

# Contents

<b>GP – Battery Experts for nearly 60 years</b> .....	3
<b>Battery Experts - Product Compliance</b> .....	4
<b>Battery Experts - Laboratory Services</b> .....	5
<b>Battery Experts - System Certification and Awards</b> .....	6
<b>Batteries Selection Guide</b> .....	7
<b>Alkaline Cylindrical Batteries</b> .....	8
<b>Carbon Zinc Cylindrical Batteries</b> .....	10
<b>Primary Lithium Cylindrical Batteries</b> .....	11
<b>Primary Lithium Coin Batteries</b> .....	12
<b>Alkaline Button Batteries</b> .....	13
<b>Sales and Marketing Offices</b> .....	14



# GP Battery Experts for nearly 60 years

GP Batteries International Limited is principally engaged in the development, manufacture and marketing of batteries and battery-related products. With nearly 60 years of industry experience, GP Batteries excels in high-speed automated battery manufacturing with global production reaching 6 billion batteries per year and is ranked one of the world's largest manufacturers of primary and rechargeable batteries. It is also one of the largest consumer battery manufacturers in China.



## R&D

Our world class R&D center features advanced testing equipment, professional trial-production workshops, chemical labs and material analysis rooms. All these support ongoing performance improvements and the development of new battery products.



## Automation

Our highly automated production lines deliver consistently high quality levels and productivity to meet capacity needs of demanding high volume customers.



## Quality

Our quality management system and manufacturing process is data-driven, following the Six Sigma philosophy for continuous improvement. Factors that affect product quality are automatically measured, analyzed and tightly controlled. Specialized state of the art inspection equipment such as Atomic Absorption Spectroscopy (AAS), UV-Visible Spectrometry (UV-VIS) and Energy Dispersive X-Ray Fluorescence (EDXRF) support us in our drive for quality.



# Battery Experts



## Product Compliance

GP Batteries meets and exceeds the highest international safety standards.

GP Batteries's IEC62133-certified **NiMH** and Lithium-ion batteries offer quick market penetration into **54** certification body scheme participating countries\*.

GP Batteries manufactures **4** out of **8** brands of certified primary 9V brands complying with UL217 specifically for Smoke Alarm applications.

GP Batteries is amongst the **first batch of Lithium-ion battery brands** to qualify for the voluntary CQC mark in China, as well as UR, BIS, and MC marks in the USA, India and Malaysia.



With **UN38.3** certification, all GP Lithium batteries are easily transported by air and sea to **5** continents\*.

\* Subject to national deviation, additional tests may be needed.



# Battery Experts

## Laboratory Services

### China and Singapore

GP Batteries' quality assurance centers, located strategically in China, Singapore and Hong Kong, provide full range R&D facilities for quality and safety assurance.

Our laboratories in China and Singapore are well-recognized by more than 90 international regions under the International Laboratory Accreditation Cooperation-Mutual Recognition Agreement (ILAC-MRA).

#### China (Shenzhen) - Chemical & Calibration Laboratory

- CNAS (China National Accreditation Service for Conformity Assessment) Accreditation



中国认可  
国际互认  
检测 / 校准  
TESTING / CALIBRATION  
CNAS L2411

- Testing scope
  - 2011/65/EU (RoHS Directive)
  - 2006/66/EC (Battery & Accumulator Directive)

#### Battery Performance Test in Singapore

- SAC-SINGLAS (Singapore Laboratory Accreditation Scheme) Accreditation



- Testing scope
  - IEC 60086-1 - GB/T 8897.1 & GB/T 8897.2
  - IEC 60086-2 - ANSI C18.1M Part 1
  - IEC 60086-5 - IEC 61951-2

### Hong Kong Science Park

Our GP Hong Kong laboratory is the first in HK to be certified under UL WTDP (Witnessed Test Data Program) and one out of only five UL CTF (Customers Testing Facilities - Stage 2) certified laboratories in China and Hong Kong.

