433 MHz Wireless Magnetic Field Vehicle Detector

Model – **MD360P** *PUCK* & **MD360C** *CONTROLLER*

The **MD360P (Puck)**

Combines a magneto resistive sensor with a low power battery operated radio transceiver. This combination results in a self-contained wireless vehicle detector that does not require a loop or any cables to be run to it making installation times quicker.

The Puck's sensor detects changes in the earth's magnetic field due to the presence of a vehicle, which results in a detect signal being output to the MD360 Controller.

The Puck has been designed to be buried in the road surface underneath the vehicle path. It is suitable for installation in any stable surface (bitumen, concrete, compacted earth etc.) and can be easily installed into a 70mm core drilled hole.

The **MD360C (Controller)** is a wireless control unit which enables configuration and output of the **MD360P**. DIP switches are used for configuration and LED's are used for visual indication of the operation of the Puck. A relay output switches ON when a vehicle is detected.

The **MD360** series has been designed for parking and access control applications and is a cost-effective wireless solution for detecting vehicles in order to facilitate the automatic opening of security gates. It requires a minimal amount of cutting in the road surface to install.

Features

Wireless connectivity. ● Up to 50 meters range **(Line of Sight).**

● ETSI EN300-220 Compliant for use in Africa/Australia/Europe/NZ/UK

Battery Life (MD360P only). Up to 5 years battery life @ 25℃ (Calculated @ 1 detect per minute).

Reset Switch. ● Reset the Puck from Controller (Puck adjusts to the environment becoming ready for vehicle detection).

● Easily pair Puck to Controller (Note: Only one puck can be paired to a controller at one time).

Switch selectable Sensitivity. Two sensitivity settings are available on the switches to allow for flexibility in configuration.

Filter Option. Prevent false detection of small or fast-moving objects.

Relay Mode. Configure the relay to operate in presence or pulse mode.

Pulse Relay Selection. Configure relay to pulse on vehicle detect or undetect.

Motion Filter. Only trigger output once the vehicle has stopped moving for at least 1 second.

Presence settings. While in detect, puck will reset after selected timeout: *5min, 30min, 2hr and no-timeout.*

Technical Specifications – MD360C (Controller)

Power supply	12 - 24VAC/DC 50/60Hz 45mA
Radio Specifications	Frequency: 433.92 MHz Power: 10 dBm Modulation: 2FSK Bandwidth: 250 kHz Antenna: 1.8 dB Dipole Antenna (Supplied with controller)
Presence/Pulse Relay	Change over contact 0.5A/220VAC
Response time	Approximately 1s after vehicle enters Puck area.
Indicators	LED indicators show: Power, Detect and Reset State.
Connector	5 Way Screw terminal block.
Dimensions	105mm X 90mm X 22mm
Operating Temperature	-20°C to +70°C
Storage Temperature	-40°C to +85°C

Indicators

Power Indicator. This LED Indicator illuminates when power is present, flashing indicates that the connected Puck has a low battery voltage.

Detect Indicator. This LED Indicator is illuminated when there is a vehicle present, flashing indicates the device is in pairing mode.

Reset Indicator. This LED Indicator flashes to indicate that the Puck is currently being reset.

Switch Settings – MD360C Controller

MD360C Switch Settings					
Switch No.	**Function**	**ON**		**OFF**	
		∞	2hr	30m	5m
10	Presence	On	On	Off	Off
9	Presence	On	Off	On	Off
8	Motion Filter	On		Off	
7	Relay Mode	Pulse		Presence	
6	Pulse Mode	Undetect		Detect	
5	Filter	2 Second		Off	
4	Sensitivity	Low		High	
3	N/A				
2	N/A				
1	N/A				

Wiring Connections – MD360C Controller

Screw Terminal	Description
1	Power Supply 0V
2	Power Supply +V
3	Relay Normally Closed N/C
4	Relay Common COM
5	Relay Normally Open N/O

Technical Specifications – MD360P (Puck)

Power	1x 3.6V 9000 mAh Li-SOCL2
Radio Specifications	Frequency: 433.92 MHz Power: 10 dBm Modulation: 2FSK Bandwidth: 250 kHz Antenna: PCB Trace
Battery Life	Up to 5 years at 1 detect per minute.
Response time	Approximately 1s after vehicle enters Puck area.
Sensing Distance	The Puck should be placed in the ground under the vehicle. Maximum Sensing distance is 1.5m approximately.
Environmental tracking	Automatic Compensation
Dimensions	Ø 64mm X 38mm
Weight	160g
IP Rating	IP68
Operating Temperature	-20°C to +70°C
Storage Temperature	-40°C to +85°C

Installation

The MD360 PUCK has a 1.5m sensing range, best detection results are obtained when the PUCK is mounted underneath and as close to the vehicles path as possible. The PUCK can be mounted as follows:

1. Buried in the ground alongside the passage of the vehicle.
2. Buried in the road beneath the vehicle.

Note: Battery should face downwards.

