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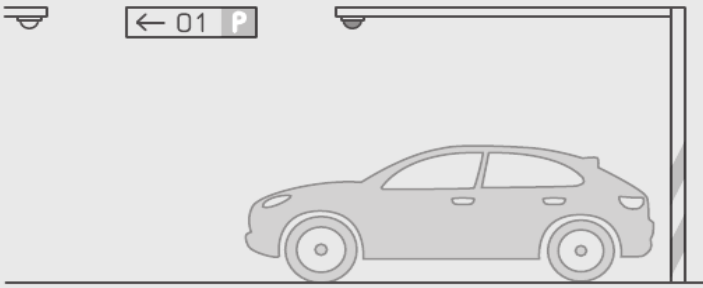
PARKING SOLUTION



Technical Datasheet

Loop Counting

Product codes:
PSL/AD/LD/1
PSL/AD/LD/2
PSL/CO/CC/V2
Document Version 1.0

20+ years in business
Innovative technology
Made in European Union
Accordance to ISO standards
Flexible solutions
Three years warranty

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Contents

1. Introduction

In this document you will get acquainted with Parksol Inductive Loop vehicle counting system and its method, also you will get to know such system installation guide and requirements.

2. Inductive loop

Inductive loop basically is a piece of wire which is arranged in a closed loop under a road or pavement. Such loop is driven by oscillating current with a fixed frequency, which creates an electromagnetic field around it. When a vehicle passes, electromagnetic field is distorted and loop inductance gets decreased, thus increasing oscillation frequency. Such physical phenomena allow detecting passing vehicles and count them, which is the purpose of Parksol Inductive loop counting system.

3. System structure

Basic Inductive loop counting system consists of 3 main elements:

- Inductive loop (electrical wire)
- Inductive loop detector PSL/AD/LD/1 or PSL/AD/LD/2
- Parksol Counting Controller

For additional parking guidance functionality you may require:

- Icon or VMS displays (total parking spaces information)
- Parksol Server and Monitoring Software with Graphical UI

System structure is shown in a picture below.

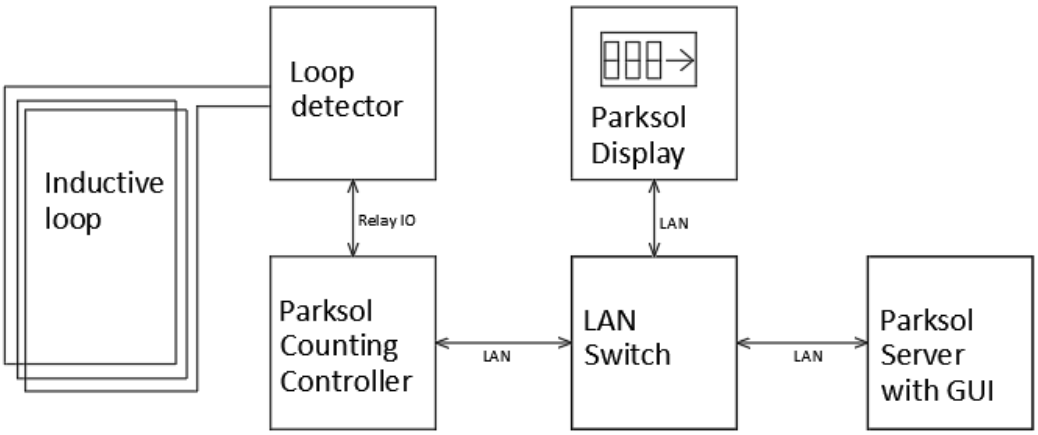


Figure 1. Inductive loop counting system

Loop detector detects passing vehicles and outputs its internal relay, thus Counting controller's input is activated and vehicle is counted, keep in mind Counting Controller must have configured parking group to do so (for more information about groups and configuration please refer to Counting Controller's manual at Parksol support portal).

Parksol Displays are for parking group vehicle count information indication, data is taken from Counting controller or from server through LAN.

