MUSCLEGRID

CONSISTENCY THROUGH YOU

LIFEPO$_4$ ENERGY STORAGE · SPEC & USER GUIDE

LITHIUM BATTERY

Prime · Thunder Pro · Signature | 25.6V – 51.2V | up to 640Ah

6.14 kWh
MAX ENERGY

6000+
LIFE CYCLES

5 yr
WARRANTY

THE TECHNOLOGY

LITHIUM THAT OUTWORKS LEAD-ACID

MuscleGrid developed high-capacity $LiFePO_4$ batteries for Indian homes, shops and solar systems. One pack runs lights, fans, television, refrigerator, water motor and kitchen appliances through outages — and charges back to 100% in 2–4 hours from solar or grid.

- ✓ **High capacity & long life** — 6000+ charge cycles and 15+ years of service from A+ grade prismatic cells.
- ✓ **JK Smart BMS protection** — guards against over-charge, over-discharge, over-current, short circuit and temperature extremes.
- ✓ **1A active balancer** — transfers energy from high cells to low cells, keeping the whole pack matched for life.
- ✓ **LCD + Bluetooth app** — live voltage, current, SOC and per-cell data on screen or phone.
- ✓ **Maintenance-free** — no topping up, no fumes, about ¼ the weight of comparable lead-acid banks.

	MUSCLEGRID LFP	LEAD-ACID
Cycle life	6000+	800–1200
Full charge	2–4 h	8–10 h
Usable depth	80–90%	50%
Maintenance	None	Monthly

THE RANGE

ONE FAMILY. THREE SERIES.

Every MuscleGrid LFP pack shares the same A+ grade cells and heavy-duty steel case. The series sets the brains — pick the BMS and display that match your system.

PRIME SERIES

ESSENTIAL

Basic BMS · Mobile app connectivity · Passive cell balancing

Models 25.6V · 48V · 51.2V — 100Ah & 120Ah

THUNDER PRO

THIS GUIDE

JK Smart BMS · LCD display + mobile app · 1A active balancer

Models 25.6V · 48V · 51.2V — 100Ah & 120Ah

FEATURED: 48V & 51.2V 120AH · ASIN B0D2GMQ8FR / B0DVJ14Z9B

SIGNATURE SERIES

FLAGSHIP

Touch-screen display on every model · JK Smart BMS · 1A active balancer — everything in Thunder Pro

Models 25.6V · 48V · 51.2V — 100Ah & 120Ah

Plus 51.2V 314Ah (ASIN B0H72K7B2Z) & 640Ah towers — 8000+ cycle cells · 200A JK BMS · 2A active balancer

WHICH SERIES IS YOURS?

Prime for dependable everyday backup at the best price · **Thunder Pro** for solar systems that want closed-loop inverter control and active balancing · **Signature** for flagship touch-screen monitoring and large storage up to 32.7 kWh per tower.

A+ GRADE CELLS
LiFePO$_4$ prismatic, all series

APP MONITORING
On every series

5-YEAR WARRANTY
1-time replacement

MADE IN INDIA
MuscleGrid Industries

01 · SPECIFICATIONS

TECHNICAL SPECS

THUNDER PRO SERIES · 48V & 51.2V · 120AH

	48V MODEL	51.2V MODEL
Amazon ASIN	B0D2GMQ8FR	B0DVJ14Z9B
Chemistry	$LiFePO_4$ · A+ grade prismatic cells	
Cell configuration	15S	16S
Nominal voltage	48.0 V	51.2 V
Rated capacity	120 Ah	
Stored energy	5.76 kWh	6.14 kWh
Max charge voltage	54.7 V	58.4 V
Discharge cut-off	40.5 V	43.2 V
Std. / max charge current	50 A / 100 A	
Max cont. discharge	100 A · 200 A instantaneous	
Cycle life	6000+ cycles @ 80% DoD	
Charge temperature	0 – 55 °C	
Discharge temperature	-20 – 55 °C	
Terminals	M8 bolt · torque 10–12 N·m	
Installation	Indoor · floor or rack mount · upright	
Warranty	5 years · 1-time replacement	

BMS — JK-PB1A15-16S SMART BMS

- Active balance current **1 A**
- Comms **2× RS485 + CAN**
- Dry contacts **2 (alarm / fan)**
- CAN rate **250 kbps**
- Voltage acquisition **±3 mV**
- Temp. sensors **1 + 4 NTC**
- Parallel addresses **DIP 0–15**
- Standby draw **12 mW**

VALUES AT 25 °C, 0.5C. SEE PRODUCT LABEL FOR WEIGHT & DIMENSIONS.

