

NEW

State of Maine



Master Agreement

Effective Date: 07/05/18

Expiration Date: 07/31/19

Master Agreement Description: Signs, LED Flashing Speed, Stop Signs, Stop Ahead

Buyer Information

William Allen 207-624-7871 ext. NULL WJE.Allen@maine.gov

Issuer Information

SHARON KRECHKIN 207-624-3038 ext. sharon.krechkin@maine.gov

Requestor Information

Sharon Krechkin 207-624-3038 ext. sharon.krechkin@maine.gov

Authorized Departments

17A TRANSPORTATION

Vendor Information

Vendor Line #: 1

Vendor ID

VS0000012369

Vendor Name

K & K Systems, Inc.

Alias/DBA

Vendor Address Information

P. O. Box 1065

Verona, MS 38879

US

Vendor Contact Information

Tim Keith

662-566-2026 ext.

info@k-systems.com

Payment Discount Terms

Discount 1: 1.0000 % 10 Days

Discount 2: % 0 Days

Discount 3: % 0 Days

Discount 4: % 0 Days

Commodity Information

Vendor Line #: 1

Vendor Name: K & K Systems, Inc.

Commodity Line #: 1

Commodity Code: 80160

Commodity Description: Signs, LED Flashing Speed, Stop Signs, Stop Ahead

Commodity Specifications:

Commodity Extended Description: Master Agreement for Flashing Speed & Stop Signs

Quantity

0.00000

UOM

Unit Price

\$0.00

Delivery Days

30

Free on Board

FOB Dest, Freight Prepaid

Contract Amount

\$0.00

Service Start Date

Service End Date

Catalog Name

K and K Sign

Discount

0.0000 %

Discount Start Date

07/05/18

Discount End Date

07/31/19

TERMS & CONDITIONS
MA 180705-002

COMMODITY ITEM: Flashing LED Speed and Stop Signs

CONTRACT PERIOD: Through July 31, 2019. The State of Maine with vendor approval can opt to issue up to two (2) one (1) year extensions.

VENDOR CONTACT PERSON: The contact person will help consumers place orders, inquire about orders that have not been delivered, all shipping issues, quality issues, and any issues pertaining to this Master Agreement. All orders not submitted through a DO will be sent through the contractor's contact person. The contact person will be: **Alice Bingham** Phone: **888-414-3003** Email: ali@k-ksystems.com

EXTENSION OF CONTRACT: The Director of Procurement Services may, with the consent of the contractor extend the Contract period beyond the indicated expiration date.

CANCELLATION OF CONTRACT: The Division of Procurement Services reserves the right to cancel a contract with a thirty-day written notice OR cancel immediately if the contractor does not conform to terms and conditions and specifications of contract.

PRICES: Prices shown are to be net including transportation charges fully pre-paid by the contractor FOB destination. Prices are to remain firm for the duration of the contract.

QUANTITIES: It is understood and agreed that the contract will cover the **actual quantities** required by State Agency over the length of the contract.

ORDERING PROCEDURE: Delivery orders (DO) will be created in AdvantageME for all orders over \$5000.00. If a DO is used, the DO will be e-mailed to the email address set up in AdvantageME by the Vendor as a .pdf file. Orders less than \$5000.00 can be ordered using a P-Card.

INVOICES and PAYMENT: The Contractor shall submit an itemized bill to the Department for materials following delivery for approval and payment. Invoices shall minimally include the following:
Contractor name, address & Contract Number 18P 180705-002, Invoice Date & Number, Dates of Delivery

DELIVERY: The Contractor will be responsible for the delivery of material in first class condition at the point of delivery, and in accordance with good commercial practice. The Contractor shall deliver the materials to the MaineDOT Sign Shop at 66 Industrial Drive in Augusta, ME. The Contractor shall notify MaineDOT, Steve Hunnewell, Telephone 207-592-4801, a minimum of one week prior to delivery for delivery coordination. Alternative contacts is: Robert Rooney, 207-287-2846. The Contractor shall deliver the materials only during the following times: Monday through Friday, 7:00 AM through 3:30 PM except for deliveries may not be made on holidays, or government closure days. The Department will not off-load the materials at the delivery site.

QUARTERLY REPORT: The Division of Procurement Services **requires a quarterly report of sales** be faxed to 207-287-6578 within 30 days of the end of each calendar quarter. It will be the responsibility of the vendor to produce a quarterly report. The report must include the dollar value of goods purchased, broken down by Department as well as the total dollar value of purchases made by all Departments.

PROCUREMENT CARD: State policy requires vendors to accept the State of Maine Procurement Card (P-Card) as a form of payment, with very rare exceptions. Your company will be required to accept these cards. The pricing offered to the State of Maine shall be the final cost to the State of Maine regardless of payment method. No surcharge or other compensation will be allowed. The State of Maine reserves the right to reject your bid if you are unwilling to accept this condition.

Description

The Flashing signs shall meet the material specification section of this section.



Contract Administrator: The contract administrator for this contract will be:

Name: Steve Hunnewell
Title: Assistant State Traffic Engineer
Address: Maine Department of Transportation
16 State House Station Road , Augusta, ME 04333-0016
Phone: 207-592-4801

Dispute Resolution If, in the performance of this Agreement, there arises a dispute between the Contractor and MaineDOT that cannot be resolved by the parties to the Contract, the parties may agree to submit the dispute to non-binding Alternate Dispute Resolution. All disputes shall be governed by Maine law, and all actions shall be filed in the Kennebec Superior Court, in Augusta Maine.

Conformity with Standards Unless otherwise provided in the contract, all materials shall conform to the following standards, as applicable.

- A. MDOT
- B. AASHTO
- C. ASTM
- D. AREMA
- E. Standard conditions and special conditions contained in any permit

- F. Manual on Uniform Traffic Control Devices (MUTCD)
- G. American with Disabilities Act (ADA)

Material Quality Materials and manufactured products shall be new unless otherwise specified, free from defect, and in conformity with the contract. If there is no applicable standard set forth in this Contract for a particular item, then the item shall be in accordance with industry standards prevailing at the time of bid. The Department has the authority to inspect all Materials and every detail of the Work.

When material is fabricated or treated with another material or where any combination of materials is assembled to form a finished product, any or all of which are covered by specifications, the Department may reject the finished product if any of the components do not comply with the specifications. The Department may reject materials not conforming to the Specifications at any time.

Material Specifications The Contractor shall provide and deliver Flashing (LED) Sign: R2-1 Speed Limit (48 inch by 60 inch) as shown on the quantity sheet.

The Manufacturer shall provide a solar-powered BlinkerSign® LED-enhanced sign assembly. This sign's high-intensity Day-Viz® LEDs are visible in all weather and ambient light conditions to increase the conspicuity of the sign. AutoBright™ control circuitry monitors ambient light levels throughout the day and night, and automatically regulates the brightness of the LED array to provide optimum visibility.

The BlinkerSign® LED-enhanced sign is fully compliant with the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD). The LED array's color and shape help to convey the sign type to roadway users, both day and night.

Sign shall have a minimum of 3 years of field history experience. References maybe requested.

Materials: The Day-Viz® BlinkerSign® assembly shall include the following items:

1. Sign

- a. All signs shall conform to 2009 Federal Highway Administration's MUTCD section 2A.07 on retroreflectivity and illumination. MUTCD standards. **MEETS**
- b. The sign face shall have 8 qty White LEDs. **MEETS**
- c. All signs blanks shall be .080" gauge aluminum minimum. **K&K HAS .080 FRONT, .236 BACK SKIN**
- d. Sheeting used shall be 3M™ DG3 diamond grade and include anti-graffiti overlay protection. **MEETS**
- e. All sign assemblies shall use anti-vandal fasteners to mount components to sign and sign to fixture. **MEETS**
- f. The Speed Limit Signs will have the number left blank. ("Speed Limit" will be written on sign, but the speed number area will be left blank). **MEETS**

