

Integrated bidirectional power supply module



AI Overview

Integrated bidirectional power supply modules can both source and sink power, enabling efficient energy flow between AC/DC grids and batteries, with regenerative capabilities and high integration for modern energy systems.

Overview An integrated bidirectional power supply module is a device capable of two-way energy conversion, allowing it to both deliver power to a load and absorb power from a source. These modules are widely used in EV charging (G2V/V2G), battery energy storage systems (BESS), renewable energy integration, and industrial energy management. They combine the functionality of a power supply and an electronic load in a single unit, often with regenerative operation that returns absorbed energy to the grid, improving efficiency and reducing heat and energy waste.

Key Features

- Bidirectional Operation:** Supports charging (sourcing) and discharging (sinking) of energy, enabling applications like vehicle-to-grid (V2G), vehicle-to-home (V2H), and battery testing.
- Regenerative Efficiency:** Many modules can recover over 96% of energy during discharge, returning it to the local grid or system.
- Modular Design:** High-power systems can be built by connecting multiple modules in parallel or series, scaling from kilowatts to megawatts.
- Compact and High-Density:** Modern DC-DC modules, such as the TPS-DM570T1512KIF or TDM750T series, deliver up to 12-13.5 kW in compact enclosures, with high-voltage isolation and intelligent cooling.
- Communication and Control:** Integrated CAN bus or other communication protocols allow seamless integration with Battery Management Systems (BMS) and smart grid controllers.
- Thermal Management:** Intelligent forced-air cooling and high-efficiency designs ensure stable operation under full load, typically from -10°C to 45°C.

Applications

- EV Charging and V2G Systems:** Modules like BMPU-R2 enable grid-tied...

Article Content

AC/DC Bidirectional Power Supply – Benefits

AC/DC bidirectional power supply modules are key to modern energy management. They enable efficient two-way energy transfer, support renewable

Integrated Multi-input Bi-directional DC-DC Converter for Hybrid

Experimental results show this converter can interface two individual power sources simultaneously and ensure flexible power flow control with all ports bi-directionally. $N = 2$ converter structure can

AC/DC Bidirectional Power Supply – Benefits

An AC/DC bidirectional power supply module not only delivers energy but also recovers unused power, significantly improving the efficiency of modern

EA-PSB Bidirectional Power Supplies

EA supplies can parallel easily up to 3.84MW in output power, at up to 2000VDC. They come standard with a built-in function generator capable of creating

Solar + EV Charging Integration: 8-Step Design Guide for Installers ...

V2H (Vehicle to Home) routes vehicle battery power through the home's electrical panel to supply household loads. It requires a bidirectional EVSE certified for home integration and a

Programmable bidirectional DC power supply

The EA-PSB 10000 2U and 3U series are two-quadrant programmable bidirectional power supplies, capable of operating as both DC sources and

Bidirectional Power Supply

The EA-PSB Series bidirectional DC programmable power supply has an integrated, regenerative electronic load and therefore can sink (absorb) current and recover up to 96% of current, returning it to

15Pcs INA219 Bidirectional Current Power Sensor Tap Module Diy 3V

4. All features of INA219 support software version. 5. Use a single power supply, its working voltage is between +3.0 to + 5.5V. 1. INA219 module is a zero-drift, bidirectional current / power monitoring

Power semiconductor technologies for renewable energy systems ...

Power semiconductor technologies play a fundamental role in this transition by enabling efficient energy conversion, control, and grid integration across renewable energy systems.

INA240 data sheet, product information and support | TI

TI's INA240 is a -4 to 80V, bidirectional, ultra-precise current sense amplifier with enhanced PWM rejection. Find parameters, ordering and quality information

Bidirectional Modules

Discover advanced bidirectional power modules. Perfect for regenerative testing, EV battery formation, and smart grid simulation environments.

What is a solid-state transformer?

That can enhance sustainability by enabling bidirectional power flow and seamless integration of renewable energy and storage resources. That is

Bidirectional power modules

Designed for smart grid (V2G, V2H, V2L) applications, BMPU-R2

How to Simplify System Integration with a TPS DC DC

The TPS-DM570T1512KIF is a compact, high-performance DC-DC bidirectional power module designed to solve these exact integration

Energy Storage Plant Transformers for BESS Projects

Guide to energy storage plant transformers for BESS projects, covering design, sizing, applications, and grid integration for efficient power

Infypower – Power Electronics & Smart Energy Solutions

Infypower is a world leading power module supplier with over 5 million modules in stable operation globally already. Featuring exceptional power density, reliability,

Programmable bidirectional DC power supply

The EA-PSB series bidirectional power supply from Elektro-Automatik stands out as a leading solution; unlike traditional unidirectional power supplies

Bidirectional Power Supply

Bidirectional Power Supply High Performance DC Supplies that Source & Sink Power
The EA-PSB Series bidirectional DC programmable power supply has an integrated, regenerative electronic load

High Efficiency, Versatile Bidirectional Power Converter for Energy ...

By combining the two power stages into a single bidirectional power stage, this TIDA-00476 reference design proposes an optimized solution in terms of performance, cost, and size. The design utilizes a

Level Shifter Circuit: Theory, Types, and Applications

Level shifter circuit In digital systems, it's common for distinct sections to function using different power supply voltages. In real circuits, problems may occur if

DC-to-DC converter

Flyback converter 400V to 12V DC-DC conversion DC-to-DC converters are available as integrated circuits (ICs) requiring few additional components. Converters are also available as complete hybrid

USB Type-C & USB Power Delivery ICs

Our controllers are USB Type-C-compliant and provide up to 15 W in accordance with USB-IF specifications. Our USB Type-C converters integrate a DC/DC power supply for small, efficient

Strong Growth Anticipated in the Global 25kW DC AC Bidirectional Module ...

The 25kW DC AC Bidirectional Module Market prioritizes cost control and efficiency enhancement. Additionally, the reports cover both the demand and supply sides of the market.

APEC 2026 Power Electronics Passive Components

APEC 2026 highlights higher power density, wide-bandgap devices, and advanced packaging in power electronics. Discover what these trends mean

DC EV Charger & Bidirectional Charging Module | Sigenergy

Pair home solar storage with faster DC EV charging. Sigenergy's bidirectional charging module supports V2H use cases and smart home energy systems.

DC5V Lithium Battery Charging Protection Module Charge/Discharge ...

DC5V Lithium Battery Charging Protection Module Charge/Discharge Integrated Module Booster Step- Power Supply Beskrivelse 1. Miniature size of 17x12mm, extremely portable, easily embedded into

Contact Us

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