

# PD132 Loop Detector Specification

(Version 1.00)



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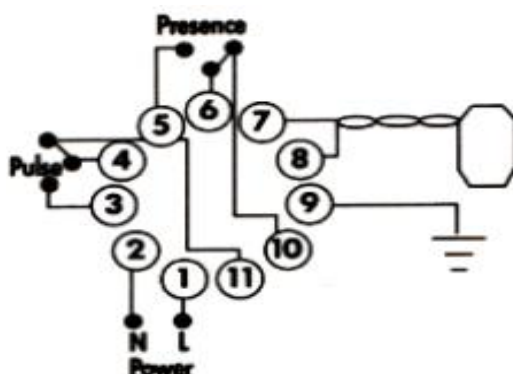
## 1. Application

Loop detectors are used wherever vehicles have to be detected. Like monitoring and safe guarding access ways to counting vehicles. The output signal can be used for controlling door and gate drive mechanisms, operating barriers, controlling traffic light systems in car parks or activating card dispensers in car parks.

## 2. Technical Data

- Operating voltage : 220V AC  $\pm$ 10%
- Power Consumption:  $\leq$ 5VA
- Output relays: 240V/5A AC
- Frequency range: 20 kHz to 170 kHz
- Reaction time: 10ms
- Signal holding time: Unlimited / limited when loop is permanently covered 10 minutes
- Sensitivity: adjustable in 8 increments
- Wiring: 50 $\mu$ H to 1000  $\mu$ H. Ideal is 150-300 $\mu$ H
- Loop connection wiring: Maximum length 20 meters,  
● twisted at least 20 times per meter
- Autocorrecting time: 1 to 2 seconds
- Operating temperature: -20°C to +65°C
- Storage temperature: -40°C to +85°C
- Dimensions (include pedestal ): 78x40x108 mm (L x W x H)
- Net Weight ( include pedestal ) : 265g
- Specific set the table below. In trial runs, first sensitivity in the lower stalls, the actual test vehicle detection if no response should be an increased sensitivity to stall, so repeated several times until the car seized stability for normal work.

## 3 Wiring Diagram



### Pin Designation

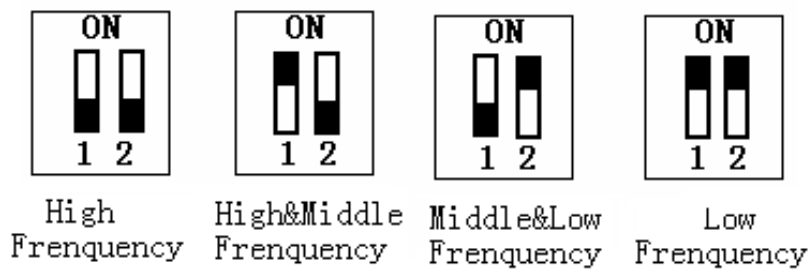
- 1 Live 230V AC 50/60 Hz
- 2 Neutral
- 3 Pulse Relay Normally Open contact
- 4 Pulse Relay Common contact
- 5 Presence Normally Open contact
- 6 Presence Relay Common contact
- 7 Blue Loop (twist this pair back to the control)
- 8 Blue Loop
- 9 Green Earth
- 10 Presence Relay Normally Closed contact
- 11 Pulse Relay Normally Closed contact

## 4 Use and operational

On powering the PD-132 loop detector, it will automatically calibrate. When correct, it will show 2 LEDs. Do not leave a car on the loop or any other metallic objects when it is calibrating. If the calibration is successful, the detect LED turns off. Failure of the calibration is indicated by a flashing detect LED. When a car passes over the loop, the detect LED turns on.

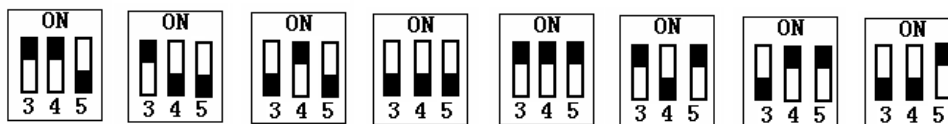
### 4.1 Frequency adjust

To avoid Crosstalk, please to select different frequencies and screened cables. There are 4 opt frequency. The can be altered by means of DIP1, DIP2Switch.



