

WHELEN[®]

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Installation Guide: M9 Series LED Lighthead 2- & 5-Wire (12 Volt)

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.
- 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.
- 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.
- 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.
- 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

Installation and Wiring:

External Flasher Models: This product draws significantly less current than a standard incandescent automotive bulb. If your flasher does not operate properly, it may be necessary to replace your flasher module with a Whelen® flasher module. Contact your sales representative for application.

Caution: Permanent mounting of this product will require drilling. It is absolutely necessary to make sure that no other vehicle components could be damaged by this process. Check both sides of the mounting surface before starting. If damage is likely, select a different location.

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!**

NOTE: The color of the Positive Wire is determined by the color of the LED. In this manual, RED is used as a reference color.

- Using the dimensions shown, mark the 2 mounting hole locations and wire access hole location onto the mounting surface.
- Drill the two, 0.250" diameter mounting holes and a 0.625" (minimum) wire access hole into the mounting surface.
- Place the appropriate gasket into position on the rear of the M9 assembly (see Gasket Note). Insert the slotted hole screw grommet through the mounting holes on the M9/Gasket assembly.
- Feed the M9 wires through the wire access hole in the mounting surface. Press the M9/Gasket/Grommet assembly onto its mounting location so that it is flat against the mounting surface. With the assembly in position and using the hardware provided, tighten the mounting screws until the lighthead assembly is drawn firmly against the mounting surface. **DO NOT OVERTIGHTEN!**
- Using appropriately sized wires (minimum 18 AWG), extend the M9 wires to their designated connections. Refer to the diagram below for wiring and fusing information.

Operation:

Flash Mode / RED:

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

Low Power / VIOLET:

The type of switch used depends on how the operator wishes the Low Power feature to function:

Latching Mode: By applying +VBAT to the VIO wire for less than 1 sec., the lighthead is "latched" into low power. The unit must be turned off and then back on to restore normal operation. (**A momentary switch is preferred**)

Level Mode: Applying +VBAT to the VIO wire for more than 1 sec. holds the lighthead in low power mode until voltage is removed. (**A toggle switch is preferred**)

SYNC / GREY

To SYNC two lightheads, configure both lightheads to display the same Phase 1 (Simultaneous) pattern. Turn the power off and connect the GREY wire from each lighthead together. When the lightheads are activated their patterns will be synchronized. To configure two lightheads to alternate their patterns, advance the pattern of either lighthead to Phase 2 (Alternating) of the current pattern.

NOTE: You can also program the 2 banks of LEDs inside the lighthead to flash in different configurations (See M9 Sequencing and Phasing).

Scan-Lock™ / WHT/VIO / Flash Pattern Selection:

This feature allows the user to select from several available flash patterns. The lighthead must be switched on for Scan-Lock™ to work.

TO CYCLE THROUGH ALL PATTERNS: Apply +VBAT to the WHT/VIO wire for less than 1 second and release. To cycle backward through patterns apply +VBAT to the WHT/VIO wire for over 1 second and release.

TO SET A PATTERN AS DEFAULT: Allow the pattern to run for more than 5 seconds. The lighthead will flicker slightly when the pattern locks in. This flicker may be difficult to see with some patterns. The lighthead will now display this pattern when activated.

TO RESET TO THE FACTORY DEFAULT PATTERN: Turn off power. While applying +VBAT to the WHT/VIO wire, turn power on. This will reset the lighthead to its factory default flash pattern.

IMPORTANT! It is the responsibility of the installation technician to make sure that the installation and operation of this product will not interfere with or compromise the operation or efficiency of any vehicle equipment!

