MetroCount®

RoadPod® VM User Manual

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Introduction to the RoadPod VM

The RoadPod® VM is a new, patented traffic monitoring system that uses small, unobtrusive magnetometers that are solar powered to provide real-time data on traffic movements. The sensors work in an array, together with a real time gateway on the side of the road to accurately count vehicles, monitor speeds and classify vehicle type based on the length of each passing vehicle.

The RoadPod VM was the result of over 8 years of research and development and is continually being improved by MetroCount engineers. The recommendations in this user manual are based on current best practices, however, are subject to change at anytime.

Choosing optimal location for RoadPod VM sensors

Before installation, ensure the planned location adheres to the following requirements:

- Is a straight, relatively flat section of road.

- The road has good lane-discipline.

- When installed, each sensor must have access to a minimum of 1 hour of direct sunlight per day. This ensures charge maintenance to run 24/7.

- There must be a low chance of vehicles stopping over the sensors for more than approximately 5 minutes.

- The sensors and real-time gateway (RTG) must be able to be installed within 50-60 metres or 165-195 feet of each other and without any radio obstructions between them (such as concrete barriers or steel railings).

- For contingency MetroCount recommends installing 4 RoadPod VM sensors per traffic lane to ensure accuracy and reliability. A minimum of 3 sensors is required.

Choosing optimal location for Real Time Gateway
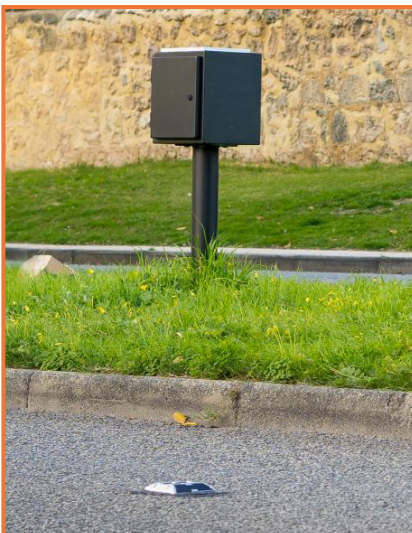
- Must be within 60 metres or 195 feet of the RoadPod VM sensors.

- Must be elevated higher than the sensors.

- Must be in full sunlight for the majority of the day.

- Avoid installing the gateway close to metal side rails, fences or other large metal objects. If this is unavoidable, a pole mounted cabinet is required.

- MetroCount can supply an aluminium cabinet to mount on existing pole/s and solar panel/s.

Installation requirements

- 8m / 26 ft measuring tape
- Chalk sticks
- Broom or leaf blower
- Gas powered torch
- Laser thermometer
- Mounting pads
- RoadPod® VM sensors
- Additional tools may be required for cabinet and solar panel installation

110mm
20mm
110mm
Weight: ≤350g
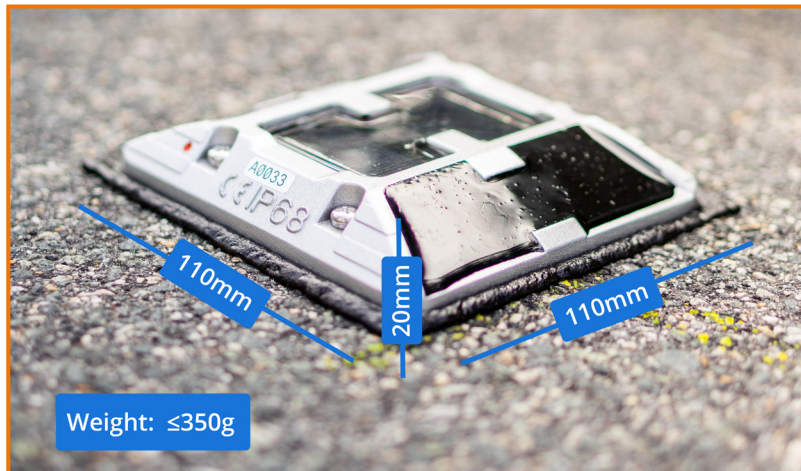
Recommendations

Store mounting pads indoors at between 2-35°C / 36-95°F. Packaging should be kept flat to avoid pad deformation.

Head to MetroCount's YouTube channel for further video guidelines on how to install the RoadPod® VM sensors.

Safety precautions

MetroCount recommends using safety equipment and procedures for hot surfaces. At the least, protective clothing should be worn at all times during installation. This consists of leather boots, gloves, long pants, high visibility vests and safety goggles or a face shield.

Avoid all contact with hot mounting pad material and hot parts of the gas torch.

