

Commoditizing Energy Storage To Enable Global Circular Economy

Extendable Battery Framework™ (EBF): A suite of groundbreaking technologies

Charge Node™: Intelligent, self-contained module with built-in BMS and isolation

Charge Mesh™: Adaptive, resilient power system architecture

Digital Twin LCTs: Secure, enforceable control tokens for precise tracking and use control

Key Innovations

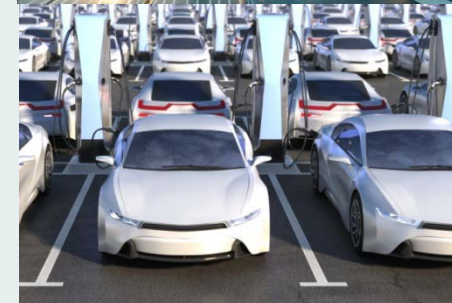
Positively prevent thermal runaway – series-only module architecture with individual cell real-time monitoring and internal relays

On-demand pack configuration – configure packs for precise use requirements as-needed

Agnostic to cell type and chemistry – facilitate rapid introduction of improvements to the market, greatly improve market access for producers and supply access for consumers

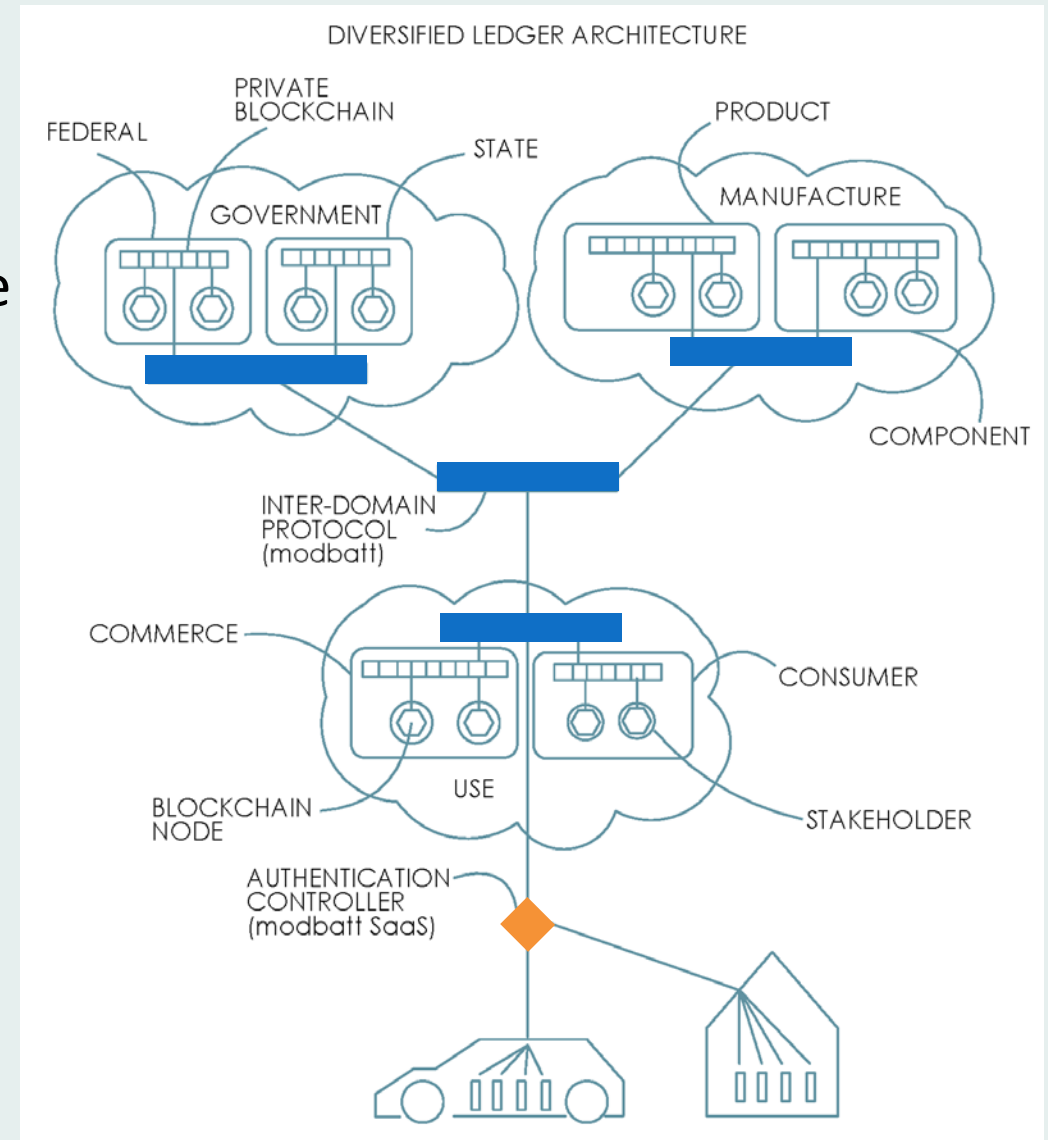
Full module lifecycle tracking and use control – Linked Control Tokens (LCTs) in hierarchical multi-domain blockchains

