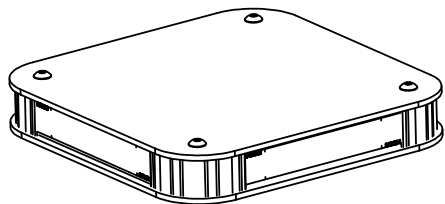




LED Grid Light



IMPORTANT NOTICE TO INSTALLER: Make sure to read and understand all instructions and warnings before proceeding with the installation of this product. Ensure that the manual and any warning cards are delivered to the end user of this equipment. Proper installation of the light requires the installer to have a thorough knowledge of automotive electronics, systems, and procedures. Lights provide an essential function of an effective visual warning system. The use of the light does not ensure that all drivers can or will abide by or react to a warning signal, especially at high rates of speeds or long distances. The operator of the vehicle must never take the right of way for granted and it is the operator's responsibility to proceed safely. The effectiveness of the light is highly dependant on the correct mounting and wiring. The installer must read and follow the manufacturer's installation instructions and warnings in the manual. The vehicle operator should verify daily that the light is securely fastened to the vehicle and properly functioning before operating vehicle. The light is intended for use by authorized personnel only. It is the user's responsibility to ensure they understand and operate the warning devices in compliance with the applicable city, state and federal laws and regulations. SoundOff Signal assumes no liability for any loss resulting from the use of this warning device.

Components/Contents

Standard Equipment:

- 1 - Grid Light, built to your specifications

Other Parts that may be included depending on your configuration:

- 1 - Mounting with Hardware

*Kits will vary with each Grid Light depending on mounting specified on order form.

Tools Required for Installation

- 7/16" Socket Screw Driver
- 7/16" Open End Wrench
- 3/8" Socket with Ratchet
- 1/2" Socket with Ratchet



1.800.338.7337 / www.soundoffsignal.com

IMPORTANT INFORMATION:

Warning devices are strictly regulated and governed by Federal, State and Municipal ordinances. These devices shall be used ONLY on approved vehicles. It is the sole responsibility of the user of these devices to ensure compliance.

To review our Limited Warranty Statement & Return Policy for this or any SoundOff Signal product, visit our website at www.soundoffsignal.com/sales-support. If you have questions regarding this product, contact **Technical Services**, Monday - Friday, 8 a.m. to 5 p.m. at **1.800.338.7337** (press #4 to skip the automated message).

This instruction sheet is for the proper installation of your light bar. Please see our website for the ongoing maintenance of your light bar.

Questions or comments that do not require immediate attention may be emailed to techservices@soundoffsignal.com.

SUPERIOR CUSTOMER RELATIONSHIPS. SMARTLY DESIGNED LIGHTING & ELECTRONIC SOLUTIONS.

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10	GRID LIGHT TROUBLESHOOTING
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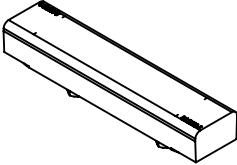
Important Information:

- DO NOT install this product or route any wires in the Air Bag Deployment Zone. Refer to your vehicle Owner's Manual for the location of any air bag deployment zones.
- DO NOT connect this device to a strobe power supply. This product is self-contained and does not require an external power supply.





LED Grid Light

	4": 6 & 8 LED Single Color, 12 LED Dual & 18 LED Tri Color Module
	INPUT VOLTAGE RANGE: 9-32 Vdc CURRENT DRAW PER MODULE*: 0.36 Amps @ 12.8 Vdc, 0.18 Amps @ 25.6 Vdc (Flashing Red) 0.62 Amps @ 12.8 Vdc, 0.31 Amps @ 25.6 Vdc (Peak Red) 0.60 Amps @ 12.8 Vdc, 0.30 Amps @ 25.6 Vdc (Flashing Amb, Blue, Green, White) 0.90 Amps @ 12.8 Vdc, 0.45 Amps @ 25.6 Vdc (Peak Amb, Blue, Green, White) WATTAGE: 4.6W (Flashing Red) 7.7W (Flashing Amber, Blue, Green, White)

*NOTE: Total current draw can be calculated by adding the number of modules.

