



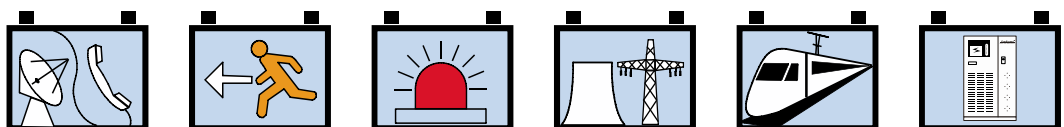
**EverExceed®**  
*power your applications*

V4.0

## **Ultra-low Maintenance Gas Recombination NiCd Battery**



**»Premium quality for  
uninterrupted communication«**



[www.everexceed.com](http://www.everexceed.com)



**ULTRA-HIGH RELIABILITY  
ULTRA-LOW MAINTENANCE**

EverExceed SPL series is a powerful combination of proven pocket-plate construction and advanced design from the world leader in industrial nickel-cadmium battery technology. With a 20-year life and ultra-low maintenance requirements, EverExceed SPL series has become the cost-effective first choice – worldwide – for trouble-free standby power in the most demanding applications.

**More Reliable**

SPL series can continue to supply power for 20 years or more thanks to its corrosion free construction and EverExceed's tried and tested pocket-plate technology. No physical plate degradation and no sudden death with resulting costly downtime

**Low life-cycle Cost**

The cost of ownership of a battery system can be calculated across three distinct phases: the initial investment, including the cost of purchase and installation; on-going maintenance costs, including unexpected and expensive downtime periods; finally, the battery replacement costs, which include the expense of disposal as well as renewal. SPL series is the most cost-effective solution for any application – onshore or offshore – where long battery life, low maintenance costs, resistance to corrosion and total reliability are prime operating requirements.



**More Adaptable**

Offshore oil and gas, emergency lighting, fire and security, telecoms, utilities, photovoltaics. You can depend upon SPL series for perfect peace of mind.

**No Water Filling**

No water filling is necessary during the SPL series 20-year service life because of the controlled recombination and the valve regulated venting system (topping-up is possible if required).

**More Durable**

SPL series will survive treatment which would destroy lead acid batteries. This battery accepts ripple currents up to 0.2 C5 A and can be over-discharged or reversed without damage. Prolonged abusive overcharge can easily be compensated by refurbishment with water.

**More Environmentally Tolerant**

SPL series performs in the most severe conditions and can operate over a temperature range from 0°C to +40°C (+32°F to +104°F). It can survive extremes of temperature from as low as -50°C to as high as +70°C (-58°F to as high as +158°F).

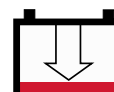
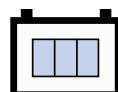
**More Manageable**

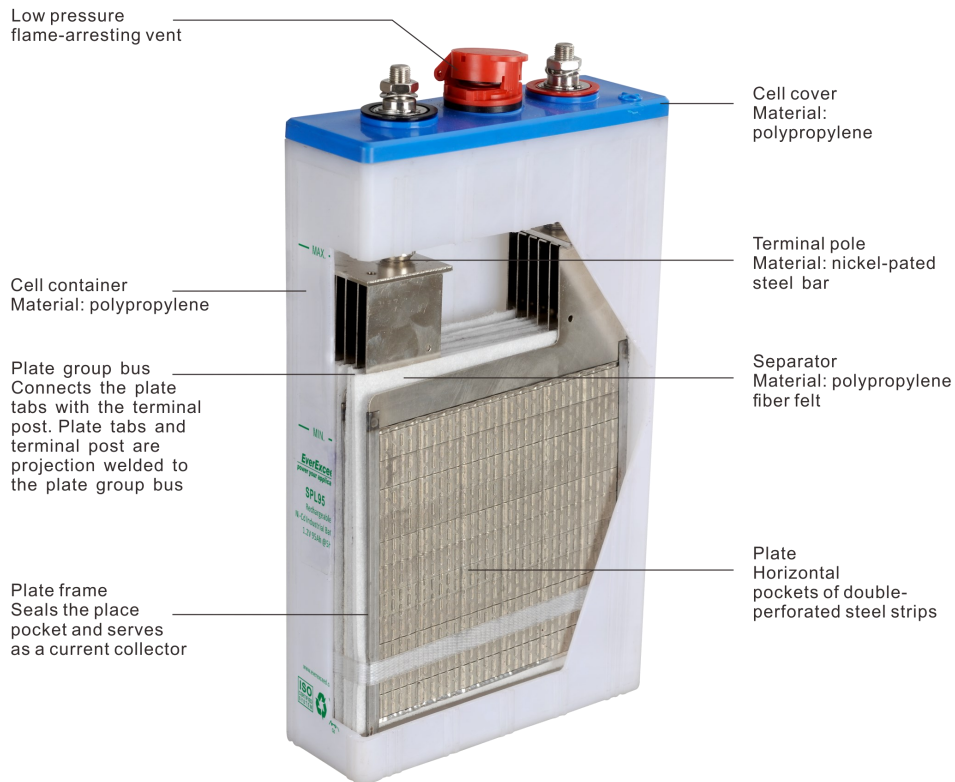
Compact and lightweight, SPL series is easy to transport and install. It can be stored for one year without need of refresher charges.

**Float-corrected Data**

Many nickel-cadmium batteries are used in stationary standby power applications where discharges occur infrequently and the battery is continuously charged by a float or constant potential charge. Under these circumstances there is a modification in the level of the discharge curve and allowances must be made for this when dimensioning the battery.

