

| Specifications          |                                    |
|-------------------------|------------------------------------|
| Nominal Voltage         | 12V                                |
| Nominal Operating Range | 25°C ± 5°C                         |
| Dimensions              | Length : 151 mm                    |
|                         | Width : 65 mm                      |
|                         | Total Height : 100 mm              |
| Weight                  | 2,50 Kg                            |
| Int. Resistance (25 °C) | 18 mΩ                              |
| Float Service Lifetime  | 10-12 years                        |
| Container Material      | A.B.S. UL94-HB (UL94-V0 Optional). |

| Compliant Standards                           |
|-----------------------------------------------|
| IEC 60896-21/22:2004                          |
| BS 6290-3/4                                   |
| IEC 62485-2                                   |
| Eurobat Guide 2015 classification : Long Life |

| Characteristics             |                                  |
|-----------------------------|----------------------------------|
| Capacity 25°C               | 9Ah 20HR (1,80V)                 |
|                             | 230,10W per block @ 1,67V, 15min |
| Charging Voltage (25 °C)    | Float use : 13,5 to 13,8 VDC     |
|                             | Cycle Use : 14,4 to 15,0 VDC     |
| Rec. Max Charging Current   | 2,7A                             |
| Self-Discharge (25°C)       | less than 3% per month           |
| Max Discharge Current       | 90A (5sec)                       |
| Operating Temperature Range | Discharge : -15 to +50°C         |
|                             | Charge : -15 to +40°C            |
|                             | Storage : -15 to +40°C           |

| Applications                                      |
|---------------------------------------------------|
| High Power UPS/EPS Systems / Back up Power Supply |
| Telecom Power Supply                              |
| Engine boosters / starters                        |
| Emergency lighting / Auto control system          |

### Technology

**NORTHBATT HR AGM** series is designed for High Rate discharge performance and service life in either float or cyclic applications, even after repeated over-discharges. It is made with updated AGM VRLA technology from pure materials with excellent know how to meet all needs. It is tested according to international standard IEC 60896-21, complies to defined requirements of IEC 60896-22, and classified as "Long Life" 10-12 Years Lifetime according to the EUROBAT 2015 guide.

The unique construction and sealing techniques of **HR AGM** series guarantee leak proof operation in any position, with no adverse effect to capacity or service life.

Positive plates are composed of a grid frame of heavy duty lead - tin - calcium alloy and active material of porous lead dioxide. Negative plates are composed of a grid frame of lead - tin - calcium alloy as well and with active material of spongy lead. Plate separators are made of non-woven fabric of fine glass fibers and are chemically stable in the electrolyte sulfuric acid. The high porosity fully absorbs the electrolyte and prevents shorting between positive and negative plates. An electrolyte suspension system is used consisting of a high porosity, glass fibre material, which in conjunction with plates, totally absorbs and contains the electrolyte. Safety valves incorporated built-in design controls gas generation and induces recombination of more than 99% of gases generated during float usage. Special safety release valves, designed to operate between 2 and 5 psi automatically reseal, preventing an excessive accumulation of gas inside the battery. The battery case is made from ABS material, shock resistant and is shock resistant. Flame retardant option is also available.

### Features

- Optimized capability of instant high-current discharging.
- High temperature and low temperature superior performance.
- Long cycle life, excellent deep discharge ability.
- Excellent charge acceptance ability.
- Precision sealing technology.

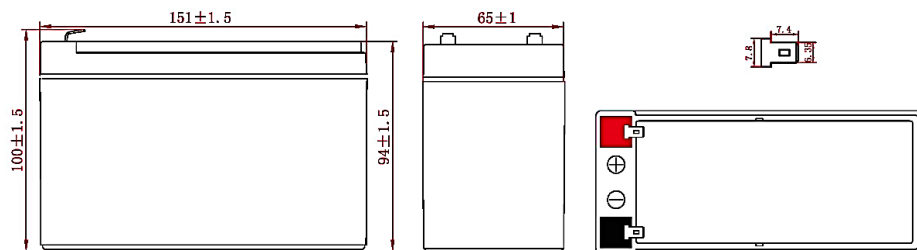
### Constant Current Discharge Table : Amperes (25°C)

| [A] | TIME - AMPERE CONSTANT CURRENT DISCHARGE (25 °C) |      |       |       |       |       |       |       |        |        |
|-----|--------------------------------------------------|------|-------|-------|-------|-------|-------|-------|--------|--------|
|     | F.V                                              | 5min | 10min | 15min | 30min | 45min | 60min | 90min | 120min | 180min |
|     | 1,60V                                            | 40,0 | 34,0  | 20,5  | 11,0  | 8,03  | 6,02  | 4,21  | 3,40   | 2,48   |
|     | 1,67V                                            | 35,1 | 30,0  | 19,5  | 10,9  | 7,65  | 5,95  | 4,19  | 3,27   | 2,41   |
|     | 1,70V                                            | 32,8 | 28,2  | 19,3  | 10,8  | 7,49  | 5,90  | 4,15  | 3,20   | 2,37   |
|     | 1,75V                                            | 29,3 | 25,6  | 19,1  | 10,6  | 7,24  | 5,85  | 4,12  | 3,12   | 2,33   |
|     | 1,80V                                            | 26,1 | 23,1  | 17,4  | 10,5  | 6,97  | 5,75  | 4,02  | 3,04   | 2,21   |

