LDD, LDP
Технические характеристики

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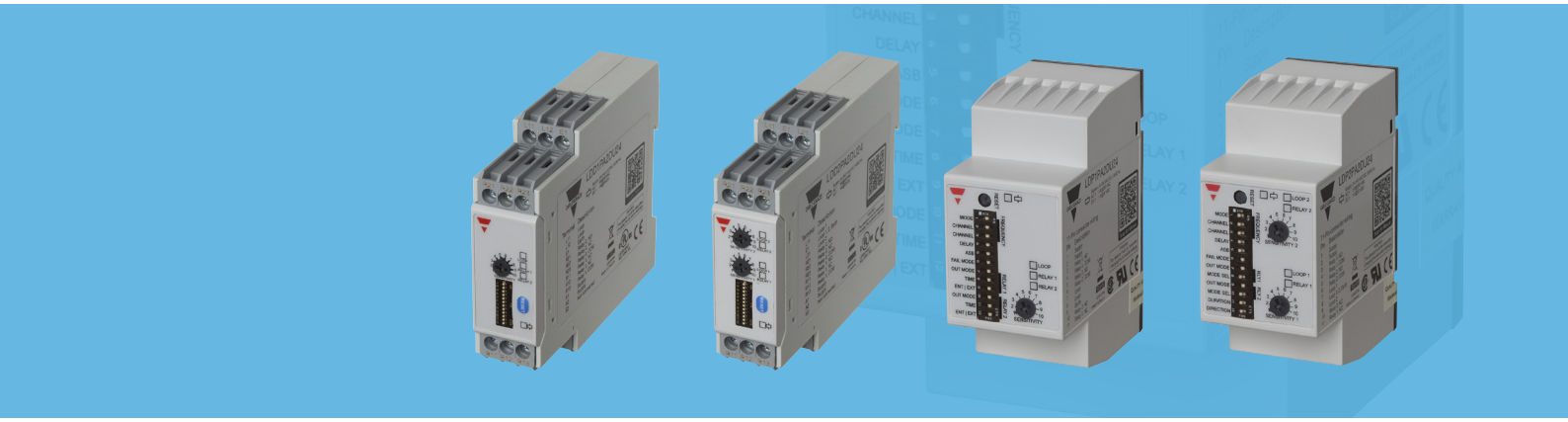
LD series
Loop detectors

LD series loop detectors are ideal to be used in car access applications to control barriers, gates, bollards and ticketing machines.
Loop detectors is the best solution in the market in detecting vehicles and can be found in carparks, toll gantries, traffic lights, on the streets, at the entrance/exit of any premises and in many other places.
LD series loop detectors come with many features that are designed specifically to simplify the installation process and also equipped with diagnostic capability to ease troubleshooting while providing a reliable and efficient way of vehicle detection.



Vehicle detection solution

Adjustable sensitivity
Loop input inductance: 20 µH to 1000 µH with adjustable sensitivity via 10 step potentiomenter easily accessible from the front.

Automatic frequency tuning
Loop frequency is automatically tuned to avoid crosstalk between adjacent loops. If manual tuning is preferred, 4 frequency channels are available and can be easily set via dip switches.

Automatic sensitivity boost (ASB)
ASB function boosts the loop sensitivity to allow the detection of high bed vehicles such as trucks, buses and trailers.

Fail secure and fail safe
In case of power loss or loop fault, the configuration of the output will change to indicate detection (FAIL SAFE) or not detection (FAIL SECURE) of a vehicle and hence open or close the gate or barrier.

Wide power supply range
24-240 VAC/VDC rated operational voltage ensures full flexibility.

Independently configurable outputs
The loop detectors come with 2 x SPDT outputs.
Each output is configurable independently and can be configured in pulse or presence mode. The pulse length and presence duration can also be set as well as whether pulse during entrance or exit of the loop. Independently configuring the 2 outputs provide great flexibility to meet different installation requirements.

Directional logic
Using the dual loop version, the direction of the vehicle can be ascertained via the directional logic function. Relay will activate accordingly to the vehicle direction.

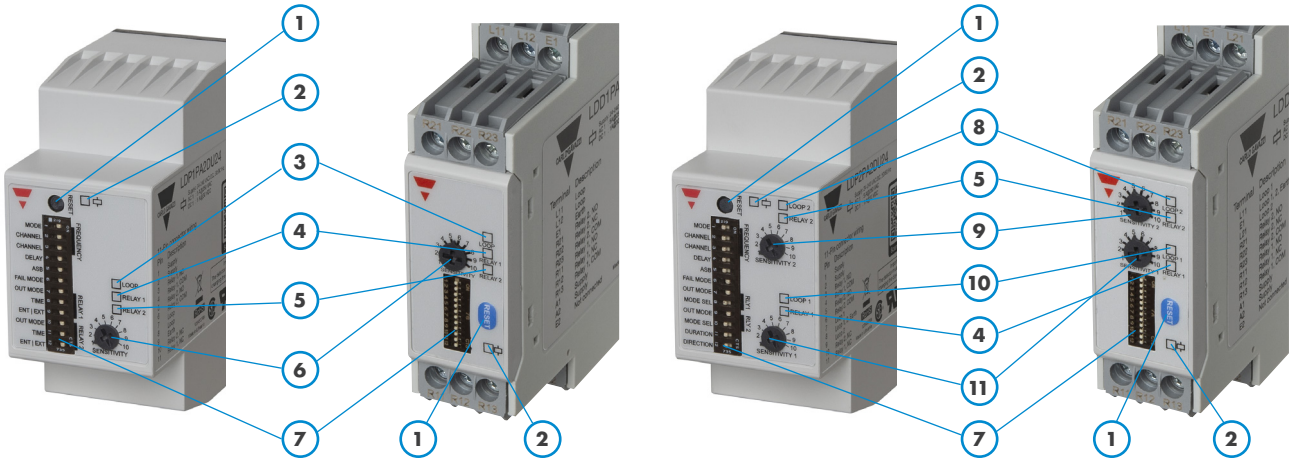
Multicolour LED for easy diagnostic
Multicolor LEDs will indicate different colors depending on the status of the loop detector and of the 2 relay outputs. The Loop LED will indicate the loop status such as inductance too low or too high, loop short circuit or open circuit and many others. This makes the troubleshooting process easy, and enables constant monitoring of the loop health.

