

Single Channel Vehicle Detector

1.Description

Loop detectors in recent years have become a popular tool having innumerable applications in policing, right from surveillance operations to traffic control. Automation of gates and doors has become a popular usage of the loop detector.

The digital technology of the loop detector enables the equipment to sense a change in the inductance of the loop as soon as it detects the metal object in its path. The inductive loop which detects the object is made of insulated electrical wire (32/020; 32 Strand, 2mm diameter) and is arranged either as a square or rectangle shape.

The loop consists of several loops of wire and consideration should be giving to the loop sensitivity when installing on different surfaces. Setting the correct sensitivity allows the loop to operate with maximum detection (16 levels via a trimpot). When detection occurs, the detector energises 2 relays for the output (each can be configured individually). This energising of the relay can be configured into different modes, by selecting the respective dip switch.

The LD-100 Enhanced Vehicle detector is also provided with an integral fault relay, which will provide an output in the event of a loop fault condition.



(1)Features

Compact Size: the compact and well engineered housing Combines all of the industry requirements regarding Features and functionality and allows this detector to be Incorporated into any or existing traffic detection system. **Diagnostic Capabilities:** Comprehensive diagnostics Capabilities allow for accurate diagnosis of loop and Installation problems.

Selectable Presence Time: The output of the presence Relay can be selected to limit a detect output to a fixed time(time >30 minutes)while a vehicle remains on the loop, **Frequency Indication:** Interference between adjacent loop/detectors can be determined by an integral indication, and eliminated by changing the frequency setting.

Two Separate Output Relays:

Presence Relay A is presence output. Can be extended for 0,2,5,8,10,15,20 or 30 seconds, programmable with external 10 way DIP switches.

Pulse Relay B, programmable with external 10 way DIP switches, provides presence, pulse on entry, pulse on exit, or failed output.

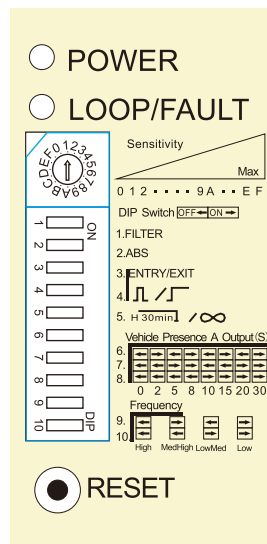
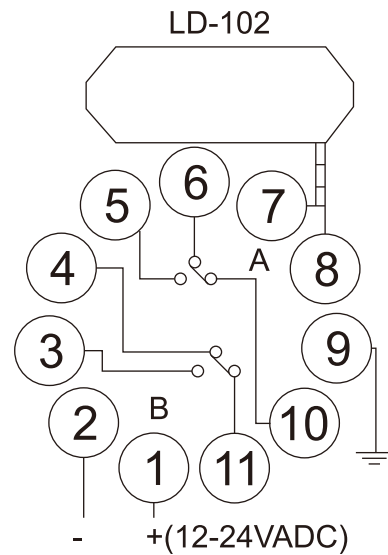
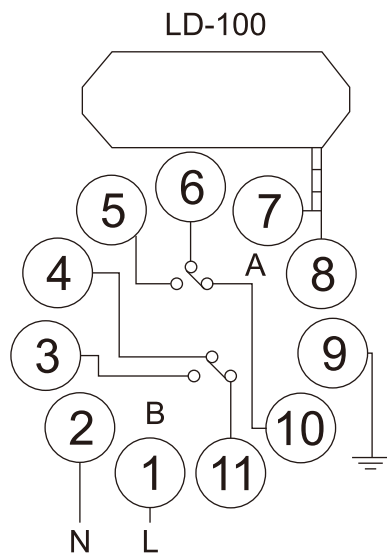
(2)Applications



1. Traffic Control Application
2. Vehicle Counting
3. Toll Systems
4. Traffic Analysis
5. Parking Control Application

2.Connections

Pin	LD-100	LD-102
1	100-240V AC	12-24VADC
2	100-240V AC	12-24VADC
3	Presence B Relay N.O	
4	Presence B Relay COM	
5	Presence A Relay N.O	
6	Presence A Relay COM	
7	LOOP	
8	LOOP	
9	Chassis Ground	
10	Presence A Relay N.C	
11	Pulse B Relay N.C	