02 · INSTALLATION

PREPARE THE SITE

1 INSPECT ON ARRIVAL

Unbox and check the case, terminals and display for transit damage. Do not install a damaged pack — call support first. Keep the wooden crate until commissioning is complete.

2 CHOOSE THE POSITION

Dry, ventilated, level indoor spot away from heat sources, direct sunlight and water. Stand the pack upright on the floor or a rack, with at least 100 mm clearance on all sides and the display facing you. The pack is heavy — lift with two people using both handles.

3 FIT DC PROTECTION

Install a 125 A DC MCB or fuse on the positive line between battery and inverter, within easy reach. This is your service disconnect — leave it OFF until step 7.

4 SIZE THE CABLES

Use 25–35 mm² copper cable with crimped M8 lugs, as short as possible (≤2 m) and both runs equal length. Route positive and negative together; avoid sharp bends.

IN THE BOX

Battery pack · RS485/CAN communication cable · user manual & warranty card. Contents may vary — check the packing list inside the crate.

YOU WILL NEED

- Insulated 13 mm spanner / torque wrench
- 125 A DC MCB or fuse + holder
- RS485 / CAN patch cable (supplied)
- Digital multimeter
- 25–35 mm² lugged copper cables
- Insulated gloves & eye protection

Professional installation by a qualified electrician is recommended.

02 · INSTALLATION

CONNECT & COMMISSION

5 CONNECT THE POWER CABLES

With inverter and MCB OFF: connect positive (+, red) to the battery first, then negative (–, black). Torque M8 terminal bolts to 10–12 N·m. Never let a tool bridge the two terminals.

6 CONNECT COMMUNICATION

For closed-loop control, connect the inverter's BMS port to **CAN** or **RS485-1** on the battery panel. (RS485-2 is only for pack-to-pack parallel linking.) Select your inverter's protocol in the app.

7 POWER ON

Boot the BMS (see box below), then switch the MCB on, then start the inverter. Verify voltage, current and SOC on the LCD or in the app before applying load.

8 CONFIGURE & FIRST CHARGE

Set the inverter parameters from page 07, then charge the pack to 100% before its first discharge so the SOC meter calibrates.

AFTER INSTALLATION: register your warranty within 30 days at newcrm.musclegrid.in and keep the invoice with this booklet — you'll need both for a claim.

BOOT / SHUTDOWN

Boot: press the white button beside the display for 1–2 s.
Shutdown: in the on state, hold the same button ≈5 s.

WON'T WAKE?

The BMS also supports charging activation — connecting a charger ≈2 V above battery voltage wakes it from deep sleep.

03 · CONFIGURATION

SET YOUR INVERTER

	48V MODEL	51.2V MODEL
Battery type	Lithium / LFP (or "USE" custom)	
Bulk / absorption voltage	54.0 V	57.6 V
Float voltage	53.6 V	57.0 V
Low-voltage cut-off	42.0 V	44.8 V
Max charge current	50 A recommended (100 A max)	
BMS protocol	CAN 250K / RS485 — select brand in app	

With CAN or RS485 closed-loop active, the inverter follows the BMS's requested voltage and current automatically — the values above then act as a safety fallback.

PARALLEL CONNECTION · UP TO 16 PACKS

✓ Parallel identical packs only — same model, capacity and firmware. Never mix 48V with 51.2V packs.

✓ Charge every pack to 100% individually before connecting them together.

✓ Run equal-length cables from each pack to a common busbar — never daisy-chain the power path.

✓ Link packs with the RS485-2 ports and set a unique DIP-switch address on each (0–15). Address 0 is the master — connect it to the inverter.

✓ The BMS's parallel current-limiting function protects a newly added pack, but matched SOC keeps performance best.

NEVER CONNECT PACKS IN SERIES. These models are parallel-only — series connection voids the warranty and can damage the BMS.

04 · MONITORING

READING THE DISPLAY

Area 1	**Fault code** — when the icon lights, the number below is the active fault (codes on page 10). Multiple faults scroll.
Area 2	**Warning icon** — lit whenever any abnormal condition is present.
Area 3	**State of charge** — remaining battery percentage.
Area 4	**Current** — a leading "−" means discharge; no sign means the pack is charging.
Area 5	**Total voltage** — pack terminal voltage.

To save power the screen sleeps 10 s after charging stops or keys go idle; it stays lit while discharging. Press the white button to wake it.

