Larson Electronics LLC
9419 E US HWY 175, Kemp, TX 75143
Phone: 800.369.6671

www.LarsonElectronics.com
Email: sales@LarsonElectronics.com
Fax: 903.498.3364

SPLT-1.8K-400A-30

1.8KW Solar Power Generator with Pneumatic Light Tower Mast

Product ID: 71140



Larson Electronics LLC manufactures a wide variety of products, including custom built to spec designs. The pictures displayed for this unit are a general representation of form factor for the product line and may not accurately represent this exact configuration in every detail due to custom builds and changes between similar products in our standard catalog. The specifics for this configuration are listed in the specification table and supporting documentation (CAD files, Dimensional Drawing, Name Plate Diagram, Wiring Diagram, etc.). This means that specific details (receptacles, plugs, wires, connections, mounting brackets, external finishes, etc.) may not be accurately represented in images vs specifications. Please review specifications and do not order based solely on images.

SPLT-1.8K-400A-30 Mobile Solar Power Light Plant
Panes: (6) 300-Watt panels
Method of Deployment: Rotating axis, hand winch
Average charge capacity: 75 amps per hour
Panel protection: Fused combiner box
System Protection: Battery over/under and ground fault
System Voltage: 24 Volts
Battery Bank: 8 X 6-volt 200ah batteries
Battery capacity: 400ah total and 200ah usable
Trailer Coating: powder coated or 2-part epoxy steel
Trailer axle: 3500 pound rating
Mast: Pneumatic
Inverter: None
Dimensions:
Weight:
Lights:

Features
Fully Solar, No Fuel Needed
30 Foot Pneumatic Tower
Multiple Light Options

Special Orders - Special Requirements
Contact us for special requirements
Toll Free: 1-800-369-6671
Intl: 1-903-270-1187
Fax: 1-903-498-3364
E-mail: sales@larsonelectronics.com

Made in Texas
PLEASE NOTE: ANY FREE SHIPPING OFFERS DO NOT APPLY TO MASTS OR TRAILERS
Solar Light Tower: This solar light tower includes 6 solar panels, solar charging system, battery bank and pneumatic mast mounted on trailer with outriggers and removable tongue. This 1.8KW solar generator system replenishes 200 amp hours of usable battery capacity per day, assuming 5.5 hours of peak charging sunlight. This system delivers 24 volts for lighting, cameras, sensors or other electronics equipment mounted atop a 30-foot collapsible, pneumatic mast.
Solar Panel Assembly: This unit is comprised of six 300-watt solar panels,

generating a total maximum output of 1.8 KW. The panels are mounted to a rotating axis assembly. There are two assemblies, one on each side of the solar trailer. The panels can be rotated until they face inwards, which protects the panels during transport. When deployed, the panels are rotated until they face upwards. On most models, we offer a locking pin system, preset with a winter and summer angle position for the panels.
In order to optimize the sun capture, the panels are set to +/- 15 degrees of the latitude of the trailers location on the earth. Houston, Texas, for example, is at latitude of 30 degrees, so the winter setting is 45 degrees and the summer setting would be 15 degrees. While this doesn't make a huge difference, every little bit helps.
Once the panels are set the correct solstice position, one section of panel is elevated into position via a manual crank winch system. This sets one set of 3 panels above the other section of three panels so they make a consistent plane angle to the sun. The entire panel deployment can be done easily by one person, since the axis system and manual winch support the weight of the panels during positioning. The entire process takes just a few minutes.
As part of the deployment, operators will set the 4 outriggers into position by pulling them out and pinning them into position. This will offset the effects of wind on the panels and the light mast.






Click Photos to Enlarge



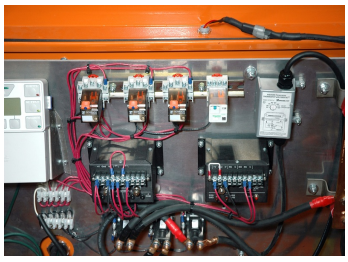
Solar Charging System: In this 24 volt system, each panel is terminated with a fused combiner box with a single lever action cut-off switch. With the switch set to the 'on' position, the combiner box passes power to the 80-amp capacity Outback Extreme charge controller.
This solar light tower uses the Outback Extreme series since it standard temperature threshold is more than 160 degrees Fahrenheit, due to its integrated heat sink and fan assembly. Oddly enough, most charge controllers aren't rated past 104 degrees Fahrenheit despite the fact the will always be close to direct sunlight. In the summer time in Texas, our fabrication shop is normally warmer than that, so this solar light tower uses a charge controller that would support the southern heat. We improve on that capability by shading the charge controller and adding additional air flow from the exhaust of a 1400 CFM component cooling system.
The charge controller charges a 400-amp capacity battery bank. This 24 volt battery system in comprised of 6 volt batteries tied together in series and parallel. Of course, with most battery technology, the battery bank cannot be drained below 50% without destroying the batteries. With that in mind, this effectively reduces the total capacity of this system to 200 amps at 24 volts.
The panels produce approximately 12.5 amps per hour to charge this system. On a bright sunny day, the six panels would generate and deliver more than 400

