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**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.

- 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 any holes and remove any metal shards or remnants. Install grommets into all wire passage holes.
- 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.
- If this product uses a remote device to activate or control this product, make sure that this control is located in an area that allows both the vehicle and the control to be operated safely in any driving condition.
- Do not attempt to activate or control this device in a hazardous driving situation.
- **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 that load. **DO NOT USE CIRCUIT BREAKERS WITH THIS PRODUCT!**
- **FAILURE TO FOLLOW THESE PRECAUTIONS AND INSTRUCTIONS COULD RESULT IN DAMAGE TO THE PRODUCT OR VEHICLE AND/OR SERIOUS INJURY TO YOU AND YOUR PASSENGERS!**

This product is designed for use with 12 volt LED lighthead. Do not exceed 5 amps total current draw for each channel.

**Mounting:** Position flasher onto proposed mounting surface and secure using the hardware provided. Do not mount near water or extreme heat.

**Wiring:** See wiring diagram. All fuses and switches are customer supplied.

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**Low Power (Item 2):** Allows user to step the unit down to low power for nighttime use.

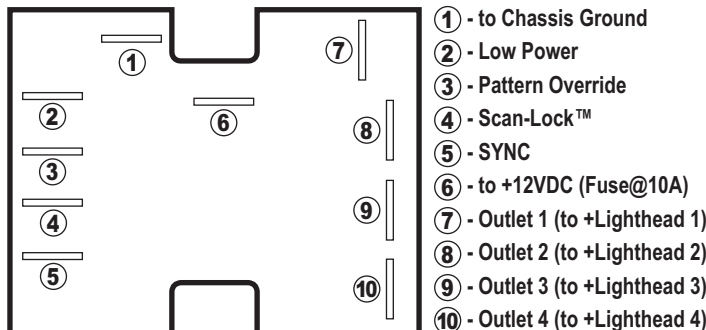
**Latching Mode -** By applying positive voltage to the Low Power wire for less than 1 second, the lighthead is "latched" into low power. The unit must be turned off and then back on to restore normal high power operation (a momentary switch is preferred).

**Level Mode -** Applying positive voltage to the Low Power wire for more than 1 second holds the lighthead in low power mode until voltage is removed (a toggle switch is preferred).

**Pattern Override (Item 3):** Applying +12 volts to the pattern override wire while lighthead is activated will change the flash pattern to whatever pattern override is programmed for. To program the flash pattern activate pattern override and select a flash pattern using Scan-Lock™.

**Scan-Lock™ Pattern Selection (Item 4):**

**TO CHANGE PATTERNS:** With the light activated: To cycle forward to the next pattern apply +12VDC to the Scan-Lock wire for less than 1 second and release. To cycle back to the previous pattern apply +12 volts to the Scan-Lock wire for more than 1 second and release.



**TO CHANGE THE DEFAULT PATTERN:** When the desired pattern is displayed, allow it to run for more than 5 seconds. The lighthead will now display this pattern when initially activated.

**TO RESTORE THE FACTORY DEFAULT PATTERN:** With power to the lighthead off, apply +12 volts to the Scan-Lock wire then turn power to the lighthead on. The factory default pattern should now be displayed (a normally open momentary switch is recommended).

**Scan-Lock will cycle through the pattern phases for each flash pattern (Alternating, Alt. Progressive, Simultaneous and Alt. Simultaneous).**

**Sync (Item 5):** Multiple flashers may be SYNC'd by connecting their respective SYNC terminals. This will allow lighthead(s) from each flasher to display SYNC-patterns (1 thru 20; Phases A & C *only*) identically to those from the other flasher(s).

Additional SYNC-capable lighthead(s) may also be connected to the SYNC terminal. The lighthead(s) should be configured to display Phase 1 of the pattern the flasher is configured for. For example; if the flasher is configured to pattern 1-A (SignalAlert™-Alternating), the additional lighthead(s) pattern should be set to SignalAlert-Phase 1. When active, Outlets 1&2 will alternate with outlets 3&4 + the additional lighthead(s).

**IMPORTANT! Before returning the vehicle to active service, visually confirm proper operation of this product, as well as all vehicle components/equipment.**

**WARNING! Do not look directly at LED lights while active. Momentary blindness and/or eye damage could result!**

| PATTERN PHASES  | FLASH PATTERNS                 |   |
|---|--------------------------------|---|
| <b>A - Alternating</b><br>Outlets 1 & 2 alt. with 3 & 4             | 1-4 SignalAlert™ / SYNC        | 44-46 PingPong™ (2)<br>47-48 FlimFlam (3)<br>49 ZigZag (4)<br>50-51 ModuFlash™ (3)<br>52 Rotator 90<br>53 Rotator 120<br>54 Rotator 150<br>55 Rotator 250<br>56-61 Steady (5)<br>62 ActionScan™ (4)<br>63 SteadyFlash |
|   | 5-8 CometFlash® / SYNC         |   |
|   | 9-12 DoubleFlash 75 / SYNC     |   |
|   | 13-16 SingleFlash 75 / SYNC(1) |   |
| <b>B - Alt (Progressive)</b><br>Outlet 1 alt. with 4; 2 alt. with 3 | 17-20 LongBurst™ / SYNC        | Only phases A and C are SYNCHRONOUS   |
|   | 21-24 SingleFlash 90 (1)       |   |
|   | 25-28 SingleFlash 60 (1)       |   |
| <b>C - Simultaneous</b><br>All outlets flash Simultaneously         | 29-32 SingleFlash 120 (1)      | 1 = Calif. Title XIII compliant 2 = Phases A,B & C only<br>3 = Phases A & B only 4 = Varying phase sequence<br>5 = Six intensity levels   |
|   | 33-36 SingleFlash 240          |   |
|   | 37-40 MicroBurst™              |   |
|   | 41-43 ActionFlash™ (2)         |   |
| <b>D - Alt-Sim.</b><br>3 cycles of A then 3 cycles of C             |                                |   |

## **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 he can operate the system without taking his 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.