

STROBECOM II



OPTICAL PREEMPTION & PRIORITY CONTROL SYSTEM

TOMAR Electronics, Inc.
Clearing the Way

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4140

OSP CARD AND CARD CAGE

The model 4140 Optical Signal Processor (OSP) is the newest and most advanced of the OSP's offered by TOMAR. Installed inside the traffic cabinet, the 4140 provides power for 209X Optical Detectors, receives, decodes and prioritizes signals from the detectors, logs preemption and priority control activity, communicates with other traffic control devices, and optically isolates the preemption channels.

The 4140 is delivered default programmed to respond on a first-come, first-served basis to optical signals from vehicles within two signal bands. Emergency band signals are typically emitted by emergency vehicles to effect a preemption of normal traffic control timing and are given the highest priority to allow rapid emergency response with enhanced safety. Transit band signals are generally emitted by transit or other non-emergency municipal vehicles to effect a priority change for the vehicle's approach direction without necessarily interrupting traffic control timing. Up to 65,000 vehicles in each signal band can be individually identified.

Using a simple Windows-based configuration program, the user can define up to 16 additional classes within each signal band with different priorities, detection ranges, and choices of actions, from simple logging to full traffic preemption.

Equipped with an Ethernet port and the ability to classify and announce the presence of multiple vehicles in real-time, the 4140 makes an excellent intelligent vehicle sensor for ITS applications.

The 4140 OSP is compatible with NEMA TS-1, TS-2, and CA/NY 170, and 2070 controllers and meets all NEMA and CalTrans environmental requirements. The 4140 plugs directly into a 170 input file without any additional hardware and does not use the internal 24VDC cabinet power. For NEMA cabinets without prewired preemption slots, the TOMAR model 1881 rack provides the necessary hardware and harnessing to allow simple connection to detector outputs and controller inputs.



4140 OSP

The TOMAR 4140 Optical Signal Processor offers the following features and benefits:

Plug-and-Play Firmware allows the ability to add accessories in the field without manual configuration. This allows you to buy only what is needed today and add more capability later, saving precious funds.

Active Reflection Suppression prevents cross street preemption due to reflected emitter technology. Only TOMAR's advanced, digital signal processing can eliminate this troublesome side effect making system installation and setup far less critical.

Expansion Port provides easy connection of the 4140 to other accessory modules like green phase monitors, confirmation light drivers, and external preemption adapters for controllers that do not have internal preemption software.

- 65,000 vehicles per band and over 14,000 log records standard
- Built-in Ethernet port providing a full-featured TCP/IP stack, with enterprise grade security features, for configuration, diagnostics, and log information retrieval.
- Firmware upgradable remotely via Ethernet port for simple future feature additions
- Fully supports OSPsoft and OSPtrack3 software via Ethernet
- Universal AC input voltage
- Enhanced transient/lightning protection
- Short-circuit proof detector power
- Simplified front panel interface

The 1881 Card Cage provides all the necessary hardware and harnessing required to allow the simple wiring of the 4140 card to the detector outputs and controller inputs. The 1881 is equipped with two 60" long cables which are wired to the controller. The first cable carries all AC power wiring, safety ground, and card outputs. The second cable is terminated to a 12 point terminal block which is typically mounted in the wiring compartment of the cabinet. The detectors are then connected to the terminal block.



4140 OSP Card and Card Cage

Specifications for OSP Card

Item	Description
Signal	The 4140 shall be capable of receiving, decoding and prioritizing the Emergency and Transit signals transmitted by all TOMAR and competitive emitters. The system shall be software configurable to accept or reject older non-identifying optical signals. Up to 65,000 vehicles in each signal band can be individually identified.
Signal Acquisition Time	Typical signal acquisition time shall be approximately 2.5 seconds. Acquisition time will vary depending upon the number of signals present simultaneously and on the density of optical noise.
Range	2500 feet maximum adjustable down to 200 feet in 255 steps for each signal band.
Range Adjustment	Range adjustment shall be accomplished via front panel switches and emitter or via software configuration.
Priority Determination	<p>The 4140 shall be delivered with default priority grouping, responding on a first-come, first-serve basis to signals within each signal band. Signals in the Emergency signal band shall be given priority over signals in the Transit signal band.</p> <p>Optionally, the user shall be able to define additional priority classes within each signal band. Up to 16 priority groups within each signal band may be defined.</p>
Event Logging	<p>The system shall log all valid and invalid preemption events including the time, date, and duration of event. The logging capacity of the card shall be a minimum of 14,000 events. The oldest events shall be discarded when newer events are received. The number of events to be stored shall be expandable by adding additional memory.</p> <p>The stored logs shall be downloadable via Ethernet port.</p>
Output Signals	The 4140 shall provide four optically isolated output channels for placing calls on the traffic controllers preempt inputs. All output signals shall comply with NEMA signal level definitions.
Control Timers	Each channel shall be equipped with 3 control timers described as: MAX CALL: Sets the maximum time a preempt call is allowed to be active. CALL EXTENSION: Sets the time a call is held after the optical signal terminates. CALL DELAY: Sets the time a call must be pending before the assertion of the call to the controller.
Electrical Requirements	120/240 VAC 50/60HZ
Temperature Range	-40 degrees Celsius to +75 degrees Celsius
Transient Protection	Input power is MOV protected from line transients.
Fusing	Input power connections are fused at 1/2 amp to prevent cabinet wiring damage in the event of an electrical failure.

Specifications for 1881 Card Cage and Harness

Item	Description
Mechanical	Height 5.80" (147.3mm) Length 8.06" (204.7mm) Width 2.90" (73.7mm)
Mounting	The 1881 can sit on mounting feet atop a shelf or can be hung, using the mounting holes in the top flange, under a shelf.
Construction	Anodized aluminum with upper mounting flange and lower mounting feet. Open frame with single 22/44 card edge connector and 60" long controller and detector terminal block cables.

True 10 Year Warranty:

The 4140 OSP and all STROBECOM II components are covered under the 10 year warranty. Unlike other manufacturers, TOMAR's warranty has NO FEES or charges for warranty repairs.

NOTICE: The sale of these items are restricted to state and local governments and to authorized distributors only.

2140

OSP CARD AND CARD CAGE

The model 2140 Optical Signal Processor (OSP) is the most advanced of the 2000 Series OSP's offered by TOMAR. Installed inside the traffic cabinet, the 2140 provides power for 209X Optical Detectors, receives, decodes and prioritizes signals from the detectors, logs preemption and priority control activity, communicates with other traffic control devices, and optically isolates the preemption channels.

The 2140 is delivered default programmed to respond on a first-come, first-served basis to optical signals from vehicles within two signal bands. Emergency band signals are typically emitted by emergency vehicles to effect a preemption of normal traffic control timing and are given the highest priority to allow rapid emergency response with enhanced safety. Transit band signals are generally emitted by transit or other non-emergency municipal vehicles to effect a priority change for the vehicle's approach direction without necessarily interrupting traffic control timing. Up to 65,000 vehicles in each signal band can be individually identified.

Using a simple Windows-based configuration program, the user can define up to 16 additional classes within each signal band with different priorities, detection ranges, and choices of actions, from simple logging to full traffic preemption.

Equipped with a serial port and the ability to classify and announce the presence of multiple vehicles in real-time, the 2140 makes an excellent intelligent vehicle sensor for ITS applications.

The 2140 OSP is compatible with NEMA TS-1, TS-2, and CA/NY 170, and 2070 controllers and meets all NEMA and CalTrans environmental requirements. The 2140 plugs directly into a 170 input file without any additional hardware and does not use the internal 24VDC cabinet power. For NEMA cabinets without prewired preemption slots, the TOMAR model 1881 rack provides the necessary hardware and harnessing to allow simple connection to detector outputs and controller inputs.

The 1881 Card Cage provides all the necessary hardware and harnessing required to allow the simple wiring of the 2140 card to the detector outputs and controller inputs. The 1881 is equipped with two 60" long cables which are wired to the controller. The first cable carries all 115 VAC power wiring, safety ground, and card outputs. The second cable is terminated to a 12 point terminal block which is typically mounted in the wiring compartment of the cabinet. The detectors are then connected to the terminal block.



