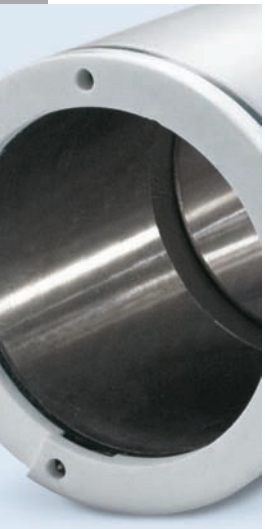


THE WORLD'S MOST RELIABLE > MOST DURABLE > LONGEST-LASTING > BATTERY PACKS



ELECTROCHEM BATTERY PACKS > Whether you want more capacity, more voltage or both, an Electrochem battery pack will deliver the power you need. > Electrochem offers both parallel and series packs, or a combination of both, custom engineered and tailored for your pulse and product life-cycle needs. > If you're looking for durability, you can get a fully encapsulated Electrochem pack with cells that don't out-gas. That's why leading companies around the globe rely on Electrochem battery packs. > In this brochure, you'll find information about some of our most popular packs. Of course, at Electrochem, custom design and engineering are standard. So if you need a battery pack that we don't have, we'll custom build a prototype for you. > To learn more, call us at 716.759.5800 or visit www.electrochempower.com.



HERE'S WHY THE WORLD'S LEADING COMPANIES CHOOSE ELECTROCHEM >

THE MOST RELIABLE >

- + The highest energy density available – up to .9 Whr/cc
- + Enhanced bromine, thionyl and sulfuryl chloride chemistries
- + Cell capacities up to 40 Ahr
- + “Non-magnetic” cells will not interfere with sensitive data-recording instruments
- + Six Sigma™ Quality Improvement Philosophy and ISO quality systems

THE SAFEST >

- + Products meet the requirements of “UN Recommendations on the Transport of Dangerous Goods”
- + Experienced in working with ATEX compliance
- + Blocking diodes in parallel packs prevent dangerous reverse current flow
- + Shunt diodes in series packs maintain continuity of circuit
- + Reinforced glass-to-metal seals maintain hermeticity even under extreme temperatures, preventing leakage by allowing internal pressure to be restrained

FOR THE MOST EXTREME CONDITIONS >

- + Designed for temperatures from -55°C to +200°C
- + Shock up to 3,000 g
- + Vibration up to 40 grms
- + Proprietary construction
- + Specialty electrolyte formulations for optimized restart and pulse capability
- + Level rate performance over the entire temperature range



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THE RINGER >

UNIQUE PACKS FOR UNIQUE NEEDS



The Ringer's distinctive design wraps around the drill pipe, making this pack ideal for MWD electronic testing systems for downhole oil and gas drilling.

Each pack is optimized to fit the most power in the smallest configuration, using Electrochem's Annular cell form factor. Ringer packs are available in series and parallel combinations and are custom-made to your specifications for voltage and amp-hour capacities.

KEY FEATURES >

- + Annular cell form factor maximizes power within space limitations
- + More efficient than half annular packs using AA cells
- + Actual pack dimensions (as shown): 14.27" x 3.94" (OD) x 3.745" (ID)

°C -5 150 or 180

TECHNOLOGY: THIONYL CHLORIDE



THE FLEX PACK >

FLEXIBLE SOLUTIONS FOR ANY APPLICATION



With three separate, connected sections, the unique Flex Pack is just one example of how Electrochem can optimize power within space constrictions for downhole applications.

This battery pack offers more capacity than a typical C cell, with length between a C and CC size thanks to the unique 3/2C-size cell design. Of course, many different cell sizes can be used and connected in various series and parallel combinations to meet your specifications for voltage and amp-hour capacities.

KEY FEATURES >

- + Available in both low-rate and moderate-rate versions
- + End bumpers absorb shock and vibration
- + Flexible design allows for multiple sections within one continuous battery pack

°C -40 150 or 180

TECHNOLOGY: THIONYL CHLORIDE



THE POWER PACK >

POWERFUL CELLS = POWERFUL PACKS



When you need lots of power in a little space – for oceanographics, seismic surveying and other applications – you need Electrochem. Our engineers know exactly how to maximize energy density in every cell and every pack.

In the Power Pack, we've configured 36 cells in a half circle, two of which fit into a full circle that threads through the buoy rod, while still keeping the lithium content of each unit under your specified maximum threshold.

KEY FEATURES >

- + Cells potted halfway for structural integrity with less weight
- + Can be arranged in any quantity, cell type or configuration to meet your capacity and voltage requirements
- + Configuration (as shown): 4 in series, 9 in parallel
- + Capacity (as shown): 270 Ahr
- + Actual pack dimensions (as shown): 13.5" x 5.75" x 5.00"



THE SUPER SOLUTION >

A COMPLETE LIFE-CYCLE PACKAGE
AT AN AFFORDABLE PRICE



Now you can get Electrochem's Super D cell in a complete, cost-effective package, including the initial primary battery pack, secure pack key, reusable battery housing, voltage tester and replacement battery pack.

