



We Power Your Technology

PRIMARY LITHIUM BATTERY SOLUTIONS FOR IoT INDUSTRY

www.cnhcb.com

Company Profile



HAOCHENG Group was founded in 1995. It is a solution provider for the R&D, production and sales of backup power sources. HAOCHENG Group operates 3 different subsidiaries in China:

- Beijing Chengxunda Telecommunication Equipment Co., Ltd.
- Beijing Nandu Haocheng Power Equipment Co., Ltd.
- HCB Battery Co., Ltd.

HCB Battery Co., Ltd. was founded in 2001. As a leading primary lithium battery manufacturer and solution provider in China, HCB remains dedicated to leading the R&D and manufacturing of various types of primary lithium batteries.

With every improvement that is made, HCB continues to pursue perfection. Technological development & innovation are of great importance to HCB. We have been focusing on providing reliable products & services to the customers worldwides for more than 24 years.





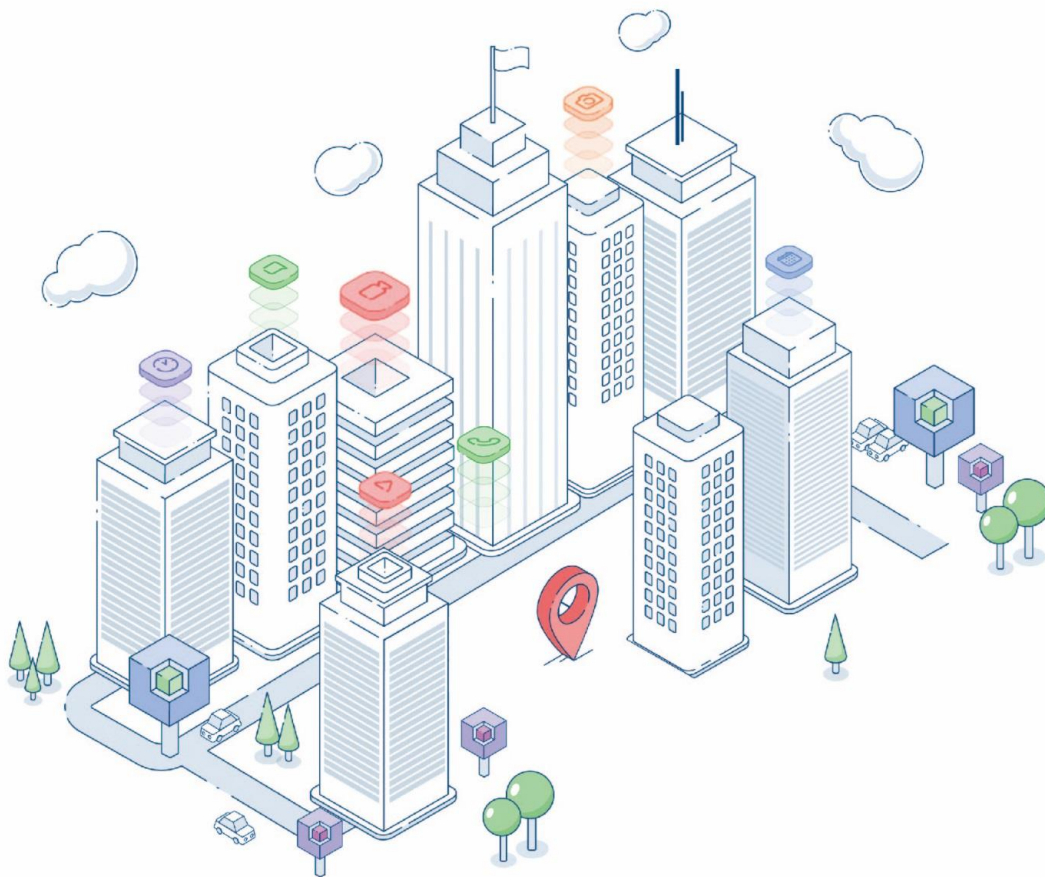
Our Vision

The World Will See China Through HCB

With Experience of 24 Years

And Wisdom of 600 Persons

We Do only One Thing



- Intelligent Smoke Alarm
- Smart Parking
- Smart Water Meter
- Smart Gas Meter
- GPS
- Bike-sharing
- Security Alarm
- Intelligent Manhole Cover
- Smart Lock
- Outdoor Asset Tracking
- Intelligent Logistics (Cold Chain)
- Cloud Shot
- Intelligent City - Waste Management
- Intelligent Agriculture - Greenhouse
- Intelligent Agriculture - Breeding Care & Animal Tracking
- Smart Home - Household Appliance Remote Control & Intrusion Alarm

Demand and Trend of Battery Supply in IoT Industry

