

Solar SEED Project Brief

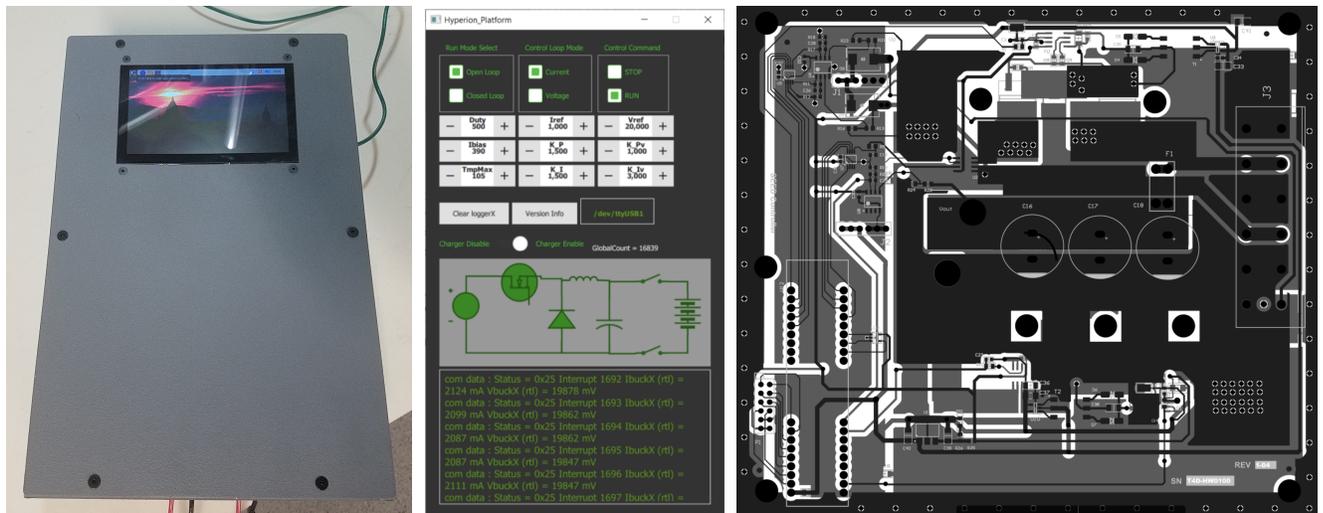
Desired Skills and Knowledge:

- Power Electronics - renewable energy applications
- Charge Controllers - Maximum Power Point Tracking (MPPT) & Pulse Width Modulation (PWM)
- Battery charging - knowledge of various battery chemistries a plus
- Circuit & PCB design and testing
- Software development
- Silicon Carbide (SiC) components for high-power applications (PROJECT 2)
- Embedded circuits
- U/X and user interface development - liquid crystal display

PROJECT 1: Solar SEED Smart Controller (600W) Firmware

The Solar SEED Smart Controller transforms the off-grid energy system landscape and ultimately de-risks off-grid energy by establishing the innovative battery-optional off-grid system. We have found no solar power electronic device that offers the battery-optional functionalities of our solution (Fig. A). Our unique, Patent-Pending technology generates usable DC and AC electricity from sunlight with or without battery storage, establishing the first Multi-Modal Off-Grid Energy System.

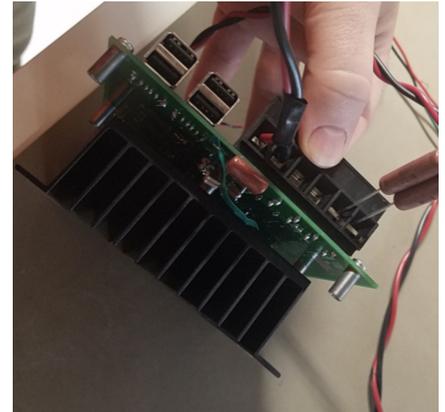
Fig. A



Latest prototype

GUI on QT Platform (community ed.)