In order to simplify this process, the data EverExceed supplies in this publication takes into account this phenomenon. The data published by EverExceed is the performance after prolonged floating and it can be used directly to perform the battery calculation. This phenomenon occurs with all nickel cadmium batteries, but some other manufacturers of nickel-cadmium batteries may not take this effect into account in published data.





## Meeting International Standards

EverExceed batteries are manufactured under a strict ISO 9001 regime. Highest quality materials and rigorous quality checking procedures ensure all relevant international standards are met, including IEC 60623-2001, IEC 62259-2003.

## Technology Superiority

The electrode use steel tape as the framework. No react with electrolyte and remain complete during the whole service life.

The separator is made of polypropylene fiber felt.

No electrolyte replacement within service life.

Terminals are made of steel or copper which has excellent electric conductivity and high mechanical strength.

Battery case is made of high strength, corrosion resisting, translucent engineering plastics.

No sudden death risk.

Gas recombination efficiency can reach 85%~95%.

Ultra high gas recombination efficiency, which reduces 90% water consumption.

Conforms to IEC/EN 62259.

## Application

Offshore oil and gas

Fire and security systems

Railway signaling

Process control

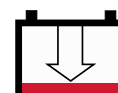
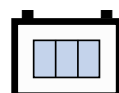
Switchgear

Telecommunications

Mass transit

Wind/Solar energy

UPS



## Battery Charging

It is recommended to use Constant Voltage method of charging for Nickel Cadmium Batteries, usually with current limitation to C/5 or C/10. Charging voltages must be regularly checked. To optimize the battery performance, it is necessary to ensure that the voltage is kept within the following limits:

Batteries can be charged in:

- ◆ **constant voltage mode with load connected**

or

- ◆ **constant current or declining current mode when load is isolated.**

High rate or over charge will not damage the battery.

Minimum float charging current: 2 mA per Ah.

- ◆ **Constant voltage mode:**

### A. Two level constant potential charging:

- Float voltage: 1.42 V/cell
- Boost Voltage: 1.45 V/cell

Alternatively, if a faster rate of recharge is required, a voltage limit of 1.55 V/cell with a current limit of 0.1 C5 Ampere can be used. However, if frequent recharges are required this will increase the rate of water loss and gas generation.

### B. Single level float charging:

- Float voltage: 1.42 V/cell

For use at temperatures outside the range of +15°C to +25°C (+59°F to +77°F), the correcting factor for charge voltage is  $-3 \text{ mV}/^\circ\text{C}/\text{cell}$  ( $-1.7 \text{ mV}/^\circ\text{F}/\text{cell}$ ).

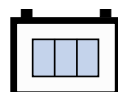
- ◆ **Constant current mode:**

- Normal charging: 0.1 C A for 16 hours

## Initial Charging

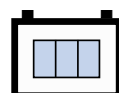
The whole charge should preferably be carried out at constant current. The charging time is inversely proportional to the current which is set by the current limit of the charging equipment.

Recommended rates for the first charging according to IEC 62259: 0.1 C5A for 16 hours



## SPL Series Electrical Specifications & Dimensions

| Cell Type | Nominal Voltage (V) | Capacity (C <sub>5</sub> Ah) | Max. External Dimensions (mm/inch) |     |       |      |        |      | Max. Weight (kg/lb.) | Electrolyte Volume (L) | Terminal | Container Material |     |
|-----------|---------------------|------------------------------|------------------------------------|-----|-------|------|--------|------|----------------------|------------------------|----------|--------------------|-----|
|           |                     |                              | Length                             |     | Width |      | Height |      |                      |                        |          |                    |     |
| SPL30     | 1.2                 | 30                           | 70                                 | 2.8 | 135   | 5.3  | 245    | 9.6  | 2.8                  | 6.2                    | 0.8      | M10                | PP  |
| SPL40     | 1.2                 | 40                           | 70                                 | 2.8 | 135   | 5.3  | 245    | 9.6  | 3.0                  | 6.6                    | 0.8      | M10                | PP  |
| SPL50     | 1.2                 | 50                           | 70                                 | 2.8 | 135   | 5.3  | 285    | 11.2 | 4.0                  | 8.8                    | 0.9      | M16                | PP  |
| SPL60     | 1.2                 | 60                           | 70                                 | 2.8 | 135   | 5.3  | 285    | 11.2 | 4.2                  | 9.3                    | 0.8      | M16                | PP  |
| SPL70     | 1.2                 | 70                           | 70                                 | 2.8 | 135   | 5.3  | 285    | 11.2 | 4.5                  | 9.9                    | 0.8      | M16                | PP  |
| SPL80     | 1.2                 | 80                           | 80                                 | 3.1 | 140   | 5.5  | 365    | 14.4 | 5.8                  | 12.8                   | 1.7      | M10                | PP  |
| SPL90     | 1.2                 | 90                           | 80                                 | 3.1 | 140   | 5.5  | 365    | 14.4 | 6.0                  | 13.2                   | 1.7      | M10                | PP  |
| SPL100    | 1.2                 | 100                          | 80                                 | 3.1 | 140   | 5.5  | 365    | 14.4 | 6.2                  | 13.7                   | 1.6      | M10                | PP  |
| SPL120    | 1.2                 | 120                          | 105                                | 4.1 | 165   | 6.5  | 345    | 13.6 | 8.5                  | 18.7                   | 2.5      | M20                | PP  |
| SPL150    | 1.2                 | 150                          | 105                                | 4.1 | 165   | 6.5  | 345    | 13.6 | 9                    | 19.8                   | 2.2      | M20                | PP  |
| SPL200    | 1.2                 | 200                          | 100                                | 3.9 | 172   | 6.8  | 450    | 17.7 | 12.0                 | 26.4                   | 2.8      | M20                | PP  |
| SPL250    | 1.2                 | 250                          | 100                                | 3.9 | 172   | 6.8  | 450    | 17.7 | 12.6                 | 27.7                   | 2.3      | M20                | PP  |
| SPL300    | 1.2                 | 300                          | 152                                | 6.0 | 170   | 6.7  | 385    | 15.2 | 15.2                 | 33.1                   | 3.0      | M20                | PP  |
| SPL350    | 1.2                 | 350                          | 152                                | 6.0 | 170   | 6.7  | 385    | 15.2 | 16.5                 | 36.3                   | 2.8      | M20                | PP  |
| SPL400    | 1.2                 | 400                          | 152                                | 6.0 | 170   | 6.7  | 385    | 15.2 | 18                   | 39.7                   | 2.6      | M20                | PP  |
| SPL450    | 1.2                 | 450                          | 138                                | 5.4 | 276   | 10.9 | 450    | 17.7 | 25.2                 | 55.4                   | 5.6      | 2 x M16            | PP  |
| SPL500    | 1.2                 | 500                          | 138                                | 5.4 | 276   | 10.9 | 450    | 17.7 | 26.5                 | 58.3                   | 5.0      | 2 x M16            | PP  |
| SPL550    | 1.2                 | 550                          | 175                                | 6.9 | 290   | 11.4 | 500    | 19.7 | 36.5                 | 80.3                   | 9.5      | 2 x M20            | ABS |
| SPL600    | 1.2                 | 600                          | 175                                | 6.9 | 290   | 11.4 | 500    | 19.7 | 37.2                 | 81.8                   | 8.8      | 2 x M20            | ABS |
| SPL700    | 1.2                 | 700                          | 175                                | 6.9 | 290   | 11.4 | 500    | 19.7 | 39.2                 | 86.3                   | 8.3      | 2 x M20            | ABS |
| SPL800    | 1.2                 | 800                          | 185                                | 7.3 | 400   | 15.7 | 570    | 22.4 | 57.5                 | 126.5                  | 16.0     | 3 x M20            | ABS |
| SPL900    | 1.2                 | 900                          | 185                                | 7.3 | 400   | 15.7 | 570    | 22.4 | 58.2                 | 128.0                  | 14.8     | 3 x M20            | ABS |
| SPL1000   | 1.2                 | 1000                         | 185                                | 7.3 | 400   | 15.7 | 570    | 22.4 | 60.0                 | 132.0                  | 14.2     | 3 x M20            | ABS |