2. LEDs

- a. Each sign assembly shall consist of up to 8 high power 1 watt Luxeon® LEDs that provide a maximum light intensity of up to 550,000mcd (millicandelas) with a viewing angle of 15°. **MEETS**
- b. Each LED shall be sealed in 7/8" diameter, heat dissipating plastic enclosure to provide resistance to weather and vibration. **MEETS**
- c. All LED enclosures shall be mounted in a 1" hole and ultrasonically welded to the sign assembly to provide maximum strength and rigidity. **BOLTED TOGETHER WITH RUBBER SEAL**
- d. All LEDs shall be wired in strings to activate simultaneously per MUTCD standards and wired in a manner (parallel) that all LEDs continue to flash in the event of failure of an individual LED. **MEETS**
- e. All wire used shall conform to military specifications, MIL-W-16878D, Type D, vinyl nylon jacket. **MEETS**
- f. Wiring shall be encapsulated inside a 1" x 3/8" aluminum extrusion secured to the sign assembly, to provide weather resistance and protection. **IT IS INSERTED IN THE SIGN**
- g. All LED connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 1 meter deep for 30 minutes. Connectors shall be Deutsch DTM series. **MEETS**
- h. Visible from 2 miles line of sight at night and just under 1 mile during daylight hours. **MEETS**

3. Solar Panel

- a. All solar panels shall be up appropriately sized for sign power requirements and all climate and geographical locations. **MEETS**
- b. All panels shall be mounted to an aluminum plate and bracket at an angle of 45°- 60° to provide maximum output. Bracket shall be secured to a 2-3/8" aluminum tube. (NOTE: COLLECTOR MUST FACE SOUTH) **MEETS**
- c. All fasteners used shall be anti-vandal. **MEETS**
- d. Wire used shall conform to military specifications, MIL-W-16878D, Type D, vinyl nylon jacket. **MEETS**
- e. All solar panel connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 1 meter deep for 30 minutes. Connectors shall be Deutsch DTM series. **MEETS**

4. Control Circuit

- a. The control circuit shall have the capability of independently flashing dual outputs. The flashing output current and duty cycle shall be programmable. **MEETS**
- b. The flashing output shall be 50 to 60 flashes per minute with 100msec duration on time. The outputs shall reach the output current as programmed for the duration of the 100msec pulse. **MEETS**
- c. The output current shall be individually programmable for day and night time operation. The day and night time mode will automatically be determined by solar panel charge input and adjust to match ambient lighting conditions. **MEETS**
- d. The controller shall provide 6 levels of brightness control determined by ambient conditions. **MEETS**
- e. The controller will manage the battery charge and LED brightness levels in order to accommodate 17 days of continuous use without any charge. **MEETS**
- f. The control circuit shall operate between the temperatures of -40° to +176°F (-40° to +80°C). **CONFORMAL COATING AND IN A NEMA 3R CABINET**
- g. All circuit connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 1 meter deep for 30 minutes. Connectors shall be Deutsch DTM series. **MEETS**

5. Battery

- a. Battery packs shall be 12 Volt Lead Acid. **YES AGM LEAD ACID**
- b. All batteries shall be sealed and maintenance free. **MEETS**
- c. All batteries shall operate between the temperatures of -40° to +176°F (-40° to +80°C). **MEETS**
- d. All battery connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 1 meter deep for 30 minutes. Connectors shall be Deutsch DTM series. **MEETS**

Warranty: Manufacturer shall offer a 3 year unconditional warranty against all defects in material and workmanship. **MEETS**

643.18 Method of Measurement

Each Flashing (LED) will be measured for payment by the each supplied and delivered.

Appendix D

STATE OF MAINE
DEPARTMENT OF ADMINISTRATIVE AND FINANCIAL SERVICES
DIVISION OF PROCUREMENT SERVICES

Municipality Political Subdivision and School District
Participation Certification

RFQ # 17A1801310000000000409

Master Agreement for Flashing Speed & Stop Signs

The Division of Procurement Services is committed to providing purchasing opportunities for **municipalities, political subdivisions and school districts** in Maine by allowing them access, through our vendors, to our contract pricing. A bidder's willingness to extend contract pricing to these entities will be taken into consideration in making awards.

Will you accept orders from political subdivisions and school districts in Maine at the prices quoted?

Yes

Yes with conditions as follows:

No

Name of Company:

K & K SYSTEMS, INC.

Address:

687 PALMETTO RD. TUPELO, MS 38801

Signature:

Tray G. Keith, Pres.

Date:

2/14/18

SUPPLIER PART NUMBER	ITEM DESCRIPTION	EXTENDED DESCRIPTION	UNIT OF MEASURE	LIST PRICE	DELIVERY DAYS
R1-1-3636-HI-8-DC20	SIGN, STOP LED FLASHING 36 INCH, 8, 1 WATT BULBS	INCLUDES FOB DESTINATION PRICING	EA	\$1,117.31	42
R2-1-2430-HI-8-DC20	SIGN, SPEED LIMIT LED FLASHING, 24 x 30, 8, 1 WATT BULBS	INCLUDES FOB DESTINATION PRICING	EA	\$1,117.31	42
R3-1-3636-HI-8-DC20	SIGN, STOP AHEAD, 36 INCH, 8, 1 WATT BULBS	INCLUDES FOB DESTINATION PRICING	EA	\$1,117.31	42
Wxxxx-3636-HI-8-DC20	SIGN, BLANK LED FLASHING 36 INCH, R4-1, 8, 1 WATT BULBS	INCLUDES FOB DESTINATION PRICING	EA	\$1,117.31	42

February 14, 2018

**BIDDER'S AFFIRMATIVE STATEMENT
FOR RFQ # 17A1801310000000000409**

K & K Systems, Inc. can confirm that the bid that we are submitting does comply with all requirements of this RFQ. If there are any questions or any assistance is needed please contact Alice K. Bingham at 888-414-3003 or 662-566-2025 and ali@k-systems.com

Troy G. Keith, Pres.

**TROY G. KEITH, PRESIDENT
K & K SYSTEMS, INC.
687 PALMETTO RD.
TUPELO, MS 38801
P: 888-414-3003
F: 662-566-2025**



Tel: 888-414-3003
Web: www.k-systems.com
Fax: 662-566-7123
Email: Sales@k-systems.com

MANUFACTURER'S STANDARD 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 three (3) years 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 of 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 of 888-414-3003, email info@k-systems.com or you might want to look us up on the Internet at www.k-systems.com.

643.19 Basis of Payment

The Flashing (LED) Sign will be paid for by each, which payment will be full compensation for furnishing all materials including, but not limited to the Sign, LED's, Solar Panel, Control Circuit, and Battery and all appurtenances and incidentals required for a complete and functioning sign package.

Payment will be made under:

<i>Description</i>	<i>Pay Unit</i>
Flashing (LED) Sign:R1-1 36 inch	Each
Flashing (LED) Sign:R2-1 24x30 inch	Each
Flashing (LED) Sign:R3-1 36 inch	Each
Flashing (LED) Sign:R4-1 36 inch	Each

Vendor K & K SYSTEMS, INC.

SCHEDULE OF ITEMS

<i>Description</i>	<i>Unit Price</i>
Flashing (LED) Sign:R1-1 (36 inch Stop Signs)	<u>\$1,117.31</u>
Flashing (LED) Sign:R2-1 (24 inch by 30 inch Speed Limit)	<u>\$1,117.31</u>
Flashing (LED) Sign:R3-1 (36 inch Stop Ahead)	<u>\$1,117.31</u>
Flashing (LED) Sign:R4-1 (36 Inch blank warning sign)	<u>\$1,117.31</u>

Please include FOB Destination shipping in your bid prices!

