

Average Speed Enforcement. Making our roads safer.





In 2013 there were over 3,000 people killed or seriously injured (KSI) in road accidents where speed was a contributing factor.* Travelling above the legal speed limit dramatically reduces a driver's chance of stopping if something unexpected happens.

In order to reduce the number of KSIs, the UK Government has set out to undertake all necessary measures, including the use of Automatic Number Plate Recognition (ANPR) cameras to aid speed enforcement.

3M offer a Home Office Type Approved (HOTA), cost effective Average Speed Camera System (formerly known as SpeedSpike), with the aim of reducing speed on the UK road network to protect road users. The 3M Average Speed Camera System is suitable for average speed enforcement on motorways, urban speed enforcement in town and city centres and local short distance speed enforcement outside schools and residential areas and at roadworks.

A four year evaluation of average speed camera effectiveness commissioned by the Department for Transport found a 70% reduction in speeding at fixed sites, a fall of 6% in average speeds and a 42% reduction in people killed and seriously injured.

What is the 3M™ Average Speed Camera System?

It is widely understood that speed limits alone don't always reduce speed and the 3M Average Speed Camera System has been designed as a fairer system for decreasing speed.

Our system consists of a speed enforcement network of up to 1000 Average Speed Cameras and an Evidence Retrieval and Control Unit (Instation).

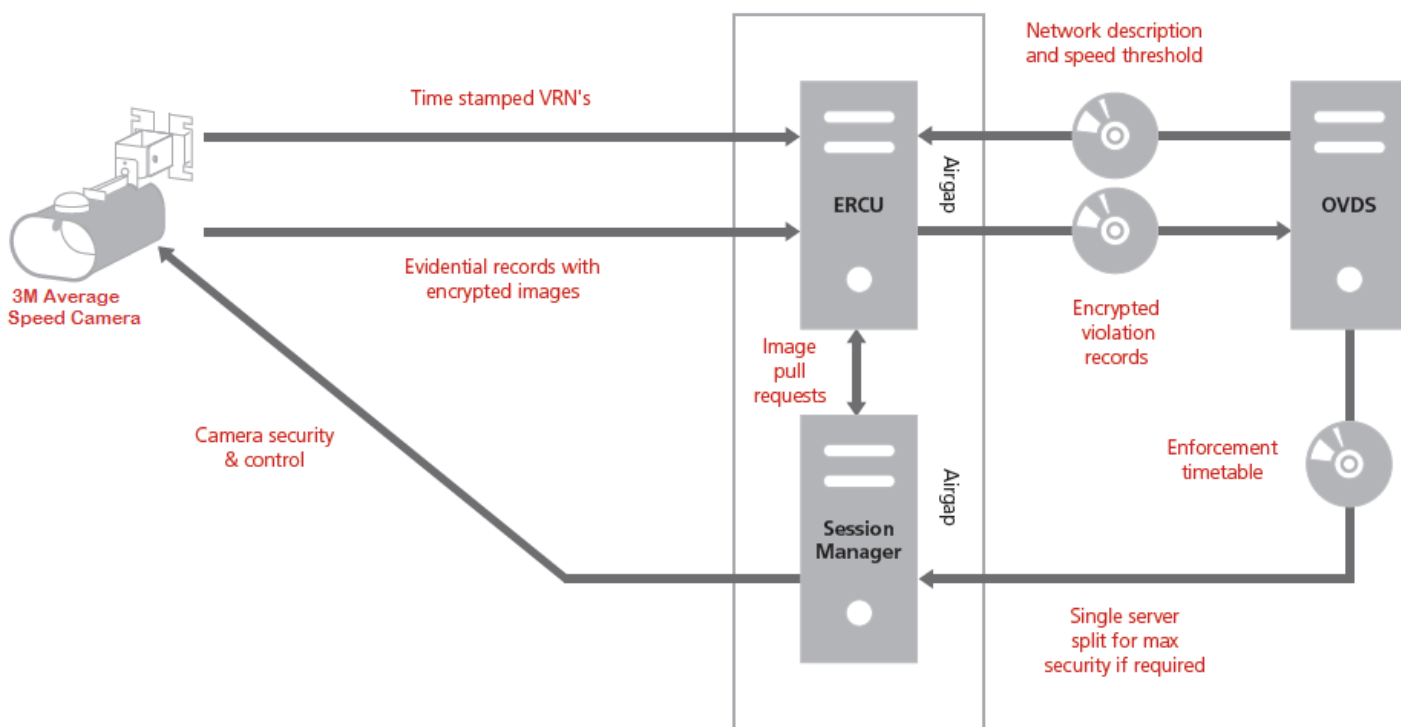
Using Automatic Number Plate Recognition (ANPR) technology, our average speed cameras are able to 'read' the number plate of every vehicle which passes its field of view and creates a time, date and location file for that vehicle. Should a vehicle reach the next camera too quickly, the enforcement server will highlight a violation has occurred. These violations can then be exported to a ticketing back office system for processing.

