K&K Systems, inc.
Traffic Safety Products Manufacturer

ECO-BEACON
OPERATING MANUAL

TABLE OF CONTENTS

Thank You 3
Introduction 4
Description of Sign Alert Components 5
Splasher Introduction and Controls 6
Mode Settings 7
Control Cabinet and Components 8
Safety/Warnings/Precautions 9
Troubleshooting 10-11
Solar Powered Wiring Diagram 12
AC Powered Wiring Diagram 13
Parts List 14
Warranty 15

Thank you for your business!

To Our Valued Customer,

K&K Systems, Inc. is excited that you have purchased our product.

Our company has been serving the traffic industry since 1997. Since that time we have risen to become a leader in the traffic industry. We offer a complete line of traffic safety products that include message boards, arrow boards, radar speed monitors, solar school zone flashers, solar 24-hour flashers and many other quality products that serve our industry today.

At K&K Systems, Inc., we strive to improve the quality of our products. We are dedicated to the concept that our customers are our most valuable resource. We strive to serve our customers as we would want to be served.

Tim Keith,
President

K&K Systems, inc.
Traffic Safety Products Manufacturer

INTRODUCTION

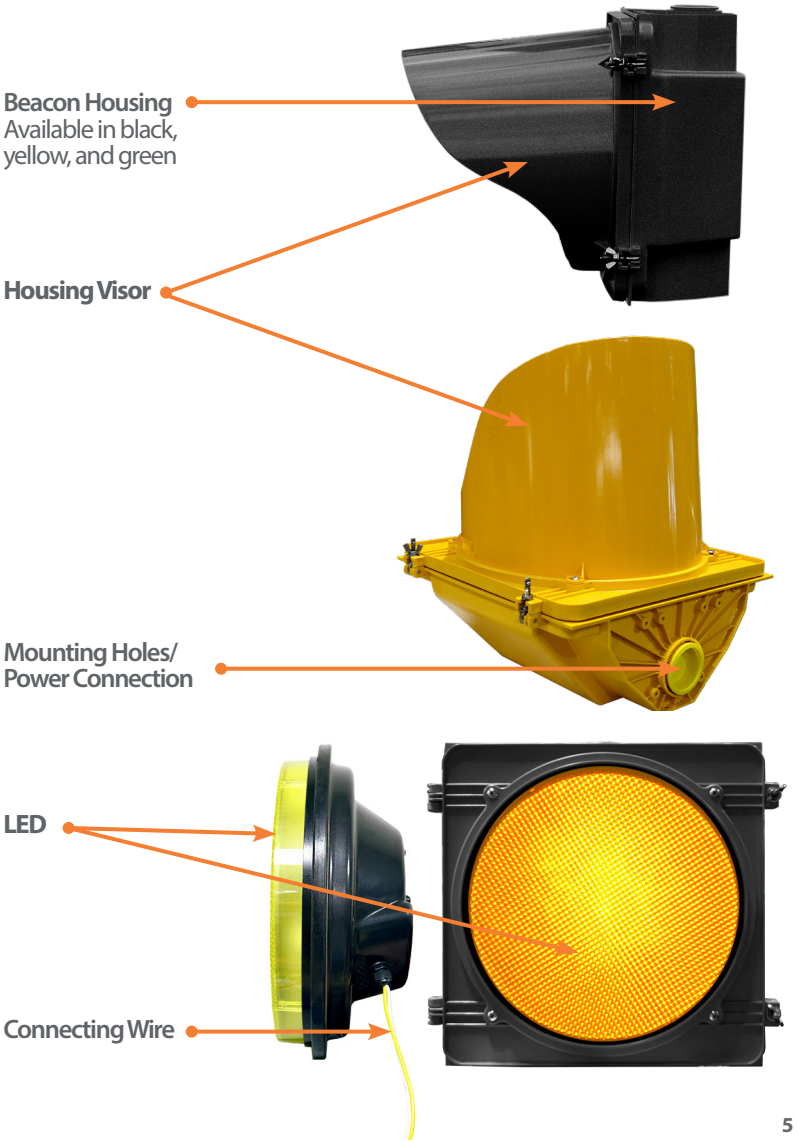
WHAT IS AN ECO-BEACON

K&K Systems' Eco-Beacon Systems utilize LED lighting. They are operated by solar or AC power and are designed to enhance the visibility of highway signs in any weather conditions to increase road safety.

K&K Sign Alerts can utilize any one of our smart controllers, the SPLasher or the CrossTalk, or a timing module to flash 24/7 or custom functionality.

