Global Traffic Technologies

Installation Instructions June 2010

# Opticom™ Infrared System

# Model 795H Low-Profile LED Emitter

## 1. Description

The Opticom™ Infrared System Model 795 Low-Profile LED Emitter is a LED preemption emitter designed for use in low profile light bars.* This product is intended for use only inside of a light bar. It is not intended to be installed in an unprotected environment.

**The Model 795 is intended to be installed by Original Equipment Manufacturers (OEMs) or an OEM approved light bar installer only. This document is intended for use by OEM and their approved installers only. This manual is not intended for use by end users. The OEM should modify its lightbar manuals to document proper programming, testing, use, and maintenance of the Model 795 and provide this information to the end users.**

## 2. Intended Use

The system is intended to assist authorized priority vehicles through signalized intersections by providing temporary right-of-way through vehicle operator interface to the system and through the use of common traffic controller functions.

## 3. OEM Technical Support

If the OEM has questions about the use, installation or operation of the Model 795, please contact the Global Traffic Technologies (GTT) Technical Service department at 1-800-258-4610.

OEMs should direct their end customers to the OEM technical support contacts in order to answer specific questions about how the Model 795 is installed and wired into their lightbars.

*The method of using the components of the Opticom™ Infrared system may be covered by U.S. Patent Number 5172113. Other U.S. and foreign patents pending.

## 4. Electrical Specifications

- Input Voltage: 10-32 VDC
- Current Draw: 200mA @13.5 VDC (nominal)
- Power should be connected to a point that will provide sufficient voltage and current.
- A 1 amp fuse is required to protect vehicle wiring (Not included)

**⚠ CAUTION**

Install a 1-amp fuse in series with the red wire. **Failure to install the correct size fuse may damage the unit and vehicle wiring and void the warranty**.

## 5. Connector Details

The Model 795 is equipped with a 7.5" pigtail with an 8-pin Tyco/AMP connector. The OEM shall provide the harness to mate with the Model 795 connector.

**⚠ CAUTION**

Do not cut off the connector. **Cutting off the connector will void the warranty**. It will also prevent end users from programming their emitter.

The part numbers to construct a mating connector are:
Connector Shell: Tyco /AMP, 794941 Qty 1
Connector Pins: Tyco/AMP, 770903 Qty 7

Bulk cable is available from GTT in 1000' spools. The part number of this cable is 79-1000-0182-0. If this cable is not used, GTT recommends that stranded wire 18-22 AWG with colors matching the Model 795 cable be used when building a mating harness. **All seven wires should be included in the mating harness to provide all possible functions to the end user.**

## 6. Connector Pin out

Table 6-1 lists the pin index for the Model 794 emitter cable connector. Figure 6-1 shows the pin view of the connector on the end of the cable(pigtail) coming from the emitter.

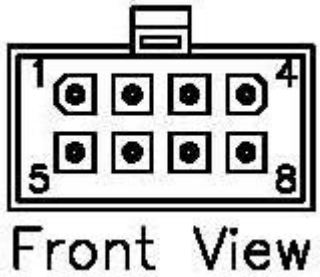


**Figure 6-1 Connector End View**

| Pin # | Wire Color | Description |
|---|---|---|
| 1 | Gray | J-1708 COM (-) (B) |
| 2 | White | Disable (input) |
| 3 | Orange | Range Setting Enable |
| 4 | Red | + 12 VDC |
| 5 | Not Used | Not Used |
| 6 | Blue | J-1708 COM (+) (A) |
| 7 | Black | DC negative/Ground |
| 8 | Green | DC Return for indicator light |

**Table 6-1**

- The **RED** wire is used to supply +12 VDC to power the emitter
- The **BLACK** wire is used to provide DC power ground
- The **WHITE** wire is the input for the disable feature (See section 9)
- The **GREEN** wire is a DC return for an indicator light (See section 10)
- The **GRAY** and **BLUE** wires are used for J-1708 communications (See Section 11)
- The **ORANGE** wire is used for range setting. This wire is typically **not** used in emergency vehicles. **GTT recommends that this wire be pinned out but left unconnected.**

## 7. Switch connections

GTT recommends that the emitter be wired so that it may be controlled by the control box that operates the rest of the lightbar. If that is not done, then GTT recommends that a separate lighted switch be used to control the emitter. See Section 10 for details on why a lighted switch is needed.