Altium files, 3D and 2D schematics available



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Tasks

- Test and verify prototype function and performance.
- Complete firmware
- Add battery charging algorithms (lead acid and lithium batteries)
- Add Maximum Power Point Tracking (MPPT) algorithms and confirm performance
- Capture design schematic - include any / all revisions

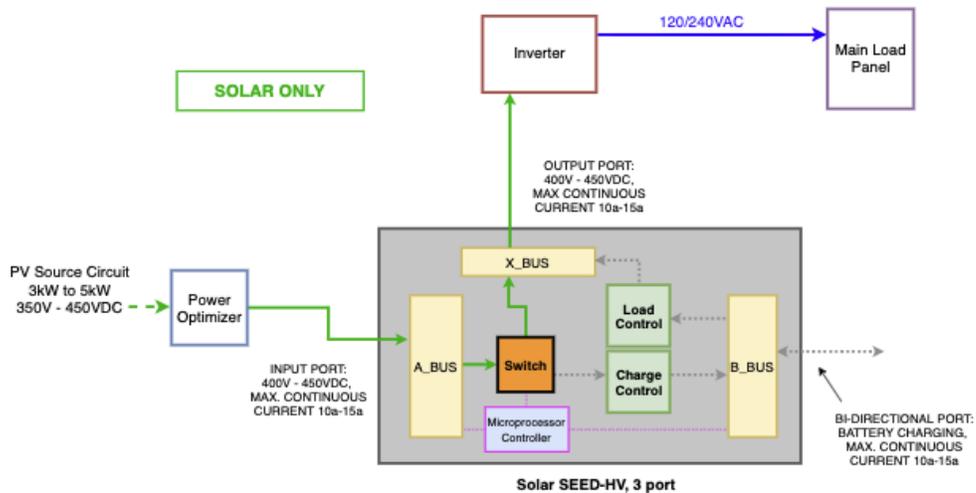
PROJECT 2: Solar SEED-HV

A flexible, cost-effective, solution for transforming traditional grid-interactive systems into demand response / back-up power systems. This high-voltage version of our patent-pending Solar SEED Smart Controller (Fig. A) technology will deliver a versatile, code-compliant, cost-effective solution allowing consumers to offset their on-site utility consumption with renewables and export excess electricity while having the added advantage of integrating energy storage at any time.

The target product that needs to be designed and built - see the shaded grey box below

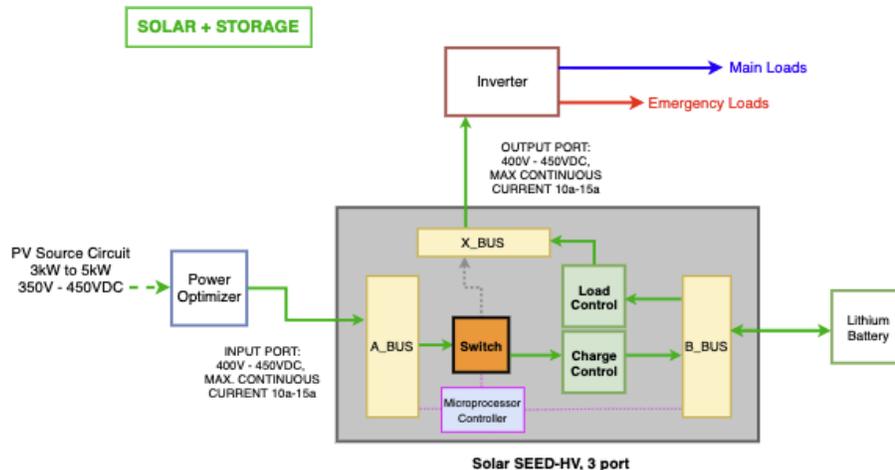
Solar SEED-HV: SOLAR ONLY function

- Grid-Interactive while the local utility grid is energized



Solar SEED-HV: SOLAR + STORAGE function

- Demand Response / Back-Up Power by adding energy storage



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Tasks and Timeline:

- Build functional proof-of-concept
- Test and verify functional proof-of-concept performance
- Capture design schematics
- Due February 28, 2022

Contact:

David Gibbs
Solar SEED Inc., Founder & CEO
m: +1 973.641.7338
e: r.davidgibb@gmail.com