4. Loop Detector Technical Characteristics

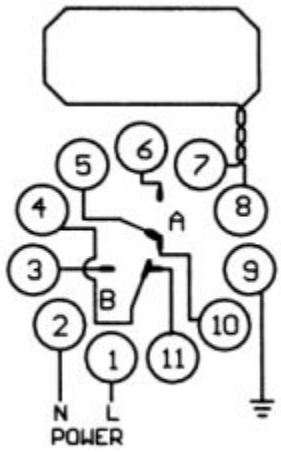
1 table. Technical characteristics of loop detector

Power supply	**PSL/AD/LD/1**	**PSL/AD/LD/2**
Voltage	12 – 24 V	
Power consumption	6 VA	
Connector	Amphenol 86-CP11	
Loop channel count	1	2
Loop frequency range	20 – 80 kHz	
Loop inductance	20-2000 µH	
Loop Lead	<500m	<150m
Loop Resistance	<20 Ω	
Sensitivity	ΔL 0.015% - 2.56% (16 selectable levels)	ΔL 0.015% - 0.8% (8 selectable levels)
Weight	<280 g	<305 g
Dimensions	76mm(D) x 42mm(W) x 74mm(H)	
Case	ABS plastic	
Operating Temperature	-40°C to 82°C	
Operating Humidity	<95%	
Impulse time	>250ms	
Response time	10 – 60 ms	
Relay contacts	110V AC, 1A, 110VA	

5. Installation Guide

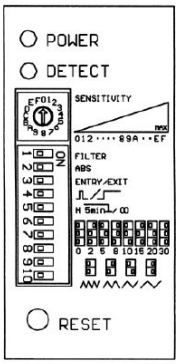
5.1 PLS/AD/LD/1 (LD163) Pins and Switch Functions

5.1.1 Pin definitions



Pin No.	**Function**
1	12-24 VDC
2	12-24 VDC
3	Output B Relay (N.O.)
4	Output B Relay (COM)
5	Output A Relay (COM)
6	Output A Relay (N.O.)
7	Loop
8	Loop
9	Chassis Ground
10	Output A Relay (N.C.)
11	Output A Relay (N.C)

5.1.2 Front panel LED and switch



(1) POWER: POWER RED LED -> On = Power applied to detector; Off = No power or fuse is broken.
(2) DETECT: DETECT GREEN LED -> On = Vehicle being detected; Blinking = Loop Failure;
(3) SWITCH 1 (SENSITIVITY): Selections of sensitivity are from 0 to and A to F where 0 stands for the lowest sensitive and F is the highest sensitive.

Unit: -ΔL/L x100%

SENSITIVITY LEVELS							
LEVEL 0	2.56	LEVEL 4	0.48	LEVEL 8	0.12	LEVEL C	0.03
LEVEL 1	1.28	LEVEL 5	0.32	LEVEL 9	0.08	LEVEL D	0.02
LEVEL 2	0.96	LEVEL 6	0.24	LEVEL A	0.06	LEVEL E	0.015
LEVEL 3	0.64	LEVEL 7	0.16	LEVEL B	0.04	LEVEL F	0.01

(4) SWITCH 2 (DIP SWITCH):

DIP NO.	DIP MODE	FUNCTION
DIP 1	ON	2 seconds delay for the relay. There will be no output for a vehicle with a speed that is faster than 8km/h
DIP 2	ON	Increase detector's sensitivity to avoid the failed detection. Especially in the case of trailer or trucks

DIP NO.	DIP 3	DIP 4	OUTPUT B MODE	DETECT
DIP MODE	OFF	OFF	Pulse on entry	Output B mode
	ON	OFF	Pulse on exit	Output B mode
	OFF	ON	Presence mode	Output B mode
	ON	ON	Output B will set to the presence mode when the loop failed	

DIP NO.	DIP 5	PRESENCE MODE
DIP MODE	ON	Continuous detect output is maintained as long as the vehicle remains on the loop
	OFF	Hold time of 5 minutes for any vehicle detected

DIP 6, DIP7 and DIP 8 – CONTROLS OUTPUT A EXTEND TIME:

DIP NO.	DIP 6	DIP 7	DIP 8	EXTEND
DIP MODE	OFF	OFF	OFF	NO EXTEND
	ON	OFF	OFF	2 s
	OFF	ON	OFF	5 s
	ON	ON	OFF	8 s
	OFF	OFF	ON	10 s
	ON	OFF	ON	15 s
	OFF	ON	ON	20 s
	ON	ON	ON	30 s

