



# Installation and Operation Instructions

## LED SURFACE MOUNT LIGHT HEADS

### Dual Stack Single and Split Colors

**IMPORTANT!** Read all instructions before installing and using. Installer: This manual must be delivered to the end user.

**WARNING!**  
 Failure to install or use this product according to manufacturers recommendations may result in property damage, serious injury, and/or death to those you are seeking to protect!

**Do not install and/or operate this safety product unless you have read and understand the safety information contained in this manual.**

1. Proper installation combined with operator training in the use, care, and maintenance of emergency warning devices are essential to ensure the safety of emergency personnel and the public.
2. Emergency warning devices often require high electrical voltages and/or currents. Exercise caution when working with live electrical connections.
3. This product must be properly grounded. Inadequate grounding and/or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or severe vehicle damage, including fire.
4. Proper placement and installation is vital to the performance of this warning device. Install this product so that output performance of the system is maximized and the controls are placed within convenient reach of the operator so that s/he can operate the system without losing eye contact with the roadway.
5. It is the responsibility of the vehicle operator to ensure daily that all features of this product work correctly. In use, the vehicle operator should ensure the projection of the warning signal is not blocked by vehicle components (i.e., open trunks or compartment doors), people, vehicles or other obstructions.
6. The use of this or any other warning device does not ensure all drivers can or will observe or react to an emergency warning signal. Never take the right-of-way for granted. It is your responsibility to be sure you can proceed safely before entering an intersection, drive against traffic, respond at a high rate of speed, or walk on or around traffic lanes.
7. This equipment is intended for use by authorized personnel only. The user is responsible for understanding and obeying all laws regarding emergency warning devices. Therefore, the user should check all applicable city, state, and federal laws and regulations. The manufacturer assumes no liability for any loss resulting from the use of this warning device.

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**Package Contains:**

1	Light Head
2	Screws
1	Installation Guide
1	Mounting Gasket
1	Bezel

**Operation Environment:**

**Ambient Temperature:** -40 to 65°C(-40 to 149°F)

**Specifications:**

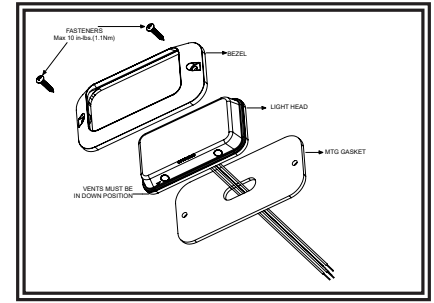
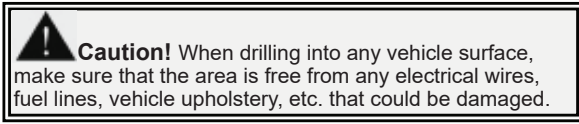
Light Head Model	ED3788 Dual Stack
Input Voltage	12-24VDC
Work Current	1.2 A Max @ 12 VDC Nominal
Physical H x W x L	0.62 in x 2.39 in x 4.72 in 1.58 cm x 6.07 cm x 11.98 cm
Weight	0.24 lb(0.11kg)
Avail Single Colors	Red, Blue, Amber, White, Green
Available Dual Colors	Amb/Wht, Blue/Amb, Blue/Wht, Red/Amb, Red/Blue, Red/Wht

## Installation and Mounting:

To mount the light head, use the bezel as a template to mark the mounting holes. The supplied self-tapping #6 x 0.75" screws typically use 0.125" diameter holes but this may vary depending on the type of material and the thickness being tapped. Provide a minimum 0.50" diameter hole for the wires. Grommet the hole if possible and seal with RTV sealant.

### **It is important to note:**

The light head has 2 small round holes covered with vent membrane that must face downward when mounting the light head.



## Wiring Instructions:

RED: Positive, (5A fuse required)

WHITE: Positive, (5A fuse required)

BLACK: Negative

BLUE: Pattern select to negative -- Dim control to positive

YELLOW: Synchronized Function (Up to 32 units can be Synchronized)

**Important!** This unit is a safety device, and it must be connected to its own separate, fused power point to assure its continued operation should any other electrical accessory fail.