### 4.2 Sensitivity adjust

The sensitivity can be adjusted on the front of the housing by means of a DIP3, DIP4 and DIP5 dip switches. Specifically set by varying the switches in the table below. Carry out trial runs with different vehicles, cars, bikes etc. Repeat several times until the detector has stability for normal work.



Low 
→
 high

### **4.3 Filter option**

When the environment has electromagnetic disturbance, resulting in frequent detector mis-operation, turn the DIP6 switch on to increase the filter coefficient, (filtering disturbance.) Please note that when the environment is normal turning DIP6 to the on position may reduce detector sensitivity detection or increase the delay time.

Note: If the loop parameters laid are unreasonable, it may also lead to frequent detector mis-operation. These loop parameters should be amended or re-buried loop.

### **4.4 Function output relay**

\*Pin5, pin 6, pin10: Relay Pulse Output . The output pulse relay can be altered by means of DIP7-Switch

**OFF** when the car enters the loop, the pin5, pin6 closes the contacts and after 500ms switches-off.

**ON:** only when the car leaves the loop, the pin5, pin6 closes the contacts and after 500ms switches-off.

\*pin3, pin4, pin11: Relay Presence Output. When the loop is occupied by the car or metal, the Pin3, pin 4 closes the contacts until the car leaves the loop. The duration decided by DIP8

### **4.5 Duration output time setting**

The duration output time setting can be programmed by means of DIP8-Switch.

The presence time may be set to permanent presence or to limited presence. In permanent presence mode the detector will continuously compensate for all environmental changes whilst there is a vehicle present over the loop.

The presence mode is set with switch No. 8 and is configured as follows: -

SW8

Off - Limited Presence (The loop will automatically recalibrate after 10 minutes)

On - Permanent Presence (The loop will only recalibrate by the reset switch)

### **4.6 Reset**

By powering off, then on again or pressing the reset panel buttons, or in limited duration mode over time there will detector reset operation. After reset, the detector will be initialized for a car-free state.

## 5. Operating Guide

The detector must be installed in a convenient weatherproof location as close to the loop as possible.

WARNING:

- 1) This unit must be earthed.
- 2) Installation and operation by service professional only.
- 3) Disconnect power before working on this unit.

A correct loop configuration and detector installation will ensure a successful inductive loop detection system.

### 5.1 Operational Constraints

#### 5.1.2 Crosstalk

When two loop configurations are in close proximity, the magnetic field of one can overlap and disturb the field of the other. This phenomenon, known as crosstalk, can cause false detect and detector lock-up. Crosstalk can be eliminated by:

1. Careful choice of operating frequencies of operation frequency. The closer together the two loops, the further apart the frequencies of operation must be.
2. Separation between adjacent loops .where possible a minimum spacing of 2 meters between adjacent loops. Where possible a minimum spacing of 2 meters between loops should be adhered to.
3. Careful screening of feeder cables if they are routed together with other electrical cables. The screen must be earthed at the detector end only.

#### 5.1.3 Reinforcing

The existence of reinforced steel below the road surface has the effect of reducing the inductance, and therefore the sensitivity, of the loop detection system .in this case two additional turns of wire should be added to the loop.

The ideal spacing between the loop cable and steel reinforcing is 150mm, although this is not always practically possible. The slot depth should be kept as shallow as possible, talking care that no part of the loop or feeder remains exposed after the sealing compound has been applied.

## 6 Installation Information

### 6.1 Loop and Feeder Specification

The loop must consist of insulated wire with a minimum copper cross-sectional area equivalent to 1.5 square millimeters. The feeder should be of the same material but twisted a minimum of 20 twists per meter.

Joints in the loop or feeder are not recommended. Where this is not possible, Joints are to be soldered and terminated in a waterproof joint bow. This is extremely important for reliable detector performance.

Where long loop feeders are used, or feeders are routed together with other electrical wiring, the use of a screened cable is suggested for the feeder. The screen must be earthed at the detector end only.

### 6.2 Sensing Loop Geometry

Sensing loops should, unless site conditions prohibit, be rectangular in shape and should normally be installed with the longest sides at right angles to the direction of traffic movement. These sides should ideally be 1 meter apart.

