



## FEATURES

### Sealed/Maintenance-Free

The valve regulated, spill-proof construction of the Power-Sonic battery allows trouble-free, safe operation in any position. There is no need to add electrolyte, as gases generated during over-charge are recombined in a unique "oxygen cycle."

### Easy Handling

No special handling precautions or shipping containers – surface or air – are required due to leak-proof construction.

### Economical

The high watt-hour per dollar value is made possible by the materials used in a sealed lead-acid battery: they are readily available and low in cost.

### Long Service Life

Under normal operating conditions, four or five years of dependable service life can be expected in stand-by applications, or between 200 and 1000 charge/ discharge cycles depending on the average depth of discharge.

### Design Flexibility

Batteries may be used in series and/or parallel to obtain choice of voltage and capacity. Due to recent design breakthroughs, the same battery may be used in either cyclic or standby applications. Over 40 models are available to choose from.

### Rugged Construction

The high impact resistant battery case is made either of non-conductive ABS plastic or styrene. Large capacity batteries frequently have polypropylene cases. All of these materials impart great resistance to shock, vibration, chemicals and heat.

### Compact

Power-Sonic batteries use state-of-the-art design, high grade materials, and a carefully controlled plate-making process to provide excellent output per cell. The high energy density results in superior power/volume and power/weight ratios.

### High Discharge Rate

Low internal resistance allows discharge currents of up to ten times the rated capacity of the battery. Relatively small batteries may thus be specified in applications requiring high peak currents.

### Long Shelf Life

A low self-discharge rate permits storage of fully charged batteries for up to a year at room temperature before charging is required. Lower storage temperatures enhance shelf life characteristics even further.

### Wide Operating Temperature Range

Power-Sonic batteries may be discharged over a temperature range of -20°C to +60°C (-4°F to +140°F) and charged at temperatures ranging from -20°C to +50°C (-4°F to +122°F).

### Deep Discharge Recovery

Special separators, advanced plate composition, and a carefully balanced electrolyte system have greatly improved the ability of recovering from excessively deep discharge.

# SPECIFICATIONS

# SEALED LEAD-ACID BATTERIES

| Model      | Nominal Voltage V | Nominal Capacity@ A.H. | Current @ 20 hr. rate mA | Length |     | Width |     | Height |      | Ht. Over Terminal |     | Weight |       | Standard Terminals |
|------------|-------------------|------------------------|--------------------------|--------|-----|-------|-----|--------|------|-------------------|-----|--------|-------|--------------------|
|            |                   |                        |                          | in.    | mm  | in.   | mm  | in.    | mm   | in.               | mm  | lbs.   | kgs.  |                    |
| PS-260     | 2                 | 6.0                    | 300                      | 1.97   | 50  | 1.34  | 34  | 3.94   | 100  | 4.13              | 105 | 0.90   | 0.41  | F1                 |
| PS-445     | 4                 | 4.5                    | 225                      | 1.89   | 48  | 2.09  | 53  | 3.70   | 94   | 3.86              | 98  | 1.40   | 0.64  | F2                 |
| PS-490     | 4                 | 9.0                    | 450                      | 3.97   | 101 | 1.73  | 44  | 3.74   | 95   | 4.02              | 102 | 2.80   | 1.27  | F2                 |
| PS-4100    | 4                 | 10.0                   | 500                      | 4.02   | 102 | 1.97  | 50  | 3.72   | 94   | 3.92              | 100 | 3.10   | 1.41  | F1                 |
| PS-605     | 6                 | 0.5                    | 25                       | 2.24   | 57  | 0.55  | 14  | 1.97   | 50   | 1.97              | 50  | 0.20   | 0.09  | WL                 |
| PS-610     | 6                 | 1.0                    | 50                       | 2.00   | 51  | 1.65  | 42  | 2.00   | 51   | 2.20              | 56  | 0.60   | 0.27  | F1                 |
| PS-612     | 6                 | 1.3                    | 65                       | 3.82   | 97  | 0.98  | 24  | 2.03   | 51.5 | 2.25              | 57  | 0.70   | 0.30  | F1                 |
| PS-628     | 6                 | 2.8                    | 140                      | 2.60   | 66  | 1.30  | 33  | 3.86   | 98   | 4.06              | 103 | 1.25   | 0.57  | F1                 |
| PS-630     | 6                 | 3.4                    | 170                      | 5.28   | 134 | 1.34  | 34  | 2.35   | 60   | 2.56              | 65  | 1.50   | 0.68  | F1                 |
| PS-632     | 6                 | 3.2                    | 160                      | 2.60   | 66  | 1.30  | 33  | 4.65   | 118  | 4.80              | 122 | 1.50   | 0.68  | F1                 |
| PS-640     | 6                 | 4.5                    | 225                      | 2.76   | 70  | 1.89  | 48  | 4.02   | 102  | 4.25              | 108 | 1.95   | 0.89  | F1                 |
| PS-650L    | 6                 | 5.0                    | 250                      | 2.63   | 67  | 2.63  | 67  | 3.78   | 96   | 4.28              | 109 | 2.00   | 0.91  | SP                 |
| PS-665     | 6                 | 6.5                    | 325                      | 3.86   | 98  | 2.20  | 56  | 4.05   | 103  | 4.05              | 103 | 3.00   | 1.36  | FP                 |