2140 OSP

The TOMAR 2140 Optical Signal Processor offers the following features and benefits:

Modular construction allows tool-less field repair and firmware upgrades. Competitive products must be returned to the factory for proper repair.

Plug-and-Play Firmware allows the ability to add preemption channels or other accessories in the field without manual configuration. This allows you to buy only what is needed today and add more capability later, saving precious funds.

Active Reflection Suppression prevents cross street preemption due to reflected emitter technology. Only TOMAR's advanced, digital signal processing can eliminate this troublesome side effect making system installation and setup far less critical.

Expansion Port provides easy connection of the 2140 to other accessory modules like the eLock emitter authentication system, green phase monitors, confirmation light drivers, and external preemption adapters for controllers that do not have internal preemption software.

Preemption channel disconnect switches allow the preemption outputs from the 2140 to be physically disconnected from the controller inputs during setup and testing. This allows traffic technicians the ability to perform all system setups and testing without disrupting traffic flow.



1881 Card Cage and Harness

2140 OSP Card and Card Cage

Specifications for OSP Card

Item	Description
Signal	The 2140 shall be capable of receiving, decoding and prioritizing the Emergency and Transit signals transmitted by all TOMAR and competitive emitters. The system shall be software configurable to accept or reject older non-identifying optical signals. Up to 65,000 vehicles in each signal band can be individually identified.
Signal Acquisition Time	Typical signal acquisition time shall be approximately 2.5 seconds. Acquisition time will vary depending upon the number of signals present simultaneously and on the density of optical noise.
Range	2500 feet maximum adjustable down to 200 feet in 255 steps for each signal band.
Range Adjustment	Range adjustment shall be accomplished via front panel switches and emitter or via serial port command.
Priority Determination	<p>The 2140 shall be delivered with default priority grouping, responding on a first-come, first-serve basis to signals within each signal band. Signals in the Emergency signal band shall be given priority over signals in the Transit signal band.</p> <p>Optionally, the user shall be able to define additional priority classes within each signal band. Up to 16 priority groups within each signal band may be defined.</p>
Event Logging	<p>The system shall log all valid signal receipts along with the time, date, and duration of receipt. The logging capacity of the card shall be a minimum of 1300 events. The oldest events shall be discarded when newer events are received. The number of events to be stored shall be expandable by adding additional memory.</p> <p>The stored logs shall be downloadable via RS-232 port. The 2140's operating system shall allow connection to a controller, a local computer, or a modem.</p>
Output Signals	The 2140 shall provide four optically isolated output channels for placing calls on the traffic controllers preempt inputs. All output signals shall comply with NEMA signal level definitions.
Control Timers	Each channel shall be equipped with 3 control timers described as: MAX CALL: Sets the maximum time a preempt call is allowed to be active. CALL EXTENSION: Sets the time a call is held after the optical signal terminates. CALL DELAY: Sets the time a call must be pending before the assertion of the call to the controller.
Electrical Requirements	120VAC 50/60 Hz
Temperature Range	-40 degrees Celsius to +75 degrees Celsius
Transient Protection	Input power is MOV protected from line transients.
Fusing	Input power connections are fused at 1/2 amp to prevent cabinet wiring damage in the event of an electrical failure.

Specifications for 1881 Card Cage and Harness

Item	Description
Mechanical	Height 5.80" (147.3mm) Length 8.06" (204.7mm) Width 2.90" (73.7mm)
Mounting	The 1881 can sit on mounting feet atop a shelf or can be hung, using the mounting holes in the top flange, under a shelf.
Construction	Anodized aluminum with upper mounting flange and lower mounting feet. Open frame with single 22/44 card edge connector and 60" long controller and detector terminal block cables.

True 10 Year Warranty:

The 2140 OSP and all STROBECOM II components are covered under the 10 year warranty. Unlike other manufacturers, TOMAR's warranty has NO FEES or charges for warranty repairs.

NOTICE: The sale of these items are restricted to state and local governments and to authorized distributors only.

2080

OSP CARD AND CARD CAGE

The 2080 Optical Signal Processor (OSP) is TOMAR's mid-range OSP providing the advanced detection and discrimination of all 2000 Series OSP's with improved system security and upgradability. Installed inside the traffic cabinet, the 2080 provides power for 209X Optical Detectors, receives, decodes and prioritizes signals from the detectors, and optically isolates the preemption channels.

The 2080 responds on a first-come, first-served basis to optical signals from vehicles within two signal bands. Emergency band signals are typically emitted by emergency vehicles to effect a preemption of normal traffic control timing and are given the highest priority to allow rapid emergency response with enhanced safety.

Transit band signals are generally emitted by transit or other non-emergency municipal vehicles to effect a priority change for the vehicle's approach direction without necessarily interrupting traffic control timing.

The 2080 OSP is compatible with NEMA TS-1, TS-2, and CA/NY 170, and 2070 controllers and meets all NEMA and CalTrans environmental requirements. The 2080 plugs directly into a 170 input file without any additional hardware and does not use the internal 24VDC cabinet power. For NEMA cabinets without prewired preemption slots, the TOMAR model 1881 rack provides the necessary hardware and harnessing to allow simple connection to detector outputs and controller inputs.

The 1881 Card Cage provides all the necessary hardware and harnessing required to allow the simple wiring of the 2080 card to the detector outputs and controller inputs. The 1881 is equipped with two 60" long cables which are wired to the controller. The first cable carries all 115 VAC power wiring, safety ground, and card outputs. The second cable is terminated to a 12 point terminal block which is typically mounted in the wiring compartment of the cabinet. The detectors are then connected to the terminal block.



2080 OSP

The TOMAR 2080 Optical Signal Processor offers the following features and benefits:

Modular construction allows tool-less field repair and firmware upgrades. Competitive products must be returned to the factory for proper repair.

Plug-and-Play Firmware allows the ability to add preemption channels or other accessories in the field without manual configuration. This allows you to buy only what is needed today and add more capability later, saving precious funds.

Active Reflection Suppression prevents cross street preemption due to reflected emitter technology. Only TOMAR's advanced, digital signal processing can eliminate this troublesome side effect making system installation and setup far less critical.

Preemption channel disconnect switches allow the preemption outputs from the 2080 to be physically disconnected from the controller inputs during setup and testing. This allows traffic technicians the ability to perform all system setups and testing without disrupting traffic flow.



1881 Card Cage and Harness

2080 OSP Card and Card Cage

Specifications for OSP Card

Item	Description
Signal	<p>The 2080 shall be capable of receiving, decoding and prioritizing the Emergency and Transit signals transmitted by all TOMAR and competitive emitters.</p> <p>The 2080 shall be configurable via a jumper on the control module, to accept or reject older non-coded optical signals. The 2080 does not uniquely identify any emitter codes when accepting or rejecting non-coded optical signals.</p>
Signal Acquisition Time	Typical signal acquisition time shall be approximately 2.5 seconds. Acquisition time will vary depending upon the number of signals present simultaneously and on the density of optical noise.
Simultaneous Signals	Each signal processor module shall be capable of receiving 10 signals simultaneously. Additional simultaneous signals will be ignored.
Range	2500 feet maximum adjustable down to 200 feet in 255 steps for each signal band.
Range Adjustment	Range adjustment shall be accomplished via front panel switches and emitter.
Priority Determination	Signals in the Emergency signal band shall be given priority over signals in the Transit signal band. Signals in the same band shall be serviced on a first-come, first-served basis.
Output Signals	The 2080 shall provide four optically isolated output channels for placing calls on the traffic controllers preempt inputs. All output signals shall comply with NEMA signal level definitions.
Max Call Timer	Each channel shall be equipped with a MAX CALL TIMER which will disable a channel's response to an emitter should that emitter remain within range for more than 2 minutes. Once the emitter is shut off for 10 seconds or more the channel shall again respond to that emitter.
Electrical Requirements	120VAC 50/60 Hz
Temperature Range	-40 degrees Celsius to +75 degrees Celsius
Transient Protection	Input power shall be MOV and fuse protected from line transients.
Fusing	Input power connections shall be fused at 1/2 amp to prevent cabinet wiring damage in the event of an electrical failure.