The length of the loop will be determined by the width of the roadway to be monitored. The loop should reach to within 300mm of each edge of the roadway.

In general, loops having a circumference measurement in excess of 10 meters should be installed using 2 turns of wire, while loops of less than 10 meters in circumference should have three or more turns. Loops having a circumference measurement less than 6 meters should have four turns. It is good practice at time of installation to construct adjacent loops with alternate three and four turn windings to escape crosstalk.

### 6.3 Loop Installation

All permanent loop installations should be installed in the roadway by cutting slots with a masonry cutting disc or similar device. A 45° crosscut should be made across the loop corners to reduce the chance of damage that can be caused to the loop cable at right angle corners.

Nominal Slot width: 4mm

Nominal Slot depth: 30mm to 50mm

A slot must also be cut from the loop circumference at one corner of the loop to the roadway edge to accommodate the feeder.

A continuous loop and feeder is obtained by leaving a tail long enough to reach the detector before inserting the cable into the loop slot. Once the required numbers of turns of wire are wound into the slot around the loop circumference, the wire is routed again via the feeder slot to the roadway edge. A similar length is allowed to reach the detector and these two free ends are twisted together to ensure they remain in close proximity to one another. (Minimum 20 turns per

meter). Maximum recommended loop sensitivity decreases as the feeder length increases, so ideally the feeder cable should be kept as short as possible.

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

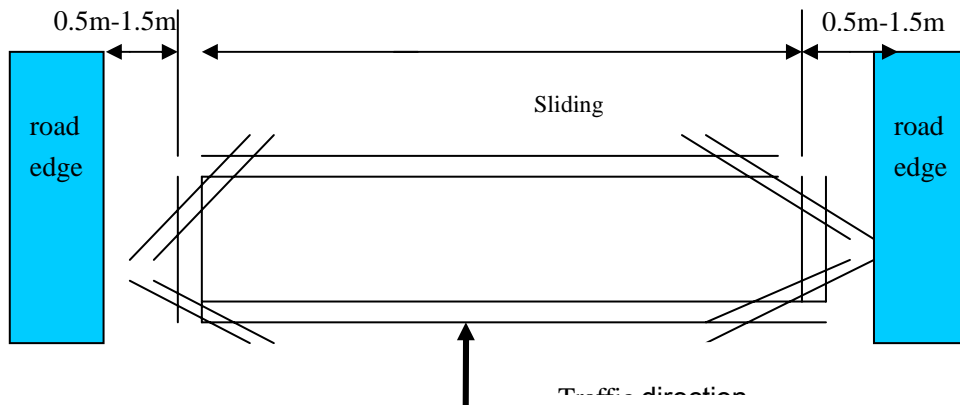
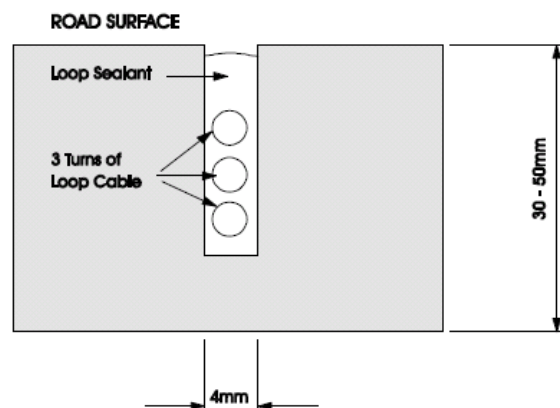


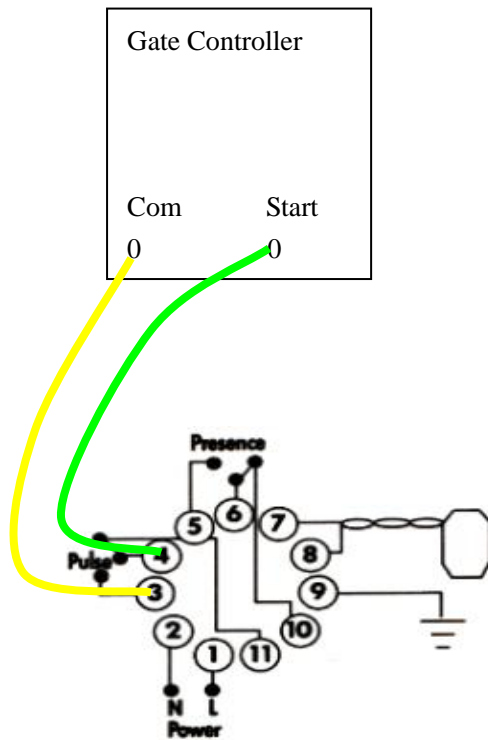
Diagram 6





Wiring Example to gate controller for pulse exiting

It is recommended that the condominium setting is enabled on gate controllers when using inductive loops.