DIP 9 and DIP 10 – FREQUENCY SELECTION (40kHz to 80kHz):

DIP NO.	DIP 9	DIP 10	FREQUENCY RANGE
DIP MODE	OFF	OFF	High frequency
	ON	OFF	Medium – High frequency
	OFF	ON	Medium frequency
	ON	ON	Low frequency

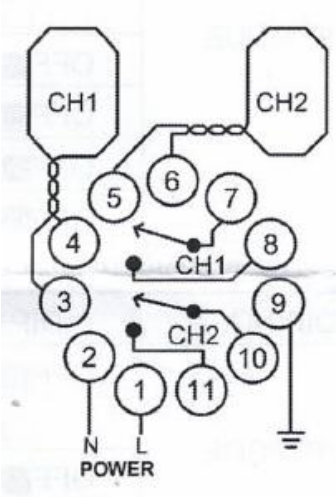
!!*When more than two loops are used, please set up different frequencies in order to eliminate crosstalk

(4) RESET BUTTON

RESET button resets the detector. It is needed whenever a frequency is changed.

5.2 PSL/AD/LD/2 (LD263) Pins and Switch Functions

5.2.1 Pin definitions



Pin No.	Function
1	12-24 VDC
2	12-24 VDC
3	CH1 Loop
4	CH1 Loop
5	CH2 Loop
6	CH2 Loop
7	CH1 Relay output [JP1: (1,2 closed) = CH1 output N.C.; (2,3 closed) = CH1 output N.O.]
8	
9	Chassis Ground
10	CH2 Relay output [JP1: (1,2 closed) = CH2 output N.C.; (2,3 closed) = CH1 output N.O.]
11	

5.2.2 Front Panel LED and Switch

(1) POWER: POWER RED LED -> ON = Power applied to detector; OFF = No power or broken fuse;
(2) CH1 LED: CH1 GREEN LED -> ON = Vehicle being detected; Blinking = Loop failure;
(3) CH2 LED CH2 GREEN LED -> ON = Vehicle being detected; Blinking = Loop failure;
(4) SWITCH 1: CH1 LOOP FUNCTION

DIP NO.	DIP MODE	FUNCTION
DIP 1	ON	Increase detectors sensitivity to avoid failed detection. Especially in the case of trailer or trucks
DIP 2	ON	Continuous detect output is maintained as long as the vehicle remains on the loop
	OFF	Hold time of 30min for any vehicle detected
DIP 3	ON	Detector in direction logic mode (CH1 relay provides output when vehicle travel direction CH1 ->CH2), CH2 provides output when direction is from CH2->CH1;
	OFF	Any channel output operating in the presence or pulses

DIP NO.	DIP MODE	CH1 OUTPUT MODE	CH1 DETECT
DIP 4	OFF	CH1 Presence output	CH1 output mode
	ON	CH1 pulse output selectable on DIP 5	please see DIP 5
DIP 5	OFF	CH1 pulse on entry	CH1 output mode
	ON	CH1 pulse on exit	CH1 output mode

DIP NO.	DIP 6	DIP 7	DIP 8	SENSITIVITY (%)
DIP MODE	OFF	ON	ON	0.015 HIGH
	OFF	ON	OFF	0.02
	OFF	OFF	ON	0.04
	OFF	OFF	OFF	0.08
	ON	ON	ON	0.12
	ON	ON	OFF	0.2
	ON	OFF	ON	0.5
	ON	OFF	OFF	0.8 LOW

DIP 9 and DIP 10 CH1 LOOP FREQUENCY SETTINGS (20KHz – 80kHz):

