



## Battery Handling and Precautions

### Soldering

- Do not solder directly onto batteries. Always solder onto solder tag for connection.

### Charging and Discharging

- Always charge batteries before first time application.
- Parallel charging or connection is not recommended. Parallel charging will produce irregular charging currents. Please consult GP Batteries for more details.
- Never short-circuit or reverse polarity in application.
- Do not use different types of batteries in the same battery assembly.
- If the battery has been deep-discharged, a prolonged charging time is required to bring the battery back to full capacity.

### Storage

- Always store batteries in a cool, dry place.
- After long storage, e.g. over a year, it is desirable to cycle (charge/discharge) the battery 3 times to restore full capacity.
- Do not mix batteries with metal objects during storage or transportation to avoid accidental short-circuit.
- Do not store large quantities of batteries in a densely packed condition when they are in a charged or partially charged state.

### Battery Handling

- Do not incinerate or dismantle batteries. Cell components are corrosive and may be harmful to skin and eyes.
- Do not pull on battery lead wires or connector. Excessive force on the leads or connectors can damage the welding joints or other connections.

### Easy Battery Removal

- Some countries have legislation requiring easy removal of batteries from the devices. When designing a product, consideration should be given to the use of a socket connector and an easy-to-open battery compartment.

Distributed by:

# GP Batteries

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# GP Batteries

## NiCd Rechargeable Batteries



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# Rechargeable Batteries

Committed to continued efforts in R&D and product innovation, supplemented by employment of the latest technology, GP Batteries is one of the most progressive manufacturers to produce various types of batteries to meet different needs.

Nickel Cadmium (NiCd) is the ideal rechargeable battery system to suit applications where battery performance and cost effectiveness are the major concerns. GP Batteries offers a wide range of NiCd batteries which are very durable, reliable, easy-to-use and economical, yet offering good performance. The main categories in active demand are: Standard, High Temperature, High Drain, Economy Series and VC-Series.

## Major Features

- Long service life**  
 Depending on usage conditions, GP NiCd batteries can deliver 300 - 1000 charge / discharge cycles.
- Superior high rate discharge characteristics**  
 Up to 2C high rate discharge is possible.
- Quick charging capability**  
 Rapid charge in about one hour with GP specified charging conditions.
- Excellent overcharge performance**  
 GP NiCd batteries can be continuously overcharged at 0.1C rate for 28 days without leakage or deformation.
- Built-in safety features against misuse**  
 Built-in chemical protection against polarity reversal or overdischarge. A resealable safety vent is incorporated to relieve internal pressure in case of misuse.
- No memory effect**  
 Unlike sintered type rechargeable cells, GP NiCd batteries produced with modern foam electrode technology do not exhibit memory effect.
- High reliability**  
 GP NiCd batteries are manufactured with the best available material using state of the art technology, allowing them to perform with outstanding reliability.

## Major Applications

### Communications

Cellular phones, cordless phones, pager and transceivers.

### Information devices

Notebook computers, personal digital assistants (PDAs), portable facsimile machines.

### Audio and video devices

Digital video cameras, LCD TVs, portable DVD, VCD, MD and CD players.

### Emergency lighting

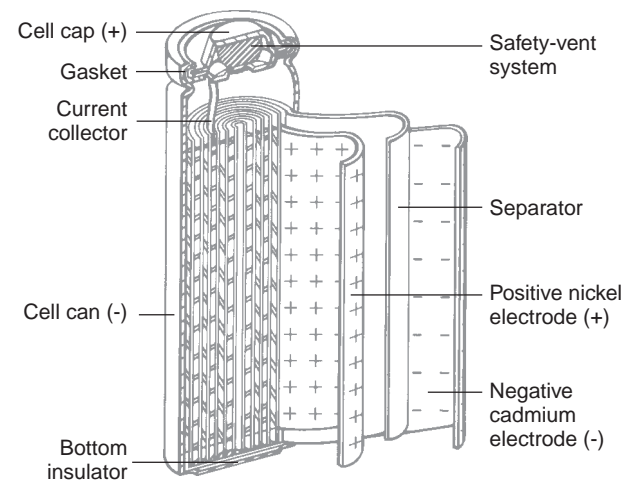
### Remote controls & security systems

### Other applications

Remote control toys, shavers, massagers, electric tooth brushes, handheld vacuum cleaners, power tools, handheld terminals, electric bicycles, memory back-up etc.

