

Lineum Star Phantom[®]

Model ULB48-TD

Dual Color Undercover Interior LED Lightbar



IMPORTANT: Please read all of the following instructions before installing your new LED undercover lightbar.

WARNING!!! Care should be taken when positioning this warning light so that the light and/or cord does not interfere with the proper operation of the driver-side or passenger-side airbag! Failure to heed this warning may result in serious or fatal injury.

Please Note: These instructions are provided as a general guideline only. Specific mounting and/or wiring, may be necessary and are the sole responsibility of the installer. Star Headlight & Lantern Co., Inc. assumes no responsibility for the integrity of the installation for this or any of its products.



This light utilizes high-intensity LED Lamps. DO NOT stare directly into the light while it is on, as momentary blindness and/or permanent eye damage may occur.



Star Headlight & Lantern Co., Inc.

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STAR
WARNING
SYSTEMS[®]

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PLIT505 REV. C 12/26/19

Mounting

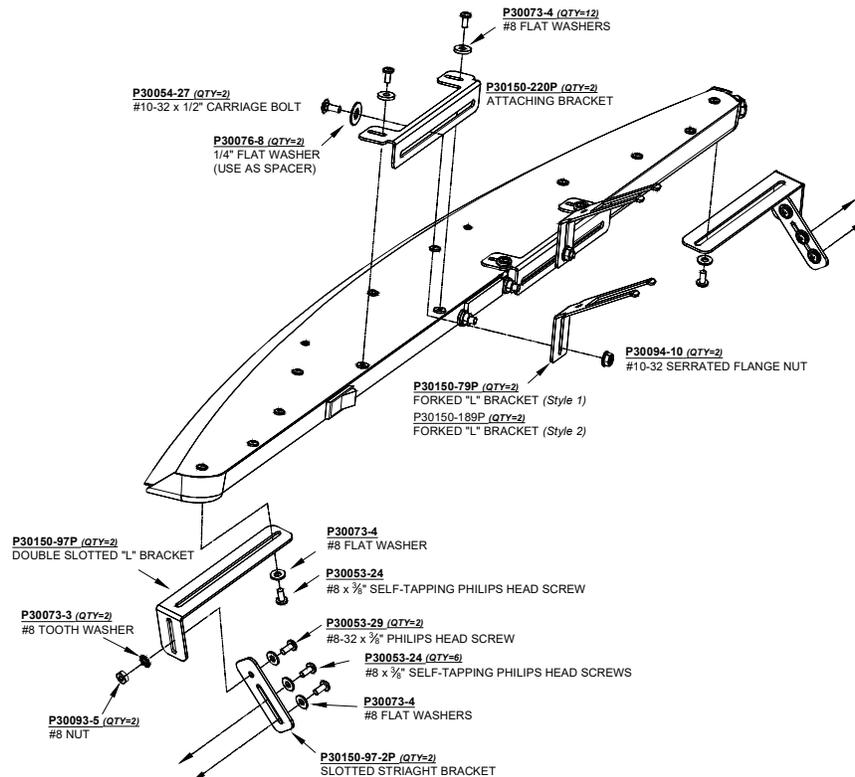
 Please review the **Programming** section BEFORE mounting your light. There are several options you may wish to set prior to installation.



*The **Star Phantom**[®] line of lights is designed to be mounted on the inside of your vehicle. They are not intended for exterior applications and are not warranted against water damage.*

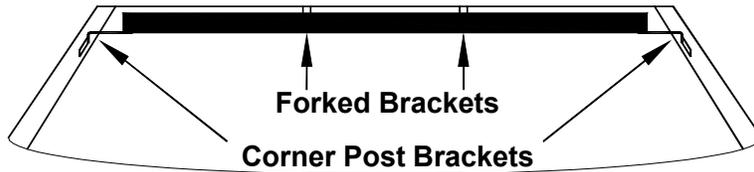
It is the sole responsibility of the owner to ensure the warning light is secure. Check your light every time you enter the vehicle to ensure that it is mounted securely. The manufacturer assumes no responsibility for the secure mounting of this light.

