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Installation Guide:
Avenger™-series LED Dash Light
Models: AVN1* (Single w/Cigar Cord)
AVN1# (Single/Split w/Cigar Cord)
AVN2 (Dual w/Cigar Cord)**
AVNS1* (Single w/Sync)
AVNS2 (Dual w/Sync)**

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.**
- **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 owners 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!**

For warranty information regarding this product, visit www.whelen.com/warranty

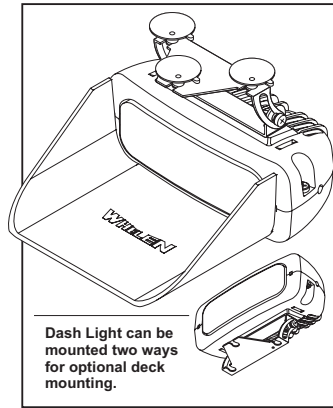
Mounting:

CAUTION! Nighttime operation of this product may produce reflected light within the vehicle! Use with caution!

CAUTION: This product has been designed to rest on top of the vehicle dashboard. Suction cups are used to prevent lateral movement while the vehicle is in motion. These suction cups should not be used to suspend this product above the dashboard.

1. Secure the lower mounting bracket to the Avenger™ (the Dual Avenger™ uses two brackets).
2. Slide the suction cups onto the upper mounting bracket and secure the upper mounting bracket onto the lower mounting bracket.
3. Attach the reflector tape to the visor hood and secure the visor hood to the unit.
4. With the Avenger™ resting on the top of the dashboard, apply the suction cups to the windshield. **Do not locate the Avenger™ in any location where it will interfere with the drivers ability to safely operate the vehicle. Refer to the safety warnings on the cover of this manual.**
5. Adjust the angle of the Avenger™ bracket until the visor hood is in full contact with the windshield.

There are holes on the upper bracket to be used if permanent mounting is desired. Using the upper bracket as a template, mark the areas where the mounting holes are to be drilled. Secure the unit using the appropriate hardware (customer supplied).



Wiring:

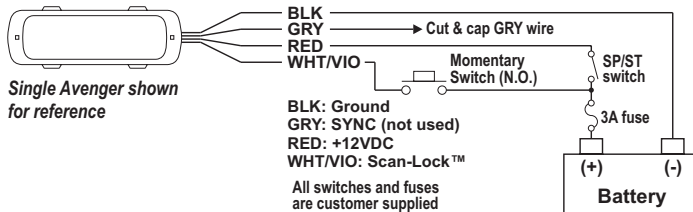
IMPORTANT AIR BAG WARNING! Do not install this product or route any wires in the air bag deployment zone of your vehicle. Equipment mounted or located in air bag deployment zones will damage or reduce the effectiveness of the air bag, or become a projectile that could cause serious personal injury or death. Refer to your vehicle owners manual to learn the air bag deployment zones for the vehicle. The User/Installer assumes full responsibility to determine proper mounting location, based on providing ultimate safety to all passengers inside the vehicle.

The standard Avenger™ uses a cigar cord for power connection and no further wiring is necessary. This cord has a built in Power switch and a Scan-Lock™ pattern selection momentary switch. The Sync models must be wired as outlined below.

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!

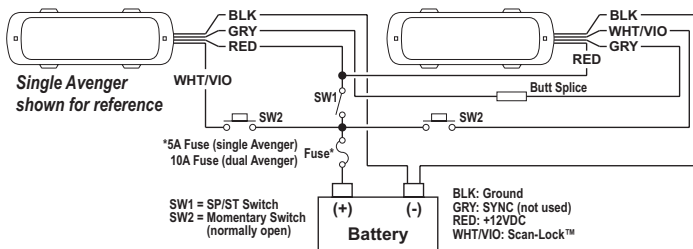
One (1) Sync Avenger™ (single or double)

1. Extend the RED wire to a Single Pole/Single Throw switch. From this switch, extend a wire to +12VDC. See the appropriate Parts Diagram for fusing information.
2. Extend the BLACK wire to chassis ground.
3. The GREY wire is not used. Cut & cap this wire.



Two (2) or more Sync Avengers (single or double)

1. Extend the RED wire from each Avenger™ to a Single Pole/Single Throw switch. From this switch, extend a wire to +12VDC. See the appropriate Parts Diagram for fusing information.
2. Extend the BLACK wires from each Avenger™ to chassis ground.
3. Butt splice the two GREY wires together.



Flash Pattern Selection:

To advance to the next flash pattern, press the pattern selection switch for less than 1 second. To cycle backwards to previous patterns, press the pattern selection switch for more than 1 second.

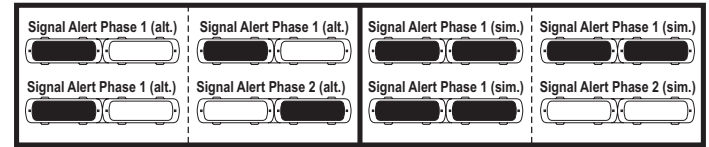
To reset to the factory default pattern: With power to the lighthouse off, press and hold the pattern selection switch. Turn the lighthouse on and keep the pattern selection switch depressed for at least 5 seconds before releasing.

