



Installation and Operation Instructions Pursuit Lightbar



Introduction

The Pursuit™ Lightbar is a versatile, powerful, high output warning device suitable for a range of vehicle types and duties. There are numerous options and lengths available. The lightbar can either be mounted permanently to the vehicle or mounted using the vehicle roof gutters. It also utilizes individual top lenses for easy internal access with a provision to disconnect the lightbar cable to allow easy removal of the lightbar.

The unique shape of the Pursuit Lightbar ensures a sleek, low profile body hugging fit for many vehicle applications. In addition to the long, maintenance free service life and low current draw benefits of LED technology, the dual deck Pursuit also supports additional auxiliary lighting options. Featuring an aluminium chassis and clear, weatherproof, polycarbonate lenses along with encapsulated electronic control modules, the lightbar is strong, durable and protected against the environment.

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IMPORTANT! Read all instructions before installing and using. Installer: This manual must be delivered to the end user.



WARNING!

Failure to install or use this product according to manufacturers recommendations may result in property damage, serious injury, and/or death to those you are seeking to protect!



Do not install and/or operate this safety product unless you have read and understand the safety information contained in this manual.

1. Proper installation combined with operator training in the use, care, and maintenance of emergency warning devices are essential to ensure the safety of emergency personnel and the public.
2. Emergency warning devices often require high electrical voltages and/or currents. Exercise caution when working with live electrical connections.
3. This product must be properly grounded. Inadequate grounding and/or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or severe vehicle damage, including fire.
4. Proper placement and installation is vital to the performance of this warning device. Install this product so that output performance of the system is maximized and the controls are placed within convenient reach of the operator so that s/he can operate the system without losing eye contact with the roadway.
5. It is the responsibility of the vehicle operator to ensure daily that all features of this product work correctly. In use, the vehicle operator should ensure the projection of the warning signal is not blocked by vehicle components (i.e., open trunks or compartment doors), people, vehicles or other obstructions.
6. The use of this or any other warning device does not ensure all drivers can or will observe or react to an emergency warning signal. Never take the right-of-way for granted. It is your responsibility to be sure you can proceed safely before entering an intersection, drive against traffic, respond at a high rate of speed, or walk on or around traffic lanes.
7. This equipment is intended for use by authorized personnel only. The user is responsible for understanding and obeying all laws regarding emergency warning devices. Therefore, the user should check all applicable city, state, and federal laws and regulations. The manufacturer assumes no liability for any loss resulting from the use of this warning device.

Installation and Mounting

Unpacking and Pre-installation Inspection


Carefully remove the light bar and place it on a flat surface, taking care not to scratch the lenses or damage the cable coming out of the bottom. Examine the unit for transit damage, broken light heads, etc. Report any damage to the carrier and keep the shipping carton.

Standard light bars are built to operate on 12volt and 24volt D.C. negative ground (earth) vehicles. If you have an electrical system other than 12volt or 24volt D.C. negative ground (earth), and have not ordered a specially wired light bar, contact the factory for instructions.

Test the unit before installation. To test, connect the Junction Box to the lightbar per the **Network Junction Box Instructions** section of this manual and touch the black wire to the ground (earth) and the red wire to +12volt or +24volt D.C. (an automotive battery is preferable for this test). Then touch each of the control wires to power and check for proper operation. If problems occur at this point, please contact the factory.

Mounting the Lightbar

All mounting hardware is packed in a small box or bag inside the main carton. Four standard kits are available: (1) Hook-On Type, (1) Tow and Recovery and (2) Permanent Types. NOTE: Hook-on mounting for "gutterless" type vehicles will require a special hook for mounting. Several special application hooks are available. Contact the factory for details. Refer to the instructions included with the mounting kit for installation.

	CAUTION! When drilling into any vehicle surface, make sure the area is free from any electrical wires, fuel lines, vehicle upholstery, etc. that could be damaged.
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Quick Lightbar Removal

The Pursuit lightbar has been designed with a unique cable access hole enabling the lightbar to be removed without uninstalling the lightbar cable.