K&K Sign Alert Systems paired with K&K SMART Add-Ons can be activated using our High Water Sensor, Motion Sensor, Push Button Sensor, Moisture Sensor, Radar Sensor, or Key Fob remote.

DESCRIPTION OF BEACON COMPONENTS



SPLASHER

INTELLIGENT SOLAR CONTROLLER/FLASHER

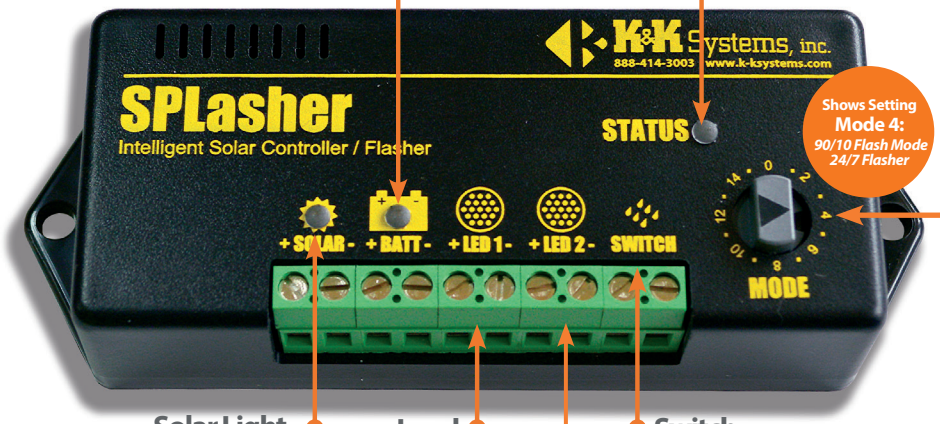
K&K Systems' SPLasher Beacon Controller is a compact all-in-one solar controller with maximum power point tracking, flasher, and auto-dimmer. It is compatible with all 24-7 Solar Sign Alerts and beacons. It has a dry contact for any activation switches such as the High Water Sensor, Motion Sensor, Push Button Sensor, Moisture Sensor, or Radar Sensor. Mode settings allow for an adjustable flash rate from 90/10 to 50/50 and duration settings from 24/7 to 1 minute.

Status Light

The status light blinks in sequence with the first output, letting you know the flasher is active and the flash rate.

Battery Light

Battery status light for safe accurate battery connections:
Green = Good Connection



Solar Light

Solar controller status indicator shows when battery is being charged:
Green = Full Charge
Yellow = Charging

Load

12V LED/ DC Flasher outputs/switches (x2). Maximum load 50W per output.

Switch

Switch/Dry-Contact: Optional activation
- *Moisture Sensor*
- *Push Button Sensor*
- *High Water Level Sensor*
- *Motion Sensor*
- *Over Speed Sensor*

SPLASHER MODES

Mode Switch

Beacon Modes

0 : *LED1 - 50/50; LED2 - 50/50; ON 24/7*
1 : *LED1 - 50/50; LED2 - 50/50; Switched 1 minute*
2 : *LED1 - 50/50; LED2 - ON; Switched 1 second*
(LED2 Always ON to power radar)
3 : *LED1 - 50/50; LED2 - 50/50; Switched 1 second*

Sign Alert Modes

4 : *LED1 - 90/10; LED2 - 90/10; ON 24/7*
5 : *LED1 - 90/10; LED2 - 90/10; Switched 1 minute*
6 : *LED1 - 90/10; LED2 - ON; Switched 1 second*
(LED2 Always ON to power radar)
7 : *LED1 - 90/10; Switched 1 second*

Combo Beacon and Sign Alert Modes

8 : *LED1 - 50/50; LED2 - 90/10; ON 24/7*
9 : *LED1 - 50/50; LED2 - 90/10; Switched 1 minute*
10: *LED1 - 50/50; LED2 - 80/20; Switched 3 minutes*
(UK_MODE: 80/20; Switched 1 second)
11: *LED1 - 50/50; LED2 - 90/10; Switched 1 second*

Specialty Light Mode

12: *LED1 ON Full Bright; LED2 ON Photo Cell; Switched 1 second*

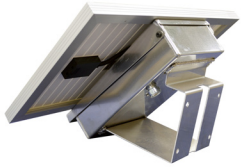
Wig/Wag Modes - *LED1 and LED2*

13: *Wig/Wag; Switched 1 second*
14: *ON; Wig/Wag; Switched: ON while switch held, Wig/Wag for duration of switch hold*
15: *Wig/Wag; Switched 1 minute*

CONTROL CABINET AND COMPONENTS

CONTROL CABINET

The control box is aluminum fabricated and hinged at the top to protect the batteries and the controller. Lower height mounting hardware for easier access is available.

