



# Installation and Operation Instructions

## MATRIX-ENABLED

### 21/27/COVERT SERIES LIGHTBARS

**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 manufacturer's recommendations may result in property damage, serious bodily/personal injury, and/or death to you and 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.
8. This product may contain high intensity LEDs staring directly into these lights could result in temporary and/or permanent vision impairment.

#### Specifications:

<b>Cross Section:</b>	Covert Series	1.6" x 12.3"	<b>Light Module Current (@ 12 VDC):</b>					
	21 Series	2.1" x 12.3"	27 Series	Prizm	Single Color	5 LED AL, WL, RD	0.7 A	
	27 Series	2.7" x 12.3"	27 Series	Prizm	Single Color	8 LED Directional	1.3 A	
<b>Max Input Voltage:</b>		10-16 VDC	27 Series	Prizm	Single Color	12 LED Directional	1.7 A	
			27 Series	Prizm	Dual Color	24 LED Directional	2.0 A	
			27 Series	Prizm	Tri Color	24 LED Directional	1.1 A	
<b>Nominal Input Voltage:</b>		12 VDC	21 Series	Torus	Single Color	3 LED AL, WL, TD	0.4 A	
			21 Series	Torus	Single Color	3 LED Directional	0.6 A	
			21 Series	Torus	Single Color	4 LED Directional	0.8 A	
<b>Fusing Requirement:</b>		30A / 60A	Covert / 21 Series	Torus	Dual Color	6 LED AL, WL, TD	0.6 A	
			21 Series	Torus	Single Color	6 LED Directional	1.1 A	
			21 Series	Torus	Single Color	8 LED Directional	1.3 A	
<b>Matrix Connectivity:</b>	Covert Series	CAT5	Covert / 21 Series	Torus	Tri Color	9 LED AL, WL, TD	0.6 A	
	21 / 27 Series	CAT5	Covert / 21 Series	Torus	Dual Color	12 LED Directional	1.2 A	
			Covert / 21 Series	Torus	Dual Color	16 LED Directional	1.3 A	
<b>Temp. Range:</b>		-40°C to 65°C	Covert / 21 Series	Torus	Tri Color	18 LED Directional	1.2 A	
		(-40°F to 149°F)						

#### Additional Matrix Resources

Product Information: [www.code3esg.com/us/en/products/matrix](http://www.code3esg.com/us/en/products/matrix)

Training Videos: [www.youtube.com/c/Code3Inc](http://www.youtube.com/c/Code3Inc)

Matrix Software: <http://software.code3esg.global/updater/matrix/downloads/Matrix.exe>

## Unpacking and Pre-Installation:

Carefully remove the product and place it on a flat surface. Examine the unit for transit damage and locate all parts. If damage is found or parts are missing, contact the transit company or Code 3. Do not use damaged or broken parts.

Ensure the product voltage is compatible with the planned installation.

## Installation & Mounting:

### Mounting

Before proceeding with installation, plan all wiring and cable routing. Select the mounting location for the product on a flat, smooth surface and center the unit across the width of the vehicle. The mounting location should be chosen such that the product is level and visibility to approaching traffic is optimized.