Flash patterns for both Avenger™s are listed below.

Synchronizing the Single Avenger™ - To sync two or more lighthoods, configure all lighthoods to display the same **Phase 1** pattern. When the lighthoods are activated, the patterns displayed will be synchronized. To configure specific lighthoods to alternate their patterns with other lighthoods, advance the pattern of either lighthouse to the **Phase 2** mode of the current pattern.

Synchronizing the Dual Avenger™ - The dual Avenger™ has 4 unique modes for each syncable pattern; Alternating Phase 1, Alternating Phase 2, Simultaneous Phase 1 and Simultaneous Phase 2. In Alternating mode, the left lighthouse in a dual Avenger™ alternates with the right lighthouse. In Simultaneous mode, the left and right lighthouse in a dual Avenger™ flash simultaneously.

This diagram shows the relationship between two, dual sync'd Avenger™s. Keep in mind that all Avenger™s connected by the Grey wire must be configured to flash the same pattern (as shown, both Avenger™s are displaying Signal Alert™).



NOTE: BOLD = California Title XIII Compliant Pattern *Italic = SYNC Patterns*

Flash Patterns - Single Avenger™ w/Cigar Cord (Model AVN1*)

- | | | |
|--------------------------|----------------------|-----------------------|
| 1. SignalAlert™ 75 | 10. SingleFlash 120 | 19. TripleFlash 75 |
| 2. CometFlash® 75 | 11. SingleFlash 300 | 20. TripleFlash 120 |
| 3. DoubleFlash 75 | 12. DoubleFlash 150 | 21. SigAlert Cal.™ |
| 4. SingleFlash 75 | 13. ComAlert™ 150 | 22. Action SF 60/120 |
| 5. ComAlert™ 75 | 14. ActionFlash™ 50 | 23. Action SF120/TF75 |
| 6. LongBurst™ 75 | 15. ActionFlash™ 150 | 24. CalScan™ |
| 7. PingPong™ 75 | 16. ModuFlash™ | 25. ActionScan™ |
| 8. SingleFlash 60 | 17. DoubleFlash 120 | 26. SigAlert Steady |
| 9. SingleFlash 90 | 18. PingPong™ 120 | 27. Steady |

Flash Patterns - Single Avenger™ w/o Cigar Cord (Model AVNS1*)

- | | | |
|--------------------------------|------------------------------|-----------------------|
| 1. <i>SignalAlert™ 75-PH.1</i> | 13. <i>PingPong™ 75-PH.1</i> | 25. PingPong™ 120 |
| 2. <i>SignalAlert™ 75-PH.2</i> | 14. <i>PingPong™ 75-PH.2</i> | 26. TripleFlash 75 |
| 3. CometFlash® 75-PH.1 | 15. SingleFlash 60 | 27. TripleFlash 120 |
| 4. CometFlash® 75-PH.2 | 16. SingleFlash 90 | 28. SigAlert Cal.™ |
| 5. DoubleFlash 75-PH.1 | 17. SingleFlash 120 | 29. Action SF 60/120 |
| 6. DoubleFlash 75-PH.2 | 18. SingleFlash 300 | 30. Action SF120/TF75 |
| 7. SingleFlash 75-PH.1 | 19. DoubleFlash 150 | 31. CalScan™ |
| 8. SingleFlash 75-PH.2 | 20. ComAlert™ 150 | 32. ActionScan™ |
| 9. ComAlert™ 75-PH.1 | 21. ActionFlash™ 50 | 33. SigAlert Steady |
| 10. ComAlert™ 75-PH.2 | 22. ActionFlash™ 150 | 34. Steady |
| 11. LongBurst™ 75-PH.1 | 23. ModuFlash™ | |
| 12. LongBurst™ 75-PH.2 | 24. DoubleFlash 120 | |

Flash Patterns - Dual Avenger™ w/Cigar Cord (Model AVN2**)

- Single Split Avenger™ w/Cigar Cord (Model AVN1#)