#### IEC Manufacturer's Testing Laboratory

- CTF (Customer's Testing Facilities (CTF) - Stage 2) IEC 62133-1

#### Reliability Test for Benchmarking

- Test conditions to be agreed with clients



# Battery Experts

## System Certification

GP has a strong management system in place. Our factories are certified with ISO9001:2015 (Quality Management System), ISO14001:2015 (Environmental Management System) and ISO45001:2018 (Occupational Health and Safety Management System).

Moreover, GP is a member of amfori, the leading global business association for open and sustainable trade. We abide by amfori BSCI's Code of Conduct for social responsibility and our factories are independently audited to comply with amfori BSCI standard for social performance.



### ISO17025

Our China and Singapore laboratories are ISO17025 certified – a standard ensuring most reliable testing and calibration services.

## Awards

GP Batteries' continuous commitment to high standards is recognized by customers and the industry.

### EcoVadis Bronze Medal:

In the latest EcoVadis sustainability assessment, GP Batteries was awarded the Bronze Medal, a recognition for companies that perform better than 50% of the companies that undergo the assessment in four important aspects in Environment, Labour Practices and Human Rights, Ethics and Sustainable Procurement.

Ecovadis assessment has taken into account international standards such as Ten Principles of the UN Global Compact, the International Labour Organization (ILO) conventions, the Global Reporting Initiative (GRI)'s standards and the ISO 26000 standard.

### Most Valuable Supplier and Green Partner:

This award was presented by Panasonic Corporation to recognize GP Batteries' contributions as a most valuable supplier, and we are also authorized by Sony as Green Partner.

### Asia Quality Best Practice Award:

Handed out by the International Six Sigma Council, the gold award celebrates GP Batteries being top in quality improvement.

### MAKE (Most Admired Knowledge Enterprise) Award:

The award recognizes organisations which out-perform their peers in creating shareholder's value by transforming tacit and explicit enterprise knowledge and intellectual capital into superior products/services/solutions.

### Zero Waste to Landfill Environmental Claim Validation:

Our factories are certified by UL (Underwriters Laboratories) to achieve Zero Waste to Landfill Gold (over 95% waste diversion) or Silver (over 90% waste diversion) designations. GP is the first in the battery industry to receive ZWTL Validation for its two battery manufacturing plants in ASEAN in December 2019, and the first manufacturing facility in Vietnam to earn ZWTL validation in April 2021.



# Batteries Selection Guide



GP Batteries offers support to cater an extensive variety of market needs, from general consumer gadgets to portable commercial devices to industrial applications for accuracy, its professional cell manufacturing and advanced technologies have built GP as a brand of safe, reliable and quality power supply.

## Selection Guide for Cylindrical Primary Battery Types

Applications	Alkaline	Carbon Zinc	Lithium
Access Control System	●		●
Asset Tracking System	●		●
Cameras	●		●
Clocks		●	●
Electronic Door Locks	●		●
Electronic Shavers	●		●
Flashlights	●	●	●
Home Security System	●		●
IoT (Internet of Things)	●		●
Medical Equipment			●
Meters	●	●	●
Personal Care	●	●	
Remote Control		●	
Security Sensors	●	●	●
Smoke Detectors		●	●
Toys	●	●	

## Selection Guide for Coin/Button Battery Types

Applications	Alkaline	Lithium
Calculators	●	●
Digital Clocks	●	●
Electronic Watches		●
Memory Backup	●	●
Meters	●	●
Electronic Price Tags		●
RFID	●	●
Remote Control	●	●
Security Sensors	●	●
Thermometers	●	●
Toys	●	●
Watches	●	●
Glucose Meter	●	●
Wireless Doorbell	●	●

# Alkaline Cylindrical Batteries

## General Description

GP Alkaline Cylindrical Batteries – Ultra Plus and Super – possess a higher energy density and hence provide long lasting power to support industrial usage. They are designed for the maximization of value, performance and safety. Come in several sizes to fit most applications, the multiple grades of alkaline cylindrical battery intensity are suitable for different segments of battery operated devices.



