

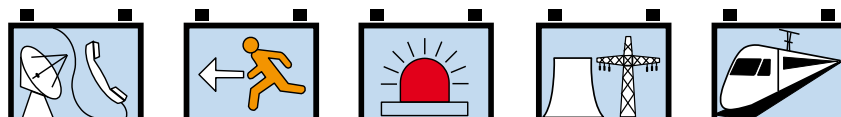
Guarantee

EverExceed®
power your applications

NiCd Pocket Plate Range EBH 10-500Ah



»Premium quality for
uninterrupted communication«



www.everexceed.com



NiCd Pocket Plate Range
EBH 10-500Ah

The block battery - for dependability

The wide range of low, medium and high capacity types makes accurate selection easy, based on discharge time and end of discharge voltage. Robust construction and generous electrolyte reserve enable the battery to withstand wide temperature fluctuations in stationary cycling behaviour over its 20+ years' life.

Built with a future Nickel-cadmium plates are completely reliable, with no risk of thermal runaway or sudden death.

Generally operating between temperatures of - 40°C to +60°C (-4°F to +140°F), they can tolerate extremes of -50°C to +70°C (-58°F to +158°F) for short periods.

With only periodic checks, the block battery will provide up to 20+ years' completely faithful service.

Trouble-free long cycle life

The EverExceed nickel-cadmium block battery's unique electrochemistry enables it to regularly withstand any depth of discharge.

Following a deep discharge the block battery is designed to recharge very quickly and economically, using standard single or two-level charging equipment.

Be sure of a low overall cost

The Ni-Cd block battery is the most highly cost-efficient solution to stored power requirements.

- ☑ No downtime
- ☑ No replacement costs
- ☑ Minimal maintenance
- ☑ Ease of installation
- ☑ 20+ years' operating life

Easy storage and installation

Nickel-cadmium block batteries are quick and easy to install as original equipment and may be stored for many years in a discharged state under correct conditions.

On installation a simple bolted connector enables the battery to be rapidly commissioned.

Assured reliability

Ni-Cd is equally dependable in controlled city environments or harsh, unpredictable conditions in the world's most remote and unpopulated areas.

The Ni-Cd battery's block construction makes it highly resistant to electrical abuse and transport over rough terrain, precluding risk of subsequent failure.

Optimized for performance:

An electrolyte solution of potassium hydroxide and a small amount of lithium hydroxide acts only as an ion transfer medium, delivering optimum performance without causing base material degradation.

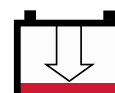
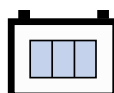
Good reserves and circulation of the electrolyte are achieved by a wide inter-plate space.

Injection moulded plastic grids both separate plate and insulate plate edges. For extremely low temperatures a special high density electrolyte is available.

The block battery is fitted with a specially designed flame arresting flip top vent and does not produce corrosive vapours. The tough polypropylene casing ensures the battery's structural integrity throughout its long life.

Supports these Single Cell ranges with:

- ☑ Quality approved manufacture to ISO 9001 and the TUV certification.
- ☑ Single Cell batteries have been developed in line with the safety requirements of EN-50272-2 and components used (such as insulated cable connectors and end lug covers) are defined to ensure high protection against electric shocks (Ip2 level).
- ☑ Full recycling service to protect the environment.



Protective cover

- To prevent external short-circuits
- In line with EN 50272-2 (safety) with ip2 level

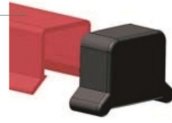


Plate group bus

- Connects the plate tabs with the terminal post.
- Plate tabs and terminal post are projection-welded to the plate group bus.

Plate

Horizontal pockets of double-perforated steel strips.

Cell container

Material: translucent/transparent polypropylene

Flame-arresting vents

Material: polypropylene.

Plate tab

Spot-welded both to the plate side-frames and to the upper edge of the pocket plate.

Separating grids

- These separate the plates and insulate the plate frames from each other.
- The grids allow free circulation of electrolyte between the plates.

Plate frame

Seals the plate pockets and serves as a current collector.



The EverExceed Single Cell ranges fully comply and exceed the IEC 60623 standard requirements.

Application

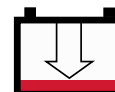
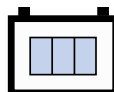
EBH Series nickel cadmium batteries are designed for general industrial applications where absolute reliability is a necessity. Service-proven pocket-plate technology ensures long uninterrupted battery life without the risk of sudden loss of power.

EBH Series batteries are suitable for high discharge rate applications (30 minutes and below) such as switchgear tripping, diesel engine starting, UPS, etc.

Performance Data

- ☑ High tolerance to electrical abuses such as overcharge and over discharge.
- ☑ High tolerance to rough handling and mechanical abuse due to strong components and robust construction.
- ☑ Trouble-free long cycle life .
- ☑ No risk of sudden death due to the chemistry and the cell structure.
- ☑ Wide operating temperature: -40°C to 60°C.
- ☑ Generous electrolyte reserve for long maintenance intervals.

- ☑ Clear (MBS) or translucent (PP) plastic cell case for easy electrolyte level inspection.
- ☑ Plastic grid spacers eliminate separator deterioration problem.
- ☑ Custom cell dimensions available.
- ☑ 20+ years service life in stationary applications.
- ☑ Conforms to IEC60623.



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:**

For continuous parallel operation:

- Float voltage: 1.40 - 1.45 V/cell for EBL, EBM & EBH
- Boost Voltage:
 - EBL : 1.60 - 1.70 V/cell
 - EBM : 1.60 - 1.65 V/cell
 - EBH : 1.60 - 1.65 V/cell

A higher voltage will reduce the charge duration and increase the efficiency of recharging but may increase water consumption.

