GPSmirror
DRIVER SAFETY SYSTEM

User Manual

Cheetah™

GPSmirror
DRIVER SAFETY SYSTEM

Thank you for purchasing the Cheetah™ GPS mirror and welcome to yet another world first from Cheetah!

Modern roads become more congested and regulated every day so driver awareness has never been more important. Even the most conscientious motorist can have occasional lapses in concentration which could easily result in an accident or a fine and licence endorsements. Collisions, penalty fines or points can all result in increased car insurance premiums to say nothing of the implications for personal safety.

Your GPSmirror is designed and sold as a road safety enhancement tool to protect you and your family, as well as your livelihood and your licence.

Advance awareness of high risk accident zones can greatly enhance road safety. Your GPSmirror calculates where you are every second you're on the road and reminds you whenever you are approaching these known hazard zones, so you can plan ahead. It provides audio and visual alerts, along with voice announcements, for all locations that are stored in its on-board Trinity database, such as an accident blackspots or Safety Cameras - many authorities now place speed or red light camera systems at dangerous intersections or stretches of road where there has been a history of road accidents. Where they are known, advisory speed limits for the hazard location are also announced.

The wide angle mirror housing helps eliminate rear blindspots and lets you to keep watch on back seat passengers with ease. Its unique anti-glare tint eliminates glare at the same time as providing better night vision. There is a highly accurate GPS speedometer and a useful overspeed alert feature which you can use to remind you to slow down, if you inadvertently find yourself driving too quickly.

Whether or not you agree with camera enforcement, speed and red light camera systems are here to stay. Their use is growing rapidly around the world. The GPSmirror uses the Trinity™ GPS global database to warn you of known fixed camera locations in many different countries. Local drivers know where the danger spots are in their area. Using a GPSmirror means you can now be as informed and aware as a local driver.

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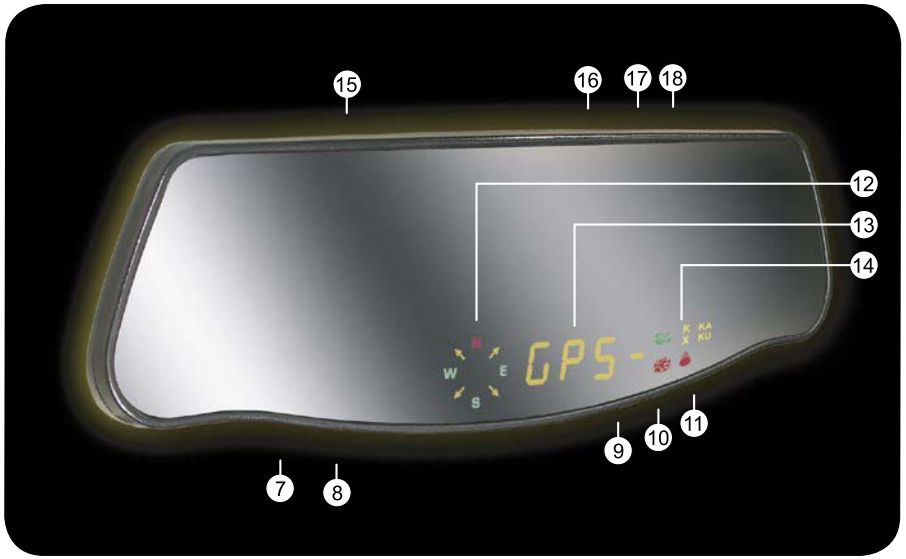
3) USB download cable
4) Quick start guide
5) CD containing USB driver software
6) GPS Mirror cleaning cloth

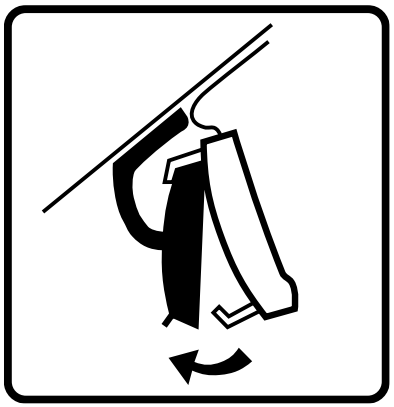
1.2 Buttons and connections

7) Button 1
8) Button 2
9) Button 3
10) Button 4
11) Rotary volume control
12) Digital compass display
13) Digital speed / distance display
14) External alert centre (displays radar and laser alerts from optional extras)
15) Download cable socket
16) External GPS antenna connection
17) 12V Power cable socket
18) On / off switch



