




## TOPIC OF STUDY

Intro to PV System Design

 180 MINUTES  
(2 SESSIONS)

## KEY TERMS

input voltage  
maximum power point tracking (MPPT)  
PV source circuit  
Overcurrent Protection Devices (OCPD)  
startup voltage

## LESSON

Manufacturers Specifications

## OBJECTIVES

Students will:

- Interpret manufacturer specifications for a PV inverter
- Use an installation manual for a PV inverter

## BIG IDEA(S)

It is important to adhere to manufacturer specifications.

## TASK LIST SUBCATEGORY

- 415 Demonstrate knowledge of manufacturer specifications
- 405 Identify the factors related to system sizing and production
- 402 Select appropriate components to design a solar system

## OVERVIEW

Following manufacturers' guidelines can save time and money. Cutting corners and not following the directions may void a product's guarantee. During this session, the teacher should stress the importance of manufacturer specifications. The teacher should introduce students to this topic by reviewing a complete installation manual for a popular inverter.

## STANDARDS

### PA

**CC.3.5.9-10.A.** (Specific Anchor, Key Ideas and Details) Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

**CC.3.5.9-10.E.** Reading (Specific Anchor, Craft and Structure) Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, or energy).

**Construction Career Pathway (AC-CST)** Compare and contrast the building systems and components required for a construction project.

## INSTRUCTIONAL

### TEXT/REFERENCES

Solar Electric Handbook: Photovoltaic Fundamentals and Applications; Solar Energy International; Pearson 2013

### MATERIALS NEEDED

**Teacher Presentation:** [Solaredge Inverter Installation Manual](#)

**Content:** Text Book - Chapter 12





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## IMPLEMENTATION (LESSON PLAN)

### ENGAGE

- Ask students what the word specific means.

### EXPLORE

1. Ask pairs of students to each write out a set of directions for their partner for a simple task (i.e. build a small lego structure, make a peanut butter and jelly sandwich, etc...).
2. Have students complete the task exactly as their partner's direction state.

### EXPLAIN

1. Have students discuss what went wrong with the directions they were given.
2. Have students revise their directions to incorporate the feedback from their partners.

### EXTEND

- Student pairs should read through the Solaredge manual and create a checklist that includes items needed and things to be mindful of during the installation process.

### EVALUATE

- Students should present to the teacher their plans for installation of the inverter based on their interpretation of the manual.

## RESOURCES/LINKS

Solaredge Manual

[https://www.solaredge.com/sites/default/files/se\\_hd\\_wave\\_inverter\\_SetApp\\_installation\\_guide.pdf](https://www.solaredge.com/sites/default/files/se_hd_wave_inverter_SetApp_installation_guide.pdf)

Why Contractors Need to Appreciate Manufacturers' Guidelines and Specifications

<https://fixingpoint.com/news-and-press/why-contractors-need-to-appreciate-manufacturers-guidelines-and-specifications>

