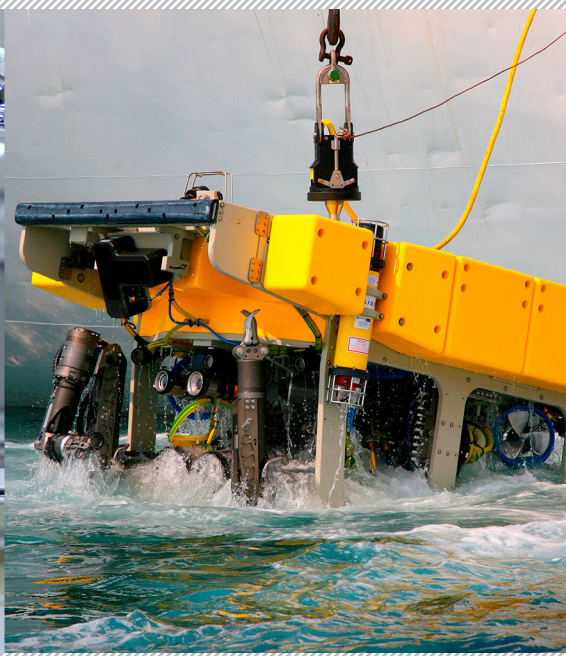
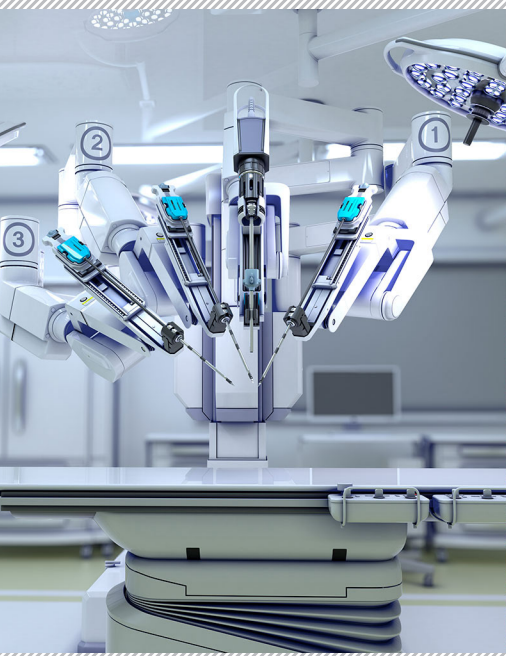