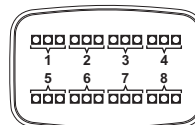
#	Pattern	Seq	Phase							
1	SignalAlert™	Solid	PH.1	56	LongBurst 75	T/B	PH.2	111	ModuFlash™	Solid
2	SignalAlert	Solid	PH.2	57	LongBurst 75	I/O	PH.1	112	ModuFlash	L/R
3	SignalAlert	L/R	PH.1	58	LongBurst 75	I/O	PH.2	113	ModuFlash	T/B
4	SignalAlert	L/R	PH.2	59	LongBurst 75	Diag	PH.1	114	ModuFlash	I/O
5	SignalAlert	T/B	PH.1	60	LongBurst 75	Diag	PH.2	115	ModuFlash	Diag
6	SignalAlert	T/B	PH.2	61	PingPong™ 75	Solid	PH.1	116	DoubleFlash 120	Solid
7	SignalAlert	I/O	PH.1	62	PingPong 75	Solid	PH.2	117	DoubleFlash 120	L/R
8	SignalAlert	I/O	PH.2	63	PingPong 75	L/R	PH.1	118	DoubleFlash 120	T/B
9	SignalAlert	Diag	PH.1	64	PingPong 75	L/R	PH.2	119	DoubleFlash 120	I/O
10	SignalAlert	Diag	PH.2	65	PingPong 75	T/B	PH.1	120	DoubleFlash 120	Diag
11	CometFlash®75	Solid	PH.1	66	PingPong 75	T/B	PH.2	121	PingPong™ 120	Solid
12	CometFlash 75	Solid	PH.2	67	PingPong 75	I/O	PH.1	122	PingPong 120	L/R
13	CometFlash 75	L/R	PH.1	68	PingPong 75	I/O	PH.2	123	PingPong 120	T/B
14	CometFlash 75	L/R	PH.2	69	PingPong 75	Diag	PH.1	124	PingPong 120	I/O
15	CometFlash 75	T/B	PH.1	70	PingPong 75	Diag	PH.2	125	PingPong 120	Diag
16	CometFlash 75	T/B	PH.2	71	SingleFlash 60	Solid	PH.1	126	TripleFlash™75	Solid
17	CometFlash 75	I/O	PH.1	72	SingleFlash 60	L/R	PH.1	127	TripleFlash 75	L/R
18	CometFlash 75	I/O	PH.2	73	SingleFlash 60	T/B	PH.1	128	TripleFlash 75	T/B
19	CometFlash 75	Diag	PH.1	74	SingleFlash 60	I/O	PH.1	129	TripleFlash 75	I/O
20	CometFlash 75	Diag	PH.2	75	SingleFlash 60	Diag	PH.1	130	TripleFlash 75	Diag
21	DoubleFlash 75	Solid	PH.1	76	SingleFlash 90	Solid	PH.1	131	TripleFlash 120	Solid
22	DoubleFlash 75	Solid	PH.2	77	SingleFlash 90	L/R	PH.1	132	TripleFlash 120	L/R
23	DoubleFlash 75	L/R	PH.1	78	SingleFlash 90	T/B	PH.1	133	TripleFlash 120	T/B
24	DoubleFlash 75	L/R	PH.2	79	SingleFlash 90	I/O	PH.1	134	TripleFlash 120	I/O
25	DoubleFlash 75	T/B	PH.1	80	SingleFlash 90	Diag	PH.1	135	TripleFlash 120	Diag
26	DoubleFlash 75	T/B	PH.2	81	SingleFlash 120	Solid	PH.1	136	Action SF 60/120	Solid
27	DoubleFlash 75	I/O	PH.1	82	SingleFlash 120	L/R	PH.1	137	Action SF 60/120	L/R
28	DoubleFlash 75	I/O	PH.2	83	SingleFlash 120	T/B	PH.1	138	Action SF 60/120	T/B
29	DoubleFlash 75	Diag	PH.1	84	SingleFlash 120	I/O	PH.1	139	Action SF 60/120	I/O
30	DoubleFlash 75	Diag	PH.2	85	SingleFlash 120	Diag	PH.1	140	Action SF 60/120	Diag
