



Global Traffic
Technologies

Opticom™ GPS System Vehicle Equipment

Opticom™ GPS System Matched Component Products

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Description

The Opticom™ GPS 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 system consists of the following matched components:

Vehicle Equipment

- Opticom™ Model 1012 GPS Radio Unit containing a GPS receiver and a 2.4 GHz spread spectrum transceiver, with Opticom™ Model 1050 GPS/Radio Antenna and Opticom™ Model 1072 GPS Cable Assembly
- Opticom™ Model 1020 GPS Vehicle Control Unit (high priority)
–OR–
Opticom™ Model 1021 GPS Vehicle Control Unit (low priority)
- Opticom™ Model 1071 GPS Vehicle Interface Cable
- Opticom™ Model 1070 GPS Installation Cable

Intersection Equipment

- Opticom™ Model 1010 GPS Radio Unit containing a GPS receiver with antenna and a 2.4 GHz spread spectrum transceiver with antenna
–OR–
Opticom model 1012 GPS radio unit containing a GPS receiver and a 2.4 GHz spread spectrum transceiver, with Opticom model 1050 GPS/radio antenna and Opticom model 1072 GPS cable assembly
- Opticom™ Model 1000 GPS Phase Selector
- Opticom™ Model 1040 GPS Card Rack
- Opticom™ Model 1030 GPS Auxiliary Interface Panel

- Opticom™ Model 1035 GPS Green Sense Harness
- Opticom model 1070 GPS installation cable

Opticom GPS system 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 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



Opticom™ Model 1071 GPS Vehicle Interface Cable, Opticom™ Model 1020 or 1021 GPS Vehicle Control Unit, Opticom™ Model 1050 GPS/Radio Antenna and Opticom™ Model 1012 GPS Radio Unit

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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™ Model 1040 GPS Card Rack provides the power and logic wiring for the Opticom™ Model 1000 GPS Phase Selector, which plugs directly into a slot in the unit. An alternate external power supply may be needed for use in cabinets with pre-wired priority control slots that do not have +24 VDC available and do not use the Opticom model 1040 GPS card rack. The Opticom™ Model 1030 GPS Auxiliary Interface Panel provides connections for monitoring green phases and provides additional priority control outputs.

The Opticom™ Model 1035 GPS Green Sense Harness can be used to provide connection for monitoring green phases when the Opticom model 1030 GPS auxiliary interface panel is not required.

Features

Opticom™ GPS System vehicle equipment is intended for use on priority vehicles. The vehicle equipment kit consists of 1) the compact, RF-energy-emitting Opticom™ Model 1012 GPS Radio Unit containing a GPS receiver and a 2.4 GHz spread spectrum transceiver, used with the Opticom™ Model 1050 GPS/Radio Antenna and Opticom™ Model 1072 GPS Cable Assembly; 2) an Opticom™ Model 1020 or 1021 GPS Vehicle Control Unit, which provides an interface point for vehicle wiring (an external computer is used for configurations, setup and diagnostics); and 3) the Opticom™ Model 1071 GPS Vehicle Interface Cable.

Opticom GPS system vehicle equipment has the following features:

- More than 38 million vehicle identification code combinations selectable at installation
- Vehicle turn signal status monitoring and transmission
- User-selectable disable mode: latching or non-latching modes, disable trigger mode and +12 VDC to ground or ground to +12 VDC
- Diagnostic and status indicators
- FCC part 15 Class A specifications compliance
- No license requirements
- Easily accessible computer interface

- Easy installation
- Low power consumption
- Additional GPS output in NEMA format for other onboard uses
- Available Windows® configuration and maintenance software
- Choice of configurable activation methods
 - Activated by lightbar
 - Activated by lightbar AND by driver activation
 - Activated by lightbar OR by driver activation

The following reference model numbers appear on the shipping boxes and serial plate labels:

