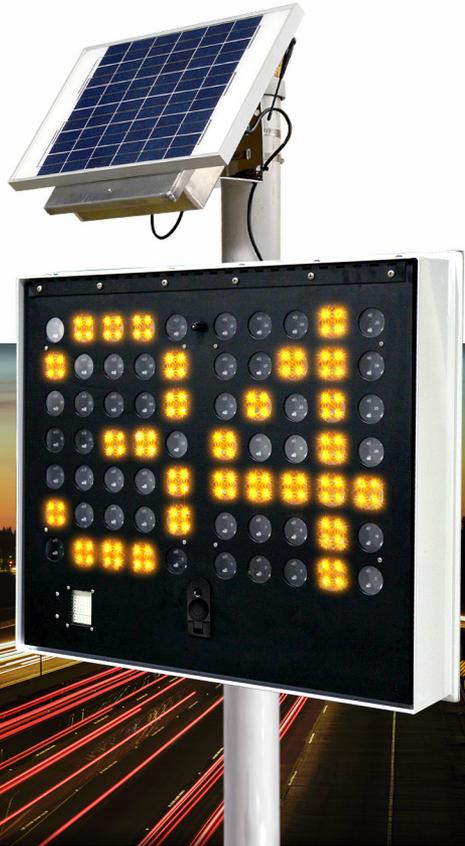




K&K Systems, inc.
Traffic Safety Products Manufacturer



RADAR DISPLAY

OPERATING MANUAL

RPM SERIES RADARS FOR FLORIDA



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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





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 charges, and 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 tort 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-systems.com or look us upon the internet at www.k-systems.com.



INTRODUCTION RADAR DISPLAY

K&K Systems' Radar Displays are designed to keep both pedestrians and vehicular traffic safe by reminding motorists of their speed. By using a violation alert flashing display, the driver's attention is drawn to the radar display. Radar displays have been proven to slow motorist down 5 to 10 MPH.

Our 100,000 rated LED lighting unit displays (2)18" amber digits. Our boards detect speeds from 5-99 MPH. KPH board is available. We install the display in an aluminum housing that has been powder coat painted matte black to prevent glare and rust.

The Radar unit is solar powered with a charge controller and battery power backup. Optional traffic statistics feedback is available.

BATTERY BOX

The control box is steel fabricated with lockable rotary latches and hinged at the top to protect the batteries and the controller. Mounting hardware for lower heights for easier access is available.

DISPLAY HOUSING

The display housing is framed in extruded aluminum and has a polycarbonate plastic that provides U.V. protection along with glare resistance. The message board uses LED (light emitting diodes) to produce numbers.

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.



SAFETY, WARNINGS, PRECAUTIONS

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

- Periodically inspect the unit. This includes but is not limited to the wiring, housing and the Lexan face.
- Periodically check all nuts, bolts, cable clamps, etc. and tighten/ repair/ replace when necessary, where applicable.

Please remember that the best assurance against accidents is a careful and responsible operator.

BATTERY SAFETY (optional)

It is important that you know that, while 12V DC is not likely to cause electrical shock, these batteries can produce unbelievable amounts of current that can instantly melt large tools, burn wires, and heat jewelry to skin searing temperatures. Batteries produce hydrogen gas in the course of normal operation and will explode under certain conditions with disfiguring consequences. One component of a battery, sulfuric acid, will permanently damage clothing, corrode metal, severely irritate your skin, and blind you if it gets into your eyes. You should become familiar with how batteries operate so that you will know how to avoid the dangerous characteristics of a battery.

BATTERY CHARGER SAFETY (optional)

If optional battery charger is installed the battery charger is preset in automatic position. DO NOT CHANGE THESE SETTINGS because of possible overcharging of batteries. Plug cord into a standard 120 volt AC for charging.