## Notes on Choosing Flash Patterns:

A variety of flash patterns may be chosen for the light head. The Dual Stack light heads are split horizontally and vertically providing 4 separate lighted areas in each light head that may be chosen to flash up-down, right-left, diagonally, and to rotate. The Split Dual Color version also provides different colors for the upper level versus the lower level.

A separate flash pattern may be assigned for the power wires red, white, or both connected together and the pattern operated depending which wire or wires are energized. Power the red or the white wires (or both together) then use the pattern select blue wire (touch to ground) to select the chosen flash pattern from one of the lists below.

Note: The split dual color light heads have a separate flash pattern list.

See the legend at the top of the pattern lists for compliance with various standards.

## Pattern Select Operation:

The light head flash pattern may be changed by touching the Blue wire to ground for the following intervals (while the light head is flashing):

NOTE: The blue wire must be disconnected from any voltage when not activating DIM nor changing flash patterns.

- When the light head signal becomes steady, disconnect the Blue wire and the flash pattern will increment by one pattern.

- When the light head signal becomes steady, then goes off, disconnect the Blue wire and the flash pattern will decrement by one pattern.

- When the light head signal becomes steady, then goes off, then becomes steady again, disconnect the Blue wire and the flash pattern will reset to the factory default pattern.

- When the light head signal becomes steady, then goes off, then becomes steady again, then goes off again, disconnect the Blue wire and the flash pattern will become set to the steady burn mode.

## Notes on Dim Control:

The light head intensity may be reduced if necessary. The Blue wire when connected to positive will reduce the intensity to 25% for SAE patterns. NOTE: The blue wire must be disconnected from any voltage when not activating DIM nor changing flash patterns.

## Notes on Synchronizing and Phase (Sync Ph):

(Up to 32 light heads can be Synchronized by connecting their yellow wires).

When the yellow wires of the light heads are connected together, the group with Ph1 flash patterns will flash simultaneously. If the light heads in the second group are set to Ph2 flash patterns, they will flash alternately with the first group. To simplify the set-up of a synchronized installation, the following process is recommended:

1. Before connecting the yellow wires together, choose the desired flash pattern for each light head. **The patterns chosen must have the same flash rate for all light heads intended to be synchronized. (By definition a 75fpm light head will not sync with at 120fpm light head)** To avoid confusion set each light head individually to the chosen flash pattern using the blue pattern select wire. Ph1 light heads will alternate with Ph2 light heads and simultaneously with all other light heads set to Ph1. Ph2 light heads flash simultaneously with all other light heads set to Ph2. It is also strongly recommended that the same style of flash pattern be used on all heads to produce the most effective warning pattern.
2. Connect the yellow synchronization wires together and check that the light heads are flashing in a synchronized manner as expected. If a pattern for one light head appears to be wrong, keep the yellow wire connected and use the blue pattern select wire to cycle forward or backward for that individual light head until the correct pattern is selected. Once that is completed verify the light head is synchronized correctly.

### Flash Patterns ED3788 Single Color:

For patterns that meet SAE J595 Class1 requirements for Red, Blue, Amber, and White, see **S** in chart below!

For patterns that meet California Title 13 Class B requirements for Red, Blue, and Amber, see **C** in chart below!

For patterns that meet ECE R65 Class 2 Cat X (day & night) requirements for Red, Blue, Amber see **E2** in chart below!