*Based on research undertaken by THINK! : <http://think.direct.gov.uk/speed.html>

How does the 3M™ Average Speed Camera System work?

The Vehicle Registration Number (VRN) for each passing vehicle is read, accurately time-stamped and added to an encrypted batch of VRN's stored on the camera. Every batch of 30 VRN's is sent via a GPRS or ADSL connection to the 3M Evidence Retrieval and Control Unit (ERCU) 'Instation' enforcement server. The ERCU has been configured with the distance between each camera and the speed threshold. When a vehicle passes an exit camera the ERCU works out the speed of the vehicle using the elapsed time between the links and the distance.

The ERCU pulls the images from each camera for violations only and combines them into an encrypted Violation Record, which is written to CD. The free-space on the CD can be constantly monitored using the ERCU and an email can be sent when it is 90% full. The CD can then be retrieved for review in the Offence Viewing & Decision System (OVDS) with selected violations being exported to a ticketing back office.



Evidence of a violation

Within the 3M Average Speed Camera System, air-gap isolation provides absolute evidential integrity. All of the data is stored on Write Once Read Many (WORM) CD-R's and can be inspected if queried. The data is also encrypted on the media Session Manager and may be held securely, if required.

The 3M Evidence Retrieval and Control Unit (ERCU) is loaded with information on road topology; cameras, sites links, offsets and the desired speed threshold. It receives time stamped VRN's from the cameras and detects any violators. The ERCU is able to request and receive the images and assembles an encrypted violation record to CD.



Violation details showing rear plate



Violation details showing two plates



Violation details showing front plate

Benefits of the 3M™ Average Speed Camera System.



Safer than traditional spot speed systems

Traditional spot speed enforcement has often been accused of causing accidents, not preventing them. Safety campaigners from all over the world claim that spot speed cameras cause heavy braking and sudden acceleration, leading to accidents and serious injuries.

The 3M Average Speed Camera System eliminates the hazards caused by spot speed cameras, while still maintaining traffic flow. Through correct signage, drivers know that they are approaching an average speed enforcement zone and they are able to adjust their speed accordingly and safely.



Keeping roads safe at night

Driving conditions are much more challenging at night, in low light it can be much more difficult to see vulnerable road users, other vehicles and even the road ahead. According to research by the Department for Transport, road casualty statistics show that 40% of collisions occurs in the hours of darkness.**

The 3M Average Speed Camera System is able to operate around the clock, even on completely dark roads through the use of additional illumination including unobtrusive infra-red floodlights that help prevent light pollution. This enables the system to operate 24/7 with a high degree of accuracy to help keep our roads safe.



Safer at roadworks

Research conducted by the Transport Research Laboratory*** on the benefits of using average speed enforcement at overnight roadworks showed a saving of £2.37 million per year in the costs associated with road worker injury and fatality.

Average speed solutions at roadworks have been proven to modify driver behaviour, leading to a reduction in the average speed of vehicles travelling through roadworks and driving at more consistent speeds leading to a more reliable journey.

**Speed Compliance in Overnight Road Works report, 2010

***Reported Road Casualties 2010, DfT



Safer for communities

The entrances to schools are one of the most important areas for controlling speed because of the high number of vulnerable pedestrians. Young children may not fully understand the dangers of the road and slowing traffic to the legal speed limit means that lives can be saved.

We have designed our system to be enforceable over just 100 metres with speed limits as low as 20mph, ideal for deployment at school and college entrances.



Helps ease traffic flow and minimise congestion

Average speed enforcement is an effective tool for reducing journey times by limiting the disruption to traffic flow that spot speed, traffic lights or speed bumps can cause.

The implementation of average speed solutions has shown that travel times actually decrease through the enforcement zone due to more disciplined traffic flows. The side-effect of steady traffic flow is that it will help reduce the amount of fuel burned and as such, decrease particulate matter and noise pollution.



Reliable

With over 10,000 ANPR cameras installed across the UK, our team of highly experienced service engineers will ensure that the system is correctly setup and calibrated. Once the system is in place, you can be confident that it will continue to perform, providing extremely accurate read rates. Indeed, our cameras have been independently tested to ensure that they continue to perform in a variety of operating environments.