Demand of Battery Supply in IoT Industry

The Internet of things (IoT) is the extension of Internet connectivity into physical devices and everyday objects. Embedded with electronics, Internet connectivity, and other forms of hardware (such as sensors), these devices can communicate and interact with others over the Internet, and they can be remotely monitored and controlled.

From the bike-sharing, GPS, intelligent sensor, to smart metering, our concern is always the power supply. In some of IoT applications which require long life, low maintenance and high reliability, the primary lithium battery is the preferred power solution for network search, valve drive, and data transmission.

IoT Industry Devices

 Long Life

 Low Maintenance

 High Reliability

Typical Technical Parameters for IoT Industry

Expected Life Time:

>10 Years

Working Mode:

Pulse
Intermittent
Type

Temperature Range:

-40°C~+85°C

Annual Self-discharge Rate:

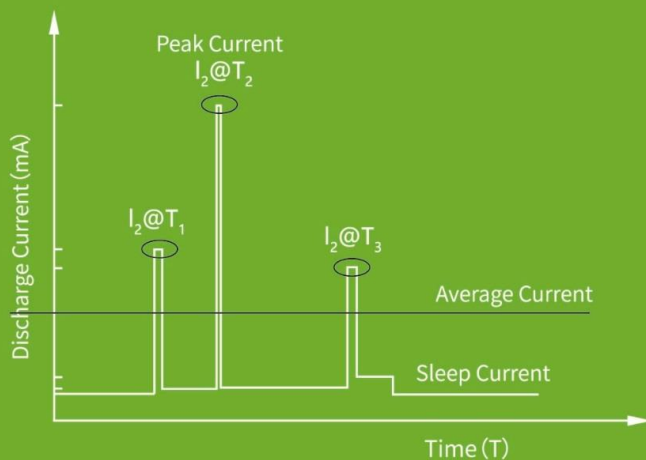
< 2%

Technical Requirements for Battery Supply in IoT Industry



Overview of HCB ER+ Battery Solutions

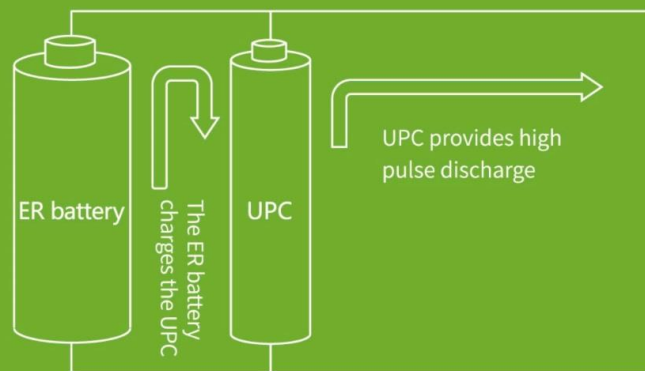
HCB ER+ Battery solution is an optimal combination of a Li-SOCl₂ (ER) battery plus a super capacitor (UPC). It meets the high capacity requirements of IoT applications, and has high pulse output capability, which becomes a preferred solution with long life, temperature adaptability and high safety.



Picture 1, the peak current (I_1 , I_2 and I_3) is mainly provided by the UPC. The small current (sleep current) is mainly provided by the ER battery.