Opticom™ **Model 1012** GPS Radio Unit

Opticom™ **Model 1020** GPS Vehicle Control Unit (high priority)

Opticom™ **Model 1021** GPS Vehicle Control Unit (low priority)

Opticom™ **Model 1050** GPS/Radio Antenna

Opticom™ **Model 1071** GPS Vehicle Interface Cable

Opticom™ **Model 1072** GPS Cable Assembly

Physical Dimensions

Opticom model 1012 GPS radio unit

Length: 8.0 in. (20.3 cm)

Width: 4.5 in. (11.4 cm)

Height: 2.7 in. (6.9 cm)

Weight: 1.9 lbs. (0.854 kg)

Opticom model 1020 or 1021 GPS vehicle control unit

Length: 5.75 in. (14.6 cm)

Width: 5.5 in. (14.0 cm)

Height: 1.75 in. (4.4 cm)

Weight: 0.8 lb. (0.363 kg)

Opticom model 1050 GPS/radio antenna

Length: 15.0 ft. (4.6 m)

Diameter: 2.85 in. (7.2 cm)

Height: 1.4 in. (3.5 cm)

Weight with cables: 0.6 lbs. (0.30 kg)

Electrical

Input voltage: 10–16 VDC

Current: Less than 2 amps

Environmental

Temperature: -30° F to +165° F (-34° C to +74° C)

Relative humidity: 5% to 95%

Operating Parameters

- High or low priorities selected by model
- User-programmable number, 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)
- Configurable disable operating mode
 - Latching or non-latching
 - Disable trigger method
 - +12 VDC to ground
 - Ground to +12 VDC
- Less than 2 amps peak current draw
- Self-diagnosis
- Non-obstructed transmission at least 2,500 feet (762 m)
- Turn signal monitoring transmitted to intersection
- R5485/J1708 serial interfaces

Interface Harness Connector Pin Index

Pin	Wire Color	Function
1	White/Yellow	J1708 (+)
2	Blue	Lightbar sense or ignition switch
3	Brown	Low priority
4	Gray	Probe
6	White	Disable sense
7	Green	Right turn sense
8	Yellow	Left turn sense
9	Black	Ground
10	Red	+12 VDC
13	White/Orange	GPS TXD (-)
14	White/Brown	GPS TXD (+)
15	White/Blue	J1708 (-)

Radio Unit Terminal Block Pin Index

Pin	Wire Color	Function
1	Yellow	Radio transmit (+)
2	Yellow/Black	Radio transmit (-)
3	Blue	Radio receive (+)
4	Blue/White	Radio receive (-)
5	Orange	Radio clock (+)
6	Orange/Green	Radio clock (-)
7	Brown	GPS power
8	Brown/White	Common
9	Violet	Radio power
10	Violet/White	Common
11	Bare	Shield drain wire

Vehicle Control Unit Indicators

Indicator	Color or Condition	Meaning
POWER	Green	Power applied to unit
ON/OFF	Green	Power applied to unit
	Flashing Green	Vehicle in disable mode
DISABLE	Off	Vehicle NOT in disable mode
	Amber	Operating in probe mode
	Flashing Green	Vehicle in disable mode
GPS	Amber	Not receiving GPS, radio not transmitting
	Green	GPS has good 3D fix
RADIO	Amber	No communication between radio unit and vehicle control unit
	Green	Good communication between radio unit and vehicle control unit

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GTT warrants future system operability coverage as described herein. This warranty shall not apply to any Opticom GPS system components which have been (1) repaired or modified by persons not authorized by GTT; (2) subjected to incorrect installation, misuse, neglect or accident; (3) damaged by extreme atmospheric or weather-related conditions, flood, fire, vandalism, crime or other events beyond the reasonable control of GTT; or (4) subjected to events or use outside the normal or anticipated course.

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Since the availability of the GPS signal is out of GTT's control and is required for system operations, GTT does not warrant against Opticom GPS system failures due to the unavailability of the GPS signal for any reason.



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