With the Super Solution, simply use the pack tester to determine when the primary pack has been depleted, then remove the batteries with the specially designed key and insert the replacement pack. The tube and connector are both reusable, to save you money. This specific design, used in a seismic towed array (bird), utilizes a low magnetic signature (LMS) version battery to prevent interruption of signals while in the field.

KEY FEATURES >

- + Available in C, D and Super-D sizes
- + Save money with reusable housing and connector
- + Change the replacement pack in just minutes
- + Can be arranged in any quantity, cell type or configuration to meet your capacity and voltage requirements
- + Utilizes low magnetic signature (LMS) batteries
- + Actual pack dimensions (as shown): 13.1" length x 1.86" diameter



Thin enough to meet DOT specifications for trailer-top mounting and powerful enough to last the life of a typical tractor trailer, the Topper eliminates the frequent replacement costs associated with alkaline and other types of cells.

The slim Topper pack is designed with Electrochem's unique 21mm cells, specifically engineered to withstand the extreme temperatures, shock, vibration and high-current pulse found in mobile asset tracking applications.

< THE TOPPER

ELIMINATE REPLACEMENT COSTS FOR TRACKING TRACTOR TRAILERS

KEY FEATURES >

- + Individual cells are fused within the pack, with blocking diodes for safety in overload conditions
- + Durable aluminum housing protects cells from humidity, salt spray and vibration in a tamper-proof container
- + Cells are encapsulated in potting, providing a redundant seal with a completely gasketed case
- + Waterproof connectors and cables available
- + Actual pack dimensions (as shown): 5.75" x 3.5" x 1" thick



Chances are Electrochem already has a battery pack to meet your needs. But if we don't, we've got the expertise to build a custom solution designed to your exact specifications. With a custom pack, our team of engineers determines the ideal number and configuration of Electrochem cells needed to get the job done.

We can increase both voltage and capacity by combining cells both in series and in parallel in the same pack. (Single cells connected in a series will yield voltage proportional to the number of cells, while single cells connected in parallel will yield capacity proportional to the number of cells.)

We can even put shut-offs in packs in case voltage drops below a certain level – something you can't do with individual cells.



< YOUR PACK HERE

CUSTOM PACKS ENGINEERED FOR THE MOST DEMANDING SPECIFICATIONS – YOURS

HERE'S WHAT WE'LL NEED TO GET STARTED >

- + Voltage (minimum and maximum)
- + Current (continuous and maximum)
- + Temperature range (minimum and maximum)
- + Total capacity (Ahr)
- + Life expectancy (weeks, months, years)
- + Size requirements (to the thousandth of an inch)



TECHNOLOGY: THE MOST RELIABLE, LONGEST-LASTING CELLS IN THE WORLD

CUSTOM POWER SOLUTIONS >

HIGH RATE > WHEN FAILURE IS NOT AN OPTION

PRODUCT SERIES	CHEMISTRY	OCV	RATE CAPABILITY	TEMPERATURE RANGE (°C)
BCX85	Bromine Chloride	3.93V	Moderate to High	-55 ← → 85
CSC93	Sulfuryl Chloride	3.93V	Moderate to High	-20 ← → 93
PMX150	Sulfuryl Chloride	3.93V	Moderate to High	-20 ← → 150
PMX165	Sulfuryl Chloride	3.93V	Moderate to High	-20 ← → 165
MWD150	Thionyl Chloride	3.67V	High	0 ← → 150
QTCDD	Thionyl Chloride	3.67V	Moderate to High	-40 ← → 85
VHT200	Thionyl Chloride	3.67V	Moderate	70 ← → 200

MODERATE RATE > PROVEN RELIABILITY AND SAFETY

PRODUCT SERIES	CHEMISTRY	OCV	RATE CAPABILITY	TEMPERATURE RANGE (°C)
150MR	Thionyl Chloride	3.67V	Moderate	-40 ← → 150
165MR	Thionyl Chloride	3.67V	Moderate	-40 ← → 165
180MR	Thionyl Chloride	3.67V	Moderate	50 ← → 180
200MR	Thionyl Chloride	3.67V	Moderate	70 ← → 200

LOW RATE > OUTPERFORMS ALKALINE IN EVERY WAY

PRODUCT SERIES	CHEMISTRY	OCV	RATE CAPABILITY	TEMPERATURE RANGE (°C)
BCX85 PC	Bromine Chloride	3.93V	Low	-55 ← → 85
CSC93 PC	Sulfuryl Chloride	3.93V	Low	-20 ← → 93
QTC85 PC	Thionyl Chloride	3.67V	Low	-40 ← → 85
QTC85 LR	Thionyl Chloride	3.67V	Low	-40 ← → 85
100LR	Thionyl Chloride	3.67V	Low	-40 ← → 100
150LR	Thionyl Chloride	3.67V	Low	-40 ← → 150
180LR	Thionyl Chloride	3.67V	Low	50 ← → 180
200LR	Thionyl Chloride	3.67V	Low	70 ← → 200



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