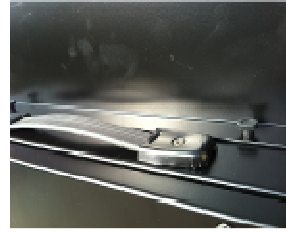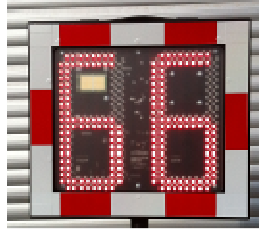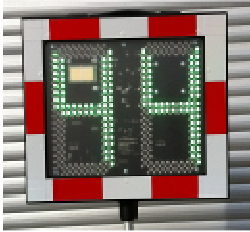# Mobile Radar Speed Sign

Specifications and manual

1. Specification:

1.1 Operational:

Display Brightness Control: Auto adjust to light conditions

1.2 Dimensions

Driver Feed Back Sign Housing: 430x360x80 (100) mm
LED Display Characters: 2 digits, 10" (250 mm) high Super Bright red/green LEDs visibility up to 100-150 m

1.3 Weight

5 kg (with lithium-ion battery)

1.4 Components

Circuit Breaker: Multi-circuit, 5 amp fuses
Power Supply: 240VAC and optional 12 VDC (7/17 Ah) AGM or Lithium ion Battery (optional) with solar panel or stand-alone
Minimum/maximum operating: 10,5 VDC/16 VDC
Power Consumption: < 0.2 amps (2 W) in active mode, idle mode < 1 watt
LEDs: Super Bright red LEDs with 8000 mcd each (life up to 100,000 hours)

1.5 Radar Unit

Type: K Band, directional Doppler radar, FCC part 15 compliant
Sensor Range: Ordinary sensor range up to 50-70 m (option: long range sensor up to 150-170 m)
(note: the distance of radar sensor sensitivity depends on a lot of circumstances, it is working with doppler effect)
Beam Width: ordinary 30/40 degrees, +/- 2 degrees (option: long range has 12/20 degrees)
Operating Frequency: 24.125 GHz, +/- 50 MHz
Accuracy: +/- 1.5 kph
Speed Detection Range: 0 - 199 kph

1.6 Housing
Composition & Finish: 2 mm ALU case with powder coated
Temperature Ranges: -20 C to +60 C
Humidity Maximum: 100%
Weatherproof: Conforms to NEMA 4R level design, non-sealed & ventilated
Makrolon Display Cover: 4 mm thick, shatter resistant, protects LEDs, one side saten to eliminate the reflection

1.7 Pole Mounting Hardware
Fixed installation:
Hardware Available For 2,5" (76 mm) round poles as standard and 60 or 89 mm is available for option
Semi-Mobile installation:
Anti-theft plate is provided to lock it by padlock and easy unmounted
Mobile installation:
An ultra-ligth tripod (1,5 kg) is provided and alu case for transportation

1.8 Solar Power (for fixed installation)

Solar Panel Output: 40 watt, Voltage at Pmax = 17.4V, Current at Pmax = 3.11 Amps
Pole Mount: Side pole mount with 30° angle bracket fo r effective solar charging

1.9 Data logger (optional)

The traffic data collection is working with a simple USB flash drive. 2 GB USD flash drive is provided at factory, and over 100 millions data can be stored.
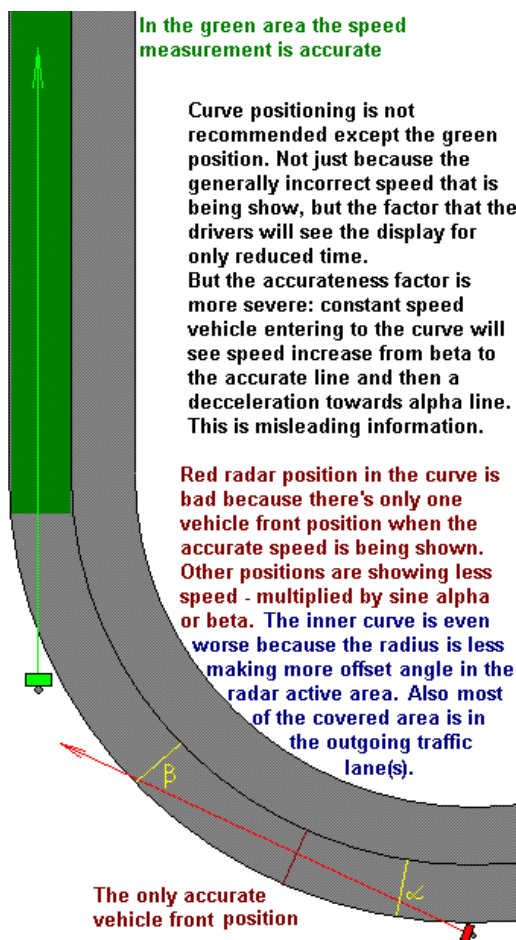
2.0 Warranty
Basics: Parts and Labor: 1 year