PATTERN GROUP	RED WIRE	WHITE WIRE	RED & WHITE WIRE	FLASH PATTERN	SYNC	Complies with
0	1-Default	1-Default	1-Default	Cycle Flash	no	
1	2	2	2	Single Flash 75FPM Ph1 Sim	yes	SC
	3	3	3	Single Flash 75FPM Ph2 Sim	yes	SC
	4	4	4	Single Flash 75FPM Up-Down Alt	yes	S
	5	5	5	Single Flash 75FPM Right-Left Alt	yes	S
	6	6	6	Single Flash 75FPM Diagonal Alt	yes	S
	7	7	7	Single Flash 75FPM Rotate CCW	no	
	8	8	8	Single Flash 75FPM Rotate CW	no	
	9	9	9	Single Flash 120FPM Ph1 Sim	yes	SC
2	10	10	10	Single Flash 120FPM Ph2 Sim	yes	SC
	11	11	11	Single Flash 120FPM Up-Down Alt	yes	S
	12	12	12	Single Flash 120FPM Right-Left Alt	yes	S
	13	13	13	Single Flash 120FPM Diagonal Alt	yes	S
	14	14	14	Single Flash 120FPM Rotate CCW	yes	
	15	15	15	Single Flash 120FPM Rotate CW	yes	
	16	16	16	Double Flash 75FPM Ph1 Sim	yes	SC
3	17	17	17	Double Flash 75FPM Ph2 Sim	yes	SC
	18	18	18	Double Flash 75FPM Up-Down Alt	yes	S
	19	19	19	Double Flash 75FPM Right-Left Alt	yes	S
	20	20	20	Double Flash 75FPM Diagonal Alt	yes	S
	21	21	21	Double Flash 75FPM Rotate CCW	no	
	22	22	22	Double Flash 75FPM Rotate CW	no	
4	23	23	23	Double Flash 120FPM Ph1 Sim	yes	SE2
	24	24	24	Double Flash 120FPM Ph2 Sim	yes	SE2
	25	25	25	Double Flash 120FPM Up-Down Alt	yes	S
	26	26	26	Double Flash 120FPM Rt-Left Alt	yes	S
	27	27	27	Double Flash 120FPM Diagonal Alt	yes	S
	28	28	28	Double Flash 120FPM Rotate CCW	no	
	29	29	29	Double Flash 120FPM Rotate CW	no	

PATTERN GROUP	RED WIRE	WHITE WIRE	RED & WHITE WIRE	FLASH PATTERN	SYNC	Complies with
5	30	30	30	Quad Flash 75FPM Ph1 Sim	yes	SC
	31	31	31	Quad Flash 75FPM Ph2 Sim	yes	SC
	32	32	32	Quad Flash 75FPM Up-Down Alt	yes	S
	33	33	33	Quad Flash 75FPM Right-Left Alt	yes	S
	34	34	34	Quad Flash 75FPM Diagonal Alt	yes	S
	35	35	35	Quad Flash 75FPM Rotate CCW	no	
	36	36	36	Quad Flash 75FPM Rotate CW	no	
	37	37	37	Quad Flash 150FPM Ph1 Sim	yes	S
6	38	38	38	Quad Flash 150FPM Ph2 Sim	yes	S
	39	39	39	Quad Flash 150FPM Up-Down Alt	yes	S
	40	40	40	Quad Flash 150FPM Right-Left Alt	yes	S
	41	41	41	Quad Flash 150FPM Diagonal Alt	yes	S
	42	42	42	Quad Flash 150FPM Rotate CCW	no	
	43	43	43	Quad Flash 150FPM Rotate CW	no	
	44	44	44	Triple 75FPM Ph1 Sim	yes	S
7	45	45	45	Triple 75FPM Ph2 Sim	yes	S
	46	46	46	Triple Flash 75FPM Up-Down Alt	yes	S
	47	47	47	Triple Flash 75FPM Right-Left Alt	yes	S
	48	48	48	Triple Flash 75FPM Diagonal Alt	yes	S
	49	49	49	Triple Flash 75FPM Rotate CCW	no	
	50	50	50	Triple Flash 75FPM Rotate CW	no	
	51	51	51	Quint Flash 150FPM Ph1 Sim	yes	S
8	52	52	52	Quint Flash 150FPM Ph2 Sim	yes	S
	53	53	53	Quint Flash 150FPM Up-Down Alt	yes	S
	54	54	54	Quint Flash 150FPM Right-Left Alt	yes	S
	55	55	55	Quint Flash 150FPM Diagonal Alt	yes	S
	56	56	56	Quint Flash 150FPM Rotate CCW	no	
	57	57	57	Quint Flash 150FPM Rotate CW	no	
	9	58	58	58	Steady - Single	no
10	59	59	59	Modulation	no	
11	60	60	60	2 Double Flash, 2 Triple Flash Alt.	no	
12	61	61	61	4 Single Flash, 2 Quad Flash Alt.	no	
13	62	62	62	Steady Burn	no	

### Flash Patterns ED3788 Split Dual Color:

For patterns that meet SAE J595 Class1 requirements for Red, Blue, Amber, and White, see **S** in chart below!