## Cell Construction

### Cylindrical



# Specifications

## High Temperature Series

| Cell Size | Model No.         | Nominal Voltage (V) | Capacity (0.2C discharge)*(mAh) |         | Nominal Dimension (mm) |        | Weight (g) | Standard Charge |             | 1 Hr Charge Current (mA)# |
|-----------|-------------------|---------------------|---------------------------------|---------|------------------------|--------|------------|-----------------|-------------|---------------------------|
|           |                   |                     | Minimum                         | Typical | Diameter               | Height |            | Current (mA)    | Time (hour) |                           |
| AA        | AA GP70AAS        | 1.2                 | 700                             | 770     | 14.4                   | 48.2   | 21         | 70              | 16          | Not Applicable            |
| AF        | 2/3 AF GP50AFK    | 1.2                 | 500                             | 550     | 17                     | 28.5   | 15         | 50              | 16          | Not Applicable            |
| Sub-C     | Sub-C GP160SCKT** | 1.2                 | 1600                            | 1760    | 23                     | 43     | 44         | 160             | 16          | Not Applicable            |
|           | Sub-C GP180SCKT   | 1.2                 | 1800                            | 1980    | 23                     | 43     | 46         | 180             | 16          | Not Applicable            |
| C         | C GP250CKT**      | 1.2                 | 2500                            | 2750    | 25.8                   | 50     | 70         | 250             | 16          | Not Applicable            |
| D         | 1/2 D GP250DKT    | 1.2                 | 2500                            | 2750    | 33                     | 37     | 82         | 250             | 16          | Not Applicable            |
|           | D GP450DKT**      | 1.2                 | 4500                            | 4950    | 33                     | 60.5   | 120        | 450             | 16          | Not Applicable            |
|           | D GP450DKTSH      | 1.2                 | 4500                            | 4950    | 33                     | 58     | 120        | 450             | 16          | Not Applicable            |

Typical Ambient Temperature : Charge: 0°C to 70°C, Discharge: -20°C to 70°C, Storage: -20°C to 35°C

## High Drain Series

|       |       |            |     |      |      |    |    |     |     |    |      |
|-------|-------|------------|-----|------|------|----|----|-----|-----|----|------|
| Sub-C | Sub-C | GP200SCK** | 1.2 | 2000 | 2200 | 23 | 43 | 53  | 200 | 16 | 2000 |
| D     | D     | GP450DK    | 1.2 | 4500 | 4950 | 33 | 60 | 130 | 450 | 16 | 4500 |
|       | D     | GP500DK    | 1.2 | 5000 | 5250 | 33 | 60 | 127 | 500 | 16 | 5000 |

Typical Ambient Temperature : Standard Charge : 0°C to 40°C, Fast Charge : 10°C to 40°C, Discharge : -20°C to 50°C, Storage : -20°C to 35°C

## Standard Series

|       |        |            |     |      |      |      |      |      |     |    |      |
|-------|--------|------------|-----|------|------|------|------|------|-----|----|------|
| AAA   | AAA    | GP30AAAK   | 1.2 | 300  | 320  | 10.5 | 43.7 | 10.5 | 30  | 16 | 300  |
|       | AAA    | GP35AAAK   | 1.2 | 350  | 370  | 10.5 | 43.7 | 12   | 35  | 16 | 350  |
| AA    | 1/3 AA | GP18AAK    | 1.2 | 180  | 200  | 14.5 | 16.6 | 8    | 18  | 16 | 180  |
|       | 2/3 AA | GP30AAK    | 1.2 | 300  | 320  | 14.5 | 28.7 | 11   | 30  | 16 | 300  |
|       | 2/3 AA | GP40AAK    | 1.2 | 400  | 450  | 14.5 | 28.7 | 12   | 40  | 16 | 400  |
|       | 2/3 AA | GP50AAK    | 1.2 | 500  | 520  | 14.5 | 28.7 | 13   | 50  | 16 | 500  |
|       | 4/5 AA | GP72AAS    | 1.2 | 720  | 760  | 14.4 | 42.5 | 19   | 72  | 16 | 720  |
|       | AA     | GP60AAS**  | 1.2 | 600  | 660  | 14.4 | 48.2 | 18   | 60  | 16 | 600  |
|       | AA     | GP70AAS**  | 1.2 | 700  | 770  | 14.4 | 48.2 | 18.5 | 70  | 16 | 700  |
|       | AA     | GP80AAS**  | 1.2 | 800  | 850  | 14.4 | 48.2 | 21   | 80  | 16 | 800  |
|       | AA     | GP100AAS** | 1.2 | 1000 | 1030 | 14.4 | 48.2 | 26.5 | 100 | 16 | 1000 |
|       | AA     | GP120AAK   | 1.2 | 1200 | 1300 | 14.5 | 65   | 31   | 120 | 16 | 1200 |
| AF    | 1/3 AF | GP25AFK    | 1.2 | 250  | 275  | 17   | 16.3 | 10   | 25  | 16 | 250  |
|       | 2/3 AF | GP55AFK    | 1.2 | 550  | 605  | 17   | 28.5 | 13.9 | 55  | 16 | 550  |
|       | 2/3 AF | GP70AFK    | 1.2 | 700  | 770  | 17   | 28.5 | 16   | 70  | 16 | 700  |
|       | 4/5 AF | GP120AFK   | 1.2 | 1200 | 1320 | 17   | 43   | 26.5 | 120 | 16 | 1200 |
|       | AF     | GP140AFK** | 1.2 | 1400 | 1400 | 17   | 50   | 32.5 | 140 | 16 | 1400 |
| Sub-C | Sub-C  | GP200AFK   | 1.2 | 2000 | 2200 | 17.5 | 67.5 | 46.3 | 200 | 16 | 2000 |
|       | Sub-C  | GP130SCK   | 1.2 | 1300 | 1430 | 23   | 43   | 44.5 | 130 | 16 | 1300 |
| Sub-C | Sub-C  | GP160SCK** | 1.2 | 1600 | 1760 | 23   | 43   | 47   | 160 | 16 | 1600 |