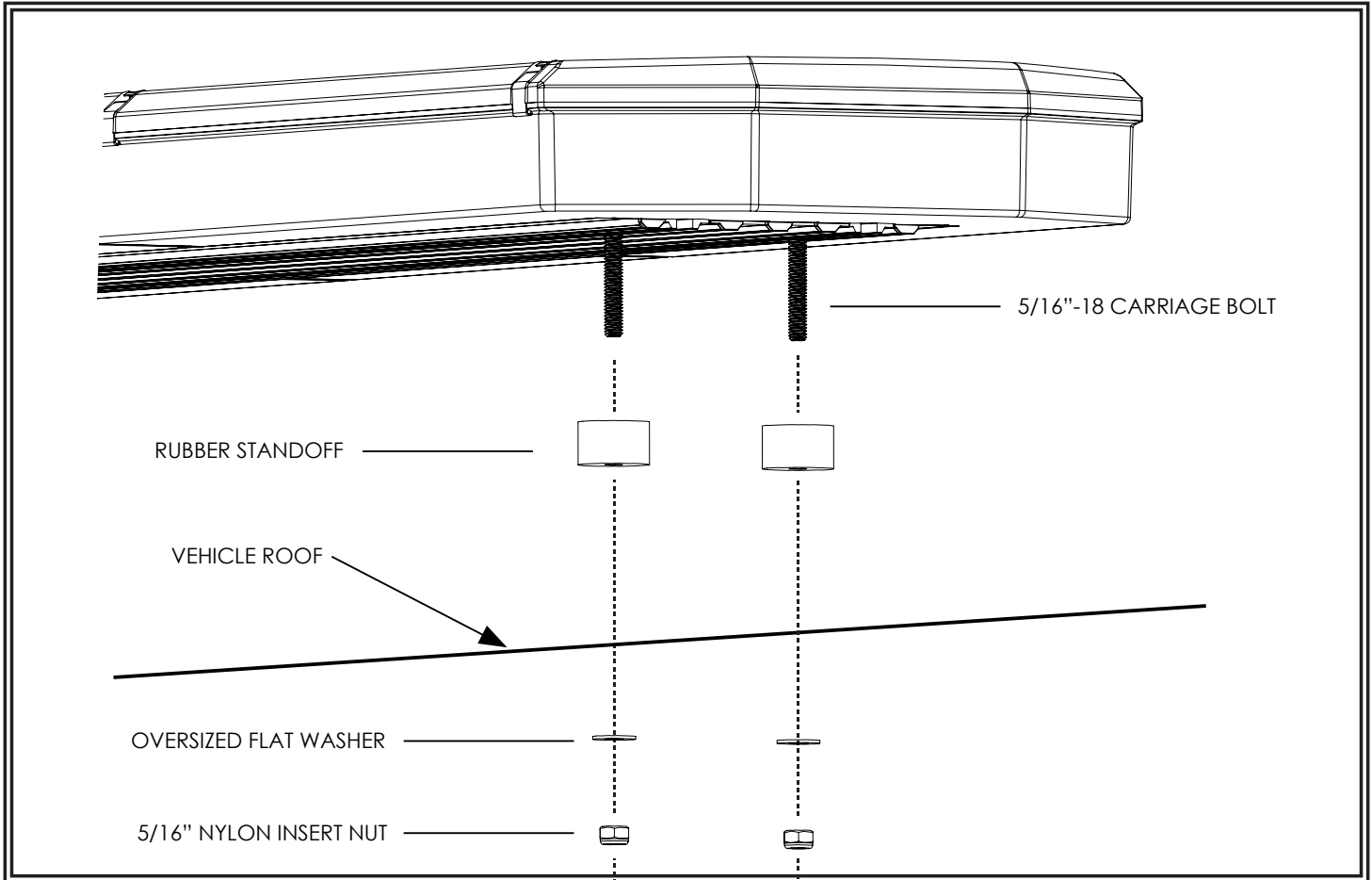


**Caution:**

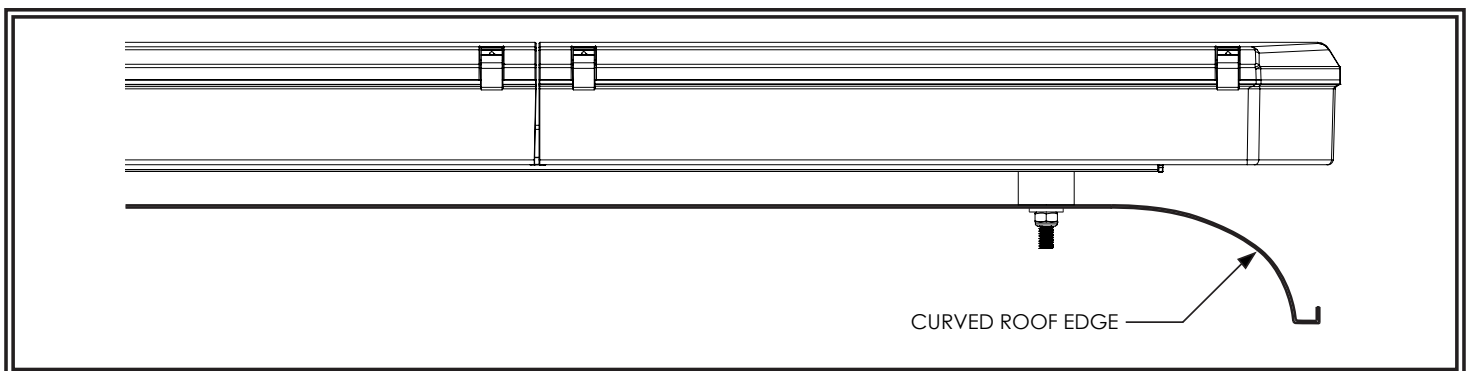
**When drilling into any vehicle surface, make sure that the area is free from any electrical wires, fuel lines, vehicle upholstery, vehicle support members, etc. that could be damaged.**

## Direct Mount Option:

1. Remove the mounting feet from the lightbar.
2. Insert the four (4) 5/16"-18 carriage bolts in the channels on the under side of the lightbar.
3. Place the lightbar over the center of the vehicle and slide the mounting hardware into position near the curved edge when possible as shown in FIGURE 2.
4. With the mounting hardware positioned, mark the location of the mounting hole centers on the roof of the vehicle. Remove the lightbar and drill the mounting holes as marked.
5. Mount the lightbar as shown in FIGURE 1 and secure the unit. See the Wiring section of this manual for further wiring instructions.



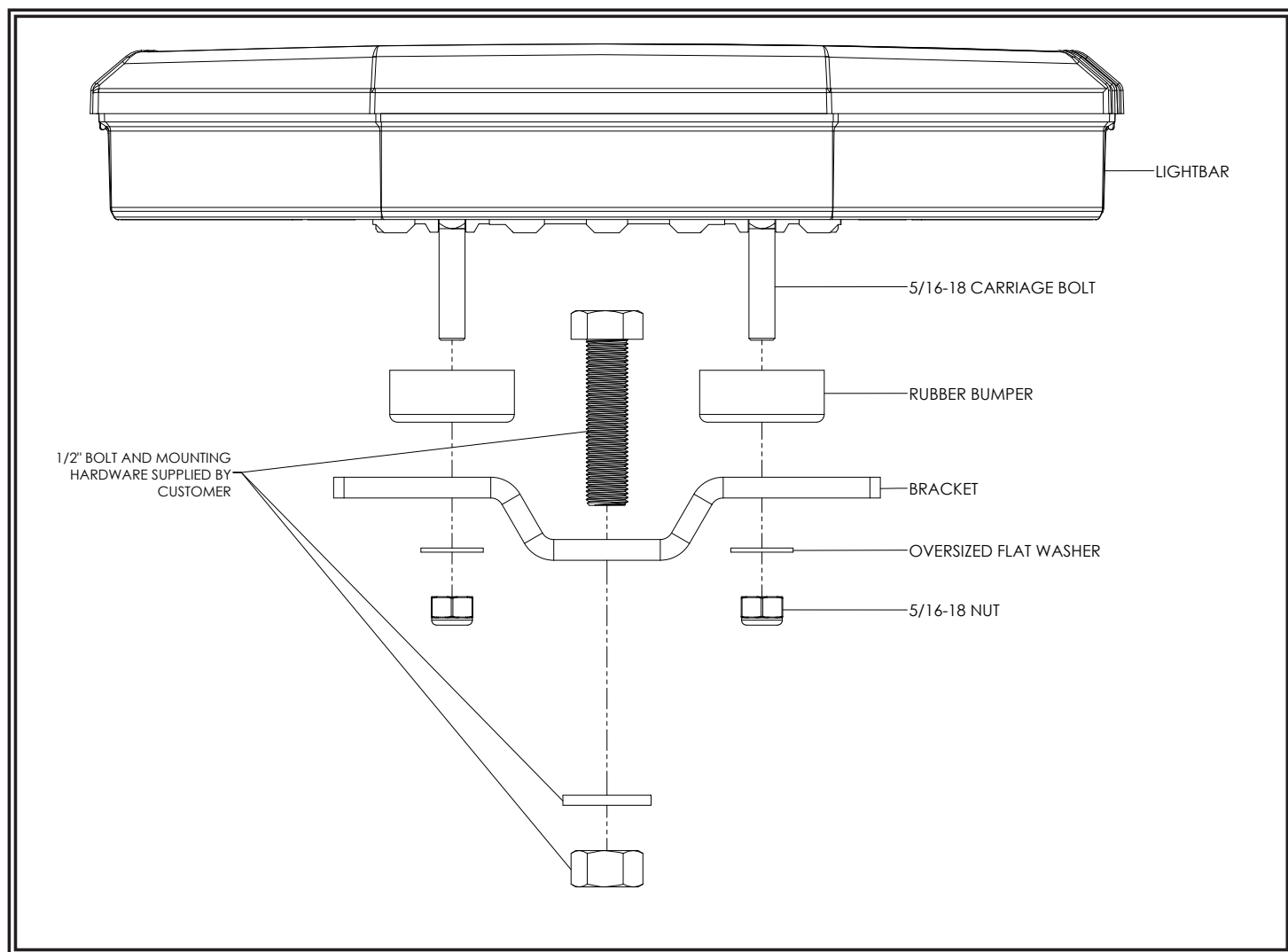
**Figure 1**



**Figure 2**

## Pylon/Headache Rack Option:

1. Remove the mounting feet from the lightbar.
2. Insert the four (4) 5/16"-18 carriage bolts in the channels on the under side of the lightbar and loosely attach the mounting brackets.
3. Place the lightbar on the vehicle and slide the mounting brackets into position.
4. Secure the brackets to the lightbar with the supplied washers and nuts as shown in FIGURE 3.
5. With the mounting brackets positioned, mark the locations of the mounting hole centers on the roof of the vehicle. Remove the bar and drill the mounting holes as marked.
6. Secure the mounting brackets to the vehicle with customer supplied hardware. See the Wiring section of this manual for further wiring instructions.



