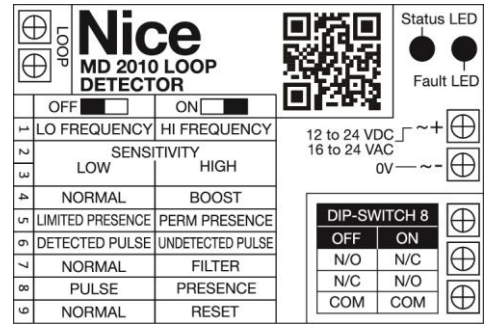




**MD-2010
Metal Loop Detector**



Preparation of the sensing loop:

Sensing loop position:

- A safety loop should be positioned where the largest amount of metal of the vehicle will be present when that vehicle is in the path of the moving gate, door or boom pole. Be aware that metal gates, doors or poles could activate the loop detector if they pass within range of the sensing loop.
- A free exit loop should be positioned +/- one and a half car length away from the gate, door or boom pole, on the approach side for traffic exiting.
- In cases where more than one loop is installed ensure there is at least 2m between the sensing loops to prevent crosstalk interference between the loops. (Also see Dipswitch 1 option and number of turns around the loop below)

Sensing loop dimensions and shape :(Figure 1)

- A square or rectangular slot of +/- 4mm should be cut into the road surface 30 – 50mm deep. (See Figure 2 below)
- The recommended minimum distance between either of the parallel sides is 1m. (See Figure 1 below)
- Cross cut the corners by 45° to prevent damage to the cable as it passes around the corners. (See Figure 1 below)
- The feeder slot will need to be wider to allow for the required twisting of the feeder.

Sensing loop wire:

- Single length copper “Panel Flex” (Stove wire)
- Silicone insulated
- Minimum cross section - 1.5mm².
- Joints in the wire are not recommended. If made they should be soldered and weatherproofed sufficiently.

Number of turns around the loop:

- Loop circumference 7-10m - 3 turns
- Loop circumference >10m - 2 turns
- Loop circumference < 7m - 4 turns
- In cases where 2 loops are adjacent to each other, use 3 turns in one and 4 turns in the other to help prevent crosstalk interference.

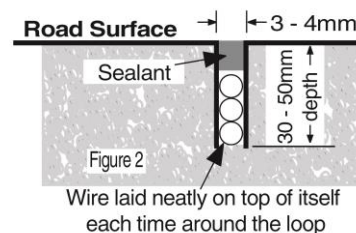
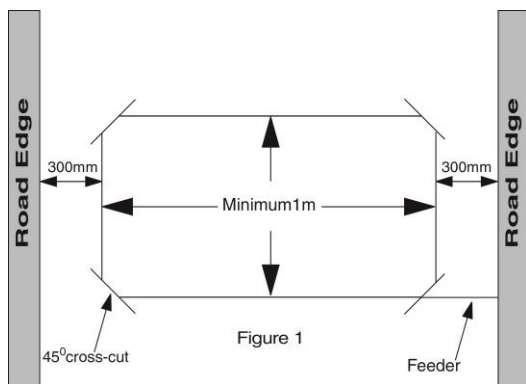
Detector position and installation:

- Install the detector in a weatherproof housing.
- The detector should be as close to the sensing loop as possible.

Installation summary:

Run the single length of wire from the detector, around the loop 3 times (see “Number of turns of loop” above) and then back to the detector. The 2 ends running to the loop and returning from the loop of the same length of cable is known as the feeder and must be twisted together 20 – 30 times per meter. The twisting will shorten the feeder, so allow excess cable when starting out from the detector and on the return from the loop.

Once complete, seal the loop slots with epoxy compound or bitumen filler. (It is recommended this is only done after the detector has been connected and tested).



Outline of the Dipswitch setting options: -

Please note: The MD2010 must be reset using dipswitch 9, after any changes to any of the other dipswitch before testing the new settings.

Dipswitch 1 – Freq. (Frequency):

This setting is used in cases where two or more loop detectors and sensing loops have been installed. (The sensing loops and detectors should be positioned at least 2m apart). Set one detector to HI frequency and the other set to LO frequency to minimize the effects of crosstalk between the two systems.

OFF = Low frequency

ON = High frequency

Dipswitch 2 and 3 – Sensitivity:

This setting determines the necessary change to the loop frequency to trigger the detector, as metal passes across the sensing loop area.

2 OFF and 3 OFF =	Low sensitivity	1% of loop frequency
2 ON and 3 OFF =	Low to Medium sensitivity	0.5% of loop frequency
2 OFF and 3 ON =	Medium to High sensitivity	0.1% of loop frequency
2 ON and 3 ON =	High sensitivity	0.02% of loop frequency

Dipswitch 4 - Boost mode:

If boost mode is ON the detector will immediately switch to high sensitivity once activated.

As soon as the vehicle is no longer being detected the sensitivity reverts back to what has been set on dipswitch 2 and 3.

This mode is used when the height of the undercarriage of a vehicle increases as it passes over the sensing loop.

