

# WHELEN<sup>®</sup>

## ENGINEERING COMPANY

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Installation Guide:  
NFA Micro Edge Freedom® Lightbar

### Warnings to Installers

Whelen's emergency vehicle warning devices must be properly mounted and wired in order to be effective and safe. Read and follow all of Whelen's written instructions when installing or using this device. Emergency vehicles are often operated under high speed stressful conditions which must be accounted for when installing all emergency warning devices. Controls should be placed within convenient reach of the operator so that they can operate the system without taking their eyes off the roadway. Emergency warning devices can require high electrical voltages and/or currents. Properly protect and use caution around live electrical connections. Grounding or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or vehicle damage, including fire. Many electronic devices used in emergency vehicles can create or be affected by electromagnetic interference. Therefore, after installation of any electronic device it is necessary to test all electronic equipment simultaneously to insure that they operate free of interference from other components within the vehicle. Never power emergency warning equipment from the same circuit or share the same grounding circuit with radio communication equipment. All devices should be mounted in accordance with the manufacturer's instructions and securely fastened to vehicle elements of sufficient strength to withstand the forces applied to the device. Driver and/or passenger air bags (SRS) will affect the way equipment should be mounted. This device should be mounted by permanent installation and within the zones specified by the vehicle manufacturer, if any. Any device mounted in the deployment area of an air bag will damage or reduce the effectiveness of the air bag and may damage or dislodge the device. Installer must be sure that this device, its mounting hardware and electrical supply wiring does not interfere with the air bag or the SRS wiring or sensors. Mounting the unit inside the vehicle by a method other than permanent installation is not recommended as unit may become dislodged during swerving; sudden braking or collision. Failure to follow instructions can result in personal injury. Whelen assumes no liability for any loss resulting from the use of this warning device. **PROPER INSTALLATION COMBINED WITH OPERATOR TRAINING IN THE PROPER USE OF EMERGENCY WARNING DEVICES IS ESSENTIAL TO INSURE THE SAFETY OF EMERGENCY PERSONNEL AND THE PUBLIC.**

### Warnings to Users

Whelen's emergency vehicle warning devices are intended to alert other operators and pedestrians to the presence and operation of emergency vehicles and personnel. However, the use of this or any other Whelen emergency warning device does not guarantee that you will have the right-of-way or that other drivers and pedestrians will properly heed an emergency warning signal. Never assume you have the right-of-way. It is your responsibility to proceed safely before entering an intersection, driving against traffic, responding at a high rate of speed, or walking on or around traffic lanes. Emergency vehicle warning devices should be tested on a daily basis to ensure that they operate properly. When in actual use, the operator must ensure that both visual and audible warnings are not blocked by vehicle components (i.e.: open trunks or compartment doors), people, vehicles, or other obstructions. It is the user's responsibility to understand and obey all laws regarding emergency warning devices. The user should be familiar with all applicable laws and regulations prior to the use of any emergency vehicle warning device. Whelen's audible warning devices are designed to project sound in a forward direction away from the vehicle occupants. However, because sustained periodic exposure to loud sounds can cause hearing loss, all audible warning devices should be installed and operated in accordance with the standards established by the National Fire Protection Association.

### Safety First

This document provides all the necessary information to allow your Whelen product to be properly and safely installed. Before beginning the installation and/or operation of your new product, the installation technician and operator must read this manual completely. Important information is contained herein that could prevent serious injury or damage.

**⚠ WARNING:** This product can expose you to chemicals including Methylene Chloride which is known to the State of California to cause cancer, and Bisphenol A, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