Sensors

LD series
Loop detectors

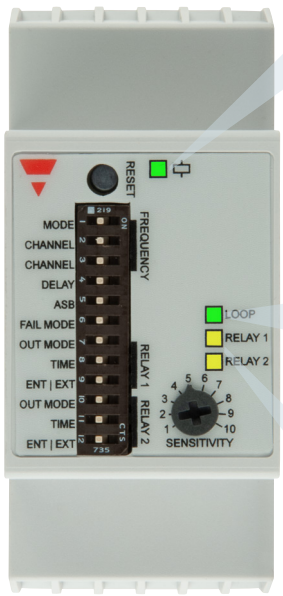
Structure

LDP1PA2DU24 LDD1PA2DU24 LDP2PA2DU24 LDD2PA2DU24



1	Reset button	**7**	Dip switches
2	Power / fault LED	**8**	Loop 2 LED
3	Loop LED	**9**	Potentiometer loop 2
4	Relay 1 LED	**10**	Loop 1 LED
5	Relay 2 LED	**11**	Potentiometer loop 1
6	Potentiometer		

Multicolour LEDs for easy troubleshooting



Power / fault indicator

LED colour	LED constant	LED Flashing
●	All OK (ASB OFF)	DIP switch changed, but changes not in effect
●	All OK (ASB ON)	-
●	Low signal indication	-
●	Channel crosstalk	-
○	-	Indication of the frequency channel

Loop state LED

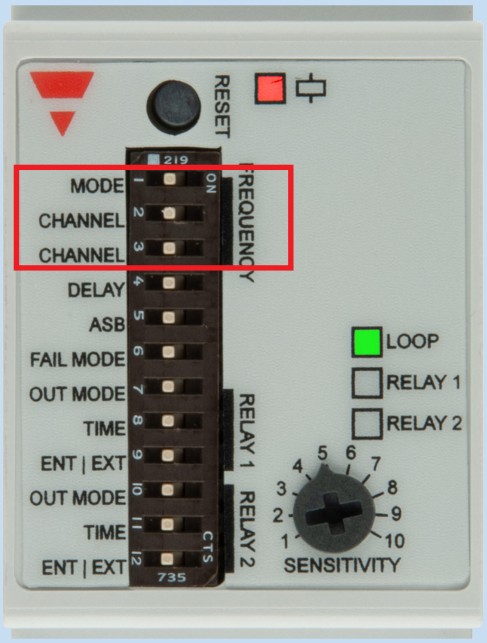
LED colour	LED constant	LED Flashing
●	Inductance ok	-
●	Inductance too high	Inductance too low
●	Loop is open circuit	Loop is short circuit

Relay state LED

LED colour	Mode	Relay deactivated	Relay activated
	Presence mode	LED OFF	LED ON
●	Pulse mode, 0.1 s	LED OFF	LED ON for 0.5 s
	Pulse mode, 0.5 s	LED OFF	LED ON for 1.0 s

