

Part #

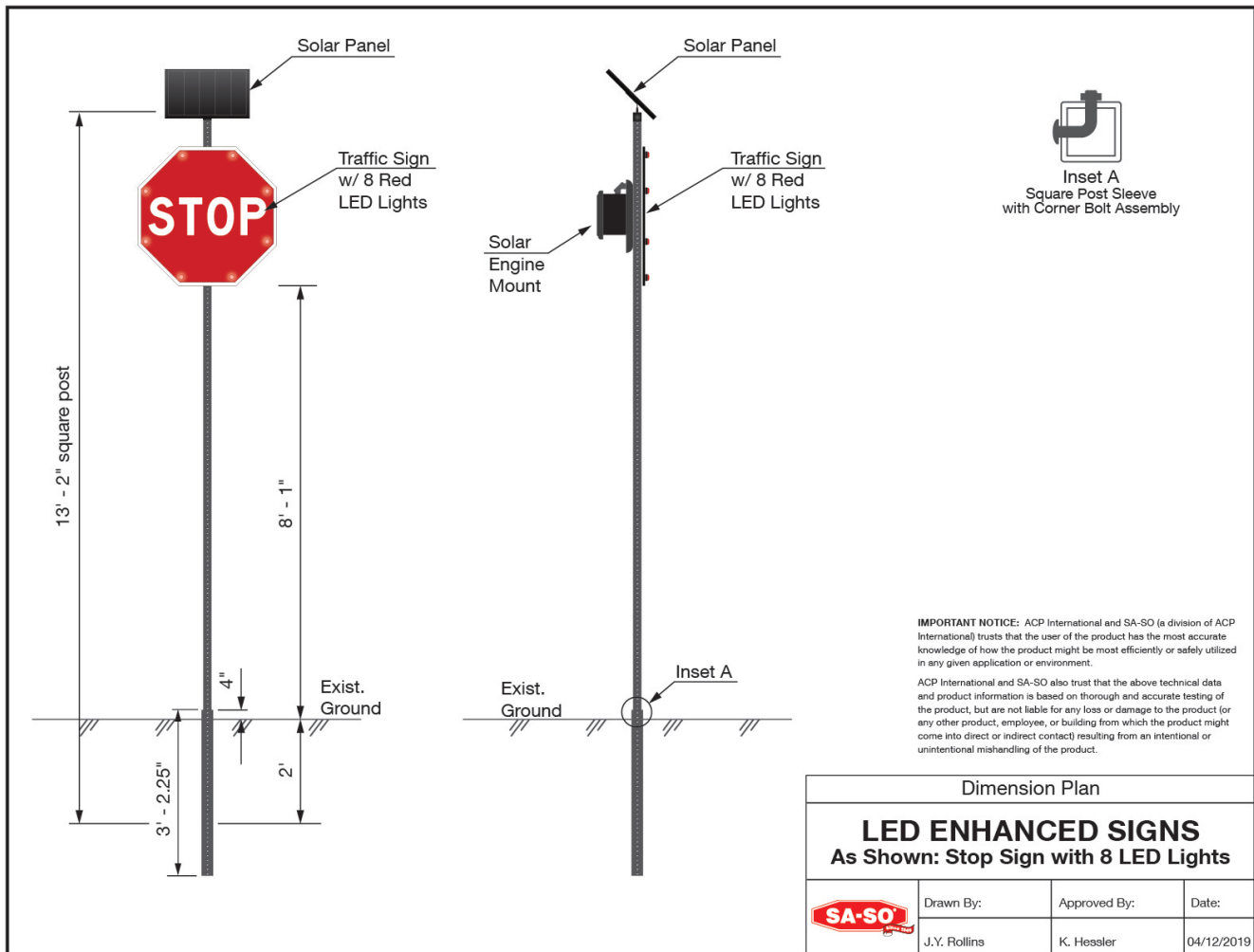
SPSK1 Solar LED Kit or SPSK2 AC Powered LED kit. Then specify color, then number of lights.

Example: SPSK1R8 (as shown in drawing) Solar LED kit with 8 red lights.

Scope

This specification covers the method and procedures of the physical dimensions and performance properties of the Solar Powered LED Enhanced Traffic Signs as manufactured by SA-SO of Arlington, Texas.

The SA-SO SPSK is a 24/7 flashing light kit for adding flashing LED lights to traffic signs. It is powered by a 12v Lithium Ion Battery and a 30 Watt Solar Panel.



LED Enhanced Signs



Technical Description, Design, and Material

Technical Description:

The SPSK1 LED Enhanced Signs are standard traffic control signs with enhanced visibility by incorporating highly visible flashing LEDs. Powered by a 12v Lithium Ion Battery and 30 watt Solar Panel.

Application:

Flashing lights like those included with the SPSK are designed to enhance driver awareness to STOP signs, pedestrian crossings, and many other traffic conditions as seen fit in addition to non regulatory signs and objects.

The LED enhancement is a conspicuity enhancement. It is not a traffic control device. The purpose of the LED enhancement is to increase visibility and driver awareness. The traffic sign is what determines if it is a traffic control device.