3M average speed cameras use our own Optical Character Recognition (OCR) engine, which is widely recognised as the most advanced in the industry.



Easy to install

3M Average Speed Cameras can be mounted on a range of existing street furniture including street lights, bridges and motorway gantries and are capable of taking their power from a street light or other existing power source. They have also been approved for mounting on passive safety poles so there is no need to install a crash barrier, keeping installation costs to a minimum.

The cameras are able to operate using wireless (GPRS or 3G) communications so all of the required electronics for the camera contained inside a single unit. With a possible installation height of up to 7.25m from the centre of the lane of traffic, this vastly reduces the chance of any vandalism to the system.

Safe and Secure

To alleviate the need for additional expenditure on hardware, 3M are able to offer hosting of the ERCU 'Instation' enforcement server at our secure data centre. In addition, 3M are able to monitor the Instation to ensure maximum uptime and send the violation record CDs to the Safety Camera Partnership for processing.

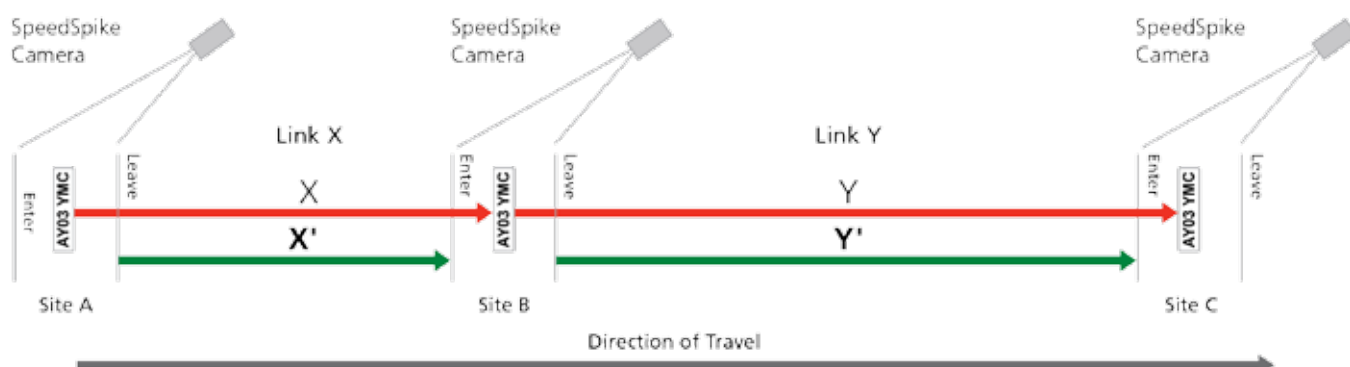


Fairer

The 3M Average Speed Camera System always favours the driver (and helps limit legal challenges) by minimising the speed reported.

The system will enforce on the minimum possible distance and always favour the driver irrespective of when the plate is read. The minimum distance is the latest possible leave point at the entrance site to the earliest possible arrival point at the exit site. The distance travelled within the field of view of the camera is ignored.

The 3M Average Speed Camera System enforces the distance between X' and Y' (Green), instead of the distance between X and Y (Red) which has actually been travelled:



Why choose the 3M™ Average Speed Camera System?

With over 20,000 cameras deployed around the globe, 3M is a worldwide leader in Automatic Number Plate Recognition (ANPR) technology, designing, manufacturing and supporting our complete line of ANPR products and services.

At the heart of the 3M Average Speed Camera System is the 3M Optical Character Recognition (OCR) engine that has been internally developed and maintained over a number of years, and is widely recognised as the most accurate in the industry. 3M OCR engines are very tolerant of skewed and off-axis number plate reads, plate sizes, syntax rules, and designs.

Our system exceeds the standards set out by the Association of Chief Police Officers (ACPO) for ANPR technology and is Home Office Type Approved (HOTA), so you can be confident in the 3M Average Speed Camera System as a robust, cost-effective solution for average speed enforcement.

Specifications

Dimensions (LxWxH)	426mm x 260mm x 205mm (including hood & Garmin)
Weight	7.8kgs (including hood & Garmin) 5.7 kgs
Full Resolution	IR Channel: 1,392 × 512 pixels
Field Rate	50 field/second
Power Consumption	35W, 48 Vdc
Operating System	Embedded Linux
Operating Temperature	-40°C to +60°C
Illumination	Effective range: up to 28.9 meters



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