- Faceplate LED indicators
- Red –Power
 - Green –Loop/Fault:
1. Undetect -off
 2. Detect – on steady
 3. Fault – flashing

3. Specifications

Self-turning Range	20-2000μH
Sensitivity	16 way selectable /Highest 0.010% DL/L / Lowest 2.56% DL/L
Frequency	Four step switch selectable 20-80KHz
Power Requirements	110-240VAC (48 to 62Hz) / 12-24VADC(48 to 62Hz)
Operation Temp	-40°C to +70°C / (-111°F to +158°F)
Fault Output	Blinks slowly: It maybe because the loop is short circuit or the no:of turns is not enough. Blinks faster: It maybe because the loop is open or the no: of turns is too many.
Response Times	Turn-on 10-90MS / Turn-off 10-90MS
Visual Indications	Power LED-Red / Channel LED-Green
Reset	Reset by push button on front of enclosure
Relay Output	Presence relay/Fault relay
Humidity	Up to 95% relative humidity without condensation

4. Indicates And Switch

(1) Power Led: RED Power LED Indicates “Power ON”

Detecting Led: Continuously On: Indicates vehicle detection.

Blinking slowly: Indicates loop is short circuit or the number of twists after the loop is not enough.

Blinking fast: Indicates loop is open circuit or too many twists after the loop.

(2) Switch 1 (Trimpot), Sensitivity Selection

Sensitivity of the loop can be adjusted by the trimpot labeled “Sensitivity”. User can select 16 different setting by turning the trimpot with 0 being the least sensitive and “F” being the most sensitive.

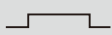
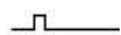




(3)Switch 2 (Dipswitch Settings)

1. DIP 1 & DIP 2 Setting Special Functions

DIP NO.	DIP MODE	Function
DIP 1	ON	Output has 2 seconds delay. (No relay output if the vehicle speed is over 8km/h)
DIP 2	ON	Increase sensitivity to avoid unwilling relay off for leaving vehicle especially for trailer.

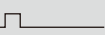


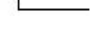
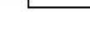
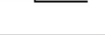



2. DIP 3 & DIP 4 Setting Relay B Output

DIP NO.	DIP 3	DIP 4	Relay B Output	Loop Coils Status 
DIP MODE	OFF	OFF	When vehicle is moving out, output for relay B is 200m/s	Relay B Output Type 
	ON	OFF	When the vehicle has left, output for relay B is 600m/s	Relay B Output Type 
	OFF	ON	Relay B will be present output. No reaction on Dip switches 3.	Relay B Output Type 
	ON	ON	Can be used to test the Loop. If the loop is faulty, Relay B will be on and it will switch off once the fault is fixed.	

3. DIP 5 Setting Automatic Reset

DIP NO.	DIP 5	Present Mode
DIP MODE	ON	Vehicle can be permanently present (no auto-reset , unless vehicle has left or manual reset)
	OFF	Normal mode (automatic reset after 30 minutes present of vehicle, used to solve the mistake operation. If it is recommended).

4. DIP 6 & DIP 7 & DIP 8 Setting Relay A Delay

DIP NO.	DIP 6	DIP 7	DIP 8	Delay	A Output 
DIP MODE	OFF	OFF	OFF	0 sec	Output 
	ON	OFF	OFF	2 sec	Output 
	OFF	ON	OFF	5 sec	Output 
	ON	ON	OFF	8 sec	Output 
	OFF	OFF	ON	10 sec	Output 
	ON	OFF	ON	15 sec	Output 
	OFF	ON	ON	20 sec	Output 
	ON	ON	ON	30 sec	Output 

