



GR32, GR42

**Installation Manual and
Users Guide**

Copyright

©2005 Sierzega Elektronik GmbH

All rights reserved.

Reproduction, adaptation or translation without prior written consent is prohibited, unless it is allowed based on applicable copyright laws.

Edition: January 2006

Warranty

Information contained in this document may be changed without notification.

Sierzega does not incur any warranty of any kind regarding this information. SIERZEGA DECLINES ESPECIALLY THE IMPLICIT WARRANTY REGARDING MARKETABILITY AND SUITABILITY FOR A SPECIFIC PURPOSE.

Sierzega accepts no liability whatsoever for direct, indirect, accidental or resulting or other damage which may result from providing or using this information.

Trademarks

Microsoft®, Windows®, Windows NT®, and MS-DOS® are according to U.S. law, registered trademarks of Microsoft Corporation.

The *Bluetooth*® trademark is property of Bluetooth SIG, Inc. and the use of the trademarks by Sierzega Elektronik GmbH takes place under licence.

All other herein named products are trademarks of the according companies.

FCC Notice:

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada.

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications made to this equipment not expressly approved by **Sierzega Elektronik GmbH** may void the FCC authorization to operate this equipment.

FCC ID: S6P-GR-146-01

IC: 5792A-GR14601

***Bluetooth* Module:**

This device contains

FCC ID: PVH090103S

IC: 5325A-090103S

The radiated output power of the GR32-42 Bluetooth module is far below the FCC radio frequency exposure limits. Nevertheless, the GR32-42 Bluetooth module shall be used in such a manner that the potential for human body contact during normal operation is minimized

Performance Characteristics

Overview

The speed displays GR32 and GR42 allow for active road safety education through the large display as well as the registration of a simple statistic of the traffic itself through integrated data recording and with the provided PC analysis software, delivers a detailed analysis and evaluation of said traffic data.

When a vehicle drives through the area of registration of the radar equipment, the measured speeds, averaged over 0,5 seconds, will be shown on the large display and the start and end speeds within the area of registration will be saved as data with date and time in the integrated storage (V1 and V2). A total of about 209,000 data records may be stored individually.

After registration, the data will be transferred to the PC and a meaningful analysis with coloured diagrams is just a few work steps away.

Content

Start-up, perform measurement

Positioning at the Curb	6
Adjustment to the Driving Lane	7

Configuration of the Display, Data transfer

General	8
Install <i>Bluetooth</i>	9

PC Analysis Software GRS

System Requirements	10
Installation	10
The Main Window	10
Data Transfer with <i>Bluetooth</i>	11
Data Filtering	12
Statistic Block	14
Text in the Diagram	14
Logo or Letterhead in the Diagram.....	14
General Information about Diagrams.....	15
Printing Diagrams	16
Diagram 1: Vd, V85, Vmax vs. Time	16
Diagram 2: Number of Vehicles vs. Speed	17
Diagram 3: Number of Vehicles vs. Time	17
Diagram 4: Vd, V85, Vmax, No. of Vehicles vs. Weekday.....	17

Affix

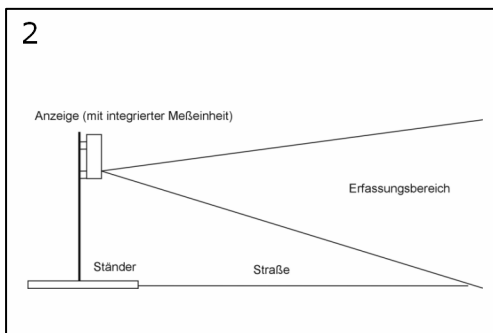
Charging the Rechargeable Battery	18
Precautions.....	18
Terms of Warranty.....	19
Technical Data	19

Mounting, Start-up, Perform Measurement



Positioning at the Curb

The mounting for the post must be fastened to the rear of the big display. Afterwards, the equipment can be fastened to a rack or an existing post at the curb and started up. (see Image 1).



Mount the speed display GR32 or GR42 respectively, in an area where traffic will not be hindered and the line of sight for traffic signs will not be blocked. Furthermore, the display should be visible to the driver from approximately 100 meters distance on a straight road, so that the drivers can adjust to the situation of speed measurement while approaching the display, and will not be startled by an unexpected fast light up of the display.