1. Remove power to the lightbar/junction box. **Failure to do this may damage the lightbar.**
2. Remove upper lens set as described in "Lens removal and Installation" in the **Maintenance** section of this manual.
3. Undo the cable gland nut from the plastic housing. (The large plastic nut inside the lightbar)
4. Unplug the data connector from the LED controller.
5. Using a No.2 point Phillips screwdriver, remove the screw grounding the external harness to the chassis, and the positive feed to the LED controller.
6. At this point the cable can be pulled from the opening in the plastic housing and the lightbar removed from the vehicle. Feed the ring terminals through the plastic nut first then the data connector and do this for the plastic housing also.
7. When reconnecting the lightbar, connect the wiring harnesses and cable gland as originally installed.

Wiring Instructions

Before attempting to connect the lightbar wiring harness, refer to the **Network Junction Box Instructions** section of this manual.

1. After the light bar has been mounted, route the wiring harness into the vehicle to the intended network junction box location.
2. Route wires from the vehicle positive (preferably the battery) to the switch panel in the cab. The vehicle negative should be direct from the battery negative terminal also. Use suitable high-temperature wire if it passes through the engine compartment. Install a suitable fuse as close to the point of tapped power as possible.
3. See **Network Junction Box Instructions** for connecting the wires from the lightbar cable and the vehicle to the junction box. This section has instructions for connecting the input wires from the junction box to the control circuits applicable for each option. Leave unused wires unconnected and insulated.
4. Use cable ties and grommets to secure and protect all cables and wires.

Important! This unit is a safety device and it must be connected to its own separate, fused power point to assure its continued operation should any other electrical accessory fail. Do not wire in parallel with any other accessory.
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	CAUTION! Disconnect the battery before wiring up the light bar, to prevent accidental shorting, arcing and/or electrical shock.
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Notes:

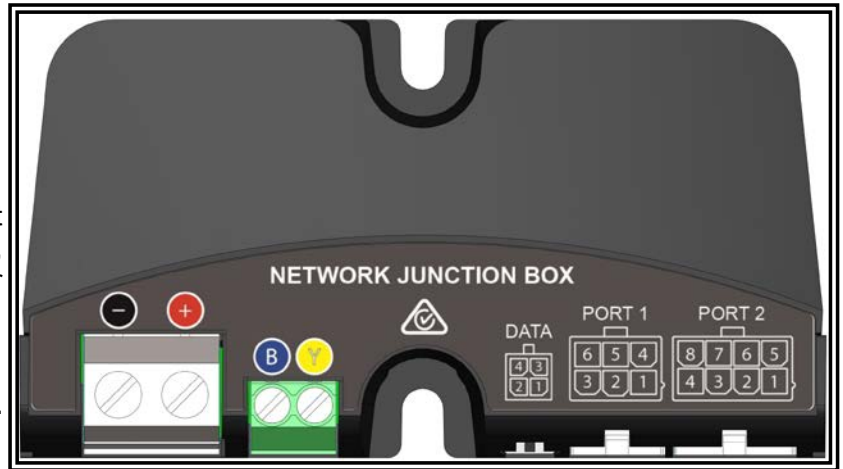
1. Larger wires and tight connections will provide longer service life for components. For high current wires it is highly recommended that terminal blocks or soldered connections be used with shrink tubing to protect the connections. Do not use insulation displacement connectors (e.g., 3M Scotchlock type connectors).
2. Route wiring using grommets and sealant when passing through compartment walls. Minimize the number of splices to reduce voltage drop. High ambient temperatures (e.g., under-hood) will significantly reduce the current carrying capacity of wires, fuses, and circuit breakers. All wiring should conform to the minimum wire size and other recommendations of the manufacturer and be protected from moving parts and hot surfaces. Looms, grommets, cable ties, and similar installation hardware should be used to anchor and protect all wiring.
3. Fuses or circuit breakers should be located as close to the power takeoff points as possible and properly sized to protect the wiring and devices.
4. Particular attention should be paid to the location and method of making electrical connections and splices to protect these points from corrosion and loss of conductivity.
5. Ground termination should only be made to substantial chassis components, preferably directly to the vehicle battery.
6. Circuit breakers are very sensitive to high temperatures and will “false trip” when mounted in hot environments or operated close to their capacity.