If you get molten pad material on your skin, flush the area immediately with cold water and seek medical treatment. Do not attempt to pull the molten material off your skin.

How to install RoadPod® VM sensors

Heat to 140°C / 285°F

Heat again to 240°C / 465°F before installing the sensor

1. Mark the leading edge of each sensor position in the centre of the traffic lane with chalk.

2. Use the below spacings between sensors for each speed bracket:

Speed (kms)	Spacing between sensors	Speed (miles)	Spacing between sensors
≤60kph	3m	≤35mph	9ft
>60kph to <100kph	4m	>35mph to <60mph	12ft
≥100kph	6m	≥60mph	18ft

3. Clear the lane of loose material to allow for proper bonding of the mounting pad.

4. Heat the road surface around where each sensor will be installed to **140°C / 285°F** with a gas burner. Ensure all corners of the spot on the road are heated.

5. Place two mounting pads together on the heated area to create a square, ensuring correct spacings are maintained and the pads are aligned with the direction of the road.

6. Use the gas burner to heat the mounting pad to a final temperature of **at least 240°C / 465°F.** When the pad is sufficiently heated it should have a viscus liquid appearance and may emit a small amount of smoke. The pad must 'melt' into all grooves/cracks on the road to ensure longevity of the installation.

7. Ensure the side of the RoadPod® VM that reads "SOLAR" is facing the road edge/kerb. Then place it onto the centre of the heated pad, leaving a small amount of pad protruding evenly around the edges.

8. Apply some pressure on the RoadPod® VM by gently standing on it, ensuring alignment is maintained.

9. This process should not take longer than 1-2 minutes per sensor. Drying time is 10-15 minutes. If lane discipline is good (vehicles do not drive on sensors), sensors are ready for use immediately.
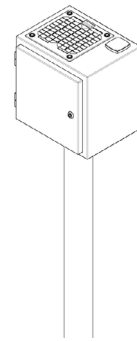
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Real Time Gateway (RTG) cabinet options

Pole-mounted cabinet

or

MetroCount pedestal cabinet
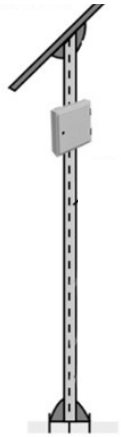
- Solar panel facing the sun. *(Minimum 40W).*
- MetroCount pole mounted cabinet.

        or

- You supply a mounted cabinet.
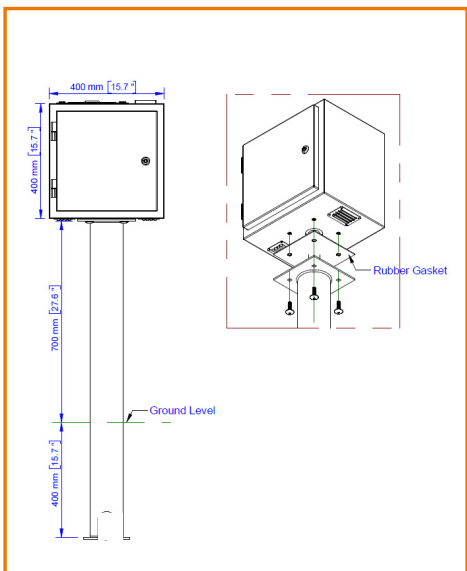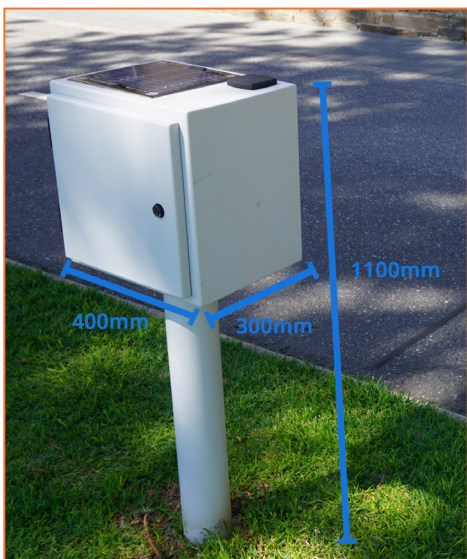

400mm

204mm

300mm

MetroCount pole mounted cabinet

Client supplied solar panel and cabinet housing the RTG

How to install RoadPod® VM Real Time Gateway (RTG)

1100mm
400mm   300mm

1. Install the MetroCount pedestal cabinet in the ground with concrete footings. See diagram at bottom left of this page for details.

