Internet Connection Setup”.

3. Click on “Add Entry”

4. Enter the IP address of the cell modem

5. If you know the password programmed in the controller board, type it in the field. When a password is used with a sign, it will show in this field.

6. Click on “Test Connection”.

   A successful connection will respond with “Remote System has responded with “name of the sign”.”

7. Click the “Add To List” button.

8. Repeat the process for each sign that has an IP address.
Delete or change a connection setup by choosing Internet Connection Setup, where you can delete, edit or add a new entry. The columns in this window can be re-sized wider or narrower to make viewing easier.

### Connect to a single sign with a cell modem

Click on the **Internet** radio button in the Communications window. Choose which sign to connect to from the Available Signs drop down list – click on “Establish Connection”. Once connected, the sign name shows in green, you have remote access to all user enabled features of the DeviceManager software. Warning: do not click on “Internet Connection Setup” – this will break (disconnect) the current Internet connection.

You may also choose a sign from the Internet Connection Entries, then click on “Connect with Selected Sign”.
**View All Internet Signs**

Click on “All Internet Signs” to immediately connect to every sign that is entered in the Internet Connections Entries screen. Only those signs configured with an active cell modem will display.

The table below is a sample of the information received back from the signs. Column width is adjustable.

Right click on the table to bring up a check box that will allow you to choose which columns to display.
Sign System Controls

Set Time & ID allows you to enter a name for the sign location in the sign firmware, and to set the internal time and date clock. The ID field allows up to 24 alphanumeric characters. Be as specific as possible when naming signs, this will help identify the sign when connecting with a wireless cell modem.

Run Test Sequence initiates a display digit roll-up test (displaying in succession the numbers 01, 12, 23, 34, 45, etc.) to test the operation, correct position and connection of both digits in the display.

Install New Firmware allows you to choose a new firmware file, typically provided by the Information Display Company support department, and install that new firmware into the display.

System Reset will reset the SpeedCheck display and re-run the power-on self test. Wait for complete roll up (@ 90seconds) - you will not be able to communicate with the sign until it has completed the reset and rollup.

Set Time & ID Screen

The Set Time & ID screen allows naming of the display location (24 characters), and setting the display’s internal clock-calander. Re-setting the time will erase the data collection memory, if you have data you need to download; you should do so before you re-set the time and date (see page 20). We recommend setting the Device ID string to a recognizable name such as an intersection or landmark name for later identification. Examples are “2nd and Main” or “Hobbs Elem Sch North” – do not use (-, /, \/).

Time Reference will only show if you have the GPS “Time Keeper” option installed, it tests the operation of the GPS.

Install New Firmware screen

DeviceManager automatically looks in the Firmware Upgrade folder for the latest firmware file, select the file (firmware files have the extension .hex) and click on “Open”. This screen allows browsing your files to select the desired firmware file. Click on “Upload Firmware” to begin the process. After successful uploading of firmware, the sign resets and rolls up. A firmware reload will reset the time and date to the default of January 1, 2001, 12:00 AM. Before installing new firmware, you should download any vehicle speed data you want to keep. After installing the firmware remember to update the time and date. Default location of the firmware files is:

C:\Documents and Settings \ All Users \ Shared Documents\SpeedCheck\Firmware Upgrade\

Note that if an operating schedule was active at the time of firmware uploading, that schedule will remain active. If the Scheduler was not being used, the operating modes remain as they were set in the Operating Modes tab prior to firmware uploading.
Sign Setup Tab

The Sign Setup screen initially appears as shown on the right, requiring a password to access changing of the basic sign operating modes. After entering the password “unlock”, the screen appears as shown below depending upon purchased options.

Sign Setup Tab after “unlock” password is entered

Upon entering the correct password, the Sign Setup screen looks like this example.

Slow Down and Use Scheduler only show when purchased with the sign.

Time Zone only shows if the GPS Time Keeper function was purchased. Flasher B is not available if GPS TimeKeeper option is installed.

Press the Apply button when done making changes and the setup data will be sent to the connected sign.