## Features

- Optimized current and continuous drain
- Superior performance at all drain levels
- Wide operating range of temperatures
- Environmentally friendly
- Comply with IEC, ANSI and JIS standards

## Application

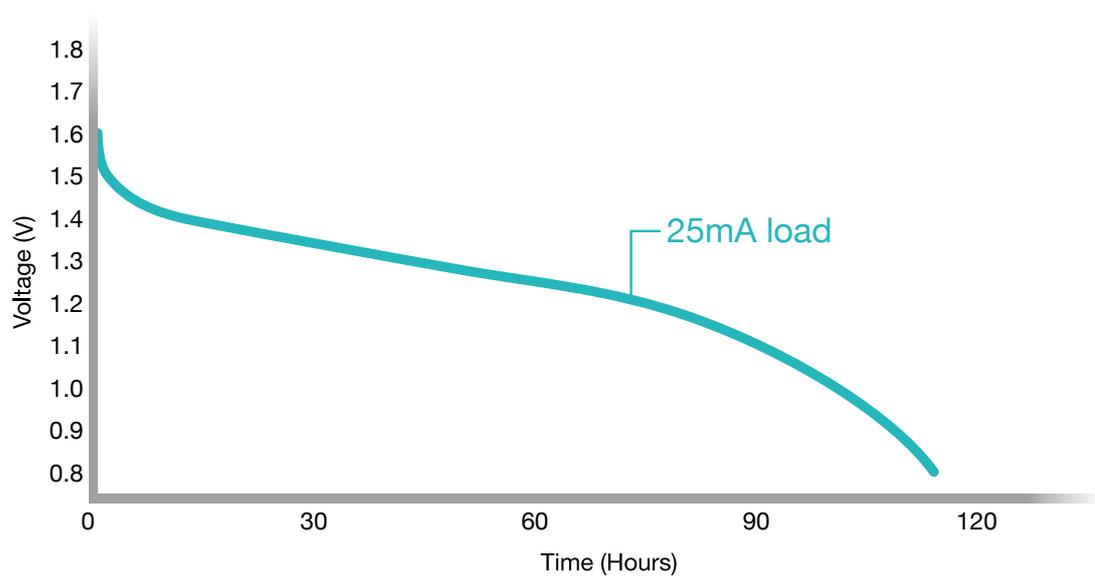
- Toys
- Security sensors
- Flashlights
- Electric shavers
- Personal care

Alkaline Cylindrical Batteries								
Model	Dimension ( mm )		Voltage ( V )	Cross reference				
	Diameter	Height		IEC	JIS	DU	Energizer	Other
<b>Ultra Plus (For high drain application, e.g. flashlight)</b>								
13AUP	34.2	61.5	1.5	LR20	LR20	MN1300	E95	D
14AUP	26.2	50.0	1.5	LR14	LR14	MN1400	E93	C
15AUP	14.5	50.5	1.5	LR6	LR6	MN1500	E91	AA
24AUP	10.5	44.5	1.5	LR03	LR03	MN2400	E92	AAA
1604AUP	26.5(L)x17.5(W)x48.5(H)		9.0	6LR61 / 6LP3146	-	MN1604	522	9V, 6LF22
<b>Super (For low drain application, e.g. toys)</b>								
13A	34.2	61.5	1.5	LR20	LR20	MN1300	E95	D
14A	26.2	50.0	1.5	LR14	LR14	MN1400	E93	C
15A	14.5	50.5	1.5	LR6	LR6	MN1500	E91	AA
24A	10.5	44.5	1.5	LR03	LR03	MN2400	E92	AAA
25A	8.3	42.5	1.5	LR8D425	-	MN2500	E96	AAAA
910A	12.0	30.2	1.5	LR1	LR1	MN9100	E90	N
312A	62.0(L)x22.0(W)x67.0(H)		4.5	3LR12	-	MN1203	-	-
908A	66.0(L)x66.0(W)x111.0(H)		6.0	4LR25	4LR25X	MN908	528	-
1604A	26.5(L)x17.5(W)x48.5(H)		9.0	6LR61 / 6LP3146	-	MN1604	522	9V, 6LF22
1412AP	35.5(L)x9.2(W)x48.4(H)		6.0	-	-	7K67	539	J



## Performance Characteristics

15A @25mA continuous discharge to 0.8V



# Carbon Zinc Batteries

## General Description

GP Carbon Zinc Cylindrical Batteries serve as an economical source of power for devices that require different drain rates. These premium carbon zinc batteries perform the best when applied to devices of light to moderate drains or continuous drains applications.