Commonality across all sectors – automotive, aerospace, marine, stationary – make full circular economy practical and cost effective via multi-use, re-use, and verified recycling



- **Diversified Ledger Architecture:** Secure, cross-referenced multiple ledgers
 - **Control:** Digital twin LCTs for seamless module and vehicle integration
 - **Hierarchical trust:** Multi-domain distributed ledgers efficiently connecting and informing all ecosystem stakeholders
 - **Transparent and verifiable:** Robust mix of private and public blockchains with need-to-know and right-to-know access

Diversified Ledger Architecture



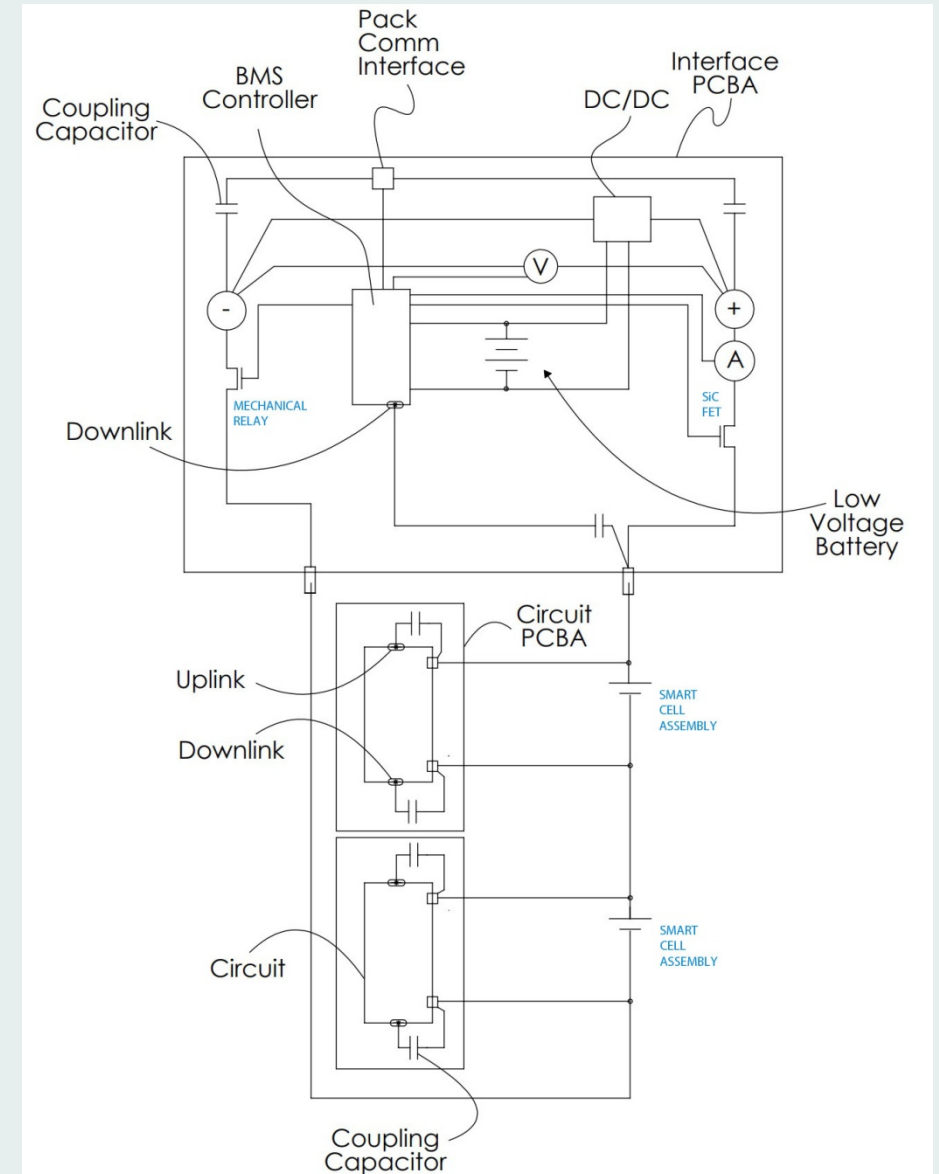
Charge Node™ Mechanical Specification

- **Mechanical Specifications:** Safe, efficient, and robust design
 - **Connections:** Series-only to prevent uncontrolled currents
 - **Cooling:** Thermally conductive encapsulation and external liquid cooling support
 - **Form Factors:** Multiple sizes and voltages for diverse applications