MUTCD Requirements Section 2A, 2B, 2C, and 7B:

02 Regulatory, warning, and guide signs and object markers shall be retroreflective (see Section 2A.08) or illuminated to show the same shape and similar color by both day and night, unless otherwise provided in the text discussion in this Manual for a particular sign or group of signs.

Option:

06 Light Emitting Diode (LED) units may be used individually within the legend or symbol of a sign and in the border of a sign...to improve the conspicuity, increase the legibility of sign legends and borders...

07 Except as provided in Paragraphs 11 and 12, neither individual LEDs nor groups of LEDs shall be placed within the background area of a sign.

08 If used, the LEDs shall have a maximum diameter of 1/4 inch and shall be the following colors based on the type of sign:

- A. White or red, if used with STOP or YIELD signs.
- B. White, if used with regulatory signs other than STOP or YIELD signs.
- C. White or yellow, if used with warning signs.
- D. White, if used with guide signs.
- E. White, yellow, or orange, if used with temporary traffic control signs.
- F. White or yellow, if used with school area signs.

09 If flashed, all LED units shall flash simultaneously at a rate of more than 50 and less than 60 times per minute.

10 The uniformity of the sign design shall be maintained without any decrease in visibility, legibility, or driver comprehension during either daytime or nighttime conditions.

Dimensions

Independent Test Results:

The Texas Transportation Institute (TTI) studied the effectiveness of flashing LED stop signs vs regular stop signs at two locations in 2004 by analyzing before and after data. The overall rate of vehicles not fully stopping was reduced by 28.9% after installation of the flashing signs. The overall rate of blow throughs was reduced by 52.9%.

The study recommended the use of the flashing LED stop signs as a special treatment on an as needed basis. (Tim J. Gates, Paul J. Carlson, and H. Gene Hawkins, Jr., Field Evaluations of Warning and Regulatory Signs with Enhanced Conspicuity Properties, Transportation Research Record No. 1862, 2004, pp. 64-76.)

Regarding the Buy America Act and the American Iron and Steel (AIS) requirements:

This product is manufactured locally in the USA. Regarding steel content, this product is made primarily of components other than steel. The total steel content falls under the De Minimus waiver of the AIS requirements.

Mechanical Properties

LED Properties:

LED type: Chip-on-Board (COB) LED

Life expectancy: 50,000 hours

Operating voltage: 12VDC

Current: Cool White 150mA, Amber 140mA, Red 160mA

Lumen: Cool White 250lm, Amber 78lm, Red 107lm

Beam angle: 60 degree

Housing material: 316 Stainless Steel

Bolt-on design

Potted with crystal clear waterproof polyurethane
Meets IP68 Standards (submersible in water)
48" long 24AWG Zip Wire
Standard Colors: Red, White, Amber, and Orange

Solar Panel Properties:

Monocrystalline 30W Panel
Maximum Power: 30W
Optimum Operating Voltage (Vmp): 17.5V
Optimum Operating Current (Imp): 1.71A
Weight: 6.2 lbs.
Maximum System Voltage: 600V DC (UL)
Open-Circuit Voltage (Voc): 21.6V
Short-Circuit Current (Isc): 1.85A
Dimensions: 13.5 X 23.8 X 1.0 In
Glass: 3.2 mm tempered glass,
Resists 5400 PA snow loads and 2400 PA wind load.
Film: main component is 30%-33% EVA, coated with fluoro-resin to prevent aging.
Frame: Corrosion-resistant aluminum
Mounting Bracket: Corrosion-resistant aluminum

Battery Properties:

12.6v Rechargeable Lithium-Ion (Li-ion) battery pack
20.8 Ah Capacity
Built in IC chip to prevent over charge and over discharge
3000 Cycle Life Expectancy
8 month Shelf Life exceeds NiMH batteries
High Temperature Tolerance: 60C
Charge rate = 1C, Discharge rate = 2C
Weight = 2.4 lb, Dimensions = 5.79 L x 2.9 H x 2.2 W

Sign Properties:

For Traffic Control Signs, utilize standard MUTCD compliant signs, .080" Aluminum
Back Plate: .080" Aluminum
Non-traffic signs can be up to .125" in thickness

Solar Charge Controller Properties:

99% efficient MPPT tracking (15Hz Speed)
Operating Consumption of 0.150mA (150uA)
CC-CV Charging Profile
-40°C to 85°C Operating Temperature
99.85% Electrical Efficiency

Flasher Properties:

Solid State
Fixed Flash Rate: 60 flashes per minute
4 amp maximum load

Solar Engine Housing:

Corrosion resistant Polycarbonate.
Lockable Latches.
Cover has a recessed Silicon Sponge Gasket.
Meets IP65 of IED529 and NEMA 1, 2, 3, 4, 4x, 12, and 13 specifications.

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ACP International
521 N. Great Southwest Pkwy.
Arlington, Texas 76011 U.S.A.
P: (817) 640-0992
F: (817) 633-3131
Online: www.acpinternational.com



SA-SO
525 N. Great Southwest Pkwy.
Arlington, Texas 76011 U.S.A.
P: (972) 641-4911
F: (972) 660-3684
Online: www.sa-so.com

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