DIP NO.	DIP 9	DIP 10	LOOP FREQUENCY (%)
DIP MODE	OFF	OFF	HIGH
	ON	OFF	MEDIUM – HIGH
	OFF	ON	MEDIUM – LOW
	ON	ON	LOW

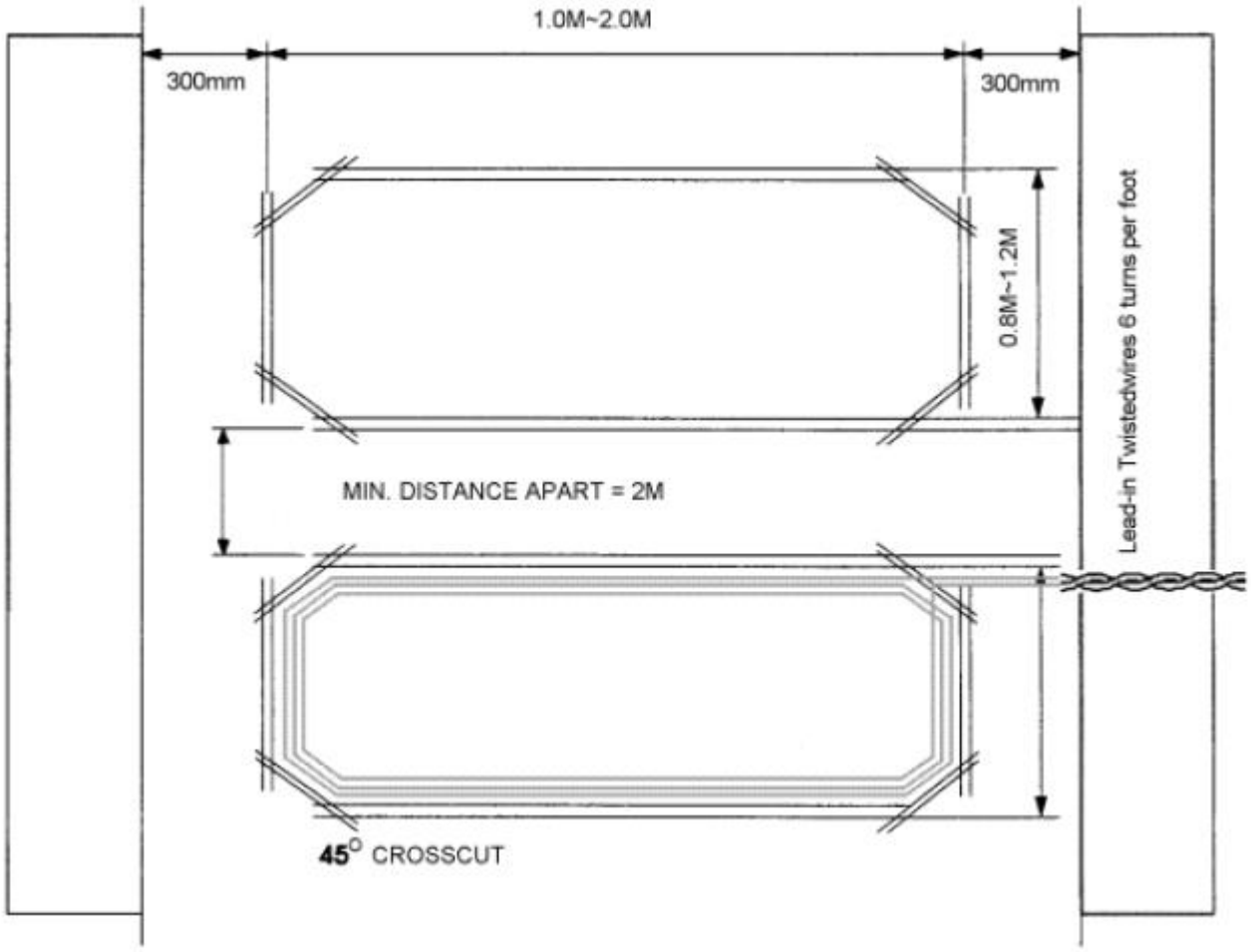
(5) SWITCH 2: CH2 LOOP FUNCTION
DIP 1 – Selects CH2 output mode: Same as CH1(SW1 – DIP 4)
DIP 2 – Selects CH2 pulse output mode: Same as CH1(SW1 – DIP 5)
DIP 3 and DIP 4 and DIP 5: CH2 selections of sensitivity, same as CH1(SW1- DIP6, DIP7, DIP8)
DIP 6 and DIP 7: CH2 loop frequency settings, same as CH1(SW1 – DIP9, DIP10)