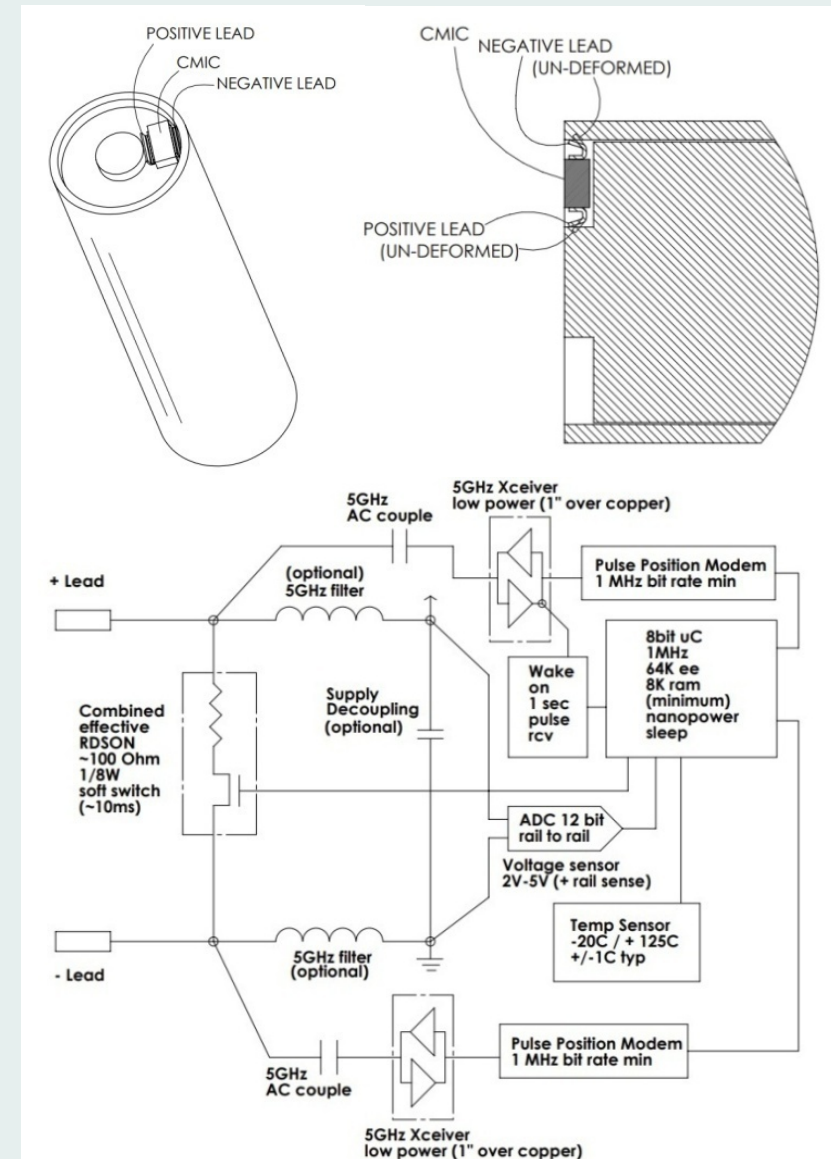
Charge Node™ Electrical Specification

- **Electrical Specifications:** Advanced safety and communication features
 - **Isolation:** Series connections and terminal relays for secure operation
 - **Smart Cells:** Voltage and temperature monitoring, balancing, and heating
 - **Communication:** PLC for reliable data exchange and unique module IDs



Charge Node™ Smart Cell Circuit

- **Smart Cell Circuit:** Universal compatibility and comprehensive monitoring
 - **Monitoring:** Real-time temperature and voltage tracking
 - **Communication:** AC coupled PLC and robust protocols
 - **Lifecycle Management:** Unique IDs for tracking and authentication



Appendix A

List of Filed IP

1. **US11,380,942** PCT/US21/50518 **HIGH VOLTAGE BATTERY MODULE WITH SERIES CONNECTED CELLS AND INTERNAL RELAYS** Filed 02-NOV-2020 *module with series connected cells and relays* - **ISSUED 7/5/2022**
2. **US11,469,470** PCT/US21/53798 **BATTERY MODULE WITH SERIES CONNECTED CELLS, INTERNAL RELAYS AND INTERNAL BATTERY MANAGEMENT SYSTEM** Filed 04-JAN-2021 *cell monitoring/conditioning circuit, PCBAs, methods* - **ISSUED 10/11/2022**
3. **US11,563,241** **APPARATUS AND METHODS FOR REMOVABLE BATTERY MODULE WITH INTERNAL RELAY AND INTERNAL CONTROLLER** Filed 10-FEB-2021 *authentication methods and circuits* - **ISSUED 12/14/2022**
