Soltronix Semi-Flexible Solar Panel Installation Instructions

Soltronix Solar Charger Kit

This kit provides the parts below and instructions to install an optional solar battery charging system on TK® Precedent TRU (reefers). The solar charging system can help maintain your reefer battery voltage during extended off cycles, increase average battery lifetime, and reduce TRU diesel fuel usage (measured with a Technoton-DFM (differential flow meter)).

Kit Contents

Quantity	Part Number	Part Description
1	R3-7F13-7VTK	24W Semi-Flexible Solar Panel with Integrated Charge Controller
1	RT-11	15ft. Battery Harness with 3A blade fuse, trucking fuse holder, and coroplast wrap

Safety

Safety Precautions

Your Soltronix solar panel with integrated charge controller is a DC power source when exposed to light. Typical output would be 10.5V-14.4V and 0A-2.5A depending upon system conditions.

Battery Safety

A lead-acid type battery normally vents small amounts of flammable hydrogen gas. Do not smoke when checking or installing the battery or solar panel. A battery explosion can cause serious physical harm and/or blindness.

A lithium battery can be a fire hazard due to high energy densities coupled with the flammable organic electrolyte. Studies have shown that physical damage or electrical abuse such as short circuits and overcharging, and exposure to elevated temperatures can cause a thermal runaway.

Warnings

Do not bend more than a 36 inch radius of curvature.

Do not pick up the solar panel by a corner, do not treat the panel like a sheet of plywood.

When handling or mounting the solar panel, hold using both hands on opposite edges of the solar panel, so

that it is fully supported. Treat the panel like a hanging dress shirt, you don't want wrinkles.

If something is deflecting the panel up from below causing the panel not to lay flat, please consider installing small rubber feet between the panel and metal support structure. Longer self-tapping screws may be needed to pass through the rubber feet.

Do not install the solar panel in path of the TRU's or tractor's exhaust system. This can lead to excessive soot build up, affecting the performance of the solar panel and excessive heat can cause delamination resulting in panel damage or failure.

It is recommended to install the solar panel indoors, or out of direct sunlight.

Wipe up any spilled radiator fluids immediately after maintenance.

Instructions

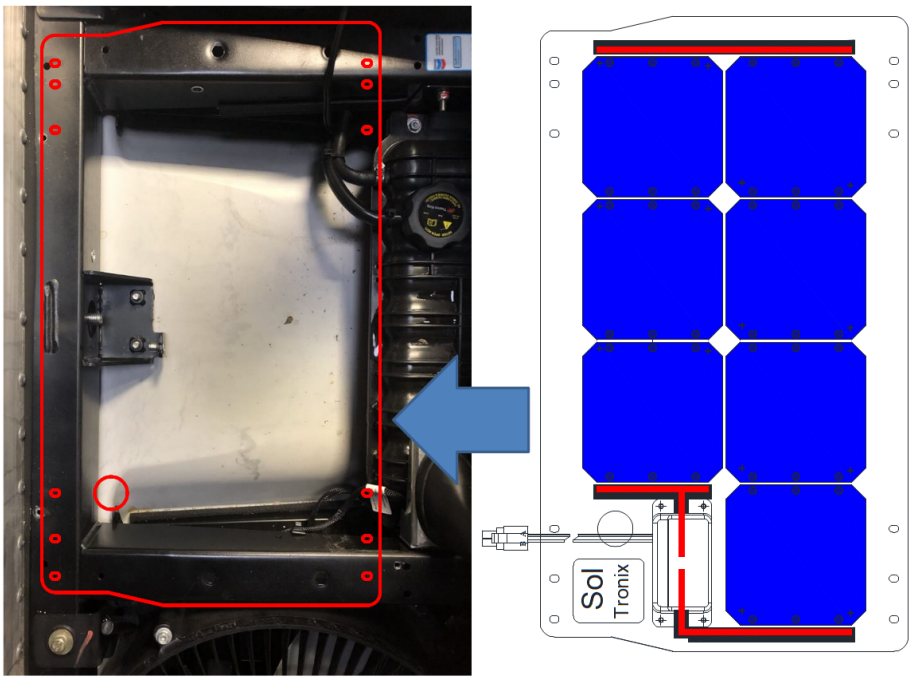
1. Verify BATTERY AND SYSTEM operate correctly prior to beginning work.
2. Turn off the reefer. Ensure the TRU will not start automatically by disconnecting the BATTERY TERMINALS.
3. Ensure all technicians working on elevated surfaces are properly tethered or secured against falling off of the elevated surface. Technicians should wear appropriate Personal Protective Equipment (PPE).
4. Dry-fit the panel and cabling to verify the system fits your application. The pigtail connector should be fed through the 1¼ inch diameter hole so that a connection to the cable can be made below the panel.

NOTE: Follow proper lockout tag out procedures.

5. Prior to permanently installing the solar panel, verify with a digital volt meter on DC scale that the voltage from the solar panel when it is exposed to full sunlight is above 10 volts DC.
6. Clean the area between the fans of the TRU, see Installation location in Figure 1.
7. Position the solar panel so that panel lays flat on the metal structure, if not consider rubber feet. The radiator cap should still be accessible after installing the panel.
8. Assuming the pigtail connector is fed through to the bottom side of the panel; connect the 15 foot extension cable and feed the ring terminal ends down through the interior of the TRU towards the battery.
9. Mechanically fasten the panel to the metal tubing with self-tapping screws using the holes provided in the panel, preferably with cushion washers.
10. Verify the 3A fuse is in the fuse holder. Then install the two ring terminals onto the battery. The positive

(+) branch of the cable has the fuse and a short section of loose red heat shrink, and a 3/8 inch diameter ring terminal. The negative (-) branch has a 5/16-inch diameter ring terminal.

11. Use zip ties and cushion clamps to secure the cabling from the battery to the panel. Make sure connectors and wires are secure and do not contact sharp, hot, or moving components. Vibrating wires during transport could lead to failures.



Checking Solar Panel Operation

Method 1 – Battery voltage measurement (requires DC voltmeter)

1. Remove the fuse from the solar panel cable/harness.
2. Measure the battery voltage.
3. With solar panel exposed to full sun light, re-install the fuse and check the battery voltage. The battery voltage should be higher depending on the amount of direct sunlight.

Method 2 – DC current measurement (most accurate, requires DC current clamp meter)

1. Connect a DC Amp clamp around the wire with the fuse installed. Depending on the battery voltage and the amount of sunlight, the current will vary from 0-2.5 Amps.

Checking Solar Panel Voltage

Integrated charge controller

1. Disconnect fuse holder.
2. Measure voltage just before the fuse and chassis ground or battery ground with a voltmeter.
3. Since the voltage is coming through a charge controller, it should be 14.1- 14.4V (no-load condition). Assuming a minimal light level and individual cells are not shaded.

Final System Checks

1. Ensure all connections are secure and weather protected if possible.
2. Check the condition of any fuses that might be in the power path.
3. Check all connections and terminals for good electrical contact.

Inspection & Preventative Maintenance

1. Inspect wire harness and connections, correct any issues found within the first 30 days, and semi-annually thereafter.
2. Inspect solar panel attachment. Repair as needed with semi-annual checks.
3. Self-cleaning top laminate should keep panel the panel operating, but wipe any dust, snow, or debris away during inspection. Wipe up any spilled radiator fluids immediately afterwards.