Standalone switches are available from GTT:

- The Model 793B is a lighted rocker style switch which may be panel mounted or mounted using the include L-Bracket.
- The Model 793S is a lighted fully enclosed pushbutton switch which is dash mounted.

## 8. Mounting Details

The specific mounting methods, locations, brackets, etc for the Model 795 are to be determined by the OEM. GTT does not provide any mounting brackets. See figures 8-1 and 8-2. CAD drawings of the Model 795 are available. Please contact GTT Tech Service at 1-800-258-4610 to request them.

For Optimal performance the Model 795 should be mounted as follows:

- So that there are no obstructions in front of it.
- Should be aimed straight ahead and parallel with the road surface.
- Should be mounted inside of a light bar behind a clear lens, colored lenses may reduce range.
- Should not be mounted inside of vehicles behind the windshield.
- Should be mounted in a protected environment. The Model 795 is not designed to be exposed directly to an outside environment.

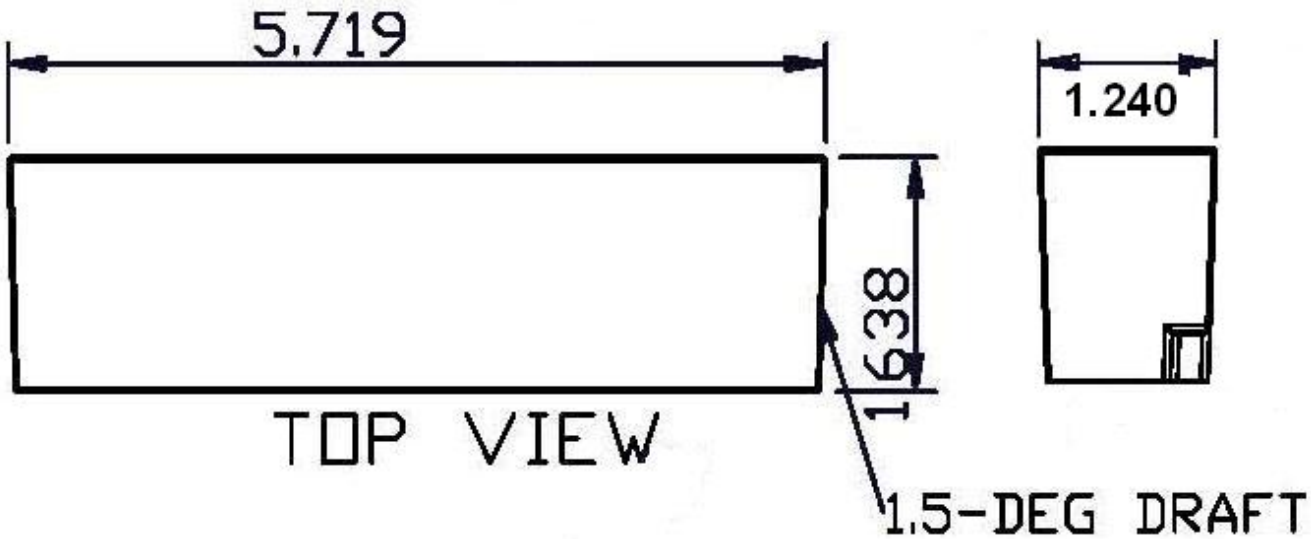


**Figure 8-1 Overall Dimensions**

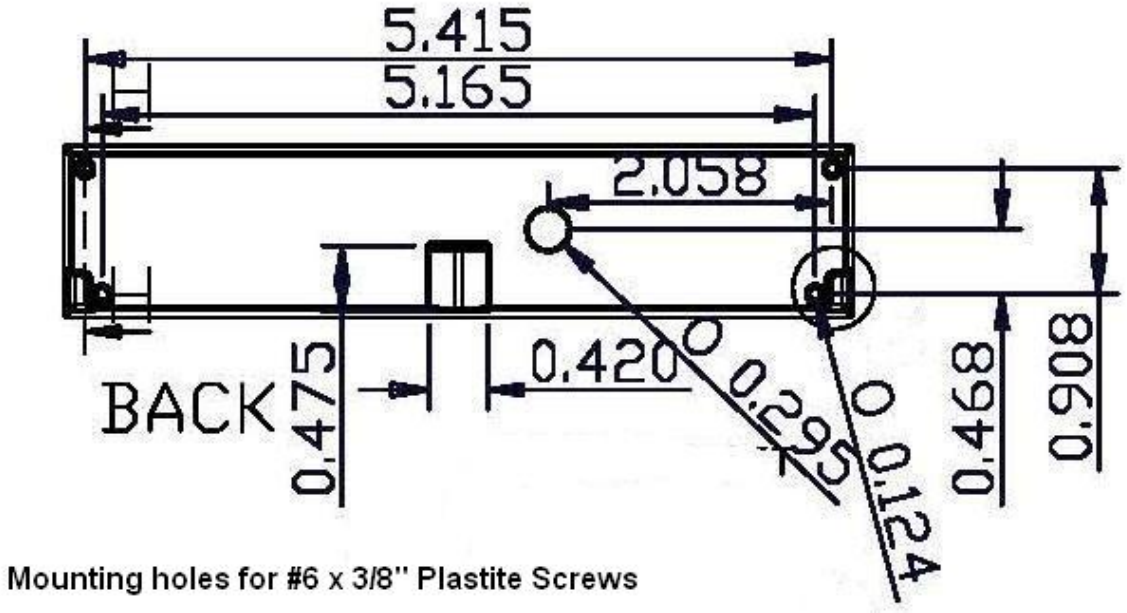


**Figure 8-2 Mounting Hole Locations**

**Note: When mounting the emitter, use #6 x 3/8″ Plastite screws only or the emitter may be damaged.**

## 9. Disable Wiring

The use of a disable switch is highly recommended so that emergency vehicle drivers do not need to remember to shut off their emitter when arriving at the scene. Without using this feature, nearby intersections may be unnecessarily held in preemption by vehicles at the scene.

The disable function is entered when the white wire transitions either from +12 VDC to ground or from a floating state to ground. See Figure 9-1

When installing the Model 795 Emitter the OEM should provide sufficient wire/cable length to allow the end user to connect the white wire as described.