Single stage charging (without boost):

- EBL: 1.47 - 1.50 V/cell
- EBM: 1.46 - 1.49 V/cell
- EBH: 1.45 - 1.48 V/cell

For starting application:

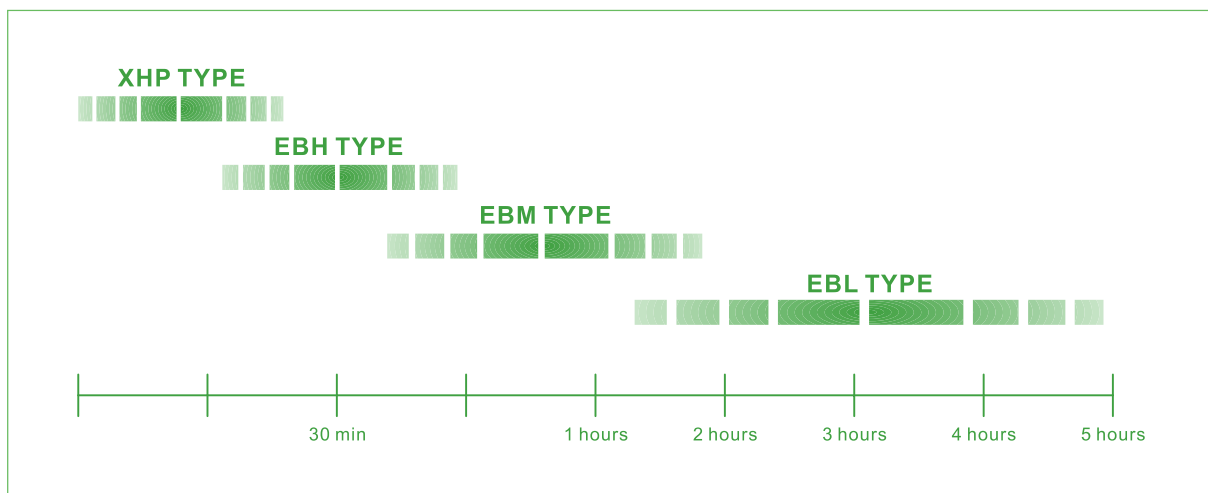
- Recommended charging voltage. 1.50 - 1.55 V/cell.

◆ **Constant current mode:**

- Normal charging: 0.2 C5 A for 8 hours
- Recommended for quick charging: 0.4 C5 A for 2.5 hours followed by 0.2 C5 A for 2.5 hours

Recommended Type Selection

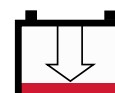
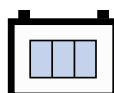
According to backup time required by application:



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: ☞ 0.2 C5A for 10 hours ☞ 0.1 C5A for 20 hours

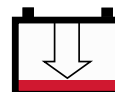
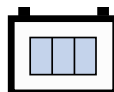


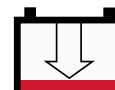
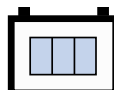
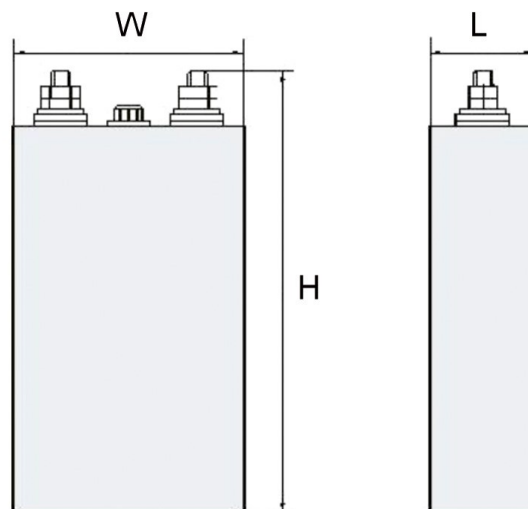
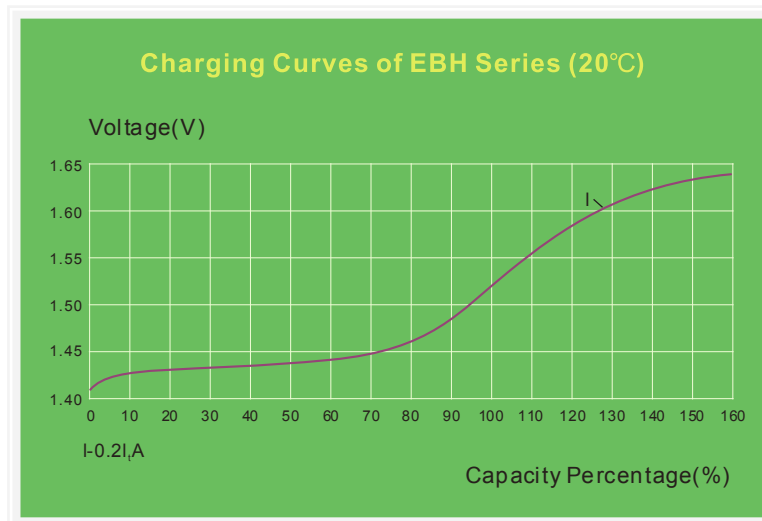
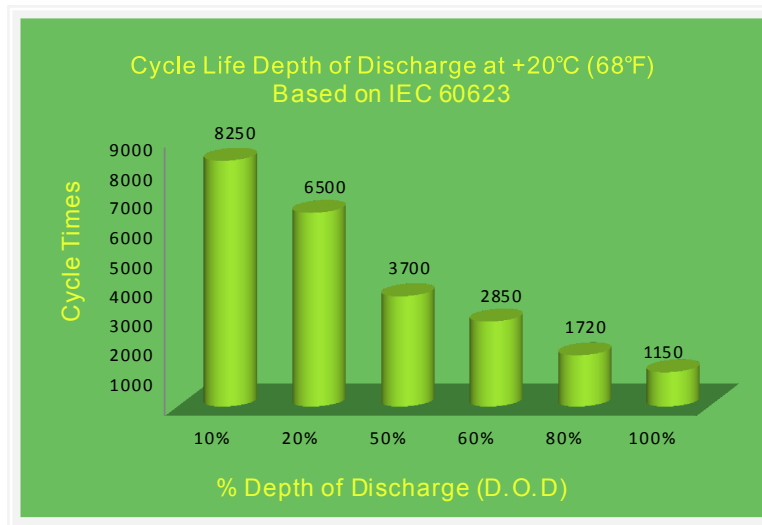
NiCd Pocket Plate EBH Range Electrical Specifications & Dimensions