- **Proper installation of this product requires the installer to have a good understanding of automotive electronics, systems and procedures.**
- **Whelen Engineering requires the use of waterproof butt splices and/or connectors if that connector could be exposed to moisture.**
- **Any holes, either created or utilized by this product, should be made both air- and watertight using a sealant recommended by your vehicle manufacturer.**
- **Failure to use specified installation parts and/or hardware will void the product warranty.**
- **If mounting this product requires drilling holes, the installer MUST be sure that no vehicle components or other vital parts could be damaged by the drilling process. Check both sides of the mounting surface before drilling begins. Also de-burr the holes and remove any metal shards or remnants. Install grommets into all wire passage holes.**
- **If this manual states that this product may be mounted with suction cups, magnets, tape or Velcro®, clean the mounting surface with a 50/50 mix of isopropyl alcohol and water and dry thoroughly.**
- **Do not install this product or route any wires in the deployment area of your air bag. Equipment mounted or located in the air bag deployment area will damage or reduce the effectiveness of the air bag, or become a projectile that could cause serious personal injury or death. Refer to your vehicle owner's manual for the air bag deployment area. The User/Installer assumes full responsibility to determine proper mounting location, based on providing ultimate safety to all passengers inside the vehicle.**
- **For this product to operate at optimum efficiency, a good electrical connection to chassis ground must be made. The recommended procedure requires the product ground wire to be connected directly to the NEGATIVE (-) battery post (this does not include products that use cigar power cords).**
- **If this product uses a remote device for activation or control, make sure that this device is located in an area that allows both the vehicle and the device to be operated safely in any driving condition.**
- **Do not attempt to activate or control this device in a hazardous driving situation.**
- **This product contains either strobe light(s), halogen light(s), high-intensity LEDs or a combination of these lights. Do not stare directly into these lights. Momentary blindness and/or eye damage could result.**
- **Use only soap and water to clean the outer lens. Use of other chemicals could result in premature lens cracking (crazing) and discoloration. Lenses in this condition have significantly reduced effectiveness and should be replaced immediately. Inspect and operate this product regularly to confirm its proper operation and mounting condition. Do not use a pressure washer to clean this product.**
- **It is recommended that these instructions be stored in a safe place and referred to when performing maintenance and/or reinstallation of this product.**
- **FAILURE TO FOLLOW THESE SAFETY PRECAUTIONS AND INSTRUCTIONS COULD RESULT IN DAMAGE TO THE PRODUCT OR VEHICLE AND/OR SERIOUS INJURY TO YOU AND YOUR PASSENGERS!**

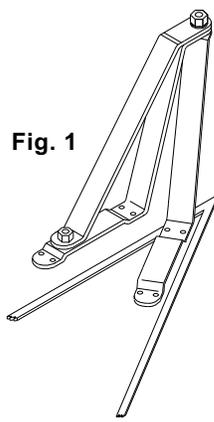
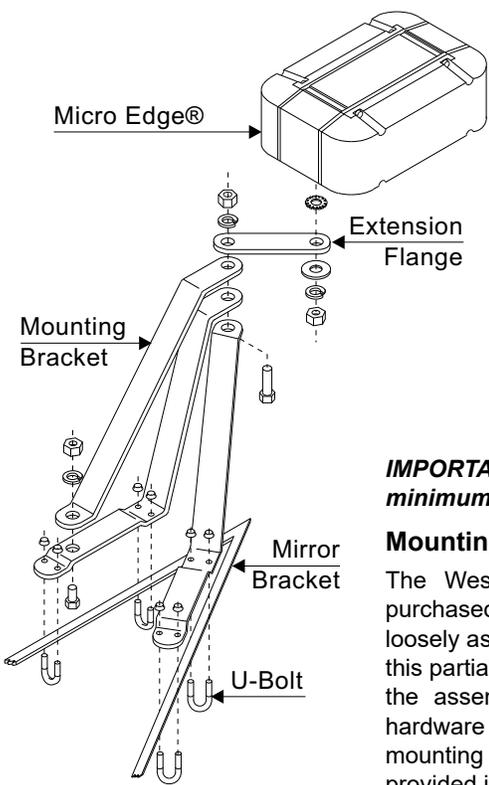


Fig. 1

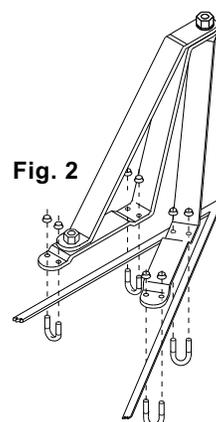


Fig. 2

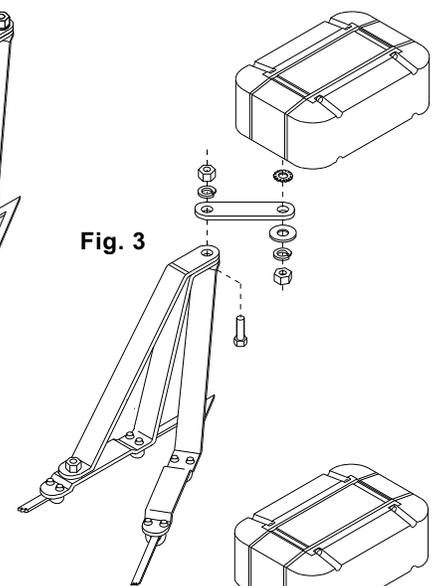


Fig. 3

**IMPORTANT! The lightbar should be located a minimum of 16" from any radio antennas!**

**Mounting the Micro Edge®:**

The West Coast mirror mount brackets shown are purchased separately. Begin the mounting procedure by loosely assembling the mounting bracket (Fig.1). Position this partial assembly on the mirror bracket (Fig. 2). Mount the assembly to the mirror bracket using the U-Bolt hardware supplied with the brackets (Fig. 3). Insert the mounting bolt on the Micro Edge through the hole provided in the extension flange. Secure as shown in Fig. 3. Adjust the bracket assembly until the Micro Edge is