| PS-670     | 6                 | 7.0                    | 350                      | 5.95   | 151 | 1.34  | 34  | 3.70   | 94   | 3.86              | 98  | 3.00   | 1.36  | F1                 |
| PS-682     | 6                 | 8.0                    | 400                      | 3.86   | 98  | 2.20  | 56  | 4.65   | 118  | 4.65              | 118 | 3.30   | 1.50  | F1                 |
| PS-6100    | 6                 | 12.0                   | 600                      | 5.95   | 151 | 2.00  | 51  | 3.70   | 94   | 3.86              | 98  | 4.60   | 2.09  | F1 or F2           |
| PS-6120    | 6                 | 12.0                   | 600                      | 4.26   | 108 | 2.75  | 70  | 5.54   | 141  | 5.54              | 141 | 5.20   | 2.36  | FP                 |
| PS-6120Toy | 6                 | 12.0                   | 600                      | 4.26   | 108 | 2.75  | 70  | 5.54   | 141  | 5.54              | 141 | 5.20   | 2.36  | TS or TH           |
| PS-6200    | 6                 | 20.0                   | 1000                     | 6.18   | 157 | 3.27  | 83  | 4.92   | 125  | 4.92              | 125 | 8.20   | 3.73  | NB                 |
| PS-6360    | 6                 | 36.0                   | 1800                     | 6.25   | 159 | 3.35  | 85  | 6.50   | 165  | 6.95              | 177 | 13.80  | 6.27  | F2 or NB           |
| PS-832     | 8                 | 3.2                    | 160                      | 5.28   | 134 | 1.42  | 36  | 2.49   | 63   | 2.70              | 69  | 1.90   | 0.86  | F1                 |
| PS-1208    | 12                | 0.8                    | 40                       | 3.78   | 96  | 0.98  | 25  | 2.42   | 62   | 2.42              | 62  | 0.80   | 0.36  | WL                 |
| PS-1212    | 12                | 1.2                    | 60                       | 3.82   | 97  | 1.69  | 43  | 2.00   | 51   | 2.13              | 54  | 1.30   | 0.59  | F1                 |
| PS-1220    | 12                | 2.2                    | 110                      | 7.01   | 178 | 1.34  | 34  | 2.38   | 60.5 | 2.56              | 65  | 2.10   | 0.95  | F1                 |
| PS-1223    | 12                | 2.3                    | 115                      | 7.17   | 182 | 0.94  | 24  | 2.42   | 62   | 2.42              | 62  | 1.76   | 0.80  | PC                 |
| PS-1228    | 12                | 2.8                    | 140                      | 5.24   | 133 | 1.30  | 33  | 3.82   | 97   | 4.09              | 104 | 2.55   | 1.16  | F1                 |
| PS-1229    | 12                | 2.9                    | 145                      | 7.01   | 178 | 1.34  | 34  | 2.36   | 60   | 2.56              | 65  | 2.20   | 1.00  | F1                 |
| PS-1230    | 12                | 3.4                    | 170                      | 5.28   | 134 | 2.64  | 67  | 2.36   | 60   | 2.60              | 66  | 2.60   | 1.18  | F1                 |
| PS-1250    | 12                | 5.0                    | 250                      | 3.54   | 90  | 2.75  | 70  | 4.01   | 102  | 4.20              | 107 | 4.20   | 1.91  | F1 or F2           |
| PS-1270    | 12                | 7.0                    | 350                      | 5.95   | 151 | 2.56  | 65  | 3.70   | 94   | 3.86              | 98  | 5.70   | 2.59  | F1 or F2           |
| PS-1282    | 12                | 8.0                    | 400                      | 3.86   | 98  | 4.40  | 112 | 4.65   | 118  | 4.65              | 118 | 6.70   | 3.05  | F1                 |
| PS-12100   | 12                | 12.0                   | 600                      | 5.95   | 151 | 4.00  | 102 | 3.70   | 94   | 3.86              | 98  | 9.20   | 4.18  | F1                 |
| PS-12120   | 12                | 12.0                   | 600                      | 5.95   | 151 | 3.86  | 98  | 3.70   | 94   | 3.94              | 100 | 9.00   | 4.09  | F2                 |
| PS-12180   | 12                | 18.0                   | 900                      | 7.13   | 181 | 2.99  | 76  | 6.57   | 167  | 6.57              | 167 | 13.10  | 5.95  | F2 or NB           |
| PS-12260   | 12                | 26.0                   | 1300                     | 6.54   | 166 | 6.88  | 175 | 4.95   | 126  | 4.95              | 126 | 20.80  | 9.45  | F2 or NB           |
| PS-12280   | 12                | 28.0                   | 1400                     | 6.54   | 166 | 4.95  | 126 | 6.89   | 175  | 6.89              | 175 | 21.40  | 9.70  | NB                 |
| PS-12330   | 12                | 33.0                   | 1650                     | 7.70   | 196 | 5.19  | 132 | 6.10   | 155  | 7.00              | 178 | 23.50  | 10.70 | NB                 |
| PS-12400   | 12                | 40.0                   | 2000                     | 7.75   | 197 | 6.50  | 165 | 6.75   | 172  | 6.75              | 172 | 32.25  | 14.70 | NB                 |
| PS-12550   | 12                | 55.0                   | 2750                     | 9.04   | 230 | 5.45  | 138 | 8.15   | 207  | 8.98              | 228 | 39.20  | 17.80 | NB                 |
| PS-12750   | 12                | 75.0                   | 3750                     | 10.25  | 260 | 6.60  | 168 | 8.15   | 207  | 8.98              | 228 | 63.50  | 28.90 | NB                 |
| PS-121000  | 12                | 100.0                  | 5000                     | 12.00  | 305 | 6.60  | 168 | 8.15   | 207  | 8.98              | 228 | 67.80  | 30.80 | NB                 |
| PS-121100  | 12                | 110.0                  | 5500                     | 13.00  | 330 | 6.76  | 172 | 8.40   | 213  | 8.70              | 221 | 77.70  | 35.30 | B                  |
| PS-121400  | 12                | 140.0                  | 7000                     | 13.60  | 345 | 6.82  | 173 | 11.28  | 287  | 11.34             | 288 | 104.50 | 47.50 | B                  |

