Focusing in on safety through enforcement
The SITRAFFIC E-Cam system: With E-Cam, bring increased safety to your roads

Enforcement solutions enhance road safety and save lives. An independent study revealed that, in camera-monitored zones, the number of people killed or seriously injured was reduced by two fifths and the number of pedestrians killed or seriously injured fell by over a third. It is thus not surprising that more and more municipalities, highway and police authorities are planning to install such monitoring systems and are looking for a reliable solution that makes technical and economical sense. With our SITRAFFIC E-Cam digital camera system, every customer is on the safe side on both counts, because E-Cam is based on the latest digital technology and helps keep costs low.

An “all-in-one” system design

SITRAFFIC® E-Cam integrates a whole range of applications in a single system:

- red light and speed enforcement
- permanent and portable installation
- front and rear vehicle photography
- use with piezo-sensor, laser and fibre-optic detection technology

Numerous important advantages. Fewer cameras needed

As SITRAFFIC E-Cam can monitor both travel directions (bi-directional front and rear vehicle photography) for speed and red light enforcement and is suitable for mobile use as well as permanent use, customers need significantly fewer cameras than with conventional systems. This means lower costs even though more vehicles can be monitored. The compact design of the SITRAFFIC E-Cam means that all electronics are included within the camera unit, enabling customers to utilise dummy flash units and switch cameras between multiple sites, resulting in further cost savings.

Reduced back-office processing costs

SITRAFFIC E-Cam allows independent secondary speed verification by means of a single photograph. In Brazil, South Africa and the UK, this was the first system to gain government type approval for single front photography for speed enforcement. Single photograph enable customers to reduce the required resources for image processing.

Increased end-user acceptance of system and image integrity

SITRAFFIC E-Cam meets extremely high performance requirements in terms of data security. All data is processed, signed, encrypted and stored within an E-Cam security module using PKIs and KEKs.

Freedom of choice in sensor technology

With SITRAFFIC E-Cam, customers can choose between piezo, laser and fibre-optic detection methods, ensuring customers have the optimum detection solution for their road and traffic conditions.

Perfectly equipped for extreme climatic conditions

The camera is protected by an environmentally sealed casing with an integrated heating/cooling system that ensures reliable operation in harsh climatic conditions at temperatures between -20°C and +60°C.
High-resolution digital recording of speed and/or red light violations

Multi-lane speed and red light enforcement

Speed enforcement

Mobile and night-time speed enforcement

The self-contained camera

The SITRAFFIC E-Cam is a self-contained system using piezo or fibre-optic sensors, or laser technology for speed measurement or red light enforcement. The camera can either be used as a permanently installed unit that works in unattended automatic mode and provides single-image front or rear photography, or as a mobile camera unit. Since up to 100,000 violation images can be stored on site, the camera requires little servicing in respect of changing camera film.
Mobile or stationary: SITRAFFIC E-Cam offers numerous configuration options

Left: Three lanes, one direction. Permanent speed monitoring installation using piezo sensors embedded in the road surface

Right: One lane, two directions. Mobile monitoring unit using laser sensors

Left: Permanent roadside multi-lane speed monitoring system using laser sensors

Right: Permanent gantry multi-lane speed monitoring unit using laser sensors

Left: Permanent roadside speed and red light violation monitoring unit using piezo sensors embedded in the road surface

Right: Permanent roadside speed and red light violation monitoring system using laser sensors

New stylish housing designed to reduce the impact of additional street furniture on the local environment. E-Cam is quickly inserted, quickly removed: thanks to its self-contained system design in a separate self-lowering enclosure, improving secure access and reducing maintenance costs.

Quickly set up, quickly taken down: SITRAFFIC E-Cam for mobile use in speed and (simultaneous!) red light violation monitoring
Benefit from SITRAFFIC E-Cam’s versatility in terms of sensor input and applications – and a whole range of advantages

The SITRAFFIC E-Cam system can be connected to different sensor technologies (see left page) and used in mobile or permanent applications for the digital recording of speed and/or red light violations. It is the only instrument that uses a unique secondary speed verification method for verifying the primary speed measurement by means of data imprinted on a single image. That is why your decision in favour of the E-Cam system is also a decision in favour of maximum flexibility – always a clever choice, especially in view of the system’s many additional benefits ...

One antenna for three data link types

The tri-band antenna ensures data transmission via several types of communication link:

- GSM link for transmission of E-Cam status and errors to the service centre
- GPS link for time/date and positional coordinates for location data
- Wireless LAN (Wi-Fi) interface to the shuttle PC (laptop) for E-Cam set-up and monitoring and data extraction

High-resolution digital photography eliminates the need to handle film cartridges ...