HS (High Speed) Cutoff Function selects between three different results upon sensing of a speed that is at or above the high-speed cutoff speed:

- **Blank Display** will stop displaying speeds at or above the high-speed cutoff value
- **Display Speed Limit** will display the speed limit at or above the high-speed cutoff value
- **Disable** will continue displaying speeds up to the maximum (99)

Circular Data Collection prevents the data memory from filing to a point where it stops collecting data. When nearly full (98% @ 240,000 data points), the circular data option overwrites the oldest data records.

Test Sequence at Startup initiates the power-on rollup sequence when the sign is first powered on.

Clock Correction Factor

The clock correction factor is used to improve the accuracy of the internal clock. Once per week, at 12:05 am on Sunday, the sign will apply this correction factor. The clock will always have some error due to temperature and other external affects. To determine the correction to apply, determine the amount of time gained or lost over the course of a week and add / subtract that amount of time to the current correction factor.

System Reset allows you to reset the SpeedCheck display and re-run the power-on self test. Wait for complete roll up before making further changes. The Reset will take about 90 seconds. Status bar will show the progress.
**Password Protection** when activated for the sign currently connected, will immediately disconnect and require the password “speedcheck” to re-establish a connection with the sign. We recommend that each sign have a different password. Passwords are case sensitive, and can be up to 12 alphanumeric characters.

Setting a password: the default password programmed into every controller board is “speedcheck”. For security reasons we suggest that you create your own password.

1. Check password protection
2. Click on “Apply” – enter “speedcheck” password to reconnect
3. Choose “Reset Password”
4. Enter a new password (12 alphanumeric characters) blank is not allowed
5. Re-enter the new password – click on “OK”
6. Keep a record (log) of your sign/password combination

Once password protection is enabled, you will need to enter the password each time you connect using bluetooth to a sign so configured.

Passwords for Internet connected signs only need to be entered the first time a connection is made, if not entered on the Internet Connection Setup screen.

**Forgotten Password** – If the password is entered incorrectly two times, you will be asked if you want to use the Master Password.

To obtain the Master Password:

1. Call Information Display Co. 800 421-8325 ext 3
2. Provide the following information: the date that is in the sign for the day you want to reconnect with it
3. IDC will email or give over the phone a unique code good for only that one date
4. Enter the code in the Master Password dialogue box – “OK”
5. Enter a new password, then re-enter it a second time – “OK”
6. Log in to the sign with the new password

**Get Reset Log** displays reset information stored on the controller board. This information might be requested by technical support at Information Display Company to assist with trouble shooting a problematic display.
Operating Mode Select Method settings allow selection between the following:

- **Fixed** will provide one set of speeds on the Operating Modes page to control operation of the display.

- **Select via External Input** will provide two sets of speeds which control display operation, which set is dependent upon if the input and ground connections on the controller board are open or closed. Mode 1 settings are selected if the connection is open, and Mode 2 settings are selected if the Input and Ground are connected together (closed). Additional hardware is required for this feature.

- **Use Scheduler** will not display the Operating Modes tab, but will relinquish all such control to the modes set in the Scheduler tab.

Output Function for the A and B auxiliary outputs (flashing beacons, strobe, camera) allow selection between the following:

- **Off** will turn off the selected output regardless of other parameters.

- **Continuous** will provide a 12VDC signal at the selected output when the corresponding output activation speed is reached or exceeded.

- **Flash** will provide a 50% duty cycle 12VDC signal at the selected output when the corresponding output activation speed is reached or exceeded.

- **Fast** will provide a 12VDC signal which follows the display digit flashing, at the selected output when the corresponding output activation speed is reached or exceeded.

- **Strobe** will provide a 12VDC pulse to activate an external strobe device when the corresponding output activation speed is reached or exceeded.

**Sync:** alternate B with A is the default when both A & B flashers are used.

Output B cannot be used when the GPS “Time Keeper” option is installed in the sign.
Operating Modes Tab

The Operating Modes screen shows the various parameters set for sign operation. A connection with a sign must be established to see and change settings. Some settings are visible only if the appropriate options are selected in the Sign Setup tab (see Sign Setup tab page 15).

The Operating Modes tab shows up to two columns of parameters. If you select “Fixed” in the Sign Setup tab, there will be only one column of parameters available. If the “External Input” is used, a second set of parameters are selected depending upon if the input and ground connections on the controller board are open or closed. Mode 1 settings are selected if the connection is open, and Mode 2 settings are selected if the Input and Ground are connected together (closed).

