



## **Count + Passive Infrared Traffic Monitoring System**

### **Description**

SpeedInfo's PITCS-100 Passive Infrared Traffic Count System is a very low power, non-intrusive traffic monitoring system. Solar powered with an integrated battery backup, the PITMS-100 integrates new functionality into a single device:

- Vehicle counts by lane
- Vehicle classification by lane
- Vehicle speed measurement by lane
- Occupancy by lane
- Road surface temperature measurement
- Pictures-on-demand with optional VGA camera

The PITMS-100 uses a 60x80 array of passive-infrared detectors to measure the radiated heat of objects as they pass through the detection zone. Using the size of the detected objects, their location within the array of detectors, and the number of frames that are taken while the object is within range, it can calculate count, classification, speed, and occupancy by lane.

By measuring background heat, it can measure the temperature of the road surface. This is particularly useful in areas where snow removal is important, and allow the DOT to deploy snow removal equipment to the most critical areas, and bypass areas where the snow is melting.

The sensor uses a cellular modem to backhaul data and provide regular measurements about its status. The traffic data is transmitted to the DOT over a secure XML link, and a simple database query can reveal any sensors that need maintenance.

The optional VGA camera is no less revolutionary. Most traffic cameras today take lots of power and require either a dedicated hardwired data connection or a large pocketbook to pay the cellular bill. The SpeedInfo camera is programmable and linked to the traffic sensor. The DOT can request pictures on demand when investigating incidents, or ask that the sensor automatically raise an alert and send a picture if traffic conditions suddenly deteriorate.

# Specifications

## Coverage

- Range up 4 lanes (unidirectional or bidirectional)
- Installs on existing infrastructure – no new poles
- 1 hour installation time
- Configurable coverage areas to suit specific installation requirements

## Communication

- Real-Time Traffic Information reporting
- 3G wireless modem data backhaul
- Adaptive traffic speed reporting (Variable reporting schedules based on congestion level)
- Full duplex/Bi-directional

## Measurement

- Bi-directional data collection
- Configurable data reporting frequency
- Vehicle count accuracy 1.8%
- Vehicle classification by length class (under 4 meters, 4-6 meters, 7-10 meters, over 10 meters)
- Correct lane detection >90%
- Speed accuracy +/- 3mph
- Road temperature +/- 1 degree C

## Mechanical

- Enclosure
  - Anodized aluminum extrusion, 10" long
  - Bright White Powder Coat
  - 4" tube diameter (.10m)
  - Visor 21" long
- Weight
  - 15kg (33 lbs) with mounting bracket and 30W solar panel
  - 2<sup>nd</sup> solar panel & battery required in northern US

## Camera

- 2.5" x 3.75" x 4.5" aluminum enclosure
- Bright White Powder Coat
- Aimed independently from PITMS-100
- VGA resolution (640x480)
- Pictures on demand
- Pictures on incident
- Pictures sent by onboard cellular link
- -20C to +70C operating temperature range

## FCC

- Part 15 certification pending

# Specifications (continued)

## Environmental

- Operating temperature -20C to +70C
- Shock and vibration
  - Shock of 5g to 10mSec half sine wave
  - Vibration of 2g up to 200Hz

## System Power

- Power usage 1.1w (average)
- Battery and charge system
  - 12V 24 Amp hour sealed lead acid battery
  - 5 year battery life
- Solar panel charging system
  - 30 Watt solar panel (6" wide x 60" long)
  - Approximately 2.5 sq. ft. in total area
  - Designed to maintain battery charge, even on cold, cloudy winter days
- AC power option available at a discount

## Reliability

- MTBF greater than 60,000 hours

## Serviceability

- On board diagnostics/self-test
- Over-the-air software updates (No service calls)