K&K Systems

Systems

QUOTATION

687 Palmetto Road
Tupelo, MS 38801
www.k-systems.com

email: ali@k-systems.com
Phone: 662-566-2025
Fax: 662-566-7123 TollFree: 888-414-3003

Quotation #: Q180214AB-1-ME-STATEOFMAINE
Quotation Date: 2/14/2018
Customer Type: Retail

Customer Contact: STEVE HUNNEWELL
Quote Valid: 45 days
Prepared by: **Ali Bingham**

Bill To:	Ship To:
Name: Steve Hunnewell	(Update if different than Bill To address)
Company Name: Maine Department of Transportation	Name: Steve Hunnewell
Street Address: 16 State House Station Rd.	Company Name: Maine Department of Transportation
Address 2:	Street Address: MaineDOT Sign Shop
City, ST ZIP Code Augusta, ME 04333-0016	Address 2: 66 Industrial Drive
Tel: 207-592-4801	City, ST ZIP Code Augusta, ME 04333-0016
Cell:	Tel: 207-592-4801
Fax:	Cell:
email:	Fax:
	email:

Product	Model #	Description	Base Price
	R1-1-3636-HI-8-DC20	Stop Sign - 36", High Intensity, 8 LEDs, DC20 Solar pack with mounting bracket, SPLasher (controller) and 18a battery. Octagon shaped.	\$1,117.31

Packaging Pack On Pallet

Options and Accessories - PER UNIT

QTY per Unit	Item #	Description	Price Each	Price per Unit
1	SA-DG	Use Diamond Grade sheeting instead of High Intensity sheeting.	INCLUDED	INCLUDED
1	SA-AG	Anti-graffiti coating	INCLUDED	INCLUDED

Special Notes

ALL WIRE USED SHALL CONFORM TO MILITARY SPECS/DELIVERY SHALL BE WITHIN 4 WEEKS OF AWARD

Terms of Purchase

FOB: Tupelo, MS 38801
Delivery (weeks): 4-6 Weeks
Warranty: 1 year limited warranty, Factory Depot

Per System Total:	\$1,117.31
Total QTY of Systems: 1	\$1,117.31
Total Shipping Costs:	INCLUDED
Taxes: 7.00%	
GRAND TOTAL:	\$1,117.31

Sales Person Signature:

Sales Manager Signature: Timothy Keith

Work Order#

Client PO#

Please note: The above specifications and quotation does not include shipping, permits, or taxes unless otherwise stated. The freight charge is an approximate estimate for your reference; the actual charge may vary. There will be an additional 3% charge on all credit card orders unless otherwise stated. *Lead-time committed is based on the date Purchase Order is received by K&K Systems and deposit made and/or credit approved. Lead time is not based on the date quoted.

K&K Systems

Systems

QUOTATION

687 Palmetto Road
Tupelo, MS 38801
www.k-systems.com

email: ali@k-systems.com
Phone: 662-566-2025
Fax: 662-566-7123 TollFree: 888-414-3003

Quotation #: Q180214AB-2-ME-STATEOFMAINE	Customer Contact: STEVE HUNNEWELL
Quotation Date: 2/14/2018	Quote Valid: 45 days
Customer Type: Retail	Prepared by: Ali Bingham
Bill To: Name: Steve Hunnewell Company Name: Maine Department of Transportation Street Address: 16 State House Station Rd. Address 2: City, ST ZIP Code Augusta, ME 04333-0016 Tel: 207-592-4801 Cell: Fax: email:	Ship To: (Update if different than Bill To address) Name: Steve Hunnewell Company Name: Maine Department of Transportation Street Address: MaineDOT Sign Shop Address 2: City, ST ZIP Code Augusta, ME 04333-0016 Tel: 207-592-4801 Cell: Fax: email:

Product	Model #	Description	Base Price
	R2-1-2430-HI-8-DC20	Speed Limit Sign - 24"x30", High Intensity, 8 LEDs, DC20 Solar pack with mounting bracket, SPLasher (controller) and 18a battery, Horizontal Rectangle	\$1,117.31

Packaging Pack On Pallet ---

Options and Accessories - PER UNIT				
QTY per Unit	Item #	Description	Price Each	Price per Unit
1	SA-DG	Use Diamond Grade sheeting instead of High Intensity sheeting.	INCLUDED	INCLUDED
1	SA-AG	Anti-graffiti coating	INCLUDED	INCLUDED

Special Notes
ALL WIRE USED SHALL CONFORM TO MILITARY SPECS/DELIVERY SHALL BE WITHIN 4 WEEKS OF AWARD

Terms of Purchase		Per System Total:	
FOB:	Tupelo, MS 38801	Total QTY of Systems: 1	\$1,117.31
Delivery (weeks):	4-6 Weeks	Total Shipping Costs:	INCLUDED
Warranty:	1 year limited warranty, Factory Depot	Taxes: 7.00%	
		GRAND TOTAL:	\$1,117.31

Sales Person Signature: _____ Work Order# _____
 Sales Manager Signature: Timothy Keith Client PO# _____

Please note: The above specifications and quotation does not include shipping, permits, or taxes unless otherwise stated. The freight charge is an approximate estimate for your reference; the actual charge may vary. There will be an additional 3% charge on all credit card orders unless otherwise stated *Lead-time committed is based on the date Purchase Order is received by K&K Systems and deposit made and/or credit approved. Lead time is not based on the date quoted.

K&K Systems

Systems

QUOTATION

687 Palmetto Road
Tupelo, MS 38801
www.k-ksystems.com

email: ali@k-ksystems.com
Phone: 662-566-2025
Fax: 662-566-7123 TollFree: 888-414-3003

Quotation #: **Q180214AB-3-ME-STATEOFMAINE**
Quotation Date: **2/14/2018**
Customer Type: **Retail**

Customer Contact: **STEVE HUNNEWELL**
Quote Valid: **45 days**
Prepared by: **Ali Bingham**

Bill To:	Ship To:
Name: Steve Hunnewell	(Update if different than Bill To address) Name: Steve Hunnewell
Company Name: Maine Department of Transportation	Company Name: Maine Department of Transportation
Street Address: 16 State House Station Rd.	Street Address: MaineDOT Sign Shop
Address 2:	Address 2: 66 Industrial Drive
City, ST ZIP Code: Augusta, ME 04333-0016	City, ST ZIP Code: Augusta, ME 04333-0016
Tel: 207-592-4801	Tel: 207-592-4801
Cell:	Cell:
Fax:	Fax:
email:	email:

Product

Model #	Description	Base Price
Wxxxx-3636-HI-8-DC20	Generic Square Sign (MUTCD # needed) - 36", High Intensity, 8 LEDs, DC20 Solar pack with mounting bracket, SPLasher (controller) and 18a battery. Square shaped.	\$1,117.31

Packaging

Pack On Pallet

Options and Accessories - PER UNIT

QTY per Unit	Item #	Description	Price Each	Price per Unit
1	SA-DG	Use Diamond Grade sheeting instead of High Intensity sheeting.	INCLUDED	INCLUDED
1	SA-AG	Anti-graffiti coating	INCLUDED	INCLUDED

Special Notes

SIGN TO BE R3-1 (STOP AHEAD)/ALL WIRE USED SHALL CONFORM TO MILITARY SPECS/ DELIVERY SHALL BE WITHIN 4 WEEKS OF AWARD

Terms of Purchase

FOB: Tupelo, MS 38801
Delivery (weeks): 4-6 Weeks
Warranty: 1 year limited warranty, Factory Depot

Per System Total: **\$1,117.31**
Total QTY of Systems: 1 **\$1,117.31**
Total Shipping Costs: **INCLUDED**
Taxes: **7.00%**
GRAND TOTAL: \$1,117.31

Sales Person Signature:

Work Order#

Sales Manager Signature: Timothy Keith

Client PO#

Please note: The above specifications and quotation does not include shipping, permits, or taxes unless otherwise stated. The freight charge is an approximate estimate for your reference; the actual charge may vary. There will be an additional 3% charge on all credit card orders unless otherwise stated. *Lead-time committed is based on the date Purchase Order is received by K&K Systems and deposit made and/or credit approved. Lead time is not based on the date quoted.

