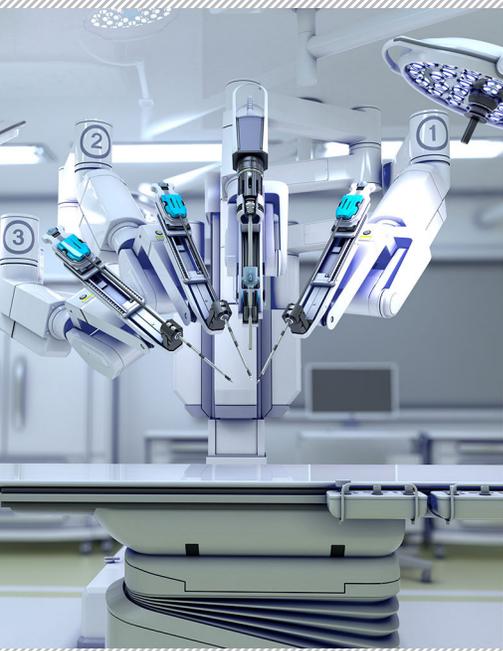


ROBOTICS

INNOVATIVE POWER SOLUTIONS FOR LAND, SEA, AND AIR
ROBOTS FROM ULTRALIFE

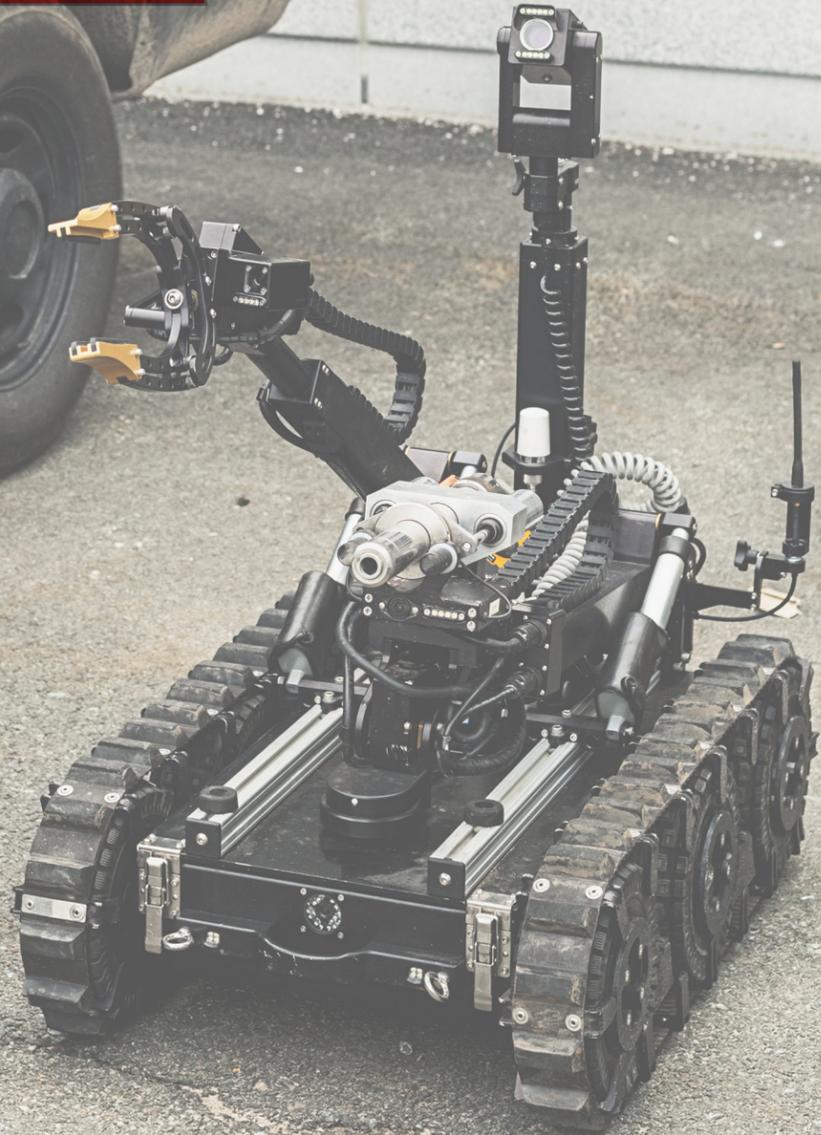


ULTRALIFE[®]

Ultralife Corporation serves its markets with products and services ranging from power solutions to communications and electronics systems. Through its engineering and collaborative approach to problem solving, Ultralife serves government, defence, medical, and commercial customers across the globe.