Sensors

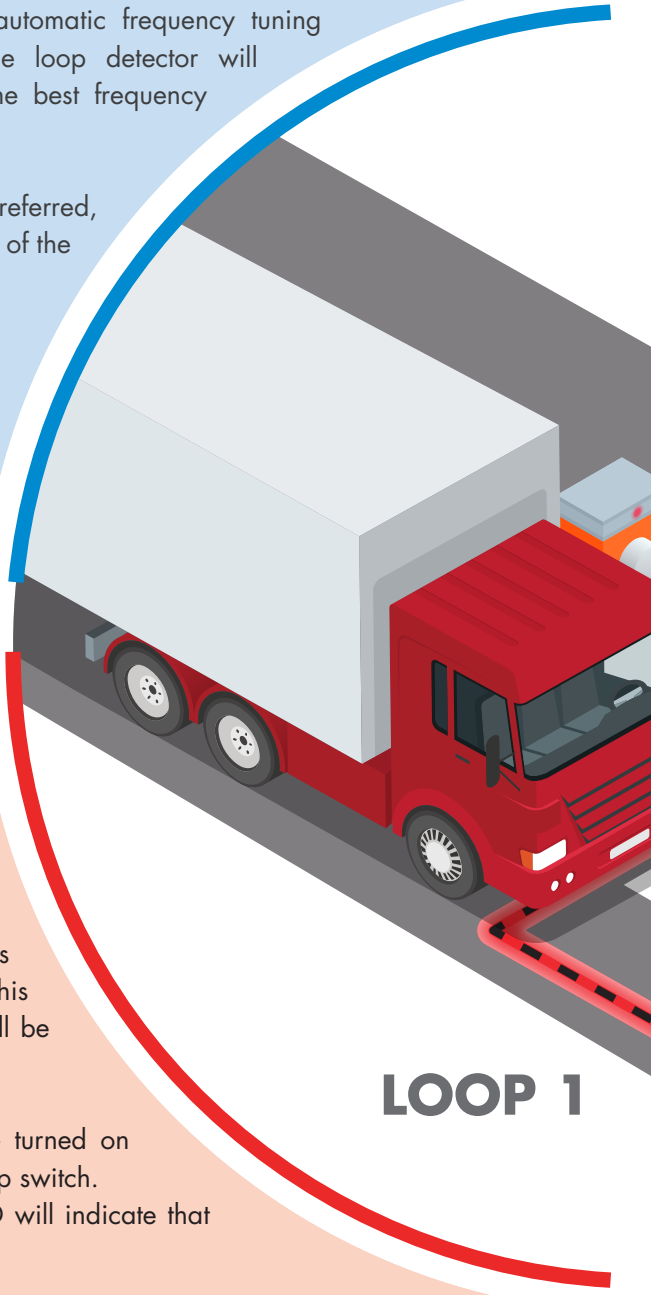
Automatic frequency tuning



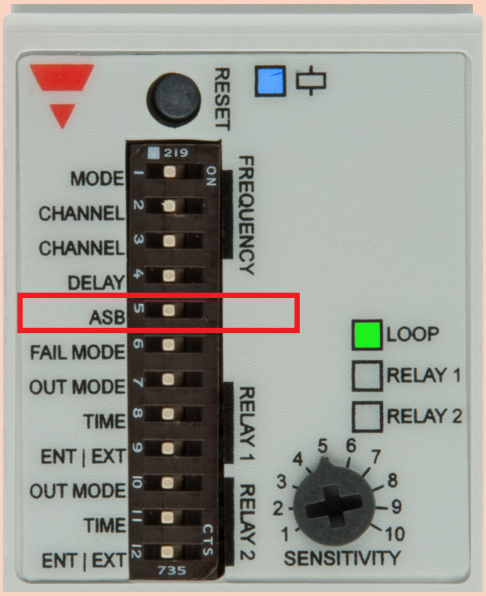
When two or more loops are installed in too close proximity, they may interfere with each other and cause false detections. In oder to avoid cross talk issues there are two possibilitites:

If the loop detector automatic frequency tuning mode is selected, the loop detector will automatically select the best frequency channel.

If manual tuning is preferred, the user can select one of the 4 channels available.



Automatic sensitivity boost



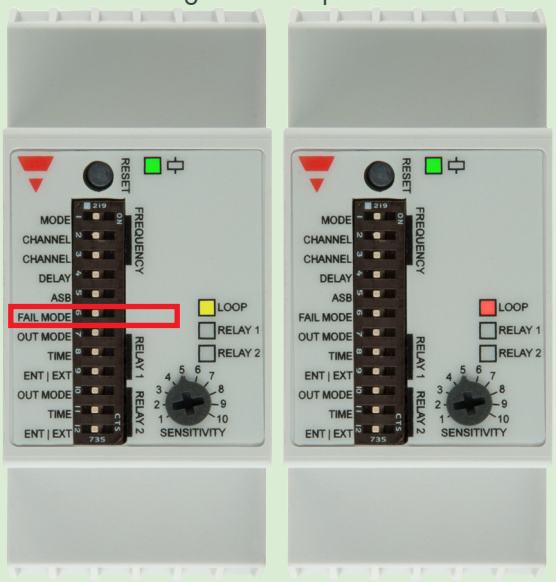
When enabled, the Loop detector will boost the loop sensitivity to detect high bed vehicles such as trucks, buses and trailers. This ensure the vehicle will be detected correctly.

ASB function can be turned on manually using the dip switch. Blue color power LED will indicate that the ASB mode is ON.

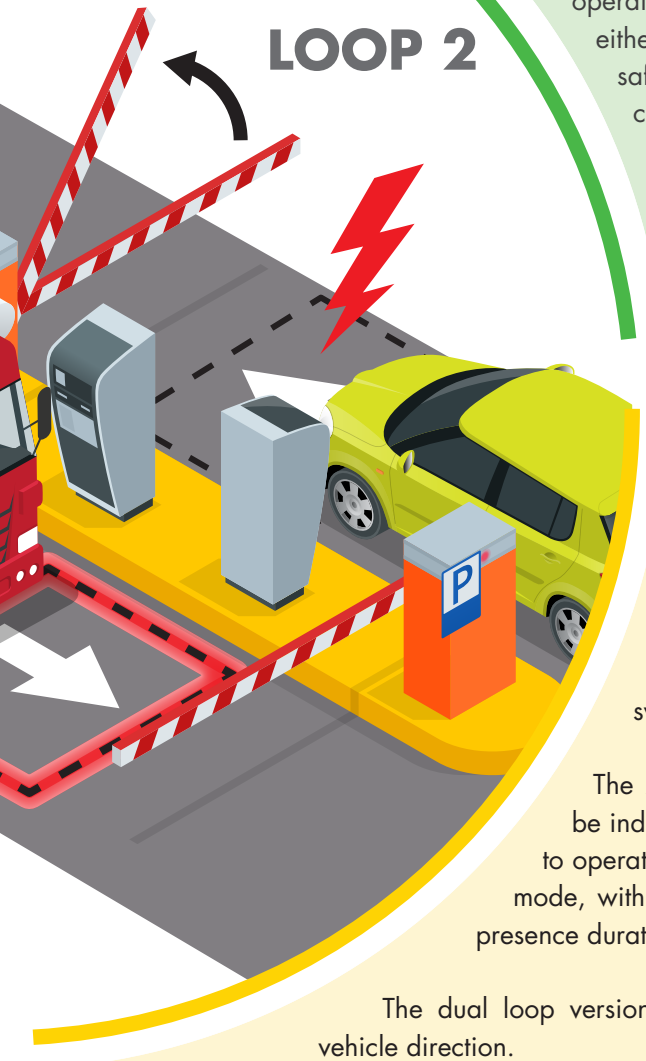
Diagnostic capability

Most of the time, it is indeed a hassle for installer to ascertain the health of the loop.