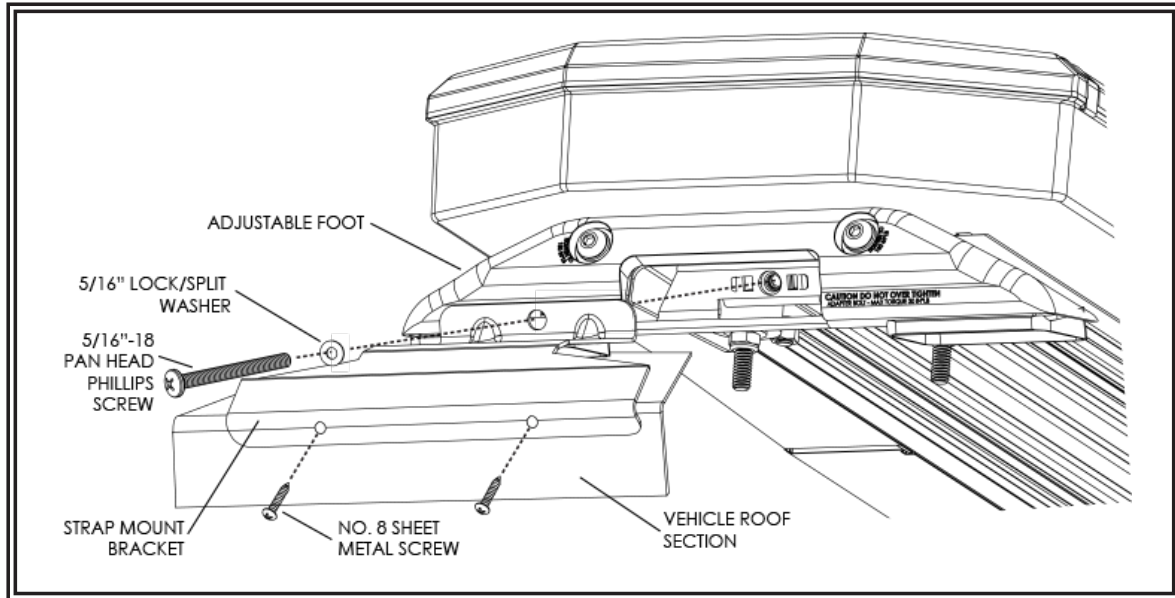
**Figure 3**

## Strap Kit Option:

### Important!

Mounting brackets are specific to the vehicle model. Please make sure the brackets are suitable for the vehicle before installation.

1. Loosen the 5/16" nuts to allow the mounting feet to slide along the base of the lightbar. Loosely attach the mounting strap to each foot using the supplied pan head phillips screws and lock washers.
2. Center the lightbar across the vehicle and align the strap mount brackets to hook into the gutter of the vehicles door frame as shown in FIGURE 4.
3. Secure the feet to the lightbar in location by tightening the four (4) nuts on each foot.
4. Slowly tighten the pan head screws to secure the strap mount brackets to the lightbar feet and around the door gutters, keeping the lightbar centered and level. Ensure the doors close completely and secure each strap mount bracket to the door frame. Mounting geometry and parts will vary for different vehicles. See the Wiring section of this manual for further wiring instructions.



**Figure 4**

\*For a full list of vehicle specific brackets, please reference a Code 3 catalog or contact a Code 3 representative.

## Wiring Instructions:

**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.**

### Notes:

- 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).
- 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.
- 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.
- 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.
- Ground termination should only be made to substantial chassis components, preferably directly to the vehicle battery.
- Circuit breakers are very sensitive to high temperatures and will "false trip" when mounted in hot environments or operated close to their capacity.

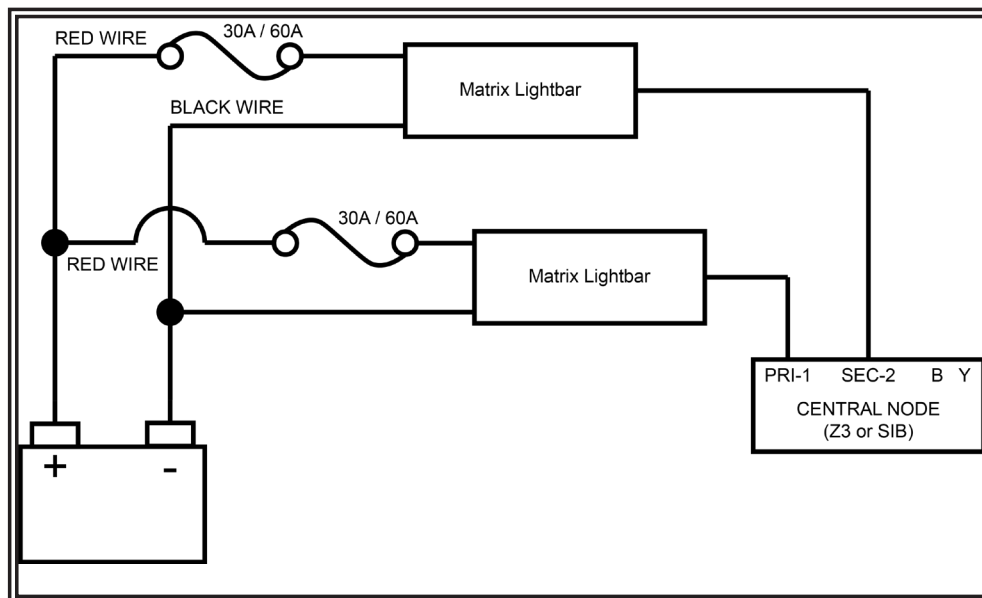


### Caution:

**Disconnect the battery before wiring up the lightbar, to prevent accidental shorting, arcing and/or electrical shock.**

Connect the red (power) and black (ground) wires from the serial lightbar to a nominal 12 VDC supply, along with a customer supplied in-line, slow blow ATC style fuse. Check the box label or wire tag to determine if your lightbar requires a 30A or 60A fuse. This depends on the number and type of light modules installed inside. Nothing less than a 30A fuse is permitted. **Please note that the fuse holder selected by the customer must also be rated by its manufacturer to meet or exceed the corresponding fuse ampacity.** See Figure 5 for details.