K&K Systems

Systems

QUOTATION

687 Palmetto Road
 Tupelo, MS 38801
www.k-ksystems.com

email: ali@k-ksystems.com
 Phone: 662-566-2025
 Fax: 662-566-7123 TollFree: 888-414-3003

Quotation #: Q180214AB-4-ME-STATEOFMAINE
 Quotation Date: 2/14/2018
 Customer Type: Retail

Customer Contact: STEVE HUNNEWELL
 Quote Valid: 45 days
 Prepared by: **Ali Bingham**

Bill To:	Ship To:
Name: Steve Hunnewell	(Update if different than Bill To address)
Company Name: Maine Department of Transportation	Name: Steve Hunnewell
Street Address: 16 State House Station Rd.	Company Name: Maine Department of Transportation
Address 2:	Street Address: MaineDOT Sign Shop
City, ST ZIP Code Augusta, ME 04333-0016	Address 2: 66 Industrial Drive
Tel: 207-592-4801	City, ST ZIP Code Augusta, ME 04333-0016
Cell:	Tel: 207-592-4801
Fax:	Cell:
email:	Fax:
	email:

Product

Model #	Description	Base Price
Wxxxx-3636-HI-8-DC20	Generic Square Sign (MUTCD # needed) - 36", High Intensity, 8 LEDs, DC20 Solar pack with mounting bracket, SPLasher (controller) and 18a battery. Square shaped.	\$1,117.31

Packaging Pack On Pallet --- ---

Options and Accessories - PER UNIT

QTY per Unit	Item #	Description	Price Each	Price per Unit
1	SA-DG	Use Diamond Grade sheeting instead of High Intensity sheeting.	INCLUDED	INCLUDED
1	SA-AG	Anti-graffiti coating	INCLUDED	INCLUDED

Special Notes

SIGN TO BE R4-1 (36 IN BLANK WARNING SIGN)/ALL WIRE USED SHALL CONFORM TO MILITARY SPECS/DELIVERY SHALL BE WITHIN 4 WEEKS OF AWARD

Terms of Purchase

FOB: Tupelo, MS 38801
 Delivery (weeks): 4-6 Weeks
 Warranty: 1 year limited warranty, Factory Depot

Per System Total: \$1,117.31
 Total QTY of Systems: 1 \$1,117.31
 Total Shipping Costs: INCLUDED
 Taxes: 7.00%
 GRAND TOTAL: \$1,117.31

Sales Person Signature:

Work Order#

Sales Manager Signature: Timothy Keith

Client PO#

Please note: The above specifications and quotation does not include shipping, permits, or taxes unless otherwise stated. The freight charge is an approximate estimate for your reference; the actual charge may vary. There will be an additional 3% charge on all credit card orders unless otherwise stated *Lead-time committed is based on the date Purchase Order is received by K&K Systems and deposit made and/or credit approved. Lead time is not based on the date quoted.

February 14, 2018

K & K Systems, Inc. will meet all material specifications listed on RFQ # 17A1801310000000000409.

1. SIGN

- A. MEETS
- B. MEETS
- C. MEETS. HAS .080 FRONT WITH .236 BACK SKIN
- D. MEETS
- E. MEETS
- F. MEETS

2. LEDs

- A. MEETS. 1 WATT LED
- B. MEETS
- C. BOLTED TOGETHER WITH RUBBER SEAL
- D. MEETS
- E. MEETS
- F. IT IS INSERTED IN THE SIGN
- G. MEETS
- H. MEETS

3. SOLAR PANEL

- A. MEETS
- B. MEETS
- C. MEETS
- D. MEETS
- E. MEETS

4. CONTROL CIRCUIT

- A. MEETS
- B. MEETS
- C. MEETS
- D. MEETS
- E. MEETS
- F. CONFORMAL COATING AND IN A NEMA 3R CABINET
- G. MEETS
- H. PLACED IN A NEMA 3R CABINET

5. BATTERY

- A. YES AGM LEAD ACID
- B. MEETS
- C. MEETS
- D. MEETS

WARRANTY: MEETS. K & K SYSTEMS, INC. IS INCLUDING A 3 YEAR UNCONDITIONAL WARRANTY

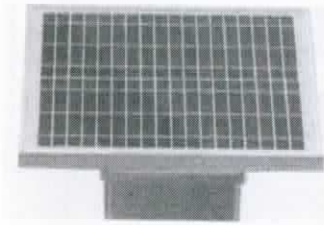
If there are any questions or any assistance is needed please contact Alice Bingham at 888-414-3003 or 662-566-2025 and ali@k-systems.com

Troy G. Keith, Pres.

**TROY G. KEITH, PRESIDENT
K & K SYSTEMS, INC.
687 PALMETTO RD.
TUPELO, MS 38801
P: 888-414-3003
F: 662-566-7123**

MUTCD Sign Alert Systems

Solar



- Laminate: Glass /EVA / TPT (tedlar/pet/tedlar) or TP E
- Front Side: High-transmission 3.2mm tempered glass
- Back Side: TPT /TPE
- Frame: Clear anodized aluminum frame
- Output: Junction box
- Watts: 10W – 40W

LEDs



- Type: Round
- Size: 20mm
- DC Voltage (V): 12
- DC Voltage (A): .30
- Lumen, RED, AMBER or WHITE (per 2009 MUTCD Section 2A.07)

SPLasher



- Built-in solar controller/battery charger/2 channel flasher 50/50
- Advanced solar charger with Maximum Power-Point Tracking (MPPT)
- Multi-stage battery charger to maximize battery life
- Wide solar panel input voltage – up to 32VDC
- LED flasher outputs (x2)
- Intelligent auto-dimming for maximum battery run-time
- Operating temperature: -40°C to +85°C

Battery



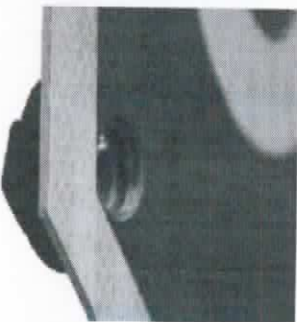
- SLA Type: AGM
- Voltage: 12VDC
- 20 A.H. Rate: 10.0A or 18.0A

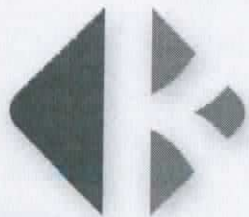
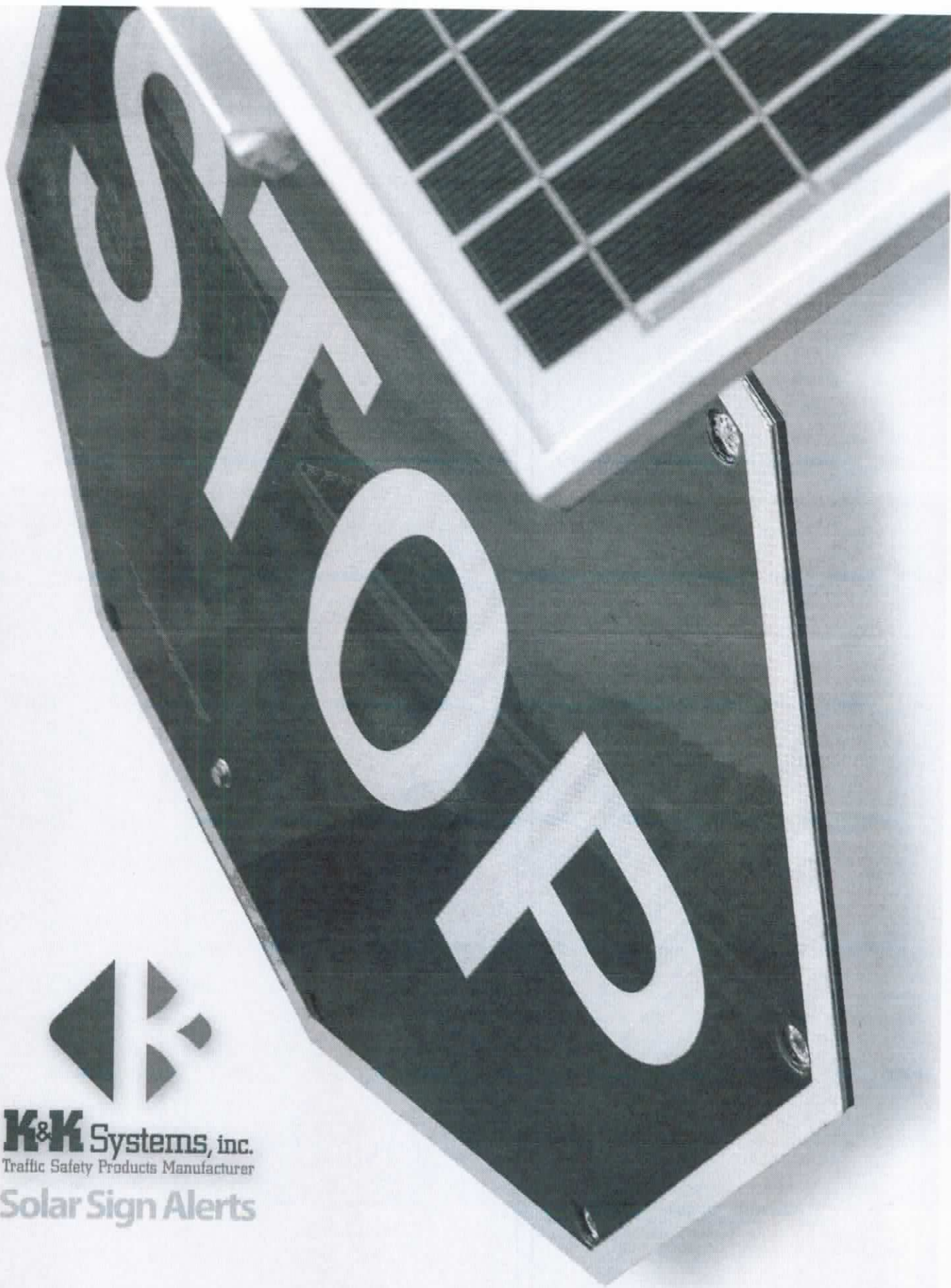
Composite

- Aluminum on both sides coated with polyester paint (.30 mm each)
- High Density Polyethylene (HDPE) core (5.4mm)
- Heavier aluminum to prevent surface dings and resists scratching and denting better than any other substrate

MUTCD Signs

- .080 Aluminum sheeting
- Reflective surface sheeting grade per state specifications





K&K Systems, inc.
Traffic Safety Products Manufacturer

Solar Sign Alerts



Solar Sign Alert Systems

Solar-Powered LED Inserts for Highway Signs

Brighter signs mean safer roads.