Network Junction Box Instructions

The Pursuit lightbar is controlled by the Code 3 Network Junction Box designed for multi-voltage operation. **Before proceeding with installation, plan all cable routing and wiring carefully.**

The Junction box can be mounted by screwing it into any flat surface using the 2 x supplied screws, preferably with a drip loop so it is not possible for water to run down the cables into the unit.

THE JUNCTION BOX IS NOT WATERPROOF, IT MUST BE MOUNTED WITHIN THE VEHICLE CABIN.



Specifications	Input Voltage Range	10-30 VDC
	Current Draw - Standby (Typ.)	14 mA
	Ambient Operating Temperature	-20 to +65 °C

REF	PORT	DESCRIPTION
	Black screw terminal	Connect the Black ground wire from the Pursuit lightbar’s six conductor cable and vehicle ground connection, insert both into the screw terminal and tighten. Use a good chassis ground point or the battery negative terminal, using the shortest possible wire length with a 10 AWG (4.5mm ²) automotive wire.
	Red screw terminal	Connect the Red wire from the Pursuit lightbar’s six conductor cable and vehicle power connection, insert both into the screw terminal and tighten. Use a 10 AWG (4.5mm ²) automotive wire from an external fused or circuit breakered source, using the shortest possible wire length. The recommended external fuse size is 30A. Do not connect this power wire until all other connections have been made to the unit.
	Blue screw terminal	Connect the Blue wire from the Pursuit lightbar’s cable. This wire connects directly to the lightbar’s internal controller and should never be connected to power.
	Yellow screw terminal	Connect the Yellow wire from the Pursuit lightbar’s cable. This wire connects directly to the lightbar’s internal controller and should never be connected to power.
DATA	4 Way Socket	Connect the C3Pro Configuration Programmer to this port when programming.
PORT 1	6 Way Socket	See tables below for wire colors and functions.
PORT 2	8 Way Socket	See tables below for wire colors and functions.

Input Wiring Functions for Network Junction Box

36 Inch and Shorter Pursuit Lightbars			
Input (Wire Color)	Function	Description	Flash Pattern/Rate
Green/Black	Level 1	Level 1 Emergency Mode.	Sweep Rev
White/Black	Level 2	Level 2 Emergency Mode.	Dual End Rotate
Red/Black	Level 3	Level 3 Emergency Mode.	Pursuit
Orange/Black	Takedown	Forward facing lower light heads steady burn.	Steady
Yellow	Left Alley	Left facing lower light heads steady burn.	Steady
Purple	Right Alley	Right facing lower light heads steady burn.	Steady
Grey	TD/Alley Flash	Forward, Left, and Right lower light heads flash.	Single 150
Brown	Driver Side Cut	Triggers Driver Side Corners and Alley Positions to turn off for 8 seconds.	Not Available
Blue/Black	Rear Cut	Triggers all rear facing and rear corners to turn off.	Not Available
Pink	Front Cut	Triggers all front facing and front corners to turn off.	Not Available
Green	Cruise	All upper corner light heads will steady burn in a dimmed state.	Cruise Low
Blue	Dim	Dim can be applied to any feature and pattern except for TD and Alley.	Dim Low
Orange	Arrowstik Flash	Rear lower light heads flash.	Single 150
	<u>Additional functions not included as part of default configuration</u>		
	Alley Flash	Left and Right lower light heads flash.	Single 150
	TD Flash	Forward lower light heads flash.	Single 150
	Aux	Customer Defined	
	Left Arrow	Rear facing lower light heads illuminate in the left direction.	Building Fast
	Right Arrow	Rear facing lower light heads illuminate in the right direction.	Building Fast
	Center Out	Rear facing lower light heads illuminate from the center then outward direction.	Building Fast
	California Steady	Light head steady burns for California T13 Compliance.	CA Steady

Any of the wires above not used to control the lightbar should be capped or otherwise insulated from accidental contact with power sources.