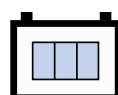
## Discharge Data Table

Discharge performance data after fully charged by constant current according to IEC62259

Available amperes at +20°C ±5°C(+68°F ±9°F)

Final voltage: 1.14 V/cell

| Cell Type | Capacity (C <sub>s</sub> Ah) | Discharge Time in Hours |      |      |      |      |      |      | Discharge Time in minutes |      |      |      |      | Time in Seconds |      |      |      |
|-----------|------------------------------|-------------------------|------|------|------|------|------|------|---------------------------|------|------|------|------|-----------------|------|------|------|
|           |                              | 10                      | 8    | 5    | 3    | 2    | 1.5  | 1    | 30                        | 20   | 15   | 10   | 5    | 1               | 30   | 5    | 1    |
| SPL30     | 30                           | 3.00                    | 3.75 | 5.85 | 9.33 | 12.9 | 15.2 | 17.8 | 20.9                      | 22.0 | 23.7 | 25.3 | 27.8 | 31.8            | 34.0 | 37.1 | 40.2 |
| SPL40     | 40                           | 4.00                    | 5.00 | 7.80 | 12.4 | 17.3 | 20.2 | 23.7 | 27.9                      | 29.4 | 31.5 | 33.7 | 37.1 | 42.4            | 45.3 | 49.4 | 53.6 |
| SPL50     | 50                           | 5.00                    | 6.25 | 9.75 | 15.6 | 21.6 | 25.3 | 29.6 | 34.8                      | 36.7 | 39.4 | 42.2 | 46.4 | 53.0            | 56.7 | 61.8 | 67.0 |
| SPL60     | 60                           | 6.00                    | 7.50 | 11.7 | 18.7 | 25.9 | 30.3 | 35.6 | 41.8                      | 44.1 | 47.3 | 50.6 | 55.7 | 63.6            | 68.0 | 74.2 | 80.3 |
| SPL70     | 70                           | 7.00                    | 8.75 | 13.7 | 21.8 | 30.2 | 35.4 | 41.5 | 48.8                      | 51.4 | 55.2 | 59.0 | 65.0 | 74.3            | 79.3 | 86.5 | 93.7 |
| SPL80     | 80                           | 8.00                    | 10.0 | 15.6 | 24.9 | 34.5 | 40.4 | 47.4 | 55.7                      | 58.8 | 63.1 | 67.5 | 74.3 | 84.9            | 90.6 | 98.9 | 107  |
| SPL90     | 90                           | 9.00                    | 11.3 | 17.6 | 28.0 | 38.8 | 45.5 | 53.4 | 62.7                      | 66.1 | 71.0 | 75.9 | 83.5 | 95.5            | 102  | 111  | 121  |
| SPL100    | 100                          | 10.0                    | 12.5 | 19.5 | 31.1 | 43.1 | 50.5 | 59.3 | 69.7                      | 73.4 | 78.8 | 84.4 | 93   | 106             | 113  | 124  | 134  |
| SPL120    | 120                          | 12.0                    | 15.0 | 23.4 | 37.3 | 51.8 | 60.6 | 71.1 | 83.6                      | 88.1 | 94.6 | 101  | 111  | 127             | 136  | 148  | 161  |
| SPL150    | 150                          | 15.0                    | 18.8 | 29.3 | 46.7 | 64.7 | 75.8 | 88.9 | 104                       | 110  | 118  | 127  | 139  | 159             | 170  | 185  | 201  |
| SPL200    | 200                          | 20.0                    | 25.0 | 39.0 | 62.2 | 86.3 | 101  | 119  | 139                       | 147  | 158  | 169  | 186  | 212             | 227  | 247  | 268  |
| SPL250    | 250                          | 25.0                    | 31.3 | 48.8 | 77.8 | 108  | 126  | 148  | 174                       | 184  | 197  | 211  | 232  | 265             | 283  | 309  | 335  |
| SPL300    | 300                          | 30.0                    | 37.5 | 58.5 | 93.3 | 129  | 152  | 178  | 209                       | 220  | 237  | 253  | 278  | 318             | 340  | 371  | 402  |
| SPL350    | 350                          | 35.0                    | 43.8 | 68.3 | 109  | 151  | 177  | 208  | 244                       | 257  | 276  | 295  | 325  | 371             | 397  | 433  | 469  |
| SPL400    | 400                          | 40.0                    | 50.0 | 78.0 | 124  | 173  | 202  | 237  | 279                       | 294  | 315  | 337  | 371  | 424             | 453  | 494  | 536  |
| SPL450    | 450                          | 45.0                    | 56.3 | 87.8 | 140  | 194  | 227  | 267  | 313                       | 330  | 355  | 380  | 418  | 477             | 510  | 556  | 603  |
| SPL500    | 500                          | 50.0                    | 62.5 | 97.5 | 156  | 216  | 253  | 296  | 348                       | 367  | 394  | 422  | 464  | 530             | 567  | 618  | 670  |
| SPL550    | 550                          | 55.0                    | 68.8 | 107  | 171  | 237  | 278  | 326  | 383                       | 404  | 434  | 464  | 511  | 583             | 623  | 680  | 736  |
| SPL600    | 600                          | 60.0                    | 75.0 | 117  | 187  | 259  | 303  | 356  | 418                       | 441  | 473  | 506  | 557  | 636             | 680  | 742  | 803  |
| SPL700    | 700                          | 70.0                    | 87.5 | 137  | 218  | 302  | 354  | 415  | 488                       | 514  | 552  | 590  | 650  | 743             | 793  | 865  | 937  |
| SPL800    | 800                          | 80.0                    | 100  | 156  | 249  | 345  | 404  | 474  | 557                       | 588  | 631  | 675  | 743  | 849             | 906  | 989  | 1071 |
| SPL900    | 900                          | 90.0                    | 113  | 176  | 280  | 388  | 455  | 534  | 627                       | 661  | 710  | 759  | 835  | 955             | 1020 | 1112 | 1205 |
| SPL1000   | 1000                         | 100                     | 125  | 195  | 311  | 431  | 505  | 593  | 697                       | 734  | 788  | 844  | 928  | 1061            | 1133 | 1236 | 1339 |