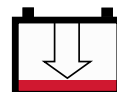
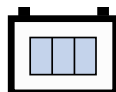
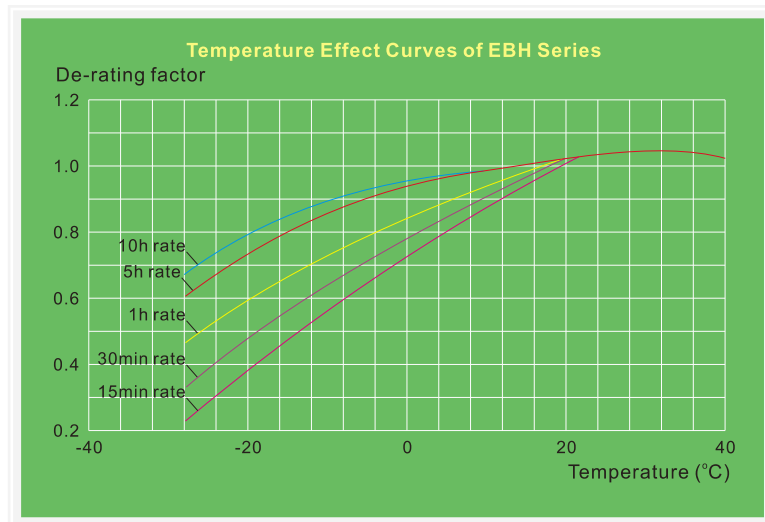
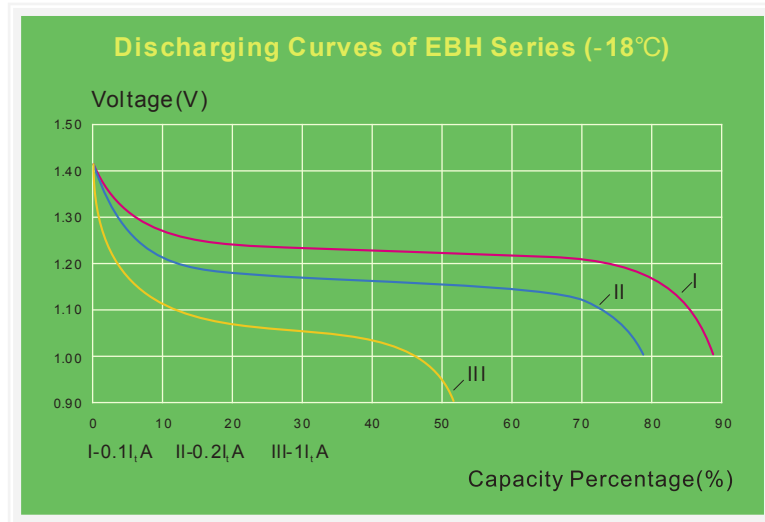
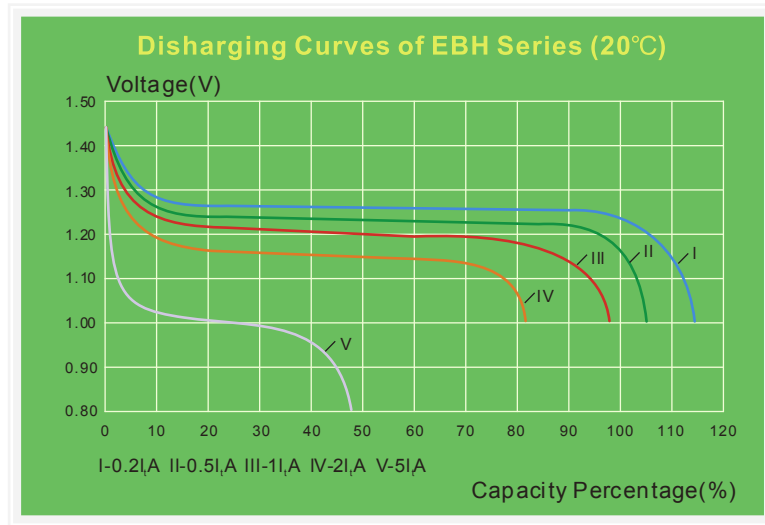
| Cell Type | Nominal Voltage (V) | Capacity (C5 Ah) | Dimensions (mm/inch) | | | | | | Weight (kg/lb.) | | | | Terminal | Cell Case Material |
|-----------|---------------------|------------------|----------------------|------|-------|------|--------|------|---------------------|------|------------------|------|----------|--------------------|
| | | | Length | | Width | | Height | | Without Electrolyte | | With Electrolyte | | | |
| EBH10 | 1.2 | 10 | 48 | 1.89 | 81 | 3.2 | 245 | 9.6 | 1.5 | 3.3 | 1.8 | 4 | M10 X1 | MBS |
| EBH13 | 1.2 | 13 | 68 | 2.68 | 134 | 5.3 | 240 | 9.4 | 1.65 | 3.6 | 2.6 | 5.7 | M10 X1 | MBS/PP |
| EBH20 | 1.2 | 20 | 68 | 2.68 | 134 | 5.3 | 240 | 9.4 | 1.8 | 4 | 2.8 | 6.2 | M10 X1 | MBS/PP |
| EBH27 | 1.2 | 27 | 70 | 2.76 | 134 | 5.3 | 285 | 11.2 | 2.7 | 6 | 3.7 | 8.2 | M16 | MBS/PP |
| EBH30 | 1.2 | 30 | 70 | 2.76 | 134 | 5.3 | 285 | 11.2 | 3 | 6.6 | 4 | 8.8 | M16 | MBS/PP |
| EBH35 | 1.2 | 35 | 70 | 2.76 | 134 | 5.3 | 285 | 11.2 | 3.2 | 7.1 | 4 | 8.8 | M16 | MBS/PP |
| EBH40 | 1.2 | 40 | 70 | 2.76 | 134 | 5.3 | 285 | 11.2 | 3.3 | 7.3 | 4.5 | 9.9 | M16 | MBS/PP |
| EBH50 | 1.2 | 50 | 80 | 3.15 | 141 | 5.6 | 370 | 14.6 | 4.7 | 10.4 | 6.2 | 13.7 | M16 | MBS/PP |
| EBH60 | 1.2 | 60 | 80 | 3.15 | 141 | 5.6 | 370 | 14.6 | 5 | 11 | 6.5 | 14.3 | M16 | MBS/PP |
| EBH70 | 1.2 | 70 | 106 | 4.17 | 164 | 6.5 | 345 | 13.6 | 6.8 | 15 | 9 | 19.8 | M20 | MBS/PP |