FLASHING = AVERAGE
 STEADY ON (100%) = PEAK

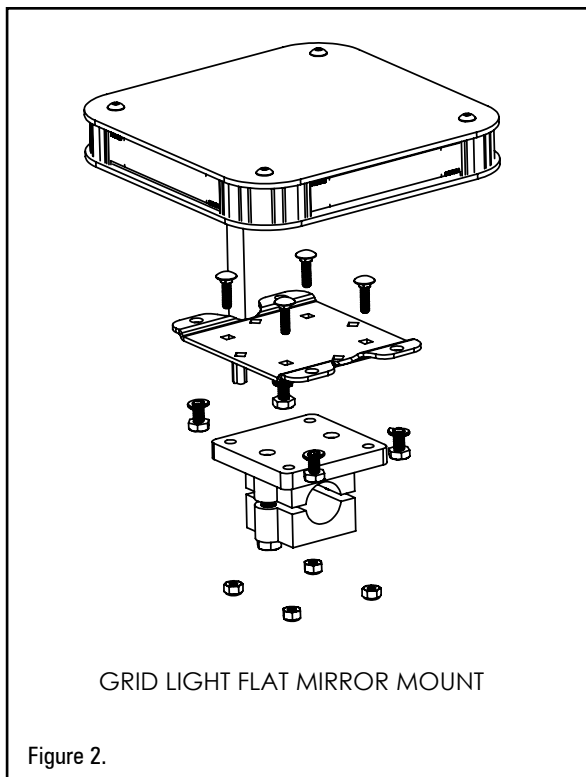
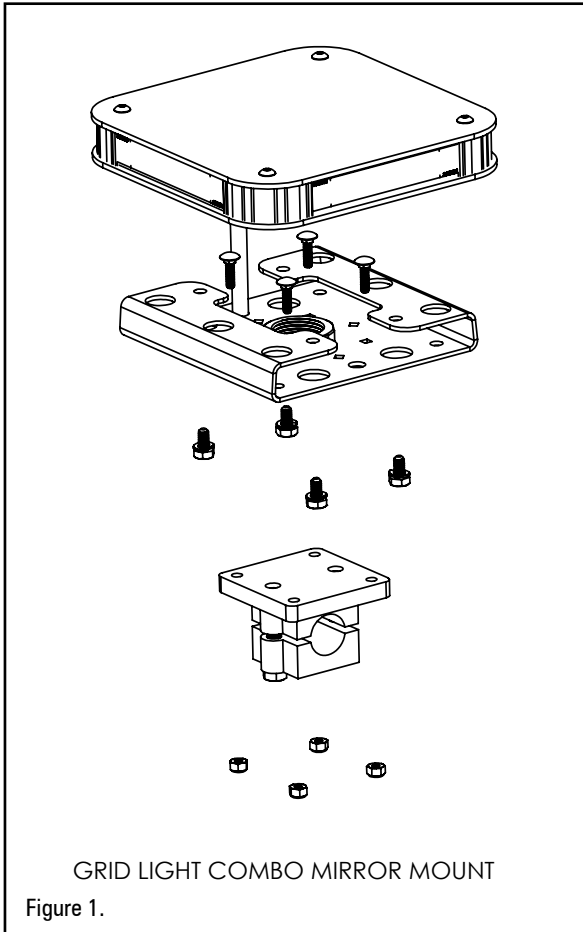
TECHNICAL SPECIFICATIONS

Material:	Top Cover and Base: Aluminum LED Modules: Dow Corning Silicone		
Roof Attachments:	1/4" bolt Stainless A2		
Operating Temperature:	-40° to +85° C		
LENGTH	DEPTH	HEIGHT	# OF MODULES
7.5"	7.5"	1.39"	4, 1x1 Single Stack
7.5"	7.5"	2.25"	8, 1x1 Dual Stack
11.75"	7.5"	1.39"	8, 2x2 Single Stack
11.75"	11.75"	2.25"	16, 2x2 Dual Stack

Fuse	Connectors
FH3	J6-(X)
FH4	J7-(X)
FH2	J5-(X)
FH1	J4-(X)

POWER SPECIFICATIONS

Input Voltage Range:	9-32 Vdc	
Light Bar Component	Current Draw (Average = Flashing)	Power Consumption (Watts)
Standby Current	<7mA, <0.17W	
Fuse Rating	4 Module: 10A 8 Module: 15A 16 Module: 25A	
Reverse Polarity	Protected	
Load Dump	Protected	
Over Voltage	Protected	
Wiring	Power Cable 15ft or 25ft, 10 AWG Wires, (+) RED, (-) BLACK, GREEN (Data/Sync), (+)BLUE (Primary Flash), (+)ORANGE (Secondary Flash), (+/-) WHITE (Function/Flash)	



COMBO MIRROR AND FLAT MIRROR MOUNTING

1. Determine the final orientation of the Grid Light desired to the "mirror bar" it will clamp to. Align the mirror clamp to the mount bracket and to the Grid Light to allow correct orientation. 0, 45, 90 degree alignments are possible, based on how the mirror clamp is installed to the mount bracket.
2. Install the Mirror Clamp to the Mount bracket (high or low depending on your option) using the 4 carriage bolts, and 4 10-24 nuts. Tighten with 3/8 socket to 1/8 turn past full seating.
3. Install the Mount bracket (with mirror clamp attached), to the Grid Light using the 4 1/4-20 bolts with 4 split lock washers. Tighten with 7/16 socket screw drive to 1/8 turn past split lock washer fully compressed.
4. Install the Grid Light assembly to the "mirror bar" using the clamp. Tighten the mirror clamp bolts with 1/2 socket. Do not tighten beyond the two clamp halves making full contact.

⚠ WARNING

Route wires only in locations that are not subjected to potential wear. Make sure to avoid routing wires in the deployment area of your air bag. Refer to your vehicle's owner's manual for airbag deployment zone.