2. Installation

### 2.1 Identifying a suitable location:

To mount the speed sign on a pole, select an existing pole that allows the preferred mounting height of 210-240 cm (7-8 feet) for the center of the display. Make sure the location is close enough to the roadway to align the sign to that it faces the incoming traffic as directly as possible, similar to the diagram (for left side driving countries). This will maximize the accuracy of the radar.

In the green area the speed measurement is accurate

Curve positioning is not recommended except the green position. Not just because the generally incorrect speed that is being show, but the factor that the drivers will see the display for only reduced time.
But the accurateness factor is more severe: constant speed vehicle entering to the curve will see speed increase from beta to the accurate line and then a decceleration towards alpha line. This is misleading information.

Red radar position in the curve is bad because there's only one vehicle front position when the accurate speed is being shown. Other positions are showing less speed - multiplied by sine alpha or beta. The inner curve is even worse because the radius is less making more offset angle in the radar active area. Also most of the covered area is in the outgoing traffic lane(s).

The only accurate vehicle front position

Traffic paralell to the road.

When the measurement vector of the radar points (alpha) angle to the road, so the two vectors are not paralell there is a side effect of reduced speed being shown.
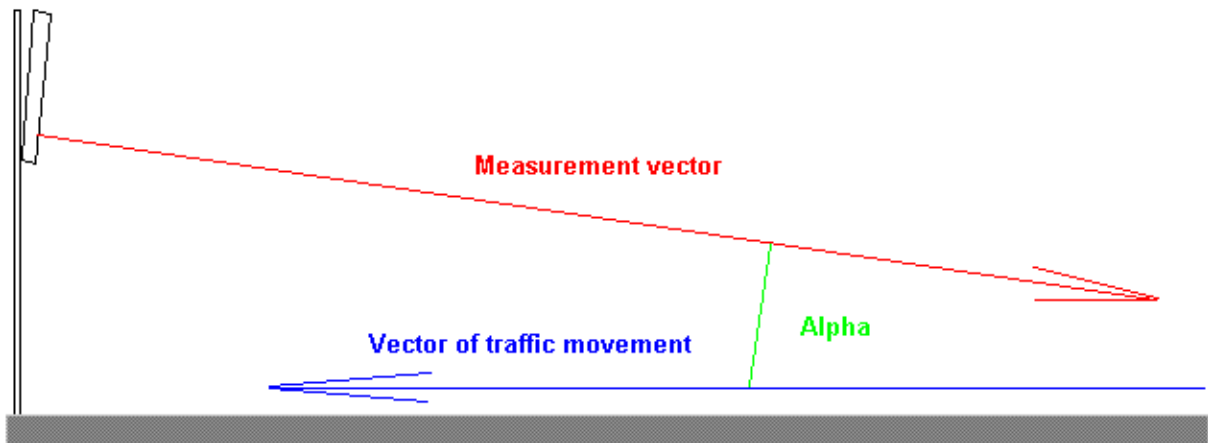
The speed shown is the traffic speed multiplied by cosine alpha.