The operation mode of the disable function may be programmed using ITS Link/790-CS. See section 10 of this document and the 790-CS help file for more details

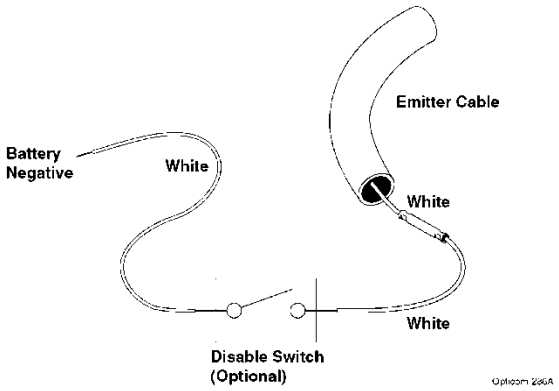


**Figure 9-1 Disable Wiring Connection**

## 10. Indicator Light

The use of an indicator light either in a switch or standalone is highly recommended. The indicator light, when controlled by the green wire in the Model 795 harness, will allow the user to determine if the emitter is

- Operating normally
    - Steady Indication
- In disable mode
    - Flashes once every two seconds
- Has failed
    - Flashes two times per second

The green wire provides a DC return for the indicator light. When +12 VDC is provided to one side of an indicator and the green wire is connected to the other side (or to the light terminal of a lighted switch, the emitter will control the behavior of the indicator light.

When installing the Model 795 Emitter the OEM should provide sufficient wire/cable length to allow the end user to connect the green wire as described above.

## 11. J-1708

The Model 795 emitter has a J-1708 compliant communications port. This port may be used to communicate between the Model 795 emitter and devices such as a control module, MDT, AVL system, or onboard computer. The communication protocol for the Model 795 is available from GTT. Contact Technical Service to obtain this document. **Cut off and tape off the Blue and Gray Wires if not used.**

## 12. Emitter programming

Using ITS Link Suite /790-CS and the Model 795 emitter programming cable the user may program the following parameters into the emitter:

- Vehicle Class Number
- Vehicle ID number
- Disable Operating Mode
- Visible LEDs behavior

ITS Link Suite /790-CS is available for download at: http://www.gtt.com/Tech-Support-Tools/Software-Downloads.

Version 3.1 or later is required to support the Model 795.