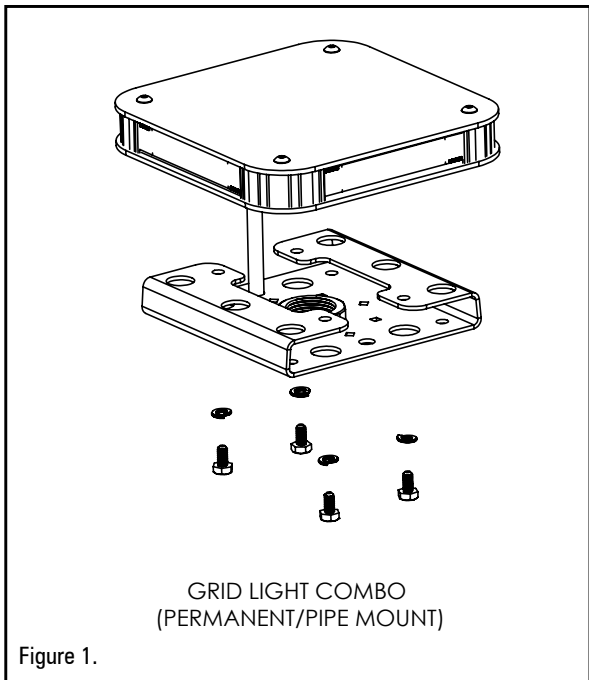


Figure 1.

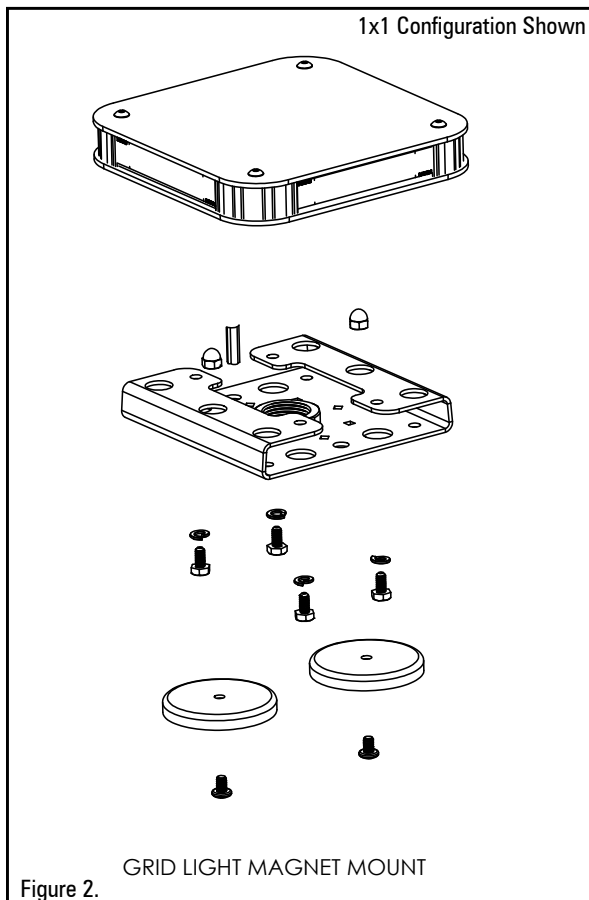


Figure 2.

COMBO (PERMANENT/PIPE) AND MAGNET MOUNTING

Combo: Permanent Mount

1. Place Permanent Mount onto desired vehicle surface location.
2. Pick the set of holes that best fit the vehicles surface, at installer's discretion. Mark these holes onto the vehicle surface (min of 2 holes.)
3. Pre-Drill the vehicle surface using a drill to match the installer's screw desired (not included.)
4. Secure the Permanent Mount onto the vehicle using the installer's screws.
5. Install the Grid light onto the secured Mount bracket using the 4 1/4-20 bolts with 4 split lock washers. Tighten with 7/16 open end wrench to 1/8 turn past split lock washer fully compressed.

Combo: Pipe Mount

1. Install the Mount bracket to the Grid Light using the 4 1/4-20 bolts with 4 split lock washers. Tighten with 7/16 socket screw drive to 1/8 turn past split lock washer fully compressed.
2. Install Grid Light Assembly onto 1" NPT Threaded Pipe End (not included.) Tighten until pipe makes contact with base of Grid Light. Do not over tighten.
3. Mount Pipe to vehicle as desired.

Magnet Mount

1. Install the Mount bracket, to the Grid Light using the 4 1/4-20 bolts with 4 split lock washers. Tighten with 7/16 socket screw drive to 1/8 turn past split lock washer fully compressed.
2. Install the magnets onto the Grid Light's mount bracket using a 7/16" open end wrench and Phillips screw driver. For dual magnets, use center set of holes. For quad magnets use the outer set of holes. Tighten to 1/8 turn past full seat.

**NOTE: 1x1 configurations use 2 magnets.
2x2 configurations use 4 magnets.**

WARNING

Route wires only in locations that are not subjected to potential wear. Make sure to avoid routing wires in the deployment area of your air bag. Refer to your vehicle's owner's manual for airbag deployment zone.