Traffic vector

Measurement Vector
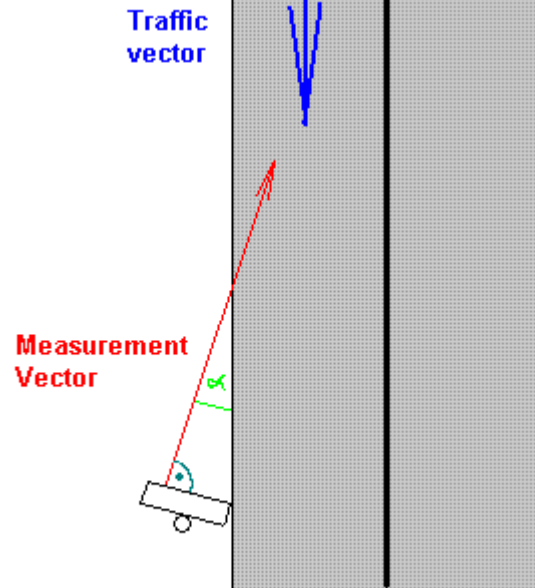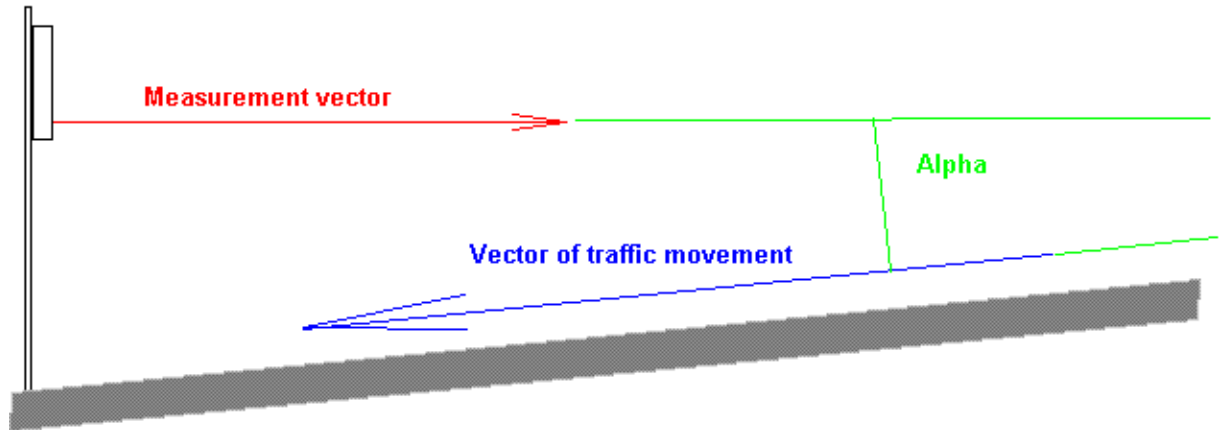
When the street is a slope or the radar is tilted, so the measurement vector is not paralell to the traffic vector, the sensed speed is less than the actual vehicle speed.

Sensed/displayed speed = vehicle speed * cosine(alpha)

2.2 Fixed installation:

Special mounting brackets are provided by the supplier. The pole diameter can be 60, 76, 89 mm. Standard mounting is 76 mm, others are options. This bracket will be used for the mounting of solar panel as well.
If there is any special shape of pole (such as conic ligthing pole), a special flexible mounting clamp will be provided as option.

Standard mounting

For tightening, only commercially available tools are required.

1. Please install the aluminum brackets on the back side of speed sign with the provided hexagonal nuts and bolts (4 pcs M8x16) as pic shows.
2.

3. Please install the clamp in the following steps as pics show

4. Rotate Infospeed horizontally such that the radiated beam lies over the carriageway to be monitored. The maximum horizontal angle of rotation should be below 10 degree.
5. Tighten the joints. If necessary secure the Infospeed from slipping by a clamp on the fixing pole or a transverse bolt. In the case of a longer set-up time (after approx. 2 days) tighten the bolts again.

Special mounting

In that case if the pole has special shape (such as conic, hexagonal or concrete e.t.c) or the diameter is too big, a special clamp can be provided. It is made from stainless steel. This clamp is available in any length.

In case of conic pole (such as popular lighting pole), 2 pcs 5 mm thick plastic spacer is provided to install them ont he top bracket to adjust the vertical level.

2.3 Semi-mobile installation

Special plate can be installed on the pole and the speed sign can be mounted and unmounted by a padlock.

