



Understanding the FG-12V38AH Battery: Technical Specifications and Practical Applications

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What's in the Code: Decoding FG-12V38AH

Let's start with the nameplate information. This battery designation breaks down into three critical components:

FG: Manufacturer's product series (exact brand requires confirmation)

12V: Nominal voltage rating

38AH: Capacity rating at 20-hour discharge rate

Think of it like reading a beverage label - 12V tells you the "pressure" available, while 38AH reveals the "volume" of energy stored. The physical dimensions typically measure 197x166x174mm (LxWxH), making it comparable in size to a standard car battery but optimized for deep-cycle applications.

Energy Storage Capacity Demystified

Using the basic energy calculation formula:

$$\text{Energy (Wh)} = \text{Voltage (V)} \times \text{Capacity (Ah)} = 12\text{V} \times 38\text{Ah} = 456\text{Wh}$$

This means the battery stores approximately 0.456kWh of energy. To put this in perspective:

Can power a 50W security camera system for 9+ hours

Supports a 300W medical device for 1.5 hours

Equivalent to running 45 LED bulbs (10W each) for 1 hour

Discharge Characteristics

Maximum continuous discharge current reaches 10CA (380A for 5 seconds), while standard discharge follows:

$$I = P/V$$

Where power (P) determines current draw. For example:

$$500\text{W inverter: } 500\text{W}/12\text{V} \approx 41.7\text{A}$$

$$\text{Runtime} = 38\text{Ah} / 41.7\text{A} \approx 0.91 \text{ hours}$$

Technical Superiority in Design

This VRLA (Valve-Regulated Lead-Acid) battery incorporates three key innovations:

FTF: Immersion plate formation ensures uniform electrochemical properties

AGM: 99% gas recombination efficiency prevents electrolyte stratification



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: Corrosion-resistant grid extends cycle life to 1,200+ deep discharges

Environmental testing parameters exceed industry standards:

Test Type Condition Performance

Vibration 4mm @ 16.7Hz for 1hr Zero leakage

Free Fall 20cm drop on hardwood No deformation

Overcharge 0.1CA for 48hrs >95% capacity retention

Application Scenarios

Common installations include:

Telecom base station backup systems

Solar energy storage (3-5 units in series for 36-60V systems)

Medical equipment power buffers

Marine electronics power supply

A recent case study showed 18 units supporting a 5kW off-grid solar system achieved 72% depth of discharge daily with projected 8-year service life.

Maintenance Best Practices

Follow these guidelines for optimal performance:

Maintain operating temperature between 15-40°C

Perform equalization charging every 3 months @ 58.2V (for 48V systems)

Keep terminal resistance

Web: <https://www.sphoryzont.edu.pl>