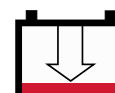
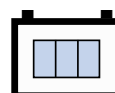
## Discharge Data Table

Discharge performance data after fully charged by constant current according to IEC62259

Available amperes at +20°C ±5°C(+68°F ±9°F)

Final voltage: 1.10 V/cell

| Cell Type | Capacity (C <sub>s</sub> Ah) | Discharge Time in Hours |      |      |      |      |      |      | Discharge Time in minutes |      |      |      |      |      | Time in Seconds |      |      |
|-----------|------------------------------|-------------------------|------|------|------|------|------|------|---------------------------|------|------|------|------|------|-----------------|------|------|
|           |                              | 10                      | 8    | 5    | 3    | 2    | 1.5  | 1    | 30                        | 20   | 15   | 10   | 5    | 1    | 30              | 5    | 1    |
| SPL30     | 30                           | 3.02                    | 3.65 | 5.35 | 7.70 | 10.3 | 11.8 | 12.5 | 17.2                      | 20.8 | 22.5 | 24.5 | 28.5 | 30.2 | 33.8            | 36.8 | 40.3 |
| SPL40     | 40                           | 4.03                    | 4.87 | 7.13 | 10.3 | 13.7 | 15.7 | 16.7 | 22.9                      | 27.7 | 30.0 | 32.7 | 38.0 | 40.3 | 45.1            | 49.1 | 53.7 |
| SPL50     | 50                           | 5.03                    | 6.08 | 8.92 | 12.8 | 17.2 | 19.7 | 20.8 | 28.7                      | 34.7 | 37.5 | 40.8 | 47.5 | 50.3 | 56.3            | 61.3 | 67.2 |
| SPL60     | 60                           | 6.04                    | 7.30 | 10.7 | 15.4 | 20.6 | 23.6 | 25.0 | 34.4                      | 41.6 | 45.0 | 49.0 | 57.0 | 60.4 | 67.6            | 73.6 | 80.6 |
| SPL70     | 70                           | 7.05                    | 8.52 | 12.5 | 18.0 | 24.0 | 27.5 | 29.2 | 40.1                      | 48.5 | 52.5 | 57.2 | 66.5 | 70.5 | 78.9            | 85.9 | 94.0 |
| SPL80     | 80                           | 8.05                    | 9.73 | 14.3 | 20.5 | 27.5 | 31.5 | 33.3 | 45.9                      | 55.5 | 60.0 | 65.3 | 76.0 | 80.5 | 90.1            | 98.1 | 107  |
| SPL90     | 90                           | 9.06                    | 11.0 | 16.1 | 23.1 | 30.9 | 35.4 | 37.5 | 51.6                      | 62.4 | 67.5 | 73.5 | 85.5 | 90.6 | 101             | 110  | 121  |
| SPL100    | 100                          | 10.1                    | 12.2 | 17.8 | 25.7 | 34.3 | 39.3 | 41.7 | 57.3                      | 69.3 | 75.0 | 81.7 | 95.0 | 101  | 113             | 123  | 134  |
| SPL120    | 120                          | 12.1                    | 14.6 | 21.4 | 30.8 | 41.2 | 47.2 | 50.0 | 68.8                      | 83.2 | 90.0 | 98.0 | 114  | 121  | 135             | 147  | 161  |
| SPL150    | 150                          | 15.1                    | 18.3 | 26.8 | 38.5 | 51.5 | 59.0 | 62.5 | 86.0                      | 104  | 113  | 123  | 143  | 151  | 169             | 184  | 202  |
| SPL200    | 200                          | 20.1                    | 24.3 | 35.7 | 51.3 | 68.7 | 78.7 | 83.3 | 115                       | 139  | 150  | 163  | 190  | 201  | 225             | 245  | 269  |
| SPL250    | 250                          | 25.2                    | 30.4 | 44.6 | 64.2 | 85.8 | 98.3 | 104  | 143                       | 173  | 188  | 204  | 238  | 252  | 282             | 307  | 336  |
| SPL300    | 300                          | 30.2                    | 36.5 | 53.5 | 77.0 | 103  | 118  | 125  | 172                       | 208  | 225  | 245  | 285  | 302  | 338             | 368  | 403  |
| SPL350    | 350                          | 35.2                    | 42.6 | 62.4 | 89.8 | 120  | 138  | 146  | 201                       | 243  | 263  | 286  | 333  | 352  | 394             | 429  | 470  |
| SPL400    | 400                          | 40.3                    | 48.7 | 71.3 | 103  | 137  | 157  | 167  | 229                       | 277  | 300  | 327  | 380  | 403  | 451             | 491  | 537  |
| SPL450    | 450                          | 45.3                    | 54.8 | 80.3 | 116  | 155  | 177  | 188  | 258                       | 312  | 338  | 368  | 428  | 453  | 507             | 552  | 604  |
| SPL500    | 500                          | 50.3                    | 60.8 | 89.2 | 128  | 172  | 197  | 208  | 287                       | 347  | 375  | 408  | 475  | 503  | 563             | 613  | 672  |
| SPL550    | 550                          | 55.4                    | 66.9 | 98.1 | 141  | 189  | 216  | 229  | 315                       | 381  | 413  | 449  | 523  | 554  | 620             | 675  | 739  |
| SPL600    | 600                          | 60.4                    | 73.0 | 107  | 154  | 206  | 236  | 250  | 344                       | 416  | 450  | 490  | 570  | 604  | 676             | 736  | 806  |
| SPL700    | 700                          | 70.5                    | 85.2 | 125  | 180  | 240  | 275  | 292  | 401                       | 485  | 525  | 572  | 665  | 705  | 789             | 859  | 940  |
| SPL800    | 800                          | 80.5                    | 97.3 | 143  | 205  | 275  | 315  | 333  | 459                       | 555  | 600  | 653  | 760  | 805  | 901             | 981  | 1075 |
| SPL900    | 900                          | 90.6                    | 110  | 161  | 231  | 309  | 354  | 375  | 516                       | 624  | 675  | 735  | 855  | 906  | 1014            | 1104 | 1209 |
| SPL1000   | 1000                         | 101                     | 122  | 178  | 257  | 343  | 393  | 417  | 573                       | 693  | 750  | 817  | 950  | 1007 | 1127            | 1227 | 1343 |



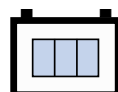
## Discharge Data Table

Discharge performance data after fully charged by constant current according to IEC62259

Available amperes at +20°C ±5°C(+68°F ±9°F)