ROBOTICS

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

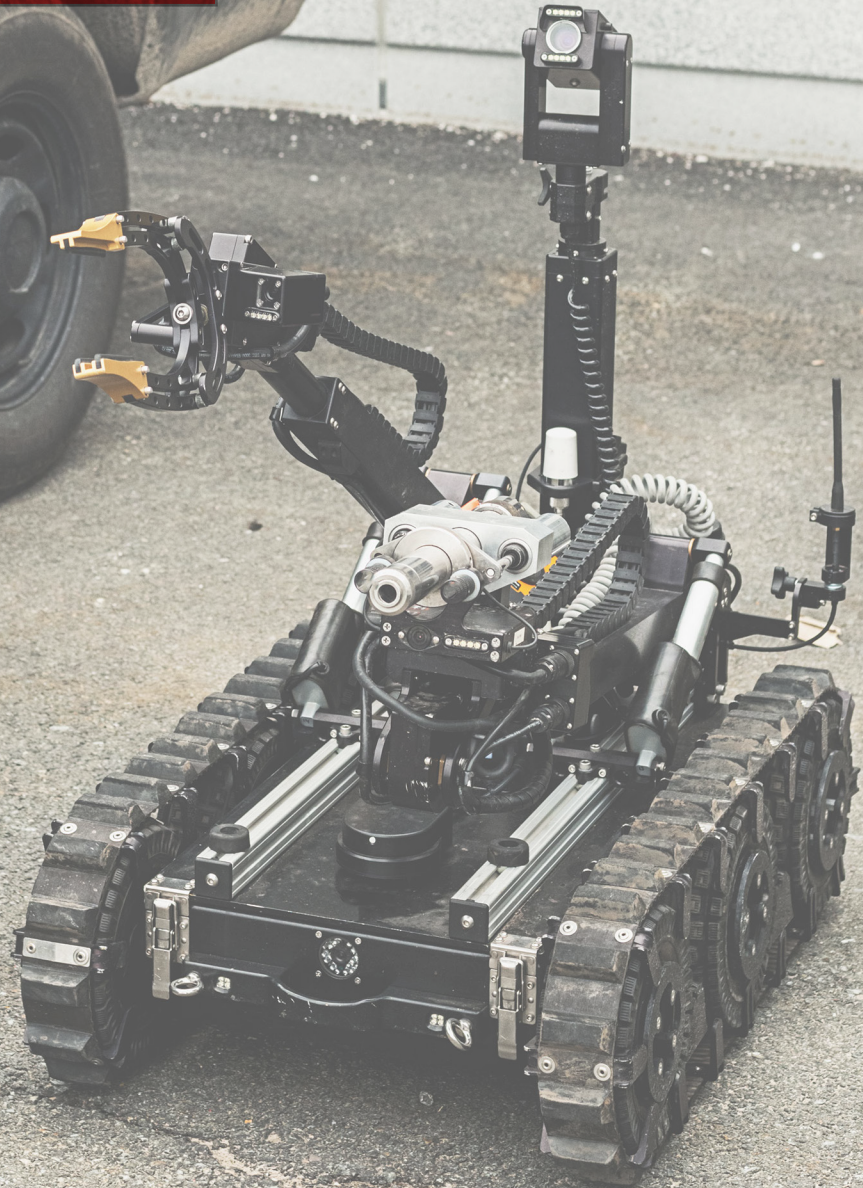


ULTRALIFE[®]

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 and its subsidiary companies ACCUTRONICS and SWE have 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

All of our robotics batteries utilize rechargeable lithium chemistry of various formulations. For those who need the highest energy density, our lithium-ion (Li-ion) 2590, VR and CMX battery ranges provide both power and energy in compact packages. When service life is critical, but space is at less of a premium, our lithium iron phosphate (LiFePO4) series provides rugged, dependable power. For underwater robotics, our lithium-ion polymer (LiPO) batteries are pressure tolerant tested at 6,000 meter depth.

As safety is paramount all of our batteries are designed and assembled to the highest levels of quality. Ultralife operate three manufacturing plants in the USA, UK and China, all of which are ISO 9001 and ISO 13485 accredited. Our rechargeable Li-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

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

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 about 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
- Accessories and chargers; many to choose from

CMX SERIES BATTERIES



FEATURES:

- For devices that draw very high levels of power, the CMX820P offers 330W discharge capability
- When energy density and high power discharge are important, CMX810M balances size and power capability
- Product labelling, case colour and more can be customised

BENEFITS:

- Nominal voltage of 28.8V allows robots to be powered more efficiently through a reduction in current consumption
- Suitable as either a primary source of power or back-up power supply
- Active and passive protection ensures that batteries remain safe during transportation, storage and use
- Cell balancing circuitry minimizes minor differences in cell capacity, boosting available capacity and extending battery life
- Designed for medical devices - white, easy-to-clean cases

