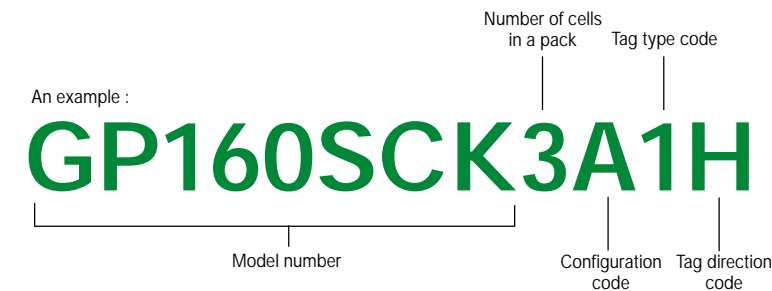


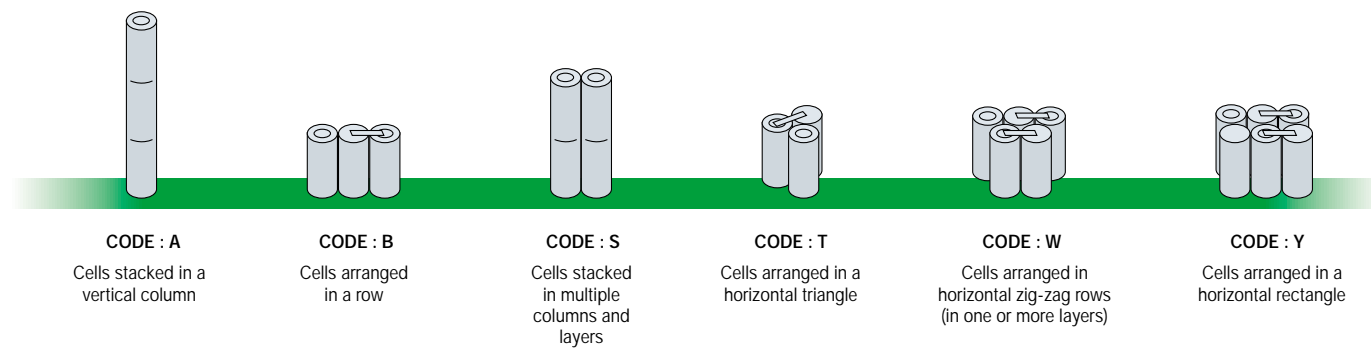
Configurations

Designation System for Battery Packs



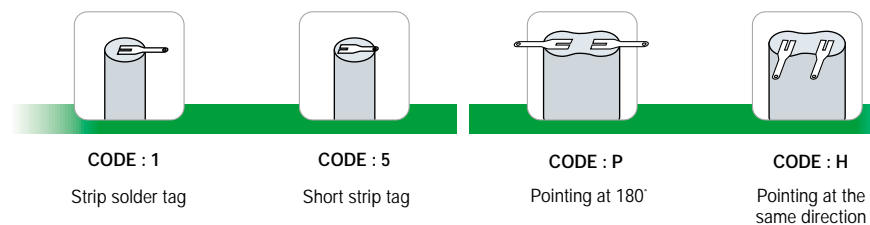
For battery packs with connectors, the last two characters will be used to specify connector type eg. GP160SCKT3AMX.

Standard Configurations for Battery Packs



Tag Type Specifications

Tag Direction Codes



* Apart from the above standard configurations, customized configurations would also be welcomed.

Accessories



Battery Specifications and Precautions



Charging and Discharging

The optimum trickle charge rate of 0.05C can be permanently applied for maximizing the battery service life. Generally speaking, the charging rate should not be less than 0.02C. If the charging rate is too low, the battery will not be fully charged. If the charging rate is too high, the battery will age prematurely and reduce the battery's service life.

Specifying Battery Capacity

It is important to consider the battery's end of life parameters when selecting battery capacity. A battery's capacity depends on its operating temperature, charging rate, battery age and its minimum operating voltage.