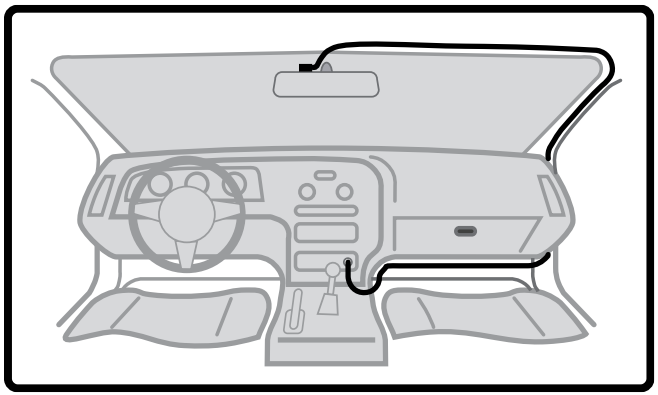
2. Installation

Spring loaded adjustable clamps ensure that your GPS mirror will fit over almost all shapes and sizes of rear view mirror.



The internal GPS antenna is clearly marked by a sticker. The area shown should overlap the factory mirror for best performance. Even in vehicles fitted with Athermic windscreens (heat reflective glass which prevents GPS signals from passing through) the manufacturers have usually left this area clear, for the placement of electronic toll tags etc. If the marked area is obstructed, or if you experience poor GPS reception due to an Athermic windscreen you can purchase an extension GPS antenna with an extra long cable which will allow you to position it on the rear parcel shelf, or externally. These are available from www.speedcheetah.com or your local dealer.

The power cord should be run along the top of the windscreen, tucked into the headliner, then down underneath the passenger door's rubbers, under the glove box and round to the cigar lighter socket for power. Any excess cable can easily be hidden underneath the glove box. There is a sliding on/off switch in the cigar socket plug for your convenience.



Care should be taken to ensure that the power cord does not interfere with the correct operation of any airbag or other vehicle control or system.

If you intend to swap your GPS mirror between vehicles we strongly recommend fitting an extra power cord and antenna in the second vehicle.

3. Registration and updating the Trinity™ database

3.1 Warranty registration

To register your GPS Mirror for warranty purposes, visit www.register.speedcheetah.com

3.2 Updating the GPSmirror with the latest Trinity™ database

The Trinity Database is one of the largest shared resources of fixed speed camera locations and other important locations from around the world. For a full list of all the countries that are covered, or are actively being mapped, please refer to www.speedcheetah.com.

The database contains locations for accident blackspots, fixed speed cameras, average speed cameras and red light cameras, as well as commonly-used mobile speed trap locations and general points of information.

The GPSmirror's memory can store up to 120,000 individual locations. New locations are constantly added to the Trinity database, so it is imperative that you regularly update your GPSmirror to ensure you will be warned of the most up to date information available. We recommend updating your database at least once every month.

Step 1:

Install the USB driver BEFORE connecting the GPSmirror to your PC.

The CD contains a USB driver for the GPSmirror. The USB driver is also available from www.support.speedcheetah.com

On your PC, navigate to the GPSmirror CD, then to USB Drivers and select your operating system. Double click the file and follow the on screen instructions to install the necessary USB driver.

If you have connected your GPSmirror to your computer before installing the USB driver, you should unplug the GPSmirror and restart your computer.

Step 2:

To update the GPSmirror with the latest Trinity database, you should connect the GPSmirror to your computer, ensure your computer is connected to the internet, then double click the application named GPS0102.exe on the CD. You can copy this file to your computer for easy future access.

The fist time you run the GPS0102.exe application, your Anti-virus software may ask you for permission for this application to access the internet. You should click "Yes" or "Accept always".

If the GPS Update software does not run, ensure Microsoft .Net 1.1 is installed. Further details are available on support.speedcheetah.com

Registered users of www.speedcheetah .com can sign in and check for the latest firmware version and GPS Updater software releases.

