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Siemens Traffic Detectors

From induction loops to radar
technology: The right detector system
for any application

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Eight technologies, one outcome: Optimum data input for perfect traffic control and guidance

Traffic controllers need it, traffic computers and traffic control systems need it, and traffic management systems even more so: exact and reliable data on the volume of traffic passing spot X exactly at second Y. Until recently, induction loops embedded in the pavement used to be among the most commonly deployed devices for collecting such data. Today, however, there is a range of other systems and technologies available, each offering its own specific advantages. Thanks to this variety, it is now possible to match every detection task with a solution that perfectly fits the overall concept on the technical as well as on the financial level. The Siemens detector portfolio comprises a wide selection of systems for strategic detection as well as various detection purposes at intersections.

How to keep the overview of so many products? Easy!

There are detectors for every application. To make it easy for you to find the right product for your purpose, we have created a synoptic table, which you will find on the following pages. The table lists the advantages and limits of each individual technology – for direct comparison and informed decision-making. As you will see, we even offer systems that can detect stationary vehicles, for instance for monitoring outdoor parking spaces. The solution that we have developed for this purpose is called Sitraffic Wimag. Its forte: even vehicles parked for several days or weeks above the detector are kept “on the radar screen” – in the literal as well as in the metaphoric sense.

Taking pedestrians and cyclists into the equation

If traffic light switching routines are also to allow for pedestrians and cyclists, the intersection controllers need data that induction loops cannot generally provide. Such detection tasks can best be accomplished by radar detectors such as Sitraffic Heimdall or the new FLIR ThermiCam.

Direct measurement of travel times

Not only for local traffic light control, but also for many other applications such as traffic situation monitoring and travel time measurement, you will find exactly the right system in our Sitraffic range of detectors. Reliable data about current travel times is important input for traffic control measures and road user information. The detectors of the Sitraffic range, for instance the ANPR camera Sicore II®, allow direct and highly precise travel time measurements.

Traffic detectors from Siemens and their key features – an overview

All detectors can be integrated seamlessly with the other elements of our comprehensive Sitraffic portfolio, no matter if they are connected to a controller (most common option), an outstation or directly to a Sitraffic Scala traffic computer.

Induction technology:

Sitraffic loop detector SLD4

The tried-and-tested Siemens loop detectors provide highly precise data on the traffic situation both at urban intersections and on interurban highways – independently of ambient conditions.

Magnetic field technology:

Wireless Sitraffic Wimag ground sensors

Designed for wireless communication, the very compact in-pavement Wimag detectors score with high precision, ease of installation and a long service life. They can be installed at quite some distance in front of the actual intersection.

Radar technology:

Sitraffic Heimdall 24 GHz radar detectors and MLR multilane radar detector

The function of radar detectors is completely immune to any adverse optical effects. The detectors of the Heimdall family are fast and easy to install and an excellent solution especially for small intersections. The new, compact MLR detector can “survey” an extended zone of up to 125 m in front of the stop line and scan up to 16 virtual loops, generating the comprehensive data base required for traffic-actuated intersection control. The MLR detectors not only detect a vehicle’s presence, but are also able to determine vehicle speed and class.

Passive infrared technology (PIR):

Sitraffic Traffic Eye Universal 5 (TEU 5)

As they score with extremely low power consumption and high-quality data, PIR detectors are the technology of choice for solar-powered systems such as Traffic Eye Universal 5 (TEU 5). Such systems can be installed anywhere and are ideal for strategic traffic situation monitoring.

Video technology:

Sitraffic Sivicam and Phoenix video detectors

Sivicam and Phoenix video detectors are the ideal solution when looking for cost-effective presence detectors for intersections. High-quality image processing and advanced sensor technology guarantee superior detection rates around the clock and under all ambient conditions.

Thermography:

FLIR ThermiCam and FLIR TrafiOne thermal imaging detectors

These thermal imaging sensors can also reliably detect pedestrians and cyclists by measuring the differences in surface temperature of the various detection objects.

ANPR technology:

Sicore II ANPR camera system

The Sicore II camera system is able to identify and read the number plates of vehicles driving at speeds of up to 250 km/h, which makes it an excellent choice for travel time measurement and access control applications.

Radio technology:

Bluetooth/Wi-Fi scanner

Bluetooth scanners have proven highly efficient devices for travel time measurement in the scope of strategic detection applications. Thanks to their fast and easy set-up, they are ideal not only for use in permanent installations, but also for mobile deployment at construction sites or on temporary diversion routes. Their integrated Wi-Fi function allows the detection of smartphones, which are often “invisible” for purely Bluetooth-based devices.

