

# Miovision Opticom® GPS-enabled vehicle equipment



The Opticom GPS-enabled system assists authorized priority vehicles through signalized intersections by providing temporary right-of-way through the use of common traffic controller functions.

The Opticom GPS-enabled system consists of the following matched components:

## Vehicle Equipment

- Opticom 2100 high priority radio/GPS control unit  
–OR–  
Opticom 2101 low priority radio/GPS control unit
- Opticom 1050 GPS/radio antenna
- Opticom 2171 vehicle interface cable
- Opticom 3100 GPS radio unit containing a GPS receiver with antenna and a 2.4 GHz spread spectrum transceiver with antenna  
–OR–  
Opticom 3101 GPS radio unit containing a GPS receiver and a 2.4 GHz spread spectrum transceiver, with Opticom 1050 GPS/radio antenna and Opticom 1072 GPS cable assembly
- Opticom 764 multimode phase selector
- Opticom 768 auxiliary interface panel
- Opticom 1040 GPS card rack or Opticom 760/770 card rack
- Opticom 1070 GPS installation cable

Opticom GPS-enabled vehicle equipment is mounted on the priority vehicle. Its GPS receiver obtains information from the constellation of global positioning satellites. This information is used to compute the location, speed and heading of the vehicle. This information, along with a priority request and the state of the vehicle's turn signal, is broadcast using the 2.4 GHz spread spectrum transceiver.

Opticom GPS-enabled system intersection equipment receives the radio transmission from the vehicle equipment. The intersection equipment then compares the information being received from the vehicle with the parameters stored in

the intersection equipment's memory. If the vehicle is heading toward the intersection in a predefined approach corridor, is requesting preemption or priority and has met all other programmed parameters, the corresponding phase selector output is activated. This output is connected to the traffic controller.

When activated, the controller cycles to grant a green light to the requesting vehicle or holds the green, allowing the vehicle to pass through the intersection.

The Opticom 760 card rack or Opticom 770 gate opener provide the power and logic wiring for the Opticom 764 multimode phase selector, which plugs directly into a slot in the unit. The Opticom 768 auxiliary interface panel provides connections for monitoring green phases and provides additional priority control outputs as well as additional outputs for time synchronization and confirmation lights.

## Features

Opticom GPS-enabled system vehicle equipment is intended for use on priority vehicles. The vehicle equipment kit consists of the compact Opticom 2100 or 2101 Radio/GPS control unit containing a GPS receiver and a 2.4 GHz spread spectrum transceiver, used with the Opticom 1050 GPS/radio antenna and the Opticom 2171 vehicle interface cable.

Opticom GPS-enabled vehicle equipment has the following features:

- Operates on 10–36 VDC
- Vehicle interface inputs 10–36 VDC
- Less than 2 amps peak current draw
- Configurable turn signal sense inputs with multiple activation options
- Speed pulse sense (future)
- Reverse/Neutral sense (future)
- 4 configurable outputs (future)
- 2 configurable inputs (future)
- Status indicators
  - On/Off switch
  - Status
  - Radio
  - Link
  - Priority
  - Disable
- Brightness level of indicators is photosensor controlled with separate settings for day and night

- Capability to control an Opticom IR emitter through a single control module
- Meets FCC part 15 Class A specifications
- Option to add dead reckoning unit (future)
- Additional GPS output in NMEA format for other onboard uses
- Vehicle identification encoding; selectable at installation
- 25-foot interface cable for installation flexibility
- Adapter available for upgrading from previous generation equipment without rewiring
- Available Windows configuration and maintenance software
- Configurable operating mode of disable input
  - Latching or non-latching
  - Disable trigger method
  - +12 VDC to ground
  - Ground to +12 VDC
- Configurable remote activation mode
  - Apply+ 10–36 VDC
  - Apply + 5VD
  - Apply ground
- Configurable activation method
  - Light bar and/or manual
- Accepts passenger count, and minutes late conditional priority input via J1708 from compatible onboard devices such as AVL and passenger counters.
- Internally records each system activation. Each entry contains:
  - Intersection name
  - Date and time of the activity
  - Vehicle class code vehicle ID, Agency ID
  - Channel called
  - Priority of the activity
  - Duration of the activation
  - If preempt requested, and reason if not
  - Turn signal status at the end of the call
  - Entry, exit and average speed
  - Relative priority level
  - Conditional priority level

## Operating Parameters

- Temperature: -34°C to +74°C (-30°F to +165°F)
- Humidity: 5% to 95% relative
- High or low priorities selected by model
- User-programmable vehicle ID code, which is transmitted to intersection equipment
  - 254 agency IDs
  - 15 vehicle classes
  - 9999 vehicle IDs
  - Over 38 million combinations per priority level
- User-programmable reference vehicle name (up to 40 characters)
- Self-diagnosis
- Non-obstructed transmission at least 2,500 feet (762 m)
  - Turn signal monitoring transmitted to intersection
  - RS485/J1708 serial interfaces
  - GPS data output
  - Ethernet port
  - USB Port
  - RS-232 serial port

## Physical Dimensions

### Opticom 2100 or 2101 radio/GPS control unit

Length: 7.25 in. (18.4 cm)

Width: 5.44 in. (13.8 cm)

Height: 1.63 in. (4.1 cm)

Weight: 1.2 lb. (0.5 kg)

### Opticom 1050 GPS/radio antenna

Diameter: 2.85 in. (7.2 cm)

Height: 1.4 in. (3.5 cm)

Cable Length: 15.0 ft. (4.6 m)

Weight with Cables: 0.6 lbs. (0.30 kg)



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