The multicolour loop LED diagnostic features will definitely reduce troubleshooting time and provide an effective monitoring of the loop status. Different colors will indicate cross talk, short circuit, open circuit, inductance too low or too high.



In case of power loss or loop fault, the Loop detector can be configured to operate appropriately either to open (fail safe mode) or close (fail secure mode) the barrier.

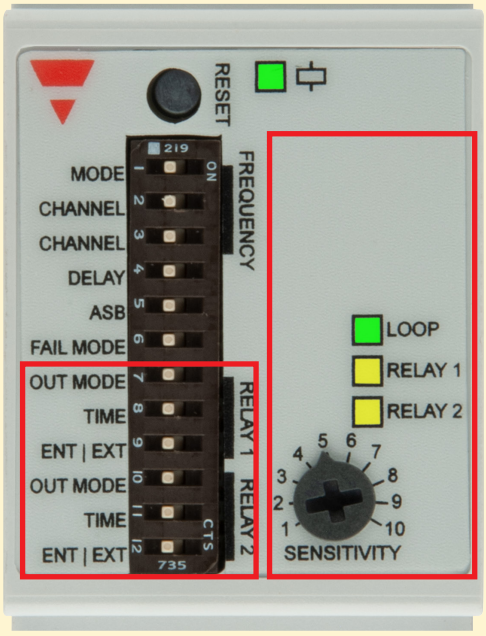


Flexibility

The sensitivity of each loop can be independently and easily adjusted via the 10-step rotary switch on the front.

The 2 x SPDT outputs can be independently configured to operate in pulse or presence mode, with adjustable pulse and presence duration.

The dual loop version can also detect the vehicle direction.

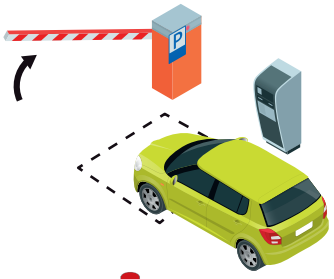


24-240 VAC/VDC universal power supply ensures full flexibility.

Applications

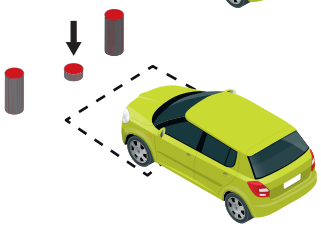
Carpark barriers

Activation of carpark barriers.
Used in public carparks, apartments, shopping malls, hotels and others.
Used also to activate ticketing machine and for occupancy counting.



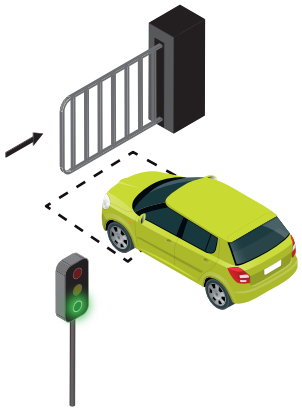
Bollards

Activation of bollards.
Used in streets, single parking space, pedestrian areas, residential security installations.



Gates and industrial doors

Activation of gates and industrial doors.
Used in factories, warehouses, premises gates, private residentials.

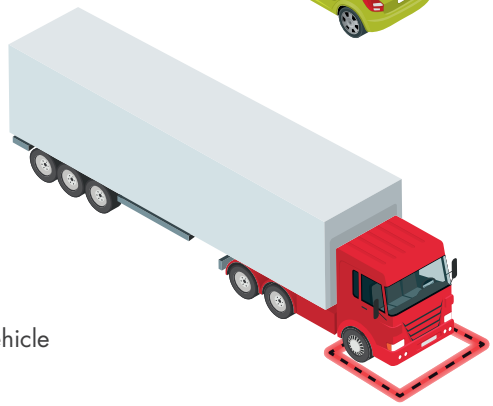


Traffic lights

Used in conjunction with smart street traffic lights, gates traffic lights to optimize traffic flow.
Used on the streets, premises gates, up/down ramps, toll gantries.

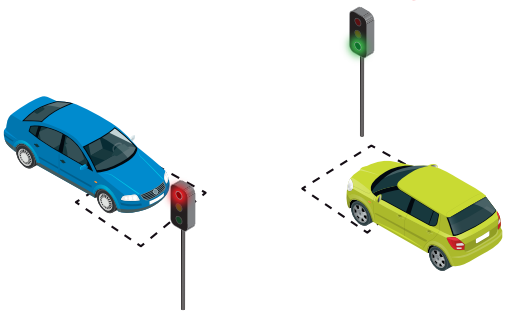
High bed vehicles

Used to detect high bed vehicles.
Used in carparks, streets, factories, warehouses.
Automatic sensitivity boost (ASB) ensures a reliable detection of high bed vehicle such as buses and trucks.



Traffic flow

Detect vehicles from both direction especially in single lane using the directional logic function for smooth traffic flow.



