Traffic Logix Radar Speed Signs
Software Manual

PASTROS- Parameters and Statistic Reporting Software

TRAFFIC LOGIX

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Congratulations on your recent purchase of Traffic Logix radar speed signs “SJT-02”, or “SJT-02V”. As you may already know, the Traffic Logix speed signs are innovatively designed with a unique configuration of LEDs (light emitting diodes) that allows for maximum brightness at low energy consumption.

Below, please find a guide to programming, monitoring and using your Traffic Logix speed sign with the accompanying PASTROS software.

1 The PASTROS software

The parameters and statistic reporting software (PASTROS) is designed to help you get the most out of your radar speed sign. It allows you to set parameters, monitor traffic data, and generate reports. A Bluetooth connection and a laptop or personal computer will enable you to use the sign software.

2. Connection to the Traffic Logix speed sign

2.1 Setup your Bluetooth device

A Bluetooth device has to be connected to the user’s PC or just switched on if the PC has a built-in Bluetooth device. Using the provided Bluetooth driver, the computer and the Traffic Logix speed sign have to be paired. The default name of the sign’s Bluetooth is “BT-12” and the default password is “12345678”. The name and the password can be changed at any time once the PASTROS software has been installed. (See section 3.3)

2.2 Starting the software

When the Bluetooth connection has been established and the Traffic Logix speed sign is connected to your computer, start the PASTROS user software. During the starting process the software will attempt to locate the driver feedback sign. This may take several minutes. A small warning window will be shown during this process. If the connection is established, the message “Ready” will appear in the status bar (lower left side).

If the user software can’t communicate with the display device, a message window will appear with the message “Can’t open the port”. If this occurs, go to the “Signboard” menu and chose “Search sign…” The software will reattempt to locate the sign. If this attempt is unsuccessful, check your Bluetooth connection.

If you know the com port which is in use for the Bluetooth connection (see Windows Bluetooth devices menu) you can try to set the com port in the PASTROS software manually. Please use the “Signboard” menu “Manual port select…” option.

3. Traffic Logix speed sign settings

All menu items described in this chapter are found in the Settings menu. This menus includes display parameters, operation modes, measuring and data recording categories, Bluetooth name and password, and the device clock.

3.1 Display settings

This option lets you determine how your sign will react when a vehicle is approaching.

Parameters download

Using the Parameters download button, current display settings parameters will be transferred from the sign. However, if the sign has already been connected (which should generally be the case), the download occurs automatically and the current parameters of the speed sign will be shown when you open the display settings window

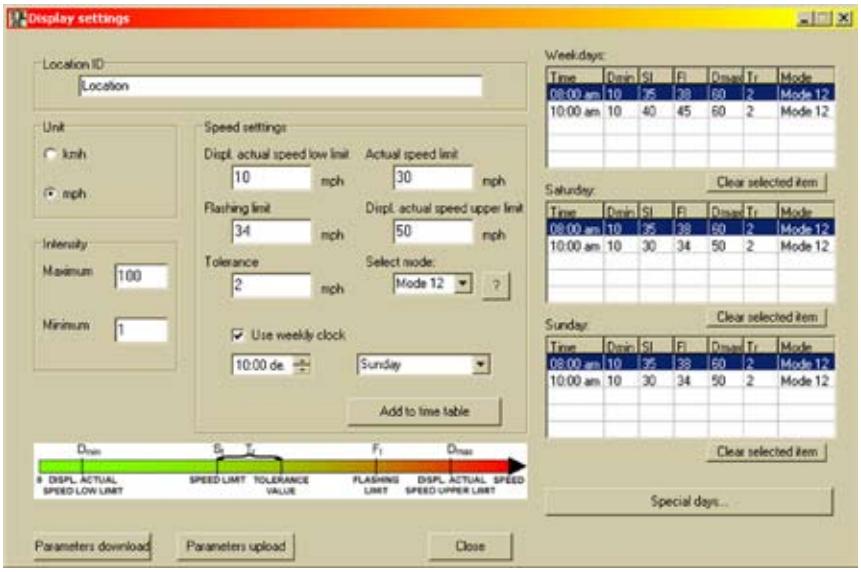


Figure 1, the display settings

Description of the located areas:

Location ID: Maximum 30 characters – You may specify a device name. If you want to test the device, start this field with a space. In this mode, speed values will be continuously generated as if they were measured by the radar. This is useful to test device functionality. To terminate the test mode, enter a name in the Location ID field beginning with a character other than space and load the device.