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|------------------------------|--------------------------|---------------------------|
| 1. SignalAlert™ 75-ALT | 19. SingleFlash 90-SIM | 37. PingPong™ 120-SIM |
| 2. SignalAlert™ 75-SIM | 20. SingleFlash 120-ALT | 38. TripleFlash 75-ALT |
| 3. CometFlash® 75-ALT | 21. SingleFlash 120-SIM | 39. TripleFlash 75-SIM |
| 4. CometFlash® 75-SIM | 22. SingleFlash 300-ALT | 40. TripleFlash 120-ALT |
| 5. DoubleFlash 75-ALT | 23. SingleFlash 300-SIM | 41. TripleFlash 120-SIM |
| 6. DoubleFlash 75-SIM | 24. DoubleFlash 150-ALT | 42. SigAlert Cal.™-ALT |
| 7. SingleFlash 75-ALT | 25. DoubleFlash 150-SIM | 43. SigAlert Cal.™-SIM |
| 8. SingleFlash 75-SIM | 26. ComAlert™ 150-ALT | 44. Action SF 60/120-ALT |
| 9. ComAlert™ 75-ALT | 27. ComAlert™ 150-SIM | 45. Action SF 60/120-SIM |
| 10. ComAlert™ 75-SIM | 28. ActionFlash™ 50-ALT | 46. Action SF120/TF75-ALT |
| 11. LongBurst™ 75-ALT | 29. ActionFlash™ 50-SIM | 47. Action SF120/TF75-SIM |
| 12. LongBurst™ 75-SIM | 30. ActionFlash™ 150-ALT | 48. CalScan™-ALT/SIM |
| 13. PingPong™ 75-ALT | 31. ActionFlash™ 150-SIM | 49. ActionScan™-ALT/SIM |
| 14. PingPong™ 75-SIM | 32. ModuFlash™-ALT | 50. SteadyFlash 60 |
| 15. SSNF 75 | 33. ModuFlash™-SIM | 51. SteadyFlash 75 |
| 16. SingleFlash 60-ALT | 34. DoubleFlash 120-ALT | 52. SteadyFlash 90 |
| 17. SingleFlash 60-SIM | 35. DoubleFlash 120-SIM | 53. SteadyFlash 120 |
| 18. SingleFlash 90-ALT | 36. PingPong™ 120-ALT | 54. Steady & Steady |

Flash Patterns - Dual Avenger™ w/o Cigar Cord (Model AVNS2**)

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|--------------------------------|-------------------------------|---------------------------|
| 1. <i>SignalAlert™ 75-PH.1</i> | 24. <i>LongBurst™ 75-PH.4</i> | 47. ModuFlash™-ALT |
| 2. <i>SignalAlert™ 75-PH.2</i> | 25. <i>PingPong™ 75-PH.1</i> | 48. ModuFlash™-SIM |
| 3. <i>SignalAlert™ 75-PH.3</i> | 26. <i>PingPong™ 75-PH.2</i> | 49. DoubleFlash 120-ALT |
| 4. <i>SignalAlert™ 75-PH.4</i> | 27. <i>PingPong™ 75-PH.3</i> | 50. DoubleFlash 120-SIM |
| 5. CometFlash® 75-PH.1 | 28. <i>PingPong™ 75-PH.4</i> | 51. PingPong™ 120-ALT |
| 6. CometFlash® 75-PH.2 | 29. SSNF 75 - PH.1 | 52. PingPong™ 120-SIM |
| 7. CometFlash® 75-PH.3 | 30. SSNF 75 - PH.2 | 53. TripleFlash 75-ALT |
| 8. CometFlash® 75-PH.4 | 31. SingleFlash 60-ALT | 54. TripleFlash 75-SIM |
| 9. DoubleFlash 75-PH.1 | 32. SingleFlash 60-SIM | 55. TripleFlash 120-ALT |
| 10. DoubleFlash 75-PH.2 | 33. SingleFlash 90-ALT | 56. TripleFlash 120-SIM |
| 11. DoubleFlash 75-PH.3 | 34. SingleFlash 90-SIM | 57. SigAlert Cal.™-ALT |
| 12. DoubleFlash 75-PH.4 | 35. SingleFlash 120-ALT | 58. SigAlert Cal.™-SIM |
| 13. SingleFlash 75-PH.1 | 36. SingleFlash 120-SIM | 59. Action SF 60/120-ALT |
| 14. SingleFlash 75-PH.2 | 37. SingleFlash 300-ALT | 60. Action SF 60/120-SIM |
| 15. SingleFlash 75-PH.3 | 38. SingleFlash 300-SIM | 61. Action SF120/TF75-ALT |
| 16. SingleFlash 75-PH.4 | 39. DoubleFlash 150-ALT | 62. Action SF120/TF75-SIM |
| 17. ComAlert™ 75-PH.1 | 40. DoubleFlash 150-SIM | 63. CalScan™-ALT/SIM |
| 18. ComAlert™ 75-PH.2 | 41. ComAlert™ 150-ALT | 64. ActionScan™-ALT/SIM |
| 19. ComAlert™ 75-PH.3 | 42. ComAlert™ 150-SIM | 65. SteadyFlash 60 |
| 20. ComAlert™ 75-PH.4 | 43. ActionFlash™ 50-ALT | 66. SteadyFlash 75 |
| 21. LongBurst™ 75-PH.1 | 44. ActionFlash™ 50-SIM | 67. SteadyFlash 90 |
| 22. LongBurst™ 75-PH.2 | 45. ActionFlash™ 150-ALT | 68. SteadyFlash 120 |
| 23. LongBurst™ 75-PH.3 | 46. ActionFlash™ 150-SIM | 69. Steady & Steady |