Specifications for 1881 Card Cage and Harness

Item	Description
Mechanical	Height 5.80" (147.3mm) Length 8.06" (204.7mm) Width 2.90" (73.7mm)
Mounting	The 1881 can sit on mounting feet atop a shelf or can be hung, using the mounting holes in the top flange, under a shelf.
Construction	Anodized aluminum with upper mounting flange and lower mounting feet. Open frame with single 22/44 card edge connector and 60" long controller and detector terminal block cables.

True 10 Year Warranty:

The 2080 OSP and all STROBECOM II components are covered under the 10 year warranty. Unlike other manufacturers, TOMAR's warranty has NO FEES or charges for warranty repairs.

NOTICE: The sale of these items are restricted to state and local governments and to authorized distributors only.

4140/2140

OSP CARD ACCESSORIES

The **2140-GPMON** is an 8-phase, optically isolated, green signal monitor. When attached to the 2140 OSP expansion port, the condition of an intersection's green signal heads is logged with each preemption event. The 2140-GPMON allows the 2140 OSP to provide early green priority control for transit applications.

The **2085 External Preemption Adapter** allows the 2140 OSP to be used with traffic controllers that do not have built in preempt software. The 2085 interfaces to the controller's OMIT, MCE, and INTERVAL ADVANCE lines to effect preemption. Desired green phases and phase advance rates are selected via dip switches. Separate settings are provided for emergency and transit band.

The **2086 Low Priority Output Module** provides separate steady-state transit band outputs allowing the 2140 OSP to be used with traffic controllers that cannot recognize the standard pulsing signal for low priority preempts.



2140-GPMON



2085 External Preemption Adapter



2086 Low Priority Output Module

Ordering Information

Model No.	Description
2140-GPMON	8-phase, isolated, green signal monitor with 2140 interface cable
2085	External preemption adapter with 2140 interface cable
2086	Low priority output module with 2140 interface cable

10 Year Warranty

These products are covered by TOMAR's standard warranty except that the warranty period is extended to 10 years for the power supply.

NOTICE:

The sale of these items are restricted to state and local governments and to authorized distributors only.

OSPtrack3

OPTICAL SIGNAL PROCESSOR TRACKING SOFTWARE

TOMAR Electronics Optical Signal Processor Tracking Software version 3 (OSPtrack 3) is a management information and maintenance tool used to analyze vehicle event data originating from STROBECOM II Optical Signal Processors. Utilizing the power of Microsoft SQL server, OSPtrack 3 centralizes EVP and transit priority control events from intersections and provides a convenient interface for conducting custom and predefined queries of the event database.

Vehicle events are collected from Strobecom II equipped intersections via modem, TCP/IP, or file import. Configurable filters allow customization of which types of data are included in the database. Intersection definitions and approach configuration are automatically defined during importation and vehicle routes are defined and maintained via an easy to use GUI interface.

Query results can be printed or exported for use in spreadsheet or statistical analysis packages. OSPtrack 3 includes complete SQL record and table structure documentation so users can develop custom applications to conduct additional studies of information in the OSPtrack 3 database.

A scheduling function allows log download, time synchronization, and any other maintenance functions to be performed unattended with user defined frequency.

- Transit system providers can measure and plan improvements to transit system performance by running queries including bus travel time, bus count, and headway.
- Emergency service agencies can study response times along major corridors and vehicle counts at intersections to better identify and improve how well each station serves the community.
- Traffic engineers can use the data from OSPtrack to study how agencies use EVP and priority control, allowing the system to be optimized to provide the greatest benefit to users while minimizing traffic system upset.
- System maintenance and configuration can be performed remotely in real-time or on a scheduled basis.

Intersection	Approach	Headway
OUTBOUND	Missouri St. Q 14th	00:15:15
OUTBOUND	Missouri St. Q 15th	00:15:21
OUTBOUND	Missouri St. Q 17th	00:15:27
OUTBOUND	Missouri St. Q 18th	00:15:34
OUTBOUND	Missouri St. Q 19th	00:15:41
OUTBOUND	Missouri St. Q 20th	00:15:48
OUTBOUND	Missouri St. Q 21st	00:15:55
OUTBOUND	Missouri St. Q 22nd	00:16:02
OUTBOUND	Missouri St. Q 23rd	00:16:09
OUTBOUND	Missouri St. Q 24th	00:16:16
OUTBOUND	Missouri St. Q 25th	00:16:23
OUTBOUND	Missouri St. Q 26th	00:16:30
OUTBOUND	Missouri St. Q 27th	00:16:37
OUTBOUND	Missouri St. Q 28th	00:16:44
OUTBOUND	Missouri St. Q 29th	00:16:51
OUTBOUND	Missouri St. Q 30th	00:16:58
OUTBOUND	Missouri St. Q 31st	00:17:05
OUTBOUND	Missouri St. Q 32nd	00:17:12
OUTBOUND	Missouri St. Q 33rd	00:17:19
OUTBOUND	Missouri St. Q 34th	00:17:26
OUTBOUND	Missouri St. Q 35th	00:17:33
OUTBOUND	Missouri St. Q 36th	00:17:40
OUTBOUND	Missouri St. Q 37th	00:17:47
OUTBOUND	Missouri St. Q 38th	00:17:54
OUTBOUND	Missouri St. Q 39th	00:18:01
OUTBOUND	Missouri St. Q 40th	00:18:08
OUTBOUND	Missouri St. Q 41st	00:18:15
OUTBOUND	Missouri St. Q 42nd	00:18:22
OUTBOUND	Missouri St. Q 43rd	00:18:29
OUTBOUND	Missouri St. Q 44th	00:18:36
OUTBOUND	Missouri St. Q 45th	00:18:43
OUTBOUND	Missouri St. Q 46th	00:18:50
OUTBOUND	Missouri St. Q 47th	00:18:57
OUTBOUND	Missouri St. Q 48th	00:19:04
OUTBOUND	Missouri St. Q 49th	00:19:11
OUTBOUND	Missouri St. Q 50th	00:19:18
OUTBOUND	Missouri St. Q 51st	00:19:25
OUTBOUND	Missouri St. Q 52nd	00:19:32
OUTBOUND	Missouri St. Q 53rd	00:19:39
OUTBOUND	Missouri St. Q 54th	00:19:46
OUTBOUND	Missouri St. Q 55th	00:19:53
OUTBOUND	Missouri St. Q 56th	00:20:00
OUTBOUND	Missouri St. Q 57th	00:20:07
OUTBOUND	Missouri St. Q 58th	00:20:14
OUTBOUND	Missouri St. Q 59th	00:20:21
OUTBOUND	Missouri St. Q 60th	00:20:28
OUTBOUND	Missouri St. Q 61st	00:20:35
OUTBOUND	Missouri St. Q 62nd	00:20:42
OUTBOUND	Missouri St. Q 63rd	00:20:49
OUTBOUND	Missouri St. Q 64th	00:20:56
OUTBOUND	Missouri St. Q 65th	00:21:03
OUTBOUND	Missouri St. Q 66th	00:21:10
OUTBOUND	Missouri St. Q 67th	00:21:17
OUTBOUND	Missouri St. Q 68th	00:21:24
OUTBOUND	Missouri St. Q 69th	00:21:31
OUTBOUND	Missouri St. Q 70th	00:21:38
OUTBOUND	Missouri St. Q 71st	00:21:45
OUTBOUND	Missouri St. Q 72nd	00:21:52
OUTBOUND	Missouri St. Q 73rd	00:21:59
OUTBOUND	Missouri St. Q 74th	00:22:06
OUTBOUND	Missouri St. Q 75th	00:22:13
OUTBOUND	Missouri St. Q 76th	00:22:20
OUTBOUND	Missouri St. Q 77th	00:22:27
OUTBOUND	Missouri St. Q 78th	00:22:34
OUTBOUND	Missouri St. Q 79th	00:22:41
OUTBOUND	Missouri St. Q 80th	00:22:48
OUTBOUND	Missouri St. Q 81st	00:22:55
OUTBOUND	Missouri St. Q 82nd	00:23:02
OUTBOUND	Missouri St. Q 83rd	00:23:09
OUTBOUND	Missouri St. Q 84th	00:23:16
OUTBOUND	Missouri St. Q 85th	00:23:23
OUTBOUND	Missouri St. Q 86th	00:23:30
OUTBOUND	Missouri St. Q 87th	00:23:37
OUTBOUND	Missouri St. Q 88th	00:23:44
OUTBOUND	Missouri St. Q 89th	00:23:51
OUTBOUND	Missouri St. Q 90th	00:23:58
OUTBOUND	Missouri St. Q 91st	00:24:05
OUTBOUND	Missouri St. Q 92nd	00:24:12
OUTBOUND	Missouri St. Q 93rd	00:24:19
OUTBOUND	Missouri St. Q 94th	00:24:26
OUTBOUND	Missouri St. Q 95th	00:24:33
OUTBOUND	Missouri St. Q 96th	00:24:40
OUTBOUND	Missouri St. Q 97th	00:24:47
OUTBOUND	Missouri St. Q 98th	00:24:54
OUTBOUND	Missouri St. Q 99th	00:25:01
OUTBOUND	Missouri St. Q 100th	00:25:08