For patterns that meet ECE R65 Class 2 Cat X (day & night) requirements for Red, Blue, Amber see **E2** in chart!

PATTERN GROUP	RED WIRE	WHITE WIRE	RED & WHITE WIRE	FLASH PATTERN	SYNC	Complies with
0	1-Default	1-Default	1-Default	Cycle Flash	No	
1	2	2	2	Single Flash 75FPM Alt Up-Dn Ph1	yes	S
	3	3	3	Single Flash 75FPM Alt Up-Dn Ph2	yes	S
	4	4	4	Single Flash 75FPM Rotate CCW	no	
	5	5	5	Single Flash 75FPM Rotate CW	no	
2	6	6	6	Single Flash 120FPM Alt Up-Dn Ph1	yes	S
	7	7	7	Single Flash 120FPM Alt Up-Dn Ph2	yes	S
	8	8	8	Single Flash 120FPM Rotate CCW	no	
3	9	9	9	Single Flash 120FPM Rotate CW	no	
	10	10	10	Double Flash 75FPM Alt Up-Dn Ph1	yes	SE2
	11	11	11	Double Flash 75FPM Alt Up-Dn Ph2	yes	SE2
	12	12	12	Double Flash 75FPM Rotate CCW	no	
	13	13	13	Double Flash 75FPM Rotate CW	no	
4	14	14	14	Double Flash 120FPM Alt Up-Dn Ph1	yes	SE2
	15	15	15	Double Flash 120FPM Alt Up-Dn Ph2	yes	SE2
	16	16	16	Double Flash 120FPM Rotate CCW	no	
	17	17	17	Double Flash 120FPM Rotate CW	no	
5	18	18	18	Quad Flash 75FPM Alt Up-Dn Ph1	yes	S
	19	19	19	Quad Flash 75FPM Alt Up-Dn Ph2	yes	S
	20	20	20	Quad Flash 75FPM Rotate CCW	no	
	21	21	21	Quad Flash 75FPM Rotate CW	no	
6	22	22	22	Quad Flash 150FPM Alt Up-Dn Ph1	yes	S
	23	23	23	Quad Flash 150FPM Alt Up-Dn Ph2	yes	S
	24	24	24	Quad Flash 150FPM Rotate CCW	no	
	25	25	25	Quad Flash 150FPM Rotate CW	no	
7	26	26	26	Triple Flash 75FPM Alt Up-Dn Ph1	yes	S
	27	27	27	Triple Flash 75FPM Alt Up-Dn Ph2	yes	S
	28	28	28	Triple Flash 75FPM Rotate CCW	no	
	29	29	29	Triple Flash 75FPM Rotate CW	no	
8	30	30	30	Quint Flash 150FPM Alt Up-Dn Ph1	yes	S
	31	31	31	Quint Flash 150FPM Alt Up-Dn Ph2	yes	S
	32	32	32	Quint Flash 150FPM Rotate CCW	no	
	33	33	33	Quint Flash 150FPM Rotate CW	no	
9	34	34	34	Steady - Single	no	
10	35	35	35	Modulation	no	
11	36	36	36	2 Double Flash, 2 Triple Flash Alt.	no	
12	37	37	37	4 Single Flash, 2 Quad Flash Alt.	no	
13	38	38	38	Steady Burn	no	

## Troubleshooting:

The LED Surface Mount series light head has been thoroughly factory tested. If any of the the device functions fail, please check the following:

1. Be sure the power source is activated, then check all connections both positive and ground at the light head (to assure no open or shorted circuits).
2. Permanently connecting the Blue programming wire to ground will disable the light head, no matter what the programmed flash pattern.
3. If the Dim function does not operate, verify the Blue wire is connected to positive.
4. If the sync function is not being used and the light head is functioning erratically, verify the Yellow wire is not connected to positive or ground.