Final voltage: 1.05 V/cell

| Cell Type | Capacity (C <sub>5</sub> Ah) | Discharge Time in Hours |      |      |      |      |      |      | Discharge Time in minutes |      |      |      |      | Time in Seconds |      |      |      |
|-----------|------------------------------|-------------------------|------|------|------|------|------|------|---------------------------|------|------|------|------|-----------------|------|------|------|
|           |                              | 10                      | 8    | 5    | 3    | 2    | 1.5  | 1    | 30                        | 20   | 15   | 10   | 5    | 1               | 30   | 5    | 1    |
| SPL30     | 30                           | 3.03                    | 3.78 | 5.94 | 9.64 | 13.6 | 17.0 | 20.3 | 25.2                      | 26.9 | 28.2 | 29.4 | 31.8 | 37.3            | 40.2 | 45.4 | 49.7 |
| SPL40     | 40                           | 4.04                    | 5.04 | 7.92 | 12.8 | 18.2 | 22.6 | 27.1 | 33.6                      | 35.9 | 37.5 | 39.2 | 42.4 | 49.8            | 53.6 | 60.6 | 66.3 |
| SPL50     | 50                           | 5.05                    | 6.30 | 9.90 | 16.1 | 22.7 | 28.3 | 33.8 | 42.0                      | 44.9 | 46.9 | 49.0 | 53.0 | 62.2            | 67.0 | 75.7 | 82.9 |
| SPL60     | 60                           | 6.06                    | 7.56 | 11.9 | 19.3 | 27.3 | 33.9 | 40.6 | 50.4                      | 53.9 | 56.3 | 58.8 | 63.6 | 74.7            | 80.3 | 90.8 | 99.5 |
| SPL70     | 70                           | 7.07                    | 8.82 | 13.9 | 22.5 | 31.8 | 39.6 | 47.4 | 58.8                      | 62.8 | 65.7 | 68.5 | 74.3 | 87.1            | 93.7 | 106  | 116  |
| SPL80     | 80                           | 8.08                    | 10.1 | 15.8 | 25.7 | 36.4 | 45.2 | 54.1 | 67.2                      | 71.8 | 75.1 | 78.3 | 84.9 | 99.6            | 107  | 121  | 133  |
| SPL90     | 90                           | 9.09                    | 11.3 | 17.8 | 28.9 | 40.9 | 50.9 | 60.9 | 75.6                      | 80.8 | 84.5 | 88.1 | 95.5 | 112             | 121  | 136  | 149  |
| SPL100    | 100                          | 10.1                    | 12.6 | 19.8 | 32.1 | 45.5 | 56.6 | 67.7 | 83.9                      | 89.8 | 93.8 | 97.9 | 106  | 124             | 134  | 151  | 166  |
| SPL120    | 120                          | 12.1                    | 15.1 | 23.8 | 38.5 | 54.5 | 67.9 | 81.2 | 101                       | 108  | 113  | 118  | 127  | 149             | 161  | 182  | 199  |
| SPL150    | 150                          | 15.2                    | 18.9 | 29.7 | 48.2 | 68.2 | 84.8 | 102  | 126                       | 135  | 141  | 147  | 159  | 187             | 201  | 227  | 249  |
| SPL200    | 200                          | 20.2                    | 25.2 | 39.6 | 64.2 | 90.9 | 113  | 135  | 168                       | 180  | 188  | 196  | 212  | 249             | 268  | 303  | 332  |
| SPL250    | 250                          | 25.3                    | 31.5 | 49.5 | 80.3 | 114  | 141  | 169  | 210                       | 224  | 235  | 245  | 265  | 311             | 335  | 379  | 415  |
| SPL300    | 300                          | 30.3                    | 37.8 | 59.4 | 96.4 | 136  | 170  | 203  | 252                       | 269  | 282  | 294  | 318  | 373             | 402  | 454  | 497  |
| SPL350    | 350                          | 35.4                    | 44.1 | 69.3 | 112  | 159  | 198  | 237  | 294                       | 314  | 328  | 343  | 371  | 436             | 469  | 530  | 580  |
| SPL400    | 400                          | 40.4                    | 50.4 | 79.2 | 128  | 182  | 226  | 271  | 336                       | 359  | 375  | 392  | 424  | 498             | 536  | 606  | 663  |
| SPL450    | 450                          | 45.5                    | 56.7 | 89.1 | 145  | 205  | 255  | 305  | 378                       | 404  | 422  | 441  | 477  | 560             | 603  | 681  | 746  |
| SPL500    | 500                          | 50.5                    | 63.0 | 99.0 | 161  | 227  | 283  | 338  | 420                       | 449  | 469  | 490  | 530  | 622             | 670  | 757  | 829  |
| SPL550    | 550                          | 55.6                    | 69.3 | 109  | 177  | 250  | 311  | 372  | 462                       | 494  | 516  | 539  | 583  | 684             | 736  | 833  | 912  |
| SPL600    | 600                          | 60.6                    | 75.6 | 119  | 193  | 273  | 339  | 406  | 504                       | 539  | 563  | 588  | 636  | 747             | 803  | 908  | 995  |
| SPL700    | 700                          | 70.7                    | 88.2 | 139  | 225  | 318  | 396  | 474  | 588                       | 628  | 657  | 685  | 743  | 871             | 937  | 1060 | 1161 |
| SPL800    | 800                          | 80.8                    | 101  | 158  | 257  | 364  | 452  | 541  | 672                       | 718  | 751  | 783  | 849  | 996             | 1071 | 1211 | 1327 |
| SPL900    | 900                          | 90.9                    | 113  | 178  | 289  | 409  | 509  | 609  | 756                       | 808  | 845  | 881  | 955  | 1120            | 1205 | 1363 | 1492 |
| SPL1000   | 1000                         | 101                     | 126  | 198  | 321  | 455  | 566  | 677  | 839                       | 898  | 938  | 979  | 1061 | 1244            | 1339 | 1514 | 1658 |





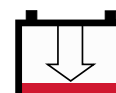
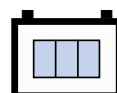
## Discharge Data Table

