



Company with
Quality Management System
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A 1100

LOOP VEHICLE DETECTORS



- MICROPROCESSOR UNIT
- HIGH IMMUNITY TO INTERFERENCES
- QUICK SELF-TUNING
- SELECTION BETWEEN TWO FREQUENCY RANGES
- "FAIL-SECURE" OUTPUTS
- SEVEN LEVELS OF SENSITIVITY
- SELECTION PRESENCE-PULSE OUTPUTS
- NORMAL OR DIRECTIONAL DETECTION

Detector A1104S
(card version)



Detector A1102B
(box version)



Vehicle detector A1100 series

The vehicle detectors A1100 series use the microprocessor technology, for detecting vehicles by means of buried loops into the road pavement and connected to the detector itself with a bipolar cable.

The series is composed of the following models:

- Detector A1101B (box version) one channel.
- Detector A1102B (box version), dual channel, has two different sensors in one box.
- Detector A1102S (card version), dual channel, has two different sensors in one card.
- Detector A1104S (card version), four channel, has four different sensors in one card.

Each channel can manage more loops set in parallel and/or in series, provided that the allowed inductance value is not exceeded (see technical data).

The A1100 series detectors are self tuning and therefore they self tune when powered. Anyway it's possible to make a further tuning by pushing the "Reset" button located on the front of the device. The vehicle detection is signalled by a warning light, that in case of loop failure, interruption or short circuit, flashes permanently.

The vehicle detection can be by presence or by pulse independently for each channel, setting the relevant switch in the "Pres." or "Pulse" position.

While functioning in presence mode you will have an output signal with a lasting time equal to the permanence time on the loop up to a maximum of 15 minutes, after that, the present vehicle will be forgotten, reactivating the normal functioning of vehicle detection travelling on the loop section remained free.

In the pulse mode the loop reactivation is immediate.

The sensitivity level of the detection is selectable between a minimum and a maximum among seven ranges, through the three "SENS" switches located on the front.

The A1102 and A1104 detectors can work also in directional mode by a hardware setting in factory or in speed detection mode by a software setting.

WORKING FEATURES

A series of switches located on the front of the unit allows to select different working modes according to what specified hereafter.

WORKING FREQUENCY

By means of FL-FH switch you can set two different working frequencies so to avoid cross-talk phenomenon between adjacent sensors and/or loops (internal pre-selection in A1104S).

HYSTERESIS

By means of FILTER switch you can select the hysteresis function that allows to eliminate anomalous detections due to loop inductance changes, caused by distortions of road pavement (function always active in A1104S model).

DETECTION TYPE

PRES. Presence detection with output signal lasting all the time that the vehicle is present over the loop. In case of a vehicle permanence over 15 minutes, the vehicle itself is forgotten restarting the normal functioning of the unit.

PULSE The output signal is an impulsive type and has a fixed duration of 100 ms for each vehicle travelling over the loop.

OUTPUT SIGNAL EXCLUSION

The output signal of each channel can be excluded turning the OUT OFF switch to the left.

SENSITIVITY

The sensitivity level of the detection of each channel can be set among 7 levels by a binary combination of the three SENS switches (see the table in the next page). Setting the sensitivity level to 0, you obtain the channel exclusion with permanent activation of the output signal.

The most common applications:

- In traffic signal regulations for "calling" secondary phases and for "extending" green times.
- In traffic data collection, for vehicle counting, speed and length calculation.
- In the automatic opening and closing of gates, barriers and shutters.
- In car parks for calculating the availability of vacant places.
- For safety purposes for signalling queues, anomalous stops, incidents etc.
- For prevention, displaying to car drivers a speed excess near turnovers or dangerous paths.



Operating Temperature
from - 25° C to + 70° C

Loop Inductance range
from 20 to 2000 μ H

Sampling :

Sensitivity	Period
1 and 2	2 ms
3	4 ms
4 and 5	10 ms
6	20 ms
7	23 ms

Sensitivity Range Over the Loop Inductance Change:

0	000	Channel exclusion
1	001	1%
2	010	0,5%
3	011	0,1%
4	100	0,05%
5	101	0,03%
6	110	0,016%
7	111	0,01 %



DIRECTIONAL FUNCTIONING

The directional functioning can be obtained by internal pre-selection. In this case the output signal is given on one channel or on the other according to the vehicle travel direction. In the A1104 detectors, channels can be divided in combined couples (channel 1 with 2 and 3 with 4) enabling the directional detection by means of one couple or both. The directional pre-selection is signalled during the turning on of the device, or when it resets, by a series of four luminous pulses on the channel 1 signalling.

SPEED DETECTION

You can set two different operating modes:

- Detection of a selectable speed overstep.
- Detection of slow traffic and queue within a selectable threshold.