Specifications

Code	LDP1PA2DU24	LDD1PA2DU24	LDP2PA2DU24	LDD2PA2DU24
Type	Single loop Plug IN	Single loop DIN rail	Dual loop Plug IN	Dual loop DIN rail
Loop input inductance	20 µH ... 1000 µH			
Adjustable sensitivity	0,01% ... 1,00%			
Number of adjustable steps	10			
Number of frequency channels	4			
Frequency range	10 ... 130 kHz			
Loop fault detection	Short circuit, open circuit, inductance out of range, frequency crosstalk			
Response time	130 ms			
Output type	Relay			
No of output	2 x SPDT			
Output mode	Pulse or presence; selectable via dip switch			
Output Assignment	2 x SPDT for loop 1		1 x SPDT for loop 1 and 1 x SPDT for loop 2	
Rated operational voltage (Output)	250 VAC/VDC			
Rated operational current (Ie)	AC1: 5 A @ 250 VAC DC1: 1 A @ 30 VDC			
Mechanical lifetime	15 x 10^6			
Electrical lifetime	>100 000 operations (@5A load)			
Protection	Reverse polarity and overvoltage			
Rated operational voltage (UB)	24 ... 240 VAC/VDC			
Power consumption	24 VAC/VDC < 2 W / 2.5 VA 115 VAC/VDC < 2 W / 3 VA 240 VAC/VDC < 2 W / 4 VA		24 VAC/VDC < 2.5 W / 3.5 VA 115 VAC/VDC < 2.5 W / 4 VA 240 VAC/VDC < 2.5 W / 5 VA	
Rated supply frequency	45 to 65 Hz			
Rated insulation voltage	800 V			
Rated impulse withstand voltage	4 kV (1.2/50 µs)			
Power-ON delay (tv)	5 s for manual frequency tuning, 10 s for automatic frequency tuning			
Protection (output)	Reverse polarity, transients			
Ambient temperature	-40° ... +70°C (-40° ... +158°F) (operating) -40° ... +70°C (-40° ... +158°F) (storage)			
Ambient humidity range	0% ... 90%			
Overvoltage category	III (IEC)			
Degree of protection	IP30 (IEC)	IP20 (IEC)	IP30 (IEC)	IP20 (IEC)
Pollution degree	2 (IEC)			
Connection type	11 pin circular plug-in	Screw terminal	11 pin circular plug-in	Screw terminal
Connection at socket (ZPD11A)	Screw terminal	-	Screw terminal	-
Housing material	PPO PX9406-802, PPO Noryl SE1			
Colour	RAL 7035 (Grey)			
Dimensions	LDP: 81 mm (h) x 35.5 mm (w) x 60.2 mm (d) LDD: 84 mm (h) x 22 mm (w) x 99 mm (d)			
Weight	105 g	134 g	108 g	139 g
Approvals	CE, CSA, RU	CE, cULus	CE, CSA, RU	CE, cULus

Inductive Sensors
Single or Dual Loop Detectors
Type LD with teach-in

- **Single or Dual loop detector**
- **Automatically adjustment of detection level**
- **Manual sensitivity for compensations of variations**
- **Easy installation via 11 pin circular plug**
- **Rated operational voltage: 24 VAC/DC, 115 VAC or 230 VAC**
- **Pulse or presence relay output**
- **Output 1A/250 VAC SPDT relay**
- **LED indication for power, relay status and loop fault**
- **Sensitivity boost – only LDP1**
- **Selectable frequency – prevents cross-talk**
- **Direction logic – only LDP2**

Product Description

Loop detectors for detection of vehicles. The vehicle loop detector is designed to handle all parking, drive-through and access control applications for controlling doors, gates, barriers or fences.

The principle is based on a change in the inductance within the loop when a metallic object (vehicles) is passing. The microprocessor evaluates the changes.

Ordering Key

LDP1 SA1 B 230

- **Type**
- **Plug mounting**
- **Loop inputs**
- **Function**
- **Adjustment**
- **Outputs**
- **Relay versions**
- **Power supply**

Type Selection

Mounting	Relay	Ordering no. Supply: 24 VAC/DC	Ordering no. Supply: 115 VAC	Ordering no. Supply: 230 VAC
Single loop	SPDT	**LDP1SA1BM24**	**LDP1SA1B115**	**LDP1SA1B230**
Dual loop	SPST	**LDP2TA2BM24**	**LDP2TA2B115**	**LDP2TA2B230**

Specifications

Rated operational voltage (U_B)		
Pin 2 & 1	230	195 to 265 VAC, 45 to 65 Hz
	115	98 to 132 VAC, 45 to 65 Hz
	M24	19.2 to 28.8 VAC/DC
Rated insulation voltage		<2.0 kVAC (rms)
Rated impulse withstand voltage		4 kV (1.2/50 µs) (line/neutral)
Rated operational power		
AC supply		3 VA
AC/DC supply		1.5 VA / 1.5 W
Power on delay (t_v)		< 10 sec Typ. 4 sec
Outputs		
Minimum switching current		10 mA @ 12 V
Rated insulation voltage		250 VAC (rms) (cont./elec.)
Relay Rating (AgNi 90/10)		µ (micro gap)
Resistive loads	AC1	1 A / 250 VAC (250 VA)
	DC1	1 A / 30 VDC (30 W)
Mechanical life (typical)		≥ 15 x 10^6 operations @ 18'000 imp/h
Electrical life (typical)	AC1	> 250'000 operations
Sensitivity		8 sensitivity settings available

Frequency range	13 - 120 kHz
Loop inductance	15 - 1500 µH
Operating frequency (f)	
Relay output	1 HZ
Response time	400 mS
Environment	
Overvoltage category	III (IEC 60664)
Degree of protection	IP 20 (IEC 60529, 60947-1)
Pollution degree	2 (IEC 60664/60664A, 60947-1)
Temperature	
Operating	-40° to +70°C (-40° to + 158°F)
Storage	-50° to +85°C (-58° to +185°F)
Housing material	NORYL SE1, light grey
Weight	
AC supply	150 g
AC/DC supply	85 g
Approvals	UL508
CE marking	Yes

CARLO GAVAZZI

Mode of Operation

Application
The LDP Vehicle Loop Detector is based on microprocessor technology, which has enabled a large number of functions to be implemented. The functions are primarily for use in the Parking/Access Control Industry like control for gates, barriers, fences, etc.
Standard operations are implemented including programmable pulse and presence option.