Advantages:

- **Greater Stability**
The bobbin battery is a simpler design than a spiral battery.
- **High Output Power**
The max. pulse is up to 5000mA, instantaneous output power can reach to 15W.
- **High Capacity**
It's over 30% higher than the same spiral battery.
- **No passivation**
The voltage delay of ER battery will not occur during the lifetime



The HCB hermetic sealed UPC has excellent discharge performance at Low-temperature.

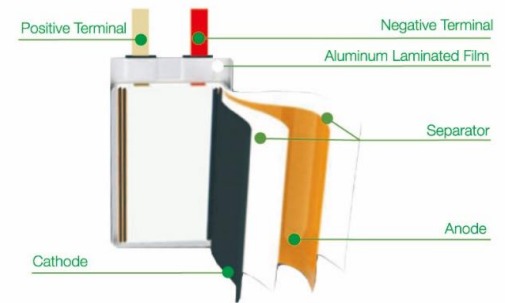
Overview of HCB CP Battery Solutions (Innovative battery Solutions)

HCB CP battery solution is a Li-MnO_2 soft pack battery, which uses an aluminum laminated film instead of the metal shell, resulting in a cell with an innovative ultra-thin structure instead of the traditional cylindrical structure. The CP battery solution is suitable for modern, lightweight electronic devices in IoT applications.

In 2007, HCB was the first company to realize mass production of CP battery in China. Meanwhile, it's also the structural patent owner of the CP battery technology

(patent number: ZL 2007 2 0087439.8). HCB is the battery supplier with the largest volume of customers and the largest annual delivery volume in the global market of CP batteries.

Compared with ER+, the CP Battery not only has the same advantages of high capacity and high pulse current, but also offers greater reliability in IoT applications. Additionally, the CP battery can be produced in custom sizes to fit IoT devices.



Picture 1 High Pulse (Suitable for High Current Discharge Applications)

The physical dimension
of a battery will no longer restrict your

IMAGINATION

and the capacity will not be a barrier
to your design.

HCB provides the most comprehensive battery solutions for IoT industry.

You create
innovative products,
We provide innovative
battery solutions!



CP Li-MnO₂
Soft Batteries

CR Li-MnO₂
Cylindrical Batteries



ER Li-SOCl₂
Cylindrical Batteries



UPC Ultra Pulse
Capacitors



Battery Solutions

HCB ER+ Battery Solutions

Model		Nominal Voltage (V)	Nominal Capacity (mAh)	Dimensions (mm)	Max. Pulse Current (mA)
EU1/2AA1520	ER14250+UPC1520	3.60	1200	16.5×32.0×28.0	2000
EUAA1520	ER14505+UPC1520	3.60	2500	16.5×32.0×55.0	2000
EUFA1520	ER18505+UPC1520	3.60	4000	20.0×34.0×55.0	2000
EUC1520	ER26500+UPC1520	3.60	8500	27.5×43.5×55.0	2000
EUD1520	ER34615+UPC1520	3.60	19000	35.0×52.5×63.5	2000
EU1/2AA1550	ER14250+UPC1550	3.60	1200	16.5×32.0×55.0	5000
EUAA1550	ER14505+UPC1550	3.60	2500	16.5×32.0×55.0	5000
EUFA1550	ER18505+UPC1550	3.60	4000	20.0×34.0×55.0	5000
EUC1550	ER26500+UPC1550	3.60	8500	27.5×43.5×55.0	5000
EUD1550	ER34615+UPC1550	3.60	19000	35.0×52.5×63.5	5000

HCB CR Battery Solutions

Model	Nominal Voltage (V)	Nominal Capacity (mAh)	Dimensions (mm)	Max. Pulse Current (mA)
CR123A	3.0	1600	φ17.0×34.5	3000
CR2	3.0	800	φ15.5×27.0	1500
CR14250SC	3.0	1050	φ14.5×25.5	100
CR123ASC	3.0	2100	φ17.0×34.5	100
CR14505SC	3.0	2350	φ14.5×50.5	200