All Matrix compatible lightbars should also connect back to a central node, such as the Serial Interface Box or Z3 Serial Siren, to establish serial communication with the larger network. Depending on the lightbar model, this cable will involve either a CAT5 connection or bare wire, twisted pair termination labeled B Y at the central node. Connect the serial lightbar to your central node, according to the Matrix connectivity specified for the particular model at the beginning of this document. Please note, for CAT5 connections the PRI-1 port must always be utilized first, before additional devices can be connected to the SEC-2 port. See Figure 5 for details.



**Figure 5**

The Matrix network is designed to conveniently accommodate a large number of accessory devices. As more products utilizing CAT5 connectivity are integrated into the vehicle, routing of the cables can be accomplished in 'daisy chain' fashion, if desired. Serial lightbars utilizing CAT5 will always be the last device in either the PRI-1 or SEC-2 chain. Further instructions, features, and control options are detailed in the installation manual of the customer selected central node.

The following table indicates the default flash patterns of the serial lightbar. These patterns are activated by other Matrix compatible products, connected to the lightbar. These can easily be reconfigured as desired, in the Matrix Configurator. See Matrix Configuration Quick Start Manual for details.

Flash Patterns	
Default	Description
Arrowstik Right	Building Fast
Right Scene	Steady
Left Scene	Steady
Takedown/Alley Flash	Single Flash 150 - Alternating
Arrowstik Left	Building Fast
Dim	30%
Cruise	Dim, Full Bar
Level 3	Pursuit - Alternating
Level 2	Triple Flash 115
Level 1	Sweep
Takedown	Steady
Front Cut	
Arrowstik Flash	Quad Flash 115

21 & 27 Series Lightbar Flash Pattern Chart							
No.	Description	FPM	SAE J845 (180°)*		SAE J595		CA TITLE 13
			A, B, R	W	A, B, R	W	A, B, R
1	Sweep	-	-	-	-	-	-
2	Dual End Rotate	-	-	-	-	-	-
3	Pursuit	-	-	-	-	-	-
4	Pursuit (Steady Front Primary)	-	-	-	-	-	-
5	Cruise Low	-	-	-	-	-	-
6	Cruise Low Full Bar	-	-	-	-	-	-
7	Cruise High	-	-	-	-	-	-
8	Flicker Cruise Low	-	-	-	-	-	-
9	Flicker Cruise High	-	-	-	-	-	-
10	Takedown/Alley Flash	-	-	-	-	-	-
11	Single Flash	75	Class 1S	Class 1S	Class 1	Class 1	Class B
12	Triple Flash	115	Class 2S	Class 2S	Class 2	Class 2	-
13	Triple Flash (Steady Front Primary)	115	Class 2S	Class 2S	Class 2	Class 2	-
14	Quad Flash	115	Class 1S	Class 1S**	Class 1	Class 1***	-
15	Single Flash	150	Class 2S	Class 2S	Class 2	Class 2	-
16	Single Flash	250	-	-	-	-	-
17	Single Flash	375	-	-	-	-	-
18	Double Flash	75	Class 1S	Class 1S	Class 1	Class 1	Class B
19	Double Flash	115	Class 1S	Class 1S	Class 1	Class 1	Class B
20	Double Flash	150	Class 1S	Class 1S	Class 1	Class 1	-
21	Triple Flash	60	Class 1S	Class 1S	Class 1	Class 1	Class B
22	Triple Flash	150	Class 1S	Class 1S	Class 1	Class 1	-
23	Quad Flash NFPA	75	Class 1S	Class 1S	Class 1	Class 1	Class B
24	Quad Flash	150	Class 1S	Class 1S	Class 1	Class 1	-
25	Five Flash	75	Class 1S	Class 1S	Class 1	Class 1	Class B
26	Five Flash	150	Class 1S	Class 1S	Class 1	Class 1	-
27	Six Flash	60	Class 1S	Class 1S	Class 1	Class 1	Class B
28	Six Flash	80	Class 2S	Class 2S	Class 2	Class 2	-
29	All Bar Rotate	-	-	-	-	-	-
30	Intersection	-	-	-	-	-	-
31	Variable Flash	-	-	-	-	-	-
32	Cycle Flash	-	-	-	-	-	-
33	360 Combo	-	-	-	-	-	-
34	Hyper Flash	-	-	-	-	-	-

\* Applies to lightbars with a minimum of the indicated colors in two corners

\*\* 21 and 27 series lightbars with single color modules in the corners are SAE Class 2S