In order to achieve optimum scopes with the measuring device, the apparatus must be aligned precisely at the run of the road. If the rack holding the apparatus is standing on uneven ground, it is important to ensure that the display is not tilted backwards. Otherwise, the scopes of the measurement are greatly reduced. Ideally, the slant of the rack should correspond to the gradient of the road. (see Fig. 2).

Attach the powersupply to the battery, clamp the black battery clamp at the negative pole and the red battery clamp at the positive pole of the battery.

Status signal after switch-on

Immediately after connection to the batter, the speed display will show the following status signals at half second intervals:

U1 – AAA – U2 – BBB – u – CCC – o – DDD – Lo

U1 ... Voltage of the battery without load.

AAA ... Voltage U1 in Volt x 10

e.g. 120 denotes 12,0 Volt

115 denotes 11,5 Volt

U2 ... Voltage of the battery while the display lights up

Mounting, Start-up, Perform Measurement

BBB ... Voltage U2 in Volt x 10
u ... Lower speed threshold
CCC ... Lower threshold in km/h
o ... Upper speed threshold
DDD ... Upper threshold in km/h
Lo ... The battery is dead, the apparatus will be switched off.

An example:

The status signal U1 – 125 – U2 – 120 denotes

U1 Off-load-voltage of the battery is 12,5 Volt

U2 On-load-voltage is 12,0 Volt

The lower threshold is 0 km/h and will therefore not be displayed

The upper threshold is 100 or 200 km/h and will therefore not be displayed

Another example:

The status signal

U1 – 115 – U2 – 105 – u – 25 – o – 80 – Lo

denotes:

U1 Off-load-voltage of the battery is 11,5 Volt

U2 On-load-voltage is below 11,0 Volt, and therefore the apparatus will be switched off in order to avoid a total discharge of the battery.

The lower threshold is 25 km/h. Only vehicles driving faster than 25 km/h will be displayed.

The upper threshold is 80 km/h.

Adjustment to the Driving Lane

Test the adjustment to the driving lane with the display activated. Turn the display horizontally and vertically until the radar measurements can reach optimal scopes. In doing so, observe the distance at which average passenger cars will be measured by the radar equipment and the speed will be displayed.

Configuration of the Display, Data Transfer

General

For start-up of the display, no other than the aforementioned adjustments are necessary. As soon as the display is connected to power supply, it is operational. The speed of oncoming vehicles will be measured and displayed. Simultaneously the measured results will be saved in the data storage.

Please note:

The course of measurement of a vehicle may be interrupted by various influences in the measuring field. The measurement may possibly be interrupted if a vehicle drives past the display from the opposite direction at the same time the measuring of an oncoming vehicle occurs, even if the oncoming vehicle is still in the measuring field.

Movements within the measurement field which are not originating from the oncoming vehicle, such as from bushes or trees in the wind or by pedestrians, may be sufficient to irritate the radar equipment. It is hence possible that in some cases two data records will be saved in the storage of the radar equipment.

Otherwise, it is possible, that in situations of standing or slow moving traffic, the distance between vehicles is not big enough for the radar equipment to measure the gap between vehicles. At such an instance, vehicles driving in close succession will be saved by the radar equipment as one vehicle.

NOTE

Due to the measurement set-up, a clear traffic census in connection with speed displays is not possible ! Should you wish to conduct unaffected traffic census without display with exact counting, speed, vehicle size and distance measurements, we recommend our Traffic Statistic Equipment SR3 or SR4.

Configuration of the Display, Data Transfer



Install *Bluetooth*

Should the integrated *Bluetooth* functions not yet be installed on your computer, you will need a USB *Bluetooth* adapter.

Install this *Bluetooth* stick according to the indications in the enclosed manual.

As soon as the *Bluetooth* adapter is ready for operation, the connection to other equipment is possible.

Connect the Sierzega Speed Display to the power source and ensure that the distance between PC and the display is not greater than 20 meters.

On the PC, choose the function „Look for other *Bluetooth* equipment“. As soon as the speed display is listed under the equipment found (Labelled „Sierzega“ and a 4 digit *Bluetooth* serial number), you will, after clicking on the symbol, be asked to enter a PIN code.

NOTE	The PIN code is listed on a sticker on the cover sheet of the manual !
-------------	--

After entering the PIN code successfully, as „available protocol“ a „serial port“ in the form of a plug will be shown. Click on this symbol in order to initiate the connection with the speed display.

