

## XPAND Modular Pack (XMP) - For Transit / Marine / Grid

### The XALT Energy® Advantage

- High specific energy and volumetric energy density
- Rugged design for challenging environments
- Outstanding safety and abuse tolerance
- Efficient direct liquid cooling maintains ideal cell temperatures
- IP67 compliant (with connectors mated)
- Easy to install, configure, and upgrade



### Introducing the XPAND Energy Storage System

The XPAND Modular Pack (XMP) is XALT Energy's state-of-the-art Energy Storage System based on XALT Energy's world-class lithium-ion high energy cells. XMP is designed for use in commercial truck, bus, and heavy duty transportation, as well as marine and stationary applications.

### XMP111E: Maximizing Energy Without Sacrificing Volume, Weight or Safety

The XMP111E sub-pack uses XALT's 63Ah High Energy cells in a 2p24s architecture to provide 11.1kWh total energy. Designed for use with moderate charge and discharge rates (C/3 and 1C, respectively), XMP111E is ideal for high energy applications requiring long usage periods between on-plug charging. Each sub-pack contains Voltage-Temperature-Balancing boards (VTBs) that measure voltages of all 24 cell pairs and internal pack temperatures, and perform cell balancing. XMP111E is designed for use with XALT's Battery Disconnect Unit (BDU) and Master Control Unit (MCU) through the I/O port. As with all sub-packs in the XMP family, XMP111E is designed for use in large battery arrays to provide hundreds of kWh in demanding mobile (and stationary) environments.

### Customizable Solutions

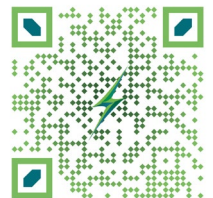
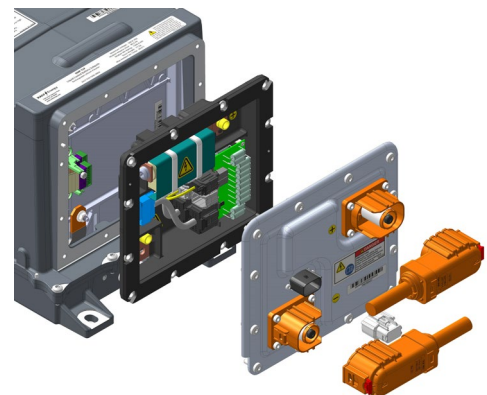
XALT Energy's "Variable Bulkhead" allows customized electrical and cooling interfaces for each customer without retooling the entire sub-pack. The bulkhead version shown here contains two keyed, shielded, sealed high-voltage connectors with integrated HVIL; other connector options are available. Sub-packs are typically integrated in series and in parallel to create very high energy and high voltage systems.

### Advanced Thermal Management

XMP's advanced, active liquid cooling system maintains ideal cell temperatures throughout the pack and responds quickly to increases in power demand and ambient (environmental) temperatures. No need for bulky air plenums, noisy fans, or conditioned air: efficient direct liquid cooling prolongs cell life under the most demanding cycle profiles and installation environments, while maintaining full IP67 sealing performance.

### Upgradeable, Ultra-Long Lifecycle Roadmap

The XMP core is designed to accommodate cells in XALT's 225mm family without the need for retooling, anticipating a wide variety of application voltage, power, and energy. This means as XALT's cell technologies advance or packs become available for re-purposing, the XMP core can be replaced while all external interfaces remain the same.



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### Advantages

#### Modular and Flexible Design

- Easy to customize high voltage, low voltage and cooling interfaces to each application
- All connections at front panel; rear access not needed for installation
- Designed for use in very large strings and pack combinations (up to 1,000V per string, and up to 24 strings in parallel)

### System Support Options

#### Accessories

- Battery Disconnect Unit (BDU)
- Master Control Unit (MCU)
- Low Voltage Harness (LVH) Kit
- High Voltage Cable Sets (HVC)
- XALT Battery Viewer (XBV) Telematics

#### Lifecycle Support

- XPAND Service Tool
- Remote Data Monitoring & Prognostics
- Core Upgrades (with new cells)
- End-of-Life Re-purposing, Recycling
- Integration Support
- On-site Training Classes

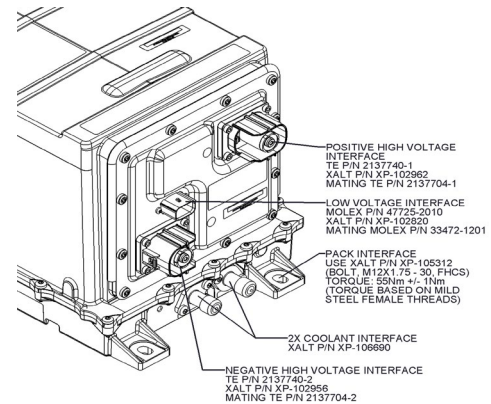
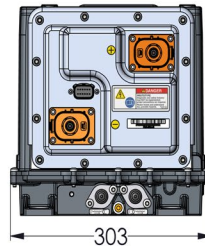
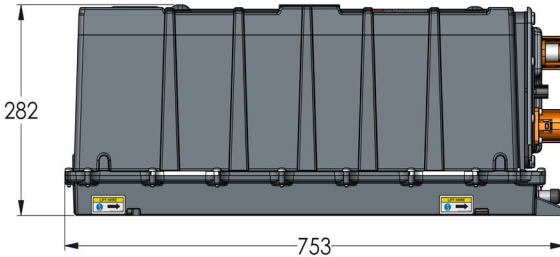
### Performance<sup>1</sup>

XALT Li-ion NMC/G Cell	63Ah UHE	Cell Configuration	2p 24s
Capacity (Rated @ C/10)	126Ah	Discharge Energy (C/10)	11,100Wh
Voltage (Nominal)	88.3V	Energy Density	≥173Wh/L
Weight	76kg	Specific Energy	≥146Wh/kg
Dimensions (all versions incl base) <sup>*</sup> (L) 753mm (W) 303mm (H) 282mm			

<sup>\*</sup>Excluding mating connector

### Environmental, Safety, and Abuse Tolerance

Test	Conditions	Reference
Vibration	Random, 3 axis, 21 hr/axis	ISO 12405
Mechanical Shock	20G, 11ms, ±3 axis, 6 ea	UNDOT 38.3 TA
Thermal Shock	75°C to -40°C within 30 minutes	ISO 12405
Ingress Protection	Mated: IP67, IPXXD; Unmated IPXXB	ISO 20653
Composite Heat & Humidity	RH93%, 25° - 65°C 28 day	ISO 16750
Housing Load	Knee 150kN/m <sup>2</sup> ; Foot 356kN/m <sup>2</sup>	GMW 16390
UNDOT	UN T-1, 2, 3, 4, 5	UNDOT 38.3
External Fuel Fire	130 seconds over fuel fire	ECE R100 8E
Drop Test	1.2m onto cement on corner	IEC 62281
Unbalanced Overcharge	1 cell pair @ 200% forced overcharge	
Forced Internal Coolant Leak	Rotate and hold around each axis	
External Short Circuit, Fused	5mΩ, 100mΩ	J2929, UN 38.3



NOTE: Subpack shown with optional shielded HV connectors

<sup>1</sup>Product specifications are preliminary; XALT Energy reserves the right to modify the product technical specifications.