### Constant Power Discharge Table : Watts/cell (25°C)

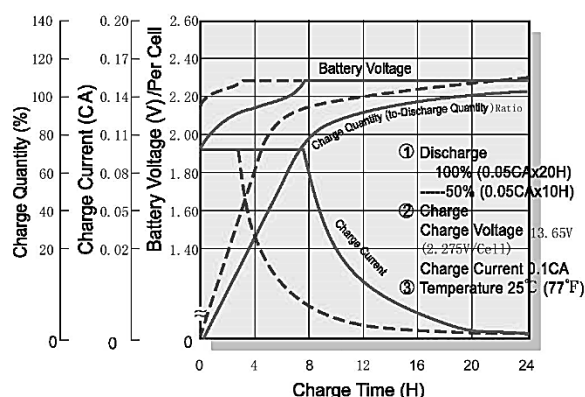
| [W] | TIME - WATTS/CELL CONSTANT POWER DISCHARGE (25 °C) |      |       |       |       |       |       |       |        |        |
|-----|----------------------------------------------------|------|-------|-------|-------|-------|-------|-------|--------|--------|
|     | F.V                                                | 5min | 10min | 15min | 30min | 45min | 60min | 90min | 120min | 180min |
|     | 1,60V                                              | 64,0 | 54,4  | 40,04 | 21,6  | 15,7  | 11,8  | 8,27  | 6,70   | 4,89   |
|     | 1,67V                                              | 58,6 | 50,1  | 38,35 | 21,4  | 15,0  | 11,7  | 8,25  | 6,44   | 4,75   |
|     | 1,70V                                              | 55,7 | 48,0  | 37,62 | 21,2  | 14,7  | 11,6  | 8,18  | 6,30   | 4,67   |
|     | 1,75V                                              | 51,3 | 44,8  | 37,23 | 20,8  | 14,2  | 11,5  | 8,12  | 6,15   | 4,59   |
|     | 1,80V                                              | 46,9 | 41,6  | 34,04 | 20,6  | 13,7  | 11,3  | 7,92  | 5,99   | 4,35   |

### Dimensions – Terminals

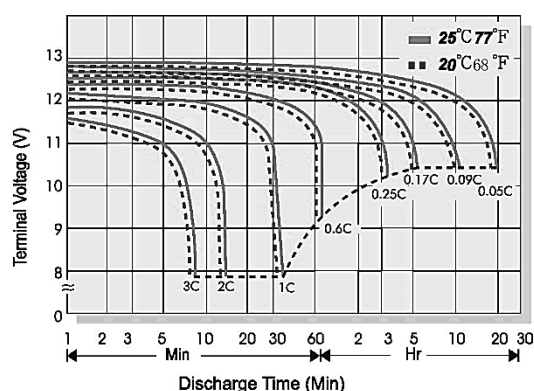


### Performance Curves

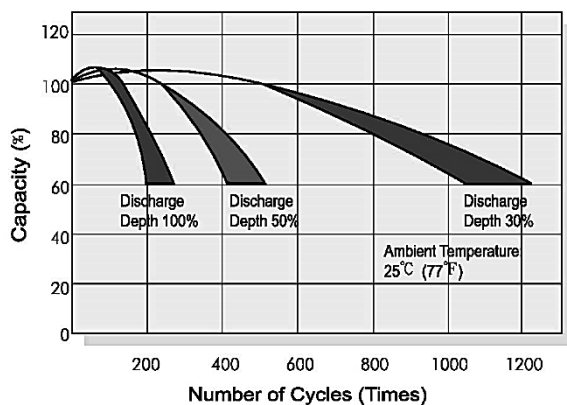
#### Charge characteristic Curve



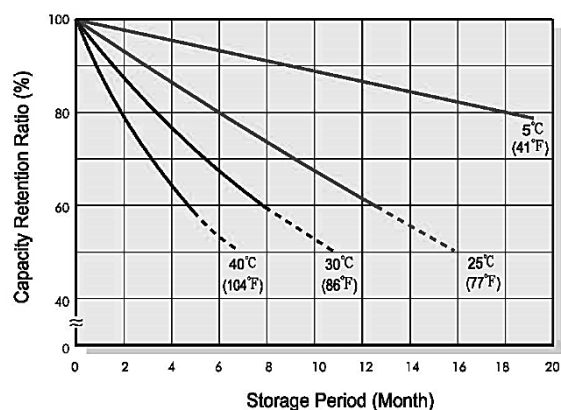
#### Voltage vs Discharge Time



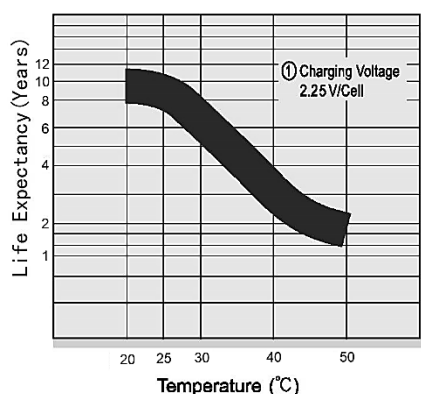
#### Life characteristics of cyclic use



#### Storage characteristic



#### Float Design Life



#### Discharge Current VS. Discharge Voltage

| Final Discharge Voltage V/Cell | 1.75       | 1.70              | 1.65              | 1.60       |
|--------------------------------|------------|-------------------|-------------------|------------|
| Discharge Current(A)           | 0.2C > (A) | 0.2C < (A) < 0.5C | 0.5C < (A) < 1.0C | (A) > 1.0C |

#### Charging Procedures

| Application | Charge Voltage(V/Cell) |           |                 | Max.Charge Current |
|-------------|------------------------|-----------|-----------------|--------------------|
|             | Temperature            | Set Point | Allowable Range |                    |
| Cycle Use   | 25°C (77°F)            | 2.45      | 2.40~2.50       | 0.30C              |
| Standby     | 25°C (77°F)            | 2.275     | 2.25~2.30       |                    |