GP Batteries

WORLDWIDE HEADQUARTERS
HONG KONG
GPI INTERNATIONAL LIMITED
8/F., Gold Peak Building, 30 Kwai Wing Road,
Kwai Chung, N.T., Hong Kong
Tel: (852) 2484 3333 Fax: (852) 2480 5912
E-mail address: gpi@goldpeak.com
Website: www.gpbatteries.com.hk

SALES & MARKETING BRANCH OFFICES

ASEAN
GP BATTERY MARKETING (SINGAPORE) PTE. LIMITED
97 Pioneer Road, Singapore 639579
Tel: (65) 6863 1534 Fax: (65) 6863 8669

MALAYSIA
GP BATTERY MARKETING (MALAYSIA) SDN. BHD.
Lot 8, Jalan Pembrolia U1/49,
Temasya Industrial Park,
40150 Shah Alam, Selangor Darul Ehsan, Malaysia
Tel: (60) 3 5569 3499 Fax: (60) 3 5569 3498

THAILAND
GP BATTERY MARKETING (THAILAND) CO., LIMITED
3/F., V.H. Commercial Building,
23/1 Soi Ngamwongwan 9, Ngamwongwan Road,
Bangkheng, Muang, Nonthaburi 11000, Thailand
Tel: (66) 2 952 5323/4/5 Fax: (66) 2 952 5322

TAIWAN
GOLD PEAK INDUSTRIES (TAIWAN) LIMITED - TAIPEI OFFICE
Room 1200, International Trade Building, No 205 Sec. 1,
Tun Hua South Road, Taipei 10647, Taiwan R.O.C.
Tel: (886) 2 2741 4919 Fax: (886) 2 2731 4868

CHINA
HUIZHOU CHAO BA BATTERY TECHNOLOGY CO., LTD
2/F., South of Hongye Industrial Building,
Tianluo Mountain, 14th Industrial District,
Huizhou City, Guangdong, China
(Postal Code: 516003)
Tel: (86) 752 282 8428 Fax: (86) 752 280 2872

HONG KONG
GP BATTERY MARKETING (H.K.) LIMITED
8/F., Gold Peak Building, 30 Kwai Wing Road,
Kwai Chung, N.T., Hong Kong
Tel: (852) 2420 0281 Fax: (852) 2494 9349

KOREA
GP BATTERY MARKETING (KOREA) LIMITED
4/F., Kunsul Hoekwan Building, 71-2 Non Hyun-Dong,
Kang Nam-Gu, Seoul, South Korea
Tel: (82) 2 549 7188/9 Fax: (82) 2 514 0623

U.S.A.
GOLD PEAK INDUSTRIES (NORTH AMERICA), INC.
11235 West Bernardo Court, San Diego,
CA 92127-1638, U.S.A.
Tel: (1) 858 674 6099 Fax: (1) 858 674 6496

CANADA
GP BATTERY MARKETING INC.
Unit 7, 7780 Woodbine Avenue, Markham,
Ontario, Canada L3R 2N7
Tel: (1) 905 474 9507 Fax: (1) 905 474 9452

LATIN AMERICA
GP BATTERY MARKETING (LATIN AMERICA) INC.
8370 NW 66TH Street, Miami, Florida 33166, U.S.A.
Tel: (1) 305 471 7717 Fax: (1) 305 471 7718

EUROPE
GP BATTERY MARKETING (EUROPE) S.A.
75 Zee Du Trou Grijden,
91280 St Pierre Du Perray, Paris, France
Tel: (33) 1 6989 6200 Fax: (33) 1 6989 6221

GERMANY
GP BATTERY MARKETING (GERMANY) GMBH
Niederröcker Str. 62, D-40667 Meerbusch, Germany
Tel: (49) 2132 971504/5/6 Fax: (49) 2132 80145

POLAND
GP BATTERY (POLAND) SPÓŁKA Z O.O.
ul. Słowicza 19, 02-170 Warszawa, Poland
Tel: (48) 22 868 0490 Fax: (48) 22 846 7535

U.K.
GP BATTERIES (U.K.) LIMITED
Summerfield Avenue, Chelston Business Park,
Wellington, Somerset, TA21 9JF, U.K.
Tel: (44) 1 823 660 044 Fax: (44) 1 823 665 595

ITALY
GP BATTERY MARKETING ITALY S.R.L.
Via A. Volta, 3 Assago-MI-Italy
Tel: (39) 02 488 2512 Fax: (39) 02 488 2865

