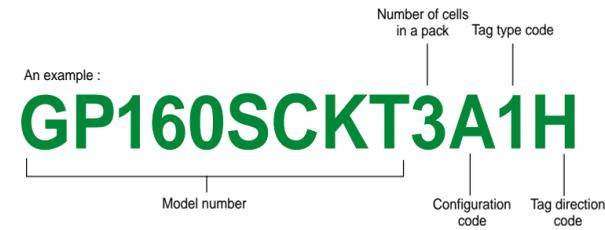


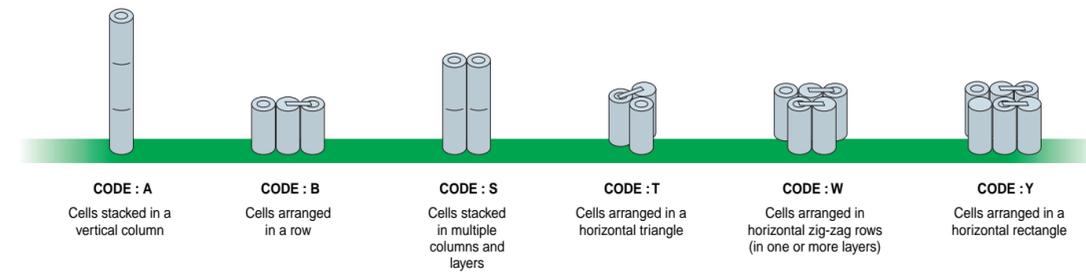
Configurations

Designation System for Battery Packs



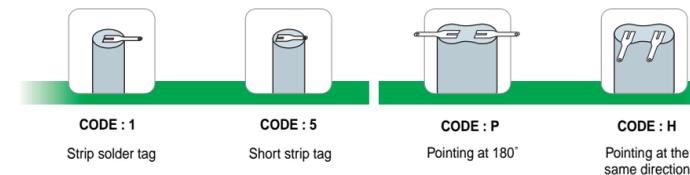
For battery packs with connectors, the last two characters will be used to specify connector type eg. GP160SCKT3AMX.

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.

For NiMH high temperature cells, intermittent charging is recommended to optimize the 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.

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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, active materials 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 to the Permanent Charge Endurance Test (PCET) 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.
- 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 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
	GP110AAHT	1.2	1100	1155	14.4	48.2	21.5	110	16
AA	GP125AAMT**	1.2	1250	1280	14.4	48.2	26	125	16
	GP160AFHT	1.2	1600	1680	17	43	33	160	16
4/5 AF	GP210AFHT	1.2	2100	2205	17	50	38	210	16
18700	GP400LAHT	1.2	4000	4200	18.3	70	70	400	16
	GP220SCHT**	1.2	2200	2420	23	43	53	220	16
Sub-C	GP220SCHTD	1.2	2200	2420	23	42	53.5	220	16

Typical Ambient Temperature : Charge: 0°C to 50°C, Discharge: -20°C to 50°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

Comparative 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

Complying with IEC 61951-2

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)
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
	GP300CKT	1.2	3000	3300	25.8	50	73	300	16
D	GP450DKT	1.2	4500	4950	33	60.5	120	450	16
	GP450DKTSH	1.2	4500	4950	33	58	120	450	16

Typical Ambient Temperature : Charge: 0°C to 55°C, Discharge: -20°C to 55°C, Storage: -20°C to 35°C
* After charging at 0.1C for 16 hours

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

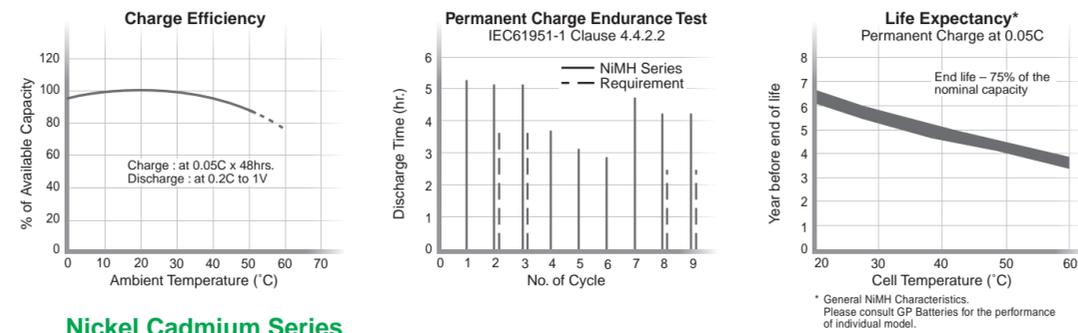
Luminaries for emergency lighting

Permanent Charge Endurance Test Condition



Performance Characteristics

Nickel Metal Hydride Series



Nickel Cadmium Series