## Features

- More economical in terms of hourly cost on moderate current drains/ use frequency when compared to the alkaline batteries
- Higher open circuit and initial close circuit voltages than alkaline batteries
- Extra heavy duty
- Environmentally friendly
- Comply to IEC, ANSI and JIS standards

## Application

- Toys
- Remote control
- Clocks
- Multimeters
- Flashlights
- Radio
- Security sensors
- Smoke detectors

## Low Lead - Carbon Zinc Batteries

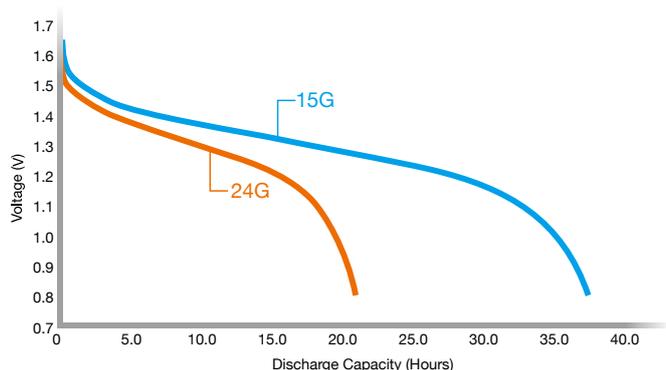
Model	Dimension ( mm )		Voltage ( V )	Cross reference			
	Diameter	Height		IEC	JIS	Eveready	Other
13G	34.2	61.5	1.5	R20P	R20P	1250	D
14G	26.2	50.0	1.5	R14P	R14P	1235	C
15G	14.5	50.5	1.5	R6P	R6P	1215	AA
24G	10.5	44.5	1.5	R03	R03	1212	AAA
1604G	26.5(L)x17.5(W)x48.5(H)		9.0	6F22	6F22	1222	-

## Lead Free - Carbon Zinc Batteries

13GLF	34.2	61.5	1.5	R20P	R20P	1250	D
14GLF	26.2	50.0	1.5	R14P	R14P	1235	C
15GLF	14.5	50.5	1.5	R6P	R6P	1215	AA
24GLF	10.5	44.5	1.5	R03	R03	1212	AAA
1604GLF	26.5(L)x17.5(W)x48.5(H)		9.0	6F22	6F22	1222	-

## Performance Characteristics

25mA constant current continuous discharge curve at room temperature



# Primary Lithium Cylindrical Batteries

## General Description

GP Primary Lithium Cylindrical Batteries offer strong voltage, high energy density, durability, safety as well as operation stability. These lithium cylindrical batteries are all equipped with built-in Positive Temperature Coefficient (PTC) device (a passive electronic component used against overcurrent faults) for the protection of cells and users against safety issues such as external short circuit.



## Features

- Low internal resistance
- Built-in PTC
- Leak proof crimping technique
- Wide operating range of temperature from -40°C to +60°C
- Durable power storage with low annual self-discharge rate (below 1% per year)
- Environmentally friendly
- Comply with UL and UN38.3 safety standards