properly aligned and tighten the bracket bolts firmly. Repeat procedure for remaining door. **NOTE:** There is also a mirror mount bracket available for the 2002 International 7400 Series Navistar® truck not shown here (sSee parts list).

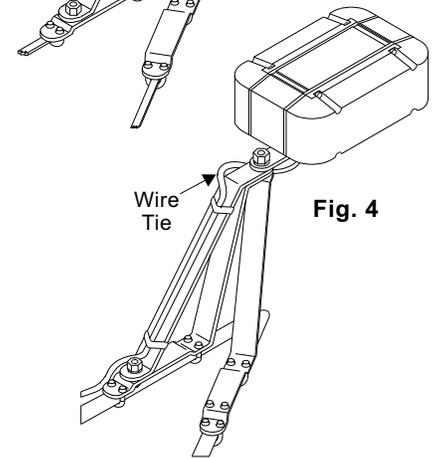


Fig. 4

**Wiring the Micro Edge:**

The Micro Edge harness cable(s) must now be routed to the battery. The path the cables follow will vary, depending upon where the power supply has been mounted. If the power supply has been mounted against the rear cab wall, the path would be:

1. Secure harness cable to Micro Edge mounting bracket with ties (Fig. 4).
2. Now have the harness cable follow the factory mirror bracket to the point where the bracket meets the vehicle door. Secure the cable with heavy-duty wire ties.
3. Remove the interior door panel. When you are sure that no door components will be damaged, drill a hole in the door just below the point where the factory mirror bracket connects to the door. Insert a rubber grommet to prevent water leakage.
4. Insert the harness cable through the hole and route it towards the door's hinge panel. Drill a hole in the hinge panel and insert the harness cable. *Be sure the cable does not interfere with the movement of any door or window components* (Fig. 5).
5. Route the cable into the cab through the kick panel and then under the rocker panel molding. Make sure that the harness cable does not bind up when the door is opened and closed.
6. Extend the wires to their destinations as shown in the wiring diagram on the next page. Be sure to use the proper size wires (see wire size warning).