Unit: Choose either mph or km/h

Intensity: Set maximum and minimum LED intensity. The maximum value is 100, while the minimum is 1. The automatic dimming will work between the 2 chosen values.

Speed settings: The following speed values must be adjusted. Choose the desired value for each category.

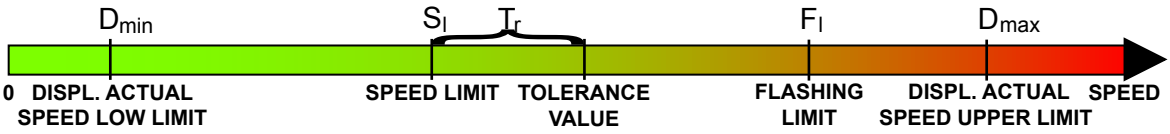


Figure 2: Speed values to be set

D_{min} *Display actual speed low limit* This is the lowest speed at which the sign will display a vehicle's speed.

S_L *Speed limit* This is the actual speed limit at the sign's location.

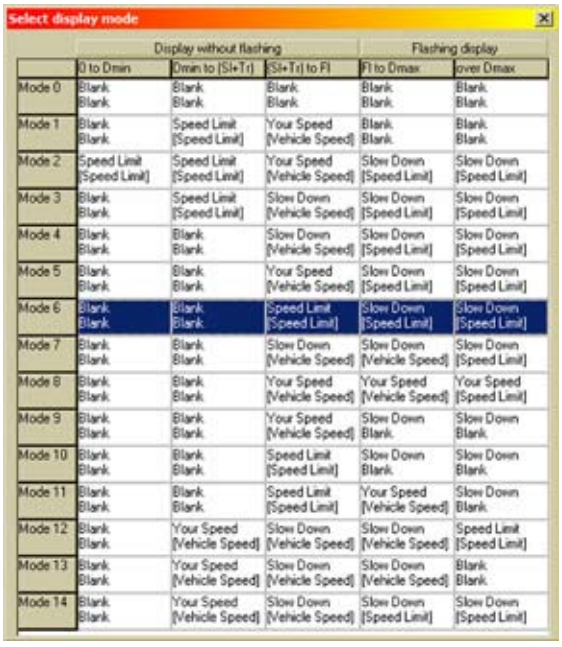
T_R *Tolerance value* This extends the speed limit up to the limit of a still acceptable speed.

F_L *Flashing limit* This is the speed at which you want the sign to flash at a passing vehicle.

D_{max} *Display actual speed upper limit* To avoid racing, this is the highest speed value at which the sign will display a vehicle's speed.

Select mode:

Click on the "?" button, and a table will show a variety of predefined operating modes. This chart refers to the above mentioned limit values, and shows what will be displayed by the device in the different modes.



