

# Gatso AMCAM for SPEED monitoring

Gatsometer's AMCAM is a lane dedicated camera system, monitoring all types of vehicles 24 hours a day, seven days a week in all weather conditions. The AMCAM uses Loopples Trigger Radars to detect the speed of passing vehicles.

An LTR aims at a target on an individual traffic lane (virtual loop). As soon as a vehicle is detected by the LTR and exceeds the pre-set speed limit, the GS11 camera takes 2 images of the offense.

The AMCAM can monitor receding or approaching traffic.

The AMCAM is equipped with facilities for mounting onto existing infrastructure. The AMCAM can be mounted on a truss (in a multiple lane set-up) or on a (existing) pole along side the road (single lane only).

Each image has a databar with a time notation and information about location and speed of the passing vehicle.

A processing computer can be connected to the AMCAM to perform ALPR (Automatic License Plate Reading). A modem can be connected to the computer to transfer the data to a backoffice.

An infrared LED flash is installed for optimum image quality during low-lighting situations.



Sep 8 2011 # 859 Image 1/2 Camera: GS-10-21-000-001 Interval time: 0.00 s Loc code: 138051  
16:44:27.919 Speed: 67 mph Speed sign: 55 mph Location: 138058 @ J Avenue, Lane 1

1st image



AMCAM with LTR



Sep 8 2011 # 859 Image 2/2 Camera: GS-10-21-000-001 Interval time: 0.20 s Loc code: 138051  
16:44:27.919 Speed: 67 mph Speed sign: 55 mph Location: 138058 @ J Avenue, Lane 1

2nd image

doc-E1120

# GTC-GS11 LTR for RED LIGHT monitoring

The Gatsometer GTC-GS11 is a specialised Digital Traffic Camera to detect and register Red Light offenses. A GTC with loopless triggering uses 4 Loopless Trigger Radars (LTRs) to monitor a maximum of 4 dedicated lanes.

The signals from the LTRs are fed to the NID (Non Invasive Detector) unit(s) inside the GTC cabinet.

An LTR aims at a target on an individual traffic lane (virtual loop). As soon as a vehicle is detected by the LTR after the traffic lights have turned red, the GS11 camera will take 2 images of the offense. The offense details will be shown on a databar on each image and the offense details are stored on camera.

The GTC-GS11 has a RJ45 network connector for communication with the backoffice and enables remote control and downloading of the results for further processing at any desired moment.

The GS11 camera has 11 million effective pixels and operates with automatic exposure and fixed focus. The GS11 camera has a color depth of 12 bits per pixel.

The GTC-GS11 uses an internal infrared light flash for optimal image quality. An optional night flash offers the best results under all ambient light circumstances.