Input Wiring Functions for Network Junction Box Cont.

42 Inch and Longer Pursuit Lightbars			
Input (Wire Color)	Function	Description	Flash Pattern/Rate
Green/Black	Level 1	Level 1 Emergency Mode.	Sweep Rev
White/Black	Level 2	Level 2 Emergency Mode.	Dual End Rotate
Red/Black	Level 3	Level 3 Emergency Mode.	Pursuit
Orange/Black	Take Down	Forward facing lower light heads steady burn.	Steady
Yellow	Left Alley	Left facing lower light heads steady burn.	Steady
Purple	Right Alley	Right facing lower light heads steady burn.	Steady
Grey	TD/Alley Flash	Forward, Left, and Right lower light heads flash.	Single 150
Brown	Driver Side Cut	Triggers Driver Side Corners and Alley Positions to turn off for 8 seconds.	Not Available
Blue/Black	Rear Cut	Triggers all rear facing and rear corners to turn off.	Not Available
Green	Cruise	All upper corner light heads will steady burn in a dimmed state.	Cruise Low
Blue	Dim	Dim can be applied to any feature and pattern except for TD and Alley.	Dim Low
Pink + Orange	Center Out	Rear facing lower light heads illuminate from the center then outward direction.	Building Fast
Orange	Right Arrow	Rear facing lower light heads illuminate in the right direction.	Building Fast
Pink	Left Arrow	Rear facing lower light heads illuminate in the left direction.	Building Fast
Additional functions not included as part of default configuration			
	Front Cut	Triggers all front facing and front corners to turn off.	Not Available
	Alley Flash	Left and Right lower light heads flash.	Single 150
	TD Flash	Forward lower light heads flash.	Single 150
	Arrowstik Flash	Rear lower light heads flash.	Single 150
	Aux	Customer Defined	
	California Steady	Light head steady burns for California T13 Compliance.	CA Steady

Any of the wires above not used to control the lightbar should be capped or otherwise insulated from accidental contact with power sources.

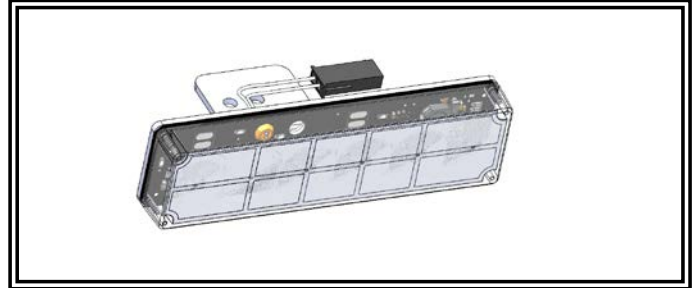
Warning Signal Modules

There are many different types of light heads producing various warning signals in the lightbar as explained below.

Note: LED modules are not user serviceable. All retaining screws to be torqued to 18 IN-LB (2.0 N-M).

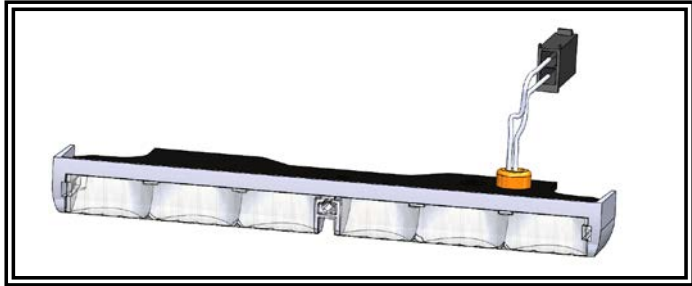
Upper Deck Modules

Designed for an uncompromised warning signal, the upper level LED modules combine maximum emitting surface area with a very high output LED optical system to produce an effective output at all angles around the vehicle. These multi-voltage units operate from 10V to 30V using 100% solid-state electronics and LEDs rated to 100,000 hours of operation.



