



**ULTRALiFE**®  
**DEFENSE & SECURITY**

# ULTRALIFE CORPORATION

## A BRIEF OVERVIEW

# GOVERNMENT & DEFENSE

## BATTERIES & CHARGERS

### A GLOBAL CORPORATION...

ULTRALIFE has extensive North American as well as international operations in Europe, China and India.

More than just a battery manufacturer, ULTRALIFE offers custom engineering design and services, tactical communications systems and a wide range of power accessories for global government and defense markets.

### BUSINESS UNITS

ULTRALIFE is organized into two business segments: Battery and Energy Products and Communications Systems. Each has specific expertise to serve the unique needs of markets served. Whether the need is for off-the-shelf or custom design, we have the capability to deliver solutions specific to customer applications.

### BATTERY AND ENERGY PRODUCTS

The Battery and Energy division provides a wide range of high-energy non-rechargeable and rechargeable power and charging systems for both defense and commercial applications. ULTRALIFE manufactures batteries using various chemistries including Lithium Manganese Dioxide, Lithium Thionyl Chloride, Lithium Iron Phosphate, Lithium-ion and Lithium Carbon Mono-fluoride Manganese Dioxide among others. Some comprise the highest energy densities currently available.

As a market leader providing batteries for military applications, ULTRALIFE also has a solid technical base in cell and battery designs for commercial sectors such as medical, security metering, telematics and other industrial segments. Our battery technology often provides turnkey solutions based on customer requirements and specifications and, when necessary, we partner with other cell manufacturers to provide the optimum solution.

### COMMUNICATIONS SYSTEMS

From “man-pack” kits to system and vehicle integration, ULTRALIFE Communications Systems provides innovation and technology that meet ever changing mission requirements.

Whether the soldier with “boots on the ground” or vehicular systems and integration for “comms on the move”, we provide power and communications solutions ranging from amplifiers and soldier modernization kits to interoperability gateways and power supplies for mobile, modular and fixed-site systems.

### ABOUT THE BATTERY & ENERGY DIVISION

ULTRALIFE is a trusted supplier of lightweight, ruggedized, high-energy, military-grade batteries; which are packaged to meet your specific needs for rugged enclosures and use in extreme environments.

### WHAT WE OFFER

Our batteries are specifically designed to remain reliable under the toughest conditions and built to withstand the harsh environments often found in military combat.

We focus on agile product design and use a large distribution network with multiple contract vehicles to provide customers around the world with fast and affordable power solutions for mission-critical equipment - always ensuring exceptional performance in adverse conditions.

We also offer a wide variety of charging solutions and accessories to meet your diverse needs.

Our development team is continuously innovating to ensure our products meet strict military requirements and changing equipment.

### BATTERIES FOR THE BATTLEFIELD...

ULTRALIFE has been manufacturing batteries and chargers for government and defense applications for over 15 years.

From our renowned “xx90” series batteries to our Land Warrior and non-rechargeable ranges; we have products to suit any military requirement.



# RECHARGEABLE



ULTRALIFE started manufacturing rechargeable battery packs for government and defense applications in 2005, with the launch of the XX-2590 range, providing the longest lasting plug and play power source. The latest MGPP line-up of XX-2590s meet the new MIL-PRF-32383/3(CR) U.S. Military Performance Specification.

Also in the early 2000s, ULTRALIFE was part of the U.S. Land Warrior army modernization program and developed the UBBL range of Land Warrior batteries. These rugged, highly energy-dense, rechargeable batteries were designed to reduce the overall weight on the soldier and include the wearable UBBL35 that meets MIL-STD-810 and MIL-STD-461E.

# NON-RECHARGEABLE



Since the formation of ULTRALIFE, over 30 years ago, high quality and reliable non-rechargeable cells and battery packs have been manufactured to meet the needs of mission-critical applications where power failure is not an option.