LED Grid Light

ELECTRICAL INSTALLATION

FEATURED HIGHLIGHTS & TERMINOLOGY

OVER-VOLTAGE PROTECTION:

When an over-voltage condition is detected, the module will flash an over-voltage warning pattern of 50mS ON/950mS OFF to alert of the over-voltage condition and protect the electronics from damage due to heat/voltage.

THERMAL COMPENSATION PROTECTION:

The Grid Light is designed to provide maximum power output while providing protection to the electronic components by reducing the output power at extreme temperatures.

SYNC 2:

Synchronizing the flashing of multiple light modules or Grid Lights is accomplished by connecting the GREEN wires of different light modules together. Up to 24 light modules can be connected for synchronized flashing. All light module flash patterns must be set to the same flash pattern # to ensure proper operation. Refer to the Phase Forward and Split Forward Flash options to setup Grid Lights to flash in alternate or simultaneous flash pattern.

CRUISE MODE:

Allows the user to program all lights to "Glow" when this feature is activated.

STEADY ON MODE:

All lights continuously on for selected color.

LOW POWER MODE:

Operates lighting at reduced intensity.

POWER CABLE:

1. Route Grid Light power cables as close to vehicle's power source (battery) as possible.
2. Install fuses (customer supplied), as indicated in chart below to the end of the RED wire of the Grid Light Power Cable.
 - a. Remove the fuse before connecting any wires to the POSITIVE (+) terminal of the battery.
3. DO NOT USE CIRCUIT BREAKER OR FUSIBLE LINK.
 - a. Do NOT use any more than 2ft of wire between the power source and the fuse and ensure the wire is protected and secured from being cut into; this is non-fused wire.
4. Connect the BLACK wire to the factory chassis ground right next to the battery or other ground location capable of handling high current.

Amp Fuse	# of Modules
25A	16
15A	8
10A	4

ORANGE, BLUE, WHITE CONTROL WIRES:

1. Route wires to the location where all controlling equipment will be, i.e. switch box, center console area.
2. ORANGE and BLUE are active high. WHITE is both active high and active low.

GREEN WIRE:

1. Connect the GREEN data/sync wire to another Grid Light GREEN wire or 5 wire products, including mpower, intersector, and undercover for pattern syncing.

NOTE: Please blunt cut or tape if not used.

INITIAL POWER UP TEST:

1. Insert Fuse(s) into Fuse Holder(s).
2. With any of the 3 control wires active high, observe LED modules flash or come on steady.

STANDBY (SLEEP) MODE:

If there is no input to the Grid Light after 30 seconds, it will go into a "standby" mode. The standby mode is a low power mode that is used to extend the life of your battery. The Grid Light will awaken from standby mode when any control wire is active high.



LED Grid Light

FLASH PATTERNS & TIMING TABLE

COLOR SWAP:

This function is only valid for dual and tri-color light modules and can only be changed when the light module is in a flashing mode (disabled for single color modules and when light module is operating in cruise or steady ON functions). The light module will switch between Color Swap OFF and Color Swap ON. When Color Swap is OFF, the 1st color will flash 1st on a dual/tri color pattern. When Color Swap is ON, the 2nd color will flash 1st on a dual/tri color pattern.

PHASE FORWARD:

This function can only be changed when the LED module is in a flashing mode (disabled in cruise or steady phase functions) and only has an effect when at least 2 Grid Lights have the green sync wire connected together. The light module will switch between A and B each time this sequence is done. To have light modules flash simultaneously, both light modules need to be set to the same phase. To have light modules flash alternately, the light modules need to be set to different phases (Set-Up Table.)

ADVANCE PATTERN:

The flash pattern will advance to the next pattern. If the light module was at the last pattern, the pattern will reset to the 1st pattern.

BACKUP PATTERN:

The flash pattern will backup to the previous pattern. If the light module was at the first pattern, the pattern will change to the last pattern on the list.

PATTERN RESET:

The flash pattern will reset to the 1st pattern in the list.

FACTORY RESET:

The Grid Light will return to the same settings as when it left the factory.

NOTE: Factory reset is based on original order configuration.

SPLIT FORWARD:

The split setting will advance to the next available option.

Set-Up Table			
User Interface		Seconds	
Action	Response	From	To
Pattern Forward	Steady High	0	1
Pattern Back	Steady Low	1	2
Color Swap	Off	2	3
Phase Forward	Steady High	3	4
Split Forward	Steady Low	4	5
Function Table Swap	Off	5	6
Reset Flash Pattern	Steady High	6	7
Reset to Factory	Steady Low	7	8

Split Table (WxD)				
SPLIT	1x1 Single Stack	1x1 Dual Stack	2x2 Single Stack	2x2 Dual Stack
1	No Split	No Split	No Split	No Split
2	Diagonal 1	Diagonal 1	Diagonal 1	Diagonal 1
3	Diagonal 2	Diagonal 2	Diagonal 2	Diagonal 2
4		Top/Bottom	Left/Right	Left/Right
5			Front/Rear	Front/Rear
6				Top/Bottom