The **PSG Series** of batteries correspond in size to Hawker models of the same voltage and capacity.

|         |   |     |     |      |     |      |    |      |     |      |     |      |      |    |
|---------|---|-----|-----|------|-----|------|----|------|-----|------|-----|------|------|----|
| PSG-450 | 4 | 5.0 | 250 | 3.54 | 90  | 1.94 | 49 | 2.87 | 73  | 2.87 | 73  | 1.70 | 0.77 | F2 |
| PSG-480 | 4 | 8.0 | 400 | 3.54 | 90  | 1.94 | 49 | 4.00 | 102 | 4.00 | 102 | 2.50 | 1.14 | F2 |
| PSG-625 | 6 | 2.5 | 125 | 4.15 | 105 | 1.63 | 41 | 2.70 | 69  | 2.70 | 69  | 1.50 | 0.68 | F1 |
| PSG-650 | 6 | 5.0 | 250 | 5.28 | 134 | 1.94 | 49 | 3.00 | 76  | 3.00 | 76  | 2.50 | 1.14 | F2 |
| PSG-680 | 6 | 8.0 | 400 | 5.28 | 134 | 1.94 | 49 | 3.99 | 101 | 3.99 | 101 | 3.70 | 1.68 | F2 |

## TERMINALS

**F1** FASTON - 0.187" x 0.032" quick disconnect tabs

**F2** FASTON - 0.250" x 0.032" quick disconnect tabs

**FP** FASTON Polarized: Positive: "F2", Negative: "F1"

**WL** Insulated, stranded wire leads terminated with:  
• Molex Housing 5264-02 & 5263-PBT plug on PS-605

**TS/TH** Toy battery connectors:

• S-connector on 6120 TS



• H-connector on 6120 TH



**PC** Pressure contacts

**SP** Spring terminals for positive

**NB** Terminal post with nut & bolt connector

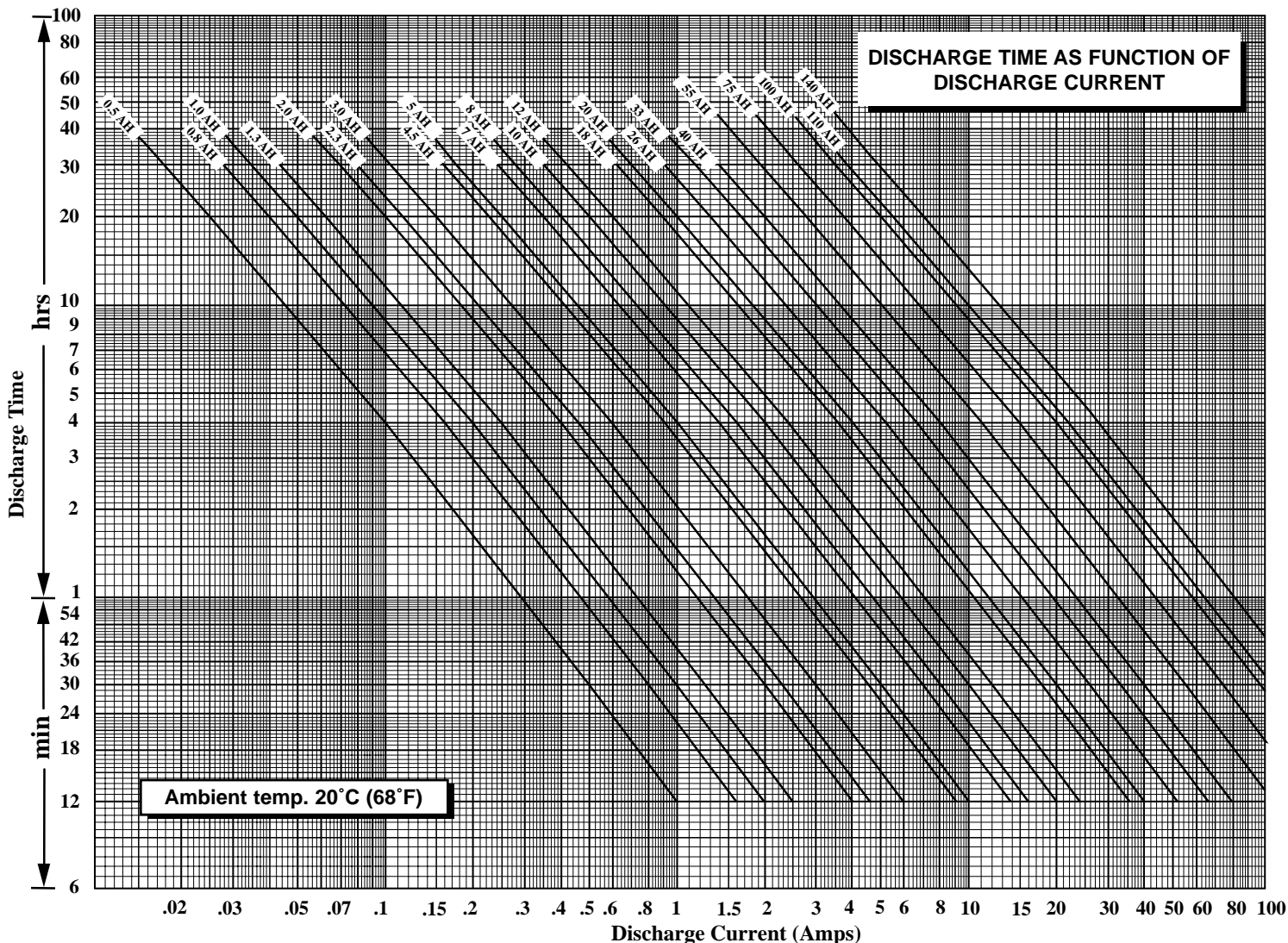
**B** Threaded copper insert terminals

# CAPACITY VARIATION BY CURRENT LOAD

When a battery discharges current at a constant rate, its capacity changes according to the amperage load. Capacity increases when the discharge current is less than the 20-hour rate and decreases when the current is higher.

The graph below shows capacity curves for major Power-Sonic battery models with different ampere-hour ratings. Amperage is on the horizontal scale and the time elapsed is on the vertical scale; the product of these values is the capacity.

Proper selection of the battery for a specific application can be made from this graph if the required time and current are known. For example, to determine the proper capacity of a battery providing 3 amps for 20 minutes, locate the intersection of these values on the graph. The curve immediately above that point represents the battery which will meet the requirement.

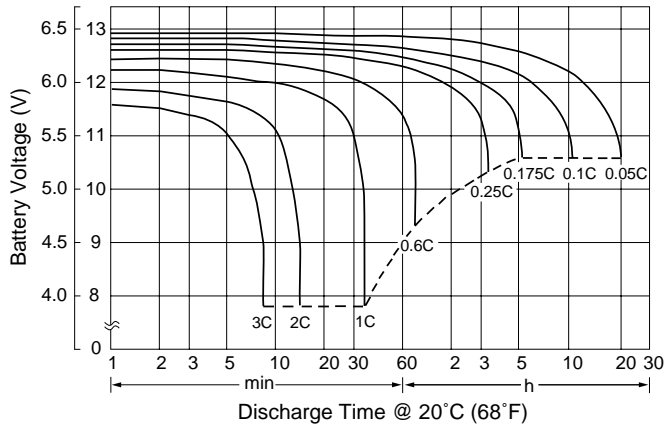


The discharge times reflect cut-off voltages which vary with the discharge current:

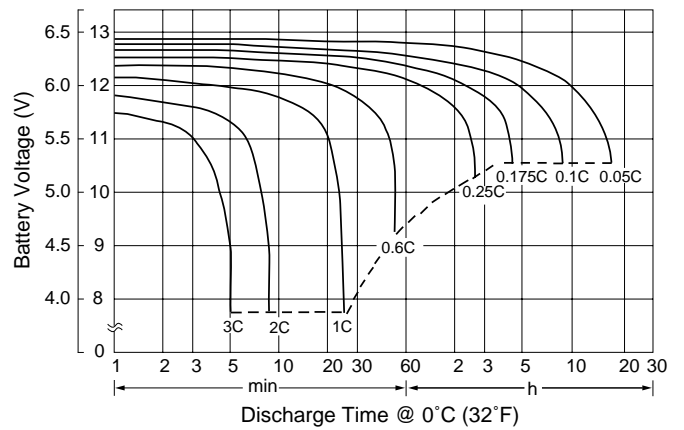
| LOAD CURRENT | FINAL VOLTAGE |
|--------------|---------------|
| 0.05 C       | 1.75 V/cell   |
| 0.10 C       | 1.75 V/cell   |
| 0.20 C       | 1.75 V/cell   |
| 0.50 C       | 1.67 V/cell   |
| 1.00 C       | 1.50 V/cell   |
| 2.00 C       | 1.50 V/cell   |
| 3.00 C       | 1.37 V/cell   |

"C" = Capacity of battery  
 Example: The 0.5 C current for an 8 A.H. battery is 4 A. The 0.1 C current 800 mA.

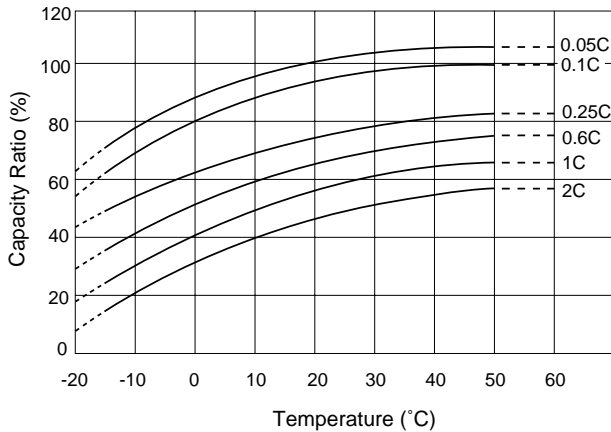
# PERFORMANCE CHARACTERISTICS



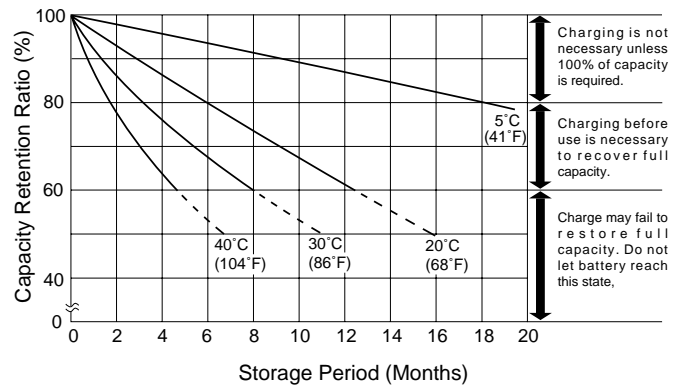
**Characteristic Discharge Curves**



**Characteristic Discharge Curves**



**Effect of Temperature on Capacity**



**Self-Discharge Characteristics**

## CHARGING

Dependable performance and long service life depend upon correct charging. Faulty procedures or inadequate charging equipment result in decreased battery life and/or unsatisfactory performance.