Our SITRAFFIC E-Cam is a high-resolution digital colour camera that is able to cover up to three lanes simultaneously. The motorised lens for aperture, zoom and focus adjustment guarantees clear, conclusive pictorial evidence. As there are no film cartridges that need to be replaced and developed after exposure, the system’s storage capacity is expanded to 100,000 pictures – without requiring manual intervention. Via LAN, the pictures can be transmitted directly to the back-office server.

... and enables automatic number plate recognition

One of the many optional features of SITRAFFIC E-Cam is the ANPR (Automatic Number Plate Recognition) function. The fixed photographic vehicle position function helps achieve better image quality, as the focus distance remains constant irrespective of vehicle type. With laser sensors the number plate will be over the verification marker. With piezo sensors the front/rear axle will be over the marker.

ANPR software can either be loaded on the SITRAFFIC E-Cam or the E-Cam back-office storage server. With this function the number plate will automatically be located and will appear as a cut-out image in the corner of the main image. The number plate insert will only appear if the ANPR module is fitted. With this function installed, the information can be transferred to a third-party back-office solution, which will automatically match the recorded number plate with the vehicle registration data base to establish the vehicle owner’s identity, including address.
### The SITRAFFIC E-Cam system

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital camera</td>
<td>4 Mega pixel digital colour camera</td>
</tr>
<tr>
<td>Lens</td>
<td>High-quality zoom lens covering up to 3 traffic lanes. Motorised focus, aperture &amp; zoom to suit the site and the camera</td>
</tr>
<tr>
<td>Electronic shutter</td>
<td>5 seconds to 1/5,000 of a second</td>
</tr>
<tr>
<td>Operating system</td>
<td>UNIX based, realtime (QNX)</td>
</tr>
<tr>
<td>Frame grabber</td>
<td>Dedicated, in-house design for digital camera, traffic sensors and other peripheral interface/control devices</td>
</tr>
<tr>
<td>Ports</td>
<td>LAN and Wi-Fi</td>
</tr>
<tr>
<td>Image capture rate</td>
<td>2 images per second</td>
</tr>
<tr>
<td>Image format</td>
<td>One image per speed violation. Two images per red light violation, covering a maximum of 3 traffic lanes using one digital colour camera</td>
</tr>
<tr>
<td>Image file size</td>
<td>± 300 kByte per violation (JPEG Format), storage of ± 100,000 violations on site</td>
</tr>
<tr>
<td>Integral flash</td>
<td>Red or infrared LEDs</td>
</tr>
<tr>
<td>Power requirements</td>
<td>24 VDC, 50 W E-Cam average, 150 W with heating/cooling unit</td>
</tr>
<tr>
<td>Standard housing</td>
<td>Sealed, splash-proof, powder-coated, tripod mounting for mobile E-Cam</td>
</tr>
<tr>
<td>Dimensions</td>
<td>E-Cam: 410 x 245 x 350 mm</td>
</tr>
<tr>
<td></td>
<td>Mobile E-Cam (with tilt &amp; swivel bracket): 410 x 380 x 440 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>E-Cam: 17 kg</td>
</tr>
<tr>
<td></td>
<td>Mobile E-Cam: 18 kg</td>
</tr>
<tr>
<td>System operating temperature</td>
<td>0°C to +50°C or -20°C to +60°C (with heating/cooling)</td>
</tr>
<tr>
<td>Humidity</td>
<td>98% non-condensing</td>
</tr>
</tbody>
</table>

### Sensor and application options

#### Piezo/fibre-optic sensors

- 3 surface or sub-surface road sensors give two primary speed results, lowest speed displayed. Traffic lane separation with light/heavy vehicle classification on permanent sites only. Mobile/permanent speed and red light monitoring sites

#### Sensor measuring distance

- 1.5 m

#### System accuracy

- ± 2 km/h (10-100 km/h)
- ± 2% (>100 km/h)

#### Speed range

- 10 to 300 km/h

#### Laser detection system

- One integral laser sensor covering one traffic lane for mobile speed installations
- Or one laser sensor per traffic lane mounted on a bridge, gantries, posts or inside the permanent outer housing, for permanent speed and red light monitoring sites (3 lanes maximum)

#### Laser diode

- Class 1 eye safe, 905 nm wavelength

#### Detection range

- 5 to 100 m

#### Speed accuracy

- ± 2 km/h (10-100 km/h)
- ± 2% (>100 km/h)

#### Speed range

- 10 to 300 km/h
### Integral traffic statistical data

- Lowest/highest speed
- Average and 85% speed
- Traffic flow
- Total and violating vehicle count
- Vehicle speed distribution