Headquartered in Newark, New York, the Company's business segments include: Battery & Energy Products and Communications Systems. Ultralife has operations in North America, Europe and Asia.

ULTRALIFE



GOVERNMENT & DEFENSE



MEDICAL



SAFETY & SECURITY



ENERGY



INDUSTRIAL

POWER FAILURE IS NOT AN OPTION

LAND, SEA, AND AIR ROBOT BATTERIES

Autonomous machines are everywhere these days, from drones in the sky to bomb disposal robots on the ground and autonomous underwater vehicles (AUVs) subsea.

The majority of these are required to be free from an AC supply, therefore they must rely wholly on batteries for their source of power. To meet this need, ULTRALIFE has created a range of professional rechargeable batteries, chargers and accessories.

Where an off-the-shelf product is not available, ULTRALIFE can also offer custom battery pack and charger design and manufacturing services.



ULTRALIFE THE HEART OF YOUR MACHINE

ULTRALIFE designs and manufactures professional rechargeable batteries to meet the emerging needs of robot manufacturers worldwide.

As safety is paramount, all of our batteries are designed and assembled to the highest levels of quality. ULTRALIFE operate manufacturing plants in the USA, Canada, UK, and China that are ISO 9001 and ISO 13485 accredited.

Our rechargeable Lithium-ion batteries include integrated protection against all forms of reasonable foreseeable misuse. With the added protection against preventable cell imbalance, users will realize maximized energy delivery per cycle and full life of the product.

Our smart batteries work in harmony with a smart charger and the host robot to ensure power is delivered safely and efficiently.

To find out how we can help to bring your robot to life, please contact our sales team:

UNITED STATES

Tel: +1 315-335-7100
Email: sales@ultralifecorp.com
www.ultralifecorp.com

UNITED KINGDOM

Tel: +44 (0)1782 566688
Email: sales@accutronics.co.uk
www.accutronics.com

BATTERIES THAT FIT YOUR NEEDS

All of our robotics batteries utilize rechargeable lithium chemistry of various formulations. For those who need the highest energy density, our Lithium-ion 2590 and VR battery ranges are ideal. When service life is critical, our lithium iron phosphate (LiFePO4) series provides rugged, dependable power. For underwater robotics, our lithium-ion polymer (LiPO) batteries are pressure tolerant tested to 6,000m depth.



2590 SERIES LITHIUM-ION BATTERIES



FEATURES:

- High energy density of up to 334Wh/L
- Two internal 14.4V batteries (connect in series or parallel)
- Certified to safety/transportation standards (incl. IEC 62133-2)
- Military spec construction to MIL-PRF-32383/3(CR)
- Most have fuel gauging and an SMBus communication interface

BENEFITS:

- Worry free - military tested design for 20 years
- Easily integrated into compatible host systems or smart chargers
- Quick international market delivery (commercial label)
- Easy integration into military robotics with tan color scheme
- Multiple options - three different capacities/energy ratings available
- Easy to manage with accurate state-of-charge display
- Consistent performance over wide temperature range
- Many accessories and chargers to choose from

LITHIUM IRON PHOSPHATE BATTERIES



FEATURES:

- Can be mounted in any direction
- Can be charged with any 2 stage charger designed for use with SLA batteries
- Built in standard sizes
- Certified to safety/transportation standards (incl. IEC 62133-2)
- Some models have fuel gauging and an SMBus communication interface

BENEFITS:

- Long life, worry free - up to 2,000 complete cycles
- Customizable; connect in series or parallel to customize voltage or capacity
- Uniform voltage during discharge
- Maintenance free
- Lightweight - about 33lb (15kg) compared to 100lb (45kg) equivalent SLA battery
- Consistent performance over wide temperature range
- Low "Cost of Ownership" - up to 7 years of life in the field

VR SERIES BATTERIES



FEATURES:

- 14.4V 6.2Ah (89.3Wh) high energy density Lithium-ion
- SMBus communication interface
- LED state-of-charge indicator
- IEC 62133-2 and UL 2054 certified

BENEFITS:

- Compact footprint makes the VR420A ideal for embedded applications
- Certified to the latest standards for transport and safety, simplifying end device certification
- Smart Battery Data Standard compliance allows host device to easily extract pertinent battery performance data
- Integrated Battery Management System (BMS) ensures battery remains safe if abused
- Custom labelling and software options available, allowing OEMs to control their aftermarket battery sales (MOQ and NRE apply)

SEASAFE BATTERIES



FEATURES:

- Choose either direct-in-water, oil-filled, or 1 ATM versions
- 24V, 30V, or 37V size modules
- Increment in series (V) or Parallel (Ah)
- SWE patented safety protection
- 6,000 meter ocean depth pressure tolerant tested

BENEFITS:

- Up to 4x more energy, 6x more available energy at colder temperatures typical of the seabed, and 8x longer cycle life than lead acid batteries
- Successfully used in subsea ice breakers, autonomous underwater vehicles (AUVs), and remotely operated vehicles (ROVs)
- 100% condition based monitoring - SWE SeaSafe Observer Software shows a real-time plot of the battery pack's current, voltage, temperature, and capacity
- All SWE SeaSafe® battery modules are UNDOT tested and have also received certification from the American Bureau of Shipping (ABS)

CUSTOM SOLUTIONS



BENEFITS:

- Cell chemistry can be matched with application requirements to provide the optimal balance of energy, physical size, temperature performance, rate capability, cycle life, and cost
- Communication standard (if required) can be selected between SMBus, I2C, HDQ, CAN, and RS485

BENEFITS (CONTINUED):

- Battery can be designed to best fit the device, in terms of shape, materials, color, and weight
- Branding can be perfectly matched to that of the OEM
- Battery is built for, and sold to the OEM only, protecting aftermarket sales
- Ultralife or its subsidiary companies will conceive, design, prototype, tool, verify and certify the battery in line with the customers schedule
- A custom charger (either embedded or desktop) can also be designed and supplied in tandem with the battery