The following mounting instructions describe the standard, most common way to mount this light. This method may or may not apply to your vehicle. Because vehicles can vary widely in their design, it may be necessary to configure the brackets differently than described. Some applications may require you to design your own custom brackets. The installer assumes all responsibility for the integrity of the installation. ***It is the sole responsibility of the owner to ensure the light is secure.***



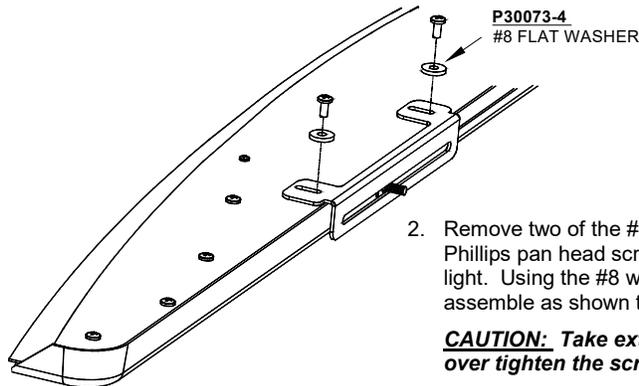
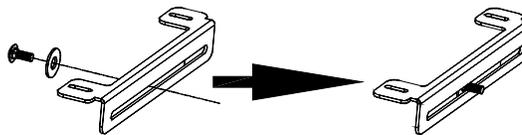
Mounting (CONTD)

This light is designed to be mounted in the rear window of a vehicle using **both** the forked brackets **and** the corner post brackets. **Failure to use both brackets could result in a faulty mount and will void the warranty.** If your vehicle is not compatible with these brackets you must custom design mounting brackets.



FORKED BRACKET INSTALLATION

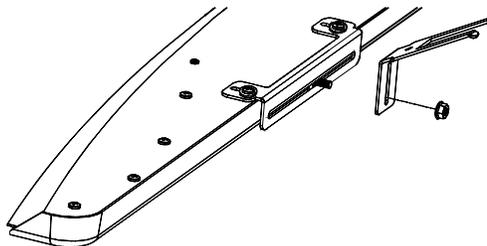
1. Insert a carriage bolt through one of the 1/4" washers and slide it through the back of each of the brackets. *Please note that washer is used as a spacer on the square neck of the carriage bolt.*



2. Remove two of the #8 x 1/2" self-tapping Phillips pan head screws on one side of the light. Using the #8 washers enclosed and assemble as shown to the left.

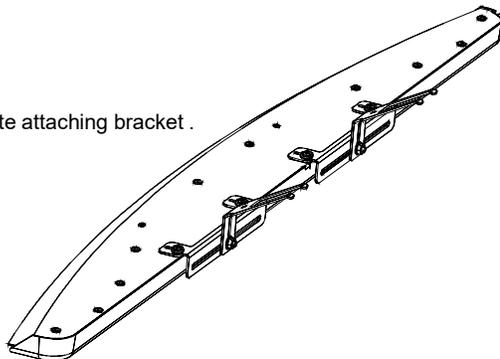
CAUTION: Take extreme caution not to over tighten the screws!!!

3. Place one of the forked "L" brackets on the bolt and secure it with one of the nuts. *Note: There are two different style forked brackets included. Use the one that suits your application best.* Leave the nut slightly loose to allow for minor adjustments during the remainder of the installation.

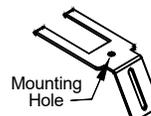


Forked Bracket Installation (CONT'D)

4. Repeat steps 1-3 for the opposite attaching bracket .

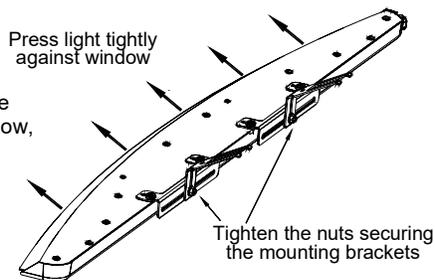


5. Determine an appropriate user-supplied screw to penetrate the headliner and securely mount the bracket to the roof brace (or other mounting location) through the mounting hole in each forked bracket.



CAUTION: Take care to ensure when selecting a screw and drilling the hole that it is capable of supporting the weight of the light and that it does not penetrate the roof of the vehicle.

6. Using the slots in the brackets, adjust the light so that it fits tightly against the window, carefully bending the forked brackets, if necessary, and tighten the screws.