SCANDINAVIA
GPBM NORDIC AB
Grimboåsen 5, 417 49 Gothenburg, Sweden
Tel: (46) 31 558 600 Fax: (46) 31 556 813

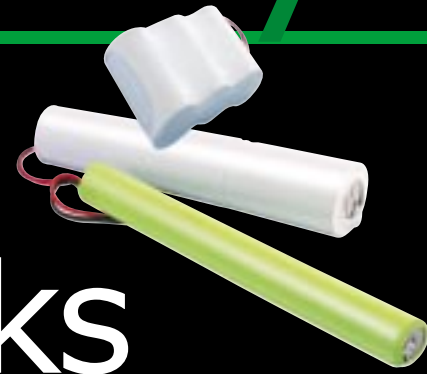
Distributed by:

GP Batteries

Emergency Lighting Battery Packs



Emergency Lighting Battery Packs



GP Rechargeable Batteries – High Temperature Series are specially designed to meet the requirements of emergency lighting application.

Major Features

- Superior Charge Acceptance at High Temperature**
In GP High Temperature Cells, chemicals of the positive plate are optimized to remain stable at high temperature. This technology enables the battery to maximize the storage of applied charges. At the temperature of 50°C, over 90% of the battery capacity can be replenished after it has been charged at 0.05C for 24 hours or at 0.1C for 16 hours. These two charging methods are widely adopted in the emergency lighting application as a single rated or combined as a two-rated charge applied to the battery after a mains failure.
- Permanent Charge Endurance Characteristic**
The chemicals and separator used in GP High Temperature Cell have been optimized for operating in high temperature environment. These durable materials ensure that the battery's permanent overcharging performance is maintained at elevated temperatures. The certificate of compliance with the Permanent Charge Endurance Test in IEC61951-1 Clause 4.4.2.2 by an independent laboratory has proven that GP batteries can sustain permanent overcharge at high ambient temperature.

- Excellent Cycling Characteristic at High Temperature**
GP High Temperature Cells are capable of charging and discharging at elevated temperatures and can achieve 300-1000 IEC cycles at ambient temperature below 40°C.
- High Reliability**
GP High Temperature Cells are produced with the best available materials and state of the art technology so that they can perform with outstanding reliability.
- Product Safety Approved by UL**
Most of the GP high temperature batteries have been approved by the UL Safety Standard (UL1989-Standards for Standby Batteries).
- Comprehensive Product Range**
In addition to AA, AF, Sub-C, C and D size NiCd batteries, GP also provides high temperature NiMH batteries of AAA, AA, AF, 18700 and Sub-C size for a wide range of lighting units/design.
- Environmentally Friendlier**
GP NiMH batteries contain no cadmium, lead or mercury.
- ISO 9001 Accreditation**
Sylva Industries Ltd., the manufacturing arm of GP Batteries, is certified to ISO9001 accreditation in the area of designing and manufacturing primary and secondary batteries since 1996.



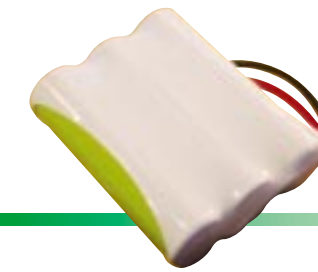
Battery Requirements for Emergency Lighting Application

- Capacity to charge the inverter with battery to meet either one-hour or three-hour standby duration.
- Have a typical discharge rate of 0.9A to 1.1A (ampere) for an inverter. It can run down to 2 volts.
- Ability to recharge in 24 hours to support another standby duration.
- Ability to renew the standby duration after being in service for up to four years.
- Works in ambient temperature at 50°C.
- Delivers continuous trickle charge at C/30 to C/20 at 50°C

Major Applications

- Emergency lighting
- Maintained type and non-maintained type

Product Range



NiMH Series

Cell Size	Model No.	Nominal Voltage (V)	Capacity (0.2C discharge)* (mAh)		Nominal Dimension (mm)		Weight (g)	Standard Charge	
			Minimum	Typical	Diameter	Height		Current (mA)	Time (hour)
AAA	GP60AAAHT	1.2	600	630	10.5	43.7	13	60	16
AA	GP125AAMT**	1.2	1250	1280	14.4	48.2	26	125	16
4/5 AF	GP160AFHT	1.2	1600	1680	17	43	33	160	16
AF	GP210AFHT	1.2	2100	2205	17	50	38	210	16
18700	GP400LAHT	1.2	4000	4200	18.3	70	66	400	16
Sub-C	GP220SCHT**	1.2	2200	2420	23	43	53	220	16