Select display mode

	Display without flashing			Flashing display	
	0 to Dmin	Dmin to (SI+Tr)	(SI+Tr) to FI	FI to Dmax	over Dmax
Mode 0	Blank Blank	Blank Blank	Blank Blank	Blank Blank	Blank Blank
Mode 1	Blank Blank	Speed Limit [Speed Limit]	Your Speed [Vehicle Speed]	Blank Blank	Blank Blank
Mode 2	Speed Limit [Speed Limit]	Speed Limit [Speed Limit]	Your Speed [Vehicle Speed]	Slow Down [Speed Limit]	Slow Down [Speed Limit]
Mode 3	Blank Blank	Speed Limit [Speed Limit]	Slow Down [Vehicle Speed]	Slow Down [Speed Limit]	Slow Down [Speed Limit]
Mode 4	Blank Blank	Blank Blank	Slow Down [Vehicle Speed]	Slow Down [Speed Limit]	Slow Down [Speed Limit]
Mode 5	Blank Blank	Blank Blank	Your Speed [Vehicle Speed]	Slow Down [Speed Limit]	Slow Down [Speed Limit]
Mode 6	Blank Blank	Blank Blank	Speed Limit [Speed Limit]	Slow Down [Speed Limit]	Slow Down [Speed Limit]
Mode 7	Blank Blank	Blank Blank	Slow Down [Vehicle Speed]	Slow Down [Vehicle Speed]	Slow Down [Speed Limit]
Mode 8	Blank Blank	Blank Blank	Your Speed [Vehicle Speed]	Your Speed [Vehicle Speed]	Your Speed [Speed Limit]
Mode 9	Blank Blank	Blank Blank	Your Speed [Vehicle Speed]	Slow Down Blank	Slow Down Blank
Mode 10	Blank Blank	Blank Blank	Speed Limit [Speed Limit]	Slow Down Blank	Slow Down Blank
Mode 11	Blank Blank	Blank Blank	Speed Limit [Speed Limit]	Your Speed [Vehicle Speed]	Slow Down Blank
Mode 12	Blank Blank	Your Speed [Vehicle Speed]	Slow Down [Vehicle Speed]	Slow Down [Vehicle Speed]	Speed Limit [Speed Limit]
Mode 13	Blank Blank	Your Speed [Vehicle Speed]	Slow Down [Vehicle Speed]	Slow Down [Vehicle Speed]	Blank Blank
Mode 14	Blank Blank	Your Speed [Vehicle Speed]	Slow Down [Vehicle Speed]	Slow Down [Speed Limit]	Slow Down [Speed Limit]

Figure 3: predefined operating modes

The highlighted mode will be written into the "select mode" field automatically after closing the window. You can choose the desired mode from the scroll down menu as well.

Use weekly clock:

If you mark this check box , you can define a time schedule with all speed setting values and modes mentioned earlier. You can schedule the sign based on three different type of days:

workdays, Saturdays and Sundays. (Use the time set and the type of the day fields as well as the “add to time table” button and see the tables). You can thereby create a special time schedule to use the signs on different modes depending on type of day, and/or time of day such as rush hours or nighttime etc. This allows you to program the sign to meet alternating speed limits as well such as school time regulated zones, night time speed reductions, etc.

Using the “Special days” button, you can define local holidays as Sunday or Saturday mode.

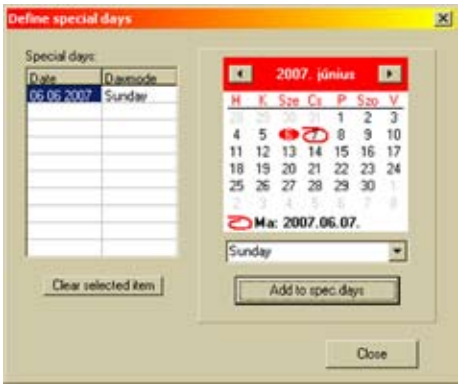


Figure 4, special days

Note: The change to daylight saving time occurs automatically.

Parameters upload

To transfer all the above settings to the sign, use the Parameters upload button.

3.2 Measurement and data record parameters

This setting is important for accurate speed measurement. It also allows you to define time intervals and speed classes for traffic data collection.

Parameters download:

Using the *Parameters download* button, all the display setting parameters will be transmitted from the sign. If the sign is already connected, the download occurs automatically. The current sign parameters will be displayed when you open the Measurement and data record parameters window

Figure 5, measurement and data record parameters

The first three lines define the exact physical location of the radar unit. Since the radar works

with the Doppler effect, in order to maintain accurate reading, the measured speed values must be correctly based on the position of the radar. The Doppler shift frequency is the difference between the fundamental transmitted frequency and the received frequency. This is denoted by "F" and is calculated by:

$$F = \frac{2 * V * F_0}{c} * \cos(\mathrm{j})$$

Figure 6, Doppler formula

V = Velocity of the target (m/s)

F0 = Fundamental Frequency (Hz)

c = Speed of Light (3*108 m/s)

φ = Angle subtended between the radar polar axis and the direction of travel of the target.