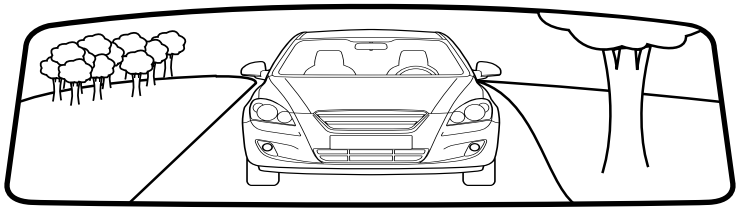
Macs are not currently supported.

4. Safety first

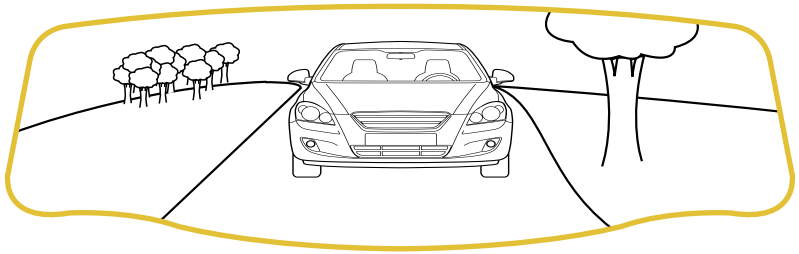
4.1 Enhanced mirror vision

The GPS Mirror is a wide angle rear view mirror with a special anti-glare blue coating and it has been designed to provide a much greater field of vision than most factory mirrors, to help eliminate blindspots. Please note that objects in the GPS Mirror may therefore be closer than they appear.

Standard mirror



GPS mirror



4.2 Responsible driving

Cheetah Advanced Technologies Ltd market and sell the GPS Mirror as a road safety enhancement device. It is your responsibility to drive within the speed limits at all times. You should always drive with full care and attention. You should not let any in-car device distract your attention or take your eyes off the road. It is your responsibility to remain aware at all time. If you need to adjust any GPS Mirror setting on the move, ask a passenger. Alternatively, stop at the next available safe location and then make any changes.

5. Overview of Standard Features

5.1 Switching on for the first time

The GPS Mirror receives signals from the network of 24 satellites orbiting the Earth, called the Global Positioning System, and uses the latest SiRF Star III GPS technology to work out where you are every second.

When the GPS Mirror is searching for satellite lock the display will show "GPS". Once satellite lock is achieved, a voice alert will confirm "GPS ready" and your current speed will be displayed. The first time your GPS Mirror is switched on, it may take up to 20 minutes to calculate its current position and lock on to the satellites. This is normal and happens with all GPS-based devices. If you use the GPS Mirror regularly, subsequent satellite lock will be greatly reduced; normally between 5 seconds and 2 minutes.

5.2 GPS Speedo

The GPS Mirror calculates your vehicle's speed using GPS data. The speed reading is continually updated and is extremely accurate when you are driving at a steady speed. As with all GPS speedo systems there will be a slight lag during accelerating or decelerating while the GPS data is being refreshed.

You may notice a slight difference between the GPS speed reading and the speed displayed by your vehicle's instruments. This is normal, because car manufacturers always build in a slight tolerance to their displayed speed for safety reasons.

The GPS Mirror also has a very handy adjustable "Overspeed Alert" feature which warns you whenever you drive above your chosen speed limit setting.

5.3 Hazard Alerts

The GPS Mirror uses the Trinity database which contains details of danger areas and high risk accident locations that have been designated by police and government bodies, often by the placement of safety cameras.

When you are approaching a location that is stored in the Trinity database, the mirror provides spoken and audible warnings to advise you that you are approaching a hazard area.

Where they are known and recorded in the database, "Advisory speed limits" are announced during an alert. These advisory announcements are for guidance only. It is your responsibility to always be aware of the prevailing speed limit, including any temporary restrictions, and lower your driving speed to suit local driving conditions.

A spoken voice announcement will identify the hazard type at a preset distance before the hazard location. If your speed is above the known advisory speed limit, you will be given a further announcement "Attention, overspeed." The digital speed display will switch to give a distance countdown to a fixed camera hazard. This distance is shown in metres. One metre is approximately equal to one yard.

GPS warnings are directional, meaning you will receive warnings of targeted threats in your direction of travel.