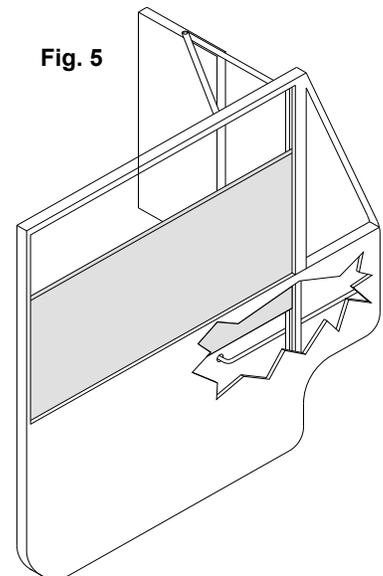
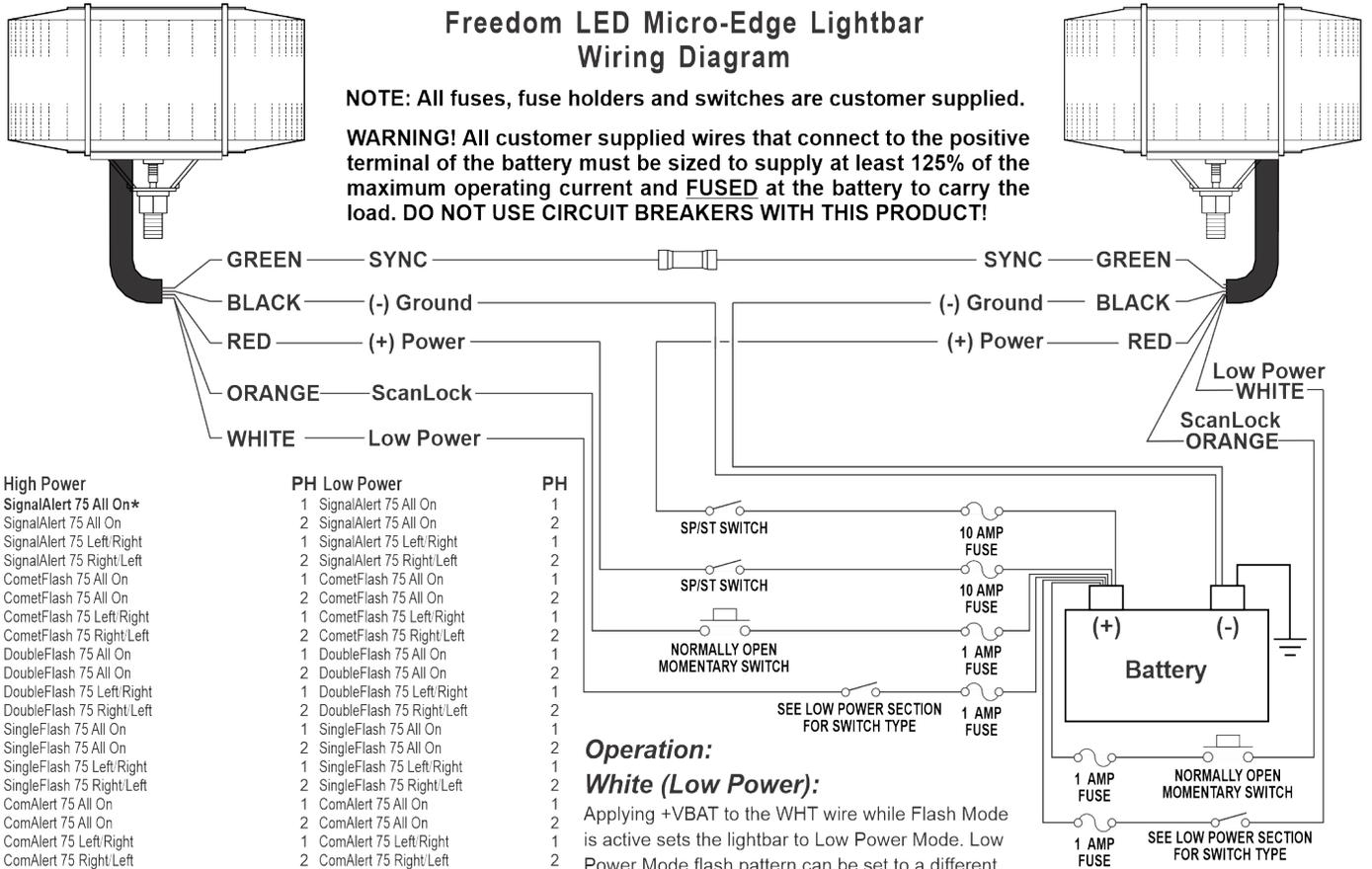


Fig. 5

# Freedom LED Micro-Edge Lightbar Wiring Diagram

**NOTE:** All fuses, fuse holders and switches are customer supplied.

**WARNING!** All customer supplied wires that connect to the positive terminal of the battery must be sized to supply at least 125% of the maximum operating current and **FUSED** at the battery to carry the load. **DO NOT USE CIRCUIT BREAKERS WITH THIS PRODUCT!**



