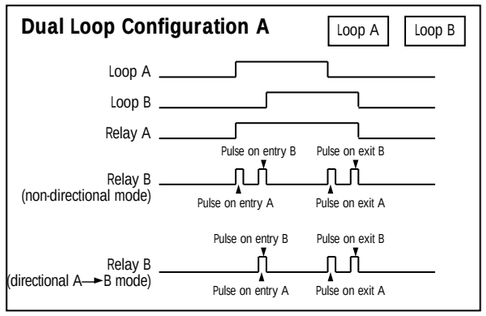
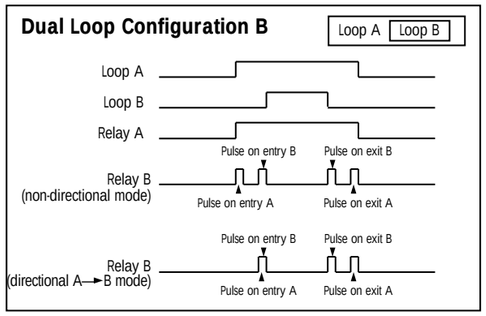
Frequency adjustment for loop A for single loop detector		
Dip Switch #1	**Dip Switch #2**	**Loop frequency**
OFF	OFF	High
ON	OFF	Mid High [High –20%]
OFF	ON	Mid Low [High – 25%]
ON	ON	Low [High – 30%]

Dual Loop Configuration A



Dual Loop Configuration B



LED SIGNAL

- 1 Green LED shows when the module is powered
- 2 Red LEDs give
  - the corresponding loop detection state in normal situation
  - the value of the oscillation frequency measurement or an error message on power ON

In normal situation the red LED stays ON as long as the loop detects any metallic object.

On power ON the sensor measures the oscillation frequency of each loop. The result of this measurement is displayed using the corresponding red LED. The amount of blinking indicates the tens value of the frequency. For example 4 short flashes correspond to a frequency between 40 kHz and 49 kHz. After this message the LED goes back to normal display.
If the loop oscillation frequency falls outside the limits set between 20 kHz and 130 kHz the red LED displays an error message and the sensor activates the corresponding relay. The blinking frequency shows the type of error according to the next table. The sensor will stay in this state until the problem is cleared and the frequency goes to the right range.

Remark : The sensor launches automatically a learning process if the oscillation frequency changes more than 10% in comparison with the measurement value.

Loop frequency error	LED display
Oscillation frequency too LOW or loop open	LED blinking at 1Hz
Oscillation frequency too HIGH	LED blinking faster at 2 Hz
Loop shorted or no oscillation	LED blinking slower at 0.5 Hz

TROUBLE-SHOOTINGS

SYMPTOM	PROBABLE CAUSE	CORRECT ACTION
The loop detector will not work The green LED is off	There is no power supply to the loop detector	Check power supply
The loop detector will not work The red LED is flashing slowly (0.5 Hz)	The corresponding loop is shorted	Check the loop cable
The loop detector will not work The red LED blinks at either 1Hz or 2Hz	The frequency of oscillation falls outside the allowed range	Adjust frequency with dip switches or change loop turns
The loop LED is detecting properly but the contact is not made	Bad connection of the relay contacts	Check relay connections
Dip switches 5 to 8 are not responding properly	Their function varies according to dip switch #10 setting	Check the appropriate loop mode required and adjust dip switch #10

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ⓘ The declaration of conformity and other technical documentation are available on our website or can be requested by phone or mail.