IMPORTANT NOTE
Mobile Camera Warnings:

Mobile cameras can be used anywhere and can potentially record your speed at 1000 metres or more. Warning of a single location within a mobile camera enforcement area is not necessarily sufficient. If the camera moves within the area then the original warning will be ineffective.

The GPS Mirror will alert you to the start of the mobile enforcement area, before you drive within range of the mobile speed trap. This means you will know that enforcement is possible around the next corner, or along the next straight stretch of road. Therefore, you will not see any distance countdown for mobile speed trap locations.

5.4 Storing personal locations

The GPS Mirror can store up to 100 Personal Locations. See section 6.2.3 for further details.

5.5 Reporting new camera locations

The Trinity database is constantly monitored and enhanced with new camera information and directional information. The camera and safety information contained in the Trinity Database is provided free of charge to all users. Please feel free to help us enhance the Trinity database for everyone by reporting new locations or changes to existing locations.

Report any information you can via our website www.cameras.speedcheetah.com or email as much information about the camera site to cameras@speedcheetah.com.

Any information sent will only be used to enhance the Trinity database, and not for any other purpose. Our global camera team will verify the details and enhance the Trinity database, allowing every single user around the world to benefit.

6. Menu Items

6.1 Button functions

During normal driving mode, the button functions are:

Button 1	Enter main menu
Button 2	Display current time
Button 3	A short press will cause the GPS Mirror to speak the current driving direction, as shown in the digital compass. A long press will cause the GPS Mirror to speak your current "Rescue Me" GPS coordinates. This can be written down or played to emergency staff.
Button 4	City Mute for optional radar detector. The radar band will be announced, but the alert tones will be silenced.

Please note:

After pressing button 1 to enter the main menu, the button functions change to allow the individual menu item settings to be adjusted.

Inside the menu system, the button functions become:

Button 1	Each press will proceed to the next menu item.
Button 2	Up
Button 3	Down.
Button 4	Store and return to normal driving mode.

6.2 Main menu functions

Scroll through the menu options by pressing Button 1 repeatedly.
Change the settings of an individual menu item by pressing Buttons 2 or 3. Button 2 = up, Button 3 = down.
Store any changes to your settings by pressing button 4. This will also exit the menu structure.
You will exit the menu once you have cycled through all the menu options.

6.2.1 Audible Alert Speed

Choose the speed above which you hear optional radar alerts. Alerts are not sounded below this speed. Alerts are displayed visually at all speeds.

Options:

MPH	KMPH
0	0
15	20
20	30
25	40
30	50
35	60
40	65
45	70
50	80
55	90
60	95
65	100
70	110
75	120
80	130

6.2.2 Overspeed Alert

Choose the speed at which an overspeed reminder is played.
An overspeed alert will be played in the following instances:

1) If your speed rises above the selected speed.

2) If you are travelling above the selected speed after an event (such as returning to the driving mode after navigating the menu, or at the end of a radar alert), the warning will play as an additional reminder.

3) Regardless of the selected overspeed alert, the warning will also play if you are driving above the prevailing speed limit at a camera site (if known).

For example, if the overspeed alert is set to 80, but you drive towards a camera in a 50 zone slightly above the prevailing speed limit, the overspeed alert warning will play.

Options:

MPH	KMPH
15	20
20	30
25	40
30	50
35	60
40	65
45	70
50	80
55	90
60	95
65	100
70	110
75	120
80	130
85	140
90	150
95	160
255	255

Select 255 to switch OFF the Overspeed Alert

6.2.3 Personal locations

Store up to 100 GPS locations for personal reminders of your own hazard locations.
Pressing button 4 will store your current location and direction as a personal location. Use buttons 2 and 3 to replace/overwrite other personal locations.

6.2.4 Common mobile site

Enable or disable alerts for commonly used mobile speed trap locations.
1 = on, 0 = off.

IMPORTANT NOTE
Mobile Camera Warnings:

Mobile cameras can be used anywhere and can potentially record your speed at 1000 metres or more. Warning of a single location within a mobile camera enforcement area is not necessarily sufficient. If the camera moves within the area then the original warning will be ineffective.

The GPS Mirror will alert you to the start of the mobile enforcement area, before you drive within range of the mobile speed trap. This means you will know that enforcement is possible around the next corner, or along the next straight stretch of road. Therefore, you will not see any distance countdown for mobile speed trap locations.