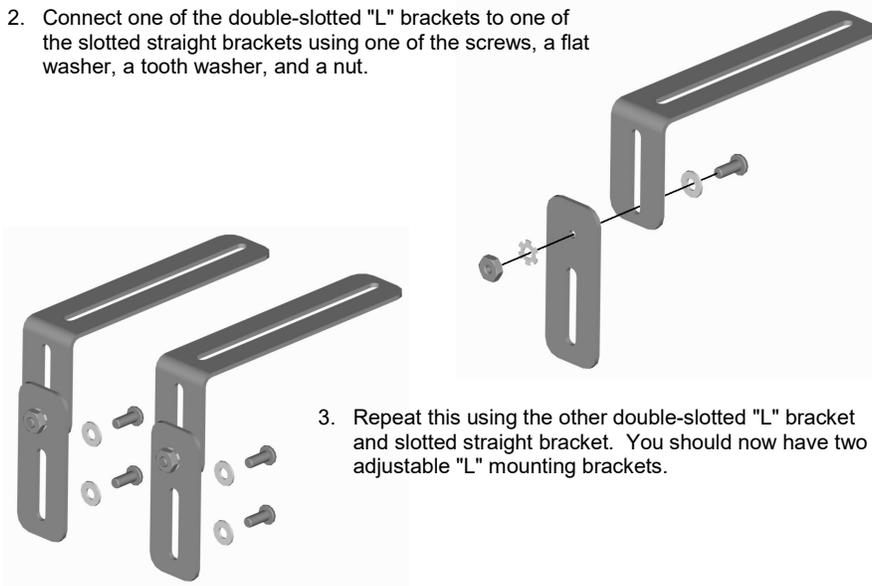
CAUTION: Take extreme caution not to over tighten the screws!!! Over tightening of the screws can strip the holes.

CORNER POST BRACKET INSTALLATION

1. After the forked brackets are installed, you will need to attach the corner post mounting brackets.



2. Connect one of the double-slotted "L" brackets to one of the slotted straight brackets using one of the screws, a flat washer, a tooth washer, and a nut.



3. Repeat this using the other double-slotted "L" bracket and slotted straight bracket. You should now have two adjustable "L" mounting brackets.

4. Connect one bracket to each end of your *Star Phantom*® using the screws provided. Loosen both screws slightly to allow for adjustability when installing the lightbar.



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Corner Post Bracket Installation (CONT'D)



5. Adjust the mounting brackets so that they rest flat against the corner post on each side of the vehicle.
6. Once the brackets are adjusted to the desired position, tighten all the screws on the brackets.
7. Mark the two spots where you will be attaching your screws to the corner post.
8. Loosen the brackets, temporarily slide them aside, and drill a 1/8" hole in each of the marked locations.
Caution: *Be sure to check that there are no wires or anything else behind the molding that may be damaged by the screw holes.*
9. Return the brackets to their original position against the corner post and use two of the self-tapping screws in each side to secure each bracket to the corner posts.
10. Once the brackets are securely tightened, check your mount to ensure the desired angle is achieved. Stand behind the vehicle and inspect the light through the rear window. The screws may be loosened slightly to allow for any final adjustments necessary.
11. Once all the necessary adjustments are made retighten all the screws.
CAUTION: *Take extreme caution not to over tighten the screws!!! Over tightening of the screws can strip the holes and result in a faulty mount.*

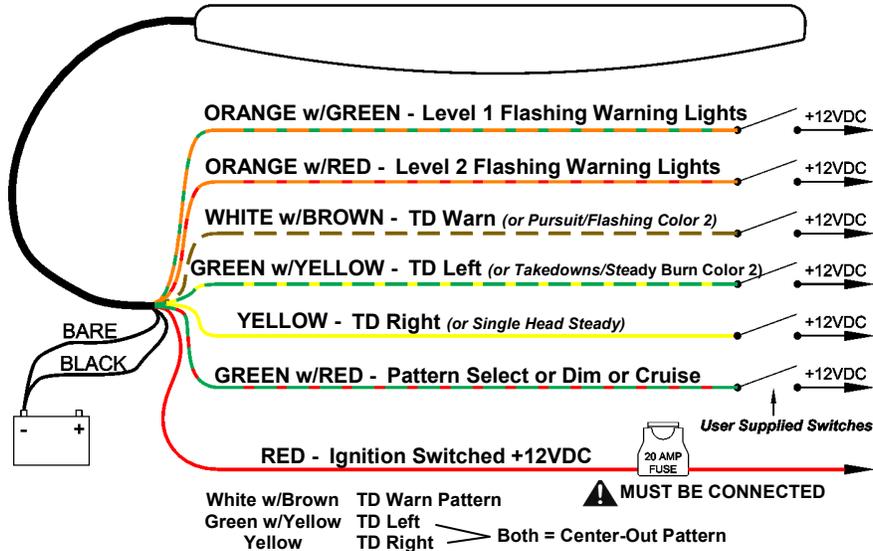


Because of the wide variety of mounting applications, Star Headlight & Lantern Co., Inc. assumes no responsibility for the secure mounting of this light. It is the responsibility of the installer and/or owner to ensure the lightbar is mounted securely. Check your light every time you enter the vehicle to ensure that it is mounted securely.