K&K Systems' Solar Sign Alert Systems are powered by a solar panel and designed to enhance the visibility of highway signs in any weather conditions to increase road safety. With Sign Alert's ultra-bright LEDs, drivers are cautioned in advanced of dangerous intersections or curves, hazardous road conditions, or entering work zones or school zones and much more. K&K's smart controller allows our sign alert systems to preserve energy and battery life with its auto-dimming feature while maintaining brightness. K&K Sign Alert Systems paired with K&K SMART Add-Ons can be activated using our moisture sensor, radar sensor, high water sensor, push button, key fob remote, or by using any one of our timing systems such as the CrossTalk. Any sign can be a Sign Alert! Download our Sign Alert app for Apple or Android to build your own Sign Alert and get an instant quote.



apple



android

K&K Systems, Inc. has been serving the traffic industry since 1997. Since that time we have become a leader in the traffic safety industry. K&K Systems offers a complete line of traffic safety products that include solar beacons, variable message boards, arrow boards, radar speed monitors, solar school zone flashers, solar 24-hour stop beacons, solar 24-hour warning flashers, and many other quality products that serve our industry today.

Should K&K not have a system that meets your needs, we will custom design a system to meet your specifications.



Warning Signs

Solar Warning Sign Alert Systems are perfect for enhancing any warning sign. Our advanced Warning Sign Alert Systems are equipped with high-intensity, optimized LED inserts to enhance the signs visibility and create advanced warning to drivers. In addition, our warning signs can be activated using any of the available add-on devices located on the back of this brochure.

DANGEROUS INTERSECTION 24" W3-66 30" W3-66 36" W3-66	STOP AHEAD 24" W3-1A 30" W3-1A 36" W3-1A	ROAD FLOODED 24" W18-2 30" W18-2 36" W18-2	WATER OVER ROAD 24" W15-6 30" W15-6 36" W15-6	NARROW BRIDGE 24" W2-2A 30" W2-2A 36" W2-2A	LOOSE GRAVEL 24" W8-7 30" W8-7 36" W8-7	DIP 24" W8-2 30" W8-2 36" W8-2	PAVEMENT ENDS 24" W8-1A 30" W8-1A 36" W8-1A	SOFT SHOULDER 24" W8-4 30" W8-4 36" W8-4	TRUCK CROSSING 24" W8-6 30" W8-6 36" W8-6	DEAF CHILD AREA 24" W16-4 30" W16-4 36" W16-4	BUMP 24" W8-1 30" W8-1 36" W8-1	ROAD MAY FLOOD 24" W18-18 30" W18-18 36" W18-18	ROAD NARROWS 24" W5-1 30" W5-1 36" W5-1	
LIMITED SIGHT DISTANCE 24" W14-4 30" W14-4 36" W14-4	NO OUTLET 24" W14-2 30" W14-2 36" W14-2	ONE LANE BRIDGE 24" W5-1 30" W5-1 36" W5-1	LANE ENDS MERGE LEFT 24" W9-2 30" W9-2 36" W9-2	LANE ENDS MERGE RIGHT 24" W9-2R 30" W9-2R 36" W9-2R	DEAD END 24" W14-1 30" W14-1 36" W14-1	BRIDGE ICES BEFORE ROAD 24" W8-11 30" W8-11 36" W8-11	SLIPPERY WHEN WET 24" W8-5A 30" W8-5A 36" W8-5A	CAUTION 24" W-64 30" W-64 36" W-64	HIGH WATER 24" W16-5 30" W16-5 36" W16-5	STREET CLOSED 24" W-62 30" W-62 36" W-62	SPEED BUMP AHEAD 24" W16-7 30" W16-7 36" W16-7	IMPASSABLE DURING HIGH WATER 24" W18-1 30" W18-1 36" W18-1	TRUCKS ENTERING HIGHWAY 24" W16-3 30" W16-3 36" W16-3	
RIGHT LANE ENDS 24" W9-1 30" W9-1 36" W9-1	LEFT LANE ENDS 24" W9-1L 30" W9-1L 36" W9-1L	ROAD CLOSED 24" W5-5 30" W5-5 36" W5-5	LOW SHOULDER 24" W8-9B 30" W8-9B 36" W8-9B	BRIDGE OUT 24" W8-11 30" W8-11 36" W8-11	UNEVEN LANES 24" W8-11A 30" W8-11A 36" W8-11A	ROUGH ROAD 24" W8-8 30" W8-8 36" W8-8	SLOW 24" W8-9 30" W8-9 36" W8-9	PEDESTRIAN CROSSING 24" W-34 30" W-34 36" W-34	NO PASSING ZONE 36" x 48" x 48" W14-3	SPEED HUMP 24" W17-1A 30" W17-1A 36" W17-1A	WATCH FOR ICE ON BRIDGES 24" W18-5 30" W18-5 36" W18-5	YIELD 24" W3-3L 30" W3-3L 36" W3-3L	T-INTERSECTION 24" W2-3R 30" W2-3R 36" W2-3R	
CURVE RIGHT 24" W1-3R 30" W1-3R 36" W1-3R	CURVE LEFT 24" W1-3L 30" W1-3L 36" W1-3L	RIGHT TURN AHEAD 24" W1-2R 30" W1-2R 36" W1-2R	LEFT TURN AHEAD 24" W1-2L 30" W1-2L 36" W1-2L	MERGE 24" W8-15 30" W8-15 36" W8-15	LANE REDUCTION 24" W4-1 30" W4-1 36" W4-1	NO U-TURN 24" W2-9 30" W2-9 36" W2-9	NO LEFT TURN 24" W10-1 30" W10-1 36" W10-1	NO RIGHT TURN 24" W10-2 30" W10-2 36" W10-2	NO TRUCKS 24" W10-3 30" W10-3 36" W10-3	NO MOTORCYCLES 24" W10-4 30" W10-4 36" W10-4	NO BICYCLES 24" W2-2 30" W2-2 36" W2-2	NO PEDESTRIANS 24" W2-4 30" W2-4 36" W2-4	NO TRUCKS ON HIGHWAY 24" W4-2 30" W4-2 36" W4-2	
RIGHT TURN YIELD 24" W1-4R 30" W1-4R 36" W1-4R	LEFT TURN YIELD 24" W2-1 30" W2-1 36" W2-1	YIELD 36" x 18" W1-6 48" x 24" W1-6	YIELD 36" x 18" W1-7 48" x 24" W1-7	BICYCLES CROSSING 18" x 18" W11-15	PEDESTRIAN CROSSING 24" W12-1 30" W12-1 36" W12-1	PEDESTRIAN CROSSING 24" W11-2A 30" W11-2A 36" W11-2A	SPEED LIMIT 45 24" W3-9 30" W3-9 36" W3-9	SPEED LIMIT 24" W3-15 30" W3-15 36" W3-15	SPEED LIMIT 24" W3-25 30" W3-25 36" W3-25	SPEED LIMIT 24" W1-15 30" W1-15 36" W1-15	12-6 24" W12-25 30" W12-25 36" W12-25	TRAILER CROSSING 18" x 12" W11-15P 24" x 18" W11-15P	PEDESTRIAN CROSSING 18" x 12" W11-15P 24" x 18" W11-15P	
HORSE CROSSING 24" W11-7S 30" W11-7S 36" W11-7S	TRACTOR CROSSING 24" W11-8S 30" W11-8S 36" W11-8S	TRACTOR CROSSING 24" W11-10S 30" W11-10S 36" W11-10S	TRACTOR CROSSING 24" W11-11S 30" W11-11S 36" W11-11S	TRACTOR CROSSING 24" W11-14 30" W11-14 36" W11-14	TRACTOR CROSSING 24" W11-15S 30" W11-15S 36" W11-15S	TRACTOR CROSSING 24" W11-6S 30" W11-6S 36" W11-6S	TRACTOR CROSSING 24" W11-15 30" W11-15 36" W11-15	TRACTOR CROSSING 24" W8-5S 30" W8-5S 36" W8-5S	TRACTOR CROSSING 24" W7-15 30" W7-15 36" W7-15	TRACTOR CROSSING 24" W11-35 30" W11-35 36" W11-35	30 MPH 18" x 18" W13-1R18 12" x 16" OM-3C	12-6 12" x 16" G-10SR 6" x 10SR	12-6 12" x 16" G-10SL 6" x 10SL	12-6 10" x 10" G-10SR 6" x 24" G-10SL