GPS warnings are directional, meaning you will receive warnings of targeted threats in your direction of travel.

6.2.5 X Band

Enable or disable X Band radar alerts from your radar detector.
1 = on, 0 = off

6.2.6 K Band

Enable or disable X Band radar alerts from your radar detector.
1 = on, 0 = off

6.2.7 KA Band

Enable or disable Ka Band radar alerts from your radar detector.
1 = on, 0 = off

6.2.8 KU Band

Enable or disable Ku Band radar alerts from your radar detector.
1 = on, 0 = off

6.2.9 Units

Miles per hour or Kilometres per hour.
1 = mph, 0 = kmph.

Changing between units of miles per hour and kilometres per hour will automatically adjust the saved settings for Audible Alert Speed and Overspeed Alert to the nearest suitable value.

6.2.A Time zone

Adjust the clock to the correct time zone for your country.
Factory default = 0 UMT (Greenwich Mean Time)

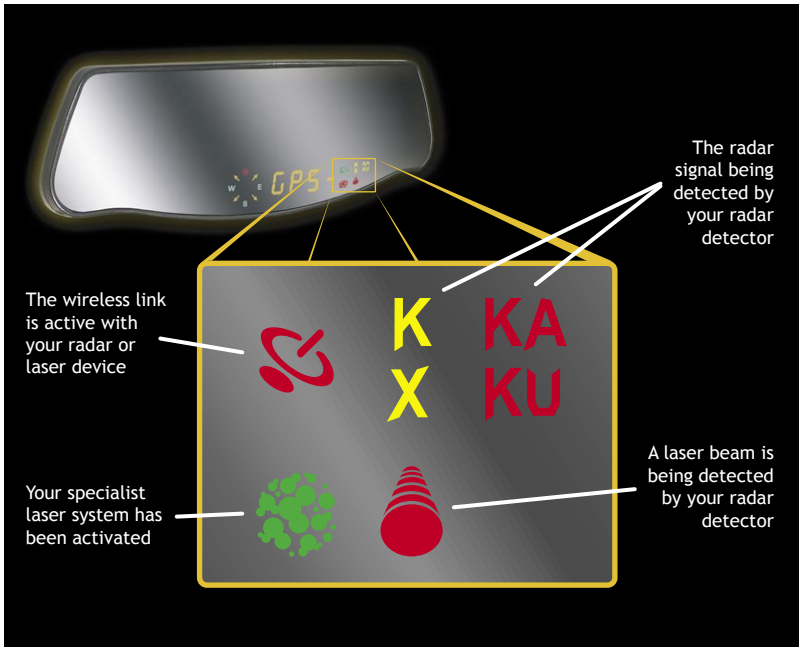
7. Using your GPS Mirror with radar detectors and other products

The GPS Mirror is designed to work with other in-car technology like radar detectors, laser jammers, laser remote control systems or even the latest laser-based parking sensors. You can wirelessly integrate them with your GPS mirror by simply plugging the appropriate Cheetah interface into the other manufacturers' product.

Your GPS mirror becomes the single central device through which all alerts are instantly relayed and it can also enhance the way that these other products work. Those annoying false alarms on radar detectors can be automatically muted below a GPS speed setting, e.g. 30mph, and individual radar bands can be switched off. The City Mute Function will only play voice alerts. The interfaces are all wireless so it can even makes the installation of some laser systems much easier.

For a full list of compatible products from other manufacturers please refer to our website.

7.1 External Alert Centre



7.2 Accessories

7.2.1 Radar Detector Interface

This allows compatible radar detectors from Beltronics, Escort and Valentine 1 to integrate with the GPS Mirror. See our website for a full list of compatible products.

7.2.2 Laser Jammer Interface

This allows compatible laser systems from Blinder, Lidatek and Target to integrate with the GPS Mirror. See our website for a full list of compatible products.

7.2.3 Extra power cord for second car

7.2.4 GPS antenna with extra long extension cable

8. Background information

8.1 GPS explained

The Global Positioning System (GPS) is used to create an electronic reference frame around the earth.