5. DIP 9 & DIP 10 Setting Frequency (40 K to 100 KHz). Used to avoid the interference

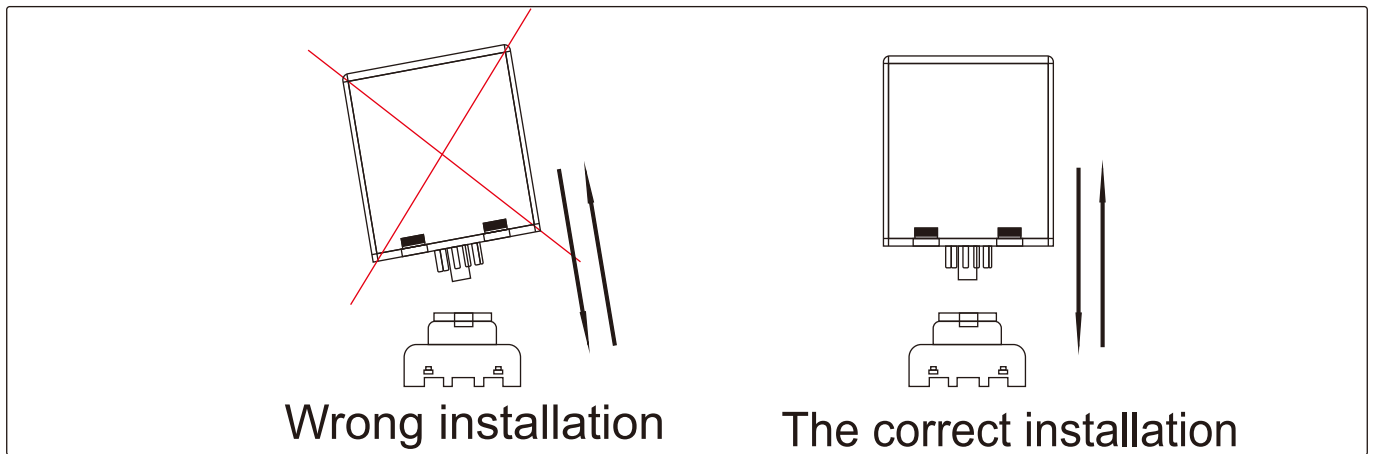
DIP NO.	DIP 9	DIP 10	Frequency
DIP MODE	OFF	OFF	High
	ON	OFF	Medium-High
	OFF	ON	Medium-Low
	ON	ON	Low

* In the application, where two or more loop detectors and sensing loops have been installed, set one detector to high frequency and the other set to low frequency to minimize the effects of cross-talk between the two systems(The sensing loops and detectors should be positioned at least 2m apart).

Reset Button:Please note: The LD-100 must be reset every time a setting change is made to the Dip switches.

5.Detector Position And Installation

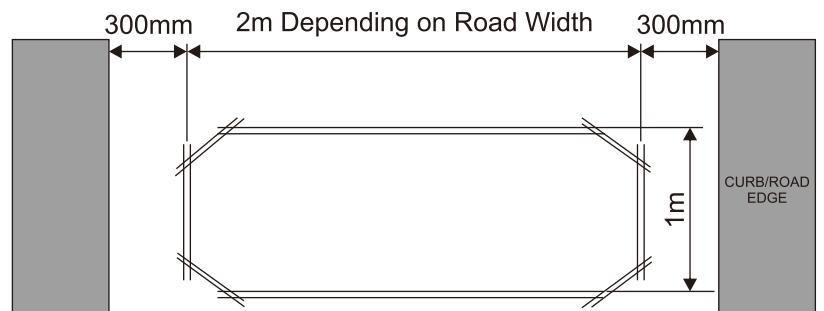
- Install the detector in a weatherproof housing.
- The detector should be as close to the sensing loop as possible.
- The detector should always be installed away from strong magnetic fields.
- Avoid running high voltage wires near the loop detectors.
- Do not install the detector on vibrating objects.
- When the control box is installed within 10 metres of the loop, normal wires can be used to connect the control box to the loop. More than 10 metres requires the use of a 2 core shielded cable. Do not exceed 30 metres distance between control box and loop.



6. Loop Installation

The loops are sealed using a “quick-set” black epoxy compound or hot bitumen mastic to blend with the roadway surface.

Loop perimeter	Cylinder numbers
3 ~ 4 M	6
4 ~ 6 M	5
6 ~ 10 M	4
10 ~ 20 M	3
20 M~ UP	2



7. Trouble Shooting

Symptoms		Solution
If the detector is not working		Press reset
If red led indicator is not fully lit		Check for power supply
If green led indicator	Blinks slowly	It maybe because the loop is short circuit or the no: of turns is not enough.
	Blinks faster	It maybe because the loop is open or the no: of turns is too many.
If no: of turns is not enough		Lower the frequency (if the frequency is still too high, you must add more turns).
If no: of turns is too many		Higher the frequency (if the frequency is still too low, you must remove some turns).

Ordering Information

LD-100 single channel, boxed, 1 type 11pin connects 100-240VAC.

LD-102 single channel, boxed, 1 type 11pin connects 12-24VADC.