Wiring

For proper installation and full operability, this light requires a 20A ignition switched power source, connections to the negative terminal of the battery, and 4-6 external switches rated for a minimum 1A (*user supplied*).

These lights come with a pre-installed 8-conductor harness. In addition, the cable also contains a bare drain wire and foil shielding.



Please Note: When the red wire is connected to +12VDC the light will draw a small current (2 mA). Occasionally vehicles may sit for extended periods of time (i.e. more than a few days), thus we recommend that the red wire be routed through an ignition switched power source.



All wires connected to the positive terminal of the battery should be fused at the battery for their rated load. **Testing the light before this fuse is properly installed will void the warranty on the light.**

Programming

Programming is optional. If the default settings are acceptable, skip to the Operation section.

If you will be changing any of the options on your lightbar, this should be done prior to installation. Programmable features include the following:

- Pattern Selection
- Traffic Director or Takedown Mode
- Phase Selection (which heads alternate)
- Head Enable (which heads activate)
- Single Steady Head Option
- Dim Option (High-Low)
- Cruise Mode
- Pattern Cycling Setup
- Resetting to Factory Defaults

Programming (CONT'D)

Pattern Programming

Not only does this light have several Patterns to select from, but it also incorporates advanced programming that allows you to select which heads flash On and Off with one another (Phase), and which heads are active in any of the functions (Head Enable).

The first step in programming is to select a basic pattern for each function:

- Level 1 Warning Lights (*Orange w/Green*)
- Level 2 Warning Lights (*Orange w/Red*)
- Traffic Director Warn (*White w/Brown*) or Pursuit, if applicable
- Traffic Director L, C-O, R (*Yellow or Green w/Yellow*)

Patterns for Warning Lights

(Level 1, Level 2, and TD Warn or Pursuit)

- 1 Flicker *
- 2 Slow Singleflash
- 3 Fast Singleflash
- 4 Slow Doubleflash
- 5 Fast Doubleflash
- 6 Slow Tripleflash
- 7 Fast Tripleflash (*Level 2 default*)
- 8 Quadflash
- 9 Quintflash
- 10 Tripleflash w/Post Pop
- 11 Quadflash w/Post Pop
- 12 Quintflash w/Pre Pop
- 13 Singleflash Flicker **
- 14 Doubleflash Flicker
- 15 Single, Quad w/Post Pop, Flicker
- 16 Delta-Omega
- 17 Moving Delta-Omega ***
- 18 Random 1
- 19 Random 2
- 20 Random 3
- 21 Flashing Bounce
- 22 Full Bounce (*Level 1 default*)
- 23 Split Bounce
- 24 Half Bounce
- 25 Bounce w/End Pop
- 26 Search Lights
- 27 Eyeballz
- 28 Fade Invert
- 29 Singleflash w/Alternating Ends
- 30 Triple In/Triple Out
- 31 Two Speed (*Pursuit default*)

- * Shortcut Pattern #1 (3 sec/1 flash)
- ** Shortcut Pattern #2 (6 sec/2 flashes)
- *** Shortcut Pattern #3 (9 sec/3 flashes)

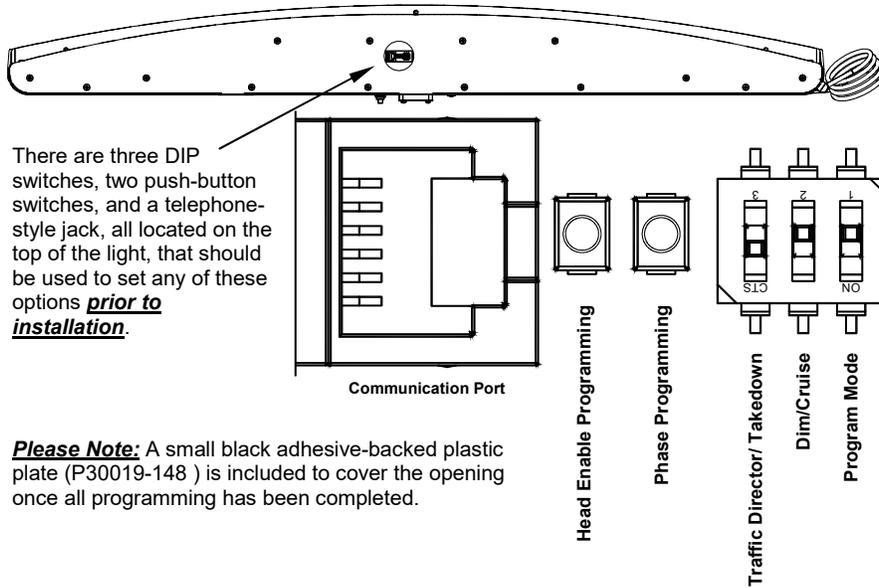
1. Connect the Red wire to power and the Black wire to Ground.
2. Activate the function you wish to program by connecting the corresponding wire to +12VDC.
3. Touch and release the Green w/Red wire to +12VDC to scroll through the patterns shown to the left. (*Traffic Director L, C-O, R shown below.*)
Note: At any time you can shortcut to the patterns indicated with the asterisks by holding the pattern select wire to +12VDC for the indicated time.
4. Repeat for each function you wish to program.