It consists of 24 satellites that orbit the earth in just under 12 hours. Each satellite transmits a unique signal and follows a strict orbital path. Every GPS antenna stores these orbits inside its memory, so it knows where each satellite is at any given time.

The GPS antenna is able to accurately calculate its current location on the earth's surface as soon as it knows the exact distance to a minimum of 4 different GPS satellites. Distance is calculated by simply timing how long each satellite's radio signal takes to reach the antenna.

8.2 GPS coordinate systems explained

GPS coordinates define a single point on an imaginary mathematical model of the earth, or datum. There are a number of different datums in use around the world. Importantly, each datum will give rise to different coordinates for the same physical location. So it is important that we reference the same datum when describing coordinates.

The Global Position System (GPS) uses the WGS-84 (World Geodetic System 1984) datum.

A coordinate can be written with varying levels of decimalisation.

8.2.1 Degrees Minutes Seconds.

Eg 38° 33'42.43" N
121° 26'11.70" W

When navigation of the sea was first pioneered, the earth was divided into 360 imaginary lines of latitude running from Pole to Pole, and 180 imaginary lines of longitude parallel to the equator. Each degree was then subdivided into 60 (minutes), and again into 60 (seconds). Positions are described as being North / South of the equator and West / East of the Prime Meridian, which passes through Greenwich, London.

8.2.2 Degrees Decimal Minutes

Eg 3833.7072 N
12126.1950 W

GPS "raw data" use this format.

GPS antennae produce standard GPS NMEA sentences containing the coordinate data. This data is then used by the GPS enabled device for navigation or other location based services.

The standard for these sentences was developed by the National Marine Electronics Association (NMEA), originally for marine applications.

8.2.3 Decimal Degrees

Eg. 38.561787
-121.436584

Decimal Degrees is perhaps the easiest way to understand GSP co-ordinates. The Minutes and Seconds are simply represented by a decimal fraction. The North / South and East / West markers are replaced by +ve and –ve number notation.

8.3 Fixed Speed Cameras

There are many different types of fixed speed or red light camera systems used around the world but, broadly speaking, there are 4 main technologies used by fixed camera systems to measure the speed of passing vehicles.

- Radar Camera systems like GATSOs use radar signals to measure speed.
- Inductive Loop Camera Systems like Redflex, Redspeed and Traffiphot, are linked to inductive (electrical) coils buried under the road surface which calculate speed based on the time taken to travel over them.
- Piezo Strip Camera Systems like Truvelo or DS2 are linked to three sensor strips placed across the road surface which calculate speed by timing how long it takes to drive over the sensors.
- Average Speed Camera Systems like SPECs or "GATSO point-to-point" calculate a vehicle's average speed between fixed two points by recording a vehicle's details at two separate camera locations and working out how long it has taken that vehicle to drive the known distance between the cameras.

GPS warnings, as you approach potential accident locations where these camera systems are sited, are a very effective safety tool to give advance awareness of upcoming hazard areas.

For the most comprehensive guides on the internet, or to identify the camera systems being used in your country, please visit the support section of our website where you will find useful speed camera guides and country guides.

8.4 Mobile Radar

Mobile radar camera systems are used in most countries with enforcement programmes.

There are three main categories of mobile radar speed cameras.

- Tripod mounted radar systems like Multanova and Mobile GATSOs
- Hand held radar guns
- Vehicle mounted radar systems

GPS systems can provide reminders when you are approaching an area where a radar system might have been used in the past, but they do not tell you if a radar system is actually being used there now. GPS systems do not "detect" anything - they simply provide a safety alert to remind you that you are approaching a map location.

Radar Detectors are the only product which actually "detect" when mobile radar enforcement is being carried out. There can be a huge difference in performance between different brands of radar detector. The best radar detector for your country may differ from another country because performance can also vary against different types of radar cameras.

The GPS Mirror can integrate with a wide range of reliable radar detectors from the leading brand manufacturers, but please note that the legality of radar detectors can vary from country to country and it is your responsibility to ensure that you comply with any local legislation.

8.5 Mobile Laser

Laser guns fire quick pulses of light in a straight line which bounce off your car and return to the gun. The beam of light is very narrow and will spread slightly over a longer distance. The laser gun measures how long it takes for the return beams to arrive back at the gun and because the whole process works at the speed of light, the laser gun can calculate a vehicle's speed in less than one third of a second.