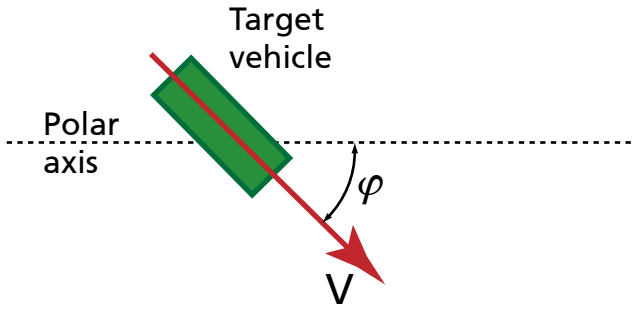


Figure 7, comment

There is no Doppler frequency shift signal received by the radar from the target when the target is stationary or if φ = 90°.

The following data must be entered:

"*Height of the sign*"	The vertical distance from the surface of the road to the position of the radar.
"*Distance to the middle of the lane*"	Horizontal distance from the position of the radar to the middle of the observed lane.
"*Measuring distance*"	Horizontal distance from the radar to the approaching vehicle when it is first detected.

Data record parameters:

In the next fields, the basic traffic data parameters must be set.

"*First threshold*"	the range of the first cell (you should set this higher than 3mph (5 km/h)
"*Step*"	the range of each cell thereafter

If the "*First threshold*" = 10 and the "*Step*" = 5, the cells will show the following speeds:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
- 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 - 69	70 - 74	75 - 79	80 - 84	85 -

Data record parameters:

You must select the cycle time for data collection. Choose either 15 minutes, 30 minutes, or 1 hour intervals. As long as traffic is equal to or less than 65,535 vehicles per interval, the recording capacity is 15, days, 30 days, or 60 days respectively. After the data record is full, the oldest data will be overwritten. To transfer your settings to the sign, use the *Parameters upload* button.

3.3 Bluetooth settings

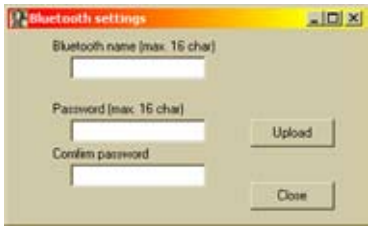


Figure 8, Bluetooth settings

In this submenu, Bluetooth parameters such as the name of the sign's Bluetooth and password can be changed. These are required to set up the Bluetooth connection in the Windows operation system (see 2.1)

For safety reasons, you should change the password from the factory default.

If you forgot the username or password for your Bluetooth, you can reset the factory settings. To do this, open the sign and disconnect the power supply plug of the electronic board, and find the "Program" connector (X8). (See Figure 9)