*Replace R with L for Left Arrow

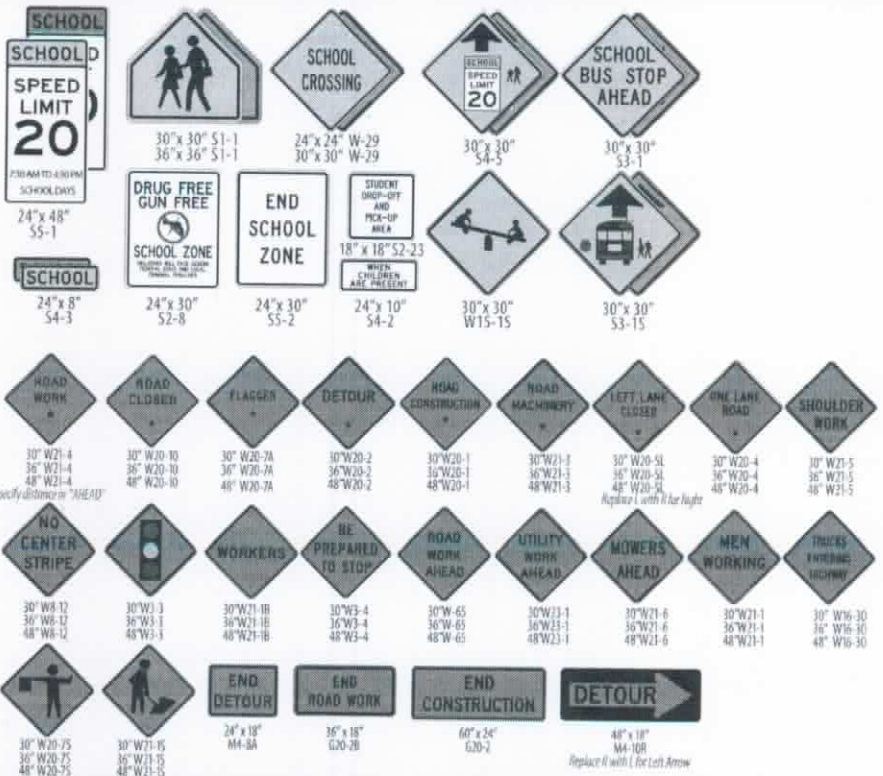
Specify height
Justify letter face on
numerical 1, from 5-15

School Signs

K&K Systems' Solar School Sign Alerts feature high-intensity LEDs that can be programmed to activate during specific times of the day to reflect when students are present using one of three methods:

- **7-Day Timer**
- **CrossLink** which allows users to schedule times wirelessly via computer for a single location.
- **Web-Based** which allows users to schedule or activate multiple sign alerts at multiple locations.

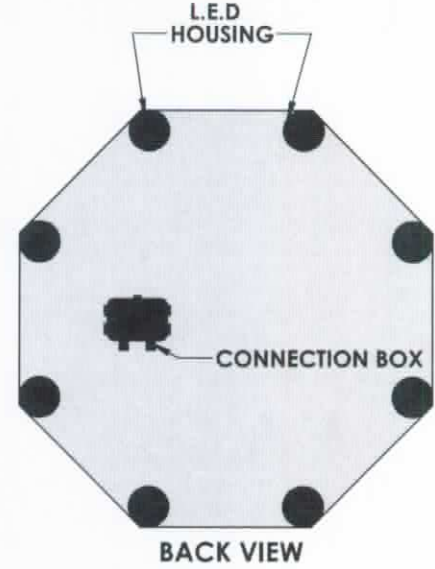
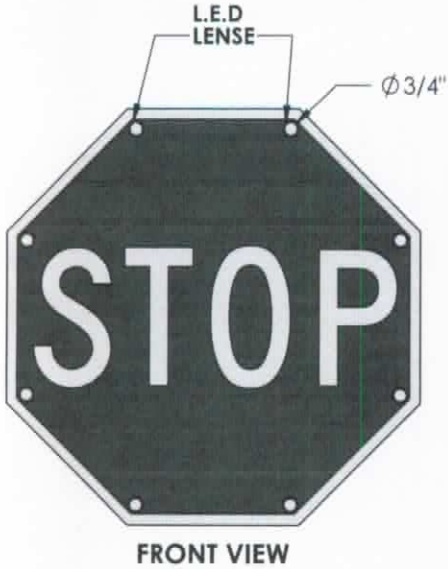
Our timer-activated systems are easy to use no matter the system you choose. See the back page for more information.



Construction Signs

K&K Systems' Solar Alerts Construction Warning Signs are designed for areas that are under long-term or short-term construction. They alert vehicular traffic to use extreme caution when approaching the area due to working personnel and equipment, changing road surfaces, as well as, lane or route reconfigurations. Our high-intensity signage is optimized with LED inserts that enhance the visibility of the sign to provide an advanced systems that can be activated using any of the options on the back of this brochure.

R1-1 "PER STATE DOT REGULATIONS"

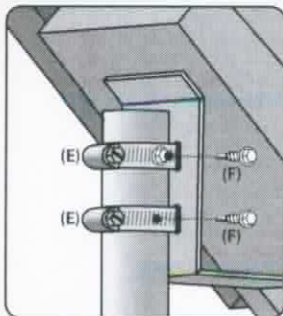


OFFICE: (662)-566-2025 WWW.k-ksystems.com		
TITLE: R1-1 RED L.E.D STOP SIGN		
SIZE A	DWG. NO.	REV
SCALE: 1:8		SHEET 1 OF 1

PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF "INSERT COMPANY NAME HERE". ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF "INSERT COMPANY NAME HERE" IS PROHIBITED.

MUTCD SIGN ALERT SYSTEMS

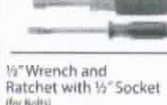
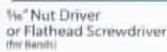
For Signs up to 36" wide



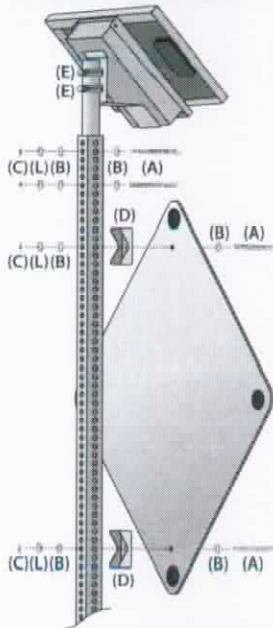
Solar Panel must point South.

Drive Self-tapping screws through side of Bands and into post to prevent unwanted rotation and slipping of Solar Panel.