\*\*\* 21 series lightbars with single color white modules are SAE J595 Class 2



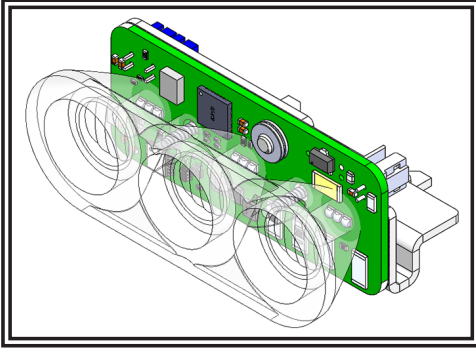
Covert Bar Flash Pattern Chart								
No.	Description	FPM	SAE J845 (180°)*			SAE J595		CA TITLE 13
			A, B, R	W	G	A, B, R	W	A, B, R
1	Sweep	-	-	-	-	-	-	-
2	Dual End Rotate	-	-	-	-	-	-	-
3	Pursuit	-	-	-	-	-	-	-
4	Pursuit (Steady Front Primary)	-	-	-	-	-	-	-
5	Cruise Low	-	-	-	-	-	-	-
6	Cruise Low Full Bar	-	-	-	-	-	-	-
7	Cruise High	-	-	-	-	-	-	-
8	Flicker Cruise Low	-	-	-	-	-	-	-
9	Flicker Cruise High	-	-	-	-	-	-	-
10	Takedown/Alley Flash	-	-	-	-	-	-	-
11	Single Flash	75	Class 1S	Class 1S	Class 3S	Class 1	Class 1	Class B
12	Triple Flash	115	Class 2S	Class 2S	Class 3S	Class 2	Class 2	-
13	Triple Flash (Steady Front Primary)	115	Class 2S	Class 2S	Class 3S	Class 2	Class 2	-
14	Quad Flash	115	Class 1S	Class 2S	Class 3S	Class 1	Class 2	-
15	Single Flash	150	Class 2S	Class 2S	Class 3S	Class 2	Class 2	-
16	Single Flash	250	-	-	-	-	-	-
17	Single Flash	375	-	-	-	-	-	-
18	Double Flash	75	Class 1S	Class 1S	Class 3S	Class 1	Class 1	Class B
19	Double Flash	115	Class 1S	Class 1S	Class 3S	Class 1	Class 1	Class B
20	Double Flash	150	Class 1S	Class 1S	Class 3S	Class 1	Class 1	-
21	Triple Flash	60	Class 1S	Class 1S	Class 3S	Class 1	Class 1	Class B
22	Triple Flash	150	Class 1S	Class 1S	Class 3S	Class 1	Class 1	-
23	Quad Flash NFPA	75	Class 1S	Class 1S	Class 3S	Class 1	Class 1	Class B
24	Quad Flash	150	Class 1S	Class 1S	Class 3S	Class 1	Class 1	-
25	Five Flash	75	Class 1S	Class 1S	Class 3S	Class 1	Class 1	Class B
26	Five Flash	150	Class 1S	Class 2S	Class 3S	Class 1	Class 1	-
27	Six Flash	60	Class 1S	Class 1S	Class 3S	Class 1	Class 1	Class B
28	Six Flash	80	Class 2S	Class 2S	Class 3S	Class 2	Class 2	-
29	All Bar Rotate	-	-	-		-	-	-
30	Intersection	-	-	-		-	-	-
31	Variable Flash	-	-	-		-	-	-
32	Cycle Flash	-	-	-		-	-	-
33	360 Combo	-	-	-		-	-	-
34	Hyper Flash	-	-	-		-	-	-

\* Applies to lightbars with a minimum of the indicated colors in two corners

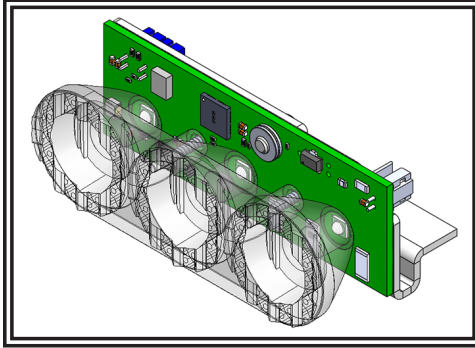
## Replacement Parts and Assemblies:

There are many different types of light-heads producing various warning signals in the lightbar as explained below. All 21/27 Series Lightbar retaining screws need to be torqued to 40 +0/-5 IN-LBS (4.52 +0/- 0.56 Nm). Covert Series Lightbar retaining screws need to be torqued to 10 +/- 1 IN-LBS (1.13 +/- 0.11 N-M)

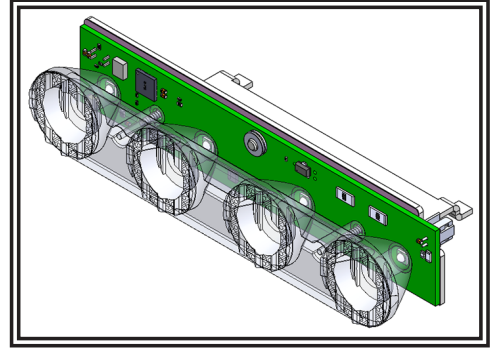
**Note: LED modules are not user serviceable.**



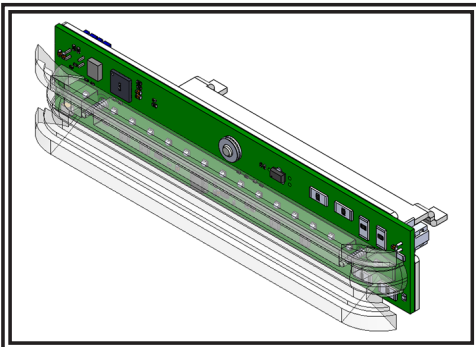
**Figure 5 - Torus Takedown**



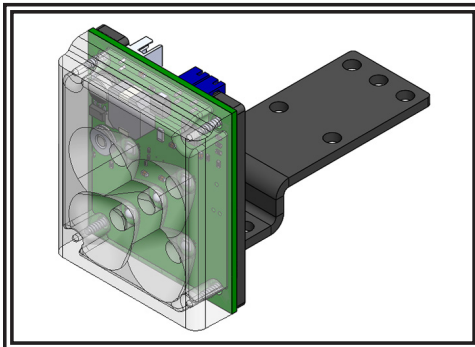
**Figure 6 - Torus 3LED Directional**



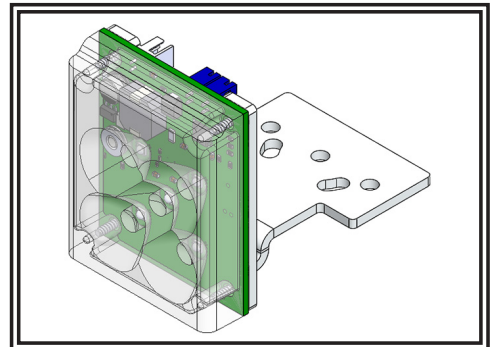
**Figure 7 - Torus 4LED Directional**



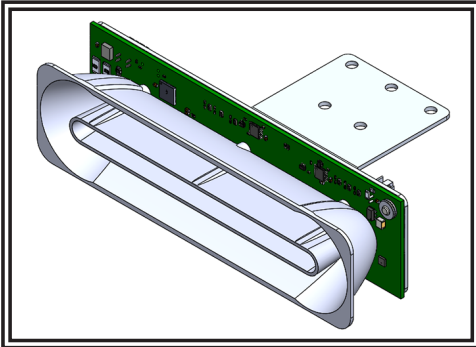
**Figure 8 - Torus Directional/Corner**



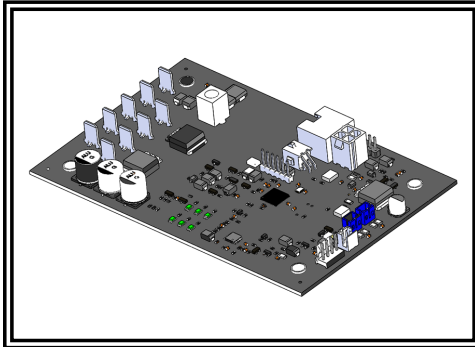
**Figure 9 - Prizm 5LED Takedown**



**Figure 10 - Prizm 5LED Alley**



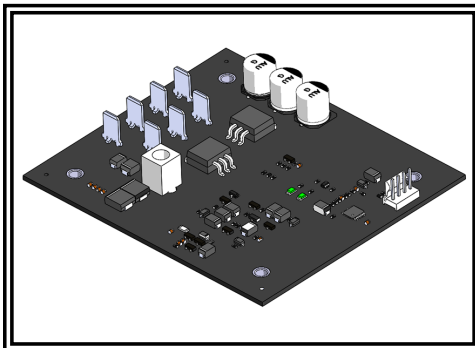
**Figure 11 - Prizm Directional/Corner**



**Figure 12 - Lightbar Controller**

The Lightbar Controller transfers network communication from other Matrix devices to all the individual light modules installed inside the lightbar. It also provides power, on demand, to the light modules. Max capacity is 15A RMS, and up to 35A peak, over the entire operating temperature range.