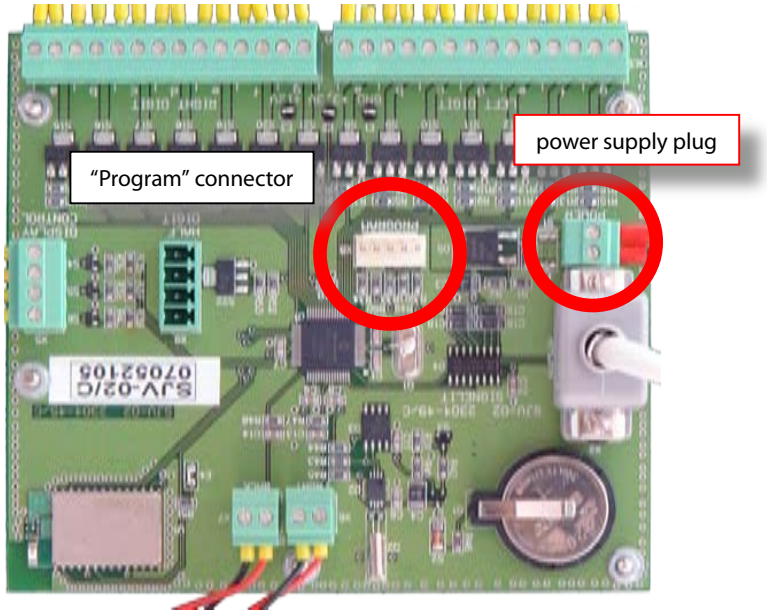


Figure 9, the SJV electronic board

Put a jumper on the 2nd and 3rd pins of the “Program” connector (X8). (See figure 10)

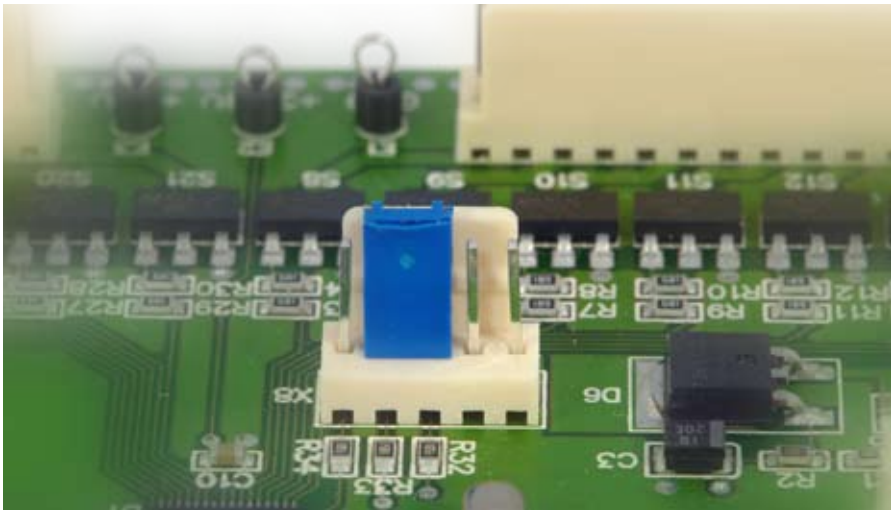


Figure 10, jumper on the “Program” connector

Connect the the power supply plug of the electronic board wait several seconds.

Power off the device, remove the jumper, power on and close the sign door.The Bluetooth connection is now set with the factory settings, and the name and password can now be reset.

Name: BT-12

Password: 12345678

3.4 Clock settings

Figure 11, Clock settings

The date and time can be adjusted in this submenu.

When you open this window, the actual time will be automatically downloaded from the device. If this doesn’t occur, click the “Read clock” button to read out the device’s time manually. After setting the correct time, you can upload it to the sign by clicking on the “Set clock” button.

3.5 Auto clock upload

If this line is marked in the settings menu, when you connect the software to the speed sign your computer time will be uploaded to your display device automatically.

4. Download Data

When you click on this button in the main window, the traffic data will be downloaded from your sign to your computer.