1st image



GTC-GS11 rear

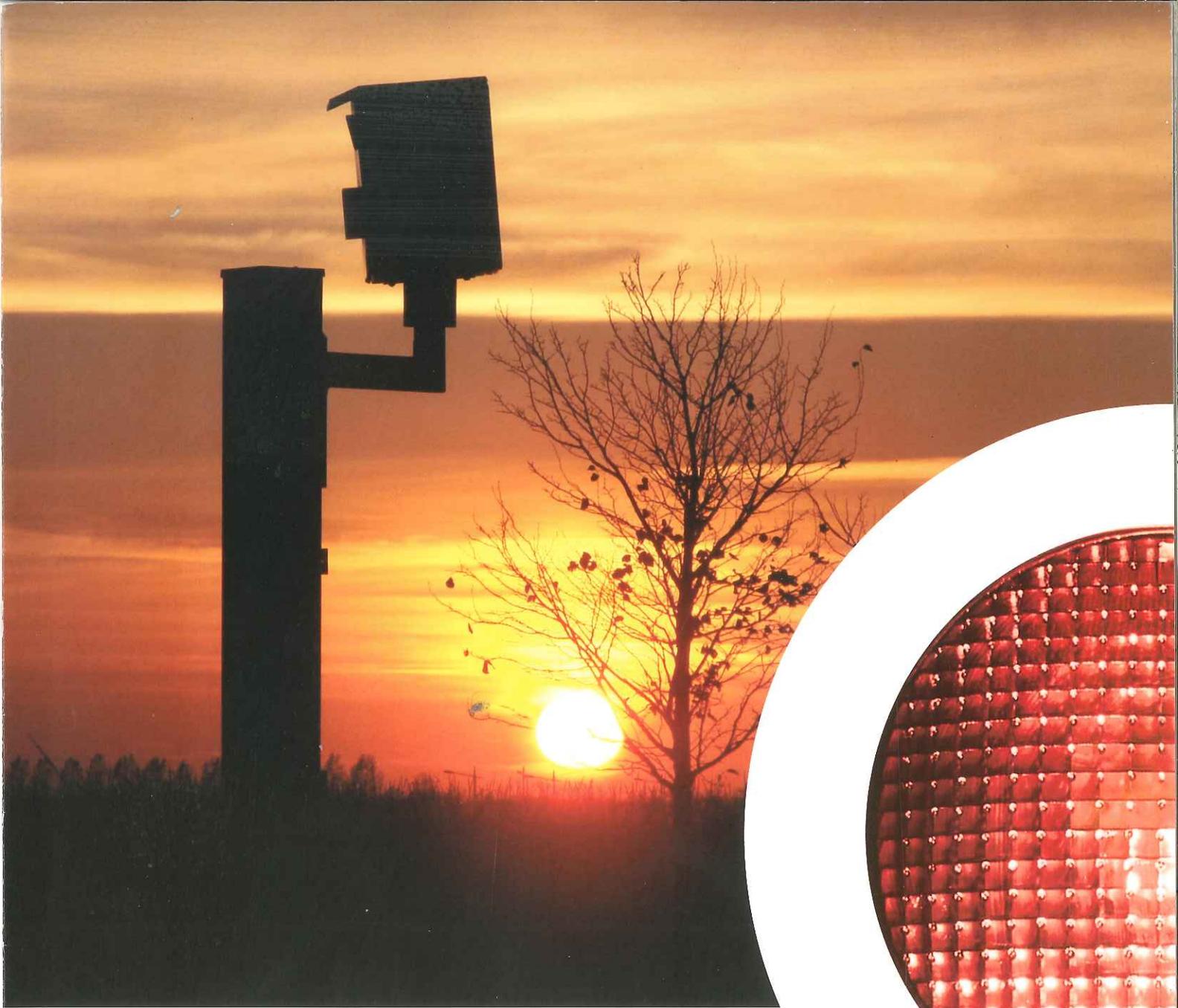


2nd image



GTC-GS11 front

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## **Gatso GS11 digital camera**

A single camera solution for traffic enforcement

## Future-proof camera for traffic enforcement

Designed exclusively for traffic applications, Gatsometer's state of the art 11 mega pixel GS11 camera delivers the highest level of evidential security. The GS11 provides an innovative single camera solution for a range of traffic enforcement applications due to its built-in digital control unit. Other features include:

- 11 mega pixels provides superb image quality
- 12-bit high dynamic range
- Captures both shadow and highlight detail simultaneously with over 68 billion colour shades
- Sharp, high quality images in all lighting or weather conditions
- High precision industrial camera
- Low energy consumption
- Fully RoHS compliant



The GS11 camera

### Burst rate

A single GS11 camera monitors up to four lanes of traffic and captures clear images of offending vehicles. In red light, speed on green or speed enforcement applications, images are captured. A burst rate of four images per second ensures that all offending vehicles are captured, even in dense traffic. The high resolution of the GS11 camera provides high quality images for accurate Automatic Number Plate Recognition (ANPR) or driver identification in all weather or ambient light conditions.

### Encrypted images

In common with all Gatsometer digital camera systems, offence data (including speed, date, time, direction, etc.) is superimposed on the image, digitally signed and encrypted in real time to ensure it is tamperproof. All encrypted violation images and data are electronically stored and in Gatsometer's Secure Digital Image (SDI) encrypted file format.

### All unicode characters in data bar

All the data, related to the offence, is real time superimposed in the picture. In the data bar all the data about the violation is presented: time, location, speed, etc. Captured images, simultaneously combining both the offence and the offence data are compressed and encrypted to international standards.

```
03/03/2006 10:37:50 Lane 2 Image 2/2 Violation  
Red 1.8 Yellow 3.3 Delay 0.8 Int
```

Data bar can contain all possible languages.