| EBH80 | 1.2 | 80 | 106 | 4.17 | 164 | 6.46 | 345 | 13.6 | 7.5 | 16.5 | 9.2 | 20.3 | M20 | MBS/PP |
| EBH90 | 1.2 | 90 | 106 | 4.17 | 164 | 6.46 | 345 | 13.6 | 7.8 | 17.2 | 9.6 | 21.2 | M20 | MBS/PP |
| EBH100 | 1.2 | 100 | 106 | 4.17 | 164 | 6.46 | 345 | 13.6 | 7.9 | 17.4 | 10 | 22 | M20 | MBS/PP |
| EBH120 | 1.2 | 120 | 164 | 6.46 | 167 | 6.57 | 345 | 13.6 | 10 | 22 | 14 | 30.9 | M20 | MBS/PP |
| EBH130 | 1.2 | 130 | 164 | 6.46 | 167 | 6.57 | 345 | 13.6 | 11 | 24.3 | 14.5 | 32.0 | M20 | MBS/PP |
| EBH150 | 1.2 | 150 | 164 | 6.46 | 167 | 6.57 | 345 | 13.6 | 13.5 | 29.8 | 15 | 33.1 | M20 | MBS/PP |
| EBH170 | 1.2 | 170 | 138 | 5.43 | 276 | 10.9 | 425 | 16.7 | 14.7 | 32.4 | 21.8 | 48.1 | M20 | MBS |
| EBH180 | 1.2 | 180 | 176 | 6.93 | 291 | 11.5 | 510 | 20.1 | 14.8 | 32.6 | 22 | 48.5 | M20 | MBS |
| EBH200 | 1.2 | 200 | 176 | 6.93 | 291 | 11.5 | 510 | 20.1 | 22 | 48.5 | 34.5 | 76.1 | 2×M20 | MBS |
| EBH250 | 1.2 | 250 | 176 | 6.93 | 291 | 11.5 | 510 | 20.1 | 25 | 55.1 | 35.5 | 78.3 | 2×M20 | MBS |
| EBH300 | 1.2 | 300 | 176 | 6.93 | 291 | 11.5 | 510 | 20.1 | 27.5 | 60.6 | 37 | 81.6 | 2×M20 | MBS |
| EBH350 | 1.2 | 350 | 176 | 6.93 | 291 | 11.5 | 510 | 20.1 | 29 | 63.9 | 38 | 83.8 | 2×M20 | MBS |
| EBH385 | 1.2 | 385 | 186 | 7.32 | 398 | 15.7 | 570 | 22.4 | 36.5 | 80.5 | 57.5 | 127 | 3×M20 | MBS |
| EBH400 | 1.2 | 400 | 186 | 7.32 | 398 | 15.7 | 570 | 22.4 | 37 | 81.6 | 58 | 128 | 3×M20 | MBS |
| EBH500 | 1.2 | 500 | 186 | 7.32 | 398 | 15.7 | 570 | 22.4 | 40 | 88.2 | 59 | 130 | 3×M20 | MBS |