ULTRALIFE cells and battery packs utilize a wide-range of chemistries from Lithium Manganese Dioxide (LiMnO<sub>2</sub>) to Lithium Thionyl Chloride (LiSOCl<sub>2</sub>) and Lithium Carbon Mono-fluoride Manganese Dioxide (Li-CFx / MnO<sub>2</sub>).

M1 battery packs meet MOD Defence Standard 61-21.

SELECTION OF PRODUCT SPECIFICATIONS	XX-2590 RANGE				LAND WARRIOR RANGE		CONFORMAL
	UBBL02-01	UBBL10-01	UBBL13-01	UBBL38	UBBL08-01	UBBL06-02	UBBL35
Chemistry	Li-ion						
Voltage (nominal)	28.8V or 14.4V				15.2V	14.4V	
Capacity (nominal)	8.7Ah or 17.4Ah		10.0Ah or 20.0Ah	2.9Ah or 5.8Ah	6.8Ah	13.6Ah	7.3Ah
Energy (nominal)	251.0Wh		288.0Wh	83.52Wh	103.4Wh	195.8Wh	105.1Wh
Housing	Hard plastic (Noryl N190X-701)				Hard plastic	FED-STD-595	Noryl thermoplastic
Weight	1.34kg	1.35kg	1.45kg	655g	525g	950g	960g
Operating temperature	-32 to +60°C				-32°C to +55°C	-20°C to +55°C	-20°C to +60°C
Storage temperature	-20 to +50°C				-32 to +60°C		-20°C to +45°C
UN 38.3 Transport Certification	✓	✓	✓	N/A	N/A	✓	✓
SMBus		✓	✓		✓		✓
State-of-Charge Indicator		✓		✓	✓	✓	✓

NOTE: For the complete range of products and the latest technical specifications, please visit the Ultralife website. Case color is subject to change at the discretion of Ultralife.

SELECTION OF PRODUCT SPECIFICATIONS	CELLS		M1 BATTERY PACKS			M32271/1 RANGE	
	U10025	UB2776	CS0032	CS0033	CS0034	UB0023	UB0032
Chemistry	LiMnO <sub>2</sub>		LiSOCl <sub>2</sub>			LiMnO <sub>2</sub>	Li-CFx / MnO <sub>2</sub>
Voltage (nominal)	3.0V	12.0V	11.0 to 12.0V			27.0V or 13.5V	27.0V or 13.5V
Capacity (nominal)	4.8Ah	1.0Ah	80.0Ah	160.0Ah	238.0Ah	11.1Ah or 22.2Ah	16.0Ah or 32.0Ah
Energy (nominal)	14.4Wh	12.0Wh	0.92kWh	1.84kWh	2.74kWh	330.0Wh	480.0Wh
Housing	Hermetic Ni-plated steel can	Plastic sleeve	Moulded ABS case			Hard plastic case	
Weight	61.0g	76.0g	3.3kg	6.7kg	10kg	1.33kg	1.33kg
Operating temperature	-40°C to +72°C		0°C to +40°C	-15°C to +55°C		-30°C to +72°C	-40°C to +55°C
Storage temperature	-40°C to +95°C		-32°C to +70°C			-40°C to +90°C	-40°C to +80°C
UN 38.3 Transport Certification	✓	✓	✓	✓	✓	✓	✓

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# CHARGERS & MORE



XX-2590 batteries can be charged individually or up to six can be charged simultaneously using a self-contained battery charger/conditioner. Individual smart XX-2590 batteries can also be set automatically to 20% state-of-charge for shipment by air (using the UCH0057-01).

There are also single battery chargers available for Land Warrior batteries or up to twelve can be charged simultaneously with a smart vehicle charger. CH0006, CH0008 and CH0017 are certified to MIL-STD-461E, MIL-STD-1275 and MIL-STD-810E (ask for full details).

# POWERING YOUR MILTECH

This checklist highlights what to consider when choosing the best battery for a military device.

## HOW LONG MUST THE BATTERY LAST?

If a military device runs out of power, soldiers' lives can be put at risk. Often soldiers need their devices to last a 24-hour mission before needing a recharge. Time needs to be carefully considered.



