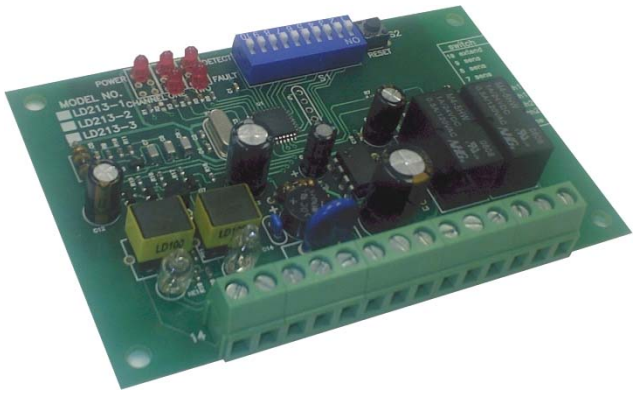
Dual Channel Loop Detector

Model – LD213 Series

The LD213 is a dual channel inductive loop card detector designed for parking and access control applications.

The detector is connected to an inductive loop mounted in the road surface. When vehicles pass over the loop the detector switches on an output.

The use of microprocessor and surface mount technology enables a large number of functions to be incorporated into a small package. The LD213 is easy to set-up and install.



Applications

Typical applications in the parking and access control environments are safety loops for barriers or gates, arming loops for activating card dispensers, vehicle counting with direction logic.

Features

Reset Switch. Pressing the reset switch enables the detector to be manually reset during commissioning and testing. This results in the detector re-tuning the sensing loop and becoming ready for vehicle detection.

Switch selectable Sensitivity. The detect sensitivity is the minimum change in inductance required to produce a detect output. (%ΔL/L). Eight sensitivity settings are available on the switches to allow flexibility in configuration.

Switch 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 on different detectors.

Extend Option. When switched on this feature extends the presence output relay for 2 Seconds after the vehicle has left the loop.

Direction Logic. This feature enables the detector to give a pulse output on relay1 for a vehicle travelling from loop1 to loop2 and a pulse output on relay2 for a vehicle travelling from loop2 to loop1. To enable this feature switches 2 and 4 must be on, and switches 3 and 5 must be off.

Pulse Relay Selection. The detect relay may be configured for a pulse output, and to energise on detection of a vehicle or when the vehicle leaves the loop.

Selectable Pulse Time. This feature sets the length of time that the pulse relay will be energised. 1 Second or 0.2 Second.

Indicators

Power Indicator. This LED Indicator illuminates when power is present.

Detect Indicator. This LED Indicator is illuminated when there is a vehicle over the loop or the loop is faulty. This LED can also be used to determine the loop frequency. On reset, count the number of times the LED flashes. Multiply this number by 10KHz.For example: if the LED flashes 6 times, then the loop frequency is between 60KHz and 70KHz.

Loop Fault Indicator. This LED Indicator is illuminated when the loop is either open circuit or short circuit and is used to give a visual indication of a faulty loop.

Technical Specifications

Power supply	11 - 26VAC/DC 50/60Hz 100mA max.
Presence Relay Mode	0.5A/220VAC (Fail Safe – normally energized)
Pulse Relay Mode	0.5A/220VAC(Non Fail Safe–normally denergised)
Response time	Approximately 120ms after vehicle enters loop.
Indicators	LED indicators show: Power, Detect state and Loop Fault.
Detector tuning range	15 - 1500uH
Loop Frequency	Approx. 23 – 130KHz (Multiplexing)
Environmental tracking	Automatic Compensation
Protection	Loop isolation transformer with zener diodes and gas discharge tube.
Connector	LD213-1 14Way MOLEX Pug Connector LD213-2 14Way Screw terminal block LD213-3 14Way Pin Strip Connector
Dimensions	105mm X 68mm
Operating Temperature	-40°C to +80°C
Storage Temperature	-40°C to +85°C

Switch Settings

LD213 Switch Settings			
Switch No.	**Function**	**ON**	**OFF**
10	Presence Relay Extend Time	2 Sec	Off
7,8,9	Sensitivity 0.02%	-	S7/S8/S9
7,8,9	Sensitivity 0.01%	S9	S7/S8
7,8,9	Sensitivity 0.05%	S8	S7/S9
7,8,9	Sensitivity 0.1%	S8/S9	S7
7,8,9	Sensitivity 0.2%	S7	S8/S9
7,8,9	Sensitivity 0.5%	S7/S9	S8
7,8,9	Sensitivity 1%	S7/S8	S9
7,8,9	Sensitivity 2%	S7/S8/S9	-
6	Frequency	Low	High
5	Mode Loop 1 Relay	Pulse	Presence
4	Mode Loop 1 Relay (Pulse Mode)	Undetect	Detect
3	Mode Loop 2 Relay	Pulse	Presence
2	Mode Loop 2 Relay (Pulse Mode)	Undetect	Detect
1	Loop 1 and Loop 2 Relay Pulse Time	1 Sec	0.2 Sec

To select direction logic mode, S2/S4 must be ON and S3/S5 must be OFF.