EverExceed EBH batteries fulfil all requirements specified by IEC publication 60623.

Transparent case optional.







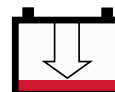
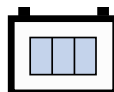
Discharge Date Table

Discharge performance date after fully charged by constant current according to IEC60623

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

Final voltage: 1.14V/cell

| Cell Type | Capacity (C5 Ah) | Discharge Time in Hours | | | | | | | Discharge Time in minutes | | | | | | | Time in Seconds | | |
|-----------|------------------|-------------------------|------|------|------|------|------|------|---------------------------|------|------|------|------|------|------|-----------------|------|------|
| | | 10 | 8 | 5 | 3 | 2 | 1.5 | 1 | 45 | 30 | 20 | 15 | 10 | 5 | 1 | 30 | 5 | 1 |
| EBH10 | 10 | 1.1 | 1.3 | 2 | 3.1 | 4.5 | 5.8 | 8.3 | 9.4 | 12.4 | 14.2 | 16.3 | 19 | 23.9 | 38.6 | 41.3 | 48.9 | 50.5 |
| EBH13 | 13 | 1.43 | 1.69 | 2.60 | 4.03 | 5.85 | 7.54 | 10.8 | 12.2 | 16.1 | 18.5 | 21.2 | 24.7 | 31.1 | 50.2 | 53.7 | 63.6 | 65.7 |
| EBH20 | 20 | 2.1 | 2.5 | 4 | 6.2 | 9 | 11.5 | 16.5 | 18.7 | 24.3 | 28.3 | 32.5 | 38.1 | 47.9 | 77.3 | 82.6 | 97.9 | 101 |
| EBH27 | 27 | 2.88 | 3.42 | 5.31 | 8.37 | 12.2 | 15.8 | 22.2 | 31.1 | 32.9 | 39.4 | 43.7 | 51.0 | 64.4 | 98.1 | 113 | 132 | 136 |
| EBH30 | 30 | 3.2 | 3.8 | 5.9 | 9.3 | 13.6 | 17.5 | 24.7 | 34.5 | 36.6 | 43.8 | 48.6 | 56.7 | 71.6 | 109 | 125 | 147 | 151 |
| EBH35 | 35 | 3.73 | 4.43 | 6.88 | 10.9 | 15.9 | 20.4 | 28.8 | 40.3 | 42.7 | 51.1 | 56.7 | 66.2 | 83.5 | 127 | 146 | 172 | 176 |
| EBH40 | 40 | 4.2 | 5 | 7.9 | 12.4 | 18 | 23.3 | 33.6 | 37.5 | 48.9 | 58.5 | 65.4 | 75.7 | 95.8 | 145 | 165 | 196 | 202 |
| EBH50 | 50 | 5.3 | 6.3 | 9.9 | 15.5 | 22.7 | 29.4 | 41.9 | 48.9 | 61.3 | 73.1 | 82.4 | 94.8 | 121 | 181 | 207 | 245 | 253 |
| EBH60 | 60 | 6.3 | 7.6 | 11.8 | 18.5 | 27 | 35 | 49.4 | 59.7 | 72.1 | 87.6 | 98.4 | 113 | 144 | 218 | 250 | 294 | 304 |
| EBH70 | 70 | 7.4 | 8.9 | 13.9 | 21.6 | 31.4 | 40.8 | 57.9 | 67 | 85.8 | 102 | 115 | 132 | 168 | 253 | 289 | 343 | 354 |
| EBH80 | 80 | 8.4 | 10.1 | 15.9 | 24.7 | 36.1 | 46.6 | 67.2 | 77.3 | 98.1 | 117 | 131 | 151 | 192 | 290 | 331 | 391 | 405 |
| EBH90 | 90 | 9.5 | 11.3 | 17.9 | 27.8 | 40.9 | 52.3 | 75.6 | 87.1 | 110 | 132 | 147 | 170 | 216 | 326 | 372 | 440 | 456 |
| EBH100 | 100 | 10.5 | 12.9 | 20.1 | 30.9 | 44.8 | 58.2 | 83.9 | 113 | 123 | 146 | 165 | 191 | 240 | 361 | 413 | 489 | 506 |
| EBH120 | 120 | 12.6 | 15.1 | 23.7 | 37.1 | 53.8 | 70 | 98.9 | 118 | 144 | 175 | 197 | 227 | 288 | 438 | 501 | 587 | 604 |
| EBH130 | 130 | 13.8 | 16.6 | 25.7 | 40.3 | 58.3 | 75.8 | 107 | 128 | 156 | 190 | 213 | 246 | 312 | 475 | 543 | 636 | 654 |
| EBH150 | 150 | 16 | 19.1 | 29.9 | 46.4 | 67.5 | 87 | 126 | 155 | 180 | 213 | 247 | 285 | 361 | 546 | 618 | 736 | 759 |
| EBH170 | 170 | 18.6 | 22.0 | 34.1 | 54.6 | 81.5 | 100 | 144 | 177 | 204 | 246 | 282 | 326 | 412 | 638 | 704 | 837 | 862 |
| EBH180 | 180 | 19.7 | 23.2 | 36.1 | 57.7 | 85.6 | 106 | 152 | 187 | 216 | 255 | 299 | 345 | 436 | 675 | 745 | 886 | 912 |
| EBH200 | 200 | 21.1 | 25.5 | 39.7 | 61.8 | 91.6 | 116 | 168 | 196 | 247 | 284 | 330 | 381 | 479 | 726 | 826 | 979 | 1011 |
| EBH250 | 250 | 26.3 | 31.5 | 49.4 | 77.3 | 113 | 145 | 209 | 242 | 299 | 355 | 409 | 482 | 606 | 906 | 1033 | 1224 | 1265 |
| EBH300 | 300 | 31.5 | 37.9 | 59.3 | 92.7 | 135 | 175 | 252 | 330 | 361 | 426 | 489 | 571 | 723 | 1092 | 1240 | 1471 | 1517 |
| EBH350 | 350 | 36.8 | 44.3 | 69.2 | 108 | 158 | 203 | 293 | 340 | 419 | 497 | 573 | 672 | 845 | 1267 | 1446 | 1713 | 1771 |
| EBH385 | 385 | 40.4 | 48.6 | 76.1 | 124 | 172 | 223 | 322 | 376 | 471 | 548 | 629 | 730 | 922 | 1388 | 1590 | 1884 | 1947 |
| EBH400 | 400 | 42 | 50.5 | 79.1 | 129 | 179 | 232 | 335 | 391 | 489 | 569 | 654 | 758 | 958 | 1442 | 1652 | 1957 | 2023 |
| EBH500 | 500 | 52.5 | 63.1 | 98.9 | 155 | 225 | 289 | 418 | 484 | 598 | 711 | 814 | 948 | 1203 | 1804 | 2065 | 2446 | 2529 |