- |   |   |           |
|---|---|-----------|
| <b>High Power</b>                             | <b>PH Low Power</b>                       | <b>PH</b> |
| 1 SignalAlert 75 All On*                      | 1 SignalAlert 75 All On                   | 1         |
| 2 SignalAlert 75 All On                       | 2 SignalAlert 75 All On                   | 2         |
| 3 SignalAlert 75 Left/Right                   | 1 SignalAlert 75 Left/Right               | 1         |
| 4 SignalAlert 75 Right/Left                   | 2 SignalAlert 75 Right/Left               | 2         |
| 5 CometFlash 75 All On                        | 1 CometFlash 75 All On                    | 1         |
| 6 CometFlash 75 All On                        | 2 CometFlash 75 All On                    | 2         |
| 7 CometFlash 75 Left/Right                    | 1 CometFlash 75 Left/Right                | 1         |
| 8 CometFlash 75 Right/Left                    | 2 CometFlash 75 Right/Left                | 2         |
| 9 DoubleFlash 75 All On                       | 1 DoubleFlash 75 All On                   | 1         |
| 10 DoubleFlash 75 All On                      | 2 DoubleFlash 75 All On                   | 2         |
| 11 DoubleFlash 75 Left/Right                  | 1 DoubleFlash 75 Left/Right               | 1         |
| 12 DoubleFlash 75 Right/Left                  | 2 DoubleFlash 75 Right/Left               | 2         |
| 13 SingleFlash 75 All On                      | 1 SingleFlash 75 All On                   | 1         |
| 14 SingleFlash 75 All On                      | 2 SingleFlash 75 All On                   | 2         |
| 15 SingleFlash 75 Left/Right                  | 1 SingleFlash 75 Left/Right               | 1         |
| 16 SingleFlash 75 Right/Left                  | 2 SingleFlash 75 Right/Left               | 2         |
| 17 ComAlert 75 All On                         | 1 ComAlert 75 All On                      | 1         |
| 18 ComAlert 75 All On                         | 2 ComAlert 75 All On                      | 2         |
| 19 ComAlert 75 Left/Right                     | 1 ComAlert 75 Left/Right                  | 1         |
| 20 ComAlert 75 Right/Left                     | 2 ComAlert 75 Right/Left                  | 2         |
| 21 LongBurst 75 All On                        | 1 LongBurst 75 All On                     | 1         |
| 22 LongBurst 75 All On                        | 2 LongBurst 75 All On                     | 2         |
| 23 LongBurst 75 Left/Right                    | 1 LongBurst 75 Left/Right                 | 1         |
| 24 LongBurst 75 Right/Left                    | 2 LongBurst 75 Right/Left                 | 2         |
| 25 PingPong 75 All On                         | 1 PingPong 75 All On                      | 1         |
| 26 PingPong 75 All On                         | 2 PingPong 75 All On                      | 2         |
| 27 PingPong 75 Left/Right                     | 1 PingPong 75 Left/Right                  | 1         |
| 28 PingPong 75 Right/Left                     | 2 PingPong 75 Right/Left                  | 2         |
| 29 SingleFlash 60 All On                      | 1 SingleFlash 60 All On                   | 1         |
| 30 SingleFlash 60 Left/Right                  | 2 SingleFlash 60 Left/Right               | 2         |
| 31 SingleFlash 90 All On                      | 1 SingleFlash 90 All On                   | 1         |
| 32 SingleFlash 90 Left/Right                  | 2 SingleFlash 90 Left/Right               | 2         |
| 33 SingleFlash 120 All On                     | 1 SingleFlash 120 All On                  | 1         |
| 34 SingleFlash 120 Left/Right                 | 2 SingleFlash 120 Left/Right              | 2         |
| 35 SingleFlash 300 All On                     | 1 SingleFlash 300 All On                  | 1         |
| 36 SingleFlash 300 Left/Right                 | 2 SingleFlash 300 Left/Right              | 2         |
| 37 DoubleFlash 150 All On                     | 1 DoubleFlash 150 All On                  | 1         |
| 38 DoubleFlash 150 Left/Right                 | 2 DoubleFlash 150 Left/Right              | 2         |
| 39 ComAlert 150 All On                        | 1 ComAlert 150 All On                     | 1         |
| 40 ComAlert 150 Left/Right                    | 2 ComAlert 150 Left/Right                 | 2         |
| 41 ActionFlash 50 All On                      | 1 ActionFlash 50 All On                   | 1         |
| 42 ActionFlash 50 Left/Right                  | 2 ActionFlash 50 Left/Right               | 2         |
| 43 ActionFlash 150 All On                     | 1 ActionFlash 150 All On                  | 1         |
| 44 ActionFlash 150 Left/Right                 | 2 ActionFlash 150 Left/Right              | 2         |
| 45 ModuFlash All On                           | 1 ModuFlash All On                        | 1         |
| 46 ModuFlash Left/Right                       | 2 ModuFlash Left/Right                    | 2         |
| 47 DoubleFlash 120 All On                     | 1 DoubleFlash 120 All On                  | 1         |
| 48 DoubleFlash 120 Left/Right                 | 2 DoubleFlash 120 Left/Right              | 2         |
| 49 PingPong 120 All On                        | 1 PingPong 120 All On                     | 1         |
| 50 PingPong 120 Left/Right                    | 2 PingPong 120 Left/Right                 | 2         |
| 51 TripleFlash 75 All On                      | 1 TripleFlash 75 All On                   | 1         |
| 52 TripleFlash 75 Left/Right                  | 2 TripleFlash 75 Left/Right               | 2         |
| 53 TripleFlash 120 All On                     | 1 TripleFlash 120 All On                  | 1         |
| 54 TripleFlash 120 Left/Right                 | 2 TripleFlash 120 Left/Right              | 2         |
| 55 Action60 All On                            | 1 Action60 All On                         | 1         |
| 56 Action60 Left/Right                        | 2 Action60 Left/Right                     | 2         |
| 57 Action120 All On                           | 1 Action120 All On                        | 1         |
| 58 Action120 Left/Right                       | 2 Action120 Left/Right                    | 2         |
| 59 SignalAlert Steady All On                  | 1 SignalAlert Steady All On               | 1         |
| 60 DVI SingleFlash 60 Hi Intensity Left/Right | 1 DVI SingleFlash 60 Hi Inten. Left/Right | 1         |
| 61 DVI SingleFlash 60 Hi Intensity All On     | 2 DVI SingleFlash 60 Hi Inten. All On     | 2         |
| 62 DVI SingleFlash 75 Hi Intensity Right/Left | 1 DVI SingleFlash 60 Hi Inten. All On     | 1         |
| 63 DVI SingleFlash 75 Hi Intensity Left/Right | 2 DVI SingleFlash 60 Lo Inten. All On     | 2         |
| 64 DVI SingleFlash 75 Hi Intensity All On     | 1 DVI SingleFlash 75 Hi Inten. Right/Left | 1         |
| 65 DVI SingleFlash 75 Hi Intensity All On     | 2 DVI SingleFlash 75 Lo Inten. Right/Left | 2         |
| 66 Steady On                                  | 1 DVI SingleFlash 75 Lo Inten. Left/Right | 1         |
| 67 N/A  | 2 DVI SingleFlash 75 Lo Inten. All On     | 2         |
| 68 N/A  | 1 Steady On                               | 1         |
| 69 N/A  | 2 DVI SingleFlash 75 Hi Inten. All On *   | 2         |
| 70 N/A  | 1 DVI SingleFlash 75 Hi Intensity All On  | 1         |
| 71 N/A  | 2   | 2         |
| 72 N/A  |   |           |