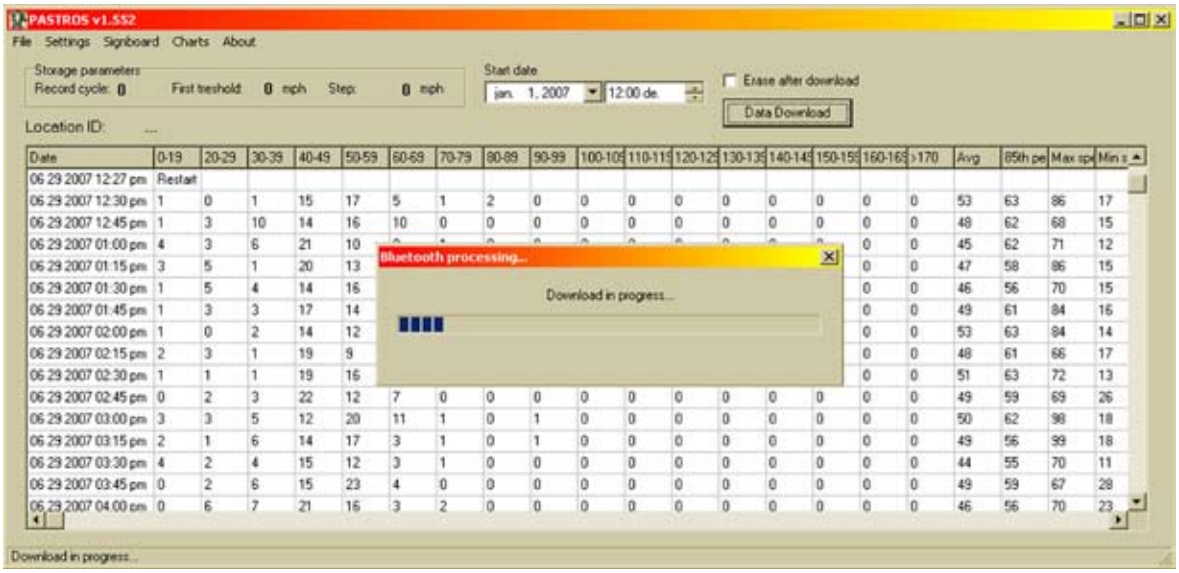


Figure 12, data download

If you want to download data beginning at a specific date and time, select it in the labeled field. All the data collected from this time on will be downloaded. The default date and time in this field is 01/01/2007 00:00. If it remains unchanged, all the data from the device will be downloaded.

To start the download process, click the “Data Download” button.