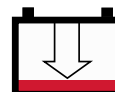
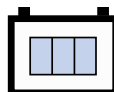
Discharge Date Table

Discharge performance date after fully charged by constant current according to IEC60623

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

Final voltage: 1.10V/cell

| Cell Type | Capacity (C5 Ah) | Discharge Time in Hours | | | | | | | Discharge Time in minutes | | | | | | | Time in Seconds | | |
|-----------|------------------|-------------------------|------|------|------|------|------|------|---------------------------|------|------|------|------|------|------|-----------------|------|------|
| | | 10 | 8 | 5 | 3 | 2 | 1.5 | 1 | 45 | 30 | 20 | 15 | 10 | 5 | 1 | 30 | 5 | 1 |
| EBH10 | 10 | 1.1 | 1.3 | 2 | 3.2 | 4.8 | 6.2 | 8.9 | 13.4 | 14.9 | 17.6 | 20.1 | 23.5 | 28.3 | 42.7 | 48.4 | 58.2 | 60.8 |
| EBH13 | 13 | 1.43 | 1.69 | 2.60 | 4.16 | 6.24 | 8.06 | 11.6 | 17.4 | 19.4 | 22.9 | 26.1 | 30.6 | 36.8 | 55.5 | 62.9 | 75.7 | 79.0 |
| EBH20 | 20 | 2.2 | 2.5 | 4 | 6.5 | 9.5 | 12.5 | 17.8 | 20.1 | 29.7 | 35.3 | 40.2 | 46.4 | 56.7 | 85 | 96.8 | 116 | 122 |
| EBH27 | 27 | 2.88 | 3.42 | 5.40 | 8.64 | 13.0 | 16.7 | 24.1 | 27.8 | 39.4 | 47.5 | 53.9 | 63.5 | 76.5 | 115 | 131 | 158 | 164 |
| EBH30 | 30 | 3.2 | 3.8 | 6 | 9.6 | 14.4 | 18.6 | 26.8 | 30.9 | 43.8 | 52.8 | 59.9 | 70.6 | 85 | 128 | 145 | 175 | 182 |
| EBH35 | 35 | 3.73 | 4.43 | 7.00 | 11.2 | 16.8 | 21.7 | 31.3 | 36.1 | 51.1 | 61.6 | 69.9 | 82 | 99 | 149 | 169 | 204 | 212 |
| EBH40 | 40 | 4.3 | 5.2 | 8 | 13 | 19.1 | 24.7 | 35.6 | 58.2 | 70.6 | 79.9 | 92.7 | 113 | 170 | 194 | 232 | 242 | 254 |
| EBH50 | 50 | 5.4 | 6.3 | 10 | 16.2 | 23.8 | 30.9 | 44.6 | 53.6 | 72.6 | 88.1 | 100 | 116 | 142 | 213 | 242 | 289 | 304 |
| EBH60 | 60 | 6.5 | 7.6 | 11.9 | 19.3 | 28.8 | 37.6 | 53.6 | 61.8 | 87.6 | 105 | 119 | 139 | 170 | 254 | 290 | 348 | 365 |
| EBH70 | 70 | 7.6 | 8.9 | 14 | 22.7 | 33.5 | 43.3 | 62.4 | 72.1 | 101 | 124 | 140 | 165 | 199 | 299 | 340 | 407 | 424 |
| EBH80 | 80 | 8.7 | 10.2 | 16 | 25.9 | 37.9 | 49.4 | 71.3 | 85.5 | 116 | 141 | 160 | 185 | 228 | 340 | 387 | 464 | 484 |
| EBH90 | 90 | 9.8 | 11.6 | 18.2 | 29.0 | 42.7 | 55.6 | 80.4 | 96.2 | 131 | 159 | 180 | 208 | 257 | 383 | 435 | 522 | 545 |
| EBH100 | 100 | 10.8 | 12.9 | 20.1 | 32.4 | 46.6 | 61.8 | 89.1 | 129 | 145 | 176 | 200 | 232 | 284 | 425 | 484 | 579 | 606 |
| EBH120 | 120 | 13 | 15.5 | 24.2 | 38.6 | 57.2 | 74.7 | 108 | 134 | 175 | 210 | 239 | 278 | 340 | 510 | 581 | 696 | 729 |
| EBH130 | 130 | 14.2 | 16.8 | 26.4 | 41.8 | 62.1 | 80.9 | 117 | 145 | 190 | 228 | 259 | 301 | 368 | 553 | 629 | 754 | 790 |
| EBH150 | 150 | 16.3 | 19.1 | 30 | 48.5 | 71.1 | 92.7 | 134 | 155 | 218 | 264 | 300 | 348 | 426 | 639 | 726 | 867 | 908 |
| EBH170 | 170 | 19.1 | 22.4 | 34.1 | 56.8 | 80.8 | 107 | 157 | 180 | 255 | 301 | 341 | 406 | 486 | 724 | 848 | 1013 | 1031 |
| EBH180 | 180 | 20.1 | 23.6 | 36.1 | 60 | 85.5 | 113 | 166 | 191 | 270 | 319 | 361 | 430 | 515 | 767 | 898 | 1072 | 1092 |
| EBH200 | 200 | 21.6 | 25.3 | 40.2 | 64.9 | 95 | 124 | 178 | 258 | 290 | 351 | 400 | 464 | 569 | 850 | 968 | 1157 | 1210 |
| EBH250 | 250 | 27.1 | 31.7 | 50 | 81.9 | 118 | 155 | 222 | 268 | 364 | 439 | 500 | 580 | 711 | 1062 | 1210 | 1445 | 1513 |
| EBH300 | 300 | 32.4 | 38.1 | 59.9 | 97 | 142 | 185 | 268 | 340 | 436 | 526 | 598 | 695 | 852 | 1275 | 1452 | 1735 | 1816 |
| EBH350 | 350 | 37.9 | 44.4 | 70 | 114 | 166 | 216 | 311 | 391 | 510 | 614 | 698 | 812 | 994 | 1487 | 1700 | 2024 | 2119 |
| EBH385 | 385 | 41.7 | 49.6 | 77.3 | 125 | 183 | 238 | 342 | 447 | 559 | 675 | 768 | 892 | 1093 | 1636 | 1863 | 2225 | 2330 |
| EBH400 | 400 | 43.3 | 51.5 | 80.3 | 130 | 190 | 247 | 355 | 464 | 581 | 701 | 798 | 927 | 1136 | 1700 | 1936 | 2312 | 2421 |
| EBH500 | 500 | 54.1 | 63.4 | 100 | 164 | 237 | 309 | 445 | 567 | 726 | 878 | 999 | 1159 | 1411 | 2125 | 2421 | 2890 | 3026 |



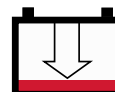
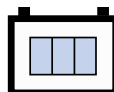
Discharge Date Table

Discharge performance date after fully charged by constant current according to IEC60623