Mandarin: 和平  
Korean: 평안



Tamil (India): அமைதி  
Greek: Ειρήνη  
Thai: สันติภาพ  
Arabian: سلام



All unicode characters can be used in the data bar.

The system's in-built monitoring function continuously checks and reports on system functionality, while an intrusion alarm sends a warning to the remote control centre in the event of vandalism or other damage.





The Colour Graphic User Interface



The GTC-GS11

## Graphical User Interface

Gatso digital photo enforcement systems are equipped with a Graphical User Interface (GUI), with easy to use menus and clear displays. The GUI enables users to remotely control and configure the system and monitor system status.

## System operation

### Camera

The GS11 has a colour depth of 12 bits per pixel providing over 68 billion colours; its broad dynamic range rules out over or under-exposed images. The camera's sophisticated software analyses each 12-bit image and saves the data in Gatsometer's Secure Digital Image (SDI) encrypted file format, ensuring:

- the full dynamic range of the camera is always used
- high quality offence images
- use of extra gain is unnecessary

Each GS11 has fully automatic lens control and fixed focus lens. A range of various lenses is available.

### Camera Interface Tool

Gatso provides several software tools in order to interface with the equipment both remotely or locally. The software maximizes the performance of the functionalities, like downloading and online viewing of captured images, viewing and printing of camera properties and statistics. Systems parameters such as threshold speed, direction, etc. can also be set.

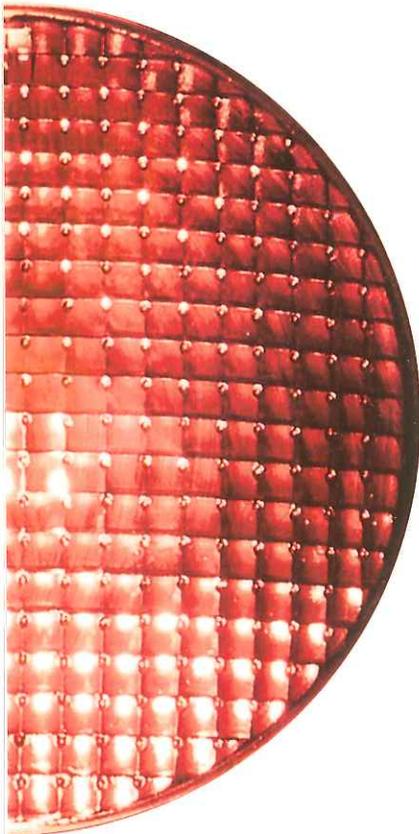
### Detection technologies

The camera may be triggered by loops, radar or non-invasive Loopless Trigger Radar (LTR).

- Loop detectors provide accurate and reliable speed or traffic light control, even on busy stretches of road. Gatso digital traffic cameras are supplied with Gatso loop detectors as standard for speed or red light detection. Vehicles are monitored by two loops installed in each lane, which ensures optimum detection of offences.
- Radar is a reliable and flexible detection technology and requires no inroad installation. A single radar installation at the roadside monitors both receding and approaching traffic and is capable of distinguishing between cars and trucks. Gatso radar technology uses a slotted wave antenna on a 24 GHz frequency that is approved worldwide for enforcement applications. Installation of the radar is totally flexible, due to the 22° vertical beam.
- Gatsometer's non-invasive LTR provides the same accurate, reliable and versatile detection as conventional loops, without disruption to traffic during installation. LTR can be mounted at the side of the road for easy access and projects a virtual loop via radar on to the road surface, providing excellent detection over up to four lanes of traffic. With a capture rate of better than 98%, LTR is a highly reliable product for enforcement applications.

## Advantages:

- The combination of 11 mega pixels and full 12 bit dynamic range delivers superb image quality and clear contextual detail
- A single camera solution for enforcement of up to four lanes of traffic
- Colour Graphical User Interface
- A range of easily changed lenses
- Data bar may be configured for different languages
- Optional ANPR capability
- One file contains up to three violation images
- Offence images encrypted to international standards to avoid tampering
- Built-in digital control unit, so no need for ground based unit



## Technical specifications:

### Digital colour camera

Type	GS 11
Dimensions (h * w * d)	145 * 195 * 95mm
Image capture	4 images per second
Resolution (h * w)	4008 x 2768
Weight	4 kg
Relative humidity	max. 95%, non-condensing
Operating temperature	-20°C to 60°C

