

# Dual Channel Magnetic Loop Detector

## 1.Description

Magnetic 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-200 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.

**Direction Detection:**(If vehicle moves from CH1 to CH2, then CH1 relay output; if vehicle moves from CH2 to CH1, then CH2 relay output).

**Sensitivity Selection:**Sensitivity and frequency of the loop can be adjusted by 7-way dip switch and 10-way dip switch setting.

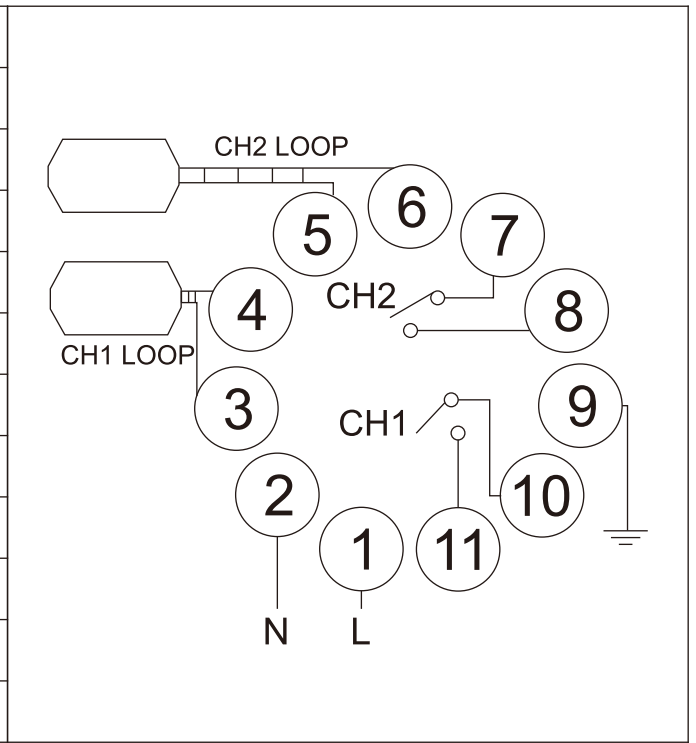
### (2)Applications



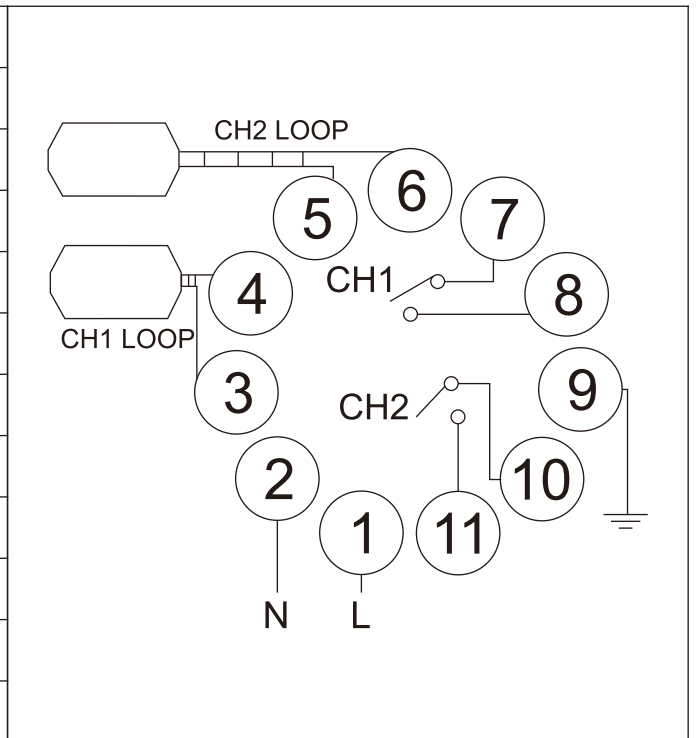
1. Traffic Control Application
2. Vehicle Counting
3. Toll Systems
4. Traffic Analysis
5. Parking Control Application

## 2.Connections

Pin	LD-200	LD-202
1	100-240VAC	12-24VADC
2	100-240VAC,Neutral	12-24VADC
3	CH1 LOOP	
4	CH1 LOOP	
5	CH2 LOOP	
6	CH2 LOOP	
7	CH2 Relay COM	
8	CH2 Relay N.O	
9	Chassis Ground	
10	CH1 Relay COM	
11	CH1 Relay N.O	



Pin	LD-205	LD-206
1	100-240VAC	12-24VADC
2	100-240VAC,Neutral	12-24VADC
3	CH1 LOOP	
4	CH1 LOOP	
5	CH2 LOOP	
6	CH2 LOOP	
7	CH1 Relay COM	
8	CH1 Relay N.O	
9	Chassis Ground	
10	CH2 Relay COM	
11	CH2 Relay N.O	