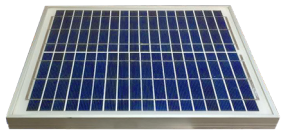


POWER SOURCE

Our products incorporate a battery pack wired for 12V operation, depending on the requirements of the design. The battery bank is regulated by and protected by a solid-state charge controller/ low voltage disconnect. This prevents gassing and over discharging of the batteries, which can result in premature failure. A thermal compensation and related circuitry adjusts the charge rate of the system with variances in temperature.

SOLAR PANEL

During operation, keep the solar panel clean of excessive dirt and debris by using soapy water or glass cleaner and a soft cloth or sponge only. Periodically check the integrity of wiring connections in the junction box. Inspect for signs of damage to the solar panel glass or frame.



SAFETY / WARNINGS / PRECAUTIONS

The following are K&K Systems' recommendations for the safe and responsible use of pole units.

PRECAUTIONS

Inspect your unit upon delivery. The system arrives ready to run. However, wires and plugs may loosen during shipment causing operational issues.
Please inspect all components and test before erecting the pole. It's always easier to work on the ground. Connect the batteries and test the unit before installation for convenient working conditions.

Connect batteries and test components before erecting the pole system.

Check cardinal directions with a compass to ensure the solar panel is **facing South** for proper charging. Check the system a few days after installation to ensure proper charging and operation.

MAINTENANCE

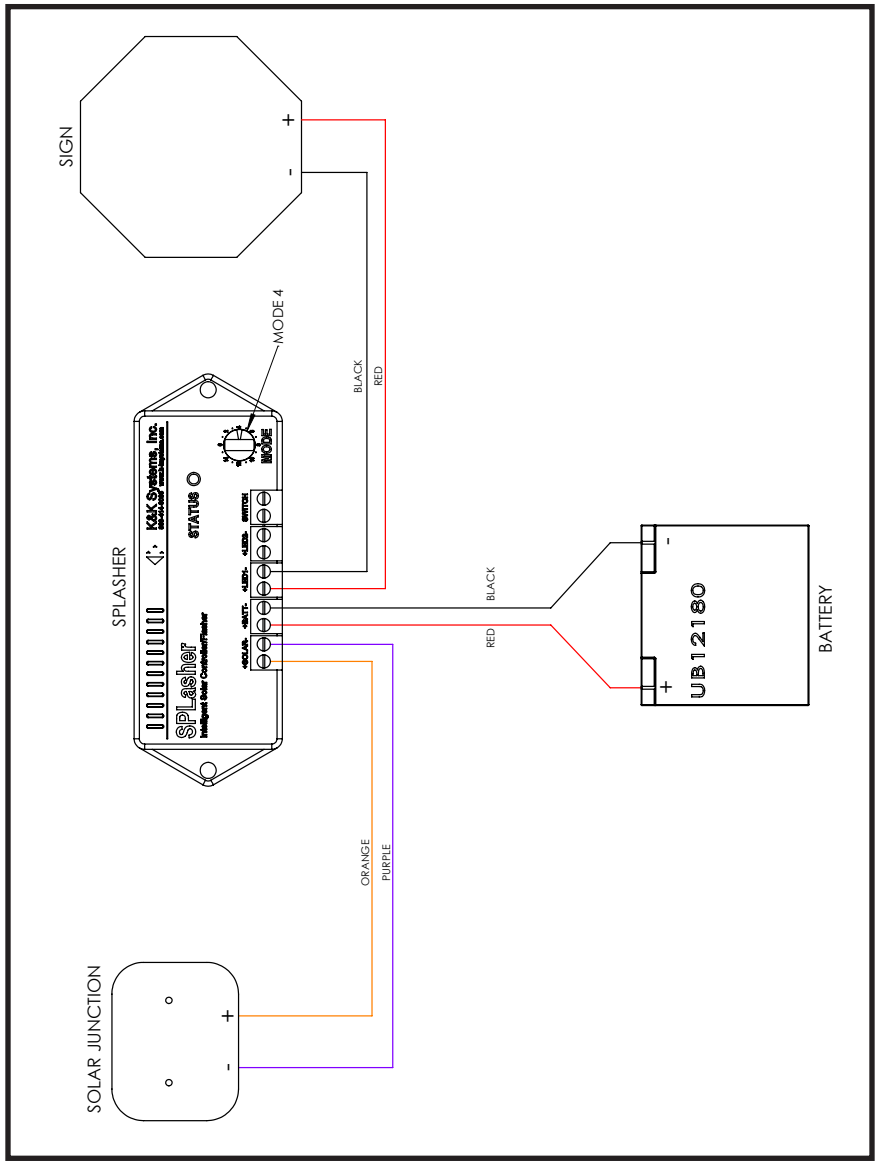
- Periodically inspect the poles. This includes but is not limited to the solar panel, battery, signs, and boxes.
- Check sign mounting to ensure it is tight and has not shifted as the solar panel may shift direction over time. Ensure the panel is facing South with a compass.
- Check the battery every 6 months to ensure proper charging. If below 12.3 volts, charge to keep power reserves high. Check solar system by cleaning the panel and inspecting wiring for wear and secure connection.
- K&K recommends that the user clean the solar panels every 6 months. Over time the solar panels may build up a thin layer of dust/dirt/road grime that can adversely affect their efficiency significantly. Clean with soapy water or glass cleaner and a soft cloth or sponge only.