## WHAT TEMPERATURES WILL BE EXPERIENCED?

Above 60 degrees Celsius, the performance of lithium-ion batteries deteriorates and below zero degrees Celsius, charging becomes challenging. Does the battery need heaters or thermal insulation?



## HOW WILL THE DEVICE BE STORED?

Some military devices (eg. surveillance) must lie dormant for long periods, but rapidly activate when needed. Therefore, they require a battery that can store power, but release it instantly when needed.



## WHAT ARE THE DEVICE'S DIMENSIONS?

Size and weight are paramount when considering military equipment design, especially for long mission use. Soldiers may need small, lightweight batteries to fit into their small, lightweight devices.



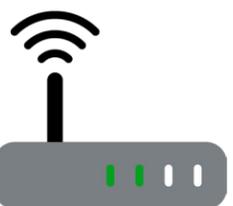
## WHAT CONDITIONS WILL BE FACED?

Soldiers travel with their devices on the majority of their missions. This means the batteries must withstand harsh conditions including rough terrain and high humidity.



## IS A SMART BATTERY REQUIRED?

Many military devices use smart batteries that communicate with the user. For example, they can inform the user of the state-of-charge or the need to be cooled down.



SELECTION OF CHARGER SPECIFICATIONS	XX-2590 RANGE				LAND WARRIOR RANGE		
	CH0002	CH0003	UCH0053	UCH0057-01	CH0008	CH0006	CH0017
Input Voltage Type	AC Line Adapter	AC / DC		DC	AC	DC	AC / DC
Number of Batteries	1	6		1	1	3	12
Weight	0.5kg	11.34kg	15.8kg	0.5kg	1.5kg	6.35kg	42.2kg

SELECTION OF CABLES ETC. SPECIFICATIONS	XX-2590 RANGE				LAND WARRIOR RANGE		
	CA0002	CA0006	CA0008	UCA0039	UCA0114	CA0009	UCA0125
Length	60 - 200cm			180cm		60cm	120cm
Type	4 Conductor; 18 AWG	2 Conductor; 18 AWG	4 Conductor; 18 AWG	Power and communications	Smart 2590 Data & Power Cable	6 Conductor; 22 AWG	PRC-152 Adapter for LI Batteries

NOTE: For the complete range of products and the latest technical specifications, please visit the Ultralife website.

For advice on how to integrate batteries into military devices, contact us on +1 (315) 332 7100.

# GOVERNMENT & DEFENSE COMMUNICATIONS SYSTEMS

# AMPLIFIERS & MORE

## COMMUNICATIONS FOR THE CORP

Under our MCDOWELL RESEARCH and AMTI brands, we design and manufacture a line of Communications Systems and Accessories to support military requirements and, under the ULTRALIFE brand, provide system integration products and services for commercial requirements.

## ABOUT THE COMMUNICATIONS SYSTEMS DIVISION

ULTRALIFE has developed a family of combat proven tactical communication equipment to meet the LOS and SATCOM requirements and demands of dismounted close combat soldiers, vehicle-based soldiers, signals platforms, JTAC and special forces. The innovative solutions provided by the Communications Systems engineering team factor in concerns of size, weight, and power (SWaP) heavily in their design.

## WHAT WE OFFER

Pre-engineered Communications Systems products include RF amplifiers, power supplies, power cables, connector assemblies, amplified speakers, equipment mounts, case equipment, man-portable systems and integrated communication systems for fixed or vehicle applications, such as vehicle amplifier-adaptors (“VAA”) for multiple programs.

In addition to off-the-shelf Communications Systems products, ULTRALIFE also offer custom solutions. For example, we can manufacture amplifiers to cater for radios that use different frequencies or waveforms. We can also adjust the pocket size of our mounts to fit different sized radios.



For over 15 years, ULTRALIFE has been manufacturing both dismounted and vehicle-mounted amplifiers to serve a wealth of military radio and other communication needs.