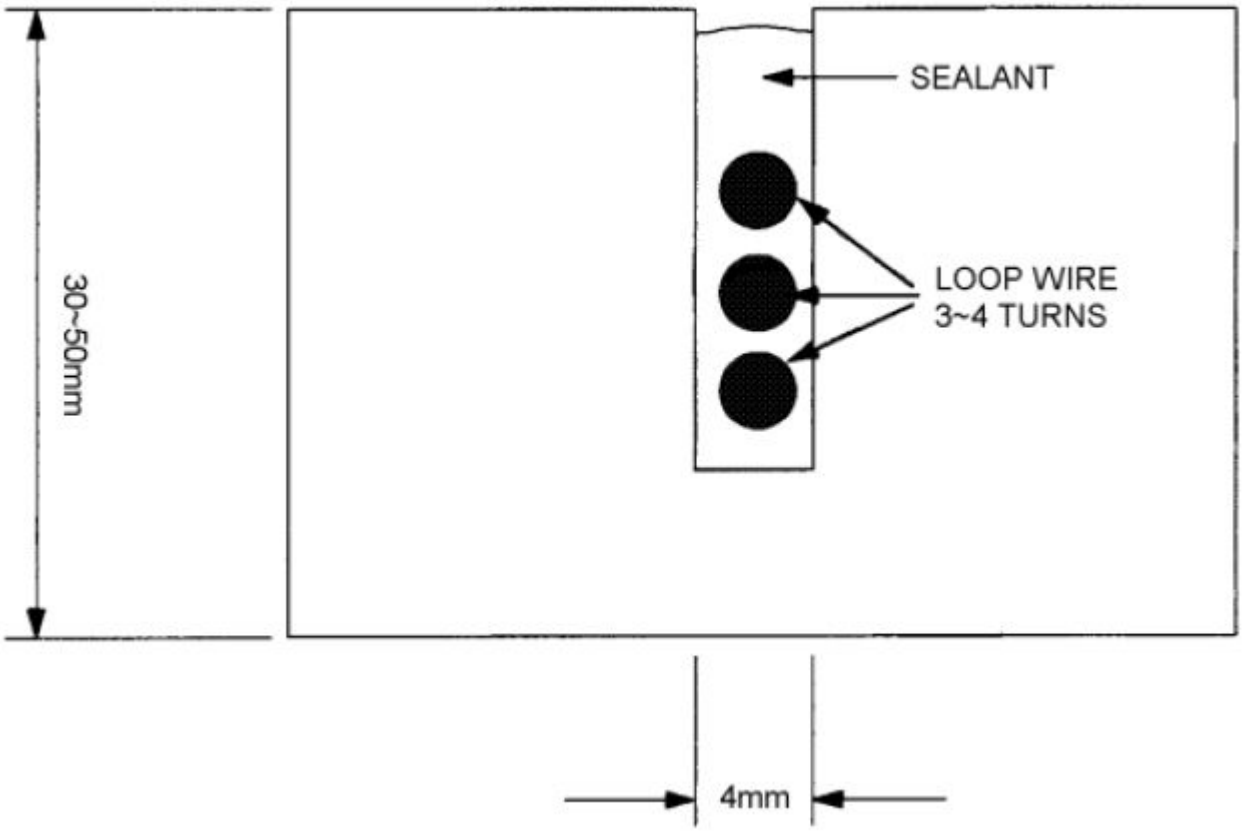
!!*When more than two loops are used, please set up different frequencies in order to eliminate the crosstalk.

(6) RESET BUTTON: RESET button will reset the detector. RESET is needed whenever frequency is changed.