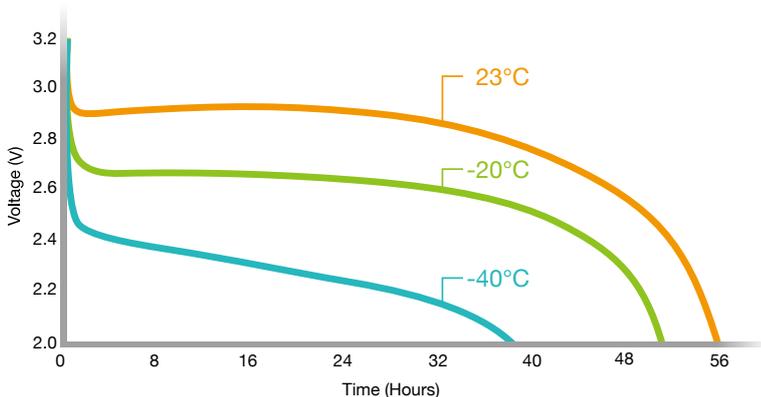
## Application

- IoT (Internet of Things)
- Home security system
- Access control system
- Smoke Detector
- Meters (gas/electric/water)
- Cameras (conventional/digital/instant)

Primary Lithium Cylindrical Batteries								
Model	Dimension ( mm )		Voltage ( V )	Cross reference				
	Diameter	Height		IEC	Energizer	Duracell	Panasonic	Ultralife
CR14250	14.5	25.0	3.0	CR14250	-	-	-	-
CR2	15.6	27.0	3.0	CR15H270	EL1CR2	DLCR2	CR-2	-
CR123A	17.0	34.5	3.0	CR17345	EL123	DL123A	CR-123A	-
CR2/3A	17.0	34.0	3.0	-	-	-	CR-2/3AZ	-
CR-P2	34.8(L)x19.5(W)x35.8(H)		6.0	CR-P2	EL223	DL223A	CR-P2	-
2CR5	34.0(L)x17.0(W)x45.0(H)		6.0	2CR5	EL2CR5	DL245	2CR-5	-
CR-V9	26.5(L)x17.5(W)x48.5(H)		9.0	-	LA522	DL1604	-	U9VL
15LF	14.5	50.5	1.5	FR6	L91	LF1500	-	-
24LF	10.5	44.5	1.5	FR03	L92	LF2000	-	-
CR17450	17.0	45.0	3.0	CR17450	-	-	-	-

## Performance Characteristics

CR123A @100Ω continuous discharge to 2.0V at various temperatures



# Primary Lithium Coin Batteries

## General Description

GP Primary Lithium Coin Batteries supply power with high energy density and reliability that works for a variety of applications. Despite their small size, these lithium coin batteries possess high energy density. They are especially suitable for compact devices with extra low background drains.



## Features

- High voltage of 3 volts
- Low self-discharge enables long service and shelf life
- Wide operating range of temperatures
- Constant operating voltage
- Environmentally friendly
- Customized welding tag available

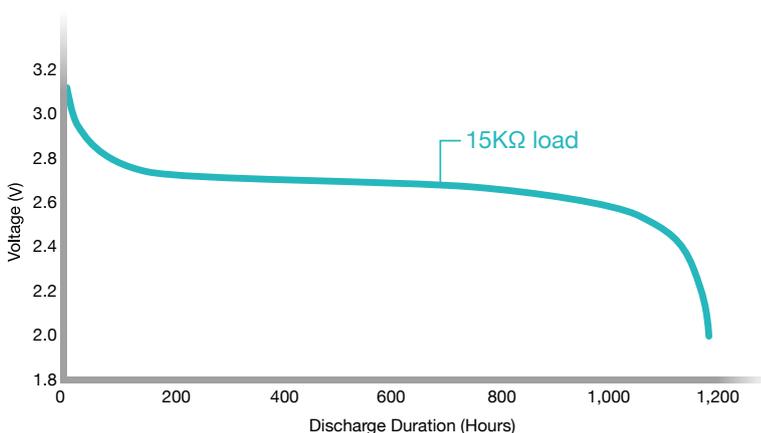
## Application

- IoT (Internet of Things)
- Calculators
- Electronic watches
- Memory backup
- RFID
- Remote control
- Electronic price tags
- Smart home