**Caution! Lightbar Controller outputs should only be connected to Matrix Compatible Light Modules. The warranty will be void if unsupported products are connected to the controller.**



**Figure 13 - Power Hub**

The Power Hub provides additional power, on demand, to individual light modules installed inside the lightbar. It is used only when the cumulative draw of light modules chosen exceeds a specified limit. Max capacity is equal to the Lightbar Controller capacity, i.e. an additional 15A RMS, and up to 35A peak, over the entire operating temperature range.

Description	Part No.
<b>Modules</b>	
Serial Interface Box (SIB)	CZMATSIB
<b>Boards</b>	
Lightbar Master Controller Board	CZMATLBC
Lightbar Power HUB Board	CZMATPH
<b>Lenses</b>	
21 Series, Lower Outboard Lens, Clear	CZ2101C
21 Series, Lower Outboard Lens, Tint	CZ2101T
21 Series, Lower Center 11" Lens, Clear	CZ2111C
21 Series, Lower Center 11" Lens, Tint	CZ2111T
21 Series, Lower Center 16" Lens, Clear	CZ2116LC
21 Series, Lower Center 16" Lens, Tint	CZ2116LT
21 Series, Upper Center 16" Lens, Amber	CZ2116UA
21 Series, Upper Center 16" Lens, Blue	CZ2116UB
21 Series, Upper Center 16" Lens, Black	CZ2116BLK
21 Series, Upper Center 16" Lens, Clear	CZ2116UC
21 Series, Upper Center 16" Lens, Red	CZ2116UR
21 Series, Upper Center 16" Lens, Tint	CZ2116UT
21/27 Series, Upper Center 11" Lens, Black	CZ2127U11BLK
21/27 Series, Upper Center 11" Lens, Clear	CZ2127U11C
21/27 Series, Upper Center 11" Lens, Red	CZ2127U11R
21/27 Series, Upper Center 11" Lens, Blue	CZ2127U11B
21/27 Series, Upper Center 11" Lens, Amber	CZ2127U11A
21/27 Series, Upper 22.5" Lens, Amber	CZ27U22A
21/27 Series, Upper 22.5" Lens, Blue	CZ27U22B
21/27 Series, Upper 22.5" Lens, Black	CZ27U22BLK
21/27 Series, Upper 22.5" Lens, Clear	CZ27U22C
21/27 Series, Upper 22.5" Lens, Red	CZ27U22R
21/27 Series, Upper 22.5" Lens, Tint	CZ27U22T
21 Series, Upper Outboard Lens, Amber	CZ21UA
21 Series, Upper Outboard Lens, Blue	CZ21UB
21 Series, Upper Outboard Lens, Black	CZ21UBLK
21 Series, Upper Outboard Lens, Clear	CZ21UC
21 Series, Upper Outboard Lens, Red	CZ21UR
21 Series, Upper Outboard Lens, Tint	CZ21UT
21 Series, Upper Outboard Lens, Black, Photocell	CZ21UBWI
21 Series, Lower 22.5" Lens, Clear	CZ21L22C
21 Series, Lower 22.5" Lens, Tint	CZ21L22T
27 Series, Lower Outboard Lens, Clear	CZ2701C
27 Series, Lower Center 8" Lens, Clear	CZ2708C
27 Series, Lower Center 11" Lens, Clear	CZ2711C
27 Series, Upper Outboard Lens, Black	CZ27UBLK
27 Series, Upper Outboard Lens, Red	CZ27UR
27 Series, Upper Outboard Lens, Blue	CZ27UB
27 Series, Upper Outboard Lens, Amber	CZ27UA
27 Series, Upper Outboard Lens, Clear	CZ27UC
27 Series, Lower 22.5" Lens, Clear	CZ27L22C
27 Series, Upper Center 8" Lens, Clear	CZ2708U

Description	Part No.
<b>Lenses (continued)</b>	
27 Series, Upper Center 8" Lens, Blue	CZ2708UB
27 Series, Upper Center 8" Lens, Amber	CZ2708UA
27 Series, Upper Center 8" Lens, Black	CZ2708UBLK
21/27 Series, Lower Center 18" Lens, Tint	CR1618LSMK
21/27 Series, Lower Center 18" Lens, Clear	CR1618LCLE
21/27 Series, Upper Center 18" Lens, Tint	CR1618USMK
21/27 Series, Upper Center 18" Lens, Amber	CR1618UAMB
21/27 Series, Upper Center 18" Lens, Clear	CR1618UCLE
21/27 Series, Upper Center 18" Lens, Red	CR1618URED
21/27 Series, Upper Center 18" Lens, Green	CR1618UGRE
21/27 Series, Upper Center 18" Lens, Black	CR1618UBLA
21/27 Series, Upper Center 18" Lens, Blue	CR1618UBLU
21/27 Series, Upper Center 18" Lens, Tint	CR1608LSMK
21/27 Series, Upper Center 18" Lens, Clear	CR1608LCLE
21/27 Series, Upper Center 8" Lens, Tint	CR1608USMK
Covert, Upper Center 8" Lens, Amber	CR1608UAMB
Covert, Upper Center 8" Lens, Clear	CR1608UCLE
Covert, Upper Center 8" Lens, Red	CR1608URED
Covert, Upper Center 8" Lens, Green	CR1608UGRE
Covert, Upper Center 8" Lens, Black	CR1608UBLA
Covert, Upper Center 8" Lens, Blue	CR1608UBLU
Covert, Lower Center 11" Lens, Tint	CR1611LSMK
Covert, Lower Center 11" Lens, Clear	CR1611LCLE
Covert, Upper Center 11" Lens, Tint	CR1611USMK
Covert, Upper Center 11" Lens, Amber	CR1611UAMB
Covert, Upper Center 11" Lens, Clear	CR1611UCLE
Covert, Upper Center 11" Lens, Red	CR1611URED
Covert, Upper Center 11" Lens, Green	CR1611UGRE
Covert, Upper Center 11" Lens, Black	CR1611UBLA
Covert, Upper Center 11" Lens, Blue	CR1611UBLU
Covert, Lower Center 16" Lens, Tint	CR1616LSMK
Covert, Lower Center 16" Lens, Clear	CR1616LCLE
Covert, Upper Center 16" Lens, Tint	CR1616USMK
Covert, Upper Center 16" Lens, Amber	CR1616UAMB
Covert, Upper Center 16" Lens, Clear	CR1616UCLE
Covert, Upper Center 16" Lens, Red	CR1616URED
Covert, Upper Center 16" Lens, Green	CR1616UGRE
Covert, Upper Center 16" Lens, Black	CR1616UBLA
Covert, Upper Center 16" Lens, Blue	CR1616UBLU
Covert, Lower 22.5" Lens, Tint	CR1623LSMK
Covert, Lower 22.5" Lens, Clear	CR1623LCLE
Covert, Upper 22.5" Lens, Tint	CR1623USMK
Covert, Upper 22.5" Lens, Amber	CR1623UAMB
Covert, Upper 22.5" Lens, Clear	CR1623UCLE
Covert, Upper 22.5" Lens, Red	CR1623URED
Covert, Upper 22.5" Lens, Green	CR1623UGRE
Covert, 22.5", green	CR1623UGRE