Patterns for Traffic Director

(Left, Right, and Center Out functions all use the same pattern)

- 1 Standard *
 - 2 6-Head TD with End Flash
 - 3 Standard w/End Blink
 - 4 Two-Head Traveling
 - 5 California Title 13 **
 - 6 California Title 13 Fast
 - 7 Four Head Traveling
 - 8 Snake
 - 9 Pop
- * Shortcut Pattern #1 (3 sec/1 flash)
 - ** Shortcut Pattern #2 (6 sec/2 flashes)

Programming (CONT'D)



Traffic Director /Takedown

This light has the option to operate in either Traffic Director Mode or Takedown Mode. By default, standard ULB48-TD lightbars will be shipped with Traffic Director Mode **ON** (DOWN in the picture above).

If you will NOT be using the Traffic Director functions of this bar (Warn, Left, Right, and Center Out) you can move this DIP switch into Takedown Mode (UP) which will replace the Traffic Director Functions with Pursuit, Takedown, and Single Steady Head functions.

Phase Selection (Programmable for Patterns 1-16 only)

Each flashing head has two Phases, an "On" phase and an "Off" phase. You can program each head for either Phase, allowing you to customize which heads flash On together and which are Off together. This can be done for your **Level 1**, **Level 2**, and **TD Warn** functions.

1. Connect the **Red** wire to power and the **Black** wire to **Ground**.
2. Activate the function you wish to program by connecting the corresponding wire to +12VDC.
3. Press the **Phase Programming** button to scroll through the 5 optional Phase variations.
4. Repeat for each function you wish to program.

	Head 1	Head 2	Head 3	Head 4	Head 5	Head 6	Head 7	Head 8	Head 9	Head 10
Standard 1	Phase 1	Phase 2	Phase 1	Phase 2	Phase 1	Phase 1	Phase 2	Phase 1	Phase 2	Phase 1
Simultaneous 2	Phase 1									
CAL T13 3	Phase 1	Phase 2								
Alt Pairs 4	Phase 1	Phase 1	Phase 2	Phase 2	Phase 1	Phase 1	Phase 2	Phase 2	Phase 1	Phase 1
Center Two 5	Phase 1	Phase 1	Phase 1	Phase 1	Phase 2	Phase 2	Phase 1	Phase 1	Phase 1	Phase 1

Programming (CONTD)

Head Enable

This light also has the ability for the installer to select which heads are active for any given function. You may wish to de-activate several heads in your Level 1 Pattern to indicate less urgency. Or you may wish to have a 6 or 8 head Traffic Director pattern with the end heads flashing the Level 1 or 2 patterns. This option can be programmed for any of the functions.

1. Connect the **Red** wire to power and the **Black** wire to Ground.

2. Activate the function you wish to program by connecting the corresponding wire to +12VDC.

3. Press the **Head Enable Programming** button to scroll through the 13 optional variations. (Note: only options 1-3 are available for the Traffic Director Functions.)

	Head 1	Head 2	Head 3	Head 4	Head 5	Head 6	Head 7	Head 8	Head 9	Head 10
1	ON									
2	ON									
3	ON									
4	ON									
5	ON									
6	ON									
7	ON									
8	ON									
9	ON									
10	ON									
11	ON									
12	ON									
13	ON									

4. Repeat for each function you wish to program.

Single Steady Head Programming (Available in TAKEDOWN mode only - pg. 8)

Some applications (such as Cal. Title 13) require the use of a single steady head. If you are using this feature (Yellow wire) and wish to change the head location, proceed as follows:

1. Connect the **Red** wire to power and the **Black** wire to Ground.
2. Connect the **Yellow** wire to power and press and release the **Head Enable Programming** button to scroll through the various positions for the steady burn head.