Flash Patterns			
PATTERN #	SINGLE COLOR	DUAL COLOR	TRI COLOR
1	Quint (SAE)		
2	Warp		
3	Inter-Cycle		
4	Double (SAE)		
5	Quad		
6	Power Pulse		
7	Road Runner (SAE/CaXIII)		
8	Q-Switch (SAE)		
9	Steady-Burn + Flash, Road Runner		
10	Steady Burn + Flash, Quad		
11	Quad 2		
12	Double 2		
13	N/A	Random 1	
14	N/A	Random 2	

Pattern Reset Default 

NOTE: Random 1 & 2 flash patterns don't split



LED Grid Light

FLASH OPTIONS

FUNCTION TABLES:

The functional operation of the Grid Light can be changed while applying +V to the BLUE or ORANGE wires. When the light is flashing, momentarily connect the WHITE wire to ground for >5S and <6S (light will go steady high, steady low, off, steady high, steady low, off) then release. The function table will now advance to the next table (table 1 to table 2.) Repeat above process to return to table 1.

NOTE: Single and Dual color devices only have 1 table available.

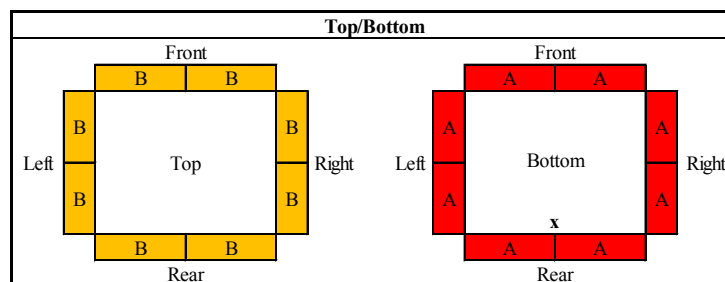
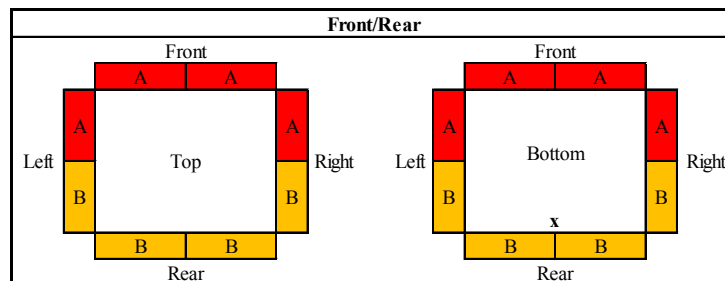
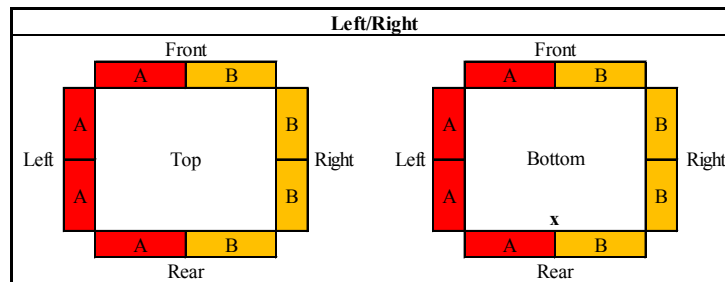
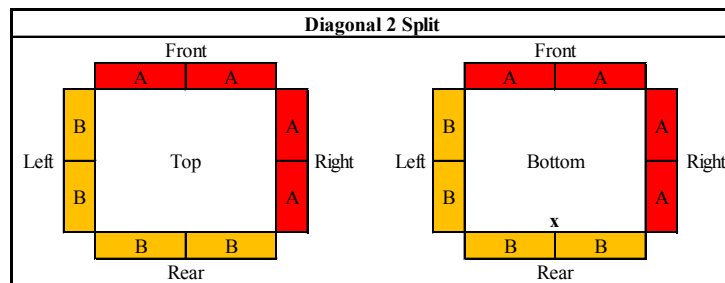
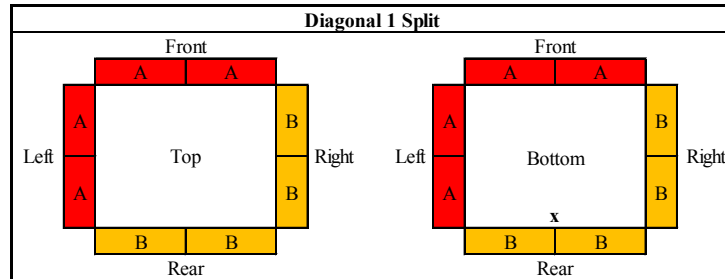
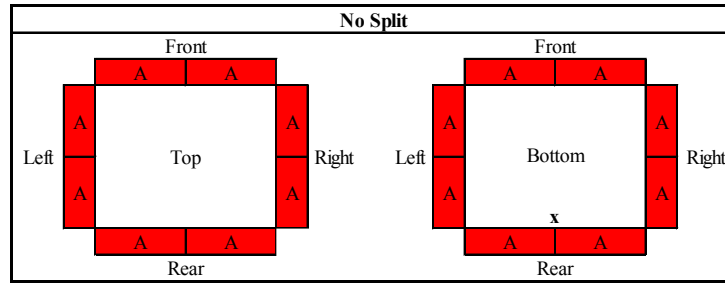
Single Color Module Operation			
Table 1			
	Wire(s)		
Operation	Blue	Orange	White
Flash	x		
Cruise Color 1		x	
Flash Low Power			x
Flash Color 1	x	x	
Steady Color 1	x		x
Cruise Color 1		x	x
Flash Low Power	x	x	x