As soon as the connection has been obtained, an interface number will be displayed, through which other programs can access this Bluetooth connection. Use this COM-port number in the GRS analysis software in order to exchange data with the display.

Entering of the PIN code is only necessary for the first connection!

System Requirements

PC with Windows 95, Windows 98, Windows ME, Windows 2000, Windows NT or Windows XP operating system, Microsoft Internet Explorer 4.1 or higher, Pentium 100 MHz, 32 MB RAM, 50 MB free hard disk storage

Installation

Insert the CD-ROM into the CD drive of your computer and start the SETUP program. (Start, run, „D:SETUP“)

Follow the installation wizard.

The Main Window (Figure 16)

The following selection is available in the menu bar:

-File

Open... (Ctrl+O):

With the PC Analysis Software GR, only GR-files may be opened. Otherwise the import of data will be interrupted.

Export... (Ctrl+X):

While working with the analysis software, the original GR-file will **not be altered**. Immediately after the first data call from the cache, the data will automatically be stored in the correct GR-format, respectively be converted into this format (Palm OS) and should **not be manipulable** anymore at a later time. This function is therefore a possibility for export only. The data will be stored in a text file, between the data are tabs, after each vehicle a CR+LF („Enter“). This way, the data may be accessed with any program like Microsoft Word or Microsoft Excel.

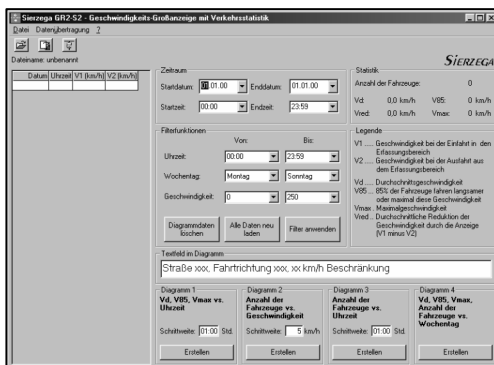


Figure 16

Data Transfer with *Bluetooth*

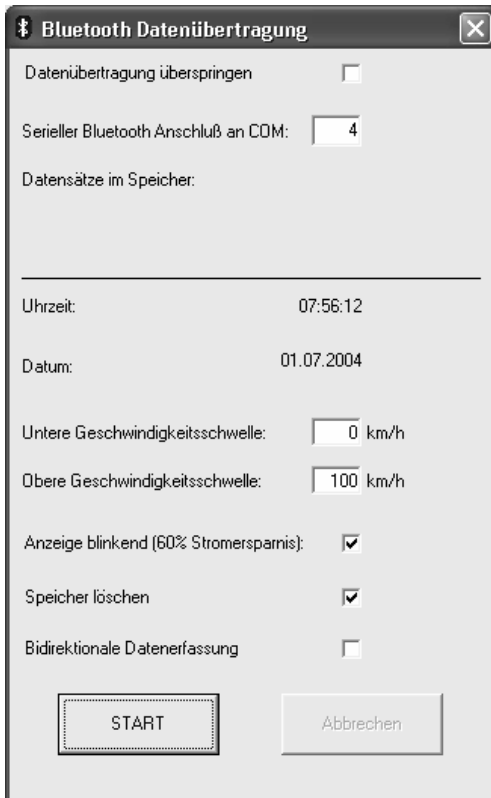


Figure 17

By clicking on „**Bluetooth Data Transfer**“ in the Menu „**Data Transfer**“ or by clicking on the *Bluetooth* Logo on the Toolbar below the Menu bar, the window *Bluetooth* Data Transfer will be displayed. (Figure 17).

In the field „Serial *Bluetooth* Connection to COM:“ enter the port number which was indicated for this port during establishment of the connection from the *Bluetooth* Software to this serial port. (see page 9).

Sub-menu points in the data transfer:

- **Skip Data Transfer**

Choose this menu point if no traffic data should be read during the following data transfer.

- **Date and Time**

For the following data transfer, the indicated values from the PC internal clock are set with the speed display.

- **Lower and Upper Speed Threshold**

Enter the values which determine when the speed display will start and stop displaying the measured speeds. The data recording will not be affected by this.