The part number for the 795 programming cable is 79-1000-0157-0. A serial extension cable is also needed. The GTT part number for this cable is 26-1014-5721-1. See figure 12-1

**See the ITS Link help file for more details.**

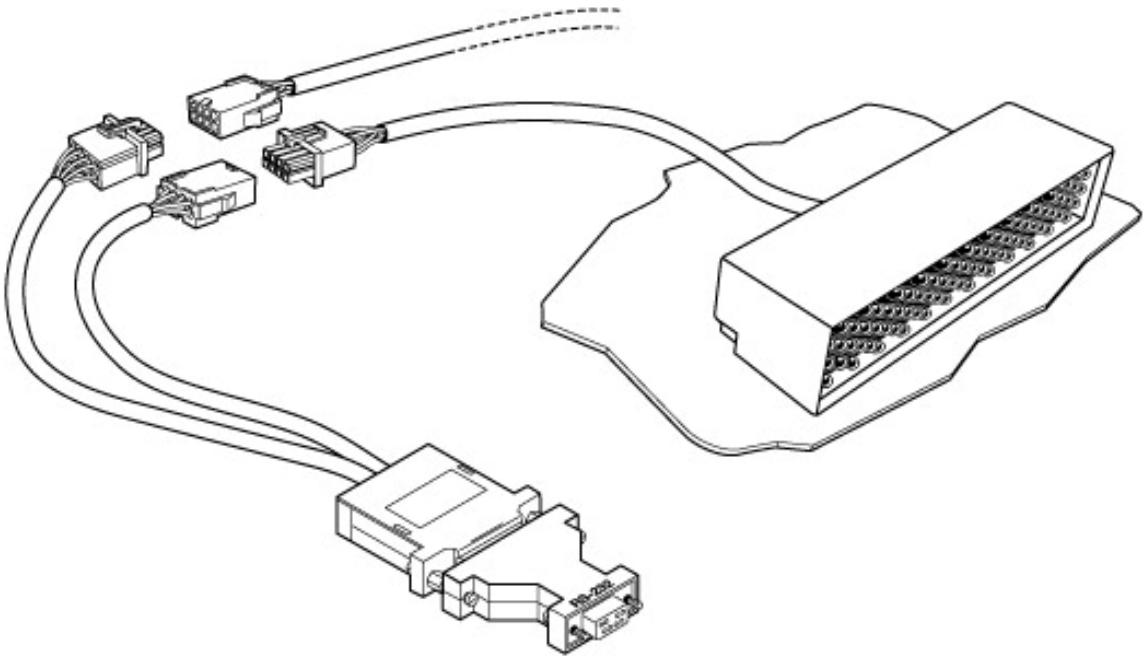

**Figure 12-1 Programming Cable Assembly**

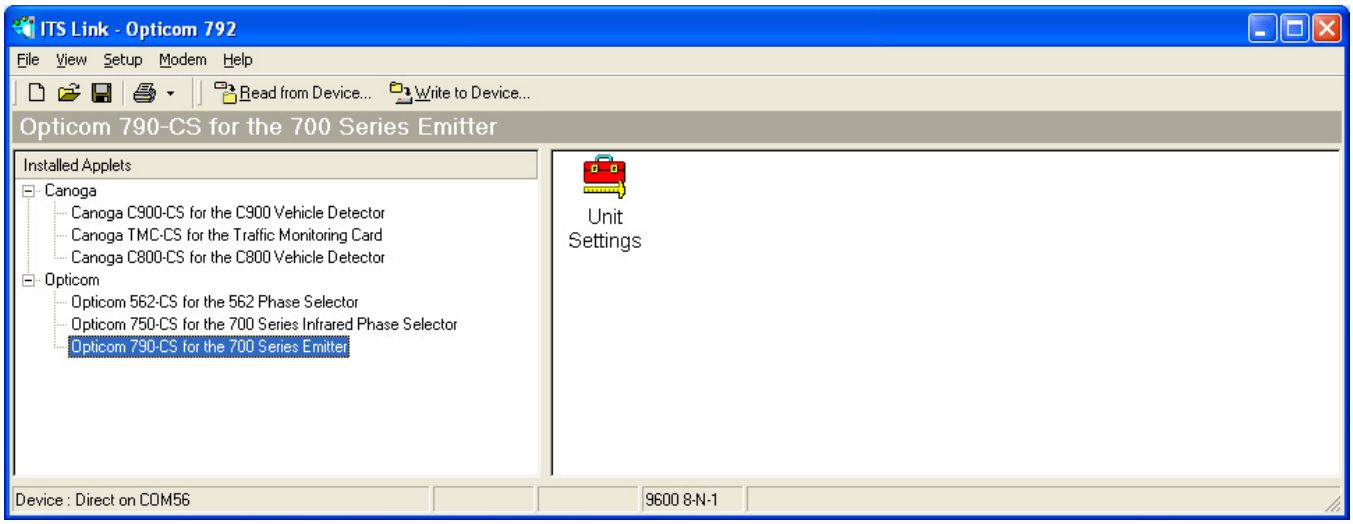


**Figure 12-2 ITS Link/790-CS Screen**

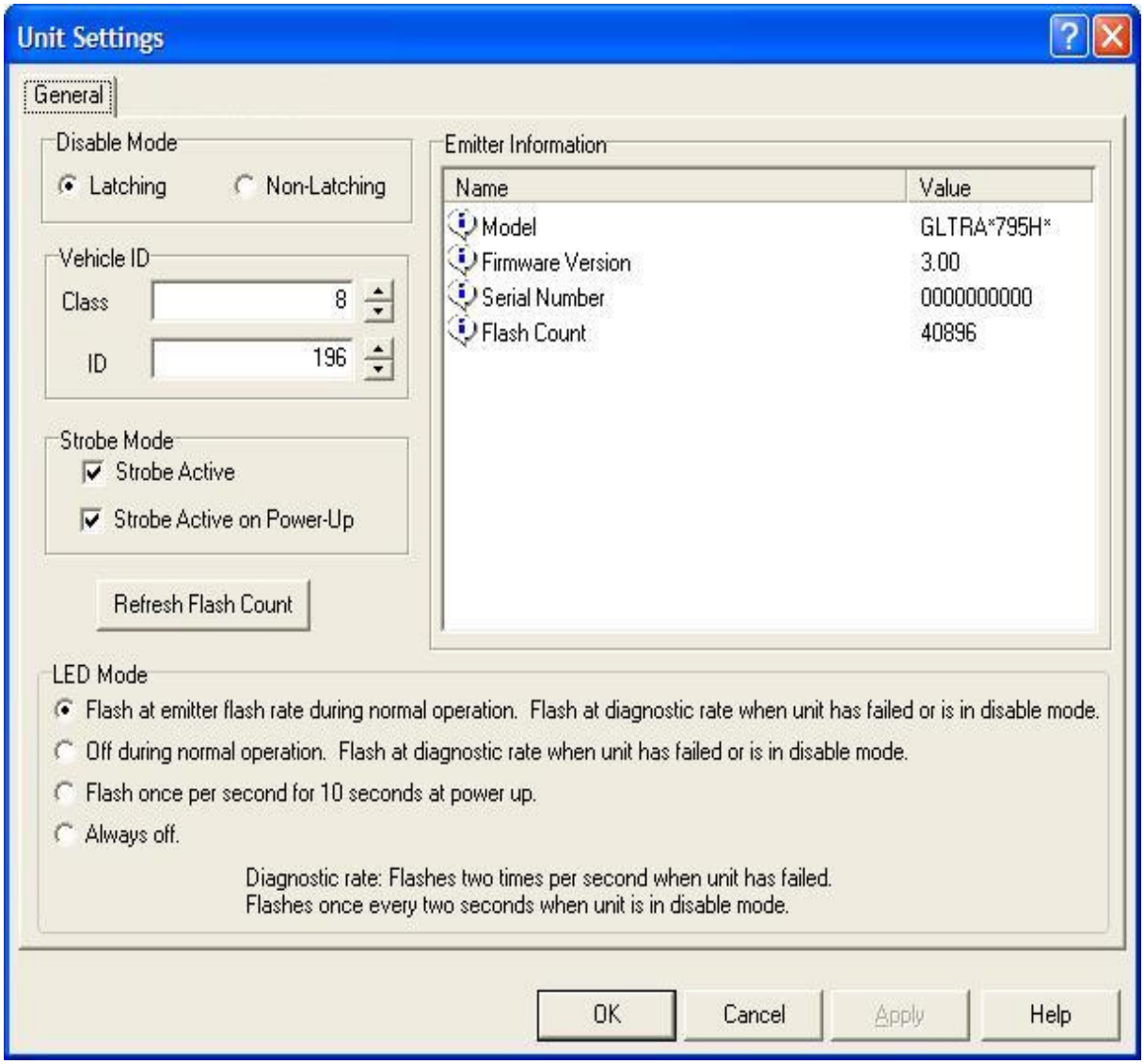


**Figure 12-3 790-CS Unit Settings Screen**

## 13 Troubleshooting

| | | |
|---|---|---|
| Four Red LEDs are Flashing rapidly, no other LEDS flashing | Infrared LEDs are not visible | View through a digital or cell phone camera |
| Four Red LEDS are steadily lit or flashing two times per second | Emitter has failed | Send in for repair |
| Four red LEDS and switch indicator light are flashing once every two seconds | Emitter is in disable mode (White wire is grounded) | Normal operation for a disabled emitter |
| No LEDS are flashing | Visible (red) LEDs are set to be always off or off after 10 seconds | Normal operation if the visible LEDs are configured that way. |
| | No power | Check voltage between red and black wires s/b 10-32 VDC |
| | No power, fuse blown | Replace fuse |
| Emitter is flashing slowly or intermittently | Insufficient voltage/current | Voltage applied must be between 10-16 VDC under all conditions. Lowest voltage typically occurs while vehicle is operating and in full response mode |