\* = Default Pattern

## Operation:

### White (Low Power):

Applying +VBAT to the WHT wire while Flash Mode is active sets the lightbar to Low Power Mode. Low Power Mode flash pattern can be set to a different flash pattern than Flash Mode using Scan Lock. By default, Low Power Mode flash pattern is #71 DVI SingleFlash 75 Hi Intensity All On.

### Green (SYNC):

When you connect the GREEN wires together from both lightbars, the lightbars will flash simultaneously with each other.

**Operation:** To SYNC 2 lights, configure both lightbars to display the same Phase 1 (Simultaneous) pattern. Turn power off and connect the GRN wire from each lightbar together. Activate the lightbars and their patterns will be synchronized. To configure 2 lightbars to alternate their patterns, advance either lightbar to Phase 2 (Alternating) of the current pattern.

### RED - Flash Mode:

Apply +VBAT to the RED wire to activate the lightbar in "flash mode". In flash mode, you may change the flash pattern using Scan-Lock™.

### ORANGE - Scan-Lock™ Pattern Selection:

This feature allows the user to select from several available flash patterns.

The lightbar must be switched on for Scan-Lock to work.

**NOTE:** Scan-Lock™+ by Whelen can be used for this product to make pattern selection easier. High and Low power patterns are chosen separately (see below).

**IMPORTANT:** When choosing a flash pattern, you can select one pattern to run when the light is in high power and another to run when the light is in low power. Selection is done separately. First set the light to high power and choose the pattern that will run when the light is in high power. Next set the light to Low Power and choose the pattern that will run when the light is in low power.

**TO CYCLE THROUGH ALL PATTERNS:** With power applied to the RED wire, apply +VBAT to the ORG wire for less than 1 second and release. To cycle backward through patterns apply +VBAT to ORG wire for over 1 second and release.

**TO SET A PATTERN AS DEFAULT:** Allow pattern to run over 5 seconds to make it the default. **TO RESET TO THE FACTORY DEFAULT PATTERN:** Turn off power. While applying +VBAT to the ORG wire, turn power on. The lightbar will reset to it's default pattern.

## IMPORTANT WARNING!

**CAUTION! DO NOT LOOK DIRECTLY AT THESE LIGHTS WHILE THEY ARE ON. MOMENTARY BLINDNESS AND/OR EYE DAMAGE COULD RESULT!**