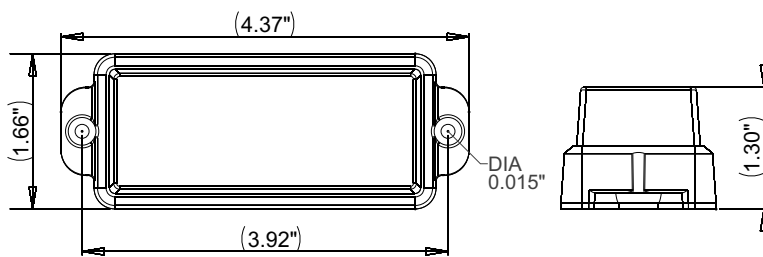




TECHNICAL SPECIFICATIONS

INPUT VOLTAGE	12.8 Vdc (Min 10V, Max 16V)
INPUT CURRENT	0.25 Amps Maximum
LED ELEMENTS	3
FLASH PATTERNS.....	8
MAXIMUM NUMBER OF SYNCHRONIZED HEADS	20
WARRANTY PERIOD.....	5 YEARS

DIMENSIONS



INSTALLATION PROCEDURE

(1) Flush Mounting: Use the HOLE TEMPLATE to mark the hole locations for the two mounting screws and the wires. Drill 7/64" pilot holes for the mounting screws and a 3/8" hole for the wires. If you purchased an accessory bracket, follow the mounting instructions provided.

(2) Make Electrical Connections. (*Wiring diagrams on back*) Be sure to run the wiring through the mounting gasket first.

(3) Mount the BULL LED™ to the vehicle. Follow the Mounting Diagram to the right. **Note that the BEZEL will fit onto the mounting tabs in one direction only. One mounting tab is smaller.**

(4) Test the system. Turn the power switch ON and check all the BULL LED™ heads. To synchronize the FLASH PATTERN on all the heads, touch the BLUE wire to +12V (or press pattern select pushbutton) while turning the power switch ON. This will set all heads to Flash Pattern #1. Then select the desired flash pattern by momentarily touching BLUE wire to +12V (or pressing flash pattern pushbutton).

SYNCHRONIZATION SYSTEM



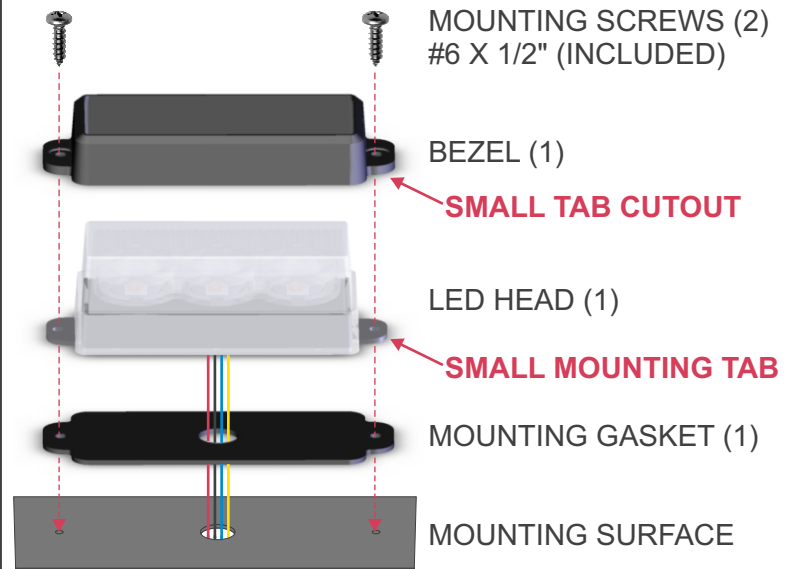
The 1SYNC system synchronizes both the flash pattern SELECTION and the flash pattern TIMING of up to 20 BULL LED™ heads.

One wire (BLUE) is used to select the flash pattern and also carries a synchronization signal between all of the BULL LED™ heads. This allows the flash pattern to be changed at any time and ensures that all heads run in perfect timing with each other.