### Lens

Fixed focus	35mm, 50mm, 85mm or 100mm
Diaphragm setting	Automatic

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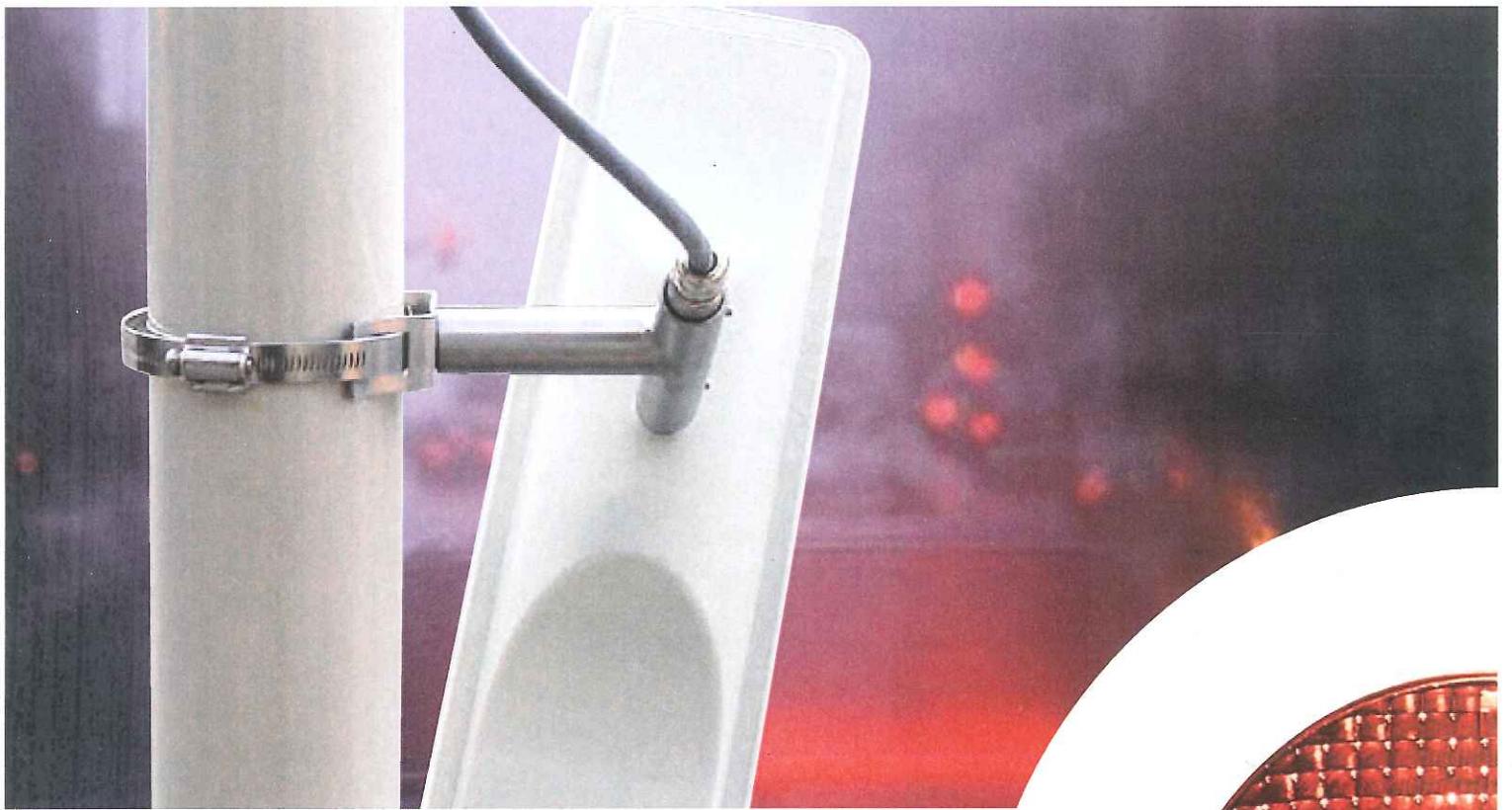
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## Non Invasive technology using Loopless Trigger Radar

*Gatsometer BV is introducing a new technology in red light enforcement: **Non Invasive Detection (NID)**. The equipment built by Gatsometer BV for this application is called the **Loopless Trigger Radar (LTR)**.*

Today, most vehicle detection systems rely on inductive loop detectors that employ loops of insulated wire placed beneath the road surface.