### 3.Specifications

Self-turning Range	20-2000µH
Response Times	10-90MS
Sensitivity	8 way selectable , Highest 0.015% DL/L , Lowest 0.8% DL/L
Visual Indications	Power LED-Red Channel LED-Green
Reset	Reset by push button on front of enclosure
Relay Output	Presence Relay/Fault Relay
Frequency	Four step switch selectable 20-80KHz
Power Requirements	10-240VAC (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.
Humidity	Up to 95% relative humidity without condensation
Circuit Protection	Conformal coating over the PCB and all components

### Modes of operation

The LD-200 series detector may be configured for any one of the following modes:

Presence Mode	Pulse Mode
AB Logic Presence Mode(Barrier Operation)	AB Logic Pulse Mode(Counting Logic)

### 4.Indicates And Switch

(1)Power Led: RED power LED indicates "Power ON"

CH1 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.

CH2 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.

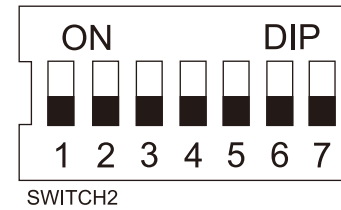
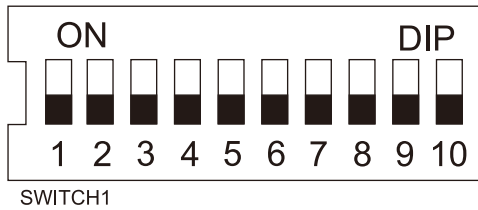
Blinking fast: Indicates loop is open circuit or too many twists after the loop.

## (2)Sensitivity Selection

Sensitivity and frequency of the loop can be adjusted by 7-way dip switch and 10-way dip switch setting.

User can select 8 different setting by changing the setting of the dip-switch to different modes as in the dip-switch setting tables below. Dip switch 6, 7 and 8 for CH1 sensitivity selection with 0.8 being the least sensitive and 0.015 being the most sensitive.

Dip switch 3, 4 and 5 for CH2 sensitivity selection with 0.8 being the least sensitive and 0.015 being the most sensitive.



### (3)Switch 1=S1:Channel 1 Loop Function Selection (10 way dip switch)

#### 1. (Switch 1)DIP 1 & DIP 2 Special Sensitivity Increase For Both Trailer (Both Channels)

DIP NO.	DIP MODE	Function
DIP 1	ON	Increase sensitivity for both channel to avoid unwilling relay Off for leaving especially for trailer
DIP 2 (Automatic Reset Both channels)	ON	Vehicle can be permanently present. (no auto-reset, unless vehicle has left or manual reset)
	OFF	Normal mode, (automatic reset after 10minutes present of vehicle,used to solve the mistake operation. If it is recommended).

#### 2. (Switch 1=S1)D 3,D4,D5 and (Switch 2=S2) D1,D2 Setting Special Functions(Mode1,2,3 Direction Detection. Mode4,5,6 Normal mode, two loop detection are separated.)

	S1	S2	Function
Mode 1	D3->ON		Direction Detection. (If vehicle moves from CH1 to CH2, and left CH1, then CH1 relay pulse output; if vehicle moves from CH2 to CH1, and left CH2, then CH2 relay pulse output).
	D4->OFF	D1->OFF	
	D5->ON/OFF	D2->ON/OFF	
Mode 2	D3->ON		Direction Detection. (If vehicle moves from CH1 to CH2, and goes in CH2, then CH1 relay presence output; if vehicle moves from CH2 to CH1, and goes in CH1, then CH2 relay presence output).
	D4->ON	D1->ON	
	D5->OFF	D2->OFF	
Mode 3	D3->ON		Direction Detection. (If vehicle moves from CH1 to CH2, and goes in CH1, then CH1 relay presence output; if vehicle moves from CH2 to CH1, and goes in CH2, then CH2 relay presence output).
	D4->ON	D1->ON	
	D5->ON	D2->ON	
Mode 4	D3->OFF		CH1 and CH2 are separated presence output.
	D4->OFF	D1->ON	
	D5->ON/OFF	D2->ON/OFF	

Mode 5	D3->OFF		When vehicle goes in CH1, then CH1 relay is pulse output; When vehicle goes in CH2, then CH2 relays pulse output.
	D4->ON	D1->ON	
	D5->OFF	D2->OFF	
Mode 6	D3->OFF		If vehicle goes in CH1,when left CH1,CH1 relaypulse output; if vehicle goes in CH2,when left CH2,CH2 relay pulse output.
	D4->ON	D1->ON	
	D5->ON	D2->ON	

3. (Switch 1=S1)D6 & D7 & D8 and (Switch 2=S2)D3 & D4 & D5 Setting CH1 and CH2 Sensitivity Selection. (Eight Levels Choices)

S1	S2	Sensitivity (%)							
		0.015(Highest)	0.02	0.04	0.08	0.12	0.2	0.5	0.8(Lowest)
D6	D3	ON	ON	ON	ON	OFF	OFF	OFF	OFF
D7	D4	ON	ON	OFF	OFF	ON	ON	OFF	OFF
D8	D5	ON	OFF	ON	OFF	ON	OFF	ON	OFF

4. (Switch 1=S1)D9 & D10 and (Switch2=S2)D6,D7 Setting Frequency (20 K to 100 KHz).