- **Flashing Display**

Choose this menu point in order to display the measured speeds in a flashing manner on the speed display. This will lower the average use of power by 60 %.

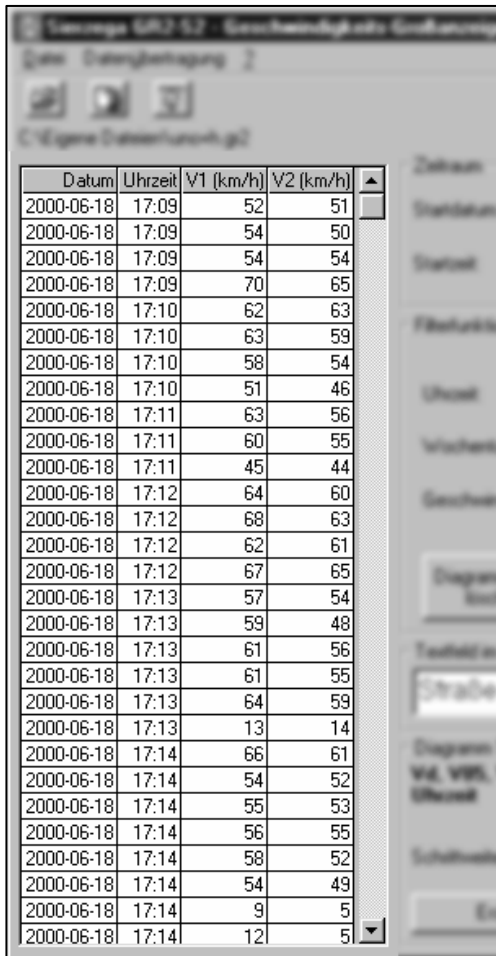
- **Delete Storage**

- **Bi-directional Data Recording**

With this menu point you can choose whether the data recording should also include vehicles from the opposing direction.

- „**START**“ of the data transfer:

If traffic data should be recorded, a file name must be entered at the beginning of the data transfer.



Datum	Uhrzeit	V1 (km/h)	V2 (km/h)
2000-06-18	17:09	52	51
2000-06-18	17:09	54	50
2000-06-18	17:09	54	54
2000-06-18	17:09	70	65
2000-06-18	17:10	62	63
2000-06-18	17:10	63	59
2000-06-18	17:10	58	54
2000-06-18	17:10	51	46
2000-06-18	17:11	63	56
2000-06-18	17:11	60	55
2000-06-18	17:11	45	44
2000-06-18	17:12	64	60
2000-06-18	17:12	68	63
2000-06-18	17:12	62	61
2000-06-18	17:12	67	65
2000-06-18	17:13	57	54
2000-06-18	17:13	59	48
2000-06-18	17:13	61	56
2000-06-18	17:13	61	55
2000-06-18	17:13	64	59
2000-06-18	17:13	13	14
2000-06-18	17:14	66	61
2000-06-18	17:14	54	52
2000-06-18	17:14	55	53
2000-06-18	17:14	56	55
2000-06-18	17:14	58	52
2000-06-18	17:14	54	49
2000-06-18	17:14	9	5
2000-06-18	17:14	12	5

Figure 18

Table of Listed Vehicles

After opening of the files, you will find at the left margin of the main window (see Figure 18) a list in which on each row for each vehicle date, time, speed V1 [km/h] at entering the measuring field and speed V2 [km/h] at leaving the measuring field are listed.

The data contained in this table is the basis for all statistical calculation and for establishment of the diagrams

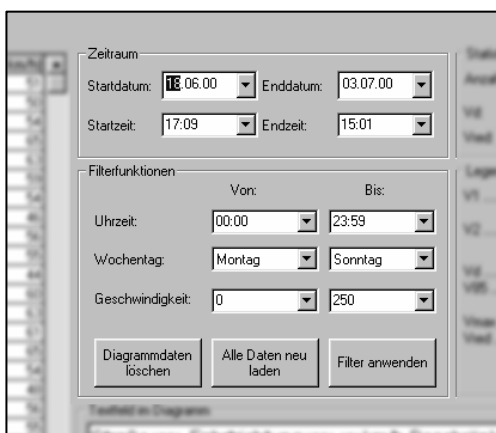
Filtering of Data (see Figure 19)

In order to establish the optimal analysis based on the total of collected data, it is often necessary to filter the data, to obtain certain information. (e.g. individual analysis of a daily frequency at a certain place, or only highest speeds etc.) or to obtain representative statistical data. Various filtering criteria are available for this purpose.