LOOP EXECUTION MODALITY

The loops can be realized with 1,5 square millimetres conductors, insulated in plastic material resistant to the direct contact with bituminous substances. The insulation resistance measured at 500 Vdc should be higher than 100 M Ω (measurement effected when the detector is not connected). The cable must be laid 5 cm under the road mantle in a groove obtained by a milling, that must be sealed with cold bitumen, so to prevent any further cable movement. The loops with perimeter inferior to 8 meters must be realized with 3 turns of cable, while the ones higher than 8 meters with 2 turns. The junction between the two loop conductors and the bipolar connecting cable must be realized in sealed box.

The two cable connectors must be interfaced between them in the part not drowned in the road mantle. The bipolar cable connecting the detector must be of the Twisted pair type.

Loop Geometry

The geometry that you must realize is in function of the application field, in the picture below you can find the most common. The most commonly used geometry is the rectangular one, oriented at 90° compared to the travel direction.

The conditions for best detection, necessary for example for detecting bicycles, can be generally obtained with loops oriented at 45°.

Loop Dimension

- Normal and directional detection

The loop dimensions in the travel direction must measure at least 1 meter.

The loop dimension in the right-angled sense to the travel direction, is in function of the field to be covered, lane width, detection zone etc.

The recommended distance between adjacent loops (from edge to edge), for example detection over more lanes or directional, must be of 1 meter.

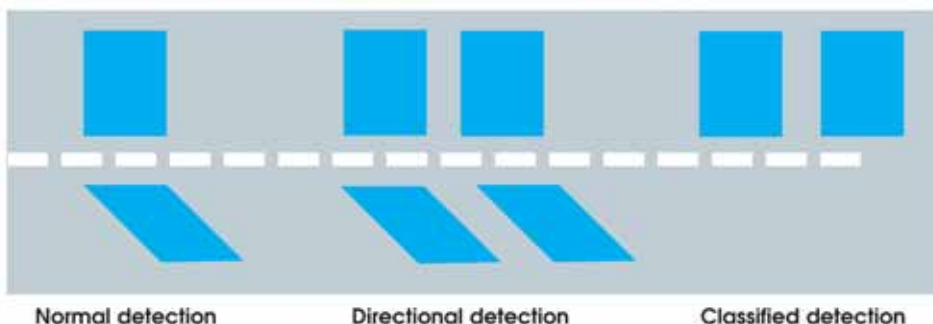
The maximum distance between two loops (from edge to edge), in a directional detection, must be of 1,5 meter.

- Classified detection

In the section of classified detection (classification of speed and/or length) the loops must be realized with dimensions compliant to the specifications of the classification system to which they are connected.

For SCAE systems the loops must have the following dimensions:

- 1° and 2° loop width = 1,5 meter.
- Distance between the two internal edges = 1 meter.



TECHNICAL FEATURES

Detector	Type	Power supply	Outputs	Dimensions (mm)		
				H	W	D
A1101B	Box	230V ac +/- 15% 50 Hz	relay with contact N.O. 5A at 250Vac	100	45	160
A1102B	Box	230V ac +/- 15% 50 Hz	relay with contact N.O. 5A at 250Vac	100	45	160
A1102S A1102SA	Card	10V ac +/- 15% 50 Hz 12V dc +/- 2,5V	opt isolated static type max. current 50 ma max Voltage 100V dc	Mono Eurocard 100 x 160 6TE		
A1104S A1104SA	Card	10V ac +/- 15% 50 Hz 12V dc +/- 2,5V	opt isolated static type max. current 50 ma max Voltage 100V dc	Mono Eurocard 100 x 160 6TE		

Note: The S version must be used in SCAE controllers MT4040. The SA version can be used in any other application.

ELECTRICAL CONNECTIONS

The box detectors are equipped with a male-female connector with 14 pin, while the card types have connectors type DIN 41612b.

Detector	Function	Contact
A1101B	Power supply	terminal 3 e 4
	Ground	terminal 6
	Loop	terminal 7 e 8
	Output contact	terminal 11 e 12
A1102B	Power supply	terminal 3 e 4
	Ground	terminal 6
	Loop channel 1	terminal 7 e 8
	Loop channel 2	terminal 9 e 10
	Channel 1 Output Contact	terminal 11 e 12
	Channel 2 Output Contact	terminal 13 e 14
A1102S	Power supply	32ab - 30ab
	Ground	15ab
	Loop channel 1	17ab - 19ab
	Loop channel 2	11ab - 13ab
	Channel 1 Output Contact	28b emitter-
	Channel 2 Output Contact	27a emitter-
	Common outputs	26b collector
		Connector type 41612 b
A1104S	Power supply	32ab - 30ab
	Ground	15 ab
	Loop channel 1	17ab - 19ab
	Loop channel 2	11ab - 13ab
	Loop channel 3	7ab - 9ab
	Loop channel 4	3ab - 5ab
	Channel 1 Output Contact	28b emitter-
	Channel 2 Output Contact	27a emitter-
	Channel 3 Output Contact	27b emitter-
	Channel 4 Output Contact	26a emitter-
	Common outputs	26b collector
		Connector type 41612 b

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Cap. Soc. € 3.000.000,00 i.v. Reg. Imprese MI 679633 C.F. e P.IVA 00857000152

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