To charge a Power-Sonic battery, a DC voltage higher than the open circuit voltage of 2.15 volts per cell is applied to the terminals of the battery. Any of the conventional charging techniques may be used, but to obtain maximum service life and capacity, along with acceptable recharge time, constant voltage - current limited charging is recommended.

During constant voltage or taper charging, the battery's current acceptance decreases as voltage and state of charge increase. The battery is fully charged once the current stabilizes at a low level for a few hours.

**Cycle Applications:** Limit initial current to 0.20C (C is the nominal A.H. capacity of the battery). Charge until battery voltage (under charge) reaches 2.45 volts per cell at 68°F (20°C). Hold at 2.45 volts per cell until current drops to approximately 0.01C amperes. Battery is fully charged under these conditions, and charger should either be disconnected or switched to "float" voltage.

**"Float" or "Stand-by" Service:** Hold battery across constant voltage source of 2.25 to 2.30 volts per cell continuously. When held at this voltage, the battery will seek its own current level and maintain itself in a fully charged condition.

## APPLICATION NOTES

Continuous over- or undercharging is the single worst enemy of a lead-acid battery. Caution should be exercised to insure that the charger is disconnected after cycle charging, or that the float voltage is set correctly.

Because there is a chance of off-gassing hydrogen and oxygen if the battery is overcharged, it is important to provide adequate air circulation. Never charge or discharge a battery in a hermetically sealed enclosure.

Batteries should not be stored in a discharged state (or in a hot place). If a battery has been discharged for some time it may not readily take a charge. To overcome this, leave the charger connected and the battery should eventually begin to accept a charge.

Due to the self-discharge characteristics of this type of battery, it is imperative that they be charged after 6-9 months of storage, otherwise permanent loss of capacity might occur as a result of sulfation. To prolong shelf life without charging, store batteries at 50°F (10°C) or less.

# Nickel-Cadmium & Nickel-Metal Hydride Batteries



## FEATURES

**Large Array of Sizes & Types:** Power-Sonic offers a broad range of cell sizes and types to meet a wide range of configuration requirements and applications. Capacities range from 60 - 12500 mAh.

**Exceptional Performance:** State of the art design and a meticulously controlled manufacturing process ensure the highest performance levels in terms of energy density and voltage stability.

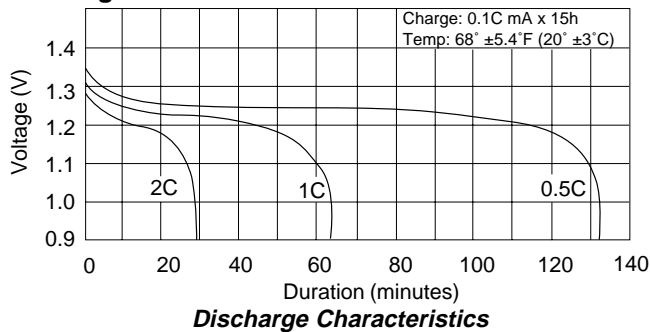
**Rugged, Durable and Safe:** The cylindrical steel case and special construction methods result in extremely impact and vibration resistant batteries designed to withstand hostile environments. A resealable safety valve automatically controls vent pressure and thus assures safe and reliable operation.

**Long Service Life:** 500-1000 charge/discharge cycles can be obtained depending on the average depth of discharge, and five years or more of trouble-free operation when used in stand-by (trickle charge) service at room temperature.

**Wide Temperature Range:** An operating temperature range from -20°C to +60°C for regular cells, and -20°C to 70°C for Hi-Temp cells provides design flexibility for a wide spectrum of environmental extremes. Even for charging, allowable temperatures range from 0°C to 50°C.

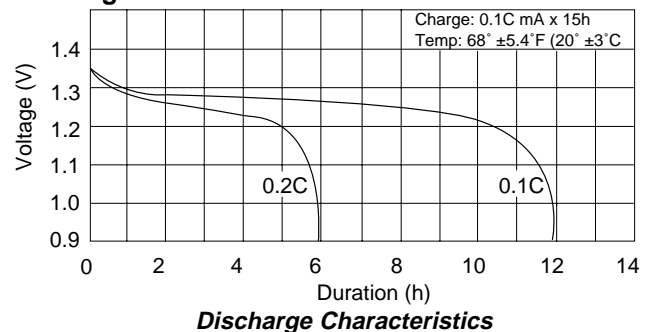
**Uniformity of Cells:** This is achieved through a quality control process which electronically screens cells as to capacity and impedance – a feature which virtually eliminates the need for cell matching and thus enhances long term performance in cell assemblies.