The Mode Settings include the following parameters that can be set: the parameters are allowed to be entered in the range of 0 – 99.

Display, you might choose to have the display set to OFF yet still collect vehicle speed data

Data Collection, vehicle speed data collection can be turned off

Speed Limit, sets the speed limit entered into the speed sample data file for later reference – this needs to be set even if not using data collection

Violation Alert Speed, sets the speed at which the display digits begin flashing to advise drivers that they are exceeding the speed limit

SLOW DOWN Speed, if installed, sets the speed at which the SLOW DOWN message is activated

High Speed Cutoff, sets the maximum speed shown to drivers on the display, to discourage racing

Minimum Display Speed, sets the lowest speed to be shown on the display; the radar will reliably detect speeds down to about 3 mph and has a low-speed mode that can be factory-set for speeds lower than this.

Output A Speed sets the speed at which Auxiliary Output A is to provide 12VDC for external devices

0 = always on  199 = disabled

Output B Speed sets the speed at which Auxiliary Output B is to provide 12VDC for external devices.

0 = always on  199 = disabled

Output A & B - On or Off, are the only choices when DeviceManager is used to program a Flasher only system

Note that after setting or changing these parameters you must click the “Apply” button to transfer these settings to the display.
Data Collection Tab

The **Data Collection** tab allows viewing of the current display ID, and the current number of vehicle speed data samples in the display’s internal memory. It also allows you to download the speed data to your PC and erase the data collection memory.

Speed data is placed on your PC hard drive, then subsequently used by the SpeedCheck **TrafficAnalyzer** to analyze and graph traffic speed trends.

Data Collection can be turned off in the Operating Modes tab, while the display remains on or data collection can be on while the display is off.

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**Circular Data Collection** (Setup Tab page 15) when activated, prevents the data memory from filing to a point where it stops collecting data. When nearly full (98% @ 240,000 data points), circular data collection overwrites the oldest data records.

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“**Refresh Vehicle Count**” will update the vehicle count while this screen is open.

“**Get Data From Sign**” initiates the download of stored speed data.

When the memory is full, no new vehicle speed data is recorded.

“**Reset Memory**” will reset the memory, erasing all vehicle speed data previously captured.
**Downloading traffic data**

The process for downloading stored traffic data from a sign is the same whether your connection is via Bluetooth, serial cable or Internet. TrafficAnalyzer can be used to read and analyze the data.

Click on the Data Collection tab, and then click on the “Get Data From Sign” button.

After data download, choose whether to reset your data memory.

The downloaded data files can be found on the in:
- XP systems - C:\Documents and Settings \ All Users \ Shared Documents \ SpeedCheck \ Data Files
- System 7 and Vista – C:\ Users \ Public \ Public Documents \ SpeedCheck \ Data Files

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**A NOTE ABOUT RADAR TRAFFIC COUNTING** — It is important to note that while using radar devices to detect vehicle speeds is quite accurate, the use of this method for absolute vehicle counting is not recommended. This is simply due to the fact that radar detection works by the reflection of high-frequency signals off of moving targets. Those targets (vehicles) each have unique size, shape, and reflection characteristics. Thus, a small car behind a truck will likely be missed in the count, and two like-sized cars traveling close together could be ‘dithered’ (the radar unit cannot tell which target it is measuring at that particular time). Occasional missed counts and multiple counts can result in errors in the total. However, the speed values will remain accurate, typically within +/- 1 mph. For this reason we recommend that the speed data can be used as presented, but the vehicle counts should be considered relative in nature and should be supplemented by a hard data collection method like a road tube system if vehicle count accuracy is absolutely critical.
TrafficAnalyzer™

The SpeedCheck™ TrafficAnalyzer allows viewing, manipulation, charting and printing of speed data files to study speed problems, speed reduction programs, or speed trends over time. The TrafficAnalyzer is a stand-alone program that provides charting, statistical analysis, combining of data files, windowing data to particular days or hours of operation, and removal of speed data outside of the areas of study.

