SAFETY MESSAGE TO INSTALLERS AND USERS

⚠️ WARNING

People’s lives depend on your safe installation of our products. It is important to read, understand and follow all instructions shipped with the products. In addition, listed below are some other important safety instructions and precautions you should follow:

• To properly install this light, you must have a good understanding of automotive systems, along with proficiency in the installation and use of safety warning equipment.

• DO NOT install equipment or route wiring in the deployment path of an air bag.

• When drilling into a vehicle structure, be sure that both sides of the surface are clear of anything that could be damaged.

• In order for the light to function properly, a separate ground connection must be made. If practical, it should be connected to the negative battery terminal. At a minimum, it may be attached to a solid metal body or chassis part that will provide an effective ground path as long as the light system is to be used.

• Locate light control so the VEHICLE and CONTROL can be operated safely under all driving conditions.

• Do not attempt to activate or deactivate light control while driving in a hazardous situation.

• You should frequently inspect the light to ensure that it is operating properly and that it is securely attached to the vehicle.

• This product contains high intensity LED devices. To prevent eye damage, DO NOT stare into the light beam at close range.

• The light should be frequently inspected to ensure that it is operating properly and that it is securely attached to the vehicle.

• File these instructions in a safe place and refer to them when maintaining and/or reinstalling the product.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death to you or others.

A. GENERAL.

The Cuda Trioptic Model 351012 is an LED light head designed for use in conjunction with all Federal Signal switch controllers. This light head is designed for mounting on a vehicle’s interior, exterior, or on a motorcycle. The housing is comprised of an extruded aluminum profile with a front high-impact polycarbonate protective lens. The unit is supplied with mounting hardware and a five-foot cable. This unit has an operating temperature of -30°C to +65°C (-22°F to +149°F). It may be mounted in the horizontal, or vertical, position with the cabling exiting from either side or the rear. The physical dimensions of this unit are 6-inches long by 1.5-inches wide by 1.75-inches high. End caps and the front lens cover are compression sealed to the extruded housing by means of Buna-N gasketing. The unit also features stainless steel hex machine screws and keps nuts for the channels on the top, bottom and rear of the housing. The Cuda TriOptic is programmed with eight flash patterns selectable by a control lead. The light head can also be user-configured to be controlled by an external flashing device.

B. INSTALLATION.

⚠️ WARNING

This product is intended for supplemental warning and for use in conjunction with an approved primary warning light system. Consult local codes and regulations to determine if the power supply/light head combination complies with the horizontal or vertical mount positioning desired in your application.

⚠️ WARNING

When installing equipment inside air bag equipped vehicles, the installer MUST ensure that the equipment is installed ONLY in areas recommended by the vehicle manufacturer. Failure to observe this warning will reduce the effectiveness of the air bag, damage the air bag, or potentially damage or dislodge the equipment, causing serious injury or death to you or others.

NOTE

For adequate condensate drainage, a horizontally mounted unit MUST be mounted with the two drain holes facing down (see figure 1). For vertical mounting, the drain holes are located conveniently on either end of the housing such that the cabling may be routed from top or bottom.

Determine which side of the unit will be attached to the mounting surface and which direction the power cable enters the unit.

The unit is supplied with the power cable entering the left side. Horizontally mounted units may be modified by the installer for cable entry in the right side, the left rear, or the right rear. Vertically mounted units may have the cable routed from the side end cap (as supplied) or from the rear (installer modified). From a horizontal orientation, the top, bottom and rear surfaces of the unit are available for mounting. The top and bottom surfaces have one mounting bolt channel and the rear surface has two mounting bolt channels (see figure 2). Choose the mounting channel that best suits your application.
After determining the cable entry and mounting orientation, follow the appropriate instructions.

1. **Horizontal Mount-Left Side End Cap Cable Entry, or Vertical Mount-End Cap Cable Entry (unit as supplied).**

   See figure 2. Remove the end cap and gasket from the side of the unit without the power cable. Slide in the two #8-32 x 1/2” hex head machine screws into the channel desired. Replace the gasket and end cap using the two flat head screws. Insure the end cap screws are properly tightened for a tight seal.

2. **Horizontal Mount-Left Rear Cable Entry, or Vertical Mount-Rear Cable Entry (installer modified).**

   See figure 3. Remove the end cap and gasket from the side of the unit with the power cable. Remove the end cap and gasket from end of the grommet/cabling. Remove the left rear plug from the housing and install it into the removed end cap. Route the cabling towards the left rear of the unit sliding the grommet into the slot where the plug was installed. Before re-attaching the end cap/gasket, slide in the two #8-32 x 1/2” hex head machine screws into the desired mounting channel. Replace the gasket and end cap using the two flat head screws. Insure the end cap screws are properly tightened for a tight seal.

3. **Horizontal Mount-Right Side End Cap Cable Entry (installer modified).**

   See figure 4. Remove the #8-32 screw and lock washer from the rear of the unit. Remove the screws which secure the end caps and gaskets in place. Remove both the right and left rear plugs from the unit. Slowly slide the left side cable/end cap/gasket/circuit board assembly out of the housing. Slide the assembly into the opposite side of the unit. Install the #8-32 screw/lock washer to lock the assembly into the housing. Before replacing the end cap/gaskets, slide in the two #8-32 x 1/2” hex head machine screws into the desired mounting channel. Install the two plugs in the rear of the housing. Replace the gaskets and end caps using the four flat head screws. Insure the end cap screws are properly tightened for a tight seal at both ends.