A second wire (YELLOW) is used to make a BULL LED™ head flash either ALTERNATING or SIMULTANEOUS with the other heads in the system.



MOUNTING DIAGRAM

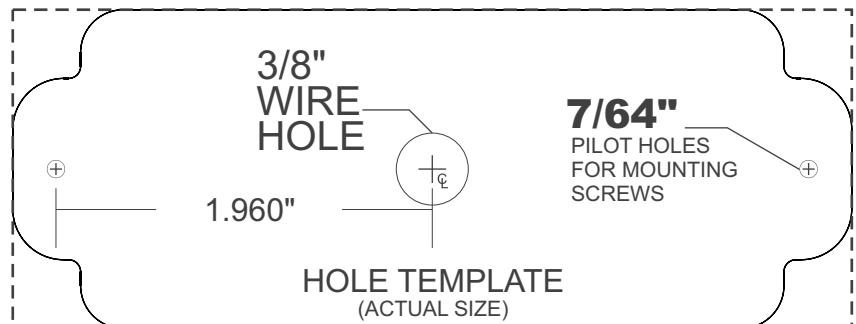


NOTE: BEZEL FITS ONTO THE MOUNTING TABS IN ONE DIRECTION ONLY.

FLASH PATTERN LIST

#	Pattern:	Frequency:	Flash Rate:
1	Quad Flash	1.25 Hz	75 Quad Flashes Per Minute
2	Double Flash	1.25 Hz	75 Double Flashes Per Minute
3	Triple Flash	1.53 Hz	92.3 Triple Flashes Per Minute
4	DeciBlast	1.42 Hz	85.5 Deci Flashes Per Minute
5	Single Flash	1.25 Hz	75 Single Flashes Per Minute
6	Mega Flash	3.05 Hz	183.1 Single Flashes Per Minute
7	Triple+Burst	1.37 Hz	82.5 Triple+Burst Flashes Per Minute
8	Steady On	N/A	N/A

HOLE TEMPLATE



ELECTRICAL CONNECTIONS

RED: Connect to +12V through an ON/OFF switch. The use of a fuse located close to the voltage source is recommended. Size the fuse according to the number of heads used in the system. 18AWG or larger wire is recommended.

BLACK: Connect to - GROUND *vehicle chassis*. 18AWG or larger wire is recommended.

BLUE: Flash pattern SYNC and SELECTION wire. If you wish to have all the LED heads synchronize their flash timings and patterns with each other then all the BLUE wires must be connected together. (20 Heads Maximum) The BLUE wire is also used to select the flash pattern. Touch the BLUE wire to +12V to select the next pattern in the FLASH PATTERN TABLE. The BLUE wire can also be run to a momentary push-button located on the dashboard to allow the flash pattern to be changed when desired. Note: The Blue wire should **never** be connected to - GROUND or the heads will not synchronize properly.

BLUE continued...

California Mode: To use a **RED BULL LED™** head in a California system, set the RED head to STEADY ON flash pattern and do not connect the BLUE wire to any of the other heads (Leave BLUE wire unconnected).

YELLOW: Alternating / Simultaneous selection.

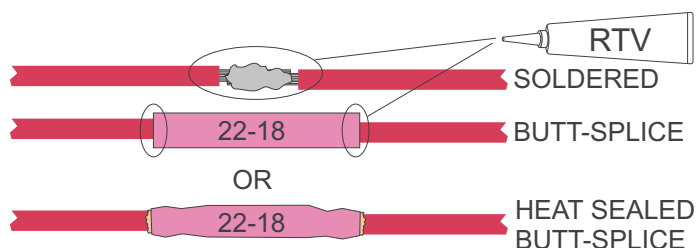
Connect to either +12V or GROUND (GND). The YELLOW wire makes the head fire AT THE SAME TIME or ALTERNATING with the other heads in the system. Heads with YELLOW connected to +12V fire at the same time. Heads with YELLOW connected to GND fire at the same time. Heads with YELLOW connected to +12V will ALTERNATE with heads that have YELLOW connected to GND.

Note: The YELLOW wire has no function in the STEADY ON flash pattern.