31	SingleFlash 75	Solid	PH.1	86	SingleFlash 300	Solid	PH.1	141	Action SF 60/TF 120	Solid
32	SingleFlash 75	Solid	PH.2	87	SingleFlash 300	L/R	PH.1	142	Action SF 60/TF 120	L/R
33	SingleFlash 75	L/R	PH.1	88	SingleFlash 300	T/B	PH.1	143	Action SF 60/TF 120	T/B
34	SingleFlash 75	L/R	PH.2	89	SingleFlash 300	I/O	PH.1	144	Action SF 60/TF 120	I/O
35	SingleFlash 75	T/B	PH.1	90	SingleFlash 300	Diag	PH.1	145	Action SF 60/TF 120	Diag
36	SingleFlash 75	T/B	PH.2	91	DoubleFlash 150	Solid	PH.1	146	Cylon SLOW	
37	SingleFlash 75	I/O	PH.1	92	DoubleFlash 150	L/R	PH.1	147	Cylon MEDIUM	
38	SingleFlash 75	I/O	PH.2	93	DoubleFlash 150	T/B	PH.1	148	Cylon FAST	
39	SingleFlash 75	Diag	PH.1	94	DoubleFlash 150	I/O	PH.1	149	Cylon VARIABLE	
40	SingleFlash 75	Diag	PH.2	95	DoubleFlash 150	Diag	PH.1	150	Cylon MEDIUM w/SOLID	
41	ComAlert™ 75	Solid	PH.1	96	ComAlert™ 150	Solid	PH.1	151	PinWheel SLOW	
42	ComAlert 75	Solid	PH.2	97	ComAlert 150	L/R	PH.1	152	PinWheel MEDIUM	
43	ComAlert 75	L/R	PH.1	98	ComAlert 150	T/B	PH.1	153	PinWheel FAST	
44	ComAlert 75	L/R	PH.2	99	ComAlert 150	I/O	PH.1	154	PinWheel VARIABLE	
45	ComAlert 75	T/B	PH.1	100	ComAlert 150	Diag	PH.1	155	PinWheel MEDIUM w/Solid	
46	ComAlert 75	T/B	PH.2	101	ActionFlash™ 50	Solid	PH.1	156	CalScan	
47	ComAlert 75	I/O	PH.1	102	ActionFlash 50	L/R	PH.1	157	ActionScan™	
48	ComAlert 75	I/O	PH.2	103	ActionFlash 50	T/B	PH.1	*158	SignalAlert™ Steady	
49	ComAlert 75	Diag	PH.1	104	ActionFlash 50	I/O	PH.1	*159	Steady	
50	ComAlert 75	Diag	PH.2	105	ActionFlash 50	Diag	PH.1			
51	LongBurst™ 75	Solid	PH.1	106	ActionFlash 150	Solid	PH.1			
52	LongBurst 75	Solid	PH.2	107	ActionFlash 150	L/R	PH.1			
53	LongBurst 75	L/R	PH.1	108	ActionFlash 150	T/B	PH.1			
54	LongBurst 75	L/R	PH.2	109	ActionFlash 150	I/O	PH.1			
55	LongBurst 75	T/B	PH.1	110	ActionFlash 150	Diag	PH.1			

***No low power for this pattern.**

BOLD = CA Title XIII Compliant
ITALIC = SYNC I/O = In/Out

M9 Sequencing & Phasing:

The M9 lighthead has 8 sets of 3 LEDs. These sets cycle through the 5 sequences shown below.



Sequences	Operation of LED sets		
Solid	All On	Alternates with	All Off
Left to Right (L/R)	1 - 2 - 5 - 6	Alternates with	3 - 4 - 7 - 8
Top to Bottom (T/B)	1 - 2 - 3 - 4	Alternates with	5 - 6 - 7 - 8
In and Out (I/O)	2 - 3 - 6 - 7	Alternates with	1 - 4 - 5 - 8
Diagonal (Diag)	1 - 2 - 7 - 8	Alternates with	5 - 6 - 3 - 4

IMPORTANT WARNING!

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