TROUBLESHOOTING GUIDE

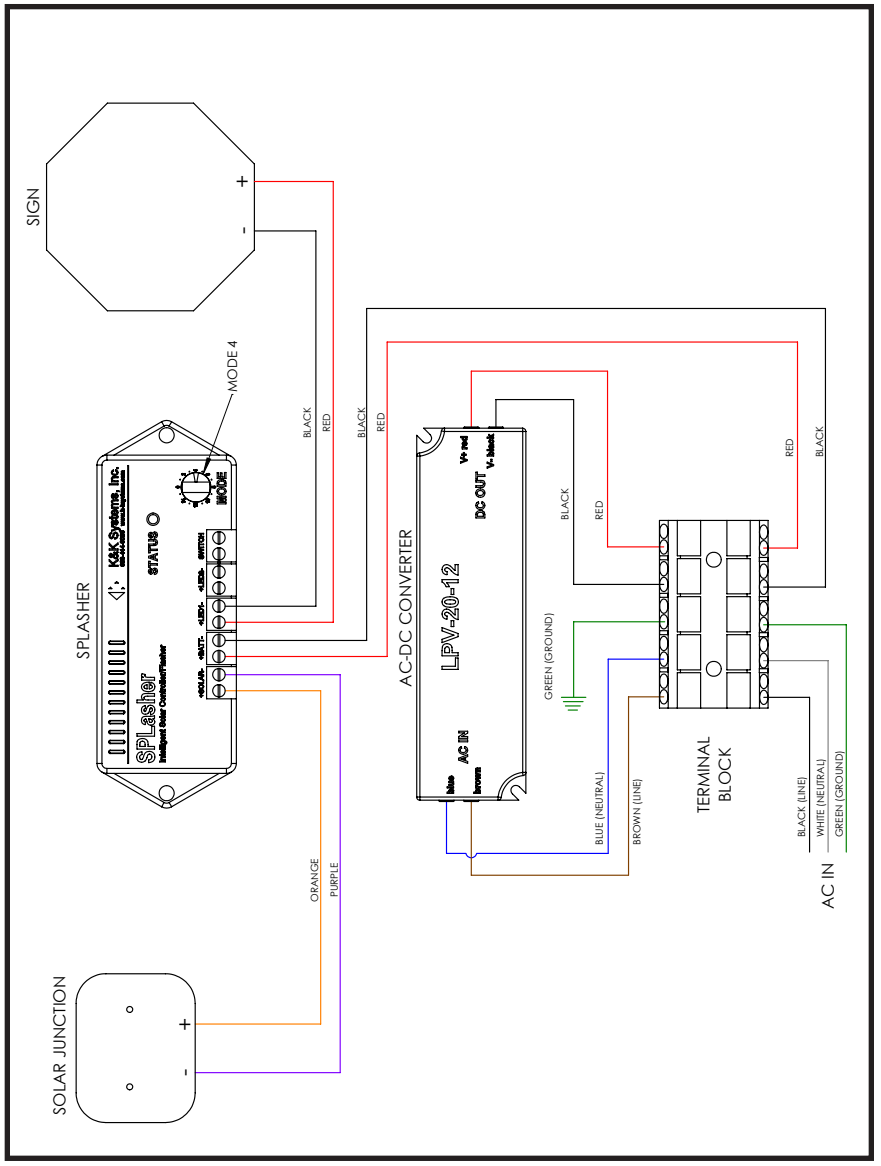
Please call 888-414-3003 for Tech Support if this guide does not solve your issue.