### Discharge



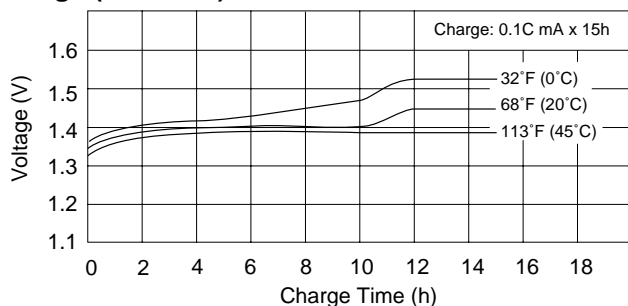
**Discharge Characteristics**

### Discharge



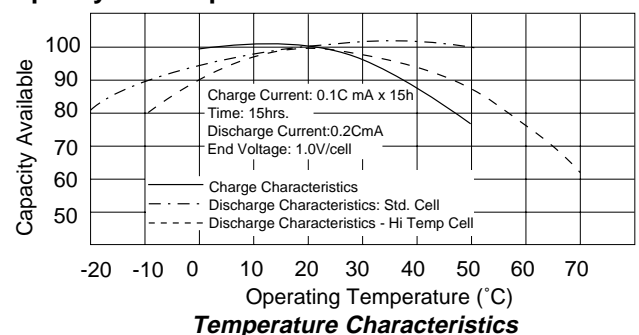
**Discharge Characteristics**

### Charge (Standard)



**Charge Characteristics**

### Capacity vs Temperature



**Temperature Characteristics**

# SPECIFICATIONS

# NICKEL-CADMIUM BATTERIES

## STANDARD CELLS

| Model Number | Cell Size   | Volt V | Capacity mA | Std. Charge |      | Quick Charge        |      | Diameter |      | Height |      | Weight g | Terminal Profile |
|--------------|-------------|--------|-------------|-------------|------|---------------------|------|----------|------|--------|------|----------|------------------|
|              |             |        |             | mA          | hrs. | mA                  | hrs. | in.      | mm   | in.    | mm   |          |                  |
| PS-AAA       | AAA         | 1.2    | 250         | 25          | 15   | 66                  | 4.5  | 0.41     | 10.5 | 1.75   | 44.5 | 10       | 2                |
| PS-2/3AA     | 2/3AA       | 1.2    | 300         | 30          | 15   | 85                  | 4.5  | 0.57     | 14.5 | 1.18   | 30.0 | 13       | 1                |
| PS-AA        | AA          | 1.2    | 600         | 60          | 15   | 180                 | 4.5  | 0.57     | 14.5 | 1.89   | 48.0 | 21       | 1                |
| PS-AAL       | AA high top | 1.2    | 600         | 60          | 15   | 180                 | 4.5  | 0.57     | 14.5 | 1.97   | 50.0 | 21       | 2                |
| PS-AAX       | AA          | 1.2    | 700         | 70          | 15   | 230                 | 4.5  | 0.57     | 14.5 | 1.89   | 48.0 | 22       | 1                |
| PS-850AA     | AA          | 1.2    | 850         | 85          | 15   | 255                 | 4.5  | 0.57     | 14.5 | 1.89   | 48.0 | 23       | 1                |
| PS-850AAL    | AA high top | 1.2    | 850         | 85          | 15   | 255                 | 4.5  | 0.57     | 14.5 | 1.97   | 50.0 | 23       | 2                |
| PS-2/3A      | 2/3A        | 1.2    | 600         | 60          | 15   | 180                 | 4.5  | 0.67     | 17.0 | 1.11   | 28.1 | 19       | 1                |
| PS-4/5A      | 4/5A        | 1.2    | 1000        | 100         | 15   | 300                 | 4.5  | 0.67     | 17.0 | 1.67   | 42.4 | 30       | 1                |
| PS-A         | A           | 1.2    | 1400        | 140         | 15   | 420                 | 4.5  | 0.67     | 17.0 | 1.70   | 43.2 | 33       | 1                |
| PS-SC        | Sub C       | 1.2    | 1500        | 150         | 15   | 450                 | 4.5  | 0.91     | 23.0 | 1.69   | 43.0 | 45       | 1                |
| PS-C         | C           | 1.2    | 2000        | 200         | 15   | 600                 | 4.5  | 1.02     | 26.0 | 1.97   | 50.0 | 68       | 3                |
| PS-CX        | C           | 1.2    | 2500        | 250         | 15   | 750                 | 4.5  | 1.02     | 26.0 | 1.97   | 50.0 | 75       | 3                |
| PS-1/2D      | 1/2D        | 1.2    | 2400        | 240         | 15   | with $-\Delta VO^*$ |      | 1.28     | 32.4 | 1.45   | 36.8 | 80       | 3                |
| PS-D         | D           | 1.2    | 4000        | 400         | 15   | with $-\Delta VO^*$ |      | 1.30     | 33.0 | 2.30   | 58.5 | 125      | 3                |
| PS-DL        | D high top  | 1.2    | 4000        | 400         | 15   | with $-\Delta VO^*$ |      | 1.30     | 33.0 | 2.40   | 61.0 | 125      | 2                |
| PS-DF        | D           | 1.2    | 4500        | 450         | 15   | with $-\Delta VO^*$ |      | 1.30     | 33.0 | 2.30   | 58.5 | 130      | 3                |
| PS-DX        | D           | 1.2    | 5000        | 500         | 15   | with $-\Delta VO^*$ |      | 1.30     | 33.0 | 2.30   | 58.5 | 155      | 3                |
| PS-F         | F           | 1.2    | 7000        | 700         | 15   | with $-\Delta VO^*$ |      | 1.30     | 33.0 | 3.59   | 91.2 | 231      | 3                |

\*Quick or rapid charge only with negative delta voltage cut-off

## HIGH TEMPERATURE CELLS (H-TYPE)

|           |       |     |      |     |    |     |  |      |      |      |      |     |   |
|-----------|-------|-----|------|-----|----|-----|--|------|------|------|------|-----|---|
| PS-1/3AAH | 1/3AA | 1.2 | 110  | 11  | 15 | n/a |  | 0.57 | 14.5 | 0.67 | 17.0 | 7   | 1 |
| PS-AAH    | AA    | 1.2 | 700  | 70  | 15 | n/a |  | 0.57 | 14.5 | 1.89 | 48.0 | 21  | 1 |
| PS-SCH    | Sub C | 1.2 | 1500 | 150 | 15 | n/a |  | 0.91 | 23.0 | 1.69 | 43.0 | 45  | 1 |
| PS-CH     | C     | 1.2 | 2000 | 200 | 15 | n/a |  | 1.02 | 26.0 | 1.97 | 50.0 | 66  | 3 |
| PS-DH     | D     | 1.2 | 4000 | 400 | 15 | n/a |  | 1.30 | 33.0 | 2.30 | 58.5 | 125 | 3 |

## HIGH CAPACITY - RAPID CHARGE CELLS

|         |       |     |      |     |    |      |      |      |      |      |      |     |   |
|---------|-------|-----|------|-----|----|------|------|------|------|------|------|-----|---|
| PS-AAXF | AA    | 1.2 | 700  | 70  | 15 | 700  | 1.5* | 0.57 | 14.5 | 1.89 | 48.0 | 22  | 1 |
| PS-SCXF | Sub C | 1.2 | 1800 | 180 | 15 | 1800 | 1.5* | 0.91 | 23.0 | 1.69 | 43.0 | 60  | 1 |
| PS-CXF  | C     | 1.2 | 2500 | 250 | 15 | 2500 | 1.5* | 1.02 | 26.0 | 1.97 | 50.0 | 72  | 3 |
| PS-DXF  | D     | 1.2 | 5000 | 500 | 15 | 5000 | 1.5* | 1.30 | 33.0 | 2.30 | 58.5 | 128 | 3 |

\*With  $-\Delta VO$  (negative delta voltage) cut-off

## PCBM (Printed Circuit Board Mount) MEMORY SAVE CELLS

|          |  |     |     |   |    |   |      |      |      |      |    |           |
|----------|--|-----|-----|---|----|---|------|------|------|------|----|-----------|
| PCBM-2.4 |  | 2.4 | 110 | 4 | 48 |  | 0.57 | 14.5 | 1.35 | 34.5 | 15 | P.C. PINS |
| PCBM-3.6 |  | 3.6 | 110 | 4 | 48 |   | 0.57 | 14.5 | 2.02 | 52.0 | 23 | P.C. PINS |

# SPECIFICATIONS

# NICKEL-METAL HYDRIDE BATTERIES

## CYLINDRICAL CELLS

|            |             |     |       |      |    |                   |   |      |      |      |      |     |   |
|------------|-------------|-----|-------|------|----|-------------------|---|------|------|------|------|-----|---|
| NH-600AAA  | AAA         | 1.2 | 600   | 60   | 15 | 185               | 4 | 0.41 | 10.5 | 1.75 | 44.5 | 10  | 1 |
| NH-1250AA  | AA          | 1.2 | 1250  | 125  | 15 | 370               | 4 | 0.57 | 14.5 | 1.89 | 48.0 | 25  | 1 |
| NH-1250AAL | AA high top | 1.2 | 1250  | 125  | 15 | 370               | 4 | 0.57 | 14.5 | 1.97 | 50.0 | 25  | 2 |
| NH-1500AA  | AA          | 1.2 | 1600  | 160  | 15 | 530               | 4 | 0.57 | 14.5 | 1.89 | 48.0 | 26  | 1 |
| NH-1500AAL | AA high top | 1.2 | 1500  | 150  | 15 | 450               | 4 | 0.57 | 14.5 | 1.97 | 50.0 | 26  | 2 |
| NH-1600A   | 4/5A        | 1.2 | 1600  | 160  | 15 | 530               | 4 | 0.67 | 17.0 | 1.67 | 42.4 | 33  | 1 |
| NH-2100A   | A           | 1.2 | 2100  | 210  | 15 | 630               | 4 | 0.67 | 17.0 | 1.97 | 50.0 | 37  | 1 |
| NH-3000SC  | Sub C       | 1.2 | 3000  | 300  | 15 | $\Delta TCO^{**}$ |   | 0.91 | 23.0 | 1.69 | 43.0 | 59  | 1 |
| NH-3700A   | 4/3A        | 1.2 | 3700  | 370  | 15 | $\Delta TCO^{**}$ |   | 0.67 | 17.0 | 2.64 | 67.0 | 53  | 1 |
| NH-7000D   | D           | 1.2 | 7000  | 700  | 15 | $\Delta TCO^{**}$ |   | 1.30 | 33.0 | 2.30 | 58.5 | 160 | 3 |
| NH-7000DL  | D high top  | 1.2 | 7000  | 700  | 15 | $\Delta TCO^{**}$ |   | 1.30 | 33.0 | 2.40 | 61.0 | 160 | 2 |
| NH-8000D   | D           | 1.2 | 8000  | 800  | 15 | $\Delta TCO^{**}$ |   | 1.30 | 33.0 | 2.30 | 58.5 | 160 | 3 |
| NH-12500F  | F           | 1.2 | 12500 | 1250 | 15 | $\Delta TCO^{**}$ |   | 1.30 | 33.0 | 3.59 | 91.2 | 250 | 3 |