SOLAR SAFETY

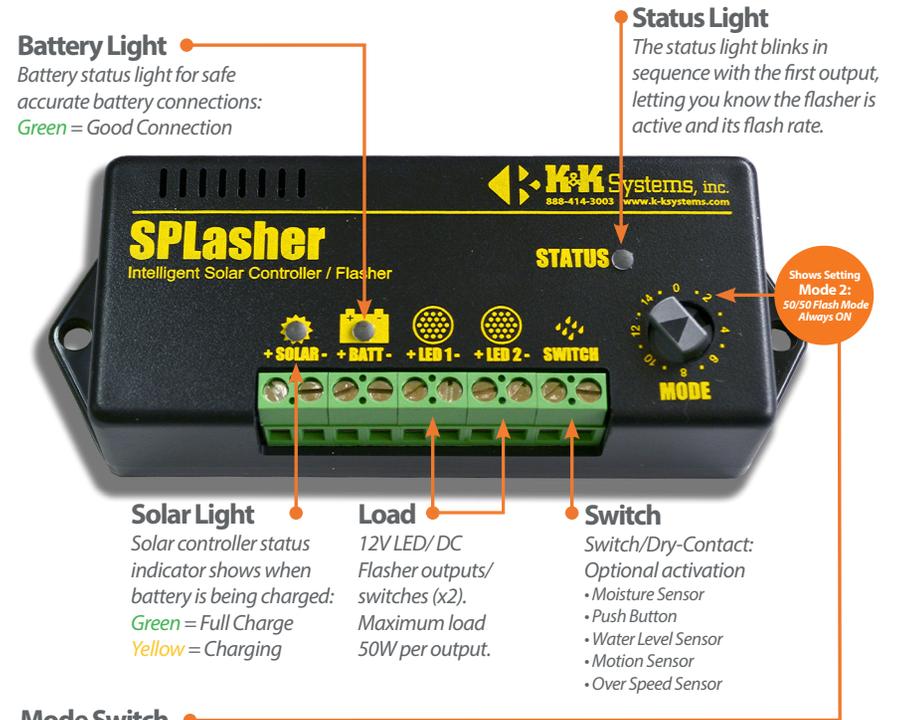
To reduce the risk of shock or burn during maintenance, solar panels should be covered with an opaque material and power converter/battery charger should be disconnected from AC power supply.

LONG-TERM STORAGE

When the sign is to be stored for extended periods of time, the POWER switch should be turned off, and the solar charge controller should be left on, allowing the solar panel array to continuously charge the sign battery bank. If possible, place the unit in a sunny area to allow the unit to maintain the charge on the batteries. When the sign is to begin operation again, a thorough inspection of all systems is advised before the sign is returned to service. Check battery state of charge to confirm over 12V.