In order to use the entered criteria, click on „**Use Filter**“.

In order to retrieve the total amount of data to use them with different filtering criteria, click on „**Reload all data**“.

After establishing a diagram, the data values which form the basis for the shown diagram are displayed in the main window instead of being listed in the table. If you want to list the vehicles again in the table, click on „**Delete Diagram Data**“.



Zeitraum

Startdatum: 18.06.00 Enddatum: 03.07.00

Startzeit: 17:09 Endzeit: 15:01

Filterfunktionen

Von: 00:00 Bis: 23:59

Wochentag: Montag Sonntag

Geschwindigkeit: 0 250

Diagramm Daten löschen Alle Daten neu laden Filter anwenden

Figure 19

Period

Used to limit beginning and end point of a time period. Most often, analysis is conducted for the duration of exactly 24 hours or a multiple thereof.

Example:

If data has been collected between Monday 15:30 hours and a week later Monday 16:30 hours, it is useful to move back the end time from 16:30 hours to 15:30 hours.

Filtering Functions

Time:

Independent of date and weekday, all data will be filtered which does not correspond to these criteria. If the beginning time is higher than the end time, only data records of the night hours will remain after filtering. If the end time is higher, only data records of those vehicles will remain which were on the road during the indicated time frame in the daytime hours.

Weekday:

Independent of date, the data will be filtered to match the weekday. First day in the week is Monday, last day is Sunday. As with the filtering of the time, please note that the program distinguishes which value is higher and hence with a higher beginning weekday will count the weekend as valid time frame and with a higher end weekday will filter out the weekend.

Speed:

All data which does not lie in the preset area will be filtered. Inverse filtering as with time and weekday is not possible! This means that if the beginning value is higher than the end value, no data records will remain!

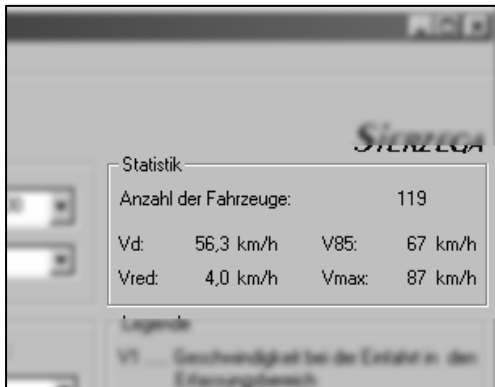


Figure 20

Statistic Block

Immediately after opening of the data and after each filtering, all statistical data will be recalculated (in the main window at the right margin, see Figure 20).

Next to the total number of vehicles, the following data will be calculated:

Vd: Average speed [km/h]

V85: 85% of vehicles drive slower or at most this speed [km/h]

Vmax: Maximum speed reached by a vehicle [km/h]

Vred: Average reduction of speed [km/h] caused by the display (V1 minus V2)

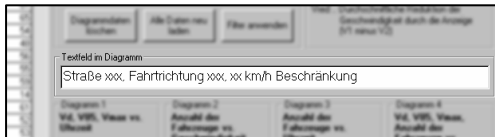


Figure 21

Text in the Diagram

The text entered into this field (see Figure 21) will be displayed as title in each diagram. After a change, the diagram has to be re-established in order for the text to be transferred correctly.

Logo or Letterhead of the Diagram

In order to add your logo or letterhead to the diagram, a respective graphic file with the name „Logo.wmf“ must be copied into the Program folder of this software. (mostly "C:\Programs\Sierzega GRS 3.0\")

The file format WMF indicates a „Windows Metafile“. The saved graphic and the contained text will automatically scaled to the ideal size, so that your print-outs will always be printed in the best possible quality, independent of printer or paper size.

Please note that the letterhead will be created in the proportion width vs. length equal 1:10. Otherwise, the graphics will appear distorted. As pattern for the creation of the file you may use our logo which is contained in the file "Logo.wmf", which is installed in your program in the same filepath.

General Information about Diagrams

The increments of resolution of the x-axis can be altered in the main window.

In each diagram, all statistical data as well as the time frame will be displayed in the lower area.