Intersection	Approach	Headway	Vehicle Type	Channel	Event Type
OUTBOUND	Missouri St. Q 14th	00:15:15	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 15th	00:15:21	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 17th	00:15:27	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 18th	00:15:34	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 19th	00:15:41	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 20th	00:15:48	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 21st	00:15:55	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 22nd	00:16:02	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 23rd	00:16:09	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 24th	00:16:16	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 25th	00:16:23	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 26th	00:16:30	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 27th	00:16:37	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 28th	00:16:44	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 29th	00:16:51	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 30th	00:16:58	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 31st	00:17:05	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 32nd	00:17:12	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 33rd	00:17:19	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 34th	00:17:26	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 35th	00:17:33	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 36th	00:17:40	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 37th	00:17:47	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 38th	00:17:54	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 39th	00:18:01	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 40th	00:18:08	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 41st	00:18:15	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 42nd	00:18:22	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 43rd	00:18:29	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 44th	00:18:36	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 45th	00:18:43	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 46th	00:18:50	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 47th	00:18:57	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 48th	00:19:04	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 49th	00:19:11	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 50th	00:19:18	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 51st	00:19:25	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 52nd	00:19:32	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 53rd	00:19:39	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 54th	00:19:46	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 55th	00:19:53	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 56th	00:20:00	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 57th	00:20:07	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 58th	00:20:14	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 59th	00:20:21	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 60th	00:20:28	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 61st	00:20:35	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 62nd	00:20:42	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 63rd	00:20:49	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 64th	00:20:56	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 65th	00:21:03	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 66th	00:21:10	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 67th	00:21:17	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 68th	00:21:24	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 69th	00:21:31	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 70th	00:21:38	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 71st	00:21:45	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 72nd	00:21:52	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 73rd	00:21:59	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 74th	00:22:06	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 75th	00:22:13	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 76th	00:22:20	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 77th	00:22:27	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 78th	00:22:34	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 79th	00:22:41	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 80th	00:22:48	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 81st	00:22:55	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 82nd	00:23:02	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 83rd	00:23:09	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 84th	00:23:16	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 85th	00:23:23	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 86th	00:23:30	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 87th	00:23:37	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 88th	00:23:44	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 89th	00:23:51	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 90th	00:23:58	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 91st	00:24:05	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 92nd	00:24:12	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 93rd	00:24:19	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 94th	00:24:26	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 95th	00:24:33	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 96th	00:24:40	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 97th	00:24:47	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 98th	00:24:54	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 99th	00:25:01	Bus	Channel 2	OUTBOUND
OUTBOUND	Missouri St. Q 100th	00:25:08	Bus	Channel 2	OUTBOUND

2090-SD & ST 2091-SD & ST OPTICAL PREEMPTION DETECTORS



2090-ST Detector

2091-ST Detector

TOMAR's 209X-SD and ST model Optical Preemption Detectors sense the optical pulses emitted by properly equipped emergency or transit vehicles. Mounted to observe the approaches of an intersection, 209X-SD and ST Detectors are used with TOMAR 2000 Series Optical Signal Processors to inform the traffic control system of the presence of designated vehicles.

The 209X-ST detectors incorporate a self-test feature for true closed loop detector and wiring welfare monitoring. Each 209X-ST detector includes a small infrared LED which periodically injects a special test signal into the detectors photo sensor. The 2140 OSP receives the special test signal and therefore knows that the detector is fully functional. Should a detector fail self-test a front panel indication and an entry in the 2140's logs indicate the problem.

Using 209X-SD or ST detectors and StrobeCom II throughout your traffic control system reduces emergency response time, allows emergency vehicles to travel with greater safety, and improves transit vehicles timeliness.

ONLY TOMAR 209X-SD Detectors offer these important features:

- Closed loop self-test for detector welfare, monitoring and reporting (ST models only).
- Military derived sensor technology for direct sunlight rejection and detection performance unmatched by ANY other system.
- Fully encapsulated electronics for complete resistance to water, heat, and vibration.
- Complete electronics protection from damage due to miswiring or electrical transients.
- Wide field of view option for uncompromised detection even in untethered span wire applications without the risk of side street activation.
- Simple advanced detector installation without any special cabling for enhanced detection around corners and over hills.

2090/2091 Optical Preemption Detectors

Specifications for 2090-SD or ST and 2091-SD or ST Detectors

Item	Description
Maximum Range	2500 feet minimum when used with a TOMAR 2000 Series Optical Signal Processor.
Optical Pulse Rise Time Discrimination	The 2090-SD or ST and 2091-SD or ST input stages are optimized for the detection of strobe pulses with a rise time from start of pulse to peak of pulse of 10 microseconds or less. Slower pulses such as varying sunlight and incandescent emergency lighting will be highly attenuated and substantially ignored by the detector's digital discriminators.
2090-ST and 2091-ST self testing detectors	The 2090-ST and 2091-ST incorporate a self-test feature for true closed loop DETECTOR SENSOR and WIRING welfare monitoring, the 2090-ST and 2091-ST includes a small infrared LED, which periodically injects a special test signal and therefore knows that the detector is fully functional
2090-SD Field of View	13 degrees conical centered about the viewport normal axis (typical).
2091-SD Field of View	60 degrees conical centered about the viewport normal axis (typical).
Power Requirements	VOLTAGE: 12 to 30VDC CURRENT: 15 mA maximum
Wiring Connections	Blue Wire - GROUND Yellow - SIGNAL Orange Wire - +12 to 30 VDC Shield and Drain Wire - CONNECT TO BLUE WIRE AT TRAFFIC CABINET
Temperature Range	-40° Celsius to +75° Celsius
Physical Construction	The 2090-SD and 2091-SD enclosures are black, glass-filled, UV stabilized, polycarbonate suitable for all-weather use. All electronic circuitry is completely encapsulated in polyurethane for protection from shock, vibration, and moisture. A weep hole is provided for allowing the escape of condensation or other internal moisture build-up in the sight tube of the detector.
Size and Weight	2.75" dia. (69.8 mm) X 3.375" tall (85.7 mm) with side mounted 4" long (101.5 mm) sight tube
Mounting	The 2090-SD or ST and 2091-SD or ST are easily mounted using standard hardware on either span wire or mast arm. The unit has a 1/2" female pipe mount hub and internal terminal block for connection to a 3/C shielded detector cable. ***** See catalog page 23 for available mounting hardware.

Available Option

Model No.	Description
2091-OPTIC	Upgrade package that allows the user to convert a 2090-SD or ST detector in the field to a 2091-SD or ST.
2090-OPTIC	Upgrade package that allows the user to convert a 2091-SD or ST detector in the field to a 2090-SD or ST

TRUE 10 Year Warranty!

10 year warranty covers the 2090-SD or ST and 2091-SD or ST and all STROBECOM II components. Unlike other manufacturers, TOMAR's ten year warranty has NO fees or charges for warranty repairs after five years.

NOTICE: The sale of these items are restricted to state and local governments and to authorized distributors only.