| | Emitter connected to a circuit that does not supply sufficient voltage and current | Connect red and black wires directly to the battery or large power distribution point |
| | Poor ground | Connect black wire directly to battery or clean the area where black wire is connected to vehicle chassis. |
| | Unused wires touching each other. | Cut off or tape off all unused wires |
| | Blue or Gray wires connected | Blue and gray wire are not used in most applications |
| LEDs flashing but not changing the signal lights | Code needed | Determine code needed for your area and program emitter accordingly |
| | Orange wire connected to +12 VDC | Orange wire should only be connected to a switch with a terminal for the orange wire. |
| | Emitter is obstructed or misaligned | Emitter should be mounted as high as possible on the vehicle , aimed straight ahead/parallel with the road |
| | Detector is located poorly, misaligned, blocked or worn | Relocate, realign or replace detector, Trim trees that may be blocking detector |
| | Incorrect model/priority for your area | Verify model number using ITS Link/790-CS |

**Important Notice to Purchaser:**

EXCEPT FOR THE LIMITED WARRANTIES SET FORTH IN THIS DOCUMENT, GLOBAL TRAFFIC TECHNOLOGIES (GTT) MAKES NO OTHER WARRANTIES AND EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED,INCLUDING, WITHOUT LIMITATION, ANY WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE.