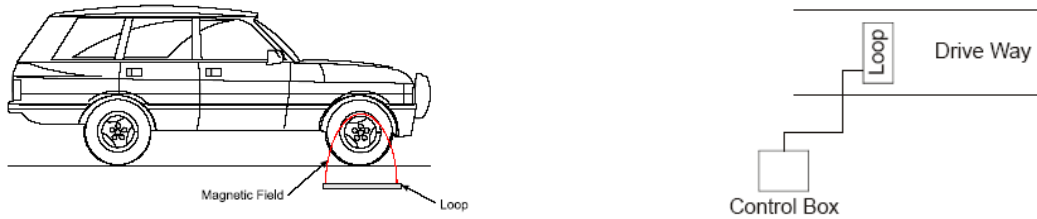


**Pin Designation**

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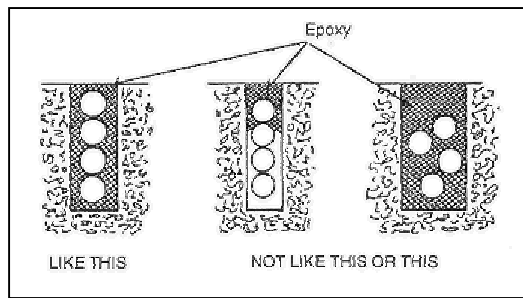
# Inductive Loop Detectors Basic Layout

Inductive loops work by detecting metal objects such as motor vehicles when the frequency of the loop is disturbed by the passing or presence of a vehicle.

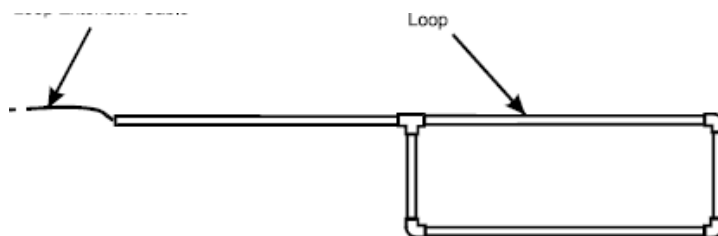


There are two basic ways to form a driveway inductive loop. In both cases the nearest wire to the surface

- 1) A saw cut loop buried directly in the traffic lane and the saw cut filled with a flexible resin. (Typically a concrete or tarmac surface)

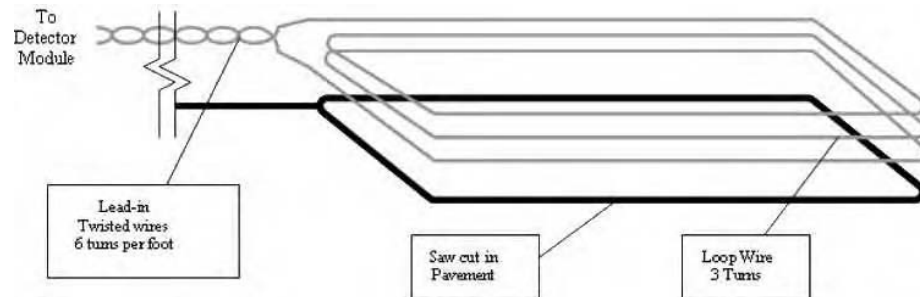


- 2) With a preformed loop made from conduit



The loop itself is a continuous run of wire that enters and exits from the same point.

A typical size of the loop in a single traffic lane would be 2.5m X 1m and the wire should go three or four times around the loop before exiting at the same point.



The two ends of wire that exit the loop and return to the loop control box should be twisted together



Correct way to twist wire



Incorrect way to twist wire