2097

Detector/LED Confirmation Light Assembly



The 2097 Detector/LED confirmation light assembly combines one of TOMAR's Strobecom II detectors with a low-voltage, super-bright, LED confirmation light in one easy to mount and wire assembly. The weather-proof tilt/swivel mounting hardware is constructed of corrosion resistant anodized and powder coated aluminum and stainless steel with galvanized steel locking nuts.

When used with a model 2140 Optical Signal Processor and a model 2087 LED confirmation light driver, the 2097 receives a vehicles emitter signal via the Strobecom II detector and provides a visual feedback signal to the emergency vehicle driver that his signal has been received and is eligible to receive preemption.

The LED lamp used in the 2097 comes directly from TOMAR's LED warning light line ensuring that it is both long-lived and powerful enough to be seen on the brightest of sunny days. The 2097's LED beam pattern is controlled to provide warning to the emergency vehicle driver without being blinding to other traffic even at night.

Ordering Information

Model No.	Description
2097-NA-x	2097 assembly with narrow-angle, standard detector
2097-WA-x	2097 assembly with wide-angle, standard detector
2097-NA-ST-x	2097 assembly with narrow-angle, self-testing detector
2097-WA-ST-x	2097 assembly with wide-angle, self-testing detector



2087

LED Confirmation Light Driver

TOMAR's model 2087 LED Confirmation Light Driver is used with the model 2140 Optical Signal Processor to provide drive signals to up to four 24 VDC LED confirmation lamps. The 2087 includes a separate 24 VDC power source for the LED lamps and the electronics necessary to switch the lamps.

The 2087 is mounted on a DIN rail and connects to the 2140 via the front panel expansion port and receives LED control signals directly from the 2140.

The 2087 is designed to be used with the TOMAR model 2097 Detector/LED Confirmation Light Assembly but can be used with any 24 VDC LED lamp that draws less than 250 mA. The 2087 LED drive outputs are short circuit proof and thermally protected. The 2087 requires 100-240 VAC.

The 2087 includes the 2140 interface cable and input power wire.



3065 Emitter

3065/3065-R

PREEMPTION EMITTER

The model 3065 and 3065-R STROBECOM II preemption emitters are used on authorized vehicles to activate TOMAR STROBECOM® or competitive optical preemption and priority control systems. The 3065 is self-contained, weather resistant, and operates on 12 or 24 VDC vehicle power. The 3065-R is a remote power supply system designed for installation where available lighthead space is limited. The 3065-R has all the same features of the 3065. Configured via optional software, the 3065 can emit any of 65,000 vehicle ID's of either Emergency Band (high) or Transit Band (low) priorities. The 3065 is equipped with continuous self-diagnostics with visual feedback and a highly adaptable automatic disable system to prevent intersection lockup. An optional visible light filter can be added to make emitter operation invisible on undercover, transit, or maintenance vehicles.

The 3065 emitters include an SAE J1708/J1587 interface that can be used for on/off control, disable override, and code programming from an onboard vehicle computer.



3065-R

Features and Benefits:

- Self-contained, potted emitter assembly
- Hermetically sealed lamp
- Power and control cable included
- Waterproof connectors
- Control switch and indicator included
- Low power mode for transit applications
- Disable feature can be latching/non-latching, GND or +BAT polarity
- SAE J1708/J1587 interface allows on/off control, disable override, and code programming from onboard vehicle computer

3065 & 3065-R Emitters

10 Year Warranty

These products are covered by TOMAR's standard warranty except that the warranty period is extended to 10 years for the power supply.

Specifications

Item	Description
Maximum Range	2500 feet in high power 1000 feet in low power
Output	Xenon flash compatible with TOMAR STROBECOM and competitive, non-coded, preemption equipment.
Power Requirements	Input voltage: 9 to 30VDC Input current: 2.8A average @ 12.8V, 1.4A average @ 25.6V
Construction	3065: Black UV stabilized glass filled Lexan® polycarbonate, polyurethane encapsulated electronics 3065-CHROME: Automotive chrome plated ABS housing, polyurethane encapsulated electronics
Size	7.5" (191mm) x 4.5" (114mm) x 4.5" (114mm)
Weight	2.5 lbs. (1.14kg)

Ordering Information

Model No.	Description
3065	Preemption emitter with black Lexan® housing
3065-CHROME	Preemption emitter with chrome plated ABS housing
3065-PROGCAB	Programming cable with ECMP3 software
3065-HOUSING	Replacement housing and power supply
3065-R	Remote preemption emitter system includes RECT-37SWP-C lamp, all cables and switches
RECT-37-VLF	Visible light filter

NOTICE: The sale of these items are restricted to state and local governments and to authorized distributors only.



T792HL Emitter

T792HL & T792HL-R

OPTICOM® COMPATIBLE PREEMPTION EMITTER

The TOMAR model T792HL and T792HL-R preemption emitters are used on authorized vehicles to activate GTT® OPTICOM® optical preemption and priority control systems. The T792HL is self-contained, weather resistant, and operates on 12 or 24 VDC vehicle power. The T792HL-R is a remote power supply system designed for installation where available lighthead space is limited. The T792HL-R has all the same features of the T792HL. Configured via optional software, the T792HL can emit any of 10,000 OPTICOM® compatible vehicle ID's in 10 classes of either command (high) or advantage (low) priorities. The T792HL is equipped with continuous self-diagnostics with visual feedback and a highly adaptable automatic disable system to prevent intersection lockup. An optional visible light filter can be added to make emitter operation invisible on undercover, transit, or maintenance vehicles.

The T792HL emitters include an SAE J1708/J1587 interface that can be used for on/off control, disable override, and code programming from an onboard vehicle computer.



T792HL-R

Features and Benefits:

- Self-contained, potted emitter assembly
- Hermetically sealed lamp
- Power and control cable included
- Waterproof connectors
- Control switch and indicator included
- Low power mode for transit applications
- Disable feature can be latching/non-latching, GND or +BAT polarity
- SAE J1708/J1587 interface allows on/off control, disable override, and code programming from onboard vehicle computer

NOTE: GTT and Opticom are trademarks of Global Traffic Technologies, LLC.

T792HL & T792HL-R Emitters

10 Year Warranty

These products are covered by TOMAR's standard warranty except that the warranty period is extended to 10 years for the power supply.

Specifications

Item	Description
Maximum Range	2500 feet in high power 1000 feet in low power
Output	Xenon flash compatible with GTT® OPTICOM®.
Power Requirements	Input voltage: 9 to 30VDC Input current: 2.8A average @ 12.8V, 1.4A average @ 25.6V
Construction	T792HL: Black UV stabilized glass filled Lexan® polycarbonate, polyurethane encapsulated electronics T792HL-CHROME: Automotive chrome plated ABS housing, polyurethane encapsulated electronics
Size	7.5" (191mm) x 4.5" (114mm) x 4.5" (114mm)
Weight	2.5 lbs. (1.14kg)

Ordering Information

Model No.	Description
T792HL	Preemption emitter with black Lexan® housing
T792HL-CHROME	Preemption emitter with chrome plated ABS housing
3065-PROGCAB	Programming cable with ECMP3 software
T792HL-HOUSING	Replacement housing and power supply
T792HL-R	Remote preemption emitter system includes RECT-37SWP-C lamp, all cables and switches
RECT-37-VLF	Visible light filter

NOTICE: The sale of these items are restricted to state and local governments and to authorized distributors only.

FSEMIT

Fire Station Mounted Emitter System



The model FSEMIT Fire Station Emitter System provides a way for emergency vehicles leaving a fire station to preempt nearby traffic intersections and clear traffic blocking the roadway in front of the fire station.

Actuated by a push button as the emergency responders prepare and man the emergency vehicle, the FSEMIT sends an emitter signal to the nearby intersection for the user configurable period of time. The nearby intersection is preempted and congested traffic in front of the station exit that might impede the emergency vehicle entry on to the roadway is cleared as the emergency vehicle prepares to leave the station.

The FSEMIT can be actuated by any normally open push button. A built in timer operates the emitter for a selected period of time and then automatically shuts off the emitter.

Optionally a TOMAR StrobeSwitch can be used instead of a push button to automatically activate the FSEMIT from the vehicle emitter signal without manual activation.

