

What are the modules that make up a photovoltaic module



Article Overview

A photovoltaic module is composed of solar cells, encapsulation layers, protective glass, a backsheet, an aluminum frame, and a junction box, all working together to convert sunlight into electricity and ensure durability.

Core Components

1. **Solar Cells** The solar cells are the fundamental energy-converting elements of a PV module. They transform sunlight into electrical energy through the photovoltaic effect. Most cells are made of silicon and come in three main types: monocrystalline (high efficiency, uniform black appearance), polycrystalline (slightly lower efficiency, blueish hue), and thin-film (flexible, less efficient). Cells are typically 156mm x 156mm for full-size or 156mm x 78mm for half-cut cells, with a thickness of 180–200 micrometers.

2. **Encapsulation Layers** Encapsulation materials, usually made of ethylene-vinyl acetate (EVA), surround the solar cells to bond them to the glass and backsheet. These layers provide electrical insulation, mechanical support, and protection from moisture and environmental stress.

3. **Protective Glass** The front layer of the module is tempered photovoltaic glass, which allows sunlight to pass through while protecting the cells from mechanical damage, hail, and weather. Anti-reflective coatings can improve light transmittance up to 93.5%.

4. **Backsheet** The backsheet is a protective layer on the rear of the module, typically made of durable polymer or sometimes glass. It provides electrical insulation, mechanical protection, and resistance to environmental factors like UV radiation and humidity.

5. **Aluminum Frame** An aluminum frame surrounds the module, providing structural support, facil...

Article Content

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How a Photovoltaic Module Works: From Structure to Output

Photovoltaic modules are primarily categorized by the crystal structure of the silicon used in their cells, which

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Photovoltaic Module

A photovoltaic module, also known as a solar panel, is a device that converts sunlight into electricity using the

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Photovoltaic Modules

2 Structure, dimensions, and material properties of photovoltaic modules A photovoltaic module is the main component of an energy

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The Complete Guide to Photovoltaic (PV) Modules

Contact Us July 22nd, 2024 The Complete Guide to Photovoltaic (PV) Modules Solar cells, commercially referred to as photovoltaic

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What Are the Main Components of Solar Panels? A Structural

This article explains the six key structural components—from front glass and solar cells to encapsulation materials,

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Photovoltaic Modules

The first commercial production of photovoltaic modules for terrestrial applications began in 1953 with the introduction of automated

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PV Cells 101: A Primer on the Solar Photovoltaic Cell

Part 1 of the PV Cells 101 primer explains how a solar cell turns sunlight into electricity and why silicon is the

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What is a Solar PV Module?

A solar module is normally series connected sufficient number of solar cells to provide required standard output

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Solar panel

Photovoltaic modules consist of a large number of solar cells and use light energy from the Sun to generate electricity through the

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Solar Photovoltaic (PV) System Components

Introduction Solar photovoltaic (PV) energy systems are made up of different components. Each component has a specific role. The

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Understanding the Composition of a Solar Cell

Solar radiation is converted into direct current electricity by a photovoltaic cell, which is a semiconductor device. Since

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How Are Solar Panels Made? A Comprehensive Overview

Curious about how solar panels are made? Learn the basics of photovoltaic technology and what goes into making and testing solar

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Photovoltaic module

Photovoltaic module Photovoltaic modules are made up of a mosaic of solar cells. Here is a description of their main features and of

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Solar Photovoltaic Technology Basics

To boost the power output of PV cells, they are connected together in chains to form larger units known as

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Unlock the power of sunlight with photovoltaic (PV) modules – the fundamental building blocks of solar energy

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Photovoltaics

Photovoltaic power generation employs solar modules composed of a number of solar cells containing a

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How a PV Cell Works

To increase power output, cells are electrically connected into a module. Modules are connected to form an array. The term "array"

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Solar Photovoltaic Systems and Components

A solar photovoltaic (PV) system, or solar PV system, is a power system designed to supply usable solar power by means of

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What Are the Main Components of Solar Panels? A Structural

What components make up a solar panel? This article explains the six key structural components—from front glass

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Photovoltaic systems

The effective cost of PV modules can be lowered when a module is integrated with other product. For example, special modules are

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Solar Photovoltaic Cell Basics

There are two main types of thin-film PV semiconductors on the market today: cadmium telluride (CdTe) and copper indium gallium

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Components of a Solar Panel: Complete Technical Guide

Understanding the components of a solar panel empowers informed decision-making when selecting photovoltaic

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An Introduction to Photovoltaic Modules

Series and Parallel Connections in Solar Modules The basic "nerves" of the solar module array which sends signals or currents to

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Photovoltaics

A photovoltaic system employs solar modules, each comprising a number of solar cells, which generate electrical power. PV

Contact Us

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