After establishing the diagram data in the main window, the actual diagram will be opened in a new window. The diagram data is displayed in the table in the main window instead of the lists of vehicles. In order, to view the table with the listed vehicles again, click on "**Delete Diagram Data**".

Tip:

Should you wish to establish a diagram in another program with the diagram data given, you may highlight the data in the table and copy them with the shortcut „Ctrl“ + „C“. In the other program you can use „Edit“ – „Paste“ or the shortcut „Ctrl“+ „P“ to insert the data and produce the desired diagram.

Printing Diagrams

By using the printer symbol in the left upper corner of each diagram window, the image can be printed with the current printer standard settings.

Note:

The settings for the desired printer need to be accessed through „Start“ – „Printers and Faxes“. Highlight the printer and choose „File“ – „Set as Default Printer“, as well as choosing further settings in the menu point „Properties“.

Diagram 1: Vd, V85, Vmax vs. Time

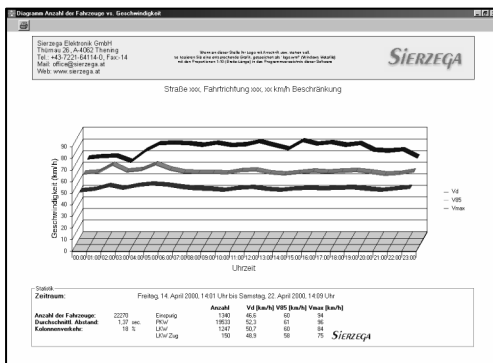


Figure 22

This diagram shows the average speed, V85 and the maximum speed during the course of a day. (see Figure 22).

If the chosen time frame is greater than 24 hours, the average values of Vd, V85 and Vmax will be calculated for each day and each data point. This way, daily tendencies become better apparent as opposed to calculating at one data point Vd, V85 and Vmax of all vehicles at one time only.

Analysis Software

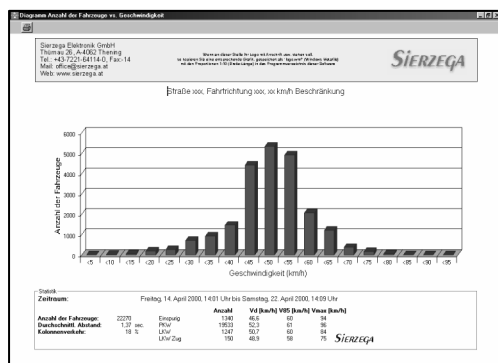


Figure 23

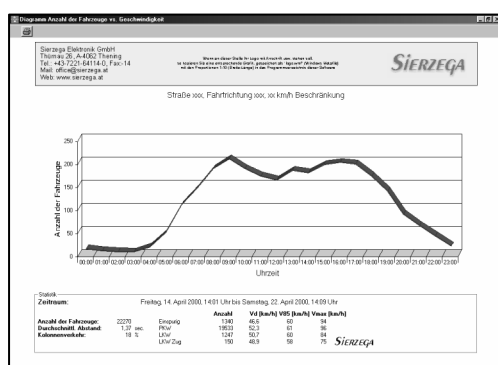


Figure 24

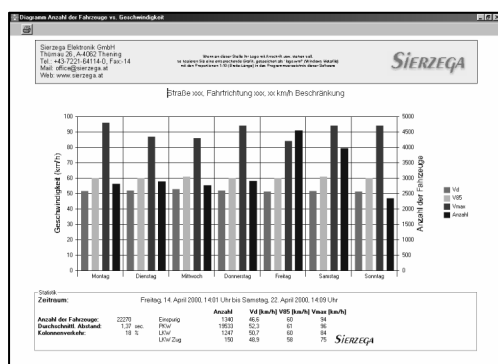


Figure 25

Diagram 2: Number of Vehicles vs. Speed

This diagram shows the speed profile (see Figure 23), it also shows how many vehicles have passed the measuring field during the chosen time frame.

Diagram 3: Number of Vehicles vs. Time

This diagram shows the number of vehicles during the course of a day. (see Figure 24).

If the chosen time frame is greater than 24 hours, the average number of vehicles will be calculated for every day and every data point.

Thus, the average number of vehicles per increment according to time, during a given time frame is displayed.

Diagram 4: Vd, V85, Vmax, Number of Vehicles vs. Weekday

This diagram shows the behaviours of speed and the traffic volume in the course of a week (see Figure 25).