Principle
The Vehicle Loop Detector is based on the inductive principle, using a coil of wire buried in the driveway and connected to the loop detector.
The change in inductance will be measured as a change in frequency.
The output relay activates when the loop is activated and releases again when the loop returns to a non-activated condition.

Setup
The loop has to be in a passive condition (no object in the loop area) during start-up and adjustment.
The loop detector will automatically calibrate when the reset button has been activated, which will be indicated by the yellow LED flashing.
The functioning can now be checked by activating the loop with the actual object. Now the yellow LED will go on, and the output relay will be activated according to the dip-switch settings.

If the loop detector does not react, the sensitivity must be manual adjusted by means of the dip-switches.
Important: reset the system after changing the Dip-switch settings.

Temperature compensation
The frequency will increase as a result of decreasing temperatures and vice versa. To compensate for this, or any other situation that courses slowly change in frequency, the LD auto tunes constantly. That means if the frequency changes slowly there will be no detection. The auto tune function compensates for both increasing or decreasing in frequency.

Fault detection
This function is useful if the cable disconnect.
The alarm will be indicated via the red LED in front of the housing. This LED is constantly lighting when the loop is open or too large and flashing when a short circuit occurs or a loop is too small.

Sensitivity
8 sensitivity settings are available on the dip-switches in front of the module, to allow flexibility in configuration and application (Compensation for variation in loop construction).

Reset switch
The reset switch enables the detector to be manually reset during commissioning and testing. The detector will re-tune the sensing loop and become ready for vehicle detection.

Relay output
The single loop detector has two SPDT relays – one for pulse output and one for presence output.
The dual loop detector has two SPST relays – one for each loop.
Pulse output (one shot): It is possible to select the length of the output period to 0.2s or 1 second. The pulse output can be setup to activate on detection of a vehicle or when the vehicle leaves the loop.
Presence output: The output will be activated as long as there is a vehicle parked in the loop. It will be possible to activate a filter (ON-delay of 2 seconds), which prevents a false detection from a small or fast moving object.
Pulse output mode
The relay activates only for a short period when the vehicle enters or leaves the loop.

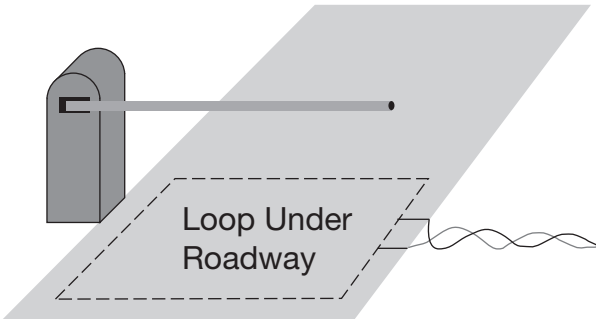
Permanent output mode
The relay will remain active as long as there is a vehicle parked in the loop.

Pulse length
Extends the pulse length from 0.2 sec to 1 sec.

On-delay
Prevents false detections of small or fast moving objects.

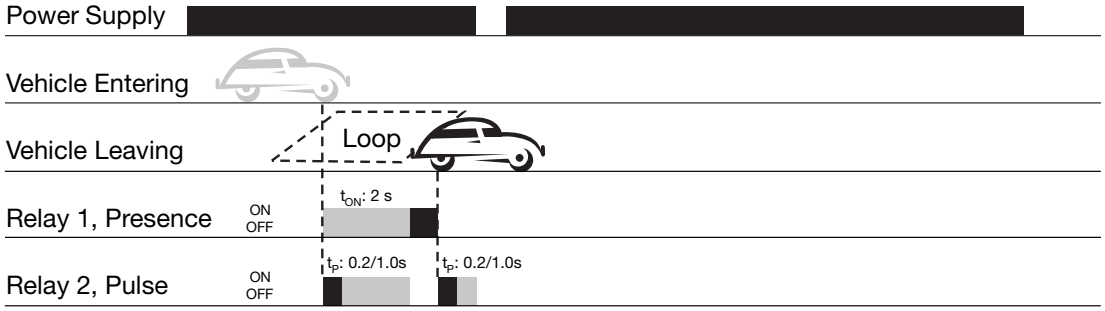
Sense boost (only single channel loop detector)
This feature sets the undetected level to maximum sensitivity and is used to prevent loss of detection of high-bed vehicles.

Selectable frequency
The frequency of the loop is determined by the inductance of the loop and the frequency switch setting. If the frequency switch is on, the frequency is reduced. It may be necessary to change the frequency to prevent cross talk between adjacent loops.
The frequency function will only change the frequency of one channel of the dual loop detector.
Important: Be careful when installing the detector next to another inductive load, as this can have an effect on the detector and cause false detections.