Typical Ambient Temperature : Charge: 0°C to 70°C / Discharge: -20°C to 70°C / Storage: -20°C to 35°C
*After charging at 0.1C for 16 hours **With UL approval

Compatible with electronics used with NiCd batteries

Competitive in cost with NiCd batteries

Space saving

Size being less than half of the NiCd packs. Potentially can be made as small as two AA cells.

Higher capacity

capacity to store more energy at charging temperature of 50°C.

Comprehensive range of size

Sizes of AA, AF, 18700 and Sub-C are catered for a wide range of lighting units/design.

Environmentally friendlier

NiCd Series

Cell Size	Model No.	Nominal Voltage (V)	Capacity (0.2C discharge)* (mAh)		Nominal Dimension (mm)		Weight (g)	Standard Charge	
			Minimum	Typical	Diameter	Height		Current (mA)	Time (hour)
AA	GP70AAST	1.2	700	770	14.4	48.2	21	70	16
AF	GP50AFKT	1.2	500	550	17	28.5	15	50	16
Sub-C	GP160SCKT**	1.2	1600	1760	23	43	44	160	16
	GP180SCKT	1.2	1800	1980	23	43	46	180	16
C	GP250CKT**	1.2	2500	2750	25.8	50	70	250	16
1/2 D	GP250DKT	1.2	2500	2750	33	37	82	250	16
	GP450DKT**	1.2	4500	4950	33	60.5	120	450	16

Typical Ambient Temperature : Charge: 0°C to 70°C / Discharge: -20°C to 70°C / Storage: -20°C to 35°C
*After charging at 0.1C for 16 hours **With UL approval

Using an improved separator

Durable separator prevents short circuit of the electrodes during prolonged operation at high temperature.

New materials developed for positive electrode

New materials with additives can optimize charging efficiency at high temperature.

Robust sealing ring materials

Ensuring the seal remains intact for its full service life at elevated temperatures.

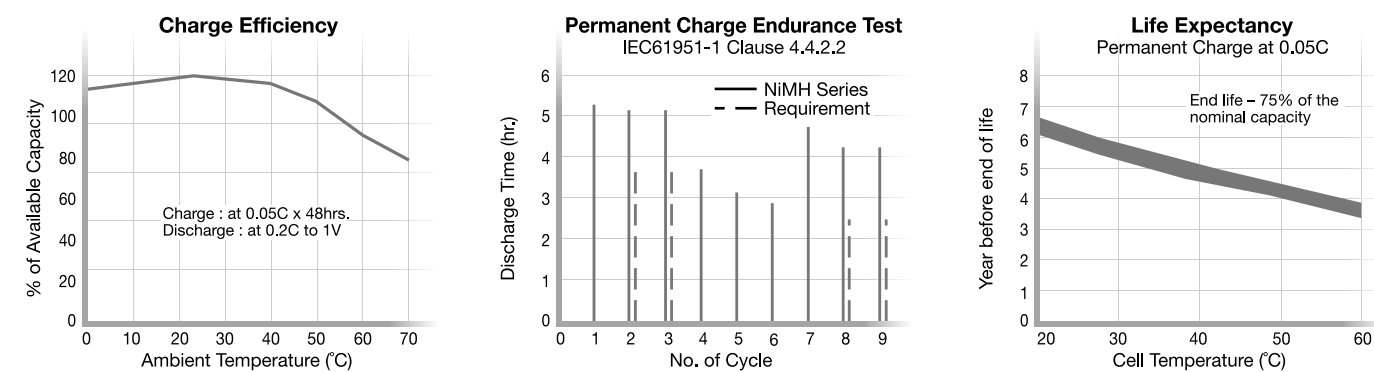
Complying with IEC 61951-1

Luminaries for emergency lighting

Permanent Charge Endurance Test Condition

Performance Characteristics

Nickel Metal Hydride Series



Nickel Cadmium Series