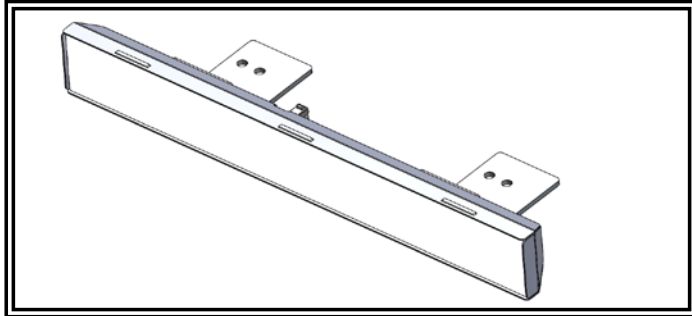
Lower Level LED Modules

Developed primarily to provide practical illumination over a broad area around the vehicle, the lower level cool-white LED modules pack high output into a very slimline optic. Options range from individual alley or takedown lights up to full 360° scene coverage, without impacting on upper level lightbar lens or LED color requirements. They can also be configured to flash in conjunction with the upper level warning patterns. In the amber version, the lower level can be configured as a traffic advisor, with a high resolution switching function for an improved visual effect.



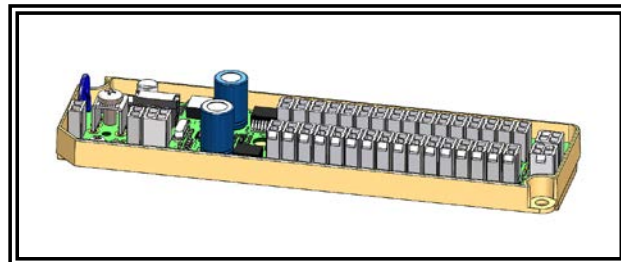
Sign Light Module


Mounted inside the lightbar and fully protected from weathering, the LED sign light is an enclosed module carefully specified to provide homogenous backlighting of the sign area while minimizing stray light. The overlaid text is available in plain white text with black, blue or amber background, or colored text with white background. Signs are also available in mirrored text.



Lightbar Controller

The Lightbar Controller can control up to 32 separate light heads, each of which can be configured to perform any supported lightbar function. Multiple controllers can work together in a lightbar to provide virtually unlimited lighting outputs. Operating on the HazCAN serial bus, the Controller is also able to provide power and data to the M5 Message Display and other compatible devices while requiring only a compact 4-wire harness out of the lightbar, regardless of the number of functions. The Controller electronics are encapsulated in high-temperature silicon potting material and housed in a rugged cast aluminium case for maximum durability. Lightbar chassis temperatures and ambient lighting levels are monitored by the Controller in order to maximize lighting output in a safe and controlled manner, over a wide range of environmental conditions throughout the life of the product.



	<p>CAUTION! Lightbar Controller outputs are only compatible with Pursuit LED Modules. The warranty will be void if unsupported products are connected to the controller.</p>
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Auto Dimming (when configured in C3Pro Configuration Programmer)