2.4. Mobile installation

An ultra-ligth tripod can be set as optionial with a carry bag. Please set the tripod as pic shows and screw the aluminum bar to the speed sign and than the speed sign can be fixed to the tripod by screw.
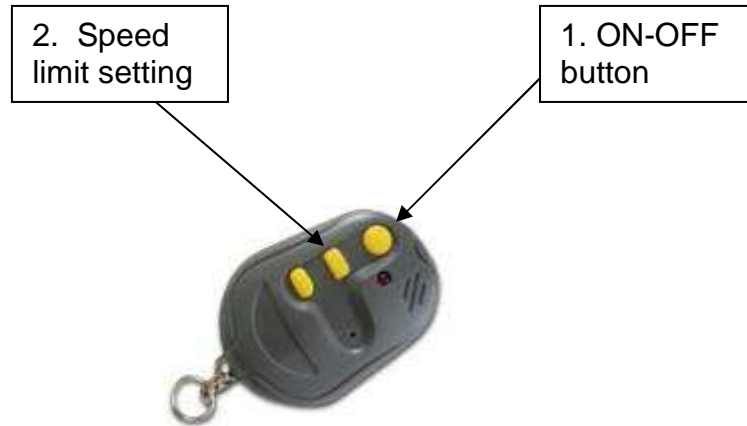

Optional:

Aluminum case can be ordered for speed sign.

3. System Start-Up

Once the speed sign is securely positioned, and then it can be start-up as you see in the start-up chapter.

The speed sign is totally closed, so it can be switched ON-OFF and set the speed limit by a remote contoller.

2. Speed limit setting

1. ON-OFF button

ON-OFF:

Please press No.1 button and than the speed sign will be ON and a white led indicates on the backside, that the speed sign is working.

If you would like to switch OFF, please press the No.1. button again.

Speed limit setting:

Please switch Ont he speed sign. Press the No.2. button and the speed limit will run permanently. When the requested speed limit is reached please release the button and the speed limit is set.

4. Charging speed sign

The speed sign is installed with 2 types of battery (please note taht battery working time depends ont he traffic volume, outside temperature, so the given datas are calculated by 50% display working and 20 C degree)

1. 12 VDC 7AH (AGM or Lithium-ion) battery
   Battery time: approx. 5-7 days (without data logger) and 3-5 days (with data logger)
2. 12 VDC 17 AH AGM or Lithium-ion) battery
   Battery time: approx. 14-16 days (without data logger) and 10-11 days (with data logger)

When the battery is discharged the white led is not ligthing any more ont he backside.
A special charger is provided, so please plug it to the normal 230 VAC plug and than connect it to the speed sign.

Charging plug

5. Special setting of SPEED SIGN

The display can be set in different function. Please follow the next steps:

1. Please open the case by a 2,5 imbus key (6 screws)and where you can find the red DIP switches.

Jumpers:

J4: On – there will be no display above 100 kph.
J3: On – there will be no display below the speed limit, Off – there will be display below the speed limit
J2: Off- there will be no display above speed limit+40 kph, On – there will be display always
J1: the refresh time can be set. Off – 1200 msec and On – 400 msec

Note: speed limit setting „50" as factory setup and all SWITCH is OFF.

6. Maintenance

The internal battery used is maintenance free and it can be stored in any position. If the batteries are going to be stored for an extended period of time, they should be fully charged before being stored.