OFF = No boost active

ON = Boost mode active

Dipswitch 5 – Permanent presence or limited presence mode:

(When presence mode selected. See dipswitch 8)

This setting determines how long the relay remains active when a vehicle is stopped within the sensing loop area.

ON = Permanent presence mode. The relay will remain active for as long as a vehicle is detected within the sensing loop area. When the vehicle clears the sensing loop area, the relay will deactivate.

OFF = Limited presence mode. With **limited presence** mode on the detector will only activate the relay **for 30 min.**

If the vehicle has not moved out of the loop area after **25 min**, **the buzzer will sound** to alert the user that the relay will **deactivate** after another 5 min. Moving the vehicle across the sensing loop area again, after the relay has deactivated, will re-activate the detector for 30 min.

Dipswitch 6 – Relay Response (when):

(Pulse mode only. See dipswitch 8)

This setting determines when the relay will activate.

OFF = PULSE ON DETECT. Relay activates immediately the vehicle is detected in the sensing loop area.

ON = PULSE ON UNDETECT. Relay activates immediately the vehicle leaves the sensing loop area.

Dipswitch 7 – Filter:

This setting provides a 2 sec delay between when the metal object is detected and when the relays activate. This option is used to prevent false activations when small or fast-moving objects pass through the loop area.

This option can be used where an electric fence nearby is the cause of false activations.

If the object does not remain in the area for 2 sec the detector will not activate the relays.

Dipswitch 8 – Pulse mode or Presence mode:

This setting determines how the relay responds to a vehicle standing still within the sensing loop area.

ON = Presence mode. Relay will remain active, as per dipswitch 5 selection, for as long as a vehicle is within the loop sensing area.

OFF = Pulse mode. Relay will activate for 1 sec only on entry or exit of sensing loop area as set by dipswitch 6. To re-activate the vehicle must leave the sensing area and re-enter.

Dipswitch 9 – Reset: -

Please note: The MD2010 must be reset every time a setting change is made to the Dipswitches!

To reset, switch Dipswitch 9 on for approximately 2 seconds and then off again.

The detector will perform the sensing loop test routine after Dipswitch 9 is returned to the off position.

Relay status:

Relay Mode	Stand-by status	Vehicle Present	No vehicle present	Sensing loop faulty	No Power
Presence mode (Dipswitch 8 = On)	N/O	Closed	Open	Closed	Closed
	N/C	Open	Closed	Open	Open
Pulse mode (Dipswitch 8 = Off)	N/O	Pulses closed 1 sec.	Open	Open	Open
	N/C	Pulses open 1 sec.	Closed	Closed	Closed

On power up or dipswitch 9 - reset the following will occur: -

Ensure the sensing loop area has been cleared of all loose pieces of metal, tools and vehicles before powering up or resetting the detector!

Detector auto-tests the sensing loops:

- **Faulty loop – Open loop or loop frequency below 20Khz:**
 - **Fault LED** - 3 flashes, 3 sec pause, 3 flashes, 3 sec pause.....this continues until the faulty loop is corrected and the detector is reset.
 - **Buzzer** - 3 beeps, 3 sec pause, 3 beeps, 3 sec pause.....repeats five times and then silences.
 - If the loop circuit is continuous (measure with continuity meter) then increase the loop frequency by adding more turns of wire.
- **Faulty loop – Short circuited or loop frequency above 120Khz:**
 - **Fault LED** – 6 flashes, 3 sec pause, 6 flashes, 3 sec pause -this continues until the faulty loop is corrected and the detector is reset.
 - **Buzzer** – 6 Beeps, 3 sec pause, 6 beeps, 3 sec pause.....repeats 5 times and then silences.
 - If there is no short circuit in the loop circuit then reduce the number wire turns around the loop to reduce the loop frequency.
- **Good loop:**
 - All three the **Detect LED**, **Fault LED** and the **buzzer** will beep/flash (count) between 2 and 11 times to indicate the loop frequency.
 - 1 Count = 10Khz

For example, 3 counts x 10Khz = Loop frequency of 30 – 40 KHz.

Buzzer and LED indications after initial power up/dipswitch 9 - reset:

After any corrections, reset the loop detector using dipswitch 9.

Detect LED	
Indication	Status
1 x 1 second flash followed by a 1 second pause	No presence of a vehicle (Metal) in the sensing loop area.
On	Vehicle (Metal) detected by the sensing loop.

Fault LED	
Indication	Status
3 x 1 second flashes followed by a 3 second pause.	Sensing loop wire is open circuit or sensing loop circuit is too long. See "Faulty sensing loop" above.
6 x 1 second flashes followed by a 3 second pause.	Sensing loop wire is short circuiting or sensing loop circuit is too short. See "Faulty sensing loop" above.

Buzzer	
Indication	Status
Tones while vehicle (Metal) is in sensing loop area	Audible buzzer confirmation for first 10 activations, feature.
Continuous tone with no vehicle (Metal) in the sensing loop area	Poor connection at either the sensing loop terminals or power terminals.