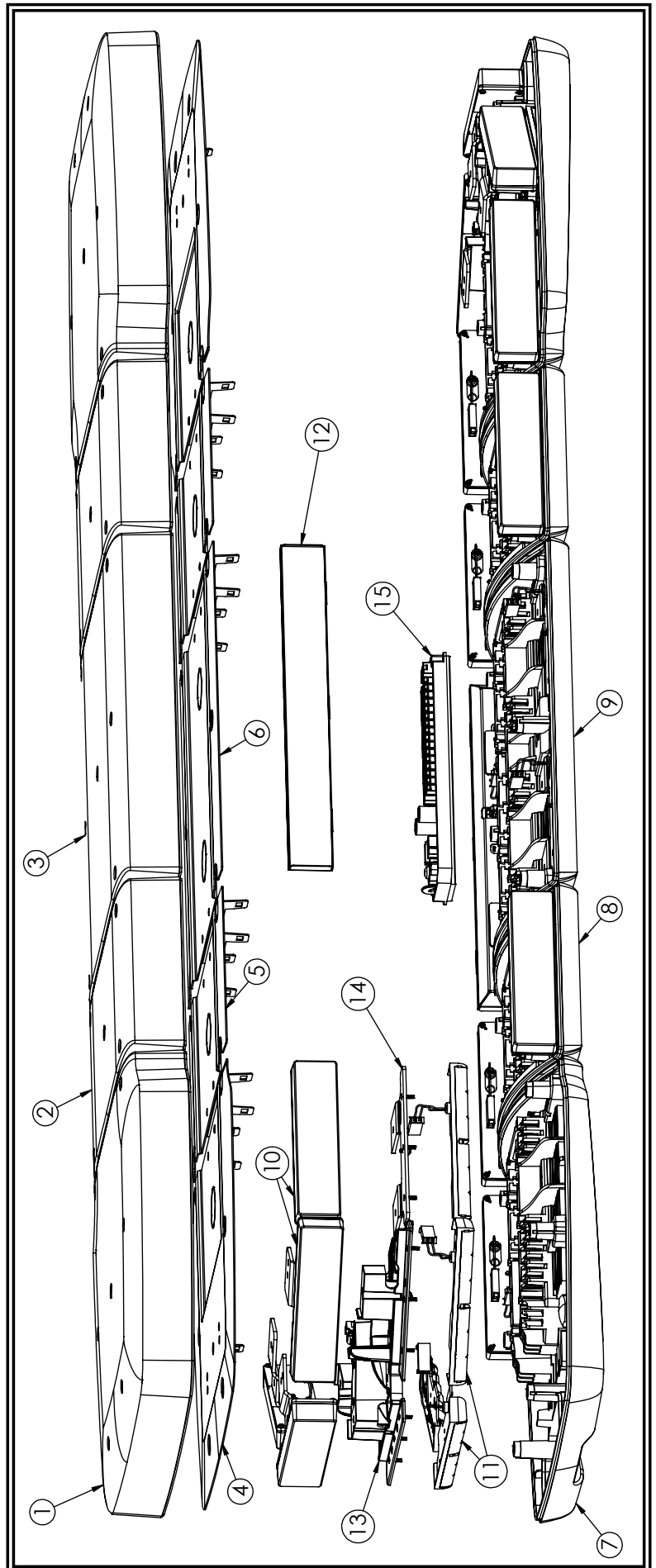
The lightbar is capable of automatically dimming the highly intense warning signals produced by the light heads. Onboard ambient light sensors detect the level of daylight present, and can dim the warning signals to a predetermined output. This reduces the chance of dazzling other road users, creating a safer environment at night.

Default settings have this feature disabled.

Please consult the C3 Pro™ Interface Software (Quick Install) Manual for more programming features and settings.

Exploded View of Lightbar Assembly

See the following page for a list of the referenced replacement parts as indicated by the balloon numbers.



Replacement Parts and Accessories (See previous page for exploded view of lightbar)



CAUTION!

When replacing LED modules it is important to note the output from the controller for the module being replaced, because damage can occur from incorrect module configuration. Details regarding configuration of a specific lightbar can be obtained from the manufacturer.

