

SAM

Sensing and Activating Module
Laser Sensor for Vehicle Detection



- Over height detection
- Determination of vehicle height
- Determination of traffic lanes
- Drawbar Identification

SAM



Application Area

Modern systems for traffic surveillance, traffic guidance and control require reliable sensing. In contrast to conventional methods, laser sensors offer distinctive advantages. Owing to the optical mode of functioning of the laser detectors, the road construction remains untouched, in addition they can be installed and serviced without interfering with the flow of traffic.

SAM

SAM (Sensing and Activating Module) is an infrared laser detector offering various possibilities for traffic surveillance. Due to the exceptional technology used for analysis SAM recognises objects in 12 selective range slots. Presence and distance information together result in a markedly fail-safe and more precise analysis. The tightly focussed and modulated infrared laser beam, in connection with the employed narrow band filters, is insensitive to sunlight, fog and snow fall. These are considerable advantages over other optical detectors. SAM is able to detect stationary as well as moving vehicles, cyclists, pedestrians and objects up to a minimal size of 5 cm.

Application

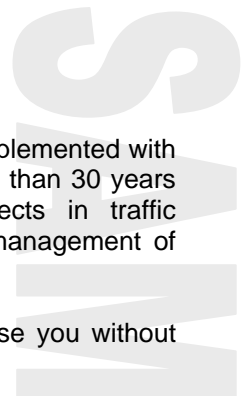
SAM is excellently suited for the following application purposes:

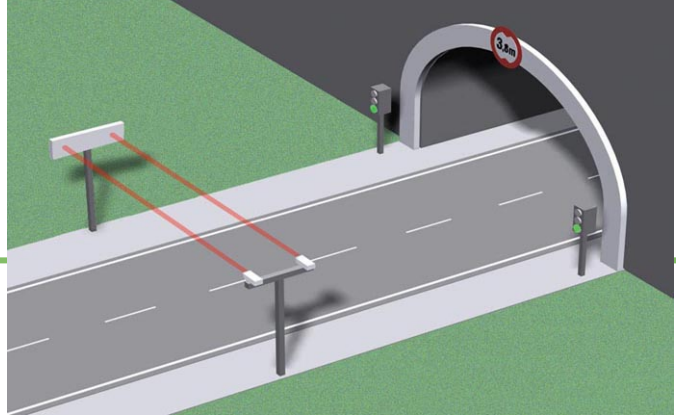
- **Over height detection**
to control vehicle heights before bridges and tunnels
- **Identification of vehicle classes**
to distinguish passenger cars from trucks / buses / street cars
- **2-range-detection**
lane distinction of vehicles based on distance measurements
- **drawbar detection**
drawbar detection between truck and trailer, to distinguish from close individual car traffic.

The Company

The technical expertise of **Schuh & Co. GmbH** is complemented with sound organisational and economical know-how. More than 30 years of experience in the realisation of complex projects in traffic engineering are the sound basis for the successful management of new customer oriented tasks.

Please feel free to contact us. We would like to advise you without obligation to win you as a satisfied customer.





SAM-S over height control

To prevent damages on the structure or equipment of tunnels (lighting, signals, ventilation), it is advisable to control the height of all vehicles at tunnel access for exceeding the headroom. In the normal case, height control at two positions is recommended. At the first position the driver of a vehicle with over height is requested by an active warning sign to leave the road at the next exit. At the second position, light signals will block tunnel access in case of alarm.



Advantages

The SAM over height control system recognises even small objects (minimum of 5 cm) at a speed of up to 100 km/h. Roads with a width of up to 32 meters can be controlled for height with an accuracy of 2 cm. Two SAM-S sensors work as reflection light barriers in this appliance. This way, only one electrical installation is required on one side. On the opposite side a passive reflector is to be mounted. Due to special beam widening, adjustment is very simple and there are no problems to be expected from percussions or the swaying of the supporting pole.



The Controller

The signals of both sensors - and inductive loops, if they exist - are logically combined in the controller to avoid false alarms that could be caused by birds or falling leaves. Additionally, the signal quality of the sensors is constantly monitored and an event of fault will be reported by a separate output. The over height alarm output allows to activate warning signs, flashing lights or traffic signals. All events will be logged in the controller to allow the complete documentation of SAM operation.



SAM

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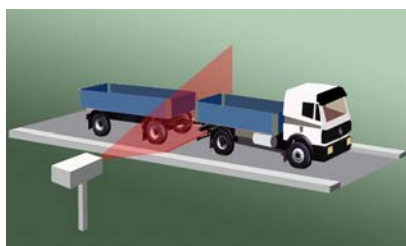


Vehicle Detection

Owing to the sharply focussed laser beam, SAM detects objects reliably even at great distance and in adverse weather conditions. Pointing across the direction of traffic, SAM detects - dependent on the height it is mounted at - all vehicles or only vehicles starting at a minimum height. This way, light-signal systems, barriers or gates can be selectively operated and controlled.

2-Range-Detection (Lane Detection)

SAM is able to recognize that part of its own laser beam that has been reflected by an object. The distance of the reflecting object can then be determined from the travelling time of the light. Being mounted pointing across the direction of traffic and across two lanes, SAM is able to determine the lane a vehicle is on. In this configuration, SAM is able to control light signal system, for instance at bus terminals and factory exits. Dependent on the lane they are on, vehicles can request a left or right turn.



Drawbar Detection

SAM-E is equipped with lenses, that widen the laser beam by 12° to a line. This way, a large area can be scanned optically. Objects inside the laser beam triangle reflect part of the light and will be detected. This configuration is mainly employed in fully-automatic tollgates where SAM is used to distinguish truck trailers from individual vehicles by detecting the drawbar between truck and trailer.

SAM Technical Data

Dimensions ex. tube	180 x 135 x 105 mm
Dimensions tube incl. heating	456 x 135 x 105 mm
Weight	1,8 Kg
Enclosure rating	IP67
Operation temperature	- 25° C bis +60° C
Laser	850 nm pulsed, 10 mW ,safe to the eye
Power supply	24V +/- 10%
Power consumption	100 mA
Heating power supply	24V +/- 30%
Heating current	max. 1A
Output signals	2 x RS485
Communication Interface	RS485
Operating mode display	ultra bright LED

SAM-S (Overheight Detection)

Operation method	reflex sensor
Beam (spot)	0,5 °
Detection range	3 m – 32 m
Reaction time	2 ms

SAM (Vehicle Detection)

Operation method	proximity sensor
Beam (spot)	0,5 °
Detection range	3 m – 20 m
Reaction time	10 ms

SAM-E (Drawbar Detection)

Operation method	proximity sensor
Beam (line)	12 °
Detection range	1 m – 10 m
Reaction time	10 ms