Sign Alert Light-Emitting Diode (LED) Sign:

Solar Powered Version, enhanced with LED Flashers

R1-1, 36” DG3 Sign Alert, Solar, 24/7 Double Post Mount

1.0 Description

The Manufacturer shall provide a solar-powered Sign Alert LED-enhanced sign assembly. This sign’s high-intensity LED’s are visible in all weather and ambient light conditions to increase the conspicuity of the sign. 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 Sign Alert 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 Alert LED-enhanced signs use 3M DG3 prismatic sheeting to provide maximum retro reflectivity, and anti-graffiti overlay film for protection.

Materials: The Sign Alert assembly shall include the following items:

1. **Sign**
    a. All signs shall conform to 2009 Federal Highway Administration’s MUTCD section 2A.07 on retro reflectivity and illumination MUTCD standards.
    b. The sign face shall be a R1-1 sign (STOP), 36”, with 48 Red LEDs.
    c. All signs blanks shall be .080” gauge aluminum minimum.
    d. Sheeting used shall be 3M DG3 diamond grade prismatic sheeting, unless required with a lower grade of reflectivity and include anti-graffiti overlay protection.
    e. All sign assemblies shall use anti-vandal fasteners to mount components to sign and sign to fixture.
    f. All sign assemblies to be “single or double post mounted” (post sold separately).
2. **LEDs**
    a. Each sign assembly shall consist of a single, permanently fastened, LED ring, with each ring housing 48 LEDs that provide a maximum light intensity of up to 446,400mcd (millicandelas) with a viewing angle of 30°.
    b. LEDs shall match the color of the background or border, as per section 2A.07 of the MUTCD.
    c. All LEDs shall be rated for 100,000 hours.
    d. All LED enclosures shall be mounted using permanent adhesive strips. Additional holes in sign face will not be accepted.
    e. 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.
    f. All wire used shall conform to UL 1520, insulated and PVC jacketed wire.

g. A single wire shall connect LEDs to power source. Multiple wires, open or encapsulated, mounted to back of sign, will not be accepted.
h. All LED connections shall be protected from exposure to the elements and treated to resist corrosion by atmospheric chemicals typically encountered in roadside environments.
i. The LED assembly shall be manufactured in an ISO 9001:2008 certified facility.

3. Solar Panel

a. All solar panels shall be up to 23" x 15" in size and provide up to 20 watts peak total output sized for all climate and geographical locations.
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 sign post. Additional holes in sign face and secondary mounting post will not be accepted.
c. All fasteners used shall be anti-vandal.
d. All wire used shall conform to UL 1520, insulated and PVC jacketed wire.
e. All solar panel connections shall be protected from exposure to the elements and treated to resist corrosion by atmospheric chemicals typically encountered in roadside environments.

4. Control Circuit

a. The control circuit shall have the capability of independently flashing dual outputs. The flashing output current and cycle shall be programmable.
b. The flashing output shall be 50 to 60 flashes per minute with 500msec duration on time per MUTCD. The outputs shall reach the output current as programmed for the duration of the 500msec pulse.
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.
d. The controller shall provide 6 levels of brightness control determined by ambient conditions.
e. The controller will manage the battery charge and LED brightness levels in order to accommodate 30 days of continuous use without any charge.
f. The controller circuit shall be potted to be waterproof and housed in an aluminum box mounted to the solar panel.
g. The control circuit shall operate between the temperatures of -40° to +176°F (-40° to +80°C).
h. All circuit connectors shall be protected from exposure to the elements and treated to resist corrosion by atmospheric chemicals typically encountered in roadside environments.
i. The control circuit shall be manufactured in an ISO 9001:2008 certified facility.

5. Battery

a. Battery shall be 12 volt 10AH Lithium Iron Phosphate (LiFeP04). Battery dimensions shall be 5.9" x 3.8" x 3.88".
b. The battery shall be sealed with the control board to provide resistance to moisture and corrosion, and shall be housed in the aluminum box attached to the solar panel.

c. The standard battery shall be rated for charging between the temperatures of -4°F to +122°F (-20° to +50°C), with an option for a rated charging between the temperatures of -40°F to +149°F (-40°C to +65°C).
d. All battery connections shall be protected from exposure from the elements and treated to resist corrosion by atmospheric chemicals typically encountered in roadside environments.

Warranty:

Manufacturer shall offer a five year unconditional warranty against all defects in material and workmanship.