Description	Part No.
<b>Lenses (continued)</b>	
Covert, Upper 22.5" Lens, Black	CR1623UBLA
Covert, Upper 22.5" Lens, Blue	CR1623UBLU
Covert, Upper Outer 18" Lens, Tint, Photocell	CR1618PHOTOSMK
Covert, Upper Outer 18" Lens, Amber, Photocell	CR1618PHOTOAMB
Covert, Upper Outer 18" Lens, Red, Photocell	CR1618PHOTORED
Covert, Upper Outer 18" Lens, Green, Photocell	CR1618PHOTOGRE
Covert, Upper Outer 18" Lens, Black, Photocell	CR1618PHOTOBLA
Covert, Upper Outer 18" Lens, Blue, Photocell	CR1618PHOTOBLU
Covert, Upper 22.5" Lens, Tint, Photocell	CR1623PHOTOSMK
Covert, Upper 22.5" Lens, Amber, Photocell	CR1623PHOTOAMB
Covert, Upper 22.5" Lens, Red, Photocell	CR1623PHOTORED
Covert, Upper 22.5" Lens, Green, Photocell	CR1623PHOTOGRE
Covert, Upper 22.5" Lens, Black, Photocell	CR1623PHOTOBLA
Covert, Upper 22.5" Lens, Blue, Photocell	CR1623PHOTOBLU
Covert, Clip, Stainless Steel	CR16CLIPSS
Covert, Clip, Black	CR16CLIPBLACK
Covert, Photocell	CR16PHOTOCELL
Covert, Opticom Emitter	CR16OPTICOM
Covert, NEP1000 Emitter	CR16NPE1000
<b>Lighthoods</b>	
21 Series, Torus, 3LED TD, White, (Single Color)	CZ21TD
21 Series, Torus, 3LED, Amber, (Single Color)	CZ213A
21 Series, Torus, 3LED, Blue, (Single Color)	CZ213B
21 Series, Torus, 3LED, Red, (Single Color)	CZ213R
21 Series, Torus, 3LED, White, (Single Color)	CZ213W
21 Series, Torus, 4LED, Amber, (Single Color)	CZ214A
21 Series, Torus, 4LED, Blue, (Single Color)	CZ214B
21 Series, Torus, 4LED, Green, (Single Color)	CZ214G
21 Series, Torus, 4LED, Red, (Single Color)	CZ214R
21 Series, Torus, 4LED, White, (Single Color)	CZ214W
21 Series, Torus, 6LED, Amber, (Single Color)	CZ216A
21 Series, Torus, 6LED, Blue, (Single Color)	CZ216B
21 Series, Torus, 6LED, Green, (Single Color)	CZ216G
21 Series, Torus, 6LED, Red, (Single Color)	CZ216R
21 Series, Torus, 6LED, White, (Single Color)	CZ216W
21 Series, Torus, 8LED, Amber, (Single Color)	CZ218A
21 Series, Torus, 8LED, Blue, (Single Color)	CZ218B
21 Series, Torus, 8LED, Green, (Single Color)	CZ218G
21 Series, Torus, 8LED, Red, (Single Color)	CZ218R
21 Series, Torus, 8LED, White, (Single Color)	CZ218W
Covert / 21 Series, Torus, 6LED TD/Alley, Amber/White, (Dual Color)	CZ21TDAW
Covert / 21 Series, Torus, 6LED TD/Alley, Blue/White, (Dual Color)	CZ21TDBW
Covert / 21 Series, Torus, 6LED TD/Alley, Red/White, (Dual Color)	CZ21TDRW
Covert / 21 Series, Torus, 12LED, Amber/White, (Dual Color)	CZ2112AW
Covert / 21 Series, Torus, 12LED, Blue/Amber, (Dual Color)	CZ2112BA
Covert / 21 Series, Torus, 12LED, Blue/White, (Dual Color)	CZ2112BW
Covert / 21 Series, Torus, 12LED, Red/Amber, (Dual Color)	CZ2112RA