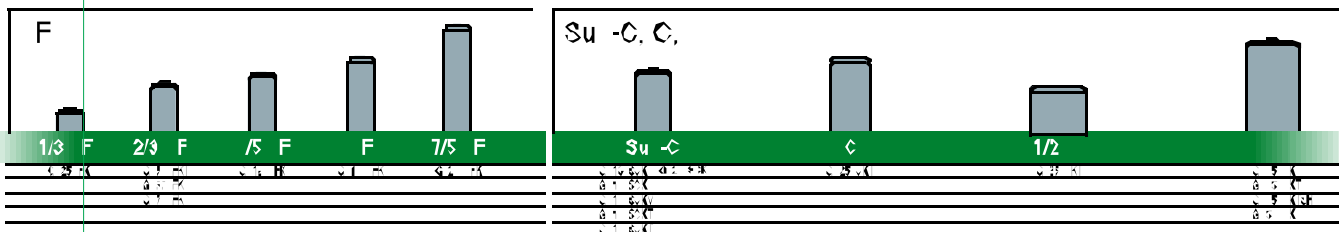
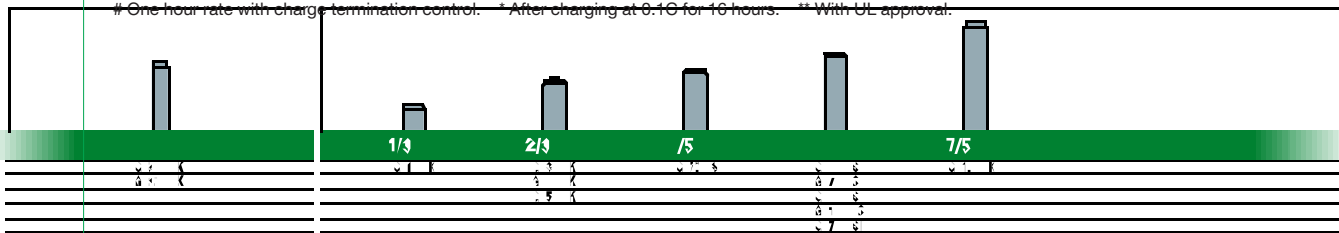
Typical Ambient Temperature : Standard Charge : 0°C to 40/45°C, Fast Charge : 10°C to 40/45°C, Discharge : -20°C to 50°C, Storage : -20°C to 35°C

## VC Series

|       |       |           |     |      |      |    |    |    |     |    |      |
|-------|-------|-----------|-----|------|------|----|----|----|-----|----|------|
| Sub-C | Sub-C | GP160SCKV | 1.2 | 1600 | 1760 | 23 | 43 | 46 | 160 | 16 | 1600 |
|-------|-------|-----------|-----|------|------|----|----|----|-----|----|------|

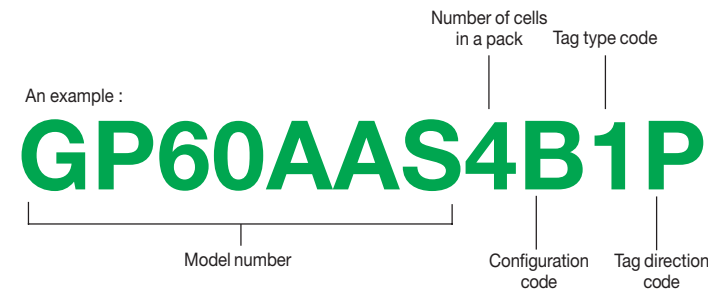
Typical Ambient Temperature : Standard Charge : 0°C to 40°C, Fast Charge : 10°C to 40°C, Discharge : -20°C to 50°C, Storage : -20°C to 35°C