TrafficAnalyzer requires the installation of the Microsoft© .NET FRAMEWORK Version 4.0, available free from Microsoft. Recommended minimum computer configuration is a Pentium 1 GHz with 512 MB RAM or more, with minimum disk space of 850 MB. Visit http://www.microsoft.com and search for “dot net” to locate the latest version.

To view your data, double click on the “TrafficAnalyzer” icon shortcut found on the desktop. The application program resides in “My Computer \ Local Disk (C) \ Program Files \ DeviceManager \ TrafficAnalyzer”.

When TrafficAnalyzer opens, it will automatically look in the folder:
  Vista & System 7 - “C:\Users\Public\Public Documents \ SpeedCheck \ Data Files”
  XP systems - C:\Documents and Settings\All Users\Shared Documents\SpeedCheck\Data Files

for downloaded data files. You should see the “Open Data File” window similar to the picture below. Select the data file you wish to analyze and click the “Open” button. The data from the selected file will be displayed in the chart window.

Clicking the “Edit Settings” button opens the setup window shown below.

Chart Options Tab
The “Chart Options” changes the data display graphic parameters. Parameters are pre-set by the program according to the speed range of your data, but can be changed manually.
SPEED AXIS SCALE PARAMETERS
Sets the parameters for the vertical scale of the graph. Un-check “Use Default Scale” to input your own selections.

CHART DISPLAY OPTIONS

**Chart Points** is used to turn ON or OFF the display of individual data points. Leaving the default setting of chart points OFF results in faster screen drawing, faster viewing of only the moving average and statistical quantities without displaying the data.

**Chart Moving Average** enables the moving average\(^1\) line, which, at any point, shows the average of the most recent XX data points. The number input here will set the number of data points used for the moving average. More points will provide an average over a longer time frame, whereas fewer points will provide a line that follows the individual data points more closely. If no number is input here, the chart will use a moving average of 10% of the displayed data.

**Chart Posted Speed** is used to turn ON or OFF the display line that indicates the posted speed. The number entered here sets the Posted Speed line.

**Chart Average** is used to turn ON or OFF the display line that indicates the Average of all of the displayed points.

**Percentile** is used to set the display line that indicates the percentage of all of the displayed points (most commonly the 85\(^{th}\) percentile). Additional percentile lines can be added by entering the number in the space provided. Leaving the entry blank will cause the line to not be displayed.

COMPLIANCE

BAR CHART BREAK POINTS
The bar chart will show all vehicles that are:
- Above Posted Speed + major over-speed (Red bar)
- At or below Posted Speed + major over-speed (Orange bar)
- At or below Posted Speed + minor over-speed (Yellow bar)
- At or below the Posted Speed (Green bar)

Posted Speed, Minor over-speed, and Major over-speed thresholds can all be changed to suit your specific needs.

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\(^1\) A Moving Average is an average of the preceding N-values in the data set. The default N is 50, meaning each point on the moving average line is the average of the preceding 50 points. The value of N can be changed in the Setup window “Chart Options” tab.
Data Selection Tab

The “Data Selection” tab allows you to change the data start and ending points. Use the slide bars on the right side of the window to adjust the date and time, or manually enter the date and time. “Duration” shows the total number of days, hours and minutes of data selected.

Filter Tab

The “Filter” tab allows you to use the data filtering and windowing options. On this tab you may select which days of the week to include in the analysis, and which hours of the day to include. You may also exclude speeds greater than or less than speed thresholds outside your range of interest for the analysis, or exclude speeds that are more than 1 to 4 standard deviations from the average\(^2\). The default setting is to remove data points greater than 3 standard deviations from the mean.

\(^2\) If you are not familiar with it, the term Standard Deviation is a statistical term that indicates variability from an average (mean) data level in a particular data set. Assuming the data conforms to a bell curve distribution, one standard deviation on each side of the average will include 68% of all data in the set. Two standard deviations will include 95%, while three standard deviations will include 99.7% of all data in the set.
99.6% of all data in the set. Four standard deviations will include 99.8%. See http://en.wikipedia.org/wiki/Standard_deviation for further explanation of this term and its usage.

**Sample of charted data**

![Sample chart showing vehicle speed report](image)

**View Data**

Selecting “**View Data**” displays each saved data point with the date/time and vehicle speed. Columns can be sorted for ease of viewing and analysis. Data Selection and Filters will also control the data displayed.