### Violation data recorded on image

- Automatic number plate recognition software (optional)
- Violation data on image
  - Time (h:m:s)
  - Date (y/m/d)
  - Alphanumeric site description
  - Primary speed measurement results
  - Amber and red light times for traffic intersection violations
  - Applicable speed limits
  - Instrument serial number
  - Frame counter
  - Lane of violation in permanent installations
  - Independent secondary speed verification times (ms)

### Modules for mobile installations

<table>
<thead>
<tr>
<th>Description</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 VDC power pack</td>
<td>24 V, 17 Ahr with integral 110/220 VAC charger</td>
</tr>
<tr>
<td></td>
<td>Dimensions: 260 x 210 x 250 mm</td>
</tr>
<tr>
<td></td>
<td>Weight: 20 kg</td>
</tr>
<tr>
<td>Portable auxiliary flash</td>
<td>Remotely triggered, tripod mounted, 12 VDC, 180 Joules, 0.5 second flash</td>
</tr>
<tr>
<td></td>
<td>repetition with optical filter</td>
</tr>
<tr>
<td></td>
<td>Dimensions: 340 x 180 x 290 mm</td>
</tr>
<tr>
<td></td>
<td>Weight: 6 kg</td>
</tr>
</tbody>
</table>

### Modules for permanent installations

<table>
<thead>
<tr>
<th>Description</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent housing</td>
<td>Bullet-, vandal- and dust-resistant, splash-proof, powder-coated and manu-</td>
</tr>
<tr>
<td></td>
<td>factured from stainless steel</td>
</tr>
<tr>
<td></td>
<td>Dimensions: 740 x 670 x 545 mm</td>
</tr>
<tr>
<td></td>
<td>Weight: 75 kg</td>
</tr>
<tr>
<td>Mounting</td>
<td>Robust, fixed or optional height-adjustable mounting pole</td>
</tr>
<tr>
<td>Auxiliary flash</td>
<td>Pole-mounted, 220 VAC, 360 Joules, 0.5 seconds flash repetition with</td>
</tr>
<tr>
<td></td>
<td>optical filter</td>
</tr>
<tr>
<td></td>
<td>Dimensions: 410 x 270 x 270 mm</td>
</tr>
<tr>
<td></td>
<td>Weight: 18 kg</td>
</tr>
<tr>
<td>Power module</td>
<td>220 VAC power supply and 24 VDC battery charger with batteries</td>
</tr>
<tr>
<td></td>
<td>Dimensions: 390 x 250 x 100 mm</td>
</tr>
<tr>
<td></td>
<td>Weight: 9 kg</td>
</tr>
<tr>
<td>SITRAFFIC E-Cam IFS</td>
<td>Intelligent Flash Simulator measures the speed of vehicles, activates a flash</td>
</tr>
<tr>
<td></td>
<td>should the vehicle exceed a preset speed limit, and gathers statistical speed</td>
</tr>
<tr>
<td></td>
<td>and vehicle volume data at permanent piezo speed sites</td>
</tr>
</tbody>
</table>

24 VDC power pack: 24 V, 17 Ahr with integral 110/220 VAC charger. Dimensions: 260 x 210 x 250 mm. Weight: 20 kg.

Portable auxiliary flash: Remotely triggered, tripod mounted, 12 VDC, 180 Joules, 0.5 second flash repetition with optical filter. Dimensions: 340 x 180 x 290 mm. Weight: 6 kg.

Permanent housing: Bullet-, vandal- and dust-resistant, splash-proof, powder-coated and manufactured from stainless steel. Dimensions: 740 x 670 x 545 mm. Weight: 75 kg.

Mounting: Robust, fixed or optional height-adjustable mounting pole.

Auxiliary flash: Pole-mounted, 220 VAC, 360 Joules, 0.5 seconds flash repetition with optical filter. Dimensions: 410 x 270 x 270 mm. Weight: 18 kg.

Power module: 220 VAC power supply and 24 VDC battery charger with batteries. Dimensions: 390 x 250 x 100 mm. Weight: 9 kg.

SITRAFFIC E-Cam IFS: Intelligent Flash Simulator measures the speed of vehicles, activates a flash should the vehicle exceed a preset speed limit, and gathers statistical speed and vehicle volume data at permanent piezo speed sites.
For further information, please contact:

Siemens AG
Industrial Solutions and Services
Intelligent Traffic Systems
I&S ITS
Hofmannstrasse 51
D-81359 Munich

The information provided in this brochure contains merely general descriptions or performance characteristics, which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

Order No. E10003-A800-A54-V1-7600
Printed in Germany
Dispo No. 22300 K-No. 40900
11/6950 C-TSR5208M02 WS 10073.
Subject to change without prior notice