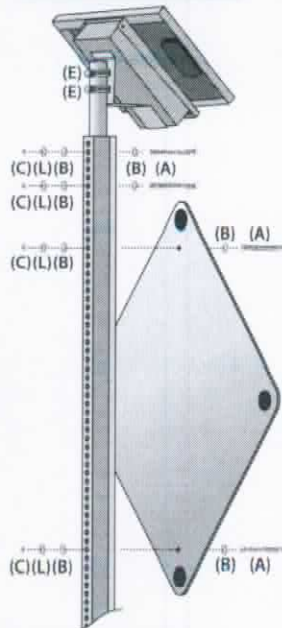
Tools Required



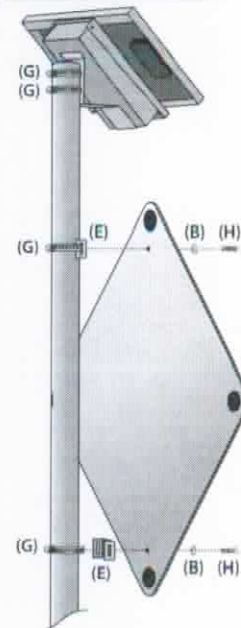
Square Post mount



U-Channel mount



Round Post mount



Square Post and U-Channel			Round Pole		
Item	Description	Quantity	Item	Description	Quantity
(A)	3/8" x 4-1/2" All-thread bolts	(4)	(G)	4-1/2" Bands	(4)
(B)	3/8" Washers	(8)	(F)	Self-tapping screws	(4)
(C)	3/8" Nuts	(4)	(H)	3/8" Washers	(2)
(D)	4" mounting brackets (Square post only)	(2)	(I)	3/4" x 1/2" All-thread bolts	(2)
(E)	2" bands	(2)	(E)	1-1/2" Pre-threaded Mounting brackets	(2)
(F)	Self-tapping screws	(2)			
(L)	3/8" Lock Washers				

K&K Systems, inc.
Traffic Safety Products Manufacturer
www.k-ksystems.com
Office (888) 414-3003

MSAS 12/28/2016

SPLasher™

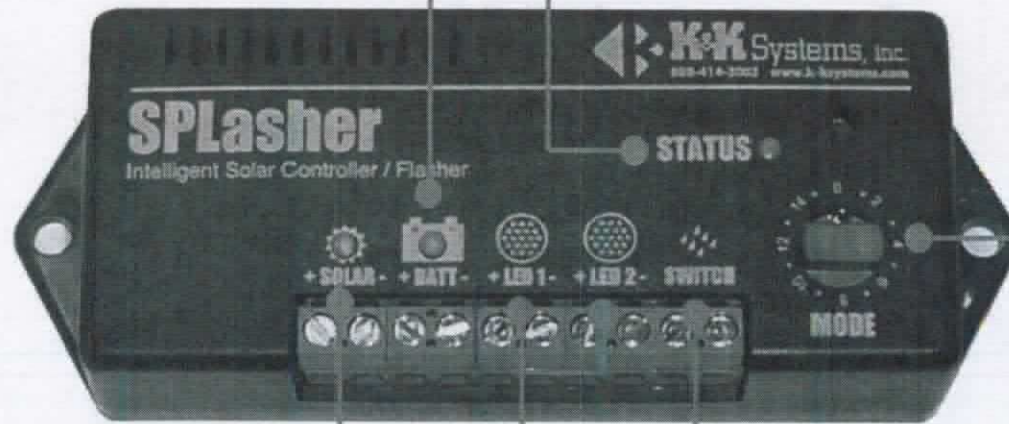
Solar Beacon Control

Battery Light

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

Status Light

The status light flashes in sequence with the first output, letting you know the flasher is active and at what rate it is flashing



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
- Water Level Sensor
- Motion Sensor
- Overspeed Sensor

Key Points

- All-In-One Solar Controller, Flasher, and Auto-Dimmer
- Maximum Power Point Tracking (MPPT)- Extract maximum power from the solar panel regardless of environment
- Multi-Stage Battery Charger to Maximize Battery Life.
- Works with all 24/7 LED beacons and most specialty lights
- Small compact design
- LED flasher outputs (x2)
- Microprocessor-based Smart Controller
- Duty Cycle adjustable between 10% and 50%
- OEM/Custom options available

MODE Switch

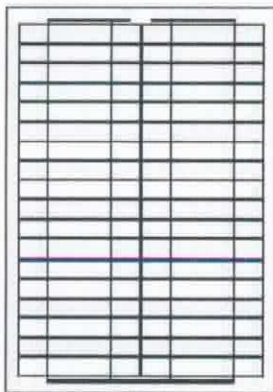
- 0: 50/50 Flash Mode -24/7
- 1: 50/50 Flash Mode -Switched -1 minute
- 2: 50/50 Flash Mode -Switched -3 minutes
- 3: 50/50 Flash Mode -Switched -(1 sec) Custom time
- 4: 90/10 Flash Mode -24/7
- 5: 90/10 Flash Mode -Switched -1 minute
- 6: 90/10 Flash Mode -Switched -3 minutes
- 7: 90/10 Flash Mode -Switched -(1 sec) Custom time
- 8: 50/50 -90/10 24/7 flasher (LED1=50/50, LED2= 90/10)
- 9: 50/50 -90/10 Switch or radio triggered 1 minute flasher (LED1=50/50, LED2 = 90/10)
- 10: 50/50 - 90/10 Switch or radio triggered 3 - minute flasher (LED1 = 50/50, LED2 = 90/10)
- 11: 50/50 - 90/10 Switch or radio triggered (1 sec) Custom time (LED 1 = 50/50, LED2 = 90/10)
- 12: ON-No Flash-No Dimming - Switched (1sec) Custom time
- 13: Wig/Wag; Switched (1sec) Custom time
- 14: Wig/Wag - Switch or radio triggered 3-minute flasher
- 15: Wig/Wag - Switch or radio triggered 1- minute flasher

Wireless Control

Optional wireless antenna module for remote control



DS-A1-20 Panels Specifications



Laminate: Glass /EVA / TPT (tedlar/pet/tedlar) or TPE

Front Side: High-transmission 3.2mm tempered glass

Back Side: TPT /TPE

Frame: Clear anodized aluminum frame

Output: Junction box

Module Type	Pm(Wp)±5% (Watts)	Vmpp(V)	Impp(A)	Voc(V)	Isc(A)	Module size	NET
DS-A1-20	20	17.3	1.16	21.6	1.29	530*340*25 (mm) 20.9*13.4*1 (inch)	2.3 kg 5.07 lbs

Operation Temperature Range: - 40°C ~ 85°C

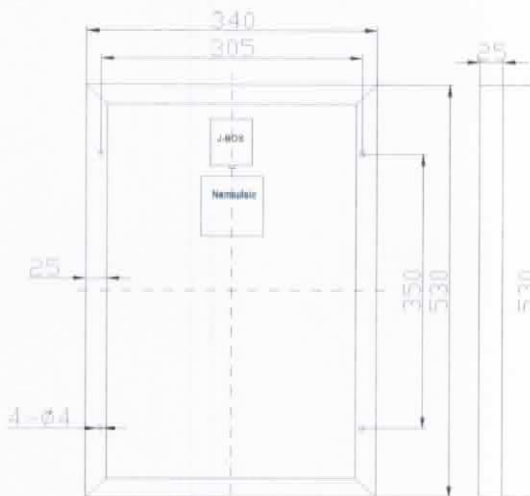
NOCT: 48°C±3C

Temperature coefficients of Im: + 0.1 %/C

Temperature coefficients of Vm: - 0.38 %/°C

Maximum System Voltage: DC715V

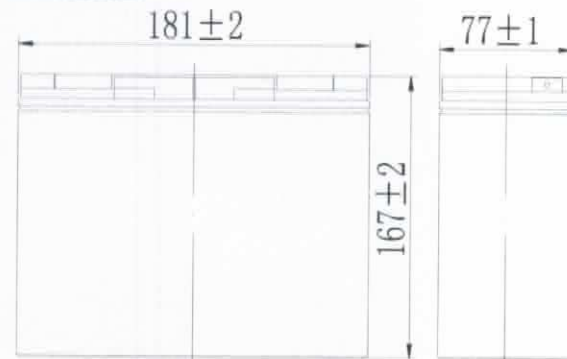
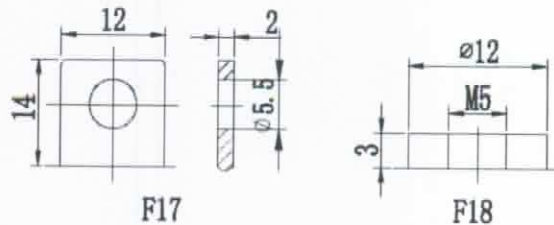
STC: 1000W/m², 25°C, AM1.5



All the data on this sheet is subject to change without notice.