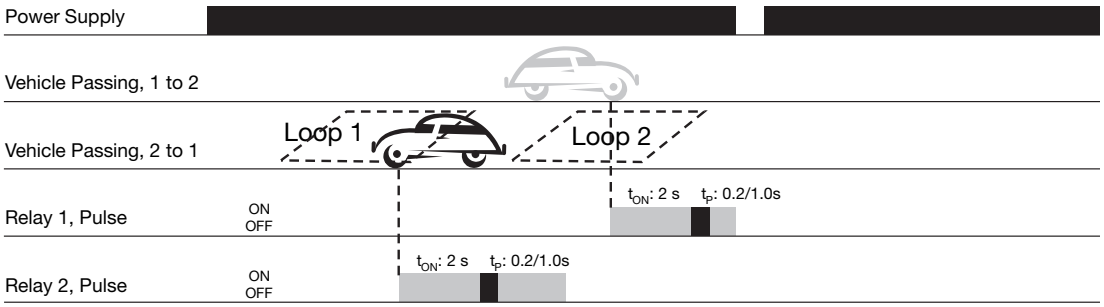
Operation Diagram

LDP1 / Presence and Pulse mode

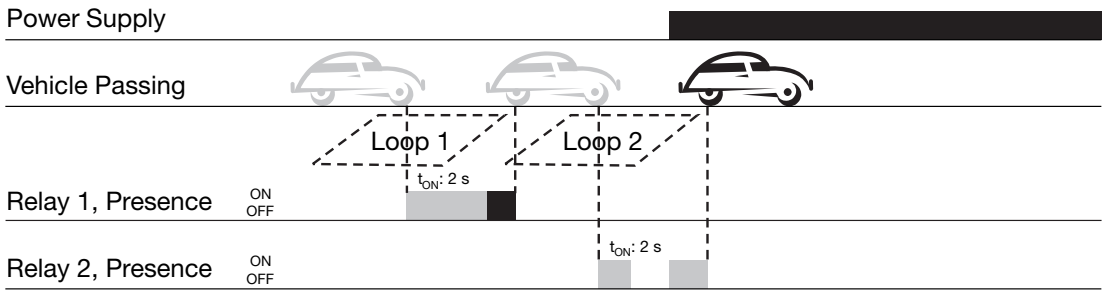


Operation Diagram (cont.)

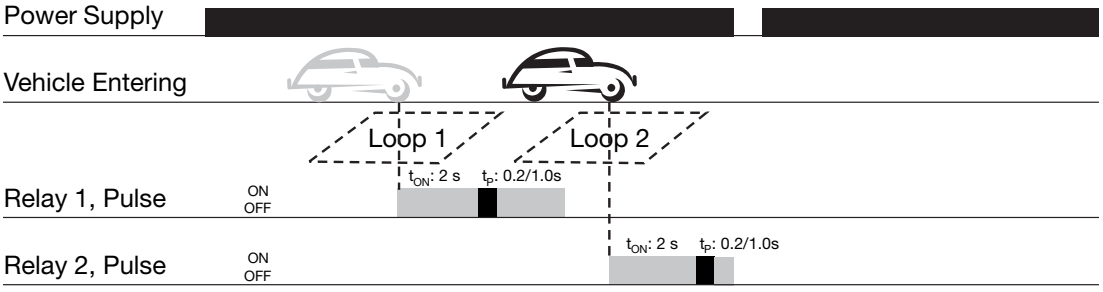
LDP2 / Direction Logic Mode



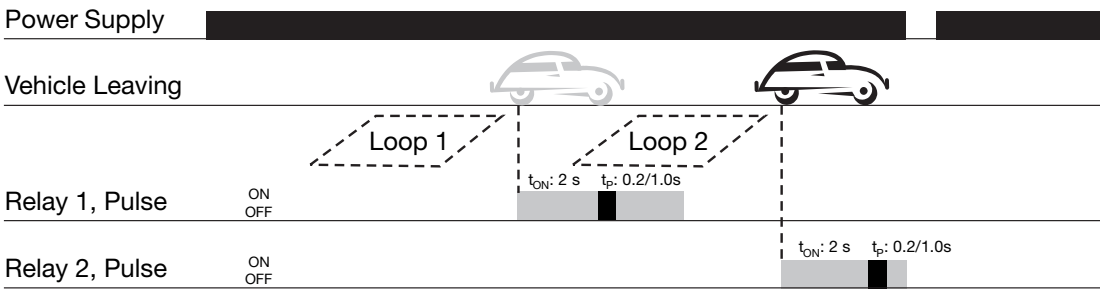
LDP2 / Presence Mode



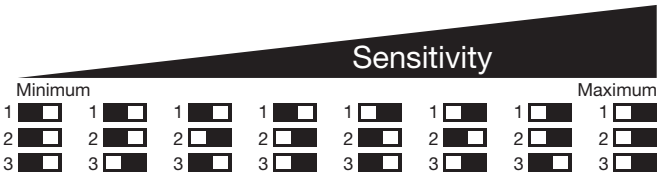
LDP2 / Pulse Entering



LDP2 / Pulse Leaving



Dip Switch Settings



LDP1

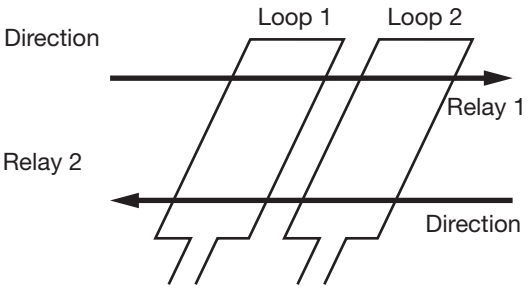
4	1 sec	0.2 sec	Pulse length
5	Leaving	Entering	Pulse mode
6	Off	2 sec	On delay
7	Off	On	Sensitivity boost
8	A	B	Loop frequency “Cross talk”

LDP2

4	1 sec	0.2 sec	Pulse length
5	Leaving	Entering	Pulse mode
6	Off	2 sec	On delay
7	Pulse	Presence	Pulse/presence mode
8	A	B	Loop frequency “Cross talk”

Direction logic

Function
The Dual loop detector (LDP2) is implemented with direction logic as standard.
The function enables the detector to give a pulse output on relay#1 for a vehicle travelling from loop 1 to loop 2 and a pulse output on relay#2 for a vehicle travelling from loop 2 to loop 1.
If a vehicle is detected, and the corresponding direction is indicated, both loops must be in a non-activated condition again before the next object can be detected.
For Direction logic mode set Dipswitch 5 to “Entering” and Dipswitch 7 to “Presence”.