**Add Data File Button**

Selecting “**Add Data File**” brings up the “Add CSV Data File” window again to allow selection of an additional data file to merge with the one already loaded into TrafficAnalyzer. You will have three choices on how the data gets merged in the case of duplicated data (speed data points with the same timestamp) as those in the displayed file.

**Saving your Work**

Data files brought into TrafficAnalyzer are not modified in the process. However, after you make parameter, setup, and filter changes to the displayed data, you can save those changes and the associated traffic data with
the “Save As” menu item. If you try to exit the program without saving, you will be given the choice to save or discard changes, to ensure none of your work is lost.
Scheduler Tab

If you have purchased the DeviceManager Scheduler option, the Scheduler Tab will be present and it allows selection and editing of the Scheduler’s Operating Modes, Daily Timetables, and Schedules with Exceptions. Schedules are best created before connecting to a sign. Naming of the Modes, Timetables and Schedules for easy identification will assist you when choosing which schedule to send to a sign. A nearly unlimited number of different schedules can be created in advance without being connected to a sign. Each schedule should be saved with a unique identifying name.

Operating Modes are nearly an unlimited number of lists of speed thresholds at which various options are triggered.

Timetables are selections of the Operating Modes to be used at predetermined times during the day.

Schedules are weekly programs of Daily Timetables.

Exceptions is a special calendar which allows selection of Timetables for holidays, special events, or a range of dates such as school closure for spring vacation.

Get Schedule From Sign downloads the current schedule settings from the connected sign: modes, timetables, schedules, and exceptions. See sample on page 34.

Manage Groups is a feature that allows for assigning schedules to a group of signs, and sending a saved schedule to a sign or a group of signs via an Internet connection.

To send a schedule to a single sign, connect first, then return to this screen and click on the “Send Schedule To Sign” to choose the correct schedule from the list.

Making changes to the Operating Modes, Daily Timetables, or Schedules does not automatically send those saved changes to a sign. After saving changes you will see a message reminding you to connect to the sign then send the changed schedule.
Edit Operating Modes

You may configure nearly an unlimited number of operating modes. Each mode can be programmed with your choice of settings depending upon the options purchased or selected in the Sign Setup tab (if an option is not enabled, the corresponding operating mode selection is not shown). Click "Add Mode" to create a new mode.

Right click on a mode name to rename, copy or delete the mode. The (ALL OFF) has been created for your convenience; it cannot be renamed, copied or deleted.

Each mode created must identify the Sign Type as: Your Speed, Speed Limit, Active Speed Limit, or Flasher.

Any selected mode can be duplicated to make entering similar modes easier. Remember to rename the duplicated mode with a unique name. Check all settings carefully.

Since Modes, Timetables, and Schedules are all inter-related, deleting or renaming a Mode that is used in a timetable will cause that timetable to not work.

Note: If you installed DeviceManager over a previous version of PC SpeedCheck you can delete the unused Modes (i.e. Mode3, Mode4……) to clean up the appearance of the Edit Operating Modes screen.

Do not delete the All Off mode.
The basic operating mode selections are:

**Display**: ON / OFF

**Data Collection**: ON/OFF

Different **Sign Types** will display different mode options i.e. Speed Limit will only have 3 options; Speed Limit, Display ON or OFF, and Flashers.

The remaining threshold options include:

**Speed Limit**, sets the speed limit entered into the speed sample data file for later reference

**Violation Alert**, sets the speed at which the display digits begin flashing to advise drivers that they are exceeding the speed limit

**High Speed Cutoff**, sets the maximum speed shown to drivers on the display, to discourage racing

**Minimum Display Speed**, sets the lowest speed to be shown on the display

**Slow Down**, sets the speed at which the Slow Down message is displayed

The above parameters are allowed to be entered in the range of 0 – 99

**Output A Speed**, sets the speed at which Auxiliary Output A is to provide 12VDC for external devices - these parameters are allowed to be entered in the range of 1 – 99  
ON with no speed entered = continuous

**Output B Speed**, sets the speed at which Auxiliary Output B is to provide 12VDC for external devices - these parameters are allowed to be entered in the range of 1 – 99  
ON with no speed entered = continuous

Remember, you must click the **“Save Changes”** button before returning to the previous screen.
Daily Timetables

You may configure nearly an unlimited number Daily Timetables based on single or multiple start and stop times. Each of the timetables can be set to a previously defined Operating Mode to control operation of the display.

