

What types of photovoltaic building modules are there



Article Overview

Photovoltaic building modules are primarily made of silicon-based solar cells, glass, metal frames, and protective encapsulants that together convert sunlight into electricity.

Core Components

1. **Solar Cells (Semiconductors)** The heart of a photovoltaic module is its solar cells, which are semiconductor devices that convert sunlight into electricity through the photovoltaic effect . Most modules use crystalline silicon, either monocrystalline (single-crystal) or polycrystalline (multi-crystal), which accounts for about 95% of global PV production . Thin-film technologies, such as amorphous silicon (a-Si), cadmium telluride (CdTe), and copper indium gallium selenide (CIGS), are also used, particularly for flexible or specialized applications .

2. **Glass Layer** A tempered glass sheet, typically 6–7 millimeters thick, covers the solar cells to protect them from mechanical damage, weather, and moisture while allowing sunlight to pass through .

3. **Encapsulant** Encapsulants, usually made of ethylene-vinyl acetate (EVA) or similar polymers, are placed between the glass and the solar cells to secure the cells, provide insulation, and protect against environmental stress .

4. **Metal Frame** A metal frame, often aluminum, surrounds the module to provide structural support, facilitate mounting, and protect the edges from damage .

5. **Electrical Components** Modules include bus wires and junction boxes to connect the cells electrically and allow safe transfer of generated electricity. Standard connectors, such as MC4, are used for weatherproof connections to the rest of the PV system

Article Content

Jul 15, 2026

Photovoltaic (PV) Cell Types

The article provides an overview of the main types of photovoltaic (PV) cell, including monocrystalline, polycrystalline, and thin-film

Jun 21, 2026

The Complete Guide to Photovoltaic (PV) Modules

Explore our complete guide to Photovoltaic (PV) modules. Learn about Solar PV modules benefits, installation

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Photovoltaics and electricity

Solar photovoltaic cells are grouped in panels, and panels can be grouped into arrays of different sizes to power water pumps, power

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Types of Solar Photovoltaic Systems

Photovoltaic (PV) Direct – A simple system, no energy storage. The simplest system consists of a load, such as a ventilation fan or

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Types of solar panels: monocrystalline, polycrystalline, and thin-film

There are three main types of solar panels used in solar projects: monocrystalline, polycrystalline, and thin-film. Each kind of solar

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Photovoltaic Module

There are several different types of photovoltaic modules available, including monocrystalline, polycrystalline, and

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Introduction to 17 Types of PV Modules, Their Categorization

Following is comprehensive review of 17 types of PV modules along with their construction process, major area of use,

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Solar PV Modules: Types, Benefits & Cost

Learn everything about Solar PV Modules — their types, working, efficiency, and benefits for homes, businesses, and

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Types of Photovoltaic (PV) Module

photovoltaic (PV) module types: including monocrystalline silicon, polycrystalline silicon, thin-film,

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Photovoltaic Module: Definition, Importance, Uses and Types

Photovoltaic Module (PV) Definition, Uses, Types including Portable PV, Rooftop PV, and Hybrid PV. Advantages and

Sep 09, 2025

Types of photovoltaic cells

There are three types of PV cell technologies that dominate the world market: monocrystalline silicon, polycrystalline silicon, and thin

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Solar Photovoltaics Explained: A Complete 2023 Guide

Photovoltaic solar panels are a type of solar panel, but not all solar panels are inherently photovoltaic (such

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Types of Solar PV Modules Explained: Which One is Right for You?

Explore the different types of solar PV modules and learn which option is best for your home or business. Compare

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Solar Photovoltaic Cell Basics: Components, Construction

Solar photovoltaic cells may be small, but they're the foundation of every solar project. By grasping their construction, characteristics,

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Solar Modules Guide 2025: Types, Efficiency

Complete guide to solar modules: types, efficiency ratings, selection criteria, and 2025

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3 Types of Solar Panels (Which Is Right for You?)

3 Main Types of Solar Panels You will find that solar panels come in many sizes, ranging

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Building-integrated photovoltaics

Building-integrated photovoltaics (BIPV) are photovoltaic materials that are used to replace conventional building materials in parts of

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What is a Photovoltaic Module? A Comprehensive Definition and

Types of Photovoltaic Modules: Mono-crystalline, Polycrystalline, and Thin-film When discussing the photovoltaic

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An Introduction to Photovoltaic Modules

Introduction to Solar PV Modules To understand the basics of photovoltaics, we must first come to the building block of solar panels

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Expanding Solar Energy Opportunities: From Rooftops to Building ...

Building-integrated photovoltaics is a set of emerging solar energy applications that replace conventional building materials with solar

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Cells, Modules, Panels and Arrays

Cells, Modules, Panels and Arrays Photovoltaic cells are connected electrically in series and/or parallel circuits to produce higher

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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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Types of photovoltaic solar panels and their characteristics

In general, photovoltaic panels are classified into three main categories: monocrystalline, polycrystalline and thin-film

Jan 12, 2026

An Extensive Guide to Different Types of Solar Panels

There are four main types of solar panels: monocrystalline, polycrystalline, thin-film, passive emitter, and rear cell

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