GPS systems can provide reminders when you are approaching an area where a laser gun might have been used in the past, but they do not tell you if laser is actually being used there now. GPS systems do not "detect" anything - they simply provide a safety alert to remind you that you are approaching a map location.

Most radar detectors on the market also contain a laser detector, however please be aware that "detecting" a laser hit often only means that your speed has already been recorded.

The GPS Mirror can integrate with a range of laser jammers from the leading brand manufacturers, but please note that the legality of laser jammers can vary from country to country and it is your responsibility to ensure that you comply with any local legislation.

For your convenience, the GPS Mirror can also integrate with some other laser-based systems in addition to laser jammers.

8.6 Other enforcement technologies

Please visit our speed camera guide on the website for more information on these other technologies including VASCAR, Light-barrier methods, etc.

9. Technical Details

Power Requirements:	Operating voltage 12V DC
Dimensions and Weight:	32cm x 9cm x 2.4cm. 320 gms.
Temperature Range:	Operating: -10˚C to +60˚C (14˚F to +140˚F) Storage: -20˚C to +70˚C (-4˚F to +158˚F)
Operating Humidity:	5% to 95% (non condensing)
Database capacity:	120,000
PC requirements:	Windows 98SE, 2000, ME, XP, Vista operating system Microsoft .NET 1.1 installed 1 x USB port Internet access

Support

Troubleshooting
If for any reason a Cheetah product develops a fault, please check our support page on www.support.speedcheetah.com

If any problems persist, please email support@speedcheetah.com

Product registration
Register online at www.register.speedcheetah.com

Accessories
Full details of accessory products are available on our website at www.speedcheetah.com

Service

If any Cheetah product needs repair:
Before sending any products back to us for service, please check our support page on www.support.speedcheetah.com or contact us at support@speedcheetah.com.

Do not attempt to service this product yourself. Do not open, puncture or disassemble the product.

If the product fails to function, follow these instructions to obtain factory service.

Where to ship:
Contact us at support@speedcheetah.com for country speci return address details.

How to ship:
Ship the unit prepaid and insured, in its original packaging or other strong protective packaging. We cannot be held responsible for any returned product until it has been delivered to our premises. Insist on a proof-of-delivery receipt.

Please include the following information with your return:
a) your name and return shipping address
b) description of the problem
c) your daytime telephone number
d) proof of purchase if you did not buy the unit directly from us

Out of warranty repairs:
If your unit is out of warranty (older than one year), we will contact you with an estimated repair cost. If the unit has been damaged, abused or modi ed, the repair cost will be calculated on a parts and labor basis.

Features, speci cations and prices subject to change without notice

Out of warranty repairs:
If your unit is out of warranty (older than one year), we will contact you with an estimated repair cost. If the unit has been damaged, abused or modi ed, the repair cost will be calculated on a parts and labor basis.

Features, speci cations and prices subject to change without notice

Limited Warranty

Cheetah Advanced Technologies Ltd. Warrant our products against all defects in materials and workmanship for a period of **one year** from the date of the original purchase, subject to the following terms and conditions.

This warranty is limited to the original owner, and is Non-Transferable.

This warranty does not apply if the serial number has been removed or is unreadable or if the product has been subjected to physical abuse, improper installation, modification or internal examination.

To obtain warranty service, the product must be returned, insured and shipping prepaid, to Cheetah Advanced Technologies Ltd., at the address shown, in its original packaging or a suitable alternative, together with a written description of the problem, proof of purchase and a return shipping address.

The sole responsibility of Cheetah Advanced Technologies Ltd under this warranty is limited to repair or, at discretion, replacement of the product.

Cheetah Advanced Technologies disclaims all other warranties, expressed or implied, including warranties of fitness for any particular purpose or merchantability.

Cheetah Advanced Technologies Ltd accept no liability for any direct, indirect or consequential claim arising from the use or misuse of this product or from any incident arising from an installation that inhibits the correct operation of an airbag or any other vehicle system.
The use of Cheetah software products is governed by a license agreement. This license contains a limitation of liability. You can review the license conditions at www.speedcheetah.com

CE Cheetah Advanced Technologies Ltd. declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

FC This device complies with Part 15 of the FCC Rules. 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

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

Copyright information

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