Product datasheet

Version: 05/03/2026

PowerTech - PowerBrick 48V 105Ah - Smart Battery

Reference : POW-48V-105AH-AB-BT

Brand : POWERTECH

Options :

No variants

3D Model : Available

EAN-13 : 3765304839059

48V LiFePO4 battery pack (nominal voltage 51.2V) rated 105Ah / 5.38 kWh, with integrated BMS, active balancing and Bluetooth monitoring. Designed for integration on a 48V DC bus (light traction, utility vehicles, AGVs/robotics, energy storage), with an IP65 ABS enclosure and M8 bolt terminals.

Overview

This “Smart” PowerBrick is designed for B2B plug-in integration as a replacement for a 48V lead-acid pack, with a wide operating window and built-in protection functions.

- LiFePO4 (LFP) chemistry with integrated BMS and active balancing (up to 1A per cell).
- Bluetooth monitoring (SOC, cell voltages, SOH, etc.).
- Energy efficiency > 98% and self-discharge < 3% per month.
- Calendar life > 10 years; > 3000 cycles (depending on usage profile).
- IP65 ABS enclosure.
- This 48V 105Ah version stands out for its high energy density (≈ 147 Wh/kg), which is particularly attractive for maximizing onboard energy at the same mass (within the PowerTech range, it is the highest; other versions are typically ~120–130 Wh/kg depending on the model).

Bluetooth monitoring (diagnostics & maintenance)

Bluetooth lets you view indicators on a smartphone such as SOC, cell voltages, SOH, etc. It is useful for quickly checking pack status, spotting drift (imbalance, BMS event) and facilitating field support.

In multi-pack architectures (several batteries wired in parallel or in series within the same application), Bluetooth enables monitoring beyond a single pack by checking each battery individually (connect/read per battery via the app).

System integration

The pack integrates as a DC source on a 48V bus. The BMS monitors and protects against over/undervoltage, overcurrent, and out-of-range charge/discharge conditions. For applications with high current peaks (starts, inverters/drives), consider current limits as a function of duration.

- Up to 16 packs can be connected in parallel to increase capacity and available current.
- Standard CC/CV charging strategy; supervision must remain consistent with BMS thresholds.
- Maintenance/diagnostics: leverage monitoring (SOC/SOH) and log events within the integration.

Technical specifications

Nominal voltage / Capacity	51.2 V / 105 Ah
Energy	5.38 kWh
Charge voltage (CC/CV)	57.6 V ± 0.8 V (optional float 53.44 V max)
BMS thresholds (charge / discharge)	59.2 V ± 0.4 V / 40 V
Charge current (continuous / max)	50 A / 100 A
Discharge current	120 A continuous ; 200 A (< 30s) ; 500 A peak (max 280 ms)
Temperatures	Charge 0 to +60°C ; Discharge -20 to +60°C ; Storage 0 to +50°C
Ingress protection	IP65
Enclosure / Cells	ABS / Prismatic
Dimensions (L×W×H)	500 (520) × 239 × 217 mm
Weight	36.5 kg
Terminals	M8 bolts

Real-world performance

PowerTech provides curves that are rarely this detailed for a 48V pack. They help anticipate real behavior (voltage, capacity, temperature, aging) rather than relying solely on an “Ah” figure.

- **Available capacity vs current** : discharge curves at 25°C show a relatively “flat” voltage over much of the discharge, and usable capacity remaining close to nominal even as current increases (low “Peukert-type” losses).
- **Temperature impact** : at the same current, cold increases voltage sag and reduces truly usable capacity; at higher temperature, voltage hold-up is improved (to be considered against the operating temperature range).
- **Power and peaks (directly usable numbers)** : 120A continuous ≈ 6.14 kW ; 200A (<30s) ≈ 10.24 kW ; 500A peak (280 ms). Consider this when sizing downstream components to avoid a BMS protection shutdown on peaks.
- **Efficiency and self-heating (order of magnitude)** : with >98% stated efficiency, drawing 5 kW for 1 hour corresponds to <2% losses, i.e. <100 W dissipated (≈0.1 kWh over 1h). Temperature rise then depends strongly on the environment (sun, enclosure, ventilation, convection), but the order of magnitude of internal losses remains low at moderate power.
- **Self-discharge** : storage curves illustrate low self-discharge at moderate temperature and faster degradation in hot storage (40–50°C).

- **Aging / cycles vs DoD** : the “cycles vs depth of discharge (DoD)” graph confirms that shallower use significantly increases service life.
- **Energy density** : ~147.4 Wh/kg and ~207.5 Wh/L (useful for concretely comparing “onboard kWh” at equivalent mass/volume).

Installation & commissioning

Mechanical mounting: the battery must be installed flat, resting on its base. It is not designed to be installed on its side, upright, or upside down (top down). This requirement prevents unsuitable mounting that can reduce reliability in mobile environments.

Provide suitable upstream protection (DC fuse/breaker), isolation, and a pre-charge strategy if the downstream equipment has a large input capacitance (drive/inverter). Use lugs suitable for M8 bolts, with controlled torque and anti-vibration retention.

Use case: DC motor controlled “ON/OFF” via contactor

If the battery is connected directly to a DC motor controlled only by a relay/contactor (without a drive/controller), watch out for the **startup inrush current**. Even if the steady-state current seems reasonable, the inrush can be very high and trigger a **BMS protection shutdown** (a phenomenon more visible on smaller-capacity versions, but worth keeping in mind across the range).

In this case, it is generally preferable to use a **DC controller/drive** (even a simple one, with a potentiometer/dial) to limit inrush current, soften acceleration, and stabilize operation.

- Validate thermal behavior in continuous operation (current, ventilation, environment).
- During charging, respect the temperature range and CC/CV setpoint.
- When paralleling packs, match lengths/cross-sections to limit current imbalance.

Wiring, protection & robustness

For reliable integration in mobile/industrial environments: limit current loops, control hot spots (connections), and mechanically secure the harness (strain relief, bend radius, routing). At high current, the architecture (protection, pre-charge, contactor) conditions reliability as much as the battery itself.

- Size cables and protection for the targeted continuous current, then verify heating during tests.
- Manage peaks (startup) in line with BMS limits and downstream equipment.
- Provide measurement points (Vbus / I / temperatures) for diagnostics and maintenance.