Primary Lithium Coin Batteries								
Model	Dimension ( mm )		Voltage ( V )	Nominal Capacity (mAh)	Cross reference			
	Diameter	Height			IEC / JIS	Energizer	Varta	Duracell
CR1220	12.5	2.0	3.0	36.0	CR1220	ECR1220	CR1220	-
CR1616	16.0	1.6	3.0	55.0	CR1616	ECR1616	CR1616	DL1616
CR1620	16.0	2.0	3.0	75.0	CR1620	ECR1620	CR1620	DL1620
CR1632	16.0	3.2	3.0	130.0	CR1632	ECR1632	CR1632	DL1632
CR2016	20.0	1.6	3.0	80.0	CR2016	ECR2016	CR2016	DL2016
CR2025	20.0	2.5	3.0	160.0	CR2025	ECR2025	CR2025	DL2025
CR2032	20.0	3.2	3.0	230.0	CR2032	ECR2032	CR2032	DL2032
CR2430	24.5	3.0	3.0	300.0	CR2430	ECR2430	CR2430	DL2430
CR2450	24.5	5.0	3.0	600.0	CR2450	ECR2450	CR2450	-

## Performance Characteristics

CR2032: load: 15KΩ continuous discharge to 2.0V



# Alkaline Button Batteries

## General Description

GP Alkaline Button Batteries are mercury free and made for miniature applications. Available in various sizes, they support voltages that range from 1.5 to 12.0 volts.



## Features

- High resistance to shock and vibration
- Long service life
- Mercury free
- Environmentally friendly

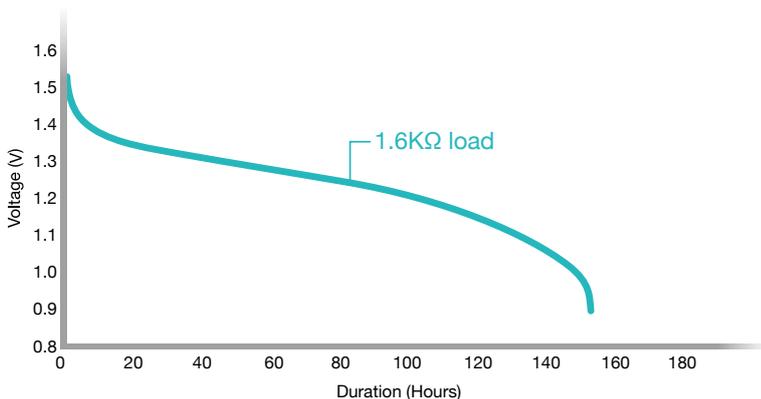
## Application

- Toys
- Meters
- Watches
- Calculators
- Digital Clocks
- Thermometers

Alkaline Button Batteries									
Model	Dimension ( mm )		Voltage ( V )	Nominal Capacity (mAh)	Cross reference				
	Diameter	Height			IEC	JIS	Energizer	Varta	Duracell
A76	11.60	5.40	1.5	110	LR44	LR44	A76	V13GA	LR44
186	11.60	4.20	1.5	70	LR43	LR43	186	V12GA	LR43
189	11.60	3.05	1.5	44	LR54	LR1130	189	V10GA	LR54
192	7.90	3.60	1.5	24	LR41	LR41	192	V3GA	-
23AF	10.22	12.00	12.0	46	-	-	A23	V23GA	MN21
27AF	8.00	12.00	12.0	18	-	-	-	-	-
476AF	13.00	6.00	6.0	105	4LR44	4LR44	A544	V4034PX	PX28A

## Performance Characteristics

A76 1.6K $\Omega$  continuous discharge to 0.9V



## WORLDWIDE HEADQUARTERS

### GP International Limited

7/F, Building 16W, 16 Science Park West Avenue  
Hong Kong Science Park, New Territories, Hong Kong  
Tel: (852) 2484 3333 Fax: (852) 2480 5912  
Email: [gpi@goldpeak.com](mailto:gpi@goldpeak.com) Website: <http://ind.gpbatteries.com>