\*\*Quick or rapid charge only with delta temp. cut-off

## BUTTON CELLS

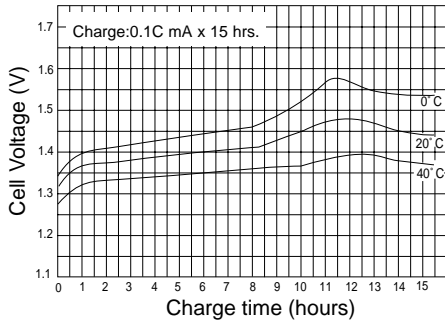
|         |         |     |     |    |    |     |  |                       |      |      |      |      |         |
|---------|---------|-----|-----|----|----|-----|--|-----------------------|------|------|------|------|---------|
| NH-B80  |         | 1.2 | 80  | 8  | 15 | n/a |  | 0.81                  | 15.4 | 0.25 | 6.30 | 3.5  |         |
| NH-B320 |         | 1.2 | 320 | 32 | 15 | n/a |  | 0.98                  | 25.0 | 0.34 | 8.70 | 14.5 |         |
| NH-TR7  | 9V Size | 8.4 | 150 | 15 | 15 | n/a |  | 48.5 x 26.5 x 17.5 mm |      |      |      | 42   | snap-on |

For cells with solder tabs add "T" to the part number

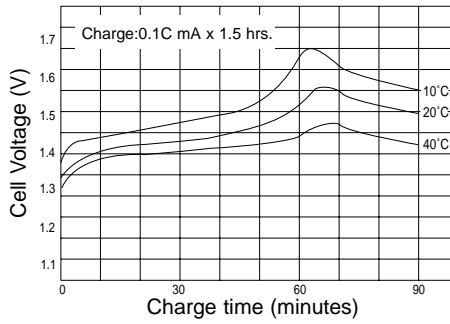
POSITIVE TERMINAL PROFILES: 1= Flat Top; 2 = Button Top; 3 = Low Profile Button

# CHARGE CHARACTERISTICS

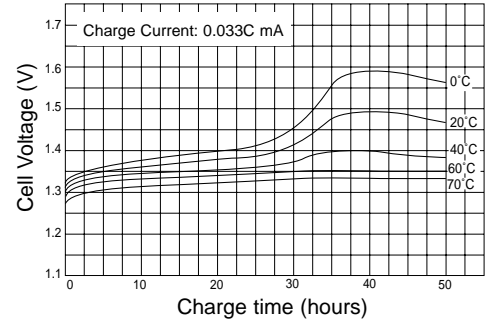
● Charge Characteristics



● Rapid Charge Characteristics\*

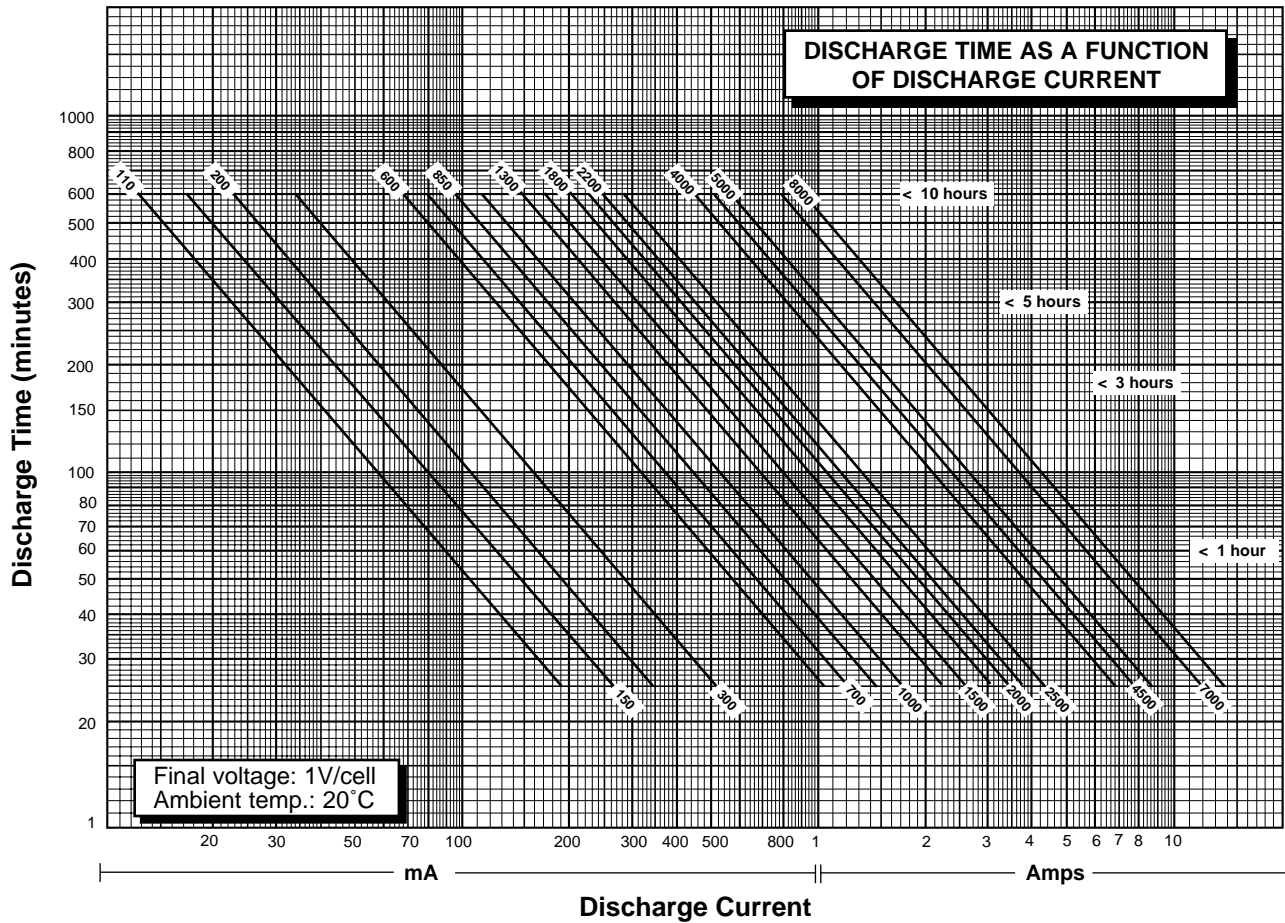


● Trickle Charge Characteristics (H Type)



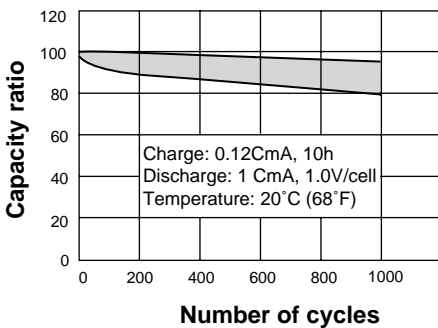
\*CAUTION: NiMH batteries require rapid charge termination circuitry different from that of NiCd's: delta temperature cut-off ( $\Delta TCO$ ) is recommended.