It is important that the PUCK does not move during normal operation. Any movement will result in the PUCK giving a false detection output. It is important to ensure that the tyres going over the PUCK do not put any downward pressure on the PUCK, any movement of the PUCK will result in a false detection. When burying the PUCK, ensure that the fill material is concave so that it does not come into contact with the tyre of the vehicle (See figure 1 below).
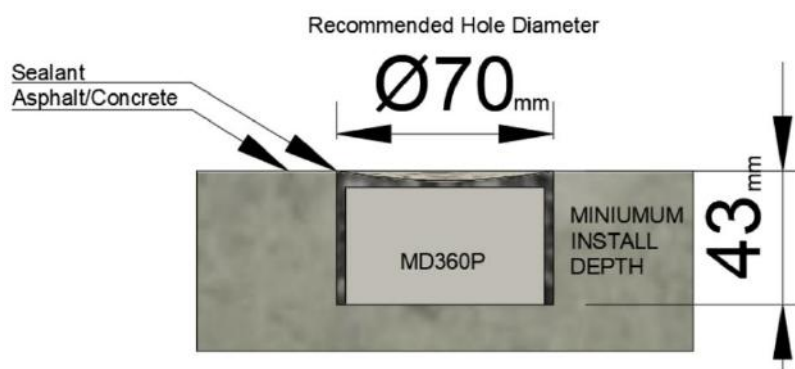

Figure 1: Installation of the Puck

Installation steps:

Step 1: *Turn on the puck before installing:* The puck is shipped in a low power mode, to wake up the puck place the supplied magnet over the magnet indentation on the top of the puck, after 1s the magnet can be removed.

Step 2: *Install the puck into the road surface:* Ensure that the puck is installed within 1,5m of the vehicles path to ensure correct operation. The puck can be installed into a Ø70mm hole, ensure that the hole is at least 43mm deep such that the puck is below the road surface. Secure the puck in place using a suitable sealant.

Step 3: *Installing the Controller:* Mount the controller into a weatherproof enclosure. Connect wiring as per wiring connections table. The controller is supplied with a swivel stick antenna, the antenna can be connected directly to the controller, alternatively a chassis mount antenna could be installed (1.8dB Gain Max).

Step 4: *Pairing the Puck to the Controller:* Apply power to the controller and ensure that the power LED is on. To enter pairing mode, press and hold the reset switch until the detect LED starts flashing (approx. 10 seconds). When the controller receives a response from a puck whilst in pairing mode it will automatically pair that puck to the controller. The detect LED will stop flashing when paired, if the detect LED has stopped flashing but is on, then follow step 5 to reset the puck.

Step 5: *Resetting the puck:* pressing and holding the reset switch for 2 seconds will cause the puck to be manually reset, during this stage it is important to ensure that there is no ferrous objects within the sensing range of the puck. The reset LED will stop flashing once the puck has been reset. The puck is now ready for use.

Note: Only one puck can be paired to a controller at one time, to change which puck is paired follow step 4 again. Pairing can take up to 2 minutes for the Puck to respond to the controller.

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 controller. (Terminals 1 and 2)
The POWER LED is flashing	The PUCKS battery voltage is low and will need to be replaced.	Order replacement MD360P.
The DETECT LED stays on.	Local environmental change.	Re-calibrate the PUCK by pressing the reset button.
The DETECT and RESET LED's are alternatily flashing	The Controller has lost comms with the PUCK. There is possible radio interference.	Try moving the Controller closer to the PUCK.
The signal range is too short	This could be due to attenuation of the signal if the controller is mounted in a metal enclosure.	Try changing the antenna direction or relocate the antenna to the outside of the cabinet using a relocation kit (not supplied with controller).

Order Codes

Order Code	Description
MD360P	MD360 433MHz Wireless Magnetic PUCK
MD360C	MD360 433MHz Wireless Controller Unit

Contact Details

PCE PROCON ELECTRONICS

Refer to our web site for distributor details.

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