To reduce the soldier’s burden; consideration for size, weight and power is paramount and ULTRALIFE has designed its equipment to be ergonomically simple, robust, radio agnostic and enduring.

In addition to amplifiers, ULTRALIFE also manufactures amplified speakers that will monitor a single transceiver and/or encryption unit.

	AMPLIFIERS	KIT	ADAPTER	SPEAKER	
SELECTION OF PRODUCT SPECIFICATIONS	A-320V3A 	LPAS-320U 	A-320V3A-KT 	A-320DPA 	MRC-67A 
Input	5 watts (RF) (nominal)	95-265VAC 11-36VDC	5 watts (RF) (nominal)	18-34VDC (2 watts max)	10-36VDC
Weight	0.68kg	<5.90kg	0.68kg	0.34kg	1.63kg
Operating temperature	-40°C to +60°C	-40°C to +60°C	-40°C to +60°C	-30°C to +60°C	-50°C to +70°C
MIL standards	MIL-STD 461E MIL-STD 810F	MIL-STD-810G	MIL-STD 461E MIL-STD 810F	MIL-STD-810G	MIL-STD-810G

NOTE: For the complete range of products and the latest technical specifications, please visit the Ultralife website.

# MOUNTS & MORE



Mounts can be used to fix a radio and sometimes an amplifier inside a vehicle or military base. Some mounts can be used to charge the radio, whilst others are designed to be easily unfixd and transported in the case of an emergency (“jerk-and-run” scenario).

Many mounts are qualified to military standards, to ensure they can cope in the extreme environments of the battlefield.

# SATCOM & SERVER



As with any form of military communication, when using satellite radio it is important to have more than one UHF channel available (in-case one becomes compromised or experiences a fault). Therefore, ULTRALIFE manufactures a satellite radio combiner that simultaneously transmits two channels operating in the 243 - 318MHz SATCOM band.

Additionally, ULTRALIFE is working with HPE to manufacture an uninterruptable power supply and durable cases for their Edge Computing servers, which can be transported safely by air. Edge Computing allows soldiers to store, analyse and process data on the transportable server rather than in an internet-connected Cloud.

SELECTION OF PRODUCT SPECIFICATIONS	MOUNTS				POWER SUPPLY
	MRC-UVA-V1	A-320HVA	A-320QM	MRC-RMT0003	MRC-UPU0003
Input voltage	11-36VDC	11-36VDC	N/A	N/A	85-250VAC 10-36VDC
Weight	<1.13kg (without radio)	<2.27kg (without radio and amplifier)	<0.45kg (without amplifier)	2.27kg	2.27kg
Operating temperature	-30°C to +49°C	-31°C to +60°C	-30°C to +60°C	N/A	-31°C to +60°C
MIL standards	MIL-STD-1275 MIL-STD-810 MIL-STD-461E	MIL-STD-810G	MIL-STD-810G	MIL-STD-810G	MIL-STD-1275 MIL-STD-810 MIL-STD-461E

SELECTION OF PRODUCT SPECIFICATIONS	SATCOM	HP EDGELINE SERVER		POWER SUPPLY
	A-301-150	CASE		EL8000-UPS
				
Input	50ohm (nominal)	N/A	N/A	80-150VAC
Output	50ohm (nominal)	N/A	N/A	120VAC
Weight	7.26kg	7.03kg	19.50kg	15.65kg
Operating temperature	-30°C to +60°C	-150°C to +150°C	-150°C to +150°C	N/A
MIL standards	MIL-STD-810G	N/A	MIL-STD-810G MIL-STD-295 DIN EN 60529 MIL-STD-461 IEC 34-5/529	N/A
Finish	FED-STD 959B, Black	Metallic Silver Paint	Paint - RAL-STD (Clear anodized)	Powder Coated Steel Frame, Black
Material	Aluminum	Aluminum	Aluminum	Aluminum

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# **ULTRALIFE<sup>®</sup>**

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