# CELLSELECTOR GUIDE

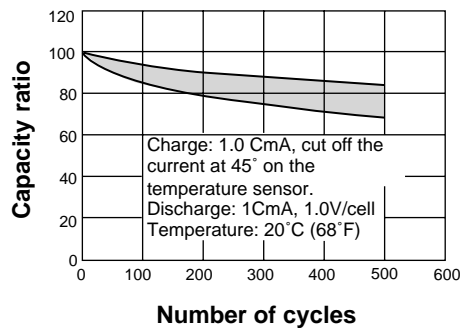


# LIFE CHARACTERISTICS

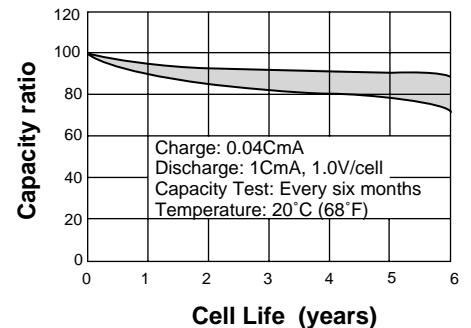
Life Characteristics for Cycle Use



Life Characteristics for Quick Charge Cycle Use



Life Characteristics for Trickle Charge Use





## CELL ASSEMBLIES

Power-Sonic NiCd & NiMH batteries are also available as cell assemblies and packs. Both cylindrical and button cells may be packaged in any configuration to meet electrical and dimensional requirements.

When specifying battery assemblies, the following information should be given:

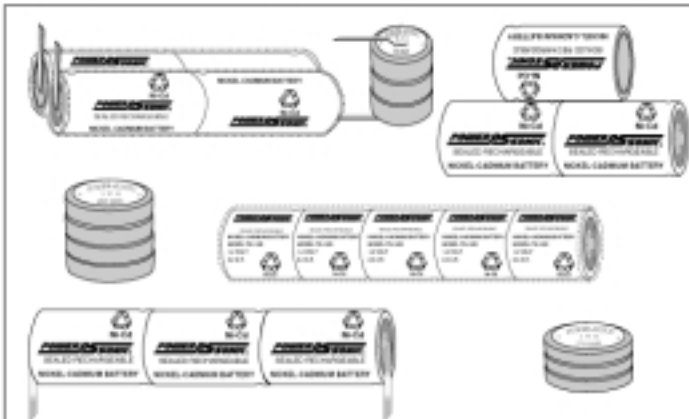
- 1) Size and type of cell
- 2) Voltage or number of cells
- 3) Configuration of cells: e.g., 1 x 4, 2 x 5, stick, etc.
- 4) Packaging method: taped or glued with hot melt; with or without shrink wrap
- 5) Termination: button top, solder tabs (incl. direction), or wire leads with or without connectors

When ordering a replacement battery pack, specify voltage or number of cells, ampere-hour capacity or cell size, and dimensions of the pack.

### LINEAR CONFIGURATIONS

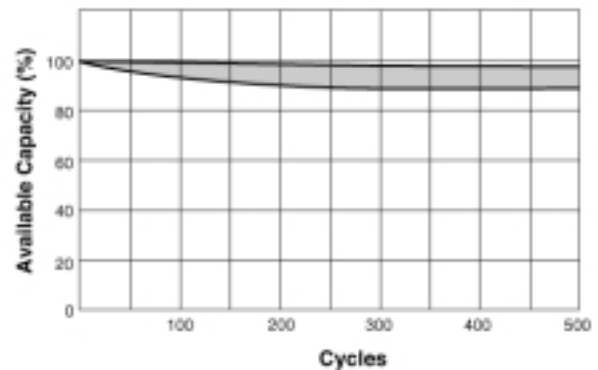


### TUBULAR CONFIGURATIONS

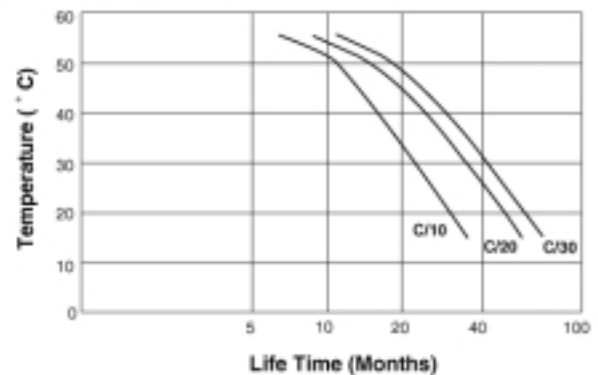


## LIFE CHARACTERISTICS

### LIFE EXPECTANCY – CYCLIC USE



### LIFE EXPECTANCY – STANDBY USE



## CHARGING

**Cyclic Use:** Semi-constant or constant current charging at the 0.1C (C/10) rate for 15 hours is recommended. Overcharging at C/10 for up to 48 hours can be done at room temperature without causing damage.

Cell sizes ranging from 1/3AA to SC can also be quick-charged for 4.5-6 hours at the 0.25C (C/3-C/4) rate. Quick-charging larger cells (C-cell and up) requires a controlled charge circuit because of the heat and gas generated during overcharge.

**Standby Use:** A trickle charge of between 0.02C and 0.05C (C/50-C/20) is sufficient to keep a battery fully charged. At 32°-113°F (0°C-45°C) this charge rate will minimize heating effects during overcharge and prolong battery life.



## FEATURES

**Electronically regulated** - current limited chargers for sealed lead-acid type batteries.

**Wall mount plug-in design** for 250, 300, 500, 800 series and 61000A; counter top design for 241000A, 2000, 4000 and 10A series.

**Operating temperature range:** 32°F – 104°F (0°C – 40°C).

**Input voltage:** 110/120 VAC, 60Hz. PSC-122000A and PSC-241000A can be switched to accept 220/230 VAC, 50Hz.

**LED's:** For 250A & 500A series: "POWER ON" and "CHARGING MODE" (ON=high-rate charging, OFF=float charging). For 300, 800, 1000, & 10A series: "FLOAT" and "FAST CHARGE" indicators. For 2000A, 241000A and 4000 series: single tri-color indicator.

**Hi-impact resistant thermo-plastic housing** for 250, 300, 500, and 800 series; metal housing for 1000, 2000, 4000, and 10A series.

**Screw-type terminals** for 250 & 500 series, I/O cord with battery connectors for 300, 800, 1000, 2000, 4000 and 10A series chargers.

## CHARACTERISTICS

**"F" Series:** Float chargers are designed to provide optimum life for batteries used in standby applications where charging is continuous. The chargers deliver a constant voltage of 2.25 to 2.30 volts per cell which allow the battery to seek its own current level and maintain itself in a fully charged condition. This series is best suited for burglar and fire alarm equipment, emergency lighting, memory protection, or UPS systems where the battery serves as back-up power to the AC source.