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 or pressure balance, oil-filled versions
- 29V or 24V, 28Ah 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, Accutronics or SWE 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				Product Availability														
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⁾	Nominal Height (mm)	Nominal Width (mm)	Nominal Depth (mm)	Nominal Weight (Kg)	UN 38.3 (Transport)	IEC 62133 (Safety)	UL/CSA 62133 (Safety)	UL 2054 (Safety)															
ULTRALIFE	2590	UBBL02-01/ UBBL02-01-CB	14.4 ⁽¹⁾ 28.8 ⁽¹⁾	17.4 ⁽¹⁾ 8.7 ⁽¹⁾	250	•	-	20 10	200	296	190	Contact Ultralife	Contact Ultralife	127.0	112.5	63.0	1.34	•	•	• (except CB version)	•	AVAILABLE NOW													
		UBBL10-01/ UBBL10-01-CB	14.4 ⁽¹⁾ 28.8 ⁽¹⁾	17.4 ⁽¹⁾ 8.7 ⁽¹⁾				20 10																											
		UBBL13-01/ UBBL13-01-CB	14.4 ⁽¹⁾ 28.8 ⁽¹⁾	20.0 ⁽¹⁾ 10.0 ⁽¹⁾				20 10																											
		UBBL09/B	11.1 ⁽¹⁾ 22.2 ⁽¹⁾	20.8 ⁽¹⁾ 10.4 ⁽¹⁾	230			20 10									180						241	148	-	-	-	-	-	-	-	-	-	-	-
			URB12450-U1-SMB	12.8				45.6																											
		URB24200-U1-SMB	25.6	22.8	Contact Ultralife			106.90									1						2	182.1	208.5	136.4	5.46	-	-	-	-	-	-	COMING SOON	
	URB-X5	12.8	21.6	276.5	20	200	112	81	1	1	317.0	120.5	75.5	3.45	Contact Ultralife	-	-	-	-	AVAILABLE NOW															
	URB0023	25.6	54.0	1380	25	Contact Ultralife	84	87	Contact Ultralife	Contact Ultralife	103.1	445.8	438.2	15.9						-	-		-	-	-	COMING SOON									
	URB0016-SMB	25.6	54.0	1380	25	Contact Ultralife	84	87	Contact Ultralife	Contact Ultralife	103.1	445.8	438.2	15.9	-	-	-	-	-							-									
	URB1270	12.8		7.5	96	•	-	15	150	106	87	5	4	97.0						152.0	65.0		1.10	•	•		-	•	AVAILABLE NOW						
	URB12200			20	256			20	200	113	90			165.0	181.0	76.0	2.85																		
	URB12350			32	410			65	650	100	89			176.0	195.0	127.0	4.60																		
	URB12550			55.8	714			60	600	106	91			200.0	256.0	132.0	7.85																		
	URB12550-22NF			52.7	675			55	550	103	90			208.0	228.0	138.0	7.50																		
URB121000	100			1280	100			1000	105	92	219.0			340.0	170.0	13.90																			
VR	VR420A			14.4	6.2			89.3	•	•	6.2			59.5	293	190	1	8	22.8	152.0	87.9	0.47	•			•				-	•	AVAILABLE NOW			
CMX	CMX810M			28.8	2.55			73.4	•	•	10			220	181	138	1	8	28.0	170.5	85.0	0.53	•			•				•	-				
	CMX820P				3.2			92.2			15			330	133	105			48.0			0.88													
SWE	SeaSafe			SeaSafe Direct	37.0			28	1036	•	•			10	370	208	112	30+	30+	254.0	252.5	97.0	10.3 (air)			•				•	•	•	AVAILABLE NOW		
		29.6	828		296	198	105		73.7			8.85 (air)																							
		25.9	725		259	173	95		73.7			8.62 (air)																							
		SeaSafe Direct 40A	37.0	1036	1480	208	112		97.0			10.3 (air)																							
			29.6	828	1184	198	105		73.7			8.85 (air)																							
			25.9	725	1036	173	95		73.7			8.62 (air)																							
		SeaSafe II	37.0	1036	1480	208	112		97.0			10.3 (air)																							
			29.6	828	1184	198	105		73.7			8.85 (air)																							
			25.9	725	1036	173	95		73.7			8.62 (air)																							
		SeaSafe I ATM	Coming Soon																			COMING SOON													

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

2590 SERIES			LIFEPO4 SERIES										VR SERIES	CMX SERIES		SEASAFE		Image Coming Soon	
UBBL02-01/ UBBL10-01/ UBBL13-01	UBBL02-01-CB/ UBBL10-01-CB/ UBBL13-01-CB	UBBL09/B	URB12450 -U1-SMB	URB24200 -U1-SMB (Coming Soon)	URB-X5	URB0023	URB0016 -SMB (Coming Soon)	URB1270	URB12200	URB12350	URB12550	URB12550- 22NF	URB121000	VR420A	CMX810M	CMX820P	SEASAFE DIRECT	SEASAFE II	SEASAFE I ATM (Coming Soon)

- 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[®]
BATTERY & ENERGY PRODUCTS

2000 Technology Parkway
Newark, New York, 14513
United States

TEL 800-332-5000 (USA & Canada)
TEL +1-315-332-7100
EMAIL sales@ultralifecorp.com
WEB www.ultralifecorp.com