Timetables should be named to make them easily identifiable. To create a new timetable, click on the “Add” button.

To enter or change a time, click on the numeric time or midnight and a clock window will pop up. Click on the hour and minutes, AM or PM then save. If you need a time such as 2:31 PM: click on the numeral 2, then type 31 in the text window, then click on PM.

To rename, duplicate or delete a timetable, right-click on the name or choose the menu option. The All Off timetable may not be renamed, copied or deleted. Reset a selected timetable by clicking on the “Reset” button.

Since Modes, Timetables, and Schedules are all inter-related, deleting or renaming a Timetable that is used in a Schedule will cause that Schedule to not work.
This sample timetable illustrates mode changes.

In the sample on the left, the sign uses the ALL OFF mode from 12:01 AM until 7 AM. - then follows the school day times with the chosen modes.

When students are arriving or leaving the school, the speed limit changes to 20 mph.

All Timetables automatically start with 12:01 AM and end with Midnight.

12 PM will display as Noon.

This weekend and holiday timetable has the sign operate from 7 AM until 7 PM in the mode setting of 35 mph with no flashers. Then the sign will be ALL OFF from 7 PM until 7:00 AM, the next day.

Note: you must press the “Save Changes” button to save the changes you make to this screen.

Note: If you installed DeviceManager over a previous version of PC SpeedCheck you can delete the unused Timetables (i.e. Timetable3, Timetable4……) to clean up the appearance of the Edit Daily Timetables screen.
Edit Schedules

You may create a nearly unlimited number of **Schedules**, and each can be set to run any of the previously defined Timetables on any of the 7 days of the week. **Exceptions** are an additional way to attach non-recurring events.

Each week is identical, and any of the predefined timetables may be selected to run on any day of the week.

To create a new Schedule, click on the “**Add Schedule**” button.

Enter a name that will clearly identify the schedule you are creating, as this is the name you will see when selecting a complete schedule to send to a sign. Right click on a schedule name to rename, copy, delete or use the menu options at the bottom of the screen.

Use the drop down menu to choose a timetable for each day of the week. The timetable chosen for Monday automatically applies to Monday thru Friday. You can select a different timetable for each day of the week. The timetable table chosen for Saturday automatically applies to Sunday.
In this sample, Monday through Friday uses the 7-8 2-3 20 mph timetable.

Saturday and Sunday use the All Off timetable.

**Note:** If you installed DeviceManager over a previous version of PC SpeedCheck you can delete the unused Schedules (i.e. Schedule3, Schedule4…….) to clean up the appearance of the Edit Schedules screen.

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### Adding Exceptions

The **Exceptions** list is an additional way to attach non-recurring event days, such as holidays, to selected schedules using a different operating mode or timetable. Since a single exception date will likely be used in multiple schedules (i.e. Veterans Day) exception lists can be created, and then added to the schedules they apply to.

There are two ways to create or access exceptions:

1. When creating a schedule – click on the “Add” button in the Exceptions box. The exceptions created will apply to the current schedule.
2. From the Scheduler tab – choose Edit Exceptions
Create an Exception List with exception dates

1. Choose “Create New” name the list (i.e. Holiday & No School)
2. In the Exception Dates column, click on “Create New”. Use the calendar to enter a single date or date range, then choose a timetable from the dropdown list
3. Continue adding all exceptions (i.e. Holiday and No School) dates.
4. Create additional lists if needed (i.e. early release dates)
5. Any list can be copied to make new lists faster to create
6. Remember to save the list

Add Exceptions to a Schedule

1. Select the list of exceptions (click on column heading of date or Daily Timetable to sort). Column widths are adjustable by dragging
2. Choose the correct schedule from the dropdown list of available schedules
3. Add the exceptions by: “Add All”, or “Add Selected” (highlight one, control click or drag with the mouse)
4. Save when finished.

Delete Expired will delete any exception that has past (expired) as of the current date.

Deleted Selected will delete only the exceptions highlighted.