Description	Part Number
Lenses Upper	
1. Upper Outboard Lens - Red	250-0340-04
Upper Outboard Lens - Blue	250-0340-22
Upper Outboard Lens - Clear	250-0340-03
Upper Outboard Lens - Amber	250-0340-02
2. Upper Center Lens Short - Red	250-0341-04
Upper Center Lens Short - Blue	250-0341-22
Upper Center Lens Short - Clear	250-0341-03
Upper Center Lens Short - Amber	250-0341-02
3. Upper Center Lens Long - Red	250-0342-04
Upper Center Lens Long - Blue	250-0342-22
Upper Center Lens Long - Clear	250-0342-03
Upper Center Lens Long - Amber	250-0342-02
Inner Panels	
4. Outboard Inner Panel	220-0602-00
5. Center Long Inner Panel	220-0603-00
6. Center Short Inner Panel	220-0604-00
Lenses Lower	
7. Lower Outboard Lens - (Clear only)	250-0343-03
8. Lower Center Short Lens - (Clear only)	250-0344-03
9. Lower Center Long Lens - (Clear only)	250-0345-03
LED Modules Upper	
10. Upper Level Light Head - Red	155-0420-03
Upper Level Light Head - Blue	155-0420-01
Upper Level Light Head - White	155-0420-02
LED Modules Lower	
11. Lower Level Light Head - White	155-0421-02
Lower Level Light Head - Red	155-0421-04
Lower Level Light Head - Blue	155-0421-22
Lower Level Light Head - Amber	155-0421-00
Sign Head	
12. Illuminated sign	155-0424-00
Light Head Mtg Brkts	
13. Outboard end bracket	220-0612-00
14. Lower light head bracket	220-0598-00
Controller	
15. M5-LED32 controller	155-0419-00
Screws	
Lens screw (M5 x 30mm socket cap - not shown)	323-0050-00
Internal screw (M5 x 10mm Phillips head - not shown)	323-0051-00

Maintenance

Occasional cleaning of the lenses will ensure optimum light output. Take care when cleaning lenses, although very impact resistant, polycarbonate scratches easily. Clean the lens and base with soap and water or a lens polish using a microfiber or other lint free soft cloth. Do not use solvents as they may damage the polycarbonate.

Lens Removal and Installation

1. Identify the lens(es) to be removed - not all lenses need to be removed to access the internal components.
2. Unfasten the retaining screws from the lens(es) of the lightbar - the screws can be left captive in the lens.
3. Carefully lift the lens off the seal – choose a suitable location to temporarily store the lens so as to not scratch the surface.
4. When reinstalling, gently apply pressure around the upper lens taking care not to damage the seal around the lower lens set. Retorque the retaining screws to 18 IN-LB (2.0 N-M).

Troubleshooting

All products are thoroughly tested prior to shipment. However, should you encounter a problem during installation or during the life of the product, follow the guide below for troubleshooting and repair information. If the problem cannot be rectified using the solutions given below, additional information may be obtained from the manufacturer. Contact details are at the end of this document.

Lightbar Issues		
PROBLEM	POSSIBLE CAUSE	SOLUTION
Lightbar does not function	Poor power or ground connection	Check power and ground connections.
	Blown fuse	Check wiring, replace fuse
One LED head does not flash, but corresponding indicator LED on control module does flash.	Open circuit wiring from control module to LED head	Connect a known-good LED head to the problem output to ensure the control module is working correctly. Repair or replace.
	Poor ground connection at LED head	Tighten or replace mounting screw.
	Failed LED head	Replace LED head
One LED head does not flash, and corresponding indicator LED on control module does not flash when appropriate pattern selected.	Wrong flash configuration	Use C3Pro Configuration Programmer to correct
	Failed control module	Replace control module
Incorrect flash patterns	Wrong flash configuration	Use C3Pro Configuration Programmer to correct

Control Box Issues		
PROBLEM	POSSIBLE CAUSE	SOLUTION
Fuse Blows ¹	Wires short circuit	Check power and ground for short circuits
	Faulty unit	If fuse continues to blow after checking the wiring replace the product
Unstable operation	Wiring fault	Check that wire colors match the label positions on Junction Box
Output on Junction box is not working	Junction box fuse blown (excessive load)	Replace the Junction Box

¹ Note: Always replace the fuse with the same value as removed

Notes

Notes

Manufacturer Limited Warranty Policy:

Manufacturer warrants that on the date of purchase this product will conform to Manufacturer's specifications for this product (which are available from the Manufacturer upon request). This Limited Warranty extends for Sixty (60) months from the date of purchase.