Single Steady Burn Head

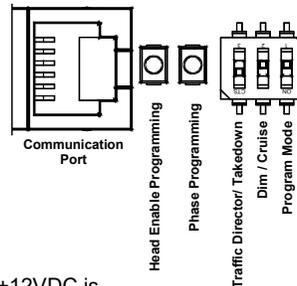
	Head 1	Head 2	Head 3	Head 4	Head 5	Head 6	Head 7	Head 8	Head 9	Head 10
1	ON									
2	ON									
3	ON									
4	ON									
5	ON									
6	ON									
7	ON									
8	ON									
9	ON									
10	ON									

Dim Option (cannot be used with Cruise Mode)

By default, the **Green w/Red** wire is normally used for Pattern Programming. This light also has the option of allowing you to use it to dim the light for nighttime operation. If you do not need this feature, skip this section.

If you wish to use the **Green w/Red** wire for the **Dim** function, proceed below:

1. AFTER PROGRAMMING YOUR FLASH PATTERNS, flip the **Dim/Cruise** DIP switch into the ON position (switch 2 in the diagram to the right would be moved DOWN).
2. Connect the **Red** wire and the **Green w/Red** wire to power and the **Black** wire to Ground to activate Cruise Mode.
3. Press the **Phase Programming** button once. Now when +12VDC is applied to the **Green w/Red** wire, the light will dim.



Programming (CONT'D)

Cruise Mode (cannot be used with Dim Option)

This light has the option of allowing you to use the **Green w/Red** wire to activate Cruise Mode. Cruise Mode is a dim steady burn mode that can be enabled on some or all of the heads. If you do not need this feature, skip this section.

By default, the **Green w/Red** wire is normally used for Pattern Programming. If you wish to utilize Cruise Mode, proceed as follows:

1. AFTER PROGRAMMING YOUR FLASH PATTERNS, flip the **Dim/Cruise** DIP switch into the ON position (DOWN in the diagram on the following page).
2. Connect the **Red** wire and the **Green w/Red** wire to power and the **Black** wire to Ground.
3. Select which Cruise Mode option that you want:
 - Low Priority (All other functions override Cruise): Hold the **Phase Programming** button until the light flashes once.
 - High Priority (Cruise overrides all other functions): Hold the **Phase Programming** button until the light flashes twice.

To change the **Green w/Red** wire to Dim functionality, activate Cruise Mode and press the **Phase Programming** Button once.

Cruise Mode Head Selection

By default Cruise Mode will illuminate all of the heads of one color in a dim steady burn mode. If desired, you can change which heads will be activated in Cruise Mode, and which color will be activated. **Please Note:** Although you can program each head to activate both colors and it will not harm the heads, it is not recommended that you do so.

1. Connect the **Red** wire to power and the **Black** wire to Ground.
2. Activate Cruise Mode by connecting the **Green w/Red** wire to +12VDC.
3. Decide which color you would like to program:
 - To program Color 1: Press and hold the **Head Enable Programming** button until the light flashes once.
 - To program Color 2: Press and hold the **Head Enable Programming** button until the light flashes twice.
4. Press and release the **Head Enable Programming** button to scroll through the 14 optional variations shown below.
5. If needed, repeat for the other color.

	<u>Head 1</u>	<u>Head 2</u>	<u>Head 3</u>	<u>Head 4</u>	<u>Head 5</u>	<u>Head 6</u>	<u>Head 7</u>	<u>Head 8</u>	<u>Head 9</u>	<u>Head 10</u>
1	ON									
2		ON								
3			ON	ON	ON	ON	ON	ON		
4				ON	ON	ON	ON			
5					ON	ON				
6	ON									ON
7	ON	ON							ON	ON
8	ON	ON	ON					ON	ON	ON
9	ON	ON	ON	ON			ON	ON	ON	ON
10				ON			ON			
11	ON	ON	ON		ON	ON		ON	ON	ON
12			ON	ON			ON	ON		
13	ON	ON			ON	ON			ON	ON
14										

Programming (CONTD)

Pattern Cycling of Simultaneous Functions

This section is **OPTIONAL**. 'Pattern Cycling of Simultaneous Functions' refers to how the light reacts if you activate more than one function at the same time.

This light is programmed such that when you activate one of the Traffic Directing patterns (Left, Right, or Center-Out) at the same time as one of the Warning patterns (Level 1 Flashing, Level 2 Flashing, or TD Warn) they will alternate with the bar producing 3 traffic directing cycles, then 1 Warning cycle, and repeat (ex: Left, Left, Left, Warn, Left, Left, Left, Warn, etc.).