7. Data logger

The traffic data collection is working with a simple USB flash drive. The stored file converts to .csv format and it can be opened by Microsoft Excel. The graphs and diagrams can be drawed easily. Every day will be stored in detached file with its date. 2 GB USD flash drive is provided at factory, and over 100 millions data can be stored.
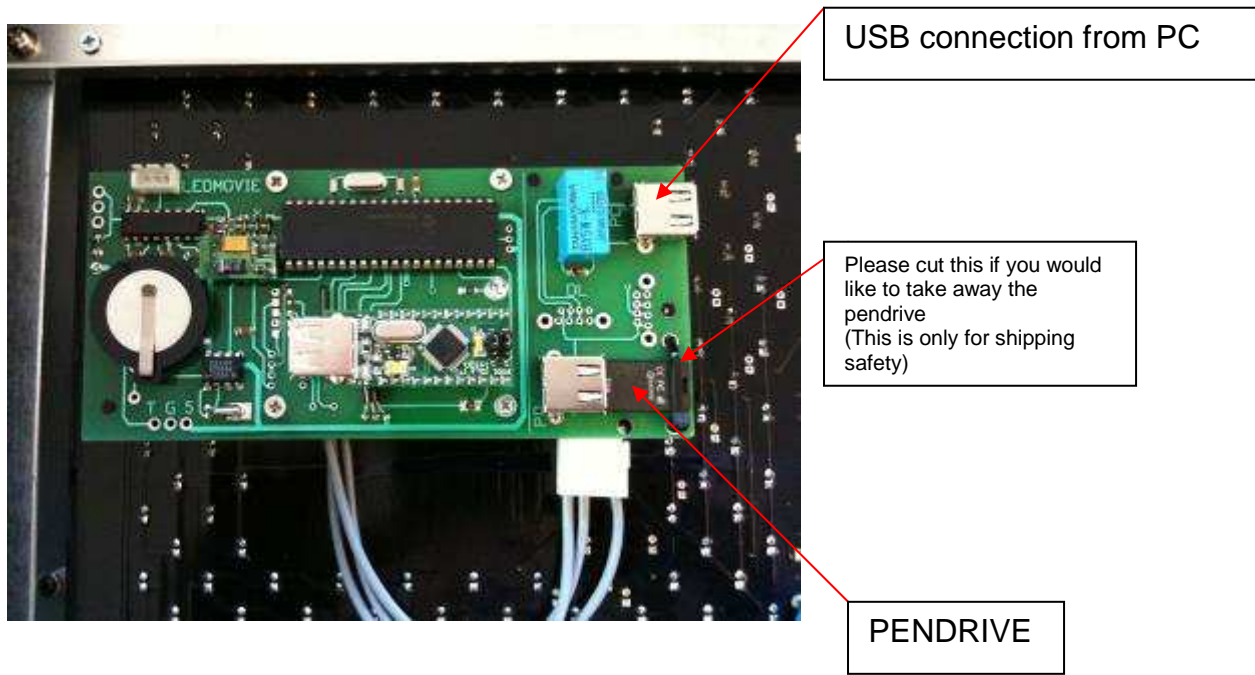

The file is containing date (day/moth/year), time (hour, minute, second) and the speed data.
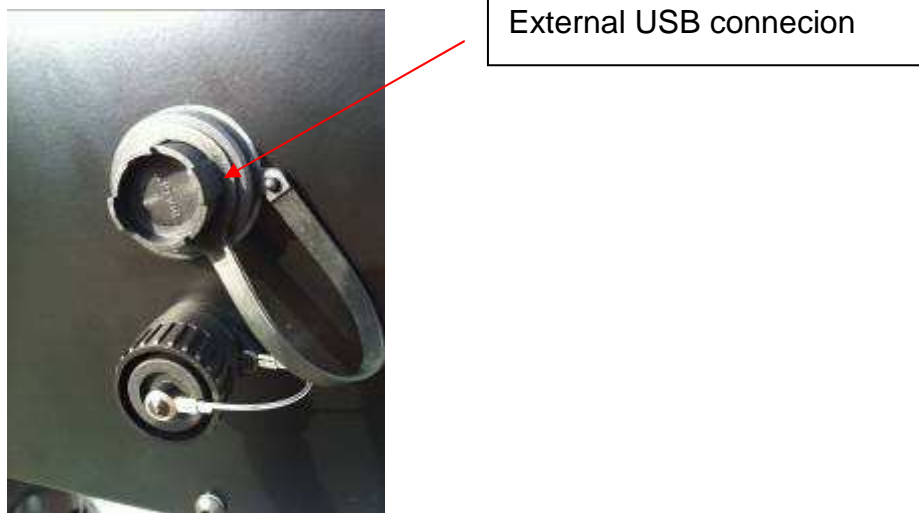

Downloading of datas

There are 2 ways to do it:

1. The logger can be connected directly via computer with a USBA-USBA cable and the pendrive is not need to take away.
2. An external USB connector (IP 68) is available as an option

USB connection from PC

Please cut this if you would like to take away the pendrive
(This is only for shipping safety)

PENDRIVE

External USB connecion

Please note the followings:

If the .csv file is opened, this format has to be seen and then it can be edit by excel.

If the format is not the normal format, please change the „Regional settings" at the Contro Panel – Date, time, Language and Reginal Options – Add other Language – Regional Options. And please choose French (France)

Please visit www.itrafficdata.com website and upload your datas from the pendrive. After that all datas can be evaluated by the software.
Important! Please mark the csv files together and zip (no other format is acceptable)

Username: udem
Password: udem01