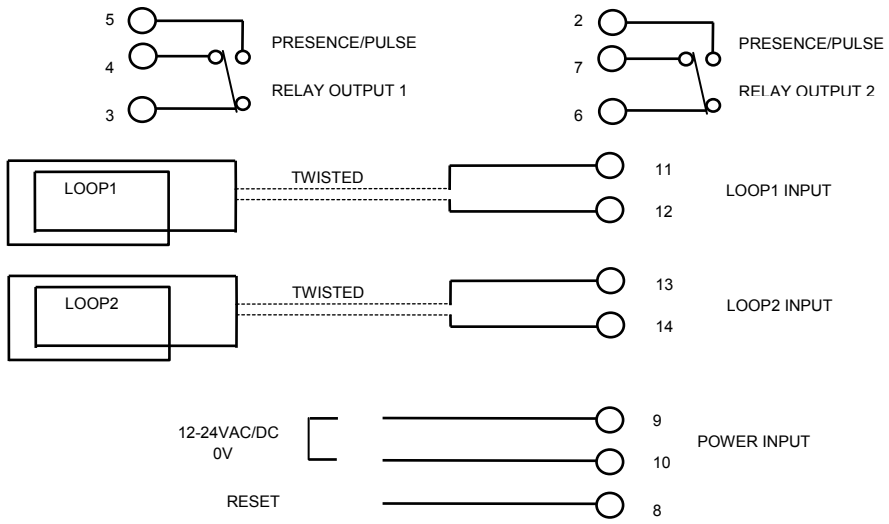
Relay Functionality

RELAYS (Presence or Pulse)		**VEHICLE PRESENT**	**NO VEHICLE**	**LOOP FAULTY**	**NO POWER**
PRESENCE RELAY	**N/O**	**CLOSED**	**OPEN**	**CLOSED**	**CLOSED**
	N/C	**OPEN**	**CLOSED**	**OPEN**	**OPEN**
PULSE RELAY	**N/O**	**PULSE CLOSED**	**OPEN**	**CLOSED**	**CLOSED**
	N/C	**PULSE OPEN**	**CLOSED**	**OPEN**	**OPEN**

Diagnostics

SYMPTOM	POSSIBLE CAUSE	SOLUTION
The POWER LED is not on.	No power supply voltage on the input.	Check that the power supply is correctly wired to the detector. (PINS 1 and 2)
The DETECT LED flashes erratically.	There may be a poor connection in the loop or loop feeder. The detector may be experiencing crosstalk with the loop of an adjacent detector.	Check all wiring. Tighten screw terminals. Check for broken wires. Try changing frequencies using the frequency switch. Put the detector with the larger loop onto low frequency and the detector with the smaller loop onto high frequency.
The DETECT LED randomly stays on.	Faulty loop or loop feeder wiring. Movement of the loop in the ground.	Check the wiring. Tighten screw terminals. Check for pinched or bent wires. Is the feeder wire twisted? Check for cracks in the road surface near the loop.
The LOOP FAULT LED is flashing.	The loop inductance is too small or the loop is short circuit.	Check that there is no short circuit on the loop feeder wiring or the loop. If there is no short circuit then the inductance is to small and more turns of wire should be added to the loop.
The LOOP FAULT LED is permanently illuminated.	The loop inductance is too large or the loop is open circuit.	Check that there is electrical continuity on the loop. This can be done using a multimeter on the ohms range (< 5 Ω). If the loop inductance is too large then try reducing the number of turns.