Description	Part No.
<b>Lightheads (continued)</b>	
Covert / 21 Series, Torus, 12LED, Red/Blue, (Dual Color)	CZ2112RB
Covert / 21 Series, Torus, 12LED, Green/White, (Dual Color)	CZ2112GW
Covert / 21 Series, Torus, 12LED, Red/White, (Dual Color)	CZ2112RW
Covert / 21 Series, Torus, 16LED, Amber/White, (Dual Color)	CZ2116AW
Covert / 21 Series, Torus, 16LED, Blue/Amber, (Dual Color)	CZ2116BA
Covert / 21 Series, Torus, 16LED, Blue/White, (Dual Color)	CZ2116BW
Covert / 21 Series, Torus, 16LED, Red/Amber, (Dual Color)	CZ2116RA
Covert / 21 Series, Torus, 16LED, Red/Blue, (Dual Color)	CZ2116RB
Covert / 21 Series, Torus, 16LED, Red/White, (Dual Color)	CZ2116RW
Covert / 21 Series, Torus, 9LED TD/Alley, Amber/White/Green, (Tri Color)	CZ21TDAWG
Covert / 21 Series, Torus, 9LED TD/Alley, Blue/Amber/White, (Tri Color)	CZ21TDBAW
Covert / 21 Series, Torus, 9LED TD/Alley, Blue/White/Green, (Tri Color)	CZ21TDBWG
Covert / 21 Series, Torus, 9LED TD/Alley, Red/Amber/White, (Tri Color)	CZ21TDRAW
Covert / 21 Series, Torus, 9LED TD/Alley, Red/Blue/White, (Tri Color)	CZ21TDRBW
Covert / 21 Series, Torus, 9LED TD/Alley, Red/White/Green, (Tri Color)	CZ21TDRWG
Covert / 21 Series, Torus, 18LED, Blue/Amber/White, (Tri Color)	CZ2118BAW
Covert / 21 Series, Torus, 18LED, Amber/White/Green, (Tri Color)	CZ2118AWG
Covert / 21 Series, Torus, 18LED, Blue/Amber/Green, (Tri Color)	CZ2118BAG
Covert / 21 Series, Torus, 18LED, Blue/White/Green, (Tri Color)	CZ2118BWG
Covert / 21 Series, Torus, 18LED, Red/Amber/Green, (Tri Color)	CZ2118RAG
Covert / 21 Series, Torus, 18LED, Red/Amber/Green, (Tri Color)	CZ2118RAW
Covert / 21 Series, Torus, 18LED, Red/Blue/Amber, (Tri Color)	CZ2118RBA
Covert / 21 Series, Torus, 18LED, Red/Blue/Green, (Tri Color)	CZ2118RBG
Covert / 21 Series, Torus, 18LED, Red/White/Green, (Tri Color)	CZ2118RWG
Covert / 21 Series, Torus, 18LED, Red/Blue/White, (Tri Color)	CZ2118RBW
27 Series, Prizm, 5LED TD, White, (Single Color)	CZ27TD
27 Series, Prizm, 5LED Alley, White, (Single Color)	CZ27AL
27 Series, Prizm, 8LED, Amber, (Single Color)	CZ278A
27 Series, Prizm, 8LED, Blue, (Single Color)	CZ278B
27 Series, Prizm, 8LED, Red, (Single Color)	CZ278R
27 Series, Prizm, 8LED, White, (Single Color)	CZ278W
27 Series, Prizm, 12LED, Amber, (Single Color)	CZ2712A
27 Series, Prizm, 12LED, Blue, (Single Color)	CZ2712B
27 Series, Prizm, 12LED, Red, (Single Color)	CZ2712R
27 Series, Prizm, 24LED, Amber/White, (Dual Color)	CZ2724AW
27 Series, Prizm, 24LED, Blue/Amber, (Dual Color)	CZ2724BA
27 Series, Prizm, 24LED, Blue/White, (Dual Color)	CZ2724BW
27 Series, Prizm, 24LED, Red/Amber, (Dual Color)	CZ2724RA
27 Series, Prizm, 24LED, Red/Blue, (Dual Color)	CZ2724RB
27 Series, Prizm, 24LED, Red/White, (Dual Color)	CZ2724RW
27 Series, Prizm, 24LED, Red/Blue/White, (Tri Color)	CZ2724RBW
27 Series, Prizm, 24LED, Red/Blue/Amber, (Tri Color)	CZ2724RBA
27 Series, Prizm, 24LED, Red/Amber/White, (Tri Color)	CZ2724RAW
27 Series, Prizm, 24LED, Blue/Amber/White, (Tri Color)	CZ2724BAW
27 Series, Prizm, 24LED, Red/Amber/Green, (Tri Color)	CZ2724RAG
27 Series, Prizm, 24LED, Amber/White/Green, (Tri Color)	CZ2724AWG
27 Series, Prizm, 24LED, Blue/Amber/Green, (Tri Color)	CZ2724BAG



## 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 clips from the lens(es) of the lightbar. Set these aside, as they will be used to reattach the lens(es).
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. Reattach the retaining clips to fasten the upper lens to the lightbar.

## Troubleshooting:

All lightbars 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.

Problem	Possible Cause(s)	Comments / Response
No Power	Faulty wiring	Ensure power and ground connections to the lightbar are secured. Remove and reconnect the red power wire to the vehicle battery.
	Input Voltage	The lightbar is equipped with an over voltage lockout circuit. During a sustained overvoltage event, the Lightbar Controller inside will maintain communication with the rest of the Matrix network, but disable power out to the light modules. Look for the solid red V_FAULT LED. Ensure that input voltage does not exceed the specified range for your particular model. When overvoltage occurs, the input must temporarily drop ~1V below the maximum limit in order to resume normal operation.
	Blown fuse	The lightbar may have blown an upstream fuse. Check and replace fuse if necessary.
No Communication	Ignition input	An ignition wire input is first required to bring the central node out of a sleep state. From that point, the central node controls the status of all other Matrix compatible devices, including the lightbar. If the lightbar is active, you should see a flashing green STATUS LED on the Lightbar Controller inside. See the installation manual of the customer selected central node for further troubleshooting of the ignition input.
	Connectivity	Ensure that the lightbar communications cable is securely connected back to a central node. Ensure that any other cables connecting Matrix compatible accessory devices in a CAT5 daisy chain are fully seated with positive lock. Remember that the PRI-1 jack at the central node must first be used, before the SEC-2 jack can be used.
Bad Light Module	No Response	If a light module is powered, but not actively communicating on the network, it should default to error flash mode. This error flash is 200msec on, and 200msec off, and is not synchronized with any other light module in the lightbar. So, for example, if the user activates a flash pattern, and all the modules are participating correctly except one, then that particular module should be in error flash mode. Note that each light module is connected to the network with a black / white twisted pair cable. If any single connection point in the twisted pair sequence between light modules has come loose, all downstream modules will operate in error flash mode. When powered, this allows the user to quickly identify the offending light module(s) and/or a possible wiring issue. Verify that the twisted pair cable connections are secure at the back of each module. Otherwise, see manual 920-0738-00 Serial Light Module Replacement for further instructions. This should be included when you receive replacement modules.
	Short Circuit	If a light module is shorted out, and the user attempts to activate a flash pattern, the pattern will not operate. Instead, the Lightbar Controller inside the lightbar will display a solid red I_FAULT LED. To determine which module is shorted out, remove power to the lightbar and then remove the red wire at the back of each light module except one. Reconnect power to the lightbar, and ensure that the device has re-established active communication with the central node. Activate a flash pattern once more. If the single, connected light module operates properly, leave the pattern running and proceed to reconnect the red wire at the back of all the other light modules, one at a time. When you have reconnected the shorted module, the flash pattern will stop and the solid red I_FAULT LED will appear once more on the Lightbar Controller. See manual 920-0738-00 Serial Light Module Replacement for further instructions. This should be included when you receive replacement modules.

## Warranty:

### 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 USA

**Technical Service USA (314) 996-2800**

c3\_tech\_support@code3esg.com

**CODE3ESG.com**