2. If installing a pole mounted cabinet, follow installation specifications from the supplier.

3. Connect the RoadPod VM Remote Access Module to the solar panel, 12V battery (preferably lithium) and puck antennas as per the diagram below.
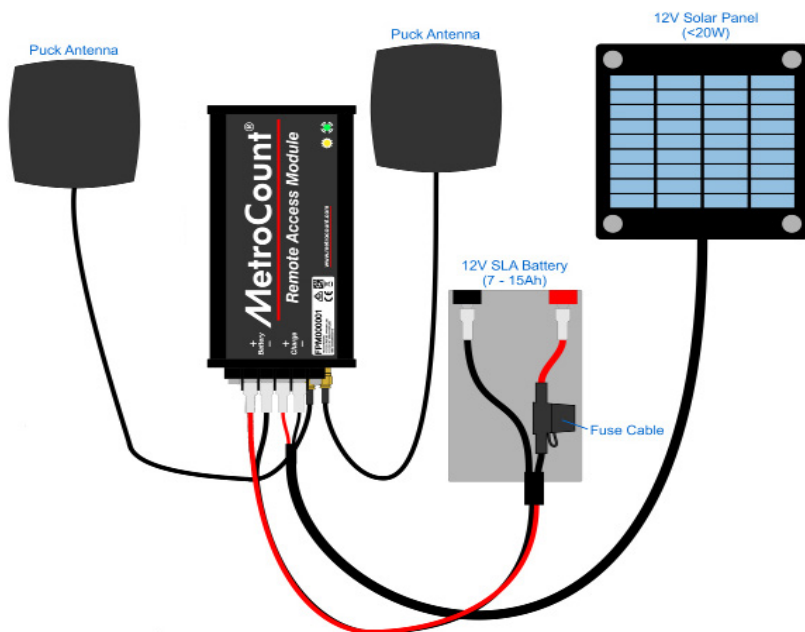
4. After installation of both the sensors and RTG, **swipe over the sensors with a magnet** to activate them.

5. Complete the installation form on the last page of this document and send to info@metrocount.com for final commissioning.

6. Set up or log into your ATLYST® account to verify data is being recorded.

7. Call the appropriate phone number from the front page of this document or email info@metrocount.com for support during installation.

MetroCount pedestal cabinet installation details

How to view data collected by the RoadPod® VM
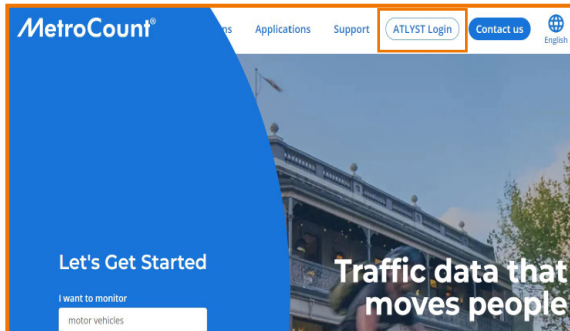
1. Go to metrocount.com and select *ATLYST Login* in the top right-hand corner.

2. Input your username and password and click *Login*.

3. You will be taken to your organisation's map of all traffic data collection sites. To view RoadPod VM sites only, click on the *Filter sites by type* icon and deselect *TEMPORARY* and *CONTINUOUS* in the *Collection frequency* section.
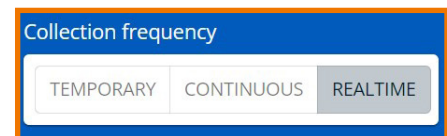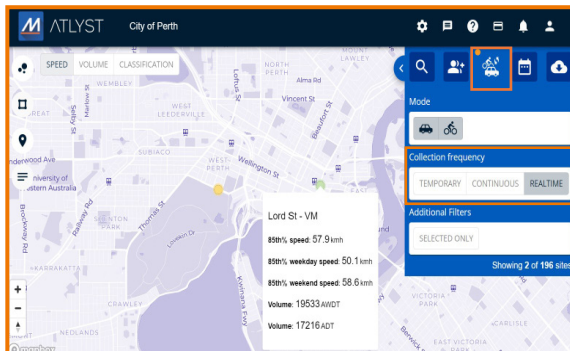
4. You can then select each individual RoadPod VM site or compare data from multiple sites.

How to remove RoadPod® VM sensors

Removing the RoadPod VM sensors is not normally recommended. However, if required, please follow the below steps:

1. Place a metal crowbar against one corner of the RoadPod VM sensor. The point of the crowbar should be positioned between the metal housing of the VM sensor and the adhesive pad.

2. With a hammer tap the crowbar until the sensor comes loose. This shouldn't require excessive force but must be done firmly.