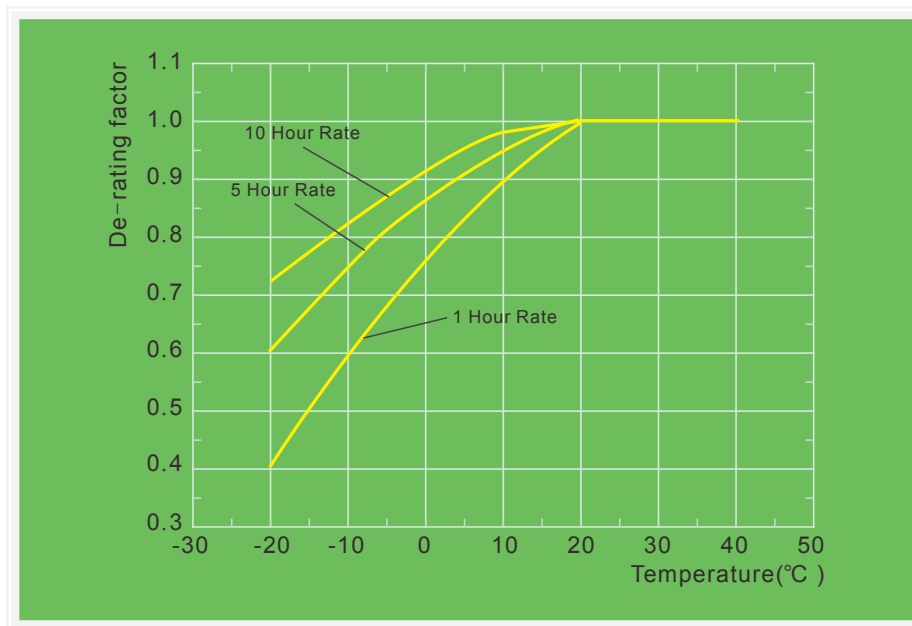
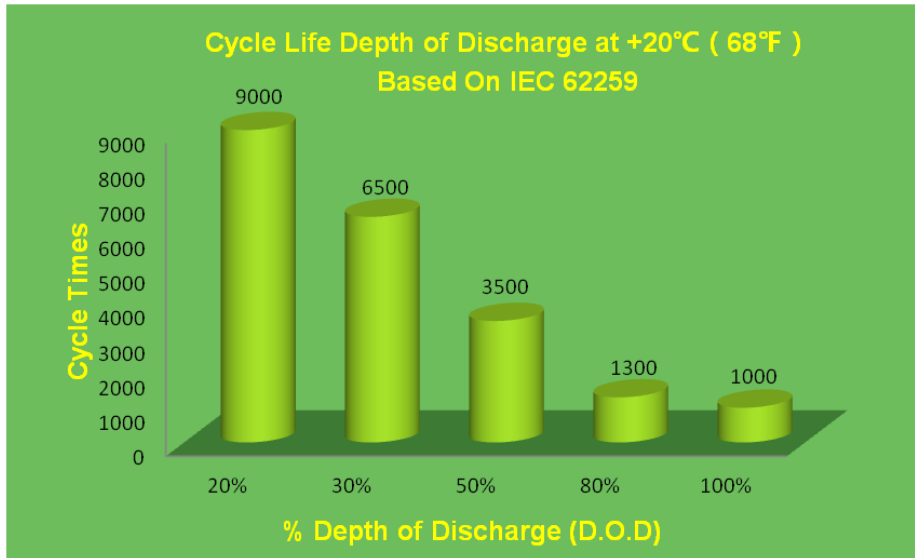
Discharge performance data after fully charged by constant current according to IEC62259

Available amperes at +20°C ±5°C(+68°F ±9°F)