Ordering Information

Model No.	Description
FSEMIT-120	120 VAC Fire Station Emitter System
FSEMIT-DC	12/24 VDC Fire Station Emitter System
1790-1014	Optional StrobeSwitch detector for automatic activation by emergency vehicle emitter

10 Year Warranty

These products are covered by TOMAR's standard warranty except that the warranty period is extended to 10 years for the power supply.

NOTICE: The sale of these items are restricted to state and local governments and to authorized distributors only.



3065-R-EM21MC Emitter
system (installed view)



3065-R-EM21MC Emitter

The TOMAR model 3065-R-EM21MC Preemption Emitter System is used to add preemption capability to police motorcycles. The 3065-R-EM21MC will operate TOMAR STROBECOM® or competitive systems. The 3065-R-EM21MC system is completely waterproof featuring potted power supply, WP cabling system, and hermetically sealed strobe lamp.

System Includes:

- 3065-R-EM21MC power supply
- PAR-36EWP-R lamp
- 9C-WP2 lamp cable
- WPPC-4 power cable
- 781MC-CBL control cable

Specifications

Item	Description
Power Requirements	Input voltage: 10 to 30VDC Input current: 2.8A average @ 12.8V, 1.4A average @ 25.6V
Dual Frequency	Emergency band Transit band
Control Features	All modes are selected by switching positive, low current, battery voltage. The main battery power may be left connected to the supply at all times. Current draw is less than 100 microamps standby. Brake disable circuit auto resets when switch is released.
Construction (power supply)	Glass filled Lexan® case, polyurethane potting
Size	7.125" (181mm) x 3.75" (95mm) x 2.5" (64mm)
Weight	3.5 lbs. (1.56kg)

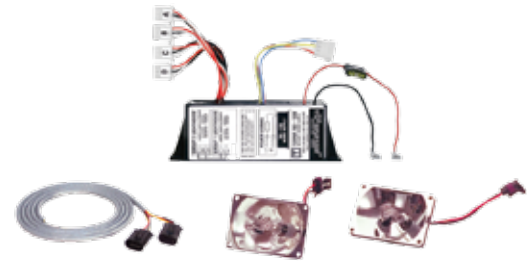
Ordering Information

Model No.	Description
3065-R-EM21MC	Police motorcycle preemption system

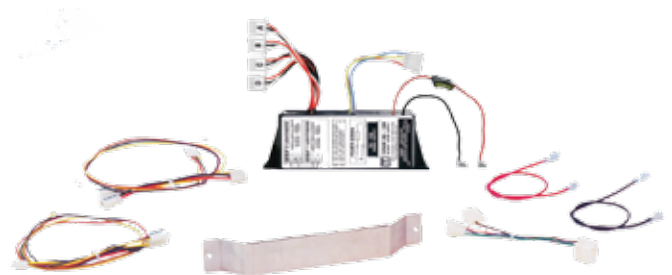
Preemption Upgrade Kits

PRE-STROBEHAWK™, PRE-EDGE™ & PRE-MX7000™

The PRE-STROBEHAWK™, PRE-EDGE™, and PRE-MX7000™ preemption emitter systems are used to operate optical traffic preemption systems such as the TOMAR STROBECOM® or other competitive systems. These systems are furnished complete and ready to operate. The lamp, cable, and power supply are completely waterproof. The power supply has a parking brake disable feature which may optionally be connected to the vehicle's brake switch to automatically switch the emitter off when the vehicle is parked to prevent traffic signal lockup at the scene of an emergency.



PRE-STROBEHAWK™
upgrade kit



PRE-EDGE™
upgrade kit



PRE-MX7000™
upgrade kit

10 Year Warranty

These products are covered by TOMAR's standard warranty except that the warranty period is extended to 10 years for the power supply.

NOTICE: The sale of these items are restricted to state and local governments and to authorized distributors only.

Preemption Upgrade Kits

PRE-STROBEHAWK™ Upgrade kit

System features:

- 1 – 20ft. lamp cable 20-2LH-WP1
- 1 – 780-1228-PRE
- 2 – RECT-34SWP lamp reflectors
- 4 – L brackets
- 4 – mounting brackets
- low power mode (reduces range)

PRE-EDGE™ Upgrade kit

System features:

- 1 – 780-1228-PRE
- 1 – 28" wire harness
- 2 – 6" lamp extension cables
- 1 – cable adapter
- 1 – bracket

PRE-MX7000™ Upgrade kit

System features:

- 1 – 781-1228-PRE
- 1 – WP control cable
- 1 – WP power cable
- Chrome coated reflector lamp
- low power mode (reduces range)

Specifications

Item	Description
Power Requirements	Input voltage: 10 to 30VDC Input current: 2.8A average @ 12.8V, 1.4A average @ 25.6V
Output	Single Xenon flashtube (PRE-MX7000™) Dual Xenon flashtubes (PRE-STROBEHAWK™) Four lamp preemption or NEOBE® flash pattern (PRE-EDGE™)
Dual Frequency	Emergency band Transit band
Control Features	All modes are selected by switching positive, low current, battery voltage. The main battery power may be left connected to the supply at all times. Current draw is less than 100 microamps standby. Brake disable circuit auto resets when switch is released.
Construction (power supply)	Glass filled Lexan® case, polyurethane potting

Ordering Information

Model No.	Description
PRE-STROBEHAWK™	Preemption upgrade kit for Federal™ lightbars
PRE-EDGE™	Preemption upgrade kit for Whelen™ lightbars
PRE-MX7000™	Preemption upgrade kit for Code 3™ lightbars

Code 3 and MX7000 are trademarks of the Public Safety Equipment Co.
Edge and Whelen are trademarks of the Whelen Technologies.
STROBEHAWK is a trademark of the Federal Signal Corp.

401-1228-PREHI/401-1228-PRELO

MINI PREEMPTION EMITTER POWER SUPPLY

The model 401-1228-PRE is a low-cost remote preemption emitter power supply. The unit is tiny at 2" x 3" x 1.5" and allows for easy mounting in any area. The 401 is fully potted making it vibration and water resistant. The 401 operates on 12 thru 28VDC and is fully protected against shorts or opens in the lamp wiring.



401-1228-PREHI-WP

Power Requirements:

Draws 1.85 A avg. @12VDC tapering to 0.9 A avg. @24VDC

Output Power Rating:

20 Watts minimum

Construction:

ABS case, polyurethane potting

Size:

2" (50.8mm) x 3" (76.2mm) x 1.5" (38.1mm)

Weight:

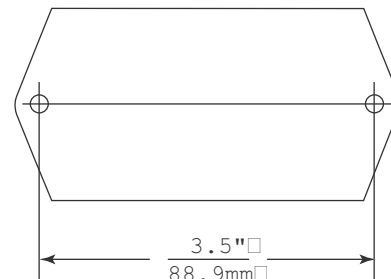
0.6 lbs (276 grams)

Mounting Hole Dimensions:

2 Holes, 0.187" Dia (4.75mm)

Ordering Information

Model No.	Description
401-1228-PREHI	High priority emitter power supply (standard connectors)
401-1228-PREHI-WP	High priority emitter power supply (waterproof connectors)
401-1228-PRELO	Low priority emitter power supply (standard connectors)
401-1228-PRELO-WP	Low priority emitter power supply (waterproof connectors)



Detector Mounts

2090M-1, 2090M-2, & 2091-S MOUNTS

TOMAR has made it easy to mount the 2090-SD and 2091-SD detectors. Choose from single or dual mounts, conduit body with terminal blocks or without terminal blocks, or span wire mounts. All mounts are manufactured out of corrosion resistant anodized and powder coated aluminum and stainless steel with galvanized steel locking nuts except for the 2091-S which is powder-coated steel with galvanized steel hardware.

The M913 STROBECOM® detector cable is made specifically for connecting 209X-SD detectors to 2000 & 3000 series optical signal processors. M913 cable is available in 500, 1000, and 2500 foot reels.