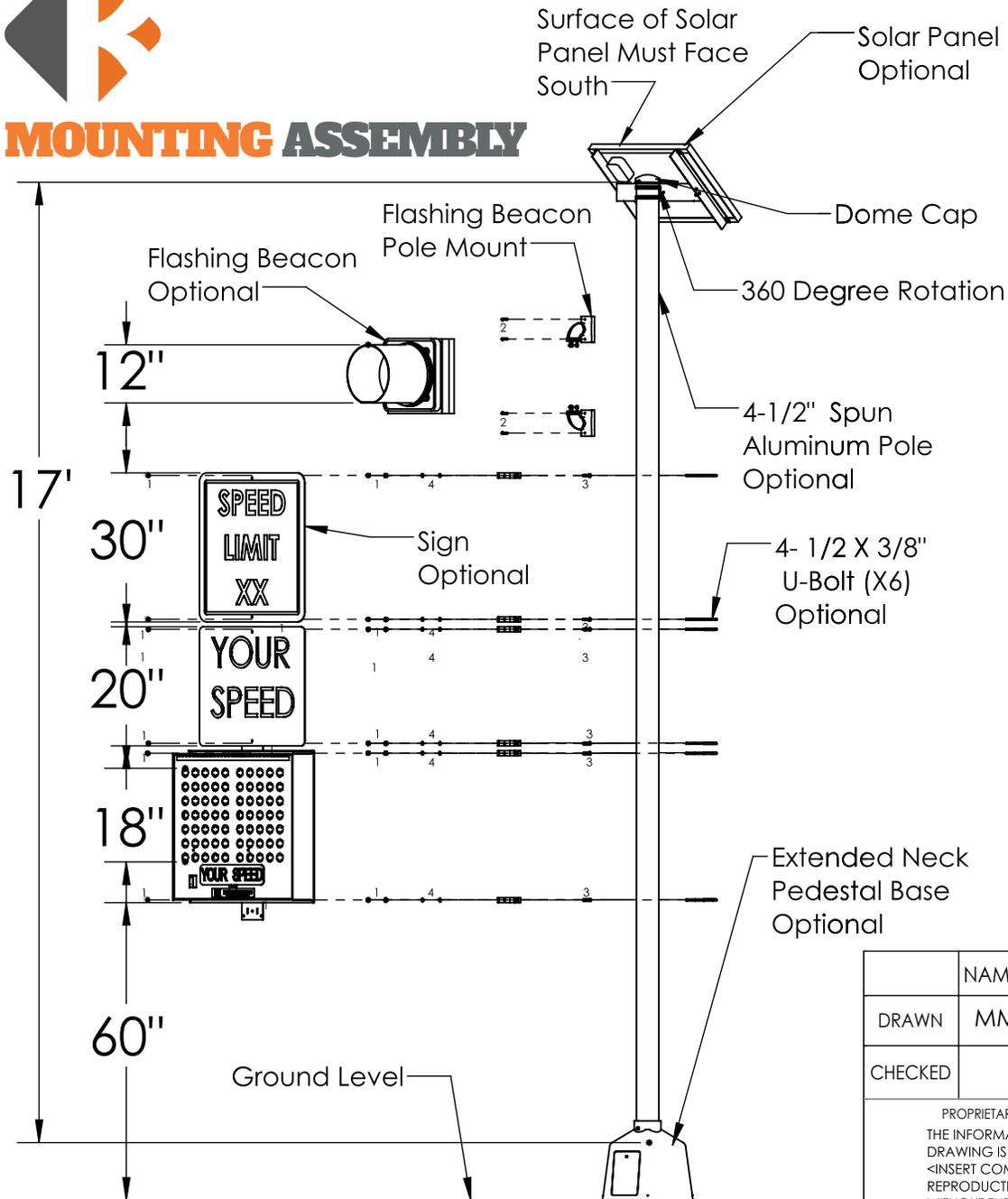
SPLASHER CONTROLLER



Mode	LED1 -	LED2 -	ON
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;	LED2 - 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	



MOUNTING ASSEMBLY



Recommended Hardware (NOT INCLUDED)		
ITEM	Description	QTY.
1	3/8-20 Hex Head Nut	18
2	1/4-20 X 1.25 Hex Head Bolt	4
3	3/8-20 X 1.75 Hex Head Bolt	6
4	3/8 Lock Washer	12

Check Local Codes For All Measurements

Lockable Cabinet prevent unauthorized access.

Flashing beacon assembly can be installed on 4.5 spun aluminum pole.

All exposed assembly hardware including nuts, bolts, screws, and locking washers are less than 5/8 inch in diameter, is Type 304 or 316 passivated stainless steel and meets the requirements of ASTM F593 and ASTM F594.

All assembly hardware greater than or equal to 5/8 inch in diameter is galvanized and meets the requirements of ASTM A307.

Equipment operates on solar power or a nominal voltage of 120 volts alternating current(VAC).

	NAME	DATE
DRAWN	MM	7/2/2018
CHECKED		

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TITLE: RPM-18		
SIZE A	DWG. NO.	REV
SCALE: 1:35		SHEET 1 OF 1

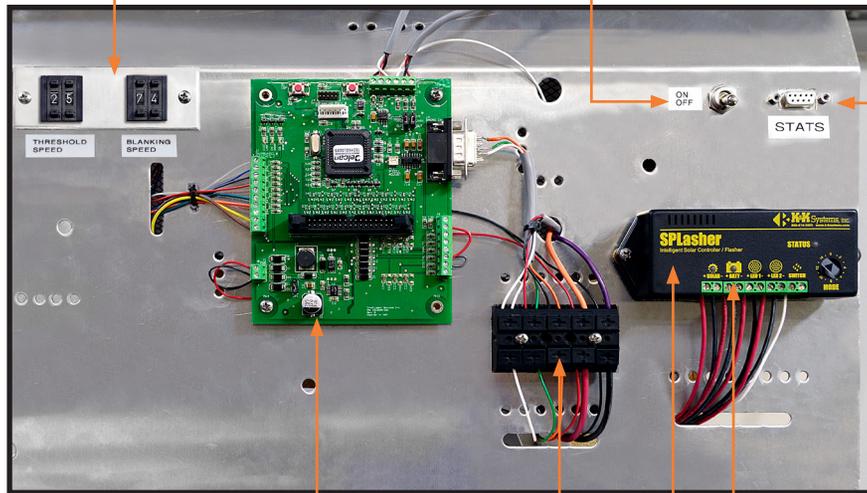


DESCRIPTION OF RADAR COMPONENTS

Quick Selection Violation Alert Switches Thumbwheels change the **Over Speed Violator Alert** speed setting and **Blanking Violator Alert**. Push the buttons to desired speed threshold.