DAMAGE TO PARTS OR PRODUCTS RESULTING FROM TAMPERING, ACCIDENT, ABUSE, MISUSE, NEGLIGENCE, UNAPPROVED MODIFICATIONS, FIRE OR OTHER HAZARD; IMPROPER INSTALLATION OR OPERATION; OR NOT BEING MAINTAINED IN ACCORDANCE WITH THE MAINTENANCE PROCEDURES SET FORTH IN MANUFACTURER'S INSTALLATION AND OPERATING INSTRUCTIONS VOIDS THIS LIMITED WARRANTY.

Exclusion of Other Warranties:

MANUFACTURER MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED. THE IMPLIED WARRANTIES FOR MERCHANTABILITY, QUALITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, USAGE OR TRADE PRACTICE ARE HEREBY EXCLUDED AND SHALL NOT APPLY TO THE PRODUCT AND ARE HEREBY DISCLAIMED, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW. ORAL STATEMENTS OR REPRESENTATIONS ABOUT THE PRODUCT DO NOT CONSTITUTE WARRANTIES.

Remedies and Limitation of Liability:

MANUFACTURER'S SOLE LIABILITY AND BUYER'S EXCLUSIVE REMEDY IN CONTRACT, TORT (INCLUDING NEGLIGENCE), OR UNDER ANY OTHER THEORY AGAINST MANUFACTURER REGARDING THE PRODUCT AND ITS USE SHALL BE, AT MANUFACTURER'S DISCRETION, THE REPLACEMENT OR REPAIR OF THE PRODUCT, OR THE REFUND OF THE PURCHASE PRICE PAID BY BUYER FOR NON-CONFORMING PRODUCT. IN NO EVENT SHALL MANUFACTURER'S LIABILITY ARISING OUT OF THIS LIMITED WARRANTY OR ANY OTHER CLAIM RELATED TO THE MANUFACTURER'S PRODUCTS EXCEED THE AMOUNT PAID FOR THE PRODUCT BY BUYER AT THE TIME OF THE ORIGINAL PURCHASE. IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR LOST PROFITS, THE COST OF SUBSTITUTE EQUIPMENT OR LABOR, PROPERTY DAMAGE, OR OTHER SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES BASED UPON ANY CLAIM FOR BREACH OF CONTRACT, IMPROPER INSTALLATION, NEGLIGENCE, OR OTHER CLAIM, EVEN IF MANUFACTURER OR A MANUFACTURER'S REPRESENTATIVE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. MANUFACTURER SHALL HAVE NO FURTHER OBLIGATION OR LIABILITY WITH RESPECT TO THE PRODUCT OR ITS SALE, OPERATION AND USE, AND MANUFACTURER NEITHER ASSUMES NOR AUTHORIZES THE ASSUMPTION OF ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH SUCH PRODUCT.

This Limited Warranty defines specific legal rights. You may have other legal rights which vary from jurisdiction to jurisdiction. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages.

Product Returns:

If a product must be returned for repair or replacement*, please contact our factory to obtain a Return Goods Authorization Number (RGA number) before you ship the product to Code 3®, Inc. Write the RGA number clearly on the package near the mailing label. Be sure you use sufficient packing materials to avoid damage to the product being returned while in transit.

*Code 3®, Inc. reserves the right to repair or replace at its discretion. Code 3®, Inc. assumes no responsibility or liability for expenses incurred for the removal and /or reinstallation of products requiring service and/or repair; nor for the packaging, handling, and shipping; nor for the handling of products returned to sender after the service has been rendered.



10986 North Warson Road
St. Louis, MO 63114

Technical Service:
(314) 996-2800

c3_tech_support@code3esg.com
www.code3esg.com

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