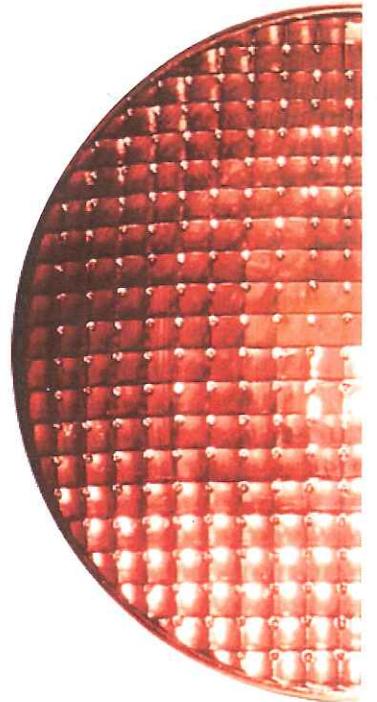
Gatsometer BV prides itself on being able to offer the most accurate inductive loop detector system in the world (The Gatsometer GLD4-2S) and for the majority of locations this is still the most favorable solution.

However, obstacles in the road surface, railway crossings with large quantities of steel in the ground, and the requirement to close lanes of traffic for installation can make induction loop systems undesirable in certain sites and circumstances.

These special conditions have resulted in our company taking the initiative to come forward to meet this market demand with our new solution. The new NID system offers an accuracy of over 98% detection, this non invasive solution is once again a highly reliable product for road safety applications.

### What is it?

Gatsometer BV is the company that pioneered the use of radar for road traffic safety systems and has decades of experience in this field. With this new system, a virtual loop is projected onto each separate lane of the road surface. The functionality is the same as with inductive loops. A vehicle that violates the red light and moves through the virtual loop zone is detected by the NID unit, which in turn instructs the camera to take a picture of the offending vehicle. The fundamental difference with this system and inductive loops is that the radar loop is projected **onto** the road surface rather than placed **under** the road surface. It is in fact a virtual loop!



GATSO METER BV  
[www.gatsometer.com](http://www.gatsometer.com)

### How does it work?

Each LTR detector is directed onto a single lane and projects a virtual loop on the road surface: the 'footprint'. A vehicle present in the footprint area is continuously measured and the output from these measurements is sent to the NID unit. The trigger point (or photo point) is in the middle of the footprint and can be aligned according to the local and legal situation: on the stop line, before the stop line or after the stop line. When a car is in violation, in this case passing the trigger point when the stoplight is red, the NID triggers the digital Gatso Traffic Camera, which will take a photograph of the offending vehicle. An optional second photograph is taken after an interval time or interval distance.