4. **Horizontal Mount-Right Rear Cable Entry (installer modified).**

   Remove the #8-32 screw and lock washer from the rear of the unit. Remove the screws which secure the end caps and gaskets in place. Remove both the right and left rear plugs from the unit. Slowly slide the left side cable/end cap/gasket/circuit board assembly out of the housing. Slide the assembly into the opposite side of the unit. Install the #8-32 screw/lock washer to lock the assembly into the housing. Remove the right rear plug from the housing and install it into the end cap where the grommet/cabling assembly was installed. Route the cabling towards the right rear of the unit and install the grommet into the slot where the plug was installed. Before replacing the end cap/gaskets, slide in the two #8-32 x 1/2” hex head machine screws into the desired mounting channel. Install the left plug in the rear of the housing. Replace the gaskets and end caps using the four flat head screws. Insure the end cap screws are properly tightened for a tight seal at both ends.

**CAUTION**

Before drilling holes in ANY part of vehicle, be sure that both sides of the mounting surface are clear of parts that could be damaged; such as brake lines, fuel lines, electrical wiring or other vital parts.

A 3/16” diameter mounting hole is recommended for the two #8 x 1/2” mounting hardware screws. The recommended
holes center to center spacing should be between 3-5". In addition, two #8 keps nuts are also provided for securing the assembly to the mounting surface.

CAUTION

Install the control unit in an adequately ventilated area. Never install near heater ducts.

CAUTION

After prolonged operation, the unit dissipates heat and can cause burns. Do not hold the unit in your hands for extended periods of time. Do not touch the unit during, or shortly after, operation. Always allow the unit to cool before handling.

C. ELECTRICAL SPECIFICATIONS AND FEATURES.

NOTE

Powering multiple devices with a common control lead may cause one or more units to briefly remain functional after signal power is removed. For example, due to the high input filter capacitance, a strobe supply can briefly supply the current required to operate a low current device such as a Cuda TriOptic™. If necessary, use a relay to isolate devices with large filter capacitors. See figure 5 for the schematic; all components/wires are user-supplied.

The unit is intended to operate on a 12.8 VDC system. It includes a 3 conductor connecting cable housed in a black jacket. The 3 conductors are: red (positive), black (negative) and green (switching). This unit is intended to work in conjunction with all Federal Signal switch controllers.


This unit features 8 flash patterns that are selected by applying the switching wire (green) to the ground wire (black). These wires are all within the black cable attached to the unit. The flash patterns are as follows:

1. Steady On
2. 120 FPM
3. 165 FPM
4. 240 FPM
5. 300 FPM
6. Combo 1:
   4 intervals @ 120 FPM
   10 intervals @ 300 FPM
7. Combo 2:
   2 intervals @ 120 FPM
   3 intervals @ 165 FPM
   6 intervals @ 240 FPM
   3 intervals @ 165 FPM
   2 intervals @ 120 FPM
   10 intervals @ 300 FPM
8. Combo 3:
   1 inactive interval @ 120 FPM
   2 intervals @ 120 FPM
   6 intervals @ 240 FPM
   14 intervals @ 480 FPM
   6 intervals @ 240 FPM
   2 intervals @ 120 FPM
   1 inactive interval @ 120 FPM

After the desired pattern has been selected, the green wire must be connected directly to the red power lead.

This unit is designed to return to the last flash pattern selected before it was de-energized. For example, if the
unit is de-energized at the seventh flash pattern and then re-energized, the seventh flash pattern illuminates. However, there is a two-second delay for the unit to remember the last pattern. So, if the unit is energized and functioning on the third flash pattern and the unit is switched to the fourth flash pattern and de-energized within a two-second time limit, the unit will return to the third flash pattern.

2. External Flashing Device Operation.

NOTE

When using an external flashing device, the unit must be on pattern #1 – Steady On.

The 351012 can be user-modified to operate with an external flashing device, either ground side or high side activated. If desired, proceed as follows:

a. Remove the light head’s end cap and slide out the printed circuit board assembly. See figure 4.


c. Replace the circuit board assembly and end cap.

d. Ensure that the drain hole is facing down and assemble the light head into the housing without bunching the wire.

e. For a high side activated flasher, install a 3-ampere fuse in the Cuda TriOptic red wire and connect to the control lead on the flasher. Connect the black wire to ground. Connect the green wire to the Cuda TriOptic red wire.

f. For a low side activated flasher, install a 3-ampere fuse in the Cuda TriOptic red wire and connect to a 12V source. Connect the green wire to the red wire. Connect the black wire to the control lead on the flasher.

SAFETY MESSAGE TO OPERATORS

WARNING

People’s lives depend on your safe use of our products.

Listed below are some important safety instructions and precautions you should follow:

- Although your warning system is operating properly, it may not be completely effective. People may not see or heed your warning signal. You must recognize this fact and continue driving cautiously.
- Also, situations may occur which obstruct your warning signal when natural or manmade objects are between your vehicle and others, such as: raising your hood or trunk lid. If these situations occur, be especially careful.
- This product contains high intensity LED devices. To prevent eye damage, DO NOT stare into the light beam at close range.
- At the start of your shift, you should ensure that the light is securely attached and operating properly.

Failure to follow these safety precautions may result in property damage, serious injury, or death to you, to passengers, or to others.

RETAIN AND REFER TO THIS MESSAGE

D. MAINTENANCE.

1. General.

WARNING

Crazing (cracking) of lenses will cause reduced effectiveness of the light. Do not use cleaning agent (which will cause crazing) such as strong detergents, solvents, or petroleum products. If crazing of lenses does occur, reliability of light for emergency signaling purposes may be reduced until lenses are replaced.

Ordinary cleaning of the plastic lenses can be accomplished by using mild soap and a soft rag. Should fine scratches or a haze appear on a lens, they can ordinarily be removed with a non-abrasive, high-quality, one-step, automotive paste cleaner/wax and soft cloth.

2. Replacement Parts.

This unit contains NO user replaceable components. Consult the factory regarding warranty repairs/replacement issues.

Manufactured by:
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