## SALES AND MARKETING OFFICES

### SOUTH EAST ASIA

#### GP Batteries International Limited

83 Clemenceau Avenue,  
#14-01 UE Square,  
Singapore 239920  
Mainline: (65) 6559 9800  
Fax: (65) 6559 9801  
Email: [industrial@goldpeak.com](mailto:industrial@goldpeak.com)  
Website: <http://ind.gpbatteries.com>

### CHINA

#### GPI International (Shenzhen) Limited

14/F, Shum Yip UpperHills Tower 1,  
No. 5001 Huanggang Road, Futian District,  
Shenzhen, China (Postal Code 518038)  
Tel: (86) 755 6186 2233  
Email: [industrial@goldpeak.com](mailto:industrial@goldpeak.com)  
Website: <http://ind.gpbatteries.com>

#### GPI International (Shenzhen) Limited

Room 1710, Zhongrun Building,  
No. 399 Baodai East Road, Wuzhong District,  
Suzhou, China (Postal Code 215000)  
Tel: (86) 512 6562 8038  
Email: [industrial@goldpeak.com](mailto:industrial@goldpeak.com)  
Website: <http://ind.gpbatteries.com>

### SOUTH KOREA

#### GP Battery Marketing (Korea) Limited

5/F, WhaDeok Building, 319-11,  
Yangjae-Dong, Seocho-Gu  
Seoul, South Korea (Postal Code 06779)  
Tel: (82) 2 549 7188 / 549 7189  
Fax: (82) 2 514 0623  
Email: [industrial@goldpeak.com](mailto:industrial@goldpeak.com)  
Website: <http://ind.gpbatteries.com>

### VIETNAM

#### GP Batteries (Vietnam) LLC

N3 Road, Block C, Hoa Mac Industrial Park,  
Hoa Mac Ward, Duy Tien Town, Ha Nam  
Province, Vietnam (Postal Code 18250)  
Tel: (84) 226 3553 323  
Fax: (84) 226 3553 329  
Email: [industrial@goldpeak.com](mailto:industrial@goldpeak.com)  
Website: <http://ind.gpbatteries.com>

### US & LATIN AMERICA

#### GP Batteries (Americas), Inc OEM / Industrial Division

11245 West Bernardo Court,  
Suite 104, San Diego, CA 92127, USA  
Tel: 1 (800) 268 3416; 1 (858) 674 6099  
Fax: 1 (858) 674 6496  
Email: [industrial@goldpeak.com](mailto:industrial@goldpeak.com)  
Website: <http://ind.gpbatteries.com>

### EUROPE

#### GP Batteries Europe B.V.

Europalaan 16,  
2408 BG Alphen aan den Rijn, The Netherlands  
Tel: (31) 017 2749074  
Email: [industrial@goldpeak.com](mailto:industrial@goldpeak.com)  
Website: <http://ind.gpbatteries.com>

#### GP Battery Marketing France SA

ZAE du Trou Grillon,  
FR-91280 St Pierre du Perray, France  
Tel: (33) 1 6989 6200  
Email: [info@gpbmfrance.fr](mailto:info@gpbmfrance.fr)  
Website: <http://www.gpbatteries.fr>

#### GP Battery Marketing (Germany) GmbH

Prinzenallee 7,  
D-40549 Düsseldorf, Germany  
Tel: (49) 211 522 9540  
Email: [kundenservice@gpbatteries.de](mailto:kundenservice@gpbatteries.de)  
Website: <http://www.gpbatteries.de>

#### GP Battery Marketing Italy S.r.l

Via. Alessandro Volta 3,  
IT-20090 Assago Milano, Italy  
Tel: (39) 02 488 2512  
Email: [info@gpbatteries.it](mailto:info@gpbatteries.it)  
Website: <http://www.gpbatteries.it>

#### GPBM Nordic AB

Sörredsvägen 113  
SE-418 78 Gothenburg, Sweden  
Tel: (46) 31-799 1600  
Email: [kundenservice@gpbmnordic.se](mailto:kundenservice@gpbmnordic.se)  
Website: <http://www.gpbatteries.se>



[ind.gpbatteries.com](http://ind.gpbatteries.com)