Global Traffic Technologies (GTT) will, at its sole option, replace or refund any amounts paid for any Opticom™ Infrared System Model 795H Low-Profile LED Emitter found to be defective in materials or manufacture within two (2) years from the date of shipment from GTT.

The warranties set forth in this document shall not apply to any Opticom infrared low-profile emitter which has 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; or (4) subject to events or use outside the normal or anticipated course.

IN NO EVENT SHALL GTT BE LIABLE FOR ANY INJURY (INCLUDING, WITHOUT LIMITATION, PERSONAL INJURY), DEATH,LOSS, OR DAMAGE (INCLUDING, WITHOUT LIMITATION, PROPERTY DAMAGE), WHETHER DIRECT, INDIRECT, INCIDENTAL,SPECIAL, CONSEQUENTIAL, OR OTHERWISE, ARISING OUT OF THE USE OR INABILITY TO USE, REPAIR OR FAILURE TO REPAIR, ANY GTT PRODUCT. REGARDLESS OF THE LEGAL THEORY ASSERTED. THE REMEDIES SET FORTH IN THIS DOCUMENT ARE EXCLUSIVE.

Sale and use of the Opticom infrared system is expressly restricted to authorized agencies of government customers, within their specific jurisdictions. However, because the infrared signal generated by the Opticom infrared system is not exclusive, GTT does not warrant exclusive activation by purchaser. Authorized users who desire to use or coordinate use of the Opticom infrared system with that of other jurisdictions must first obtain the prior written approval of each authorized user in the jurisdiction where use is sought.

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