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

Final voltage: 1.05V/cell

| Cell Type | Capacity (C5 Ah) | Discharge Time in Hours | | | | | | | Discharge Time in minutes | | | | | | | Time in Seconds | | |
|-----------|------------------|-------------------------|------|------|------|------|------|------|---------------------------|------|------|------|------|------|------|-----------------|------|------|
| | | 10 | 8 | 5 | 3 | 2 | 1.5 | 1 | 45 | 30 | 20 | 15 | 10 | 5 | 1 | 30 | 5 | 1 |
| EBH10 | 10 | 1.1 | 1.3 | 2.1 | 3.3 | 4.8 | 6.4 | 9.3 | 13.4 | 16.5 | 21.6 | 23.8 | 27.8 | 34.5 | 49.4 | 56.7 | 67.1 | 71.6 |
| EBH13 | 13 | 1.43 | 1.69 | 2.73 | 4.29 | 6.24 | 8.32 | 12.1 | 17.4 | 21.5 | 28.1 | 30.9 | 36.1 | 44.9 | 64.2 | 73.7 | 87.2 | 93.1 |
| EBH20 | 20 | 2.2 | 2.6 | 4.1 | 6.6 | 9.8 | 12.9 | 18.6 | 21.6 | 33.2 | 43.3 | 47.6 | 55.6 | 69 | 98.9 | 113 | 137 | 143 |
| EBH27 | 27 | 2.97 | 3.51 | 5.58 | 9.00 | 13.1 | 17.3 | 25.9 | 29.7 | 44.5 | 58.4 | 66.2 | 78.3 | 98.1 | 131 | 152 | 185 | 190 |
| EBH30 | 30 | 3.3 | 3.9 | 6.2 | 10 | 14.5 | 19.2 | 28.8 | 33 | 49.4 | 64.9 | 73.6 | 87 | 109 | 145 | 169 | 206 | 211 |
| EBH35 | 35 | 3.85 | 4.55 | 7.23 | 11.7 | 16.9 | 22.4 | 33.6 | 38.5 | 57.6 | 75.7 | 85.9 | 102 | 127 | 169 | 197 | 240 | 246 |
| EBH40 | 40 | 4.4 | 5.2 | 8.2 | 13.4 | 19.7 | 25.8 | 37.3 | 46.4 | 66.4 | 86.5 | 95.3 | 111 | 138 | 198 | 227 | 274 | 286 |
| EBH50 | 50 | 5.6 | 6.4 | 10.3 | 16.6 | 24.7 | 32.1 | 46.6 | 57.7 | 82.9 | 105 | 118 | 139 | 172 | 244 | 283 | 342 | 357 |
| EBH60 | 60 | 6.7 | 7.7 | 12.4 | 20.1 | 29.6 | 38.6 | 56.1 | 72.1 | 99.4 | 127 | 143 | 168 | 207 | 294 | 340 | 412 | 430 |
| EBH70 | 70 | 7.8 | 9 | 14.4 | 23.2 | 34.5 | 45.3 | 65.4 | 86.5 | 116 | 148 | 167 | 196 | 242 | 343 | 397 | 480 | 502 |
| EBH80 | 80 | 8.9 | 10.3 | 16.3 | 26.5 | 39.3 | 51.5 | 74.6 | 97.9 | 133 | 169 | 191 | 224 | 276 | 397 | 453 | 536 | 573 |
| EBH90 | 90 | 10.0 | 11.6 | 18.5 | 29.8 | 44.3 | 57.9 | 83.9 | 110 | 150 | 190 | 215 | 252 | 311 | 447 | 510 | 603 | 645 |
| EBH100 | 100 | 11.1 | 12.9 | 20.4 | 33.1 | 49.2 | 64.4 | 93.2 | 113 | 166 | 211 | 238 | 279 | 345 | 489 | 567 | 670 | 716 |
| EBH120 | 120 | 13.4 | 15.5 | 24.5 | 40.2 | 59 | 77.3 | 112 | 132 | 199 | 253 | 286 | 335 | 414 | 587 | 680 | 803 | 859 |
| EBH130 | 130 | 14.5 | 16.7 | 26.5 | 43.6 | 63.9 | 83.9 | 121 | 143 | 216 | 274 | 310 | 363 | 449 | 636 | 737 | 870 | 931 |
| EBH150 | 150 | 16.7 | 19.3 | 30.6 | 50 | 73.6 | 96.8 | 140 | 167 | 249 | 317 | 355 | 414 | 519 | 736 | 846 | 1004 | 1071 |
| EBH170 | 170 | 19.1 | 22.5 | 35.6 | 57.5 | 84.3 | 115 | 163 | 195 | 291 | 370 | 415 | 484 | 606 | 859 | 987 | 1172 | 1251 |
| EBH180 | 180 | 20.1 | 23.7 | 37.6 | 60.8 | 89.1 | 122 | 173 | 206 | 308 | 392 | 439 | 512 | 642 | 910 | 1045 | 1241 | 1324 |
| EBH200 | 200 | 22.2 | 25.8 | 40.8 | 66.1 | 98.5 | 129 | 186 | 221 | 332 | 423 | 474 | 556 | 690 | 979 | 1133 | 1339 | 1433 |
| EBH250 | 250 | 27.8 | 32.1 | 51 | 84.6 | 124 | 162 | 234 | 335 | 415 | 528 | 592 | 690 | 864 | 1261 | 1432 | 1674 | 1797 |
| EBH300 | 300 | 33.4 | 38.5 | 61.3 | 100 | 147 | 194 | 280 | 330 | 497 | 634 | 711 | 828 | 1038 | 1472 | 1691 | 2009 | 2142 |
| EBH350 | 350 | 38.9 | 45.3 | 71.6 | 118 | 172 | 227 | 328 | 371 | 581 | 742 | 829 | 966 | 1210 | 1621 | 1991 | 2343 | 2502 |
| EBH385 | 385 | 42.8 | 49.6 | 78.5 | 127 | 190 | 248 | 359 | 447 | 638 | 815 | 912 | 1070 | 1328 | 1884 | 2181 | 2578 | 2752 |
| EBH400 | 400 | 44.5 | 51.5 | 81.6 | 132 | 197 | 258 | 373 | 464 | 663 | 847 | 948 | 1112 | 1380 | 1957 | 2266 | 2678 | 2859 |
| EBH500 | 500 | 55.6 | 64.3 | 102 | 168 | 245 | 322 | 467 | 546 | 829 | 1057 | 1185 | 1380 | 1720 | 2405 | 2822 | 3348 | 3574 |



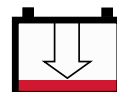
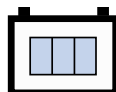
Discharge Date Table

Discharge performance date after fully charged by constant current according to IEC60623