Dual Color Module Operation			
Table 1			
	Wire(s)		
Operation	Blue	Orange	White
Flash Dual	x		
Flash Color 1		x	
Flash Low Power			x
Flash Color 2	x	x	
Steady Color 2	x		x
Cruise Color 1		x	x
Flash Low Power	x	x	x

Tri Color Module Operation							
Table 1				Table 2			
	Wire(s)				Wire(s)		
Operation	Blue	Orange	White	Operation	Blue	Orange	White
Flash Tri	x			Flash Tri	x		
Flash Color 1&2		x		Flash Color 1		x	
Flash Color 2&3			x	Flash Color 3			x
Flash Color 1&3	x	x		Flash Color 2	x	x	
Steady Color 3	x		x	Steady Color 3	x		x
Cruise Color 1		x	x	Cruise Color 1		x	x
Flash Low Power	x	x	x	Flash Low Power	x	x	x

x = 9-32V

SPLIT EXAMPLES



x = WIRE EXIT



LED Grid Light

MODULE REPLACEMENT:

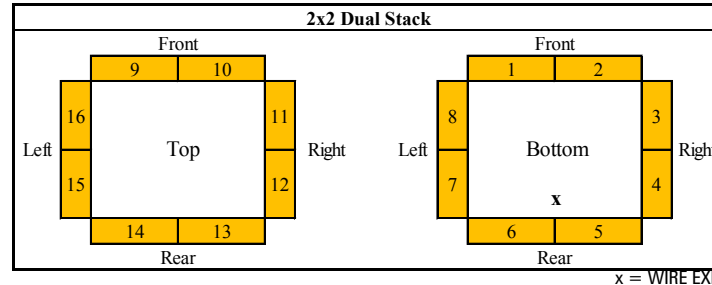
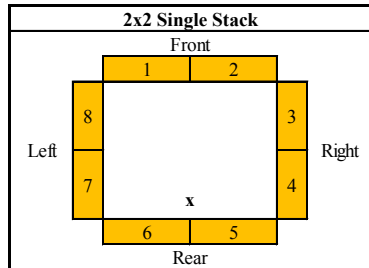
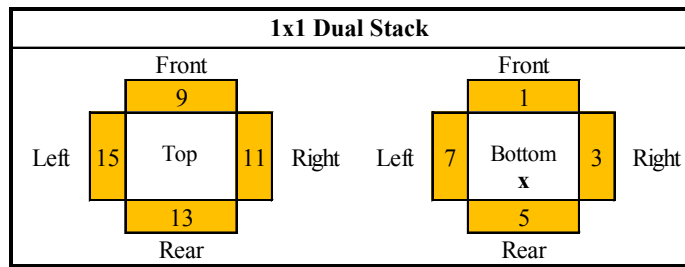
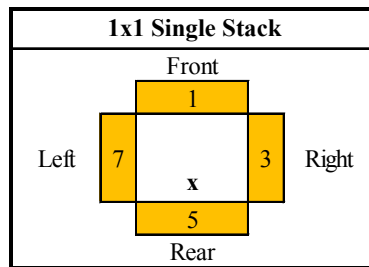
The Grid Light incorporates a self-healing technology which allows the mpower® modules to be replaced without the need for software. If replacing more than one module, this requires replacing from lowest to highest module ID (see graphics below for module ID placements.)

1. Disconnect main power.
2. Remove screws by using T-15 Torx-bit, then remove top cover.
3. Locate module and remove mounting nuts.
4. Disconnect module power cable from power distribution module and remove the mounting bracket.
5. Route wire from new light through hole in mounting bracket and connect to power distribution board.
6. Re-connect power cable to power distribution board.
7. Replace module and hardware that fasten module to mounting bracket.
8. Re-connect main power with no other inputs active.
9. After about 15 seconds, the light which was replaced will wink its mod id. This indicates the light has been provisioned and is ready for use.
10. Disconnect main power and repeat steps 3-10 until all failed modules have been replaced. Replace modules from lowest module ID to highest.
11. Replace top cover using new SOS factory screws to maintain seal integrity.

POWER DISTRIBUTION BOARD REPLACEMENT:

1. Disconnect main power.
2. Remove Top cover by removing screws using T-15 Torx bit. (Discard old screws as sealing gasket is damaged once opened.)
3. Remove electrical connections.
4. Remove all module connections.
5. Remove power distribution board.
6. Snap new distribution board assembly into housing and tighten, securing the screws.
7. Plug light modules into closest connector available and connect power and input wires.
8. Apply Power to Grid Light with no input wires active.
9. After about 15 seconds, all light modules will wink their mod ids. Once this occurs, activate input wire(s) and verify proper operation.
10. Replace top cover with new SOS factory screws to maintain warranty seal.