If you activate TD Warn with either Level 1 or Level 2 Flashing:

If Level 1 or 2 is pattern 1-16: TD Warn lights alternate the Level 1 or 2 Pattern with the Level 1 or 2 lights.

If Level 1 or 2 is pattern 17-31: TD Warn Lights go into a random Pattern while Level 1 or Level 2 lights flash in their programmed pattern (page 7).

You may skip the rest of this section if the above settings are acceptable.

Traffic Director Cycle Count refers to the number times the Traffic Directing Pattern (Right, Left, Center-Out) will repeat before alternating to the Warn/Flashing Pattern. It is defaulted to 3.

Warn Cycle Count refers to the number times the Level 1 Flashing, Level 2 Flashing, or TD Warn pattern will repeat before alternating to the Traffic Directing Pattern (this also applies if you activate Level 1 or 2 and the TD Warn). It is defaulted to Off (or 0). (Note: if OFF, pattern runs once when cycling with Traffic Director).

1. Flip the Program Mode switch onto the ON position (DOWN in the diagram on the previous page).
2. Connect the **Red** wire to power and the **Black** wire to Ground.
3. Program the **Traffic Director Cycle Count**:
 - A. Activate the Left function by connecting the **Green w/Yellow** wire to +12VDC. (Please note that the Left, Right, and Center-Out will all have the same Cycle Count and can be programmed using any one of those functions.)

One of the heads (or none) will illuminate indicating what the current **Traffic Director Cycle Count** is.

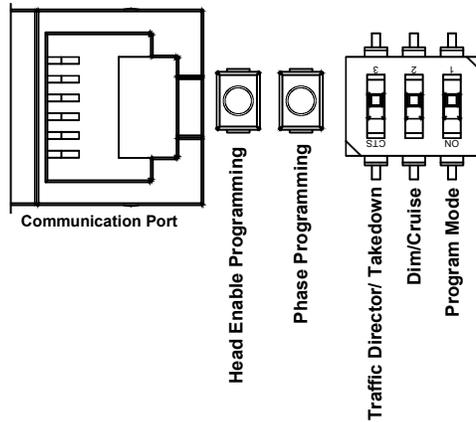
Ex: If no heads are lit, the feature is off. (Default setting Warning Patterns)
If Head 1 is lit, that mode is programmed to cycle 1 time.
If Head 2 is lit, that mode is programmed to cycle 2 times.
If Head 3 is lit, that mode is programmed to cycle 3 times (Default setting for Traffic Director Patterns)
and so on through Head 10.
 - B. Touch and release the **Green w/Red** wire to +12VDC to scroll through the different Cycle Counts.
4. Repeat step 3 using the **White w/Brown** wire to program the **Warn Cycle Count**. (Please note that Level 1 Flashing, Level 2 Flashing, and TD Warn will all have the same Cycle Count and can be programmed using any one of those functions.)
5. Disconnect all wires and flip the corresponding DIP switch out of Programming Mode.

Programming (CONT'D)

Factory Default Settings

To reset the light to all of the factory default settings, proceed as follows:

1. Flip the **Program Mode** switch ON position (DOWN in the diagram below). All Traffic Director (or Pursuit) lights should start flashing.
2. Press and hold the **Head Enable Programming** button until the Traffic Director (or Pursuit) lights go off and all of the heads light up sequentially from left to right.
3. Once all of the heads are illuminated, release the **Head Enable Programming** button and the light will be restored to the factory default settings.
4. Flip the **Program Mode** DIP switch into the OFF position. Reprogramming should be completed.



Operating Instructions

Main control of this light is done through the wires in the harness. They should be connected to +12VDC through several switches (*user supplied*) as described in the **Wiring** section.



NOTE: RED MUST BE CONNECTED TO POWER
BLACK MUST BE CONNECTED TO GROUND

Level 1 Flashing Mode (Orange w/Green)

This is usually intended as a slower, less urgent mode typically used when parked. The colored lights will flash in the pattern you have them programmed for. If Pursuit Mode or TD Warn is already activated, those lights will continue to flash, along with the Level 1 lights.

Level 2 Flashing Mode (Orange w/Red)

This mode is intended for high-urgency situations, such as a high speed chase, requiring significant warning power. It is usually a faster pattern than Level 1. The colored lights will flash in the pattern you have them programmed for. Level 2 will override Level 1 lights. If Pursuit Mode or TD Warn is already activated, those lights will continue to flash, along with the Level 2 lights.