Change allows individual or multiple exceptions to be changed. Individual allows changes of date and daily timetable. Multiple only allows changes to the daily timetable.

Save & Exit to save the schedule and exception selections you make on this page.

The Operating Mode, Timetable, and Schedule selections are saved in the SpeedCheck software for later uploading to your SpeedCheck display signs.
Send Schedule to Sign

To send a saved schedule to a display:
1. Connect to the correct sign
2. Select the Scheduler Tab
3. Select Send Schedule To Sign
4. Choose the correct schedule
5. Click on OK.

Because each schedule is composed of multiple components (modes, timetables, schedules) carefully plan, name and recheck before sending a schedule to a sign.

Get Schedule From Sign

When connected to a sign running on Scheduler, you can download the schedule information from the sign. The downloaded schedule can be saved as a text file or webpage for later reference or printing.
Manage Groups

This organizational tool requires Internet access or an active cell modem in each SpeedCheck sign.

Manage Groups is used to send Scheduler information to multiple signs. If you have a large number of signs with the same schedule, then using Manage Groups could be a convenience and save you time. Each sign must first be individually setup with an IP address, device ID, correct time and date, and other user controlled features. Depending on how many signs you have, it may be easier to send Schedules, one at a time, to each sign.

Before using Manage Groups you must do the following:
1. Connect to each sign and add them to the connection setup list. See page 12
2. Create the Modes, Timetables, and Schedules for the signs (name schedules for easy identification)
3. Organize on paper which signs can operate on the same schedule (this would be your group)

The process of Manage Groups is as follows
- Delete any unused groups (e.g., flashers)
- Create Major groups by sign type
- Create sub groups -all signs in sub group use the same schedule- (displays as a folder)
- Add the Schedule which the group of signs will use
- Add the signs to the group
- Send All Schedules will automatically send the selected schedule to all signs

Click on Manage Groups. Group and Sign Manager will display the common sign types as groups: Driver Feedback, Flashers, and Speed Limit. Right Click on a sign type (Speed Limit, Driver Feedback, Flashers) that you are not using, and delete.

After you have deleted the sign type groups you are not using, right click on the sign group (Driver Feedback is our most common sign type) and rename the group e.g. “School Zones”.

Another possible group might be “Arterial Road Sign”. Right click and choose Add Group, select the sign type (Flasher, Speed Limit, etc) then assign the group a name. The best way to organize your signs is to group similar sign types together.

Sub groups can be used to organize signs into unique groups. All signs under a sub group will use the same schedule.
1. Right click on a major group and choose Add Group – Sub Group – assign a name.
2. Right click the sub group - select a schedule
3. Right click the schedule to add signs
Using schools as an example: many schools would most likely have the same time start and stop times so they could share the same scheduler timetable. All signs in a group must use the same schedule (timetable & modes). You can have multiple subgroups as this example illustrates. Rather than send schedules to signs one at a time, Manage Groups will send the selected schedule to all signs listed under that subgroup schedule.

**Send All Schedules:**
This command will send the Schedules selected in Manage Groups to each sign listed under the group or subgroup using that Schedule. Options for sending schedules are: Select All signs, Select by Schedule, or click on individual signs (or Ctrl click to select multiple signs).

Send All Schedules will automatically connect to each sign, send the appropriate schedule, disconnect, and then repeat the process until all signs configured in the Internet Connection Setup screen have received their schedule.

Passwords are not required for each sign when using send all schedules, since the passwords are stored in the Internet Connection Setup data.
Troubleshooting

**Bluetooth™ communications not working or erratic**

- Incompatible Bluetooth adapter used with PC – Information Display Company supports Cirago (BTA6210) and Ezurio (BRBLU03) USB Bluetooth radios.
- Incompatible drivers loaded for Bluetooth radio. Cirago & Ezurio do not require installation of drivers, when first inserted they will automatically install the correct drivers (Plug & Play).
- Attempting to “Pair” Bluetooth devices will result in asking for a password. **Do Not attempt to pair Bluetooth devices – it is not needed for DeviceManager to communicate.**
- Display not powered, or key switch set to OFF.
- PC computer with Bluetooth too far away – must be located within 50 feet **in front of the sign.**
- Mismatched SpeedCheck software is loaded on the PC and/or display controller board. Contact Information Display Company for the latest versions.

