



FEATURES

- Designed for Indian EV & ESS applications
- LFP-optimized; up to 252 cells in series (~808.9 V nominal)
- Up to 500 A continuous / 1000 A peak discharge variants
- Passive cell balancing at 200 mA
- CAN (UDS) + UART/RS485 tool interface
- FOTA - firmware over-the-air updates

INTRODUCTION

The Xbattery BharatBMS™ (800V) is a compact, LFP-optimized Battery Management System engineered in India for the next generation of electric mobility and stationary energy-storage applications. Built around Fourteen high-precision cell-monitoring ICs and a robust MCU, it manages up to 252 series-connected LFP cells with ± 1 mV cell-voltage accuracy and 100ms sampling.

The platform operates from a 12 V logic supply and provides four high-side contactor drivers with feedback plus a pre-charge relay output. Twenty-eight internal and Eighty four external NTC channels deliver comprehensive thermal coverage across the pack.

Communications include Two non-isolated CANs - with UDS (ISO 14229) protocol support - plus one UART port and one RS485 port that carry a proprietary protocol for the Xbattery PC tool. The PC tool provides live monitoring, parameter configuration, and FOTA updates for fleet-wide rollouts.

KEY CAPABILITIES

SAFETY

- ▶ Insulation / ground-fault detection (250 Ω /V – 1000 Ω /V)
- ▶ Open-circuit detection
- ▶ Configurable OV/UV/OT/OC thresholds
- ▶ Supports both 4 × contactor feedback + pre-charge and 2 × contactor feedback + pre-charge

USABILITY

- ▶ PC tool: live monitoring & configuration
- ▶ FOTA — firmware over-the-air updates
- ▶ Event, error and warning logging
- ▶ Standby / sleep mode supported

BATTERY LIFE

- ▶ ± 1 mV cell-voltage accuracy
- ▶ 100 ms cell sampling
- ▶ Passive balancing at 200 mA
- ▶ 112 NTC channels for thermal mapping

PERFORMANCE

- ▶ Up to 252S LFP, 808.9 V nominal
- ▶ 100 / 150 / 200 / 500 A continuous variants
- ▶ Peak 150 / 300 / 400 / 1000 A@ 10 s
- ▶ 2 non-isolated CAN, 1 × UART, 1 × RS485

APPLICATIONS



Passenger EV



e-LCV / Truck



Stationary ESS



Industrial / AGV



Electric Bus



Marine

XBattery BharatBMS™ —800V class, LFP-optimised, 252S

MASTER CONTROL UNIT (MCU)	
Power supply	12 V DC
Cell chemistry supported	Lithium Iron Phosphate (LFP) optimized
Number of cell-monitoring ICs	14 (maximum 64 supported)
Maximum cells in series	252
Nominal pack voltage	808.9 V DC (252 S × 3.212 V/cell)
Range of high-voltage measurement	0 – 808.9V DC
Accuracy of high-voltage measurement	±1.5 % @ -20 °C to +85 °C
Pack current measurement range	Matches connected current-sensor range
Range of current measurement input (Shunt)	Configurable, 40 mV to 75 mV full-scale differential
Accuracy of current measurement input (Shunt)	±0.7 % of reading -20 °C to +85 °C (additive to sensor accuracy)
Ground-fault detection (leakage) levels	Calibratable, 250 Ω/V – 1000 Ω/V
Continuous discharge current	100 / 150 / 200 /500 A (variant dependent)
Peak discharge current	150 / 300 / 400 /1000 A @ 10 s (variant dependent)
Contactors / relays	2 or 4 × contactors with auxiliary feedback, 1 × pre-charge relay output
COMMUNICATION & SOFTWARE	
CAN interfaces	2 × non-isolated CAN
CAN protocol support	CAN 2.0A (11-bit) / CAN 2.0B (29-bit); UDS (ISO 14229)
UART/RS485 interfaces	1 × UART port /1 × RS485 port
UART/RS485 protocol	XBattery proprietary protocol (PC tool communication), Modbus
PC tool	Live monitoring, parameter configuration, diagnostics
FOTA	Firmware Over-The-Air updates supported
CELL & THERMAL MONITORING	
Detectable cell voltage	0.5 – 5.0 V DC
Cell-voltage accuracy	±1 mV
Cell-voltage sampling time	100 ms (Vary based on the CMU count)
Cell balancing topology	Passive
Cell balancing current	200 mA per cell
Internal temperature sensors	28
External temperature sensors (NTC)	84
Temperature accuracy	±1 °C
Operating temperature range	-20 °C to +85 °C
Standby / sleep mode	Supported