3. Remove sensor and leave adhesive pad on the road.

4. If you have any difficulties removing your RoadPod VM sensors, please email info@metrocount.com or call the appropriate number on the front page of this document.

Sensors	
Type	3-Axis digital magnetometer (magneto-impedance).
Dimensions	• RoadPod VM: 110mm x 110mm x 20mm / 4.33" x 4.33" x 0.78" • RoadPod VM-I: 139mm diameter x 7mm / 5.47" diameter x 0.27"
Weight	• RoadPod VM: 350g / 12.35oz • RoadPod VM-I: 700g / 24.7oz
Material	ADC10 Aluminium
Load Bearing	> 320kN
Ingress Protection	IP68
Working Life	> 3 years
Operating Time	• Continuous (24/7 within latitudes 45°S to 45°N) • > 30 days (with no solar / 25°C road surface temperature)
Operating temparatures	-30°C to 80°C / -22°F to 176° F
Solar Panel Type	A-grade monocrystalline, high efficiency
Battery Type	LiFePO4
Max Transmit Power	25mW

Cabinet		
Pole-mounted option	**Dimensions**	400mm x 300mm x 200mm / 15.75" x 11.81" x 7.87"
	Material	Aluminium
Pedestal option	**Dimensions**	400mm x 300mm x 1100mm / 5.75" x 11.81" x 43.30"
	Material	Aluminium with embedded solar panels

Real Time Gateway (RTG)		
Battery	**Type**	SLA or LiFePO4 (Lithium Iron Phosphate)
	Voltage	12V
	Recommended Capacity	18Ah
	Working Life	> 3 years
Remote Access Module	**Bands**	ISM 915MHz / SRD 868MHz
	Max Transit Power	500mW
	Typical Communication Range*	50-60m / 165-195ft
	Memory	• Unlimited (with sufficient Cloud connectivity) • 250K vehicles (with no connectivity)
	Max Sensors	Compatible with 24 sensors at any one time
Solar Requirements	**System Voltage**	12V
	Output Power*	20W / 40W depending on cabinet type and location

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RoadPod VM site installation information:

1. Site name: _____

2. Site coordinates: _____

3. Complete the diagram below with the correct sensor spacings in millimetres, and names using the following naming convention: **DIRECTION** (use the closest cardinal direction eg: N for north), **LANE NUMBER** (with lane 1 being closest to the curb/road edge), **SENSOR LETTER** (with sensor A being the first passed by a vehicle and sensor D being the last). Example: W1A. Cross out any lane that is not relevant for this site location.
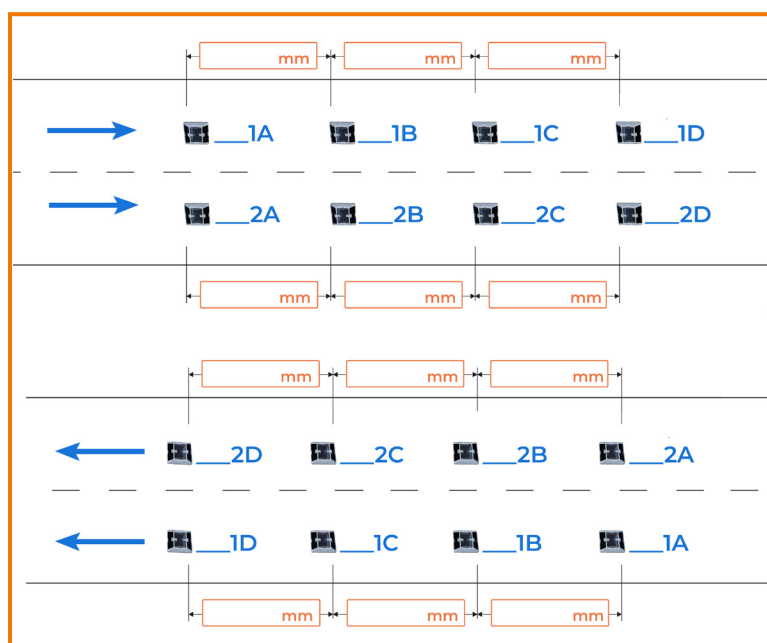
4. Complete the table below using the sensor labels from the above diagram and the serial numbers found on the side of each sensor:

Sensor Name	Serial number	Sensor Name	Serial number
___1A		___1A	
___1B		___1B	
___1C		___1C	
___1D		___1D	
___2A		___2A	
___2B		___2B	
___2C		___2C	
___2D		___2D	

5. Date and time of installation: _____

6. Installation supervised by: _____

7. Send completed form along with a satellite image of the location to info@metrocount.com.