

XPAND Rack System (XRS) - For Marine and Grid



### The XALT Energy® XRS Advantage

- XRS142 Type Approved per 2018 DNV-GL (Certificate # TAE00002YC)
- Easy to install, configure, and upgrade
- Outstanding safety and abuse tolerance
- Efficient direct liquid cooling maintains ideal cell temperatures
- IP44 compliant cabinet (with panels installed)
- Expandable to 2.66MWh with single MCU; virtually no limit with multiple MCUs

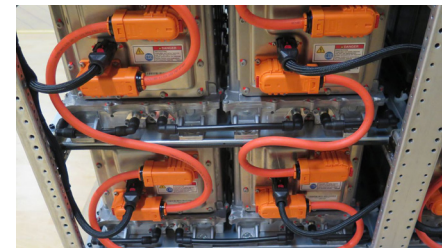


### Introducing the XRS (XPAND Rack System)

The XRS contains all battery system components, as well as coolant distribution manifolds and exhaust ventilation ducting. Each rack can contain up to two (2) strings of ten (10) sub-packs, and multiple racks can be connected in a row with exterior panels affixed to make a single, enclosed cabinet. In the 10s2p rack shown here, the lower five (5) rows contain the sub-packs and the top row contains the two (2) BDUs, one (1) MCU, and all supporting ancillary equipment. The rack and battery system it contains have both received DNV-GL Type Approval (TAE0000104 & TAE00002YC respectively), demonstrating their compliance with the latest (2018) DNV-GL Standard.

### Ease of Installation and Service

The cabinet can be delivered to the end user with all internal components (controllers, busbars, cables, ducting, coolant manifolds) pre-installed, or in kit form for on-site assembly. All connections to the sub-packs are in the front (HV & LV harnesses, coolant connections, and mounting fasteners), eliminating the need for access to the back of the cabinet. Each column of the rack has a front door, which can be fitted with locks to prevent unauthorized access.



### Thermal Management and Ventilation Management

XRS is designed with fully-integrated exhaust ventilation ducting, which circulates the air within the battery cabinet. The ducting also forms a seal around each sub-pack's overpressure vents, to remove any gases formed in the unlikely case of a thermal event. In addition, XRS includes fully-integrated thermal management pipes, that distribute coolant to each sub-pack. Push-to-Connect fittings are used for coolant connections, and coolant tubing is routed from the distribution manifold in the back of the cabinet along the sides of the sub-packs to the front inlet/outlet coolant ports.

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Performance Characteristics for 10s2p XRS<sup>1</sup>

XRS Variant	XRS142	XRS152	XRS222
Sub-pack Variant	XMP71P	XMP76P	XMP111E
XALT Li-Ion NMC/G Cell	40 Ah HP	43 Ah HP	63 Ah UHE
Total Capacity (Ah)	160	172	252
Total Energy (kWh)	142	152	222
Specific Energy (Wh/kg)	71	76	111
DNV-GL Type Approval - Battery System*	TAE00002YC	Q4 2019	Q1 2019
Cell Configuration	2p24s per sub-pack		
Sub-Pack Configuration	10s2p per rack		
System Voltage (V)	$V_{nom} : 884; V_{min} : 648; V_{max} : 984$		
Dimensions (w/o cladding) (mm)**	H: 2187 W: 1330 D: 950		
Mass (fully populated) (kg)	2000		
Ingress Protection (all cladding installed)	IP44		
DNV-GL Type Approval - Rack	TAE0000104		

\* Meets 2018 DNV-GL & NMA with no active external safety system required  
 \*\* Height and/or width can be extended or reduced as required for the application

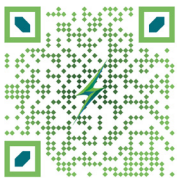
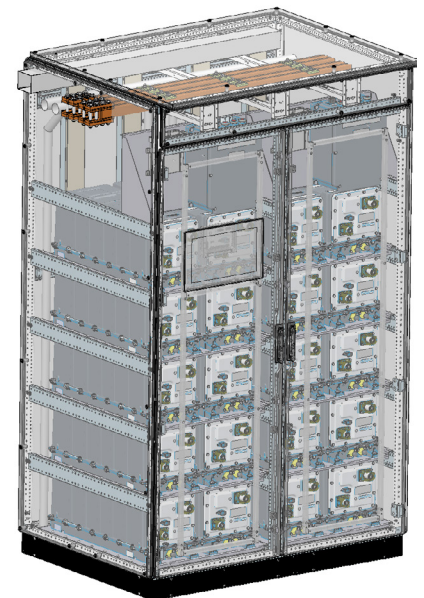
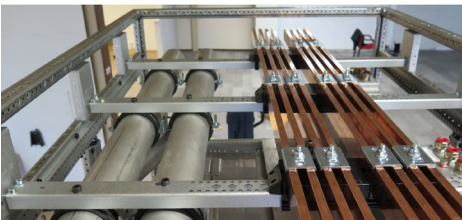
Please refer to the individual XMP and BMS data sheets for component-specific performance, environmental, and safety specifications.

Advantages

- Modular and expandable
- Multiple racks can be connected in a row and enclosed in a single large cabinet for virtually limitless energy storage capability
- Racks can be populated with any of the XMP-family sub-packs, from 100V to 1,000V
- Width and height can be scaled to accommodate any application
- Exceptionally easy to install, service and upgrade

Support Services

- Detailed installation drawings and battery space arrangement plans
- Vendor support (e.g., technical instruction to third-party cable and harness suppliers)
- On-site installation support
- On-site commissioning support
- Control panel software and HMI support (local mode options)
- Project-level DNV-GL support
- Customized BMS software



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