**Not All Vehicle Speeds Displayed**

- Verify the display has correct alignment with the roadway
- Check high-speed cutoff setting, which may be set too low for the prevailing traffic speed.
- Check minimum display speed setting, may be set too high for the prevailing traffic speed.
- Note that SpeedCheck is designed to detect moving vehicles, including trucks and golf carts. It is designed to ignore people or small targets.
- Radar unit can be factory-set for longer or shorter detection range, or the display may be angled slightly towards the centerline of the road to focus on vehicles closer to the display; the factory setting is a detection range between 400 to 600 feet from the display, depending somewhat upon target size (truck vs. compact car, etc.).

**Sign Displays Test Sequence Only**

- Operating Mode has been set to collect data but not display speeds. Set the program as desired.
- Radar is not sending data. Contact Information Display Company for further diagnostics.

**No Test Sequence and No Speeds Displayed:**

- Key switch (if used) in OFF position (fully CCW).
- Power to display is OFF.
- Test sequence disabled.
- Operating Modes settings set for “Display OFF”
- Scheduler (timer in older units) has scheduled the sign to be off.
- GPS time synchronization is taking longer than normal due to display not being powered up for a few weeks. Allow up to 30 minutes in this case.

**Numbers Displayed with No Vehicles Passing**

- “06” or “08” displayed – display is picking up noise from such items as fluorescent light ballast or fan blower motors. Eliminate the source of the noise or insulate the radar head from the display cabinet (call Information Display Company for info).
- “88” displayed – display is programmed for the SLOW DOWN message but the SLOW DOWN message boards are not installed. Disable the SLOW DOWN message operation in the Sign Setup menu.
Too high a number displayed relative to traffic speed

- Radar may be set to read Kilometers instead of MPH. Contact Information Display Company for a radar unit set to the appropriate units.

Detection Range Too Short

- Sign alignment is incorrect.
- Sign has metallic or plant obstructions between display and the vehicles.
- Sign is aligned properly but road curve or grade is affecting detection zone. Try aligning the sign face towards or away from center line, and/or more towards the grade of the road (up or down) as required.
- Internal metal radar reflector bent or missing. Check inside the display cabinet.
- Radar unit can be factory-set for longer or shorter detection range, or the display may be angled slightly towards the centerline of the road to focus on vehicles closer to the display; the factory setting is a detection range 400 to 600 feet from the display, which is affected by target size (truck vs. compact car, etc). Contact Information Display Company for more information.

Unable to set or re-set parameters using the PC computer

- Outdated or mismatched SpeedCheck software is loaded on the PC and/or display controller board. Contact Information Display Company for the latest versions.

SpeedCheck application not downloading data properly

- Invalid display name. Make sure display name programmed with the PC computer is valid and does not include special characters or punctuation.
- Make sure display date/time is set properly with the Set Time & ID menu.
- If using bluetooth, be in front of the sign, move closer to the sign

Communication Interrupted

- Distance between Bluetooth device and sign is too great – move closer
- If using Internet – many variables come in to play with cell phone signal strength, try to re-establish the connection
- Internet connection lost – make sure you have an active internet connection
File Names

Software and firmware files used by the DeviceManager system include the following:

SpeedCheck<xxxx>.hex is the SpeedCheck firmware program that resides in the display sign, controlling all functions of the display and any options purchased with it. This file can be updated through your DeviceManager application.

<sign_name> <mm-dd-yy> <hh:mm>[_nn].csv is the SpeedCheck vehicle speed data file as it appears on your PC after downloading. This file will be saved in:
- XP systems - C:\Documents and Settings \ All Users \ Shared Documents \ SpeedCheck \ Data Files
- Or
- System 7 and Vista – C:\ Users \ Public \ Public Documents \ SpeedCheck \ Data Files

The data file name will have a trailing two-digit file number representing the time of day the data files was downloaded. For example, “Fifth & Main Sep-26-08 15;44.csv”.

Sales, Service and Support

You can contact us via email, at sales@informationdisplay.com at any time, or you can complete our online information request form. We try to answer all email inquiries within 24 to 48 hours so if you have a pressing question, please call us.

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