2091-S
(shown with detector)



2090M-1



2090M-2

Ordering Information

Model No.	Description	Material
2091-S	Single 2090-SD or 2091-SD span wire mount	Steel
2090M-1	1/2" conduit body single mount for 2090-SD or 2091-SD detector	Aluminum
2090M-2	1/2" conduit body dual mount for 2090-SD or 2091-SD detector	Aluminum
2095-1	2090M-1 mount with 2090-SD detector	Aluminum
2095-2	2090M-2 mount with two 2090-SD detectors	Aluminum
2096-1	2090M-1 mount with 2091-SD detector	Aluminum
2096-2	2090M-2 mount with two 2091-SD detectors	Aluminum

M913 Cable

Detector Cable



The M913 STROBECOM® detector cable is made specifically for connecting 209X-SD detectors to 2000 and 3000 series optical signal processors. M913 cable is available in 500, 1000, and 2500 foot reels.

Specifications

Item	Description
Cable	<ul style="list-style-type: none"> Type - shielded Nominal O.D. over jacket - .35" maximum
Conductors	<ul style="list-style-type: none"> Quantity -3 Gauge - AWG #20 (7 x 28) stranding Conductor Material - Individually tinned copper strands Insulation - PVC, 80C, 600V, 25 mil minimum average thickness Color -1 Blue, 1 Orange, and 1 Yellow
Shield	<ul style="list-style-type: none"> Aluminized polyester film or approved equal, applied with a nominal 20% overlap to provide 100% shield coverage
Drain Wire	<ul style="list-style-type: none"> Gauge - AWG #20 (7x28) stranding Material - Individually tinned copper strands Uninsulated and in contact with the shield conductive surface
Electrical Properties	<ul style="list-style-type: none"> Drain and conductor DC resistance shall not exceed 11.0 ohms per thousand feet Capacitance from 1 conductor to the other 2 conductors and shield shall not exceed 48 pf/ft at 1000 Hz
Jacket	<ul style="list-style-type: none"> Minimum average wall thickness - .045" Temperature rating - 80C Voltage rating - 600V Material - PVC, Black

M3880 Cable

Confirmation Light Cable



The M3880 STROBECOM® confirmation light cable is made specifically as the communication cable between the 2087 Confirmation light driver and the confirmation light. M3880 cable is available in 500, 1000, and 2500 foot reels.

Specifications

Item	Description
Cable	<ul style="list-style-type: none"> Type - Unshielded Nominal O.D. over jacket - .208" maximum
Conductors	<ul style="list-style-type: none"> Quantity -2 Gauge - AWG #18 (16 x 30) stranding Conductor Material - tinned copper strands Insulation - Color-Coded PVC Insulation 0.016", Gray PVC Jacket
Electrical Properties	<ul style="list-style-type: none"> Voltage Rating - 300 V rms Capacitance - 33pf/ft @ 1 kHz, Nominal Conductor to Conductor Inductance - 0.18 µH/ft, Nominal Conductor DCR - 7.1 Ω/1000ft @ 20°C, Nominal
Jacket	<ul style="list-style-type: none"> Minimum average wall thickness - .020" Temperature rating -20 to +80 °C (AWM), +75 °C (CM) Voltage rating - 300V Material - PVC, Gray

3065B

CORDLESS PREEMPTION EMITTER

The model 3065B coded programmable cordless emitter operates from a built-in light weight battery and gives you complete freedom of movement to test and study optical preemption system detector installations. The 3065B has a range of 2500 feet and is rechargeable from 110VAC. The 3065B is molded from high impact plastic and includes on-off switch.

The 3065B can be programed to emit any TOMAR code on either emergency band or transit band using the 3065-PROGCAB cable and software.

An optional visible light filter can be added to make emitter operation invisible.



Ordering Information

Model No.	Description
3065B	Coded programmable cordless preemption emitter available with clear lens only. Includes 120VAC charger & rechargeable battery.
EMIT3-CP-PWRCBL	Cigar plug power cable
RECT-37-VLF	Visible light filter
3065-PROGCAB	Programming software and cable

Specifications

Item	Description
Range (visible light)	2500 feet in high power.
Power	18 volt rechargeable battery
Size and Weight	12.5" high x 6.0" deep x 7.5" wide (317.5mm x 152.4mm x 190.5mm) 4.4 lbs. (2.0 kg)

NOTICE: The sale of this item is restricted to state and local governments and to authorized distributors only.

T792HLB

CORDLESS PREEMPTION EMITTER

The model T792HLB coded programmable cordless emitter operates from a built-in light weight battery and gives you complete freedom of movement to test and study optical preemption system detector installations. The T792HLB has a range of 2500 feet and is rechargeable from 110VAC. The T792HLB is molded from high impact plastic and includes on-off switch.

The T792HLB can be programed to emit any GTT® OPTICOM® compatible code of either command or advantage frequencies using the 3065-PROGCAB cable and ECMP5 3.2 software.

An optional visible light filter can be added to make emitter operation invisible.



Ordering Information

Model No.	Description
T792HLB	Coded programmable cordless preemption emitter available with clear lens only. Includes 120VAC charger & rechargeable battery.
EMIT3-CP-PWRCBL	Cigar plug power cable
RECT-37-VLF	Visible light filter
3065-PROGCAB	Programming software and cable

Specifications

Item	Description
Range (visible light)	2500 feet in high power.
Power	18 volt rechargeable battery
Size and Weight	12.5" high x 6.0" deep x 7.5" wide (317.5mm x 152.4mm x 190.5mm) 4.4 lbs. (2.0 kg)

NOTICE: The sale of this item is restricted to state and local governments and to authorized distributors only.

NOTE: GTT and Opticom are trademarks of Global Traffic Technologies, LLC.

Detector Tester

HAND HELD TESTER

The model 1760-14 Emergency band or 1760-10 Transit band hand held tester is battery operated and used to test activate STROBECOM® and STROBESWITCH™ detectors. Simply point it at the detector and press the button. It looks, feels, and works just like a garage door opener except that it uses a crystal controlled frequency code generator to operate an LED to simulate an optical strobe emitter.



Ordering Information

Model No.	Description
1760-14	High priority hand held tester.
1760-10	Low priority hand held tester.

Specifications

Item	Description
Range	Up to 10 feet
Frequency Control	Crystal controlled solid-state digital oscillator
Output LED	Invisible IR type narrow beam width
Battery	9 volt alkaline transistor type
Size	Height 0.94" (23.9mm) Length 4.81" (122.1mm) Width 2.25" (57.2mm)
Weight (with battery)	0.24lbs (0.109kg)

NOTICE: The sale of these items are restricted to state and local governments and to authorized distributors only.

1790-1014 Strobeswitch™

GATE & DOOR ACCESS SYSTEM

The model 1790 STROBESWITCH™ is a compact low cost detector which detects a special strobe light signal and opens access gates to allow quick entrance. The detector is activated by the strobe emitters used by most fire department emergency vehicles to control traffic signals en route to a fire. The 1790-1014 STROBESWITCH™ interfaces with all TOMAR and competitive traffic preemption optical signal emitters. The model 1790 features a 1/2" female pipe hub mounting base.

HOW IT WORKS:

The emergency vehicle uses a special strobe light to transmit a continuously flashing optical signal. The TOMAR 1790-1014 STROBESWITCH™ receives this signal, and if the signal format is correct, activates a relay. The relay contacts may be used to control security gates, fire department garage doors, and other devices. Signaling is optical by line of sight, and the 1790 can operate indoors or outdoors, in bright sunlight, or in any weather. The unit is not susceptible to radio frequency interference, and uses digital frequency discrimination to reject unwanted signals, such as flashlights, emergency vehicle lighting systems, flashing signs, etc.

*The sale of this item is restricted to state and local governments and to authorized distributors only.



1790-1014
STROBESWITCH™



2795-2 Dual
STROBESWITCH™ Assembly



1790M-2
Power Module



*Hand Held Tester

1790-1014 Strobeswitch



Specifications

Item	Description
Range	200 feet typical, but depends on intensity of strobe emitter
Field of View	10° vertical, 90° horizontal
Signal Acquisition Time	0.64 seconds
Function Indicator	The unit has a red LED that illuminates whenever a proper optical signal is received. The LED is visible thru the viewport and can be seen for 25 feet or more. This feature can be used with the optional Hand Held Tester to verify the unit's operation.
Frequency	F14 = 14.035 Hz \pm .25 Hz (high priority) F10 = 10.000 Hz \pm .25 Hz (low priority)
1790M-2 Power Module	12-24VDC AC/DC DPDT relay output 2A @ 30VDC, 0.6A @ 120VAC 0-30 minute time delay plus continuous latch mode Remote reset

Ordering Information

Model No.	Description
1790-1014	Strobeswitch only
1790-1014-S&M2	Strobeswitch and power module
1790-M2	Power module only
2795-2	Dual Strobeswitch and power module

Available Options

Model No.	Description
1760-14	Hand held tester for Emergency band
1760-10	Hand held tester for Transit band



For over 30 years, TOMAR Electronics, located in Gilbert, Arizona, has engineered, designed, and manufactured the highest quality, most reliable and extremely efficient audible and visual warning signals. Tomar Electronics is dedicated to perfecting strobe and LED technology and continues to define the standard for warning light performance into the twenty-first century.