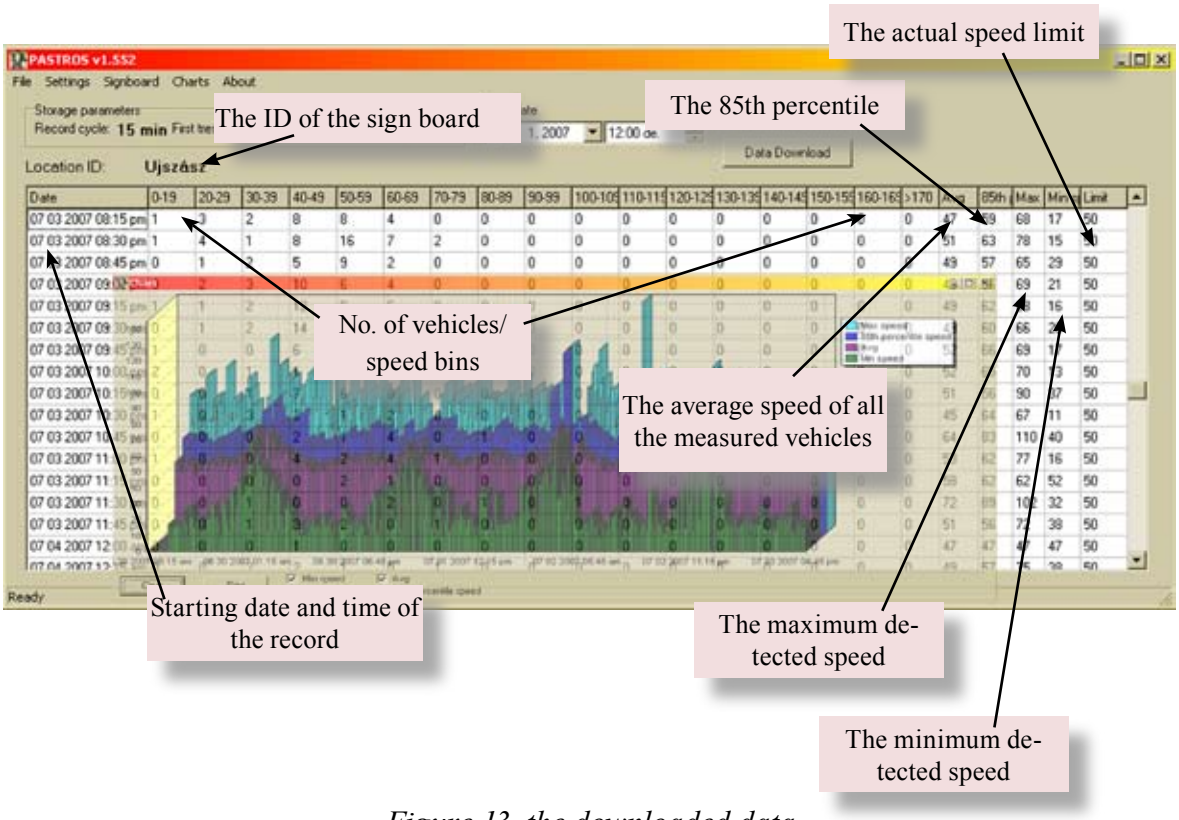


Figure 13, the downloaded data

If the check box “Erase after download” is marked, all the data memory of the Traffic Logix speed sign will be erased after a successful download process.

During the download process, a progress bar will be shown.

If a communication error occurs during the data download, a “Time out” message will appear. In this case even if you have checked “Erase after download,” sign memory will not be erased. Click on the “Data Download” button to begin the download again.

Once downloaded, all of the collected data will be shown based on the time steps you have chosen. Average, minimum, and maximum speeds, as well as the 85th percentile and the actual speed limit will be shown. The downloaded data will contain the accurate time of any possible device restarts due to power failure.

5. Further Menus

5.1 File

In this menu you can manage your downloaded or earlier saved traffic data.

5.1.1 Open data

Opens the earlier saved traffic data from the PASTROS related .dfs file format.

5.1.2 Save data

Saves the downloaded traffic data in the PASTROS related .dfs file format.

5.1.3 Export data to Excel

Exports the traffic data to a Microsoft Excel spreadsheet.

Note: To use this option, you have to have an installed Microsoft Excel on your computer. According to your Excel version choose the right separator character from the pop up menu.

Excel will open and the data will be shown. The header data will be displayed in the first 4 rows with each following row displaying one data record. You can save this spreadsheet by choosing Save from the File menu in Excel.

5.1.4 Save data as txt

You can save the traffic data as a CSV (comma separated value) text file. To do this, choose “Save data as text” from the File menu. A standard save dialogue box will open and the default file name (the location ID + date) will be offered. Change the file name as desired.

A new file will be saved in the following format: In the header, the location and storage parameters are displayed. After the header each row contains the data of one measured period. The values are separated by commas.

If you want to add the data to an existing file, choose the existing file name and the new records will be merged to the end of the existing file. The headers must be identical for the merge to be accurate. The software will not check the header of the original document before merging the new data.

5.1.5 Exit

Closes your PASTROS software. If you have unsaved data, the program will ask you to save it.

5.2 Signboard

In this menu you can erase the Traffic Logix speed sign's memory, read out the factory serial number, and update the firmware version.

5.2.1 Erasing device memory

All the collected data from the speed sign can be erased using the "Erasing device memory" submenu.

The following message box will open to confirm this command. (See Figure 13)

Figure 14, confirmation of erasing

If you choose "Yes", all of the traffic data will be erased from the device.

5.2.2 Reading out device ID number

The "Reading out device ID number" submenu will display the factory ID number of your sign. This is for information purposes only and cannot be changed.

Figure 15, the factory ID number

5.2.3 Search sign

See details in section 2.2.

5.2.3 Manual port select

See details in section 2.2.

5.2.4 Firmware update

With this function you can upgrade the firmware running in your Traffic Logix speed sign. This is generally not necessary. If you do want to update your firmware, please ensure that you have the actual firmware for backup purposes and the up to date bin file on your computer.

The collected traffic data and settings will not be lost while you update this.

If the update is unsuccessful, the PASTROS software will remind you to upload the right firmware.