Important:
Reset the detector after changing the Dip-switch settings

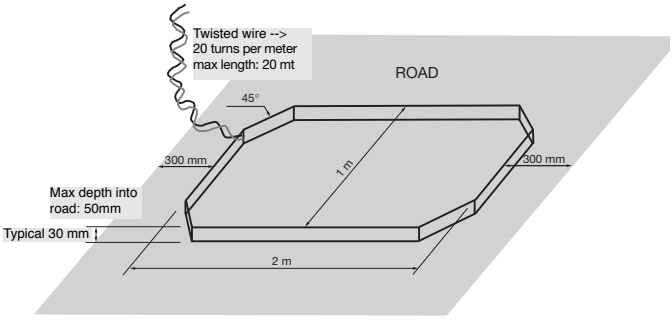
Loop Diagram

Loop installation
The loop geometry must be adapted to the respective application. The setup will be optimal if the loop has the same size as the object to be detected.
After determining the loop geometry, a groove must be cut in the ground for installing the loop.
Cut an inclined groove of 45° angle at the corners of the loop, which will protect it from excessive wear.
Clean the groove for moisture and place the wire as tight as possible along the button of the groove.
Before sealing up the groove, it is recommandable to check the loop inductance using a measuring device. Optimum value: 80-300 µH.
When sealing up the groove, ensure that the temperature of the sealing compound does not exceed the max temperature of the loop insulation, as this might cause an earth fault.

Loop turns
The number of turns strongly depends on the circumference of the loop. The smaller the loop, the more turns are required.

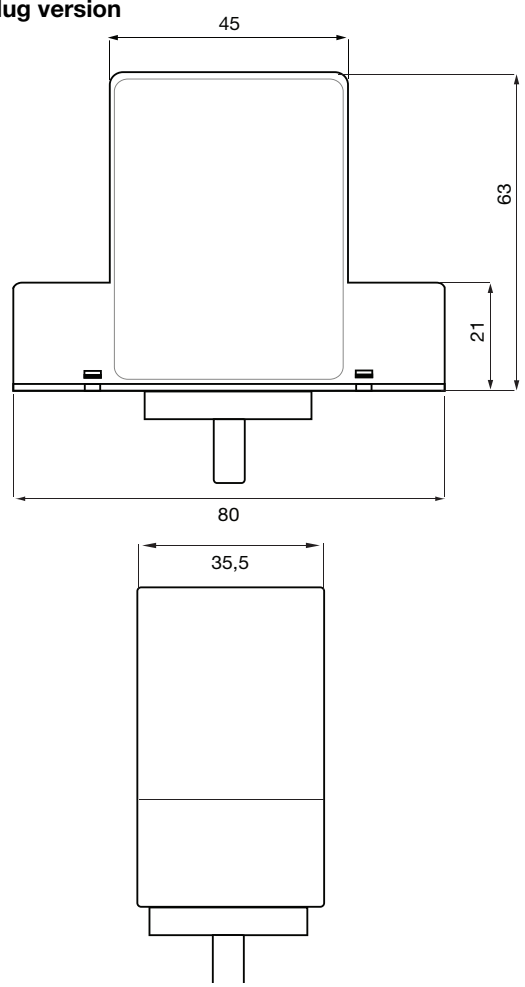
Cable Recommandations
- Use 1.5mm squared cable. Use silicon coated cable, if placed directly into the ground
- Use 2m of spacing between two adjacent loops.
- Use screened feeder cable in electrically noisy environments or where feeder runs parallel to power cables.

Loop circumference	No. of turns
(m)	
>10	2
6-10	3
<6	4



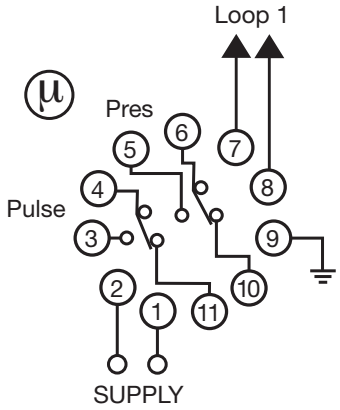
Dimension Drawing

Plug version

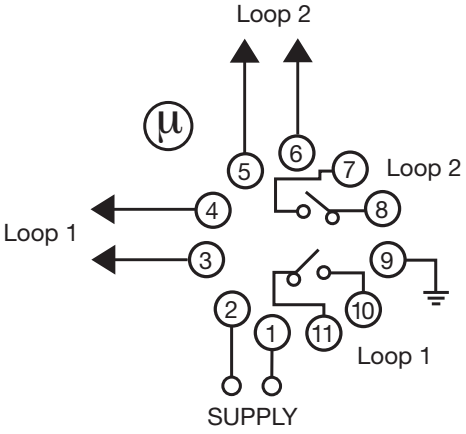


Wiring Diagram

LDP1



LDP2



Pin configuration

Pin n.	Single Channel Detector	Dual Channel Detector
1	Supply	Supply
2	Supply	Supply
3	Pulse relay NO	NO Loop #1
4	Pulse relay COM	Loop #1
5	Presence relay NO	Loop #2
6	Presence relay COM	Loop #2
7	Loop	Pulse/Presence relay #2 NO
8	Loop	Pulse/Presence relay #2 COM
9	Earth	Earth
10	Presence relay NC	Pulse/Presence relay #1 NO
11	Pulse relay NC	Pulse/Presence relay #1 COM

Accessories

- 11-pole circular socket ZPD11

Delivery Contents

- Detector
- Packaging: Carton box

По вопросам продаж и поддержки обращайтесь:

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