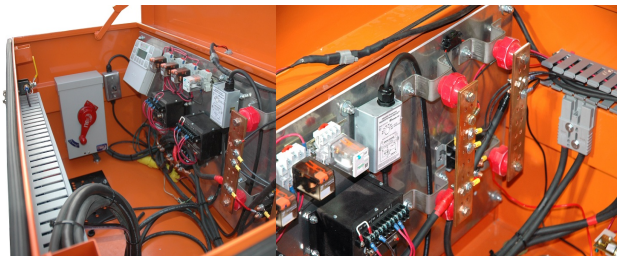
amps back to the batteries in 5.5 hours. This conservative number of 5.5 hours is pretty standard conservative number for the solar industry. Many parts of the world have more and some have less. While this solar trailer can be optimized for the angle of the sun, the panel assemblies do not follow the path of the sun, so we use this conservative number to ensure successful operation. In areas with longer days, additional battery banks can be purchased to increase the capacity of the system. The solar trailer has capacity for 2 additional battery banks or 1 additional battery bank and supplemental generator for areas with shorter days or sporadic sunlight.

Battery Bank System: The battery bank consists of eight 6-volt batteries that are mounted to a removable tray. The batteries are spaced apart, strapped to the battery tray and covered with a protective shield. The shield provides security and also shaded protection from the sun. The construction of the battery tray system enables the batteries to ventilate while shading and securing them. Much like a forklift battery bank, the entire battery tray system can be replaced in one operation. The trailer includes room for an additional battery bank system or a supplemental generator, both of which can be purchased separately and installed in the field.

Component Control Center: In order to ensure that the 50% threshold on the batteries is controlled, this solar trailer includes a system of min/max voltage sensors and relays that monitor the voltage produced by the batteries and will automatically shut off power distribution when the battery capacity falls below 50%. This protects the batteries from failure. We also include ground fault protection and an Outback Mate 3 monitoring system to track and log all activities related to the charger controller and battery health. In the event there is an issue with the solar trailer, the SD card can be removed from the Mate 3 and sent to Larson Electronics for analysis.

All the electrical components, including the combiner panel, charge controller, over/under battery monitoring and ground fault isolation are encapsulated in a NEMA 3R job box that is bolted to the trailer. Since most of these components are not rated for high heat, our component cooling system circulates air within the job box at 1400 CFM when the ambient temperature exceeds 90 degrees Fahrenheit. The component control center also includes a terminal block so that customers can mount additional electronic gear without interfering with the charging systems. The job box that contains the component control system includes locks for security purposes.





Click Photos to Enlarge





Wire Management: The trailer itself houses a built in wire raceway that brings power from the component control center and batteries to the light mast. At the base of the light mast there is an access panel for making connections from the power source to the cabling within the pneumatic mast.
Pneumatic Light Mast: The aluminum pneumatic mast reaches 30 foot in height via the use of a low voltage air compressor located in the job box. The compressor is equipped with a pressure switch that maintains the pressure within the mast. Once the mast is deployed from the component control center, its operation is automated. The air compressor will turn on briefly when the pressure in the mast falls below the fully inflated threshold. In normal operation, the air compressor may turn on once every few days for about 5 minutes to top off the mast. When it is time to take the mast down for transport, the operator simply release the pressure switch and the mast will slowly release pressure and lower to its full collapsed height of 8.25 feet.
At the top of the mast, we include a mounting bracket that is 4 foot in length and can support 150 pounds of electronics, including lights, camera or sensors. These mounting brackets can be built to customer specifications to include the holes necessary to mount their gear.
Trailer: The trailer itself is built on a 3500-pound rated axle and is approximately 16 feet long and 6 feet wide. The trailer is equipped with a removable tongue for storage, transport and security purposes. For an additional charge, we offer removable wheels in addition to the removable tongue for extra security. The four built in outriggers can be slid out from the frame and pinned into place. A standard crank style support leg can be used to secure each outrigger to the ground. The outrigger feet are over-sized and equipped with through holes for additional ground anchoring mechanisms.
Lighting: While lighting is sold separately for this solar light tower, we typically suggest the LED10SA-160 series for approximately 60,000 lumens of total light output. However, each customer's needs vary, so contact Larson Electronics for your specific requirements.
Customization: Larson Electronics is a manufacturer of light tower systems and can customize systems to meet custom requirements. Contact us at 1-800-369-6671 or sales@larsonelectronics.com to learn more.

Frequently Asked Questions (FAQ)