Functions Only Available with DIP switch in TRAFFIC DIRECTOR Mode (default setting)

TD Warn (White w/Brown)

Usually activated when a vehicle has been pulled over. The amber lights will flash in the WARN pattern you have them programmed for.

TD Left (Green w/Yellow)

Applying +12VDC to this wire will produce a pattern directing traffic left.

TD Right (Yellow)

Applying +12VDC to this wire will produce a pattern directing traffic right.

Center-Out (Green w/Yellow) and (Yellow)

Applying +12VDC to **BOTH** of these wires will produce the Center-Out Pattern.

Functions Only Available with DIP switch changed to TAKEDOWN Mode

Pursuit Mode (White w/Brown)

Usually activated when in pursuit of another vehicle. These lights (typically white) will flash in the pattern you have them programmed for.

Takedowns (Green w/Yellow)

These are steady burn lights (typically white) that are used to illuminate the scene once a vehicle has been pulled over. This mode will override all others, stopping all flashing for heads that have Takedown mode enabled.

Single Head Steady (Yellow)

When activated, the preprogrammed light will be activated in a steady burn mode.

Burst Mode (Green w/Yellow and Green w/Red)

Please Note: This mode is only available in Takedown Mode **AND** if you have the Dim/Cruise Option disabled (see pages 8-10).

This mode will temporarily "burst" the steady burn lights (typically white) into an "extra bright" mode for 30 seconds. A 30 second cool down period is then required before the Burst Mode can be activated again.

Functions Only Available with DIP switch changed to DIM/CRUISE Mode

Dim or Cruise (Green w/Red)

If the Dim/Cruise Switch is set for ON, then, depending upon the Dim/Cruise programming described on pages 9-10, applying +12VDC will either dim the light (typically used in nighttime applications) or it will activate Cruise Mode.

Operation (CONTD)

Activation of Multiple Functions

Depending upon programming, the light will have different outputs when multiple functions (i.e. switches) are activated at the same time. Please review *Pattern Cycling of Simultaneous Functions* on page 11 to determine how your light is programmed.

Service

These lights use state-of-the-art Light Emitting Diode (LED) technology. These warning lights are comprised of ultra-high intensity LEDs that are controlled by a solid state flasher unit to efficiently produce light output with lifetimes up to 100,000 hours. Under normal circumstances, you will not need to replace any LEDs in this light. If any of the LED's in your light do fail, please contact Star Headlight for arrangements to have them repaired. The flasher unit and heads CANNOT be serviced in the field and any attempt to do so will void the warranty.

NOTE: Most failures can be traced to wiring and battery problems. Check "quick-connects" and wiring to insure that correct voltage/polarity is reaching the electronic strobe light/LED beacon.

LED FIVE YEAR LIMITED WARRANTY

The manufacturer warrants this LED light against factory defects in material and workmanship for five years after the date of purchase. The owner will be responsible for returning to the Service Center any defective item(s) with the transportation costs prepaid. The manufacturer will, without charge, repair or replace *at its option*, products, or part(s), which its inspection determines to be defective. Repaired or replacement item(s) will be returned to the purchaser with transportation costs prepaid from the service point. A copy of the purchaser's receipt must be returned with the defective item(s) in order to qualify for the warranty coverage. Exclusions from this warranty include, but are not limited to, domes, and/or the finish. This warranty shall not apply to any light, which has been altered, such that in the manufacturer's judgment, the performance or reliability has been affected, or if any damage has resulted from abnormal use or service.

There are no warranties expressed or implied (including any warranty of merchantability or fitness), which extend this warranty period. **The loss of use of the product, loss of time, inconvenience, commercial loss or consequential damages, including costs of any labor, are not covered.** The manufacturer reserves the right to change the design of the product without assuming any obligation to modify any product previously manufactured.

This warranty gives you specific legal rights. You might also have additional rights that may vary from state to state. Some states do not allow limitations on how long an implied warranty lasts. Some states do not allow the exclusion or limitation of incidental or consequential damages. Therefore, the above limitation(s) or exclusion(s) may not apply to you.

If you have any questions concerning this or any other product, please contact our **Customer Service Department** at (585) 226-9787.

If a product must be returned for any reason, please contact our Customer Service Department to obtain a Returned Materials Authorization number (RMA #) before you ship the product back. Please write the RMA # clearly on the package near the mailing label.

NOTICE

Due to continuous product improvements, we reserve the right to change any specifications and/or information contained in this manual at any time without notice. Star Headlight & Lantern Co., Inc. makes no warranty of any kind with regards to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Star Headlight & Lantern Co., Inc. shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this manual.



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