5.3 Additional Information

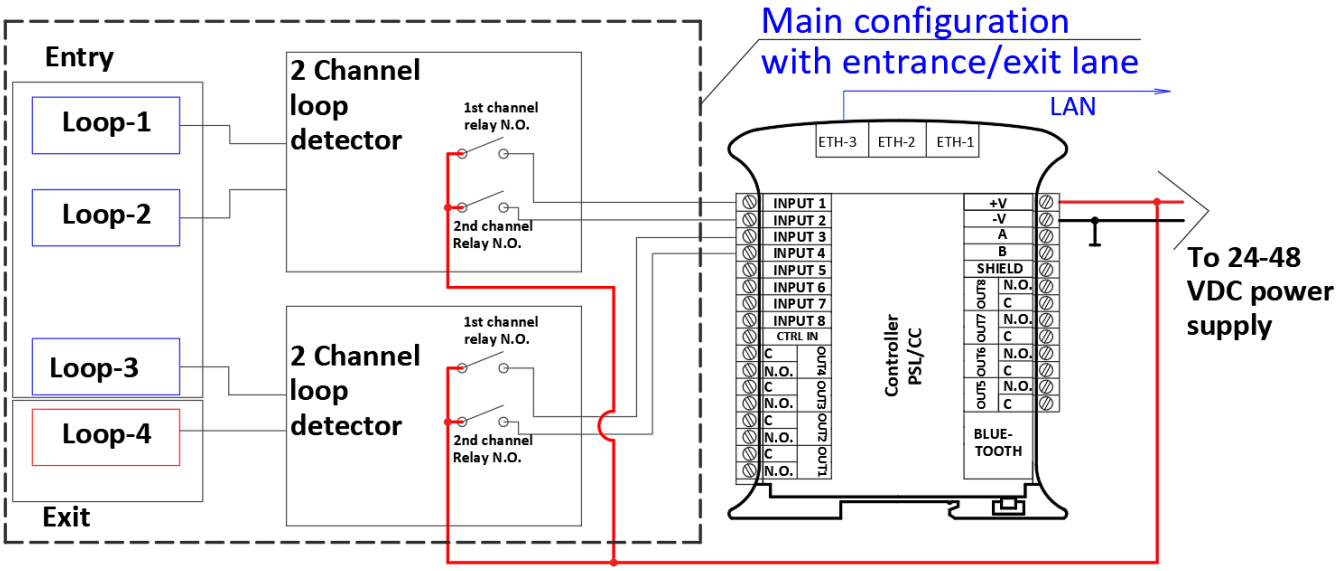
(1) Teflon loop is recommended and the maximum length could reach 500 meters for PSL/AD/LD/1 and 150m for PSL/AD/LD/2.
(2) Loops should have 3 to 5 rotaries; the remains of the cable need to have a helix every 15cm for PSL/AD/LD/1 and 5cm for PSL/AD/LD/2
(3) The more rotaries of a loop, the lower of the frequency.
(4) The appropriate way of rotation of a loop is 1.0 to 2.0m in length and 0.8 to 1.2m in width. Refer to the pictures below.
(5) The loop should be installed in an area where no electric overhead door nearby.
(6) Any vehicle with a speed of no more than 120km/h will be detected.


1.0M~2.0M
300mm
300mm
0.8M~1.2M
Lead-in Twistedwires 6 turns per foot
MIN. DISTANCE APART = 2M
45° CROSSCUT


SEALANT
LOOP WIRE
3~4 TURNS
30~50mm
4mm

6. Wiring Diagram

Below is shown a wiring diagram on how to connect Loop Detector and Parksol Counting Controller.



7. Maintenance

Devices must be operated in environment described in the technical characteristics.

8. Warranty

Our products carry a 36 months' guarantee regarding concealed defects and/or defects in materials and workmanship. We also grant a 36 months' guarantee regarding defects in construction, unless the customer or a third party has undertaken the construction. At our option, to meet this guarantee obligation, we shall provide either new products free or free repair. We do not vouch for the goods being fit for the use intended by the purchaser, not even if that use should have been mentioned to us, unless we have so committed ourselves in writing.

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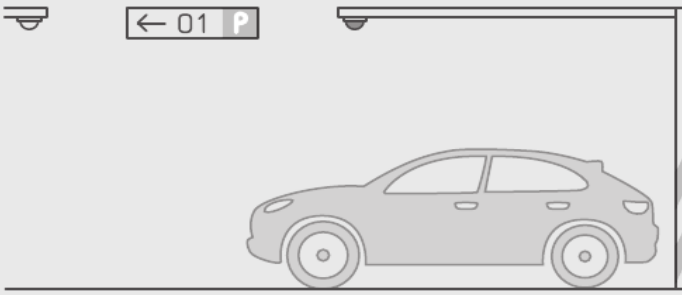

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