BLUETOOTH MONITORING APP

✓ Live per-cell voltages, current, SOC and temperatures.

✓ Set inverter protocol, balance trigger and charge limits.

✓ Control charge / discharge switches remotely.

✓ Android 7+ and iOS. Pair via Bluetooth in the app.

SCAN TO DOWNLOAD

INTELLIGENT SLEEP

If current stays below 1 A for 26 hours the BMS sleeps to protect the cells. Wake it with the white button or by connecting the charger. You can disable sleep in the app.

05 · PROTECTION

THE BMS HAS YOUR BACK

Every protection below is standard and recovers automatically once the condition clears — no fuses to replace, no manual resets in normal use.

- ✓ Charge overvoltage protection
- ✓ Discharge undervoltage protection
- ✓ Charge & discharge overcurrent
- ✓ Short-circuit protection
- ✓ Over-temperature (cell & MOS)
- ✓ Low-temperature charge lockout
- ✓ Parallel current limiting
- ✓ Charge current limiting (≈10 A safe mode)

FACTORY DEFAULT PARAMETERS · $LIFEPO_4$ · PER CELL

Cell overcharge protection / recovery	3.60 V / 3.54 V
Cell undervoltage protection / recovery	2.60 V / 2.65 V
Automatic shutdown voltage	2.50 V
Balance trigger differential	10 mV · 1 A active
Charge overcurrent delay / release	3 s / 60 s
Discharge overcurrent delay / release	300 s / 60 s
Short-circuit protection delay / release	1500 µs / 60 s
Charge / discharge overtemp (recover)	70 °C (60 °C)
Charge low-temp protection (recover)	-20 °C (-10 °C)
MOS overtemp protection (recover)	100 °C (80 °C)

DEFAULTS ARE FACTORY-TUNED FOR LFP — CHANGE THEM IN THE APP ONLY IF YOU KNOW WHAT YOU'RE DOING.

06 · TROUBLESHOOTING

FAULT CODES

When the fault icon lights, the number in Area 1 of the display identifies the condition. Most faults clear automatically once the cause is removed.

CODE	MEANING	WHAT TO DO
1	Cell over-discharge alarm	Remove load and recharge immediately.
2	Cell overcharge alarm	Check inverter charge voltage against page 07.
3	Overcurrent alarm	Reduce the connected load; auto-recovers after release time.
4	MOS over-temperature	Improve ventilation; let the pack cool.
5	Battery over-temperature	Stop charge/discharge until temperature normalises.
6	Short-circuit alarm	Disconnect load, inspect wiring before restart.
7	Internal communication abnormal	Restart the BMS; if it persists, call support.
8	Balance-line resistance too high	Service required — contact support.
9	Drop string (cell disconnection)	Shut down and contact support — do not continue use.

FAULT WON'T CLEAR?
Note the code, switch the MCB off and call us — video-call assistance available.

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24×7 · service@musclegrid.in

07 · COVER & CARE

WARRANTY & SAFETY

5-YEAR WARRANTY

✓ 1-time replacement, hassle-free — doorstep pickup and delivery, no running around.

✓ Covers manufacturing defects and BMS failures.

✕ Excludes physical damage, water ingress, unauthorised servicing, and series connection.

REGISTER WITHIN 30 DAYS & CLAIMS → **NEWCRM.MUSCLEGRID.IN**

+90 DAYS

YOUR FEEDBACK EARNS YOU 90 EXTRA DAYS OF WARRANTY

Share your experience with us and we'll extend your warranty by 90 days — free. For details, visit **newcrm.musclegrid.in**

SAFETY WARNINGS

Never short-circuit or reverse polarity. Keep metal tools, jewellery and loose wiring away from the terminals.

Never connect these packs in series. Parallel connection only, identical models.

Do not open the case. No user-serviceable parts inside; opening voids the warranty.

Keep away from fire and water. Do not expose to rain, condensation or heat sources; never incinerate.

Charge between 0–55 °C only. The BMS blocks charging below −20 °C to protect the cells.

Disconnect before servicing. Switch off the inverter, then the MCB, then shut the BMS down.

Keep away from children. Install out of reach and keep the area clear.

Recycle responsibly. Return end-of-life packs to MuscleGrid or an authorised e-waste recycler.

CARE TIPS

For long storage keep the pack at ~50% SOC in a cool dry place and top up every 3 months. Wipe with a dry cloth only — no solvents, no water jets.

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FREE PREMIUM CRM ACCESS

Track your warranties, raise claims, and get priority & video-call support from our expert team — all in one place.

newcrm.musclegrid.in