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

Final voltage: 1.00V/cell

| Cell Type | Capacity (C5 Ah) | Discharge Time in Hours | | | | | | | Discharge Time in minutes | | | | | | | Time in Seconds | | |
|-----------|------------------|-------------------------|------|------|------|------|------|------|---------------------------|------|------|------|------|------|------|-----------------|------|------|
| | | 10 | 8 | 5 | 3 | 2 | 1.5 | 1 | 45 | 30 | 20 | 15 | 10 | 5 | 1 | 30 | 5 | 1 |
| EBH10 | 10 | 1.1 | 1.3 | 2.1 | 3.4 | 5 | 6.6 | 9.6 | 11.3 | 17.5 | 23.5 | 27.8 | 32 | 39.8 | 57.7 | 64.9 | 79.3 | 84.5 |
| EBH13 | 13 | 1.43 | 1.69 | 2.73 | 4.42 | 6.50 | 8.58 | 12.5 | 14.7 | 22.8 | 30.6 | 36.1 | 41.6 | 51.7 | 75.0 | 84.4 | 103 | 110 |
| EBH20 | 20 | 2.3 | 2.7 | 4.1 | 6.8 | 10 | 13.2 | 19.2 | 23.7 | 35 | 47 | 55.4 | 64.1 | 79.5 | 115 | 130 | 159 | 169 |
| EBH27 | 27 | 3.06 | 3.69 | 5.58 | 9.09 | 13.5 | 17.8 | 25.9 | 33.4 | 47.3 | 63.0 | 73.3 | 86.7 | 107 | 157 | 176 | 214 | 228 |
| EBH30 | 30 | 3.4 | 4.1 | 6.2 | 10.1 | 15 | 19.8 | 28.8 | 37.1 | 52.5 | 70 | 81.4 | 96.3 | 119 | 174 | 195 | 238 | 253 |
| EBH35 | 35 | 3.97 | 4.78 | 7.23 | 11.8 | 17.5 | 23.1 | 33.6 | 43.3 | 61.3 | 81.7 | 95.0 | 112 | 139 | 203 | 228 | 278 | 295 |
| EBH40 | 40 | 4.5 | 5.4 | 8.2 | 13.5 | 20.2 | 26.4 | 38.7 | 48.4 | 70 | 93.9 | 109 | 129 | 159 | 232 | 260 | 317 | 338 |
| EBH50 | 50 | 5.7 | 6.8 | 10.3 | 16.9 | 25.2 | 33 | 48.4 | 60.8 | 87.6 | 117 | 136 | 161 | 199 | 289 | 325 | 397 | 422 |
| EBH60 | 60 | 6.8 | 8.1 | 12.4 | 20.4 | 30.4 | 39.8 | 58 | 72.1 | 106 | 141 | 163 | 193 | 239 | 347 | 389 | 476 | 507 |
| EBH70 | 70 | 7.9 | 9.5 | 14.4 | 23.8 | 35.3 | 46.9 | 68 | 84.5 | 123 | 166 | 191 | 225 | 283 | 433 | 497 | 577 | 639 |
| EBH80 | 80 | 9.1 | 10.8 | 16.5 | 27 | 40.4 | 53 | 77.4 | 95.8 | 140 | 187 | 217 | 258 | 319 | 464 | 519 | 634 | 676 |
| EBH90 | 90 | 10.2 | 12.3 | 18.6 | 30.4 | 45.4 | 59.6 | 87.3 | 107 | 158 | 210 | 244 | 290 | 359 | 522 | 584 | 713 | 761 |
| EBH100 | 100 | 11.3 | 13.5 | 20.6 | 33.7 | 50.5 | 66 | 96.8 | 118 | 175 | 235 | 272 | 320 | 398 | 577 | 649 | 793 | 845 |
| EBH120 | 120 | 13.6 | 16.3 | 24.7 | 40.7 | 60 | 78.8 | 118 | 144 | 210 | 281 | 324 | 383 | 478 | 692 | 773 | 948 | 1004 |
| EBH130 | 130 | 14.7 | 17.7 | 26.8 | 44.3 | 65.1 | 85.4 | 128 | 156 | 228 | 304 | 351 | 415 | 518 | 750 | 837 | 1027 | 1088 |
| EBH150 | 150 | 17 | 20.3 | 30.9 | 51 | 75.7 | 100 | 145 | 183 | 263 | 354 | 409 | 481 | 602 | 865 | 1066 | 1195 | 1294 |
| EBH170 | 170 | 19.6 | 23.4 | 37.1 | 59.4 | 86.7 | 116 | 165 | 215 | 301 | 403 | 467 | 545 | 702 | 1010 | 1245 | 1395 | 1510 |
| EBH180 | 180 | 20.6 | 24.7 | 39.1 | 62.8 | 91.7 | 123 | 175 | 227 | 319 | 427 | 494 | 577 | 743 | 1069 | 1318 | 1477 | 1599 |
| EBH200 | 200 | 22.7 | 27.1 | 41.2 | 67.4 | 99.9 | 134 | 194 | 239 | 350 | 472 | 545 | 642 | 801 | 1154 | 1288 | 1566 | 1687 |
| EBH250 | 250 | 28.3 | 33.8 | 51.5 | 85 | 126 | 166 | 242 | 330 | 438 | 590 | 681 | 793 | 1001 | 1442 | 1607 | 1957 | 2156 |
| EBH300 | 300 | 34 | 40.7 | 61.8 | 102 | 151 | 200 | 290 | 361 | 525 | 708 | 817 | 962 | 1195 | 1730 | 1928 | 2369 | 2536 |
| EBH350 | 350 | 39.7 | 47.4 | 72.1 | 119 | 176 | 232 | 338 | 412 | 613 | 826 | 953 | 1122 | 1392 | 2019 | 2250 | 2750 | 2982 |
| EBH385 | 385 | 43.6 | 52.1 | 79.3 | 131 | 193 | 255 | 372 | 456 | 674 | 908 | 1048 | 1234 | 1530 | 2220 | 2478 | 3014 | 3251 |
| EBH400 | 400 | 45.3 | 54.1 | 82.4 | 136 | 200 | 265 | 386 | 474 | 700 | 943 | 1089 | 1282 | 1590 | 2307 | 2575 | 3131 | 3378 |
| EBH500 | 500 | 56.7 | 67.6 | 103 | 170 | 251 | 331 | 483 | 597 | 876 | 1179 | 1361 | 1586 | 1988 | 2884 | 3214 | 3914 | 4223 |



Calculation Methods

Information required for battery capacity calculation

The following information needed for a precise battery capacity calculation:

- ☑ Nominal voltage of the system
- ☑ Load current required
- ☑ Backup time required
- ☑ Maximum voltage (for charging)
- ☑ Minimum voltage
- ☑ Temperature range
- ☑ Battery layout and available space
- ☑ Physical condition

Float Voltage Operation

In these conditions the float voltage, being the voltage at which the general load circuit will operate, then a decision will have to be reached on the cell float voltage needed to maintain the battery in the required condition.

$$\text{Number of cells required} = \frac{\text{Circuit voltage}}{\text{Cell Float voltage}} \qquad \text{Minimum cell voltage} = \frac{\text{Minimum D.C. voltage}}{\text{Number of cells}}$$

The most commonly used float voltages are 1.40-1.48 voltage per cell, but the exact figure has to be related carefully to circumstances.

For Example

An EverExceed Nickel Cadmium battery is required to maintain an inverter load of 50KVA at 0.8 power factor for a backup time of 30 minutes, at 20~25°C temperature. The DC voltage to the inverter operates within the limit of 265 volts with the battery on float charge to a minimum of 202 volts at end of back up time. The inverter has an 85% efficiency rate.

-Number of Cells (at recommended float of 1.44VPC) = 265/1.44≈184cells

-Minimum Cell Voltage = 202/184≈1.10 volts per cell

-Maximum Battery Current

$$= \frac{\text{Inverter load in KVA} \times \text{Power factor}}{\text{Min. cell voltage} \times \text{Number of cells} \times \text{Inverter efficiency}}$$

$$= \frac{50\text{KVA} \times 0.80}{1.10 \times 184 \times 0.85} = 232.5 \text{ Amps}$$

We shall choose the battery with capacity equal or just above 232.5Amps.

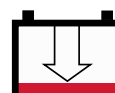
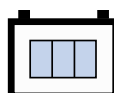
To meet the 30 minutes backup time requirement, we determine to choose the battery size from EBH Range.

From our catalogue data, the cell type is EBH300.

Battery shall comprise 184 cells of EverExceed Nickel Cadmium type EBH300.

| System Voltage | Number of Cells | Spread Range Number of Cells |
|----------------|-----------------|------------------------------|
| 24 | 20 | 18 ~ 21 |
| 36 | 30 | 27 ~ 31 |
| 48 | 40 | 36 ~ 41 |
| 110 | 92 | 88 ~ 93 |
| 220 | 184 | 180 ~ 186 |

The number of cells in a battery may be determined by simply dividing the nominal voltage of the system by the nominal voltage of a cell (1.2 Volts).



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