Please note, that not all versions of the PASTROS software are compatible with all versions of the Traffic Logix speed sign firmware. In case of doubt please consult with your Traffic Logix speed sign supplier

5.3 Charts

In this menu, you can view your traffic data file in different ways. Please note that your PASTROS window should not be in full screen mode while you use this feature.

5.3.1 Lines

This allows you to see the counters of the speed classes of a specific time interval. Highlight the desired lines in one block and click on the lines option. After opening the chart, you can add separate lines by double clicking in any field of the desired line.

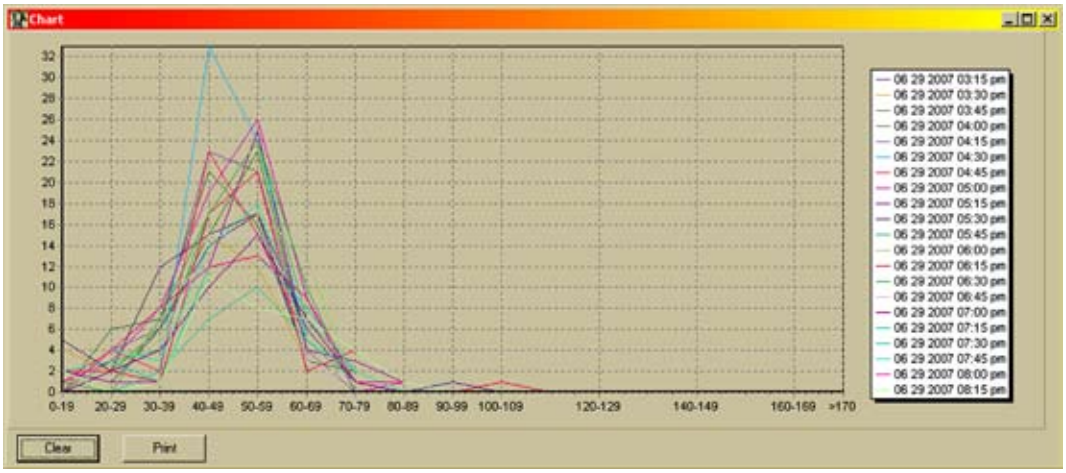


Figure 16, graphs

5.3.2 Characteristic speed values

Using this option, the maximum, minimum, average, and 85th percentile speeds of the collected traffic data can be shown. Use the check boxes to individually switch these options on and off.

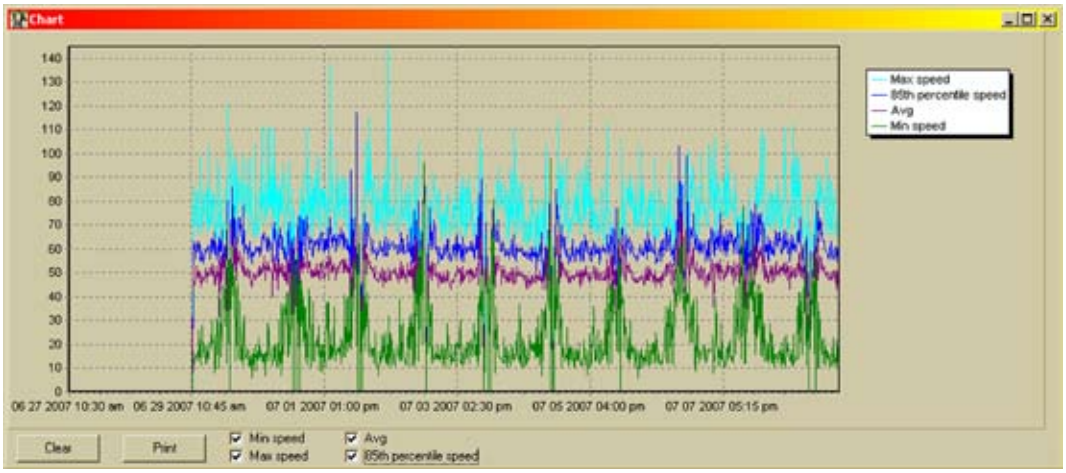


Figure 17, graphs

5.4 About

Figure 18, about