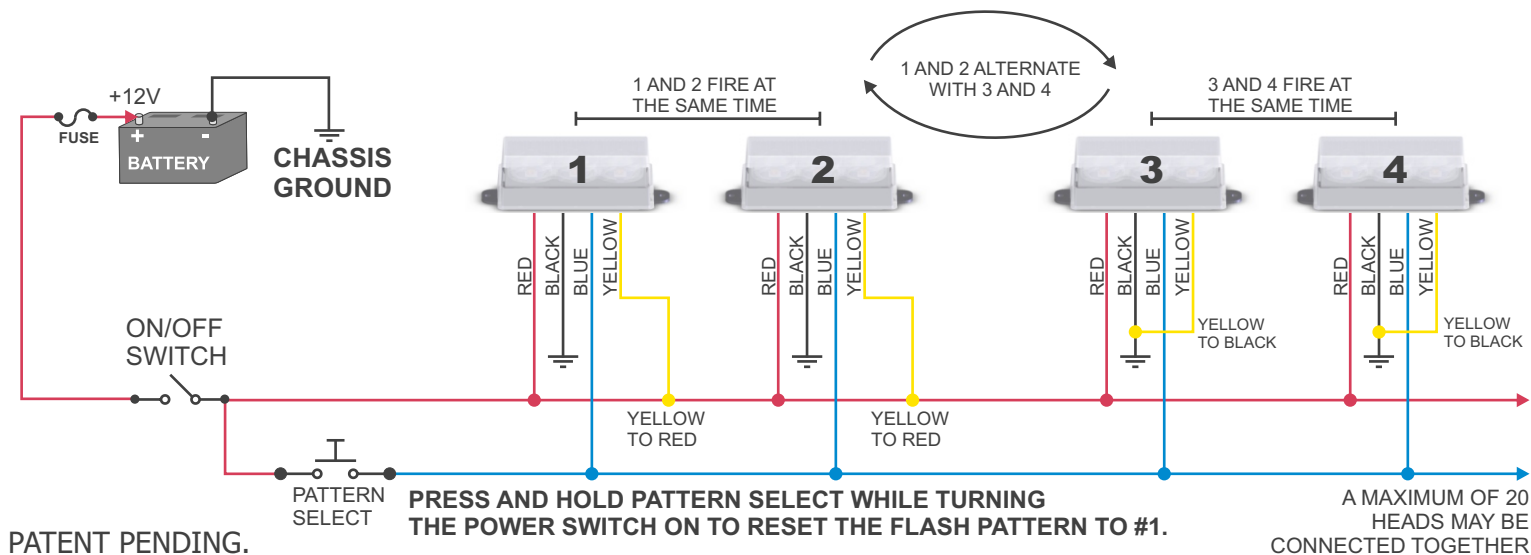
SEALING WIRE CONNECTIONS

THE WIRE CONNECTIONS MUST BE SEALED IF USED IN A WET LOCATION. WATER WILL CORRODE THE WIRES AND ALSO CAUSE SYNC PROBLEMS.

ELECTRICAL TAPE WILL NOT SEAL A CONNECTION WE RECOMMEND AN RTV SILICONE SEALANT.



WIRING EXAMPLE



TROUBLESHOOTING

HEAD NOT FLASHING:

Check the RED and BLACK wires for a reversed connection. (Reverse connection will **not** damage the unit). Check RED and BLACK wires for either a bad splice or a corroded ground connection.

HEADS NOT SYNCHRONIZING:

Check for a short circuit on the BLUE wire to either +12V or GROUND. Salt water on the wire connections will short circuit the sync signal on the BLUE wire. Check for non-functional heads in the system. If any one of the heads has a bad GROUND connection it can cause the sync signal to become corrupted. If any one of the heads has its RED and BLACK wires reverse connected it will corrupt the sync signal.

FLASH PATTERN CHANGING:

If the flash pattern changes on its own there may be an intermittent short between the BLUE wire and +12V. Check for water in the wiring connections. If any one of the heads in the system has an intermittent GROUND connection it can cause the flash pattern to change.

TEMPLATE
CUTOUT