**"A" Series:** Automatic dual rate chargers sense battery requirements and automatically switch from the fast charge to float mode, or vice versa. LED's provide visual indication of the charging mode. Automatic chargers combine the advantages of float and cycle chargers; recharge time is short yet batteries are safe from being overcharged. This charger is ideal for cyclic applications where recharge time is critical and the battery may be left on charge indefinitely. As a result charging is fool-proof.

## SPECIFICATIONS

| Model        | Output Voltage (V) |             | Output Current (A) |           | Type                 | Dimensions (in.) |       |        | Weight (lbs.) |
|--------------|--------------------|-------------|--------------------|-----------|----------------------|------------------|-------|--------|---------------|
|              | Nominal            | Range       | Nominal            | Maximum   |                      | Length           | Width | Height |               |
| PSC-6250F    | 6                  | 6.83        | .30                | .40       | Fixed volt. float    | 2.20             | 1.96  | 1.88   | 0.5           |
| PSC-6250A    | 6                  | 6.75/7.35   | .30                | .40       | Dual volt. auto.     | 2.20             | 1.96  | 1.88   | 0.5           |
| PSC-6300A    | 6                  | 6.84/7.35   | .30                | .30       | Dual volt. auto.     | 2.75             | 2.75  | 3.75   | 1.36          |
| PSC-6500A    | 6                  | 6.75/7.35   | .60                | .75       | Dual volt. auto.     | 2.55             | 1.88  | 2.89   | 0.8           |
| PSC-61000A   | 6                  | 6.84/7.35   | 1.00               | 1.00      | Dual volt. auto.     | 2.75             | 2.75  | 3.75   | 1.36          |
| PSC-64000A   | 6                  | 6.75/7.35   | 3.50               | 4.00      | Dual volt. auto.     | 5.70             | 5.80  | 3.30   | 6.0           |
| PSC-12250F   | 12                 | 13.65       | .25                | .40       | Fixed volt. float    | 2.20             | 1.96  | 1.88   | 0.5           |
| PSC-12250A   | 12                 | 13.50/14.70 | .25                | .40       | Dual volt. auto.     | 2.20             | 1.96  | 1.88   | 0.5           |
| PSC-12300A   | 12                 | 13.68/14.70 | .30                | .30       | Dual volt. auto.     | 2.75             | 2.75  | 3.75   | 1.36          |
| PSC-12500F   | 12                 | 13.65       | .50                | .60       | Fixed volt. float    | 2.55             | 1.88  | 2.89   | 0.8           |
| PSC-12500A   | 12                 | 13.50/14.70 | .50                | .60       | Dual volt. auto.     | 2.55             | 1.88  | 2.89   | 0.8           |
| PSC-12800A   | 12                 | 13.68/14.70 | .80                | .80       | Dual volt. auto.     | 2.75             | 2.75  | 3.75   | 1.36          |
| PSC-122000A  | 12                 | 13.50/14.70 | 2.00               | 2.00      | Dual volt. auto.     | 5.55             | 3.60  | 2.90   | 3.8           |
| PSC-124000A  | 12                 | 13.50/14.70 | 4.00               | 4.75      | Dual volt. auto.     | 6.65             | 5.30  | 3.40   | 7.4           |
| PSC-124000AP | 12                 | 13.50/14.70 | 4.00               | 3.50/2.50 | Charger/Power Supply | 6.65             | 5.30  | 3.40   | 7.4           |
| PSC-12-10A   | 12                 | 13.50/14.70 | 10.00              | 10.00     | Dual volt. auto.     | 7.95             | 6.10  | 4.50   | 9.0           |
| PSC-241000A  | 24                 | 27.00/29.40 | 1.00               | 1.00      | Dual volt. auto.     | 5.55             | 3.60  | 2.90   | 3.8           |

## PSN-SERIES FEATURES

Electronically-regulated, current-limited 2-stage chargers for nickel cadmium and nickel metal-hydrde batteries.

Timed C/10 charge rate with automatic switching to C/40 trickle rate after fourteen hours to keep the battery fully charged. LED's indicate charge mode.

Units are calibrated to the battery pack's specifications based on the number and mAh capacity of the cells. Assemblies of 1-12 cells and capacities of 500-5000 mAh can be charged in about 14 hours.

The wall mount design chargers are shipped with a 6-foot 18-AWG output cable with 2.5mm ID barrel plug connector and feature a vented housing made of tough ABS plastic.

To order, indicate number and capacity (mAh) of cells. Example: 5 cells (6 volt) - 1400 mAh.



**Caution:** Chargers are not protected against reverse polarity connection. Reversing polarity or shorting will damage the battery and the charger.

## PSN-SERIES SPECIFICATIONS

Input voltage range: 110 to 120 VAC, 60 Hz.

Operating temperature: 0° to 40°C (32° to 104°F)

Dimensions: 2.8"W x 3.8"H x 2.8"D

Weight: Approximately 1.5 lbs.

## SLA CHARGER SELECTION GUIDE

| Charger Model   | Max Output mA | Use With Battery Voltage | Capacity  | U.L./CSA Listing |
|-----------------|---------------|--------------------------|-----------|------------------|
| PSC-6250F       | 400           | 6V                       | 1-5 AH    | U.L.             |
| PSC-6250A       | 400           | 6V                       | 1-5 AH    | U.L.             |
| PSC-6300A       | 300           | 6V                       | 1-5 AH    | CSA/NRTL*        |
| PSC-6500A       | 500           | 6V                       | 2-10 AH   | U.L.             |
| PSC-61000A      | 1000          | 6V                       | 4.5-12 AH | CSA/NRTL*        |
| PSC-64000A      | 4000          | 6V                       | 20-40 AH  | - - -            |
| PSC-12250F      | 375           | 12V                      | 1-5 AH    | U.L.             |
| PSC-12250A      | 275           | 12V                      | 1-5 AH    | U.L.             |
| PSC-12300A      | 300           | 12V                      | 1-5 AH    | CSA/NRTL*        |
| PSC-12500F      | 600           | 12V                      | 2-10 AH   | U.L.             |
| PSC-12500A      | 500           | 12V                      | 2-10 AH   | U.L.             |
| PSC-12800A      | 800           | 12V                      | 4-12 AH   | CSA/NRTL*        |
| PSC-122000A**   | 2000          | 12V                      | 10-20 AH  | CSA              |
| PSC-124000A**   | 4000          | 12V                      | 17-40 AH  | CSA              |
| PSC-124000AP*** | 3500          | 12V                      | 17-40 AH  | CSA              |
| PSC-12-10**     | 10000         | 12V                      | 60-100 AH | - - -            |
| PSC-241000A**   | 1000          | 24V                      | 5-15 AH   | CSA              |

**Notes:** Recharge time depends on the depth of the preceding discharge and the output current of the charger. To determine the approximate recharge time of a fully discharged battery, divide the battery's amp. hrs. by the rated output current of the charger and multiply the resulting number of hours by a factor of 1.75 to compensate for the declining output current during the charge cycle. If the amount of amp. hrs. discharged from the battery is known, use it instead of the battery's capacity to make the calculation.

\* The "NRTL/C" mark appearing next to the CSA stamp indicates that the charger was also tested to meet U.L. requirements (UL 1310). Under the provisions of this agreement, CSA and U.L. can now test to each others' specifications and thus obtain approval for both organizations.

\*\* PSC-122000A, PSC-241000A and PSC-124000A can be switched to accept 115 VAC or 230 VAC input (47-63 Hz) allowing usage both here and abroad.

\*\*\* PSC-124000AP should be used when the automatic dual rate charger is used like a power supply. As such it can supply a continuous load current of up to 2.5A, yet still switch into float mode (13.8V) when the battery is fully charged.