

PV Hands-on Lab Activity Form

Date: Sept 14, 2012

Class: Introduction To PV (PV-1)

Instructor: Brian Hurd

Time Allotted for Lab: 2 hours _

Lab Title: Micro Inverter Rooftop Layout & Installation (part 1) _

1. Lab Description: The class will correctly install micro inverters for each module on the PV Lab roof mockup racking system, according to the project plans and specifications provided to each student. Upon completion, the rack will be ready for module installation (part 2)
2. Instructional Objectives: Participants will accurately measure, layout and install the micro inverters required for the 2 kW grid tied PV array, to include equipment ground, Enphase trunk cable, and roof mount junction box, according to the plans (provided) and following manufacturers installation requirements.
3. Safety: Students must have completed the OSHA Fall Protection Safety class and are required to attend the Micro Inverter Install Safety Meeting to be able to participate.
4. Facilities: Outside half gable roof mock up with safety rail.
5. Supplies: Students to bring their own tool pouch, tape measure and hand tools.
Safety: Harnesses & lanyards will be provided. Students should bring their own PPE.
Equipment: Enphase Micro Inverters and digital camera
Tools: Portable drill, portable impact driver, battery charger, two 3/8 socket and wrench sets, channel lock pliers, screw driver set, 50 ft. tape, and grease pencil.
6. Materials: Enphase trunk cable, cable termination cap, junction box, and weather tight connectors
7. Procedures:
 - a. Plans and specifications (provided) to be read and verified before installation.
 - b. All participants will understand and follow the safety requirements of the job.

- c. Following the plans, and noting module orientation (landscape or portrait), students will locate the terminal block on the back of the modules - and avoid this area when mounting the micro inverters to the rack beneath (for ease of module installation/ connection).
- d. Participants will accurately measure and layout Micro Inverter locations on the mounting rack (beneath each module) and mark with grease pencil .
- e. Using the mounting hardware provided, and following manufacturers instructions, students will mount micro inverters on the pre-marked rack locations ('d' above).
- f. Continuous ground wire will be properly attached to each micro inverter
- g. Micro inverter AC out cables will be connected to the Trunk Cable at the appropriate port for each.
- h. The trunk cable will be properly attached to the rack and run to the junction box at the end of the row. The weather tight termination cap will be installed to the other end of the trunk cable.

8. Documentation/ Data recording requirements

- a. Record the start time and finish time of the job.
- b. Take digital pictures before, during the install, and after completion.
- c. Verify the plans and document any discrepancies or site related problems.
- d. Measure and record the finished layout of the Micro Inverters and note any differences to the measurements on the plans.

9. Results / Conclusion/s: Each student must write a step by step report of the project.

10. Student Evaluation: Based on participation, report and Micro Inverter mounting quiz.