ON/OFF Switch

Stats Port to download traffic statistics (Optional)



6005 Radar Controller

Terminal Block

Battery Status Light

SPLasher solar controller



THRESHOLD AND BLANKING SETTINGS

Press the buttons to set desired speeds.

Press the bottom buttons increase the speed.

Press the top buttons to decrease the speed.



Threshold Speed Setting
Sets the desired **Over Speed** setting. The Over Speed is the speed at which motorists are alerted.

Blanking Speed Setting
Set the speed at which the display blanks/blacks out when exceeded. This prevents drivers from racing against the radar.



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	<ul style="list-style-type: none"> Check if battery light is ON on the Splasher. 	<p>If light is OFF:</p> <ul style="list-style-type: none"> Check for a good connection to the battery Check your battery voltage. <p>If AC:</p> <ul style="list-style-type: none"> Check for voltage from the DC converter. Check for voltage from your AC power lines. 	<p>If battery is good:</p> <ul style="list-style-type: none"> Check for correct polarity of battery wires to the Splasher Check for correct Polarity to radar controller for both DC and AC. 	<p>If the aforementioned is all correct.:</p> <ul style="list-style-type: none"> Please call us 	
No Display	<ul style="list-style-type: none"> Cycle power to radar On start-up, check that "23" is displayed on the unit <p>If yes:</p> <ul style="list-style-type: none"> See No Detection below 	<p>If "23" is not displayed:</p> <ul style="list-style-type: none"> Set dip switches on the panel to 2 and 8 ON and cycle the power. Check LEDs are illuminating. <p>If not:</p> <ul style="list-style-type: none"> Check for power at the green plugs 	<p>If no power at plugs:</p> <ul style="list-style-type: none"> Trace power wires and ensure connection that the Terminal Block 	<p>If LEDs are illuminated:</p> <ul style="list-style-type: none"> Reset dip switches L: 2; R: 1 and 2 Trace gray display cable to radar controller. Ensure proper and correct connection using diagram 	<p>If LEDs are not illuminated and 12V is detected at the plug:</p> <ul style="list-style-type: none"> Please call us
No Detection	<ul style="list-style-type: none"> Check the Threshold and Blanking Speeds are set to Proper settings for the area Aim the radar no greater than 12 degrees from the road (<i>almost parallel to the road</i>) 	<ul style="list-style-type: none"> Activate the radar with a tuning fork (2400Hz generates 33 MPH). <p>If do not have a tuning fork:</p> <ul style="list-style-type: none"> The tuning fork app on a smartphone works Wave the phone over the radar at full volume 	<p>If tuning fork will no activate radar:</p> <ul style="list-style-type: none"> Attempt to connect to radar via stats cable using the provided software Check to sensitivity Check minimum detection speed Check radar output 	<p>If radar is outputting, but not getting data to the controller:</p> <ul style="list-style-type: none"> Check data cable from radar to controller Check display cable to panels Check wiring to Threshold buttons Set Threshold to 0 MPH and Blanking to 99 MPH. Test 	<p>If changing Threshold Speeds does not resolve the issue. If the radar is outputting, but not sending data through the controller:</p> <ul style="list-style-type: none"> Please call us
Not Charging	<p>Your radar operates correctly, but dies after use:</p> <ul style="list-style-type: none"> Please charge the battery with a charger before troubleshooting. 	<p>If battery is charged:</p> <ul style="list-style-type: none"> Check Splasher to see if the Solar Light is on while the sun is out. It should be green if fully charged, amber if its charging. 	<p>If your solar light is not on:</p> <ul style="list-style-type: none"> Pull both solar wires out. Check with a voltmeter, should read at least 15V positive during the day. It can go as high as 22V. 	<p>If your voltage is negative, your polarity is reversed:</p> <ul style="list-style-type: none"> Flip the position of the wires on your Splasher 	<ul style="list-style-type: none"> Check battery with a load tester. <p>If problem continues:</p> <ul style="list-style-type: none"> Please call us



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