### Configuration

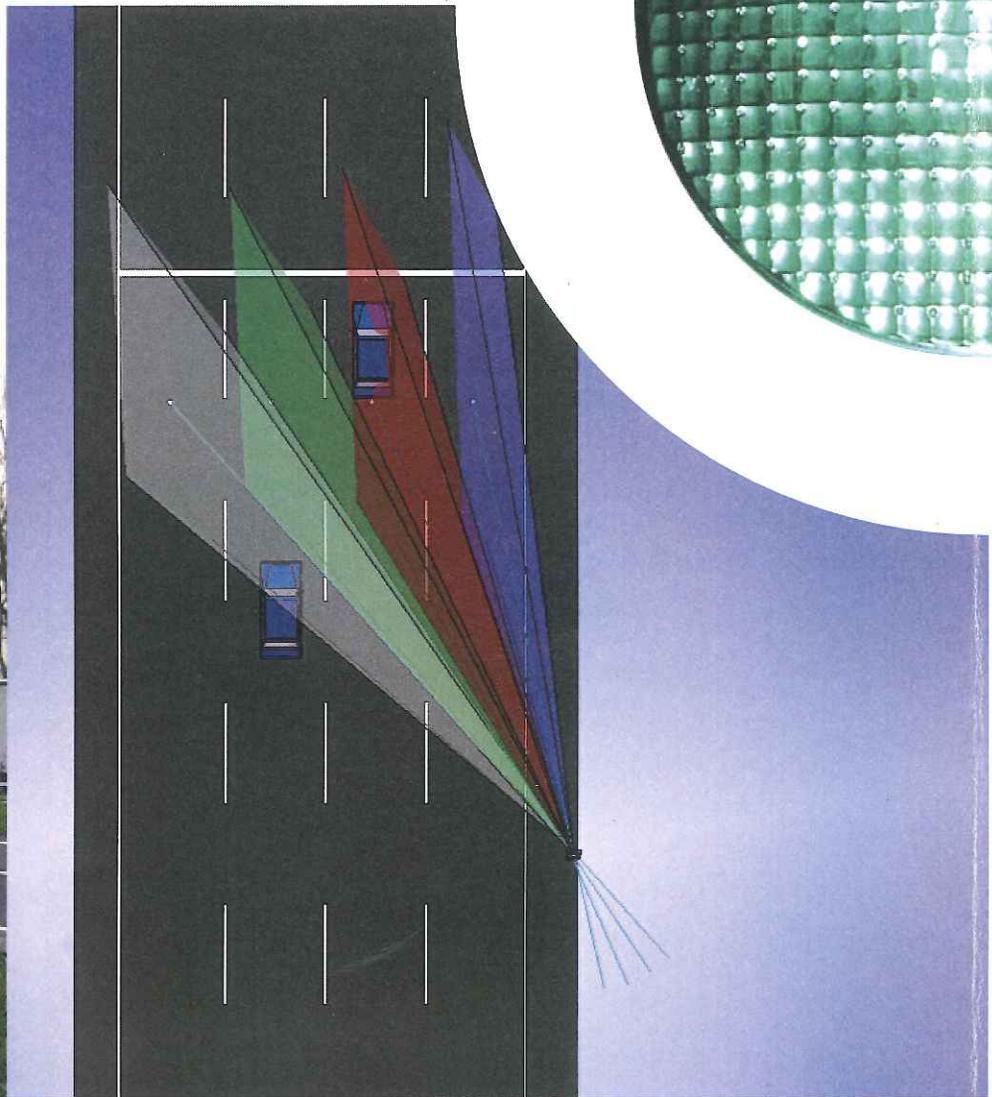
Employing the Multicam system, the NID can detect up to four lanes and can detect either approaching or receding traffic. One GTC-D can detect up to three lanes.