PROBLEM	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
No Power **If the sign's Splasher is not powering on, the battery light is off, and the status light is not blinking:**	• Is the Splasher unplugged? • Is the battery wire connected inside the control cabinet? • Check battery voltage while its unplugged from the Splasher. The voltage needs at least 12V. No less.	**If battery is at 12V:** • Charge to at least 12.7-13V. Then test again.	**If your battery is okay:** • Check the wires from battery to the Splasher. Make sure the wires are tightly screwed into the terminal.	**If problem persists:** • Please call K&K Systems	
Not charging **Battery needs recharging** **Battery dies quickly**	**Is the solar panel facing south? If it is not:** • Check with a compass to make sure the solar panel is facing South as directly as possible. Solar Panels must always face South! If not, efficiency is diminished and the battery will not charge as fast as it should.	• Check the voltage from your solar panel. While unplugged from the Splasher it should read 15-21V on a sunny day. Make sure it's positive and not a negative voltage. If negative, than your wires are flipped and that would cause the issue.	**If the solar voltage is negative:** • The polarity is backwards. Switch the position of the wires and check the polarity again. **If voltage is positive:** • Reinstall wires.	**If your wires have no voltage:** • Check wires from the panel to the junction box for damage or disconnection. • Replace or reconnect the wires and retest. **If your panel is below 15V, but above zero:** • Ensure the unit is in full sun and the solar panel is clean. Ensure the panel is facing south. Cloudy conditions, dusk or dawn will result in low voltage which is normal.	**If problem persists:** • Please call K&K Systems
No Lights	**If your Splasher is on, battery light is on, and the status light is blinking, but the sign LEDs are off:** • Check to make sure your sign is connected to the Eco-box. Check the power cord on the back of the sign connects to the cable running down from the control box.		**If the cable is connected, but still not working:** • Move the wires from LED 1 on the Splasher to LED 2. The first port may have burned out.	**If this does not fix your issue:** • Please call K&K Systems	
Burnt Fuse	**If the battery is good and it is connected correctly, but the lights are out:** • The Splasher has an internal fuse that might be blown. • K&K must make the repair. Please call us.				

WIRING DIAGRAM
SOLAR POWERED



WIRING DIAGRAM
AC POWERED



PARTS LIST

PART NUMBER	DESCRIPTION
JXC-300DCR	12" Red LED
JXC-300DCY	12" Yellow LED
TPY-112-TCN-EVN-ON	12" Poly Signal with Cap Visor
Splasher	Splasher Controller, Flasher, Auto-Dimmer
ECO1-110704	Eco-Cabinet
BAT-12-18A	18 amp AGM Battery
DS-A1-20	20 Watt Solar Panel
FAMUTCDKIT	Hardware Kit
OPTIONS	**DESCRIPTION**
DR600s	Radar
HWS	High water Sensor
MS	Moisture Sensor
PT-7	7-Day Timer
DS-A1-30	30 Watt Solar Panel
DS-A1-40	40 Watt Solar Panel
CCTR-12 4-1/2"	Spun Aluminum Pole Kit with Base
CCTUC-12 12' 3lb	U Channel Post Kit
CCTS-12-2	2" x 12' Galvanized Square Post Kit
SIGN	TBA

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MANUFACTURER'S WARRANTY

1. The manufacturer warrants that all products manufactured by K&K Systems, Inc. will be free from defects in material and workmanship for a period of one (1) year from date of shipment, subject to the conditions and restrictions contained herein.

2. This warranty does not apply to a product that has not been installed or maintained in accordance with the manufacturer's instructions, has been subjected to damage in an accident, abused or neglected during operation, repaired or modified by persons other than manufacturer, its employees or authorized agents, or failed to have normal maintenance.

3. The buyer expressly agrees that the buyer's sole remedy and the manufacturer's sole responsibility, in respect to a warranty claim, is exclusively limited to repair or replacement at the manufacturer's option, of product or a portion thereof found by the manufacturer to be defective. The manufacturer is not responsible for labor or other expended charges by buyer including transportation chargers, an shall not be liable for any incidental or consequential damages connected with repair of a product deemed to be defective or with installation or replacement of repaired product. Further, the manufacturer disclaims any liability for any incidental or consequential damages, including lost or duplicated time or expense accruing for any reason, to the owner or user or any products sold by the manufacturer, whether claim is made in contract or in tor or under any theory of warranty, negligence or otherwise.

4. The manufacturer reserves the right to make changes in its products from time to time, without incurring any obligation to incorporate such improvements in any products previously sold or in service.

5. The terms and conditions of the warranty cannot be altered without the written consent of the manufacturer.

6. The foregoing warranty is exclusive and in lieu of all other express, statutory and implied warranties **INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE.** There are no warranties which extend beyond the language in the previous six (6) paragraphs.

If you have any further questions, please feel free to call us at our toll-free number, 888-414-3003, email info@k-ksystems.com or look us upon the internet at www.k-ksystems.com.

K&K Systems, inc.

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