From assemblers to administration, TOMAR is continually improving manufacturing efficiencies while preserving the consistent quality of our work. We take great pride in our efforts toward providing innovative products that save lives.

Research and Development

The cornerstone of innovation.

The performance and reliability of TOMAR products evolves from over a quarter century of intensive research and development of high efficiency electronic circuit designs and innovative optics.

TOMAR's staff of highly specialized engineers employ state-of-the-art electronic design and testing equipment to create the most advanced warning signals available. TOMAR's testing and research equipment includes:

- An advanced computerized circuit simulator that defines critical tolerance parameters and troubleshoots for potential design weaknesses.
- Surface Mount Technology Computer Automated (SMT) Component Pick and Place Assembly
- A 100 foot automated light measurement tunnel which uses photometers calibrated to display measurements in candelas effective in accordance with FAA, and IES standards. High speed photodiodes are used to measure and display light pulse wave shapes to insure accuracy in light intensity output specifications.
- A fully equipped and certified test lab, capable of making all tests and measurements.
- A fast scanning spectroradiometer for color measurements.

Manufacturing and Quality Control *Striving to produce high quality products.*

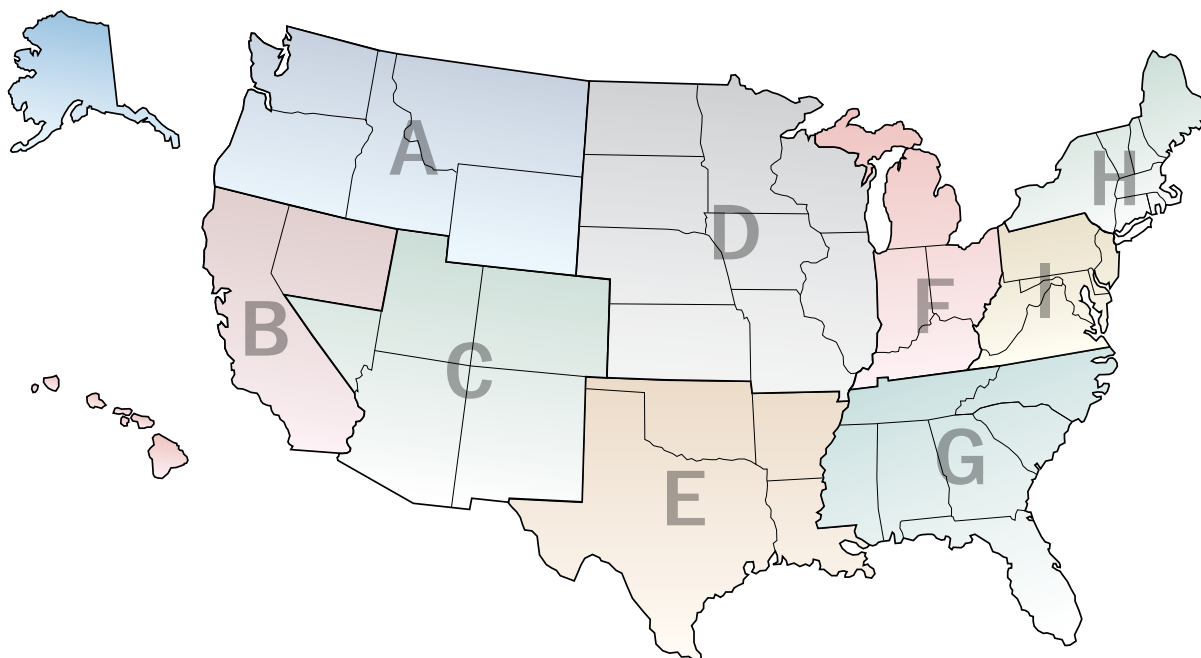
Rigorous quality control standards and detailed inspections are implemented at various stages in the production process. Fixture "burn-in" provides for an unprecedented 100% testing of all TOMAR products to ensure accurate and trouble free performance for the life of the strobe. Statistical Process Control is used to monitor production quality with detailed precision. TOMAR's warranties are among the longest in the industry, made possible by the dedication to quality in both the design and manufacturing processes. A computerized system integrating order entry, inventory, and production control helps to facilitate rapid order fulfillment.

TOMAR Online

Visit our web site for the latest product up-dates, documentation and many other helpful information at: www.tomar.com



US Sales Offices



Territory A	Territory B	Territory C	Territory D	Territory E
Alaska, Idaho, Montana, Oregon, Washington, Wyoming	California, Hawaii, North Nevada	Arizona, Colorado, Southern Nevada, New Mexico	Kansas, Nebraska, North & South Dakota, Illinois, Iowa, Minnesota, Missouri, Wisconsin	Arkansas, Louisiana, Oklahoma, Texas
Scott Cooke 604.574.4062 tel 604.866.6514 cell 604.5744055 fax scott.cooke@tomar.com	Matt Barker 480.399.3055 matt.barker@tomar.com	Tom Bleasdale 602.524.0521 480.585.2971 fax tomb@tomar.com	James Rameker 608.236.0329 608.236.0331 fax jamesr@tomar.com	Dan Sides 972.743.8555 877.575.9598 fax dan.sides@tpmar.com
Territory F	Territory G	Territory H	Territory I	
Indiana, Kentucky, Michigan, Ohio	Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee	Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont	Delaware, Maryland, New Jersey, Pennsylvania, Virginia, West Virginia	
Steve Taylor 260.760.5354 steve.taylor@tomar.com	Stuart Johnston 904.608.5607 904.608.7908 fax stuartj@tomar.com	Tomar Electronics Inc. 800.338.3133 800.688.6627 fax rex.stout@tomar.com	Tomar Electronics Inc. 800.338.3133 800.688.6627 fax rex.stout@tomar.com	

TOMAR WARRANTY

Except for Xenon strobe lamps and incandescent lamps, TOMAR Electronics, Inc. warrants most products described herein for a period of 2 years under normal use and service from the date of purchase as marked on the product, that the product will be free of defects in material and workmanship. This warranty does not cover ordinary wear and tear, abuse, misuse, overloading, altered products, or damage caused by the purchaser connecting the unit to wrong voltage or polarity. Xenon strobe lamps are warranted for 1 full year from date of purchase.

THERE IS NO WARRANTY OF MERCHANTABILITY. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION HEREIN. THERE ARE NO WARRANTIES EXPRESSED OR IMPLIED OR ANY AFFIRMATION OF FACT OR REPRESENTATION EXCEPT AS SET FORTH HEREIN.

REMEDY

TOMAR Electronics, Inc.'s sole responsibility and liability, and purchaser's exclusive remedy shall be limited to the repair or replacement at TOMAR Electronics, Inc.'s option, of a part or parts not conforming to the warranty. All products requiring warranty service shall be returned to TOMAR Electronics, Inc. within the warranted period, shipping prepaid. TOMAR Electronics, Inc. will return repaired or replaced products to the purchaser via prepaid ground transportation. In no event shall TOMAR Electronics, Inc. be liable for damages of any nature, including incidental or consequential damages, including but not limited to any damages resulting from non-conformity, defect in material or workmanship

All material being returned for service must have an RMA number shown on the shipping label. Please write or call 1 (800) 338-3133 to obtain the RMA number prior to sending the material for service.



STROBECOM II

TOMAR Electronics, Inc.

2100 W. Obispo Ave. Gilbert, AZ 85233 USA 800.338.3133 phone 800.688.6627 fax