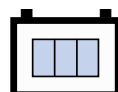
Final voltage: 1.00 V/cell

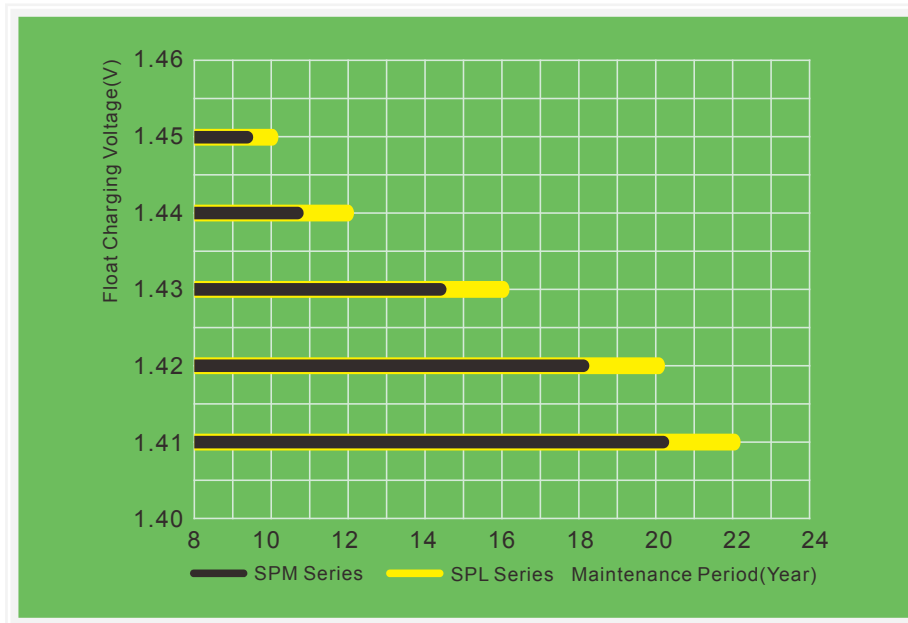
| Cell Type | Capacity (C <sub>s</sub> Ah) | Discharge Time in Hours |      |      |      |      |      |      | Discharge Time in minutes |      |      |      |      | Time in Seconds |      |      |      |
|-----------|------------------------------|-------------------------|------|------|------|------|------|------|---------------------------|------|------|------|------|-----------------|------|------|------|
|           |                              | 10                      | 8    | 5    | 3    | 2    | 1.5  | 1    | 30                        | 20   | 15   | 10   | 5    | 1               | 30   | 5    | 1    |
| SPL30     | 30                           | 3.06                    | 3.81 | 6.00 | 9.79 | 14.0 | 18.5 | 23.8 | 28.7                      | 30.6 | 32.1 | 34.3 | 36.4 | 41.9            | 44.5 | 50.4 | 56.9 |
| SPL40     | 40                           | 4.08                    | 5.08 | 8.00 | 13.0 | 18.7 | 24.6 | 31.8 | 38.2                      | 40.8 | 42.8 | 45.7 | 48.6 | 55.9            | 59.3 | 67.2 | 75.8 |
| SPL50     | 50                           | 5.10                    | 6.35 | 10.0 | 16.3 | 23.4 | 30.8 | 39.7 | 47.8                      | 51.0 | 53.6 | 57.1 | 60.7 | 69.9            | 74.2 | 83.9 | 94.8 |
| SPL60     | 60                           | 6.12                    | 7.62 | 12.0 | 19.6 | 28.1 | 37.0 | 47.7 | 57.3                      | 61.2 | 64.3 | 68.5 | 72.8 | 83.8            | 89.0 | 101  | 114  |
| SPL70     | 70                           | 7.14                    | 8.89 | 14.0 | 22.8 | 32.7 | 43.1 | 55.6 | 66.9                      | 71.4 | 75.0 | 80.0 | 85.0 | 97.8            | 104  | 118  | 133  |
| SPL80     | 80                           | 8.16                    | 10.2 | 16.0 | 26.1 | 37.4 | 49.3 | 63.6 | 76.5                      | 81.6 | 85.7 | 91.4 | 97.1 | 112             | 119  | 134  | 152  |
| SPL90     | 90                           | 9.18                    | 11.4 | 18.0 | 29.4 | 42.1 | 55.4 | 71.5 | 86.0                      | 91.8 | 96.4 | 103  | 109  | 126             | 133  | 151  | 171  |
| SPL100    | 100                          | 10.2                    | 12.7 | 20.0 | 32.6 | 46.8 | 61.6 | 79.5 | 95.6                      | 102  | 107  | 114  | 121  | 140             | 148  | 168  | 190  |
| SPL120    | 120                          | 12.2                    | 15.2 | 24.0 | 39.1 | 56.1 | 73.9 | 95.4 | 115                       | 122  | 129  | 137  | 146  | 168             | 178  | 201  | 227  |
| SPL150    | 150                          | 15.3                    | 19.1 | 30.0 | 48.9 | 70.1 | 92.4 | 119  | 143                       | 153  | 161  | 171  | 182  | 210             | 222  | 252  | 284  |
| SPL200    | 200                          | 20.4                    | 25.4 | 40.0 | 65.2 | 93.5 | 123  | 159  | 191                       | 204  | 214  | 228  | 243  | 279             | 297  | 336  | 379  |