For the creation of this diagram, each vehicle is allocated to a weekday and from the total number of vehicles per weekday, the values for Vd, V85, Vmax and the number of vehicles is calculated, no matter whether the duration of recording is one week or more.

Therefore, it must be taken into account that for an exact interpretation of the diagram, the collected data should be available for the duration of one week or a multiple thereof.

Charging of the Rechargeable Battery

The radar apparatus is equipped with a total discharge protection with re-activation block. If the battery voltage drops below approx. 11 Volt, the radar equipment will shut itself off. The re-activation block prevents the equipment from re-activating itself, even if the battery recovers or with an increase in voltage.

Charge the empty battery with the optionally available 12 Volt automatic charger. Clamp the red clamp of the charger onto the positive pole, the black clamp onto the negative pole of the battery and then insert in the power plug of the charger into a 230V/50 Hz outlet.

For further reference, view the charger's manual. After the battery is fully charged, the charger will switch to trickle charge. This way, it is impossible for the battery to be overcharged.

Precautions

Please heed the following precautions in order to avoid damage to persons and property:

Mount the speed display GR32/42 only in areas, where the traffic is not hindered, or the view onto traffic signals is not obstructed.

Do not attempt to open the display. Leave all maintenance work on the apparatus to the manufacturer. Warranty claims are nil if the sealed radar module has been improperly handled or if it has been opened.

Terms of Warranty

Sierzega is liable for damage to the Speed Display GR32/42, which occur despite proper handling for the period of two years after the date of sale.

Place of fulfilment of warranty is A-4062 Thening, Thürnau.

Technical Data

Scope of supply: Speed Display GR32 and GR42 with 60mm aluminium brackets for mounting on posts, PC Analysis Software GRS

Power Supply: 12V

Elec. Power Consumption: max. 1,5 A

Operating Temperature: -20° bis 60° C

Radar module:

Microwave sensor: 24,125 GHz/5 mW (Doppler-Radar)

Measuring range: 3 ... 255 km/h

Range: Passenger car approx. 80 m, truck approx. 120 m

Precision of measurements: Speed: +- 3%

Precision of counting with good adjustment: +- 20%

Storage: 208.895 vehicles

Display:

Reading angle: approx. 160°

Text: „YOUR SPEED“ in reflective foil

Size of numbers: 30 cm for GR32, 42 cm for GR42.

Max. Display value: 199 km/h for GR32 and GR42,

Reading distance: GR32: approx. 150 m, GR42: approx. 230 m

Display cycle: approx. 0,5 s

Casing:

Material: Aluminium

Protection class: IP66

Dimensions: width/height/depth
960/630/40 mm for GR32,
1350/900/40 mm for GR42

Weight: approx. 9 kg for GR32

approx. 16 kg for GR42

Face plate: Makrolon

CETECOM ICT Services GmbH

EC Identification number 0682

authorized by the German Government



to act as Notified Body in accordance with the R&TTE Directive 1999/5/EC of 09. March 1999.

CERTIFICATE EXPERT OPINION

Registration-No.: **E814319S-EO**

Certificate Holder: **Sierzega Elektronik GmbH
Thürnau 55
4062 Thening
Austria**

Product Designation: **24 GHz Radar System GR32, GR42**

Product Description: **Short Range Devices
(Radar Speed Indicator)**

Product Manufacturer: **Sierzega Elektronik GmbH
Thürnau 55
4062 Thening
Austria**

Essential requirements	Specifications / Standards	Submitted documents	Result
EMC (R&TTE, Article 3.1b)	EN 301 489-1 V1.4.1 (2002-08) EN 301 489-3 V1.4.1 (2002-08)	Test Report	conform
Radio spectrum (R&TTE, Article 3.2)	EN 300 440-1 V1.3.1 (2001-09) EN 300 440-2 V1.1.2 (2004-07)	Test Report	conform

Marking: **The product shall be marked with CE, our notified body number and the Class II identifier (Alert sign) as shown right hand.**



The scope of this evaluation relates to the submitted documents only.
The certificate is only valid in conjunction with the following **number** of annexes.

Number of annexes: **1**

Saarbrücken, 25.04.2005
Place, Date of Issue

Signed by Ernst Hussinger
Notified Body