PRODUCT LINE-UP

MODEL DESCRIPTION		ELECTRICAL SPECIFICATION										MECHANICAL SPECIFICATION				REGULATORY COMPLIANCE																
SERIES	MODEL	Typical Voltage (V)	Typical Capacity (Ah)	Typical Energy (Wh)	Battery Management System ⁽³⁾	Smart Battery Functionality ⁽⁴⁾	Max Discharge Current (A)	Max Discharge Power (W)	Typical VED (Wh/l)	Typical GED (Wh/Kg)	Quantity Permitted in Series ⁽²⁾	Quantity Permitted in Parallel ⁽²⁾	Approx. Height (mm)	Approx. Width (mm)	Approx. Depth (mm)	Nominal Weight (Kg)	UN 38.3 (Transport)	IEC 62133 (Safety)	UL/CSA 62133 (Safety)	UL 2054 (Safety)												
2590	UBBL02-01/ UBBL02-01-CB	14.4 ⁽¹⁾	17.4 ⁽¹⁾	251	•	-	20	200	296	190	Contact Us	Contact Us	127	113	63	1.34	•	•	• (except CB version)	•												
		28.8 ⁽¹⁾	8.7 ⁽¹⁾				10									1.35																
	UBBL10-01/ UBBL10-01-CB	14.4 ⁽¹⁾	17.4 ⁽¹⁾				20									1.45																
		28.8 ⁽¹⁾	8.7 ⁽¹⁾				10									1.35																
	UBBL13-01/ UBBL13-01-CB	14.4 ⁽¹⁾	20.0 ⁽¹⁾	288			20	1.35																								
		28.8 ⁽¹⁾	10.0 ⁽¹⁾				10	1.35																								
	UBBL09-01	10.8 ⁽¹⁾	23.2 ⁽¹⁾	251			20	Contact Us	278	185						Contact Us					Contact Us											
		21.6 ⁽¹⁾	11.6 ⁽¹⁾				10	Contact Us	Contact Us	Contact Us						Contact Us					Contact Us											
LiFePO4	URB24200	25.6	20.0	512	•	-	60	Contact Us	111	66	2	10	182	197	134	8.1	•	-	-	-												
			64.8	1659			25	Contact Us	101	104	Contact Us	Contact Us	103	446	438	15.9																
	URB-X5	21.6	277	20			200	112	81	1	1	317	121	76	3.9	•					•	Contact Us										
		URB12450-U1-SMB	45.6				584	Contact Us	Contact Us	87	Contact Us	Contact Us	60	108	64	0.82					-	-	-									
	URB0025		5.6	72			15	150	107	97	5	4	97	152	65	1.1					•	-	•	-								
	URB1270	7.6	97	20			200	112	90	165			181	76	3.05																	
	URB12200	20.0	256	76			Contact Us	115	103	182	195	127	4.8	•	-	-																
	URB12350	38.0	486	60			600	104	91	200	256	132	8.05	•	-	-																
	URB12550	55.8	714	80			Contact Us	102	92	219	340	170	14.0	•	-	-																
	URB121000	100.0	1280	80			Contact Us	102	92	219	340	170	14.0	•	-	-																
VR	VR420A	14.4	6.2	89	•	•	6.2	59.5	293	190	1	8	23	152	88	0.47	•	•	-	•												
SeaSafe	SeaSafe II Daisy Chain	24.0	30.0	777	•	•	40	1036	205	110	30+	30+	254	203	74	7.1	•	•	•	•												
		30.0		888				1184	234	121						74					7.3											
		37.0		1110				1480	265	149						81					7.8											
	SeaSafe Direct	24.0		777				259	205	109						74					7.1											
		30.0		888				296	234	120						74					7.4											
		37.0		1110				370	265	142						81					7.9											
	SeaSafe Direct 40A	24.0		777			1036	205	109	74						7.1																
		30.0		888			1184	234	120	74						7.4																
		37.0		1110			1480	265	142	81						7.9																
	SeaSafe Direct Low Profile	24.0		777			518	205	112	74						7.0																
		30.0		888			592	234	123	74						7.2																
		37.0		1110			740	265	144	81						7.7																
	SeaSafe Endurance I ATM	24.0		1269			1036	282	162	Contact Us						Contact Us					71	678	8.0	Contact Us	Contact Us	Contact Us	Contact Us					
		30.0		1450			1184	289													71	757	142	9.2	Contact Us	Contact Us	Contact Us	Contact Us				
		37.0		1813			1480	300													71	912	142	11.5	Contact Us	Contact Us	Contact Us	Contact Us				

NOTES:

- (1) 2590 series batteries contain two isolated 14.4V battery sections. These can either be used separately or externally connected in series or parallel. Series connection provides 2x the voltage with the same capacity while parallel connection provides 2x the capacity with the same voltage.
- (2) Contact Ultralife for advice before connecting batteries in either series or parallel.
- (3) Battery Management System (BMS) provides protection against over-voltage, under-voltage, over-current, short-circuit and over-temperature. Cell balancing is also included.
- (4) Smart batteries provide additional features to that found in a standard BMS, including fuel gauging, enhanced safety features, visual state of charge indication (select models only) and SMBus communication with a smart charger or host.

- Feature included
- Feature not included



- Specification details are correct at the time of printing.
- For the latest data please refer to published specifications which are available on our website at www.ultralifecorp.com
- Operator & regional variations may apply to the transport of lithium batteries. Check with your operator.

ULTRALiFE[®]
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