| SPL250    | 250                          | 25.5                    | 31.8 | 50.0 | 81.6 | 117  | 154  | 199  | 239                       | 255  | 268  | 286  | 303  | 349             | 371  | 420  | 474  |
| SPL300    | 300                          | 30.6                    | 38.1 | 60.0 | 97.9 | 140  | 185  | 238  | 287                       | 306  | 321  | 343  | 364  | 419             | 445  | 504  | 569  |
| SPL350    | 350                          | 35.7                    | 44.5 | 70.0 | 114  | 164  | 216  | 278  | 335                       | 357  | 375  | 400  | 425  | 489             | 519  | 588  | 663  |
| SPL400    | 400                          | 40.8                    | 50.8 | 80.0 | 130  | 187  | 246  | 318  | 382                       | 408  | 428  | 457  | 486  | 559             | 593  | 672  | 758  |
| SPL450    | 450                          | 45.9                    | 57.2 | 90.0 | 147  | 210  | 277  | 358  | 430                       | 459  | 482  | 514  | 546  | 629             | 667  | 756  | 853  |
| SPL500    | 500                          | 51.0                    | 63.5 | 100  | 163  | 234  | 308  | 397  | 478                       | 510  | 536  | 571  | 607  | 699             | 742  | 839  | 948  |
| SPL550    | 550                          | 56.1                    | 69.9 | 110  | 179  | 257  | 339  | 437  | 526                       | 561  | 589  | 628  | 668  | 769             | 816  | 923  | 1042 |
| SPL600    | 600                          | 61.2                    | 76.2 | 120  | 196  | 281  | 370  | 477  | 573                       | 612  | 643  | 685  | 728  | 838             | 890  | 1007 | 1137 |
| SPL700    | 700                          | 71.4                    | 88.9 | 140  | 228  | 327  | 431  | 556  | 669                       | 714  | 750  | 800  | 850  | 978             | 1038 | 1175 | 1327 |
| SPL800    | 800                          | 81.6                    | 102  | 160  | 261  | 374  | 493  | 636  | 765                       | 816  | 857  | 914  | 971  | 1118            | 1187 | 1343 | 1516 |
| SPL900    | 900                          | 91.8                    | 114  | 180  | 294  | 421  | 554  | 715  | 860                       | 918  | 964  | 1028 | 1092 | 1258            | 1335 | 1511 | 1706 |
| SPL1000   | 1000                         | 102                     | 127  | 200  | 326  | 468  | 616  | 795  | 956                       | 1020 | 1071 | 1142 | 1214 | 1397            | 1483 | 1679 | 1895 |



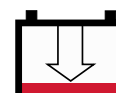
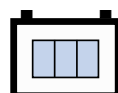
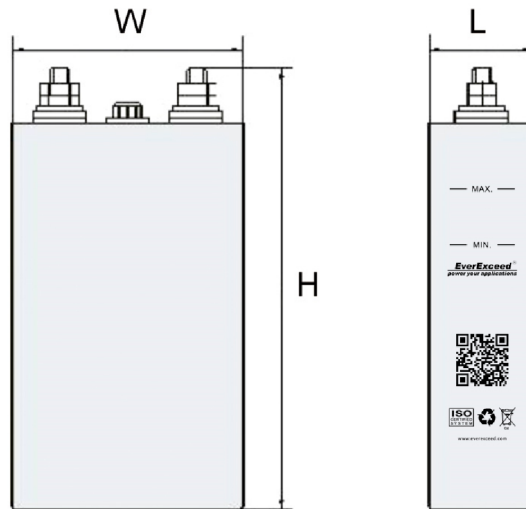


Temperature Effect Curves of SPL Series





Maintenance cycle of SPL series and SPM series battery under different float charging voltage(20°C)



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