MODULE IDS



The module displays the module ID by flashing the LEDs. The user can determine the module ID number by watching the LEDs and counting the number of bright long winks (50ms on @70% intensity) vs dim short winks (20ms on @ 5% intensity). Each long wink represents 10 module ID counts and each short wink represents 1 module ID count. In the case of dual and tri color lights, color 1 will flash for the bright long winks and color 2 for the short dim winks. In the case of single color lights all winks will be of the same color.

Below is a representation of the module ID wink sequence for a module with an ID of 24:





LED Grid Light

GRID LIGHT TROUBLESHOOTING

NORMAL OPERATION

With an input wire active, lights flash or are steady-on according to flash options on Page 7.

NO OPERATION

No Flashing lights;
No or steady operation;
Modules do not flash or are stuck on;

Remove top cover then check input voltage is min 9 Vdc and Max 32 Vdc at +RED wire and that BLACK wire is grounded.

Check that Control wire(s) are connected and verify a minimum of 9.0 Volts is present on the wire.

Remove top cover then check that the 5A fuses inside the Grid Light are not open. Each fuse powers a group of 4 LED modues, see chart on Page 2 for locations.

Check that the GREEN sync wire is not shorted to power or ground.

INCORRECT FLASH PATTERN

Undesired Flashing;

Check that correct Control wire(s) are connected and +V is present on the wire.

Change set-up table setting action for correct color swap, phase, split, or function table setting.

Reset to factory setting and verify default operation. Factory reset is based on original order configuration.

NO PATTERN SYNCING

Flash pattern goes in and out of sync;

Disconnect GREEN wire(s). Check that both Grid Lights are set to the same pattern.

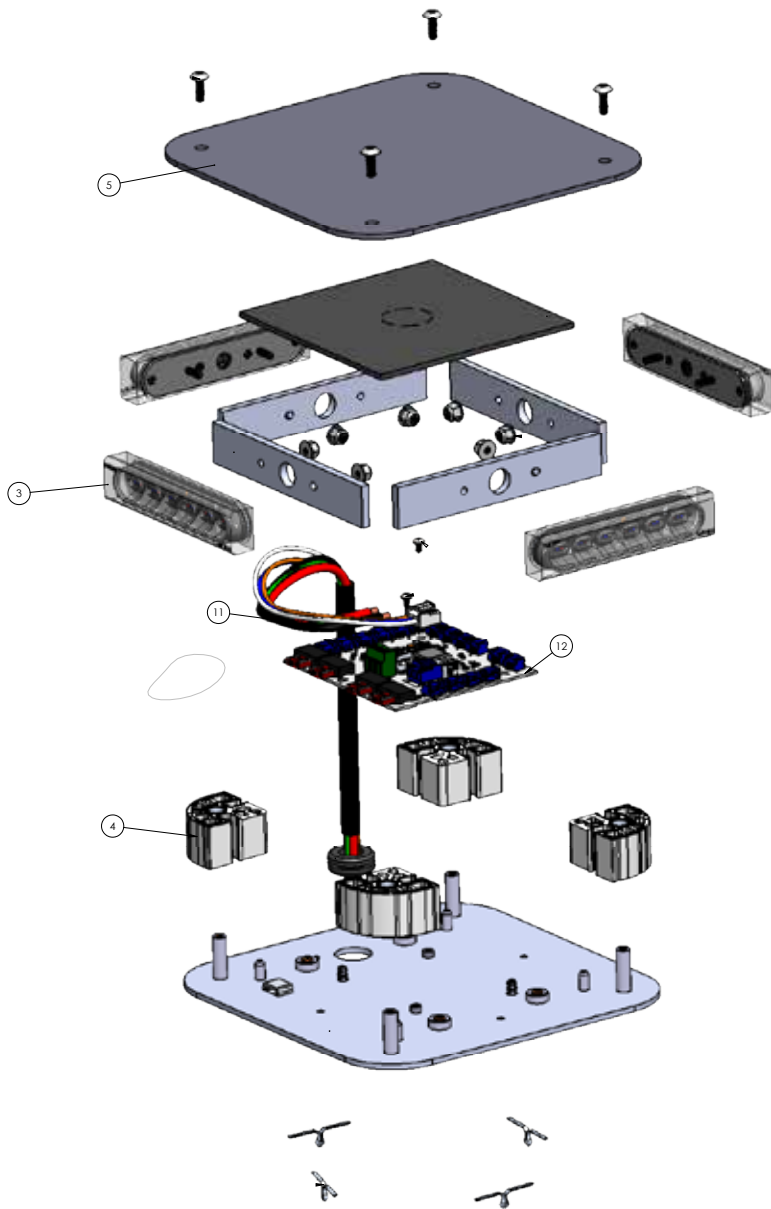
No Syncing;

Verify that GREEN wire(s) are connected together.

NO LIGHT OPERATION IN ONE SECTION

Blank modules setting may be incorrect.

Remove top cover then check that the 5A fuse for the section of lights is not open, refer to Page 9.