Focus on intersection control	Induction technology	Magnetic field technology	Radar technology	
	Technologies for vehicle detection	SLD4	Wimag	Heimdall Stopline detector
Actuation				
Detection of approaching vehicles	++	++	++	+
Distinction between directions	Only double loop	Only double detector	+	+
Measurements				
Detection of moving vehicles	++	++	-	+
Detection of individual vehicles	++	++	-	o
Detection of time gap	++	++	-	-
Counting				
Selective detection of moving vehicles	Yes	Yes	Yes	No
Distinction between vehicle classes	Only double loop	Only double detector	No	No
Distinction between directions	Only double loop	Only double detector	Yes	Yes
General features				
Detection of cyclists	+	o	+	+
Several detection zones possible	No	No	No	No
Mounting support	Asphalt/concrete	Asphalt/concrete	Pole/cantilever	Pole/cantilever
Max. distance of detection zone from mounting point	0.5 m	0.5 m	10 m	30 m
Possible interferences	Hardly any	Radio link	Hardly any	Hardly any
Special features	Well established technology; work-intensive in-pavement installation	Wireless communication	Flexible; largely immune to interferences	Flexible; largely immune to interferences

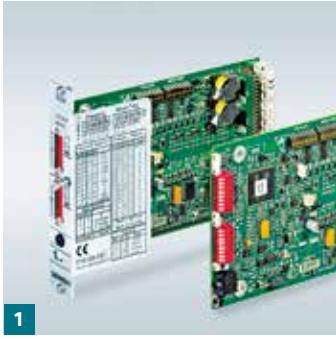
- ++ excellent
- + good
- o average
- poor

MLR multilane radar detector	Video technology			Thermography	
	Traficam X-Stream	Sivicam	Phoenix	FLIR ThermiCam	FLIR TrafiOne
+	+	+	+	++	+
++	+	+	+	+	+
+	++	++	++	++	+
+	+	+	+	++	+
+	o	o	o	o	o
Yes	Yes	Yes	Yes	Yes	No
Yes	No	No	No	No	No
Yes	Yes	Yes	Yes	Yes	Yes
+	o	o	o	++	+
Yes	Yes	Yes	Yes	Yes	Yes
Pole/cantilever	Pole/cantilever	Pole/cantilever	Pole/cantilever	Pole/cantilever	Pole/cantilever
125 m	50 m	50 m	50 m	90 m	40 m
Hardly any	Sun glare, moving shadows	Sun glare, moving shadows	Sun glare, moving shadows	Hardly any	Hardly any
Multilane radar with up to 16 detection zones	MPEG4 video transmission	Highly cost-effective	MPEG4 video transmission	High precision; reliable detection of cyclists	

Focus on traffic situation	Induction technology	Radar technology	Passive infrared technology	ANPR technology
Technologies for vehicle detection	SLD4	MLR multilane radar detector	TEU 5	Score II
Distinction between vehicle classes	Only double loop	Yes	Yes	Yes
Distinction between directions	Only double loop	Yes	Yes	Yes
Several detection zones possible	No	Yes	No	Max. 2
Mounting support	Asphalt/concrete	Mast or gantry	Mast or gantry	Mast or gantry
Max. distance of detection zone from mounting point	0.5 m	125 m	5–10 m	30 m
Special features	Well established technology; work-intensive in-pavement installation	Multilane radar	Solar-powered	Number plate recognition

Focus on cyclist detection	Induction technology	Radar technology		Video technology	Thermography	
Technologies for vehicle detection	SLD4	MLR multilane radar detector	Heimdall	Phoenix	FLIR ThermiCam	FLIR TrafiOne
General level of accuracy	+	+	+	o	++	+
Actuation	+	o	+	o	++	+
Measurements	+	+	+	o	++	+
Note	Suboptimal detection results in case of bicycles made from aluminium or carbon			Detection results impacted by hard light with dark shadows		

Focus on pedestrian detection	Passive infrared technology	Radar technology		Thermography
Technologies for pedestrian detection	PIR PED	Heimdall Crossing	Heimdall Kerbside	FLIR TrafiOne
Actuation				
Detection of arriving pedestrians	No	No	Yes	Yes
Distinction between directions	No	No	No	Yes
Measurements				
Detection of moving pedestrians	o	++	+	++
Detection of waiting pedestrians	o	–	++	+
General features				
Several detection zones possible	No	No	No	Yes
Selective detection of pedestrians (no vehicle detection)	No	No	No	Yes
Mounting support	Pole/cantilever	Pole/cantilever	Pole/cantilever	Pole/cantilever
Max. distance of detection zone from mounting point	20 m	25 m	10 m	20 m
Possible interferences	Hardly any	Hardly any	Hardly any	Hardly any
Note	Can also be used for vehicle traffic measurements	Crossing vehicles are not filtered		



1



2



5



9



6



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3



7



11



4



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Induction technology

Sitraffic SLD4 loop detector (figure 1)

Magnetic field technology

Wireless Sitraffic Wimag ground sensor (figure 2)

Radar technology

Sitraffic Heimdall 24 GHz radar detector (figure 3), MLR Multilane radar detector (figure 4)

Passive infrared technology (PIR)

Sitraffic Traffic Eye Universal 5/TEU 5 (figure 5)

Video technology

Sitraffic Sivicam (figure 6) and Phoenix (figure 7) video detectors

Thermography

FLIR ThermiCam (figure 8) und FLIR TrafiOne (figure 9)

ANPR technology

Sicore II ANPR camera system (figure 10)

Radio technology

Bluetooth/Wi-Fi scanner (figure 11)

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