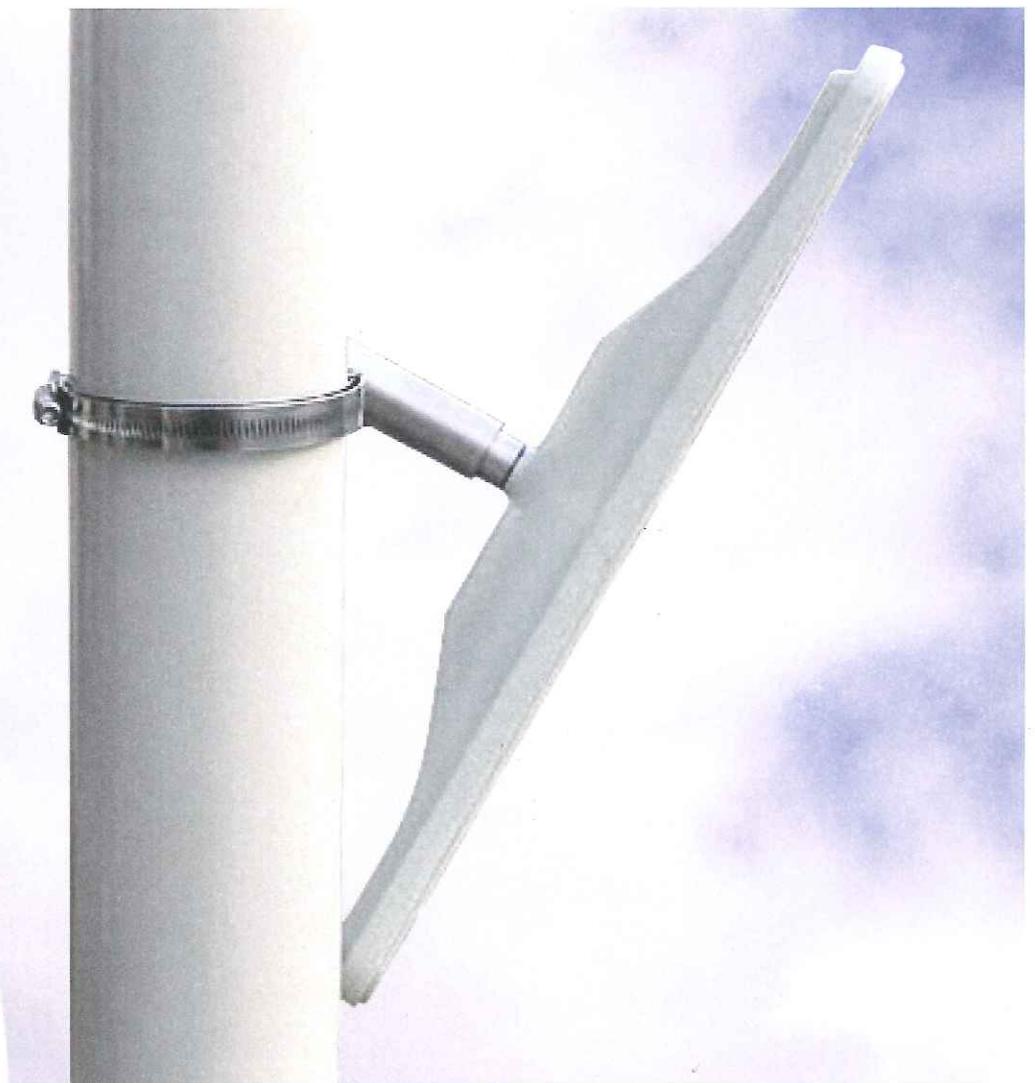
### Installation

A software package has been especially designed to guide installation engineers through the installation process. Exact positioning of the footprint and aligning of the trigger point is now a matter of utilising software and a double telescopic sight.

### Advantages:

- Suitable for all varieties of road including unsurfaced loose roads, deformed or uneven roads.
- Roads do not have to be closed and traffic does not have to be redirected during installation therefore costs and disruption to traffic flow are reduced.
- Suitable for unusual applications such as sound-dampening road surfaces, metal and reinforced concrete bridge sections, railway crossings etc.





### Compatibility

The non-invasive solution is pin compatible (plug-and-play) with the existing Gatsometer Loop Detector (GLD4-2S); allowing easy exchange of detector units in the Gatso Traffic Cameras (GTC-D, Multicam and the Point-to-Point® system). Of course the ability to download offence data (including the offence images) and also to adjust camera settings remotely is available for this new system.

### Technical specifications

#### LTR

##### *Electrical Characteristics:*

Supply voltage	12V DC +/- 10%
Power consumption	2 VA (typ.)
Operating temperature	-30°C to 85°C
Center Frequency	24.125GHz +/- 25MHz

#### NID

##### *Electrical Characteristics:*

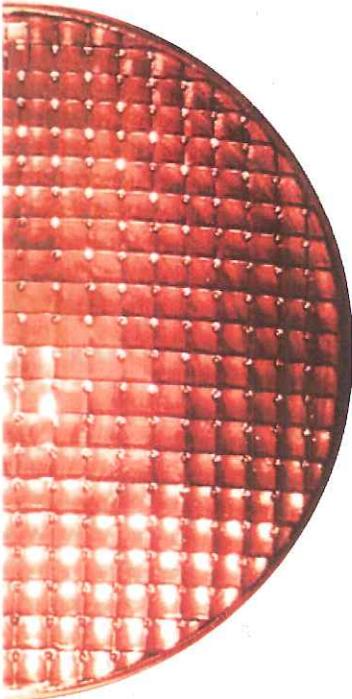
Supply voltage	5V DC +/- 5%
Power consumption	1,75VA (typ.)
Operating temperature	-30°C to 85°C



*The Loopless Trigger Radar*

## Summary

Inductive loops are a mature technology and one should not expect or should feel the necessity to replace existing inductive loops with non invasive technology. However, in circumstances where inductive loops, for a variety of reasons cannot be used, the NID can offer a perfect alternative.



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