HCB CP Innovative Battery Solutions

Model	Nominal Voltage (V)	Nominal Capacity (mAh)	Dimensions (mm)	Max. Pulse Current (mA)
CP042532	3.0	18	0.45×25×32	30
CP064848	3.0	100	0.60×48×48	75
CP2012120	3.0	480	2.2×13×125	80
CP243742	3.0	700	2.6×38×43	300
CP263840	3.0	700	2.8×39×41	500
CP223565	3.0	750	2.5×36×66	500
CP224147	3.0	800	2.4×45×49	400
CP502440	3.0	1200	5.2×25×42	500
CP603146	3.0	1950	6.2×32×47	1000
CP603742	3.0	2400	6.2×38×43	1200
CP802860	3.0	3000	8.2×29×61	2000
CP705050	3.0	4000	7.2×51×51	3000
CP783970	3.0	5500	8.0×40×71	3000
CP7839109	3.0	10000	8.0×40×110	5000

Although the size and structure of CP can be customized, we recommend that you take the battery design into consideration as early as possible in the project planning stage.

Typical Application Cases

1. Main applications

> Intelligent Smoke Alarm

Battery Solutions

Life Time Requirement: 5~10 Years

Working Environment Temperature: 0°C~+40°C

Typical Battery Solutions:

CP9V, CR123A, CR2,

ER14505M (Smoke Alarm Module),

ER14505+UPC1550,

ER18505M (Wireless Communication Module)

HCB Innovative Battery Solutions:

CP603146, CP783970 (Alarm + Telecommunication)



1

2



> Smart Parking

Battery Solutions

Life Time Requirement: 3~5 Years

Working Environment Temperature: -40°C~+85°C

Typical Battery Solutions:

ER26500M, ER26500+UPC1550, ER34615+UPC1550

HCB Innovative Battery Solutions:

CP783970-2, CP7839109, CP7839109-2



> Smart Water Meter

Battery Solutions

Life Time Requirement: 5~15 Years

Working Environment Temperature: -5°C~+60°C

Typical Battery Solutions: ER18505-2, ER26500+UPC1525

HCB Innovative Battery Solution: CP7839109

> GPS

Battery Solutions

Life Time Requirement: 1~3 Years

Working Environment Temperature: -30°C~+85°C

Typical Battery Solutions:

CR123A, ER14505-2 +UPC1550, ER26500

HCB Innovative Battery Solutions:

CP603742, CP705050, CP802060, CP783970



> Smart Gas Meter

Battery Solutions

Life Time Requirement: 5~15 Years

Working Environment Temperature: -20°C~+75°C

Typical Battery Solutions:

ER34615M, ER26500+UPC1525, ER34615+UPC1525

HCB Innovative Battery Solutions:

CP7839109, CP7839109-2



> Security Alarm

Battery Solutions

Life Time Requirement: 2~5 Years

Working Environment Temperature: -20°C~+85°C

Typical Battery Solutions:

CR123A, CR2

HCB Innovative Battery Solutions:

CP603146, CP705050, CP2012120



> Intelligent Manhole Cover

Battery Solutions

Life Time Requirement: 3~5 Years

Working Environment Temperature: -40°C~+85°C

Typical Power Solutions:

ER14505, ER26500+UPC1550, ER34615+UPC1550

HCB Innovative Battery Solutions:

CP705050, CP7839109, CP7839109-2



6

7

8

9

> Bike-sharing

Battery Solutions

Life Time Requirement:

2~3 Years

Working Environment Temperature:

-25°C~+85°C

Typical Battery Solutions:

2CR17450, ER34615+UPC1550

HCB Innovative Battery Solution:

CP1005050-4



> Smart Lock

Battery Solutions

Life Time Requirement: 5 Years

Working Environment Temperature: 0°C~+40°C

Typical Battery Solutions:

CR123A, ER26500+UPC1525, ER34615+UPC1525

HCB Innovative Battery Solutions:

CP603146, CP7839109-2



> Intelligent Logistics (Cold Chain)

Battery Solutions

Life Time Requirement:

1~3 Years

Working Environment Temperature:

-30°C~+85°C

Typical Battery Solutions:

CR123A, CR17450

HCB Innovative Battery Solutions:

CP603742, 2CP705050



10

11

12

> Outdoor Asset Tracking

Battery Solutions

Life Time Requirement: 3 Years

Working Environment Temperature: -40°C~+85°C

Typical Battery Solutions:

CR123A, ER34615+UPC1525

HCB Innovative Battery Solutions:

CP603146, CP7839109-2



> Cloud Shot

Battery Solutions

Life Time Requirement: 5 Years

Working Environment Temperature: -40°C~+85°C

Typical Battery Solutions:

ER18505-3 +UPC1550, ER34615+UPC1550

HCB Innovative Battery Solution:

CP7839109-2



2. New Applications

Sensors are widely used in IoT industry, collecting all kinds of data at anytime and anywhere, monitoring the changing state of everything. As the power source for the sensor, the primary lithium battery continuously provides energy to meet its increasing demands.

Intelligent City - Waste Management

Monitoring the volume of garbage in trash bin to optimize garbage collection routes.

HCB Battery Solutions:
ER+ battery pack , CP78 series
soft batteries



Intelligent Agriculture - Greenhouse

Controlling microclimatic condition to maximize the yield and quality of fruits and vegetables.

HCB Battery Solutions:
ER+ battery pack , CP60 series
soft batteries



Intelligent Agriculture - Breeding Care & Animal Tracking

Monitoring the growth of animal to ensure their survival and health on the farm; Tracking animal's location and verifying identification.

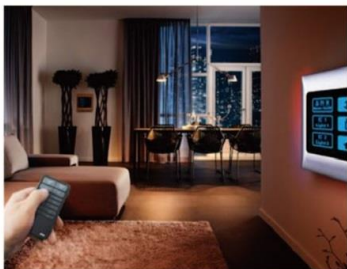
HCB Battery Solutions:
ER+ battery pack , CP60, CP78
series soft batteries



Smart Home - Household Appliance Remote Control & Intrusion Alarm

Remotely turning on and off devices to avoid accidents and save energy, detecting door and window opening to prevent intruders.

HCB Battery Solutions:
ER+ battery pack , CP20 series
soft batteries



Performance Comparison of HCB Batteries

	Li-MnO ₂ Cylindrical Battery (CR)	Li-SOCl ₂ Cylindrical Battery (ER)	Li-MnO ₂ Soft Battery (CP)
Energy Density (Wh/kg)	180~330	480~590	360~450
Features	High security, green energy, suitable for continuous large current output in a low voltage platform.	High specific energy, high and stable working voltage, wide operating temperature range.	The safest primary lithium battery, personalized design without dimension limitation.
Temperature Range	-40°C~+85°C	-55°C~+85°C	-40°C~+70°C (80°C)
Typical Discharge Curves			
Optional Structure	Spiral, Bobbin	Spiral, Bobbin	Spiral
Spiral Structure Diagram			
Bobbin Structure Diagram			

Li-MnO₂ Cylindrical Battery (CR) with Hermetic-sealing and Semi-sealing Structures

	Hermetic-sealing	Semi-sealing
Structure Diagram		
Structural Features	Glass sealing is adopted as the sealing component, the battery shell and cover are sealed by welding.	PP is used as the sealing component, the battery shell and cover are sealed by mechanical crimping.

SPECIALIZE

FOCUS

SERVE



HCB Battery Co., Ltd.

Add: No.1 Special Taizhong Avenue, Gaoqiao Industrial Park
Wujiashan Economic Development Zone Wuhan, Hubei, China

P.O.: 430040

Tel: +86 (0)27 8324 8452

Fax: +86 (0)27 8324 8455

Email: sales@cnhcb.com

www.cnhcb.com

Beijing Nandu Haocheng Power Equipment Co., Ltd.

Add: 801#, 1+1 Mansion, NO.10 Caihefang Rd, Z-park West,
Haidian District, Beijing, China

P.O.: 100080

Tel: +86 (0)10 6261 8891/92/95/96

Fax: +86 (0)10 6261 0808

www.haochengpower.com