REPLACEMENT PARTS & ACCESSORIES

ITEM #	PART#	DESCRIPTION
3	PMPGLSS206(x)C	6 LED SINGLE COLOR 4" MODULE WITH CLEAR LENS
3	PMPGLSS208(x)C	8 LED SINGLE COLOR 4" MODULE WITH CLEAR LENS
3	PMPGLSD212(x)C	12 LED SINGLE COLOR 4" MODULE WITH CLEAR LENS
3	PMPGLST218(xxx)C	18 LED SINGLE COLOR 4" MODULE WITH CLEAR LENS
12	PMPGLDST1	PWR DISTRIBUTION BOARD
11	PMPLHNPW(xx)	POWER HARNESS
5	PMPGLTT(x)0101	1X1 TOP COVER
5	PMPGLTT(x)0202	2x2 TOP COVER
4	PMPGLCR(x)0(x)	CORNERS



LED Grid Light

WARRANTY & RETURN GOODS PROCEDURE

CLEANING & CARE OF YOUR LIGHTBAR:

Keeping the lenses clean will optimize the performance of the lightbar. The special silicone lenses should be cleaned regularly to remove dirt, grime and insects, with a mild soapy water using a soft cloth or brush. DO NOT use high pressure spray directly on the light bar as it can damage the lenses.

MOUNTING INTEGRITY:

A review of bolt/hardware/mounting bracket integrity should be performed at the beginning and end of each shift.

WARNING MESSAGES - PLEASE READ:

WARNING - DRILLING ANY HOLES INTO THE LIGHTBAR IS NOT RECOMMENDED! THE RISK OF DAMAGING INTERNAL COMPONENTS AND THE RESULTING FAILURE OF THE LIGHTBAR WILL VOID ANY WARRANTY OF THIS PRODUCT.

WARNING - CARE MUST BE TAKEN WHEN DRILLING THROUGH THE ROOF OF THE VEHICLE NOT TO DRILL INTO ANY EXISTING WIRING AND NOT TO DRILL THROUGH THE HEADLINER OR SUPPORT MEMBERS OF THE VEHICLE. CHECK BOTH SIDES OF THE MOUNTING SERVICE PRIOR TO DRILLING. DE-BURR ANY HOLES AND REMOVE ANY METAL SHARDS OR REMNANTS. INSTALL GROMMETS INTO ALL WIRE PASSAGE HOLES.

WARNING - ROUTE WIRES ONLY IN LOCATIONS THAT ARE NOT SUBJECTED TO POTENTIAL WEAR. MAKE SURE TO AVOID ROUTING WIRES IN THE DEPLOYMENT AREA OF YOUR AIR BAG. REFER TO YOUR VEHICLE OWNER'S MANUAL FOR AIR BAG DEPLOYMENT ZONES.

WARNING - ALL CUSTOMER SUPPLIED POWER WIRES CONNECTING TO THE POSITIVE (+) OR NEGATIVE (-) BATTERY TERMINAL OR LOCAL CHASSIS GROUND (-) MUST BE SIZED TO SUPPLY AT LEAST 125% OF THE MAXIMUM CURRENT AND PROPERLY FUSED AT THE POWER SOURCE WITH APPROPRIATELY RATED FUSE.

IMPORTANT: When passing cables through fire wall or other sheet metal, insert grommet to protect the cable!

WARRANTY RETURN PROCESS:

Please contact your SoundOff Signal Sales Representative, Customer Services staff or our Technical Department (800.338.7337) for a RMA #, Return Merchandise Authorization Number.

The following information is required for issuance of the RMA #:

- Reason for returning the product*
- Address where replacement product is to be shipped*
- Telephone number where you may be reached*
- SoundOff Signal invoice number on which product was purchased**
- SoundOff Signal part number and serial number**
- E-mail address where RMA # should be e-mailed**
- Fax number where RMA # should be faxed**

* RMA # will not be given without this information.

** If available, please provide this information.

SoundOff Signal will NOT accept returns without an RMA #. Each RMA # is good for only one (1) return and will expire (30) days after the date it was issued. Products must be shipped back to SoundOff Signal and the RMA # clearly marked on the outside of the package near the shipping label. Please use the following address on your shipping label:

SoundOff Signal
ATTN: RMA # / Technical Services
3900 Central Parkway
Hudsonville, MI 49426

WARRANTY EXCLUSIONS:

Shipping & Handling, labor and service fees are non-refundable. SoundOff Signal is not liable for any damage due to installation or personal injury as a result of using SoundOff Signal product.

WARRANTY FORFEITURE:

Warranty will not be granted if the Warranty Return Policy & Procedure rules are not strictly followed. Physical damage resulting from customer abuse will void warranty. Warranty will also be voided if any SoundOff Signal and/or manufacturer serial tags, product stickers, seals, or the like, are removed, altered or tampered with. Returned product that is damaged by shipping via the RMA # procedure is not the responsibility of SoundOff Signal.

Document effective date on cover and below supersedes previously dated policies and statements.

There are no other warranties, expressed or implied, including, but not limited to, any implied merchantability or fitness for a particular use. SoundOff Signal reserves the right to modify this warranty statement at any time; or to discontinue, modify, or upgrade any products of its manufacture with design improvements without prior notice.