Wiring Diagram

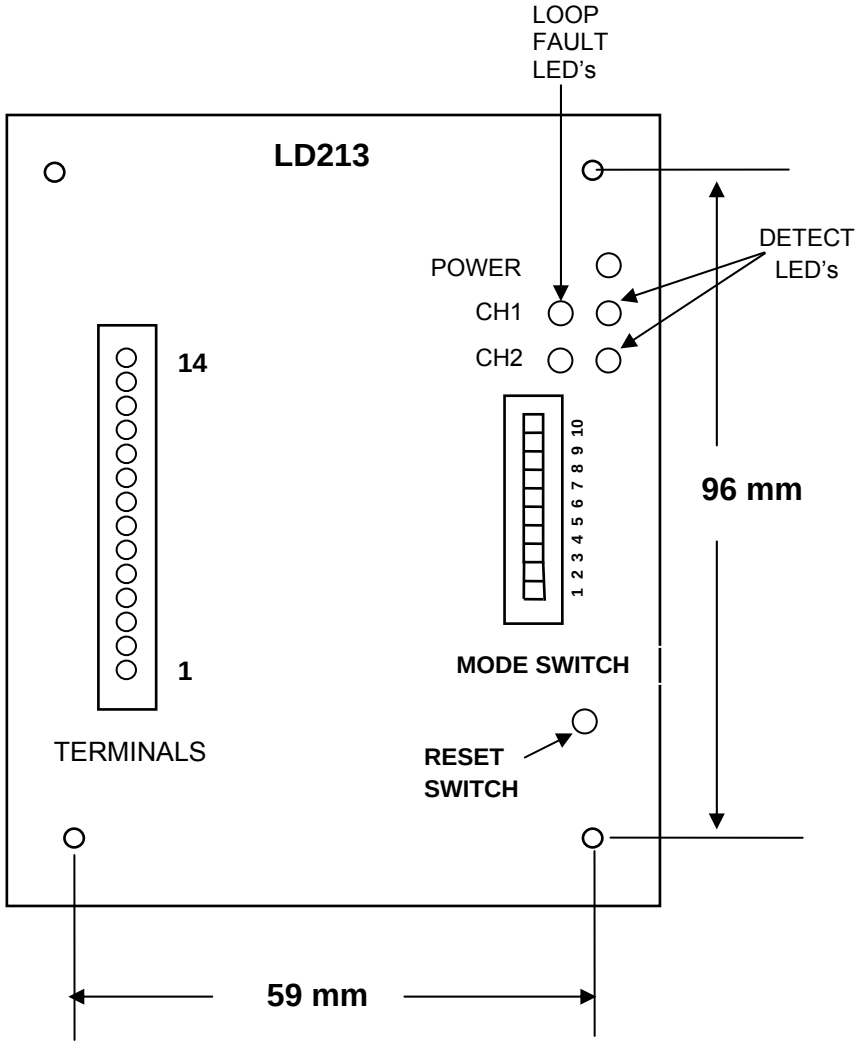


Wiring Connections

14	**LOOP2**	**TWISTED**
13	**LOOP2**	**WIRE**
12	**LOOP1**	**TWISTED**
11	**LOOP1**	**WIRE**
10	**OV**	
9	**+ 12 TO 24VAC/DC SUPPLY**	
8	**RESET**	
7	**RLY CH2 N.C.**	
6	**RLY CH2 COM**	
5	**RLY CH1 N.O.**	
4	**RLY CH1 N.C.**	
3	**RLY CH1 COM**	
2	**RLY CH2 N.O.**	
1	**CHASSIS**	

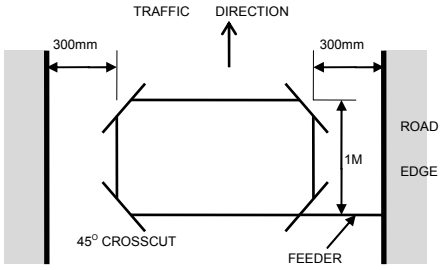
Mechanical Layout

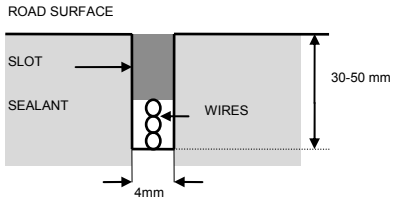
NOTE: To ensure correct operation of the LD213, the circuit board must be securely mounted using the 4 mounting holes located near the corners of the board. It is also important that nothing touches the underside of the circuit board.



Loop Installation Guide

1. The detector should be installed in a waterproof housing as close to the loop as possible.
2. The loop and feeder should be made from insulated copper wire with a minimum cross-sectional area of 1.5mm^2. The feeder should be twisted with at least 20 turns per metre. Joints in the wire are not recommended and must be soldered and made waterproof. Faulty joints could lead to incorrect operation of the detector. Feeders which may pick up electrical noise should use screened cable, with the screen earthed at the detector.
3. The loop should be either square or rectangular in shape with a minimum distance of 1 metre between opposite sides. Normally 3 turns of wire are used in the loop. Large loops with a circumference of greater than 10 metres should use 2 turns while small loops with a circumference of less than 6 metres should use 4 turns. When two loops are used in close proximity to each other it is recommended that 3 turns are used in one and 4 turns in the other to prevent cross-talk.
4. Cross-talk is a term used to describe the interference between two adjacent loops. To avoid incorrect operation of the detector, the loops should be at least 2 metres apart and on different frequency settings.
5. For loop installation, slots should be cut in the road using a masonry cutting tool. A 45^o cut should be made across the corners to prevent damage to the wire on the corners. The slot should be about 4mm wide and 30mm to 50mm deep. Remember to extend the slot from one of the corners to the road-side to accommodate the feeder.
6. Best results are obtained when a single length of wire is used with no joints. This may be achieved by running the wire from the detector to the loop, around the loop for 3 turns and then back to the detector. The feeder portion of the wire is then twisted. Remember that twisting the feeder will shorten its length, so ensure a long enough feeder wire is used.
7. After the loop and feeder wires have been placed in the slot, the slot is filled with epoxy compound or bitumen filler.





Contact Details

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