4. **US11,575,270** PCT/US21/55047 **BATTERY MODULE WITH SERIES CONNECTED CELLS, INTERNAL RELAYS AND INTERNAL BATTERY MANAGEMENT SYSTEM** Filed 22-FEB-2021 (CIP) *AC coupled comms and methods* - **ISSUED 02/07/2023**
5. **US11,699,817** PCT/US21/54434 **APPARATUS AND METHODS FOR REMOVABLE BATTERY MODULE WITH INTERNAL RELAY AND INTERNAL CONTROLLER** Filed 31-MAR-2021 *system, pack and module controllers, blockchain* **ISSUED 07/11/2023**
6. **US11,477,027** PCT/US21/55813 **APPARATUS AND METHODS FOR MANAGEMENT OF CONTROLLED OBJECTS** Filed 11-MAY-2021 *multi-domain management of controlled objects, LCT/blockchain* - **ISSUED 10/18/2022**
7. **US17/528,903** PCT/US21/60860 **ELECTRICAL POWER SYSTEM WITH REMOVABLE BATTERY MODULES** Filed 17-NOV-2021 *dissimilar modules in parallel* - **ALLOWED 2/13/2024**
8. US17/710,759 PCT/US22/24797 **APPARATUS AND METHODS FOR MANAGEMENT OF CONTROLLED OBJECTS** Filed 31-MAR-2022 *linking of identifiable records, authorizer device pairings*
9. **US11,876,250** PCT/US22/xxx **HIGH VOLTAGE BATTERY MODULE WITH SERIES CONNECTED CELLS AND INTERNAL RELAYS** Filed 31-May-2022 *dissimilar relays, PLC control bus, linear and pwm modes* - **ISSUED 1/16/2024**
10. US18/086,515 **ELECTRICAL POWER SYSTEM WITH REMOVABLE BATTERY MODULES** Filed 12-DEC-2022 *vehicle and stationary installations having a power system, energizing a bus*
11. US18/092,806 **LOW COST BATTERY CELL MONITORING CIRCUIT** Filed 3-JAN-2023 *low cost ASIC*