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MATRIX USER'S GUIDE

DIGITAL INDUCTIVE LOOP SENSORS

APPLICATIONS

The MATRIX Digital Inductive Loop Detector range is the ideal solution for parking barrier control, motorized gates and doors, vehicle access control and industrial control systems.
The MATRIX range is a high performance single or dual channel vehicle detector packaged in a compact housing, the connection is made with an industrial standard 11-pin round connector.
Six versions listed below are available, single or dual channel, and 3 possibilities for the power supply :

- **MATRIX-S110** : Single loop detector with 110 to 120 V AC power supply
- **MATRIX-S220** : Single loop detector with 220 to 240 V AC power supply
- **MATRIX-S12-24** : Single loop detector with 12 to 24 V AC/DC power supply
- **MATRIX-D110** : Dual loop detector with 110 to 120 V AC power supply
- **MATRIX-D220** : Dual loop detector with 220 to 240 V AC power supply
- **MATRIX-D12-24** : Dual loop detector with 12 to 24 V AC/DC power supply

TECHNICAL SPECIFICATIONS

Technology	inductive loop
Tuning	automatic
Detection mode	presence
Presence time	1 min to infinity (permanent presence) with 250 steps
Pulse time output	100 ms or 500 ms
Inductance range	20 µH to 1000 µH
Frequency range	20 kHz to 130 kHz
Frequency steps	4 for single loop 2 for dual loop (for each loop)
Sensitivity (ΔL/L)	0.005% to 0.5% with 250 steps
Reaction time	25 ms for single loop 50 ms for dual loop (each channel)
Power supply (depending on model)	12-24 AC/DC ±10% 230 V AC ±10% 90 ----> 125 V AC ± 0%
Mains Frequency	48 to 62 Hz
Power Consumption	< 2.5 W
Storage temperature range	–30°C to +70°C
Operating temperature range	–30°C to +40°C
Degree of protection	IP40

2 Output relays (free potential change-over contact)

- max contact voltage : 230 VAC
- max contact current : 5A (resistive)

LED indicators

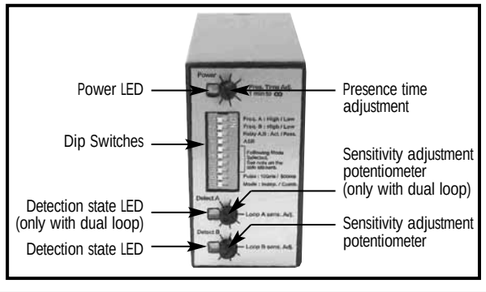
- 1 green LED : power
- 1 red LED : Loop status 1
- 1 red LED : Loop status 2

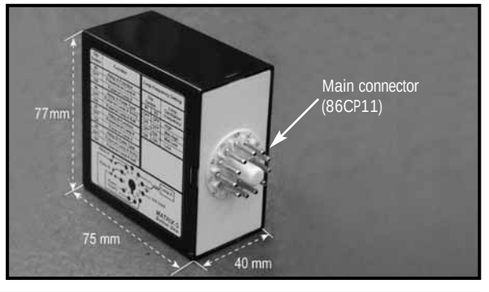
Protections

- loop insulation transformer
- zener diodes
- gas discharge clamping

Connection	standard 11-pin round connector 86CP11
Dimensions	77mm (H) x 40mm (W) x 75mm (D)
Weight	< 200gr
Product compliance	R&TTE 1999/5/EC EMC 2004/108/EC UL listed equipment for UL 508

DESCRIPTION OF THE SENSOR



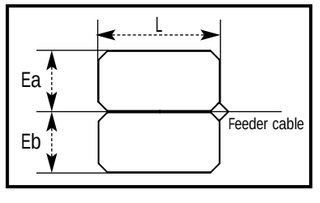


LOOPS INSTALLATION TIPS

A. CABLE SPECIFICATIONS FOR LOOP AND FEEDER

- 1.5mm² cross section area
- Multi-strand cable
- Insulation material : PVC or Silicone
- For the feeder cable, the wire must be twisted at least 15 times by meter
- Feeder for long runs used for foil screened cable is recommended (earth at equipment end only)
- The feeder cable must be firmly fixed to avoid any false detection (max length : 100 m)
- Waterproof cable junction box is required

B. LOOP GEOMETRY



- With two adjacent loops connected to a dual channel sensor, it is possible for these loops to share a common slot, if so required.
  As the channels are multiplexed, no interference will occur
- Avoid large loops or long feeder (max 100 m), the sensitivity will be affected

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