Specifications

Nominal Voltage		12 V
Capacity (25°C)	20HR(10.5V)	18 Ah
	10HR(10.5V)	16.8Ah
	1HR(9.60V)	11.8Ah
Dimension	Length	181±2mm (7.13inch)
	Width	77±1mm (3.03inch)
	Height	167±2mm (6.57inch)
	Total Height	167±2mm (6.57inch)
Approx. Weight		5.25kg (11.57lbs)±5%
Terminal type		F17/F18
Internal resistance (Fully charged, 25°C)		Approx. 16mΩ
Capacity affected by temperature (20HR)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Self-discharge (25°C)	3 month	Remaining Capacity: 91%
	6 month	Remaining Capacity: 82%
	12 month	Remaining Capacity: 65%
Nominal operating temperature		25°C±3°C(77°F±5°F)
Operating temperature range	Discharge	-15°C~50°C(5°F~122°F)
	Charge	-10°C~50°C(14°F~122°F)
	Storage	-20°C~50°C(-4°F~122°F)
Float charging voltage(25°C)		13.60 to 13.80V Temperature compensation: -18mV/°C
Cyclic charging voltage(25°C)		14.50 to 15.00V Temperature compensation: -30mV/°C
Maximum charging current		5.4A
Maximum discharge current		270A(5 sec.)
Designed floating life(20°C)		5 years


Dimensions

Terminal

Constant Current Discharge Characteristics (A, 25°C)

F.V/TIME	10min	15min	30min	60min	2h	3h	4h	5h	8h	10h	20h
9.60V	43.6	34.0	19.2	11.8	6.45	4.46	3.69	3.14	2.04	1.70	0.91
9.90V	42.3	33.2	18.8	11.6	6.41	4.44	3.67	3.12	2.03	1.70	0.91
10.2V	40.5	32.0	18.2	11.3	6.35	4.40	3.64	3.10	2.01	1.69	0.91
10.5V	38.8	30.9	17.8	11.1	6.26	4.37	3.62	3.08	2.00	1.68	0.90
10.8V	36.6	29.3	17.1	10.8	6.10	4.24	3.51	2.99	1.94	1.65	0.88

Constant Power Discharge Characteristics (Watt, 25°C)

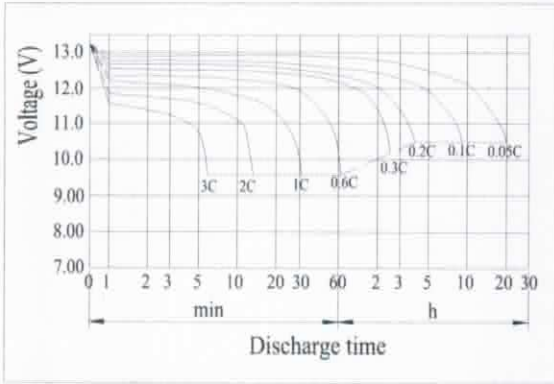
F.V/TIME	10min	15min	30min	60min	2h	3h	4h	5h	8h	10h	20h
9.60V	491	388	220	137	75.5	53.0	44.0	37.5	24.5	20.5	11.0
9.90V	477	379	215	134	75.0	52.7	43.7	37.3	24.3	20.4	10.9
10.2V	457	365	209	131	74.3	52.3	43.4	37.0	24.1	20.3	10.9
10.5V	437	352	204	128	73.2	52.0	43.1	36.8	24.0	20.2	10.8
10.8V	413	334	196	125	71.4	50.4	41.8	35.6	23.3	19.7	10.6

Note: The above characteristics data can be obtained within three charge/discharge cycles.

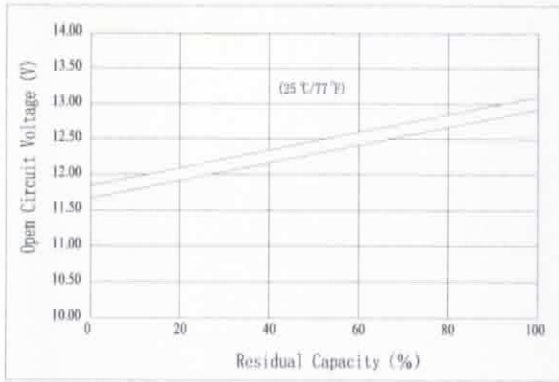
Construction

Component	Positive plate	Negative plate	Container	Cover	Separator	Electrolyte	Safety valve	Terminal
Raw material	Lead dioxide	Lead	ABS	ABS	AGM	Sulfuric acid	Rubber	Copper

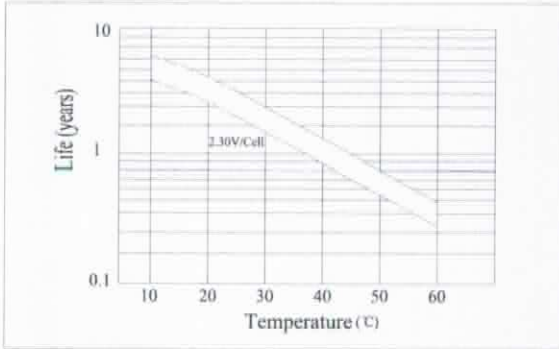
Discharge Characteristics(25°C)



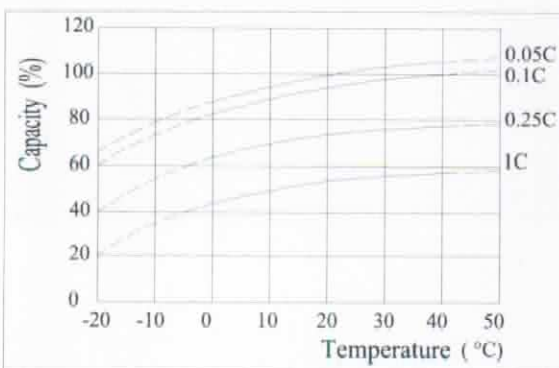
The Relationship for Open Circuit Voltage and Residual Capacity (25°C)



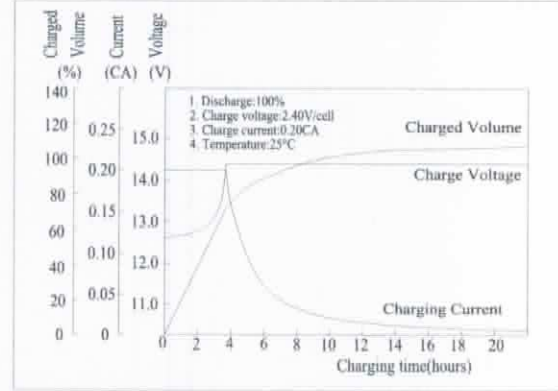
Floating Life on Temperature



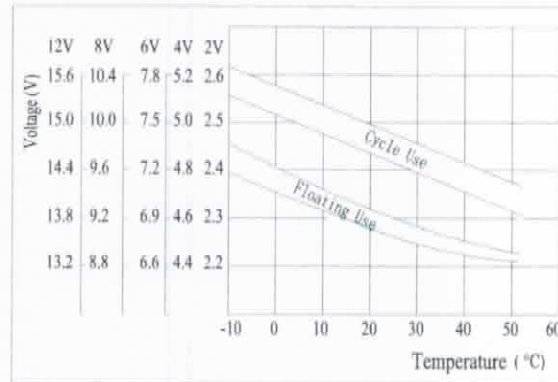
Effect of Temperature on Capacity



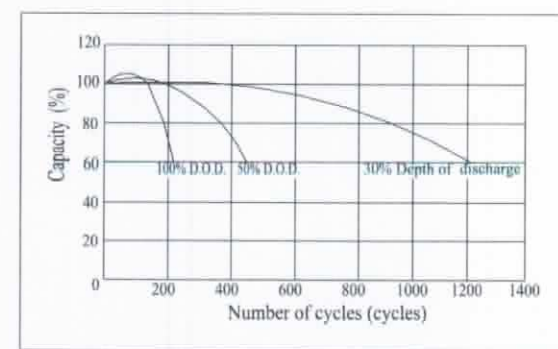
Charging Characteristics(25°C)



The Relationship for Charging Voltage and Temperature



Cycle Life on D.O.D(25°C)



Self-discharge Characteristics