# One hour rate with charge termination control. \* After charging at 0.1C for 16 hours. \*\* With UL approval.



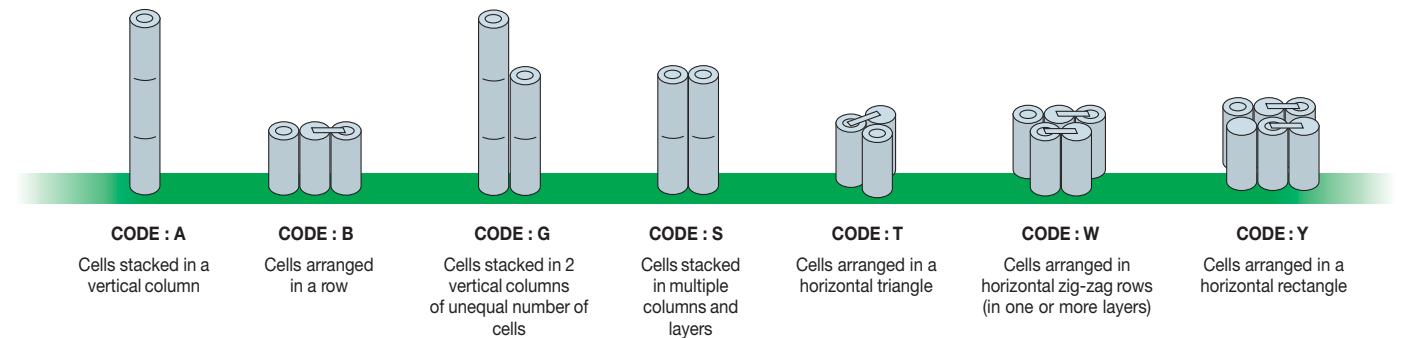
# Configurations

## Designation System for Battery Packs

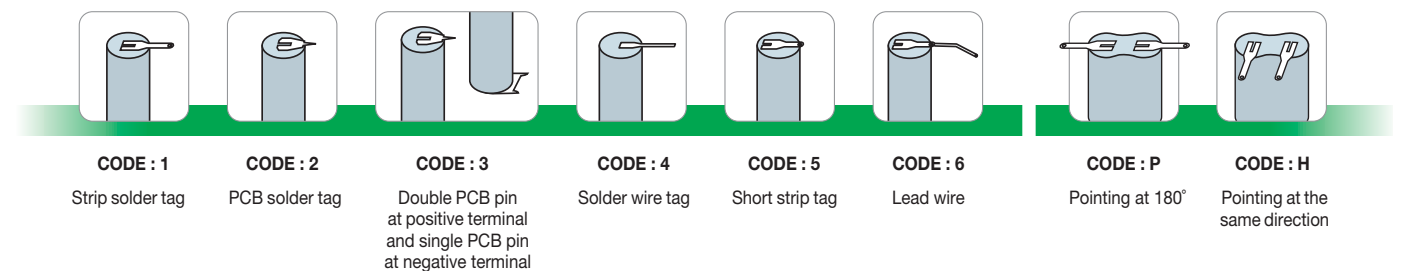


For battery packs with connectors, the last two characters will be used to specify connector type eg. GP60AAS4BMU.

## Standard Configurations for Battery Packs



## Tag Type Specifications



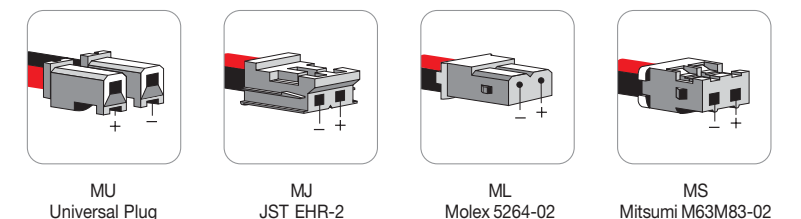
## Tag Direction Codes

## Connector Type Specifications

GP Universal Plug - exclusively from GP, offers distinctive features unparalleled in the market. - U.S. patent no. 5,161,990.

### Major Benefits

- Compatible with most cordless phone models (interchangeable with Mitsumi, JST, Molex plugs etc.)
- Minimise inventory items
- User friendly



# NiCd Rechargeable Batteries

## Performance Characteristics

### Cylindrical Cells