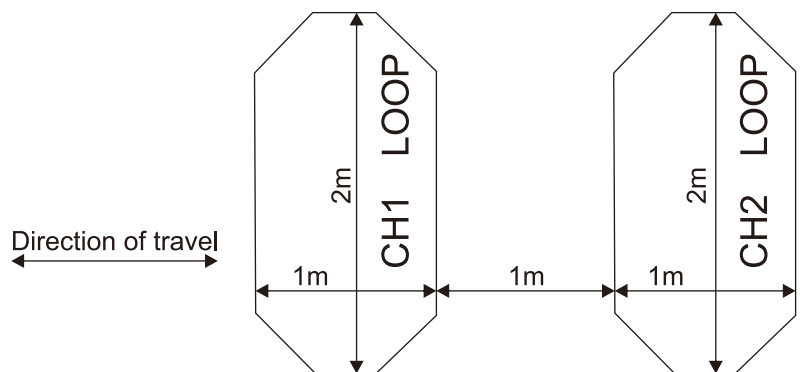
S1	S2	Frequency			
		High	Medium-High	Medium-Low	Low
D9	D6	OFF	ON	OFF	ON
D10	D7	OFF	OFF	ON	ON

\* Reset Button: Please note: The LD-200 must be reset every time a setting change is made to the Dip switches.

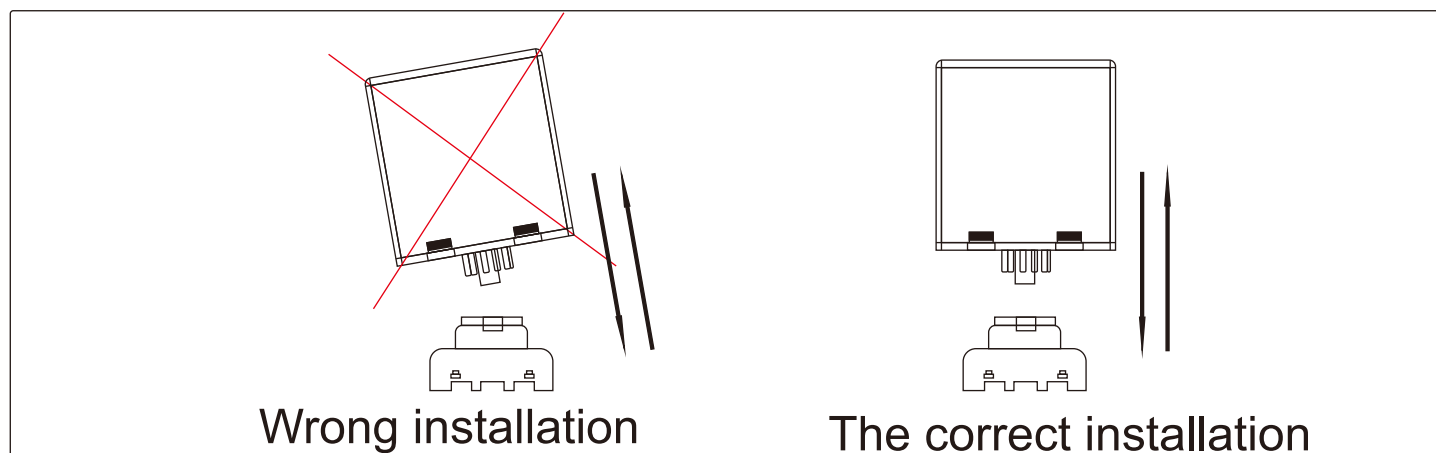
## 5. Loop Installation

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



-When installation, please keep the product plug and socket in the vertical direction



## 6. TroubleShooting

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-200 single channel, boxed, 1 type 11pin connects 100-240VAC(EU standard)

LD-202 single channel, boxed, 1 type 11pin connects 12-24VADC(EU standard)

LD-205 single channel, boxed, 2 type 11pin connects 100-240VAC(USA standard)

LD-206 single channel, boxed, 2 type 11pin connects 12-24VADC(USA standard)