

### 313K Series High Temperature Batteries

Designed and manufactured with 8 exclusive patented technologies, Narada have created an innovative range of high temperature batteries. The 313K series is designed to cope with the most extreme temperatures and environments. The advanced technology and unique manufacturing methods enable 313K batteries to deliver at least twice the cycle life of conventional lead-acid batteries, making them the first choice increasing power demands in remote hybrid telecom sites and other tough off-grid applications.

#### Standards

##### Test standards

IEC60896-21/-22, IEC61427, YD/T 799 etc.

##### Safety standard, ventilation

EN 50272-2

##### Manufactured under system

ISO9001/TL9000 & ISO14001 by Narada

#### Benefits

- Excellent deep cycling capability
- Suitable for continuous operation at temperatures in excess of 35°C
- Reduced system operating costs
- 25% electricity power saving
- Up to 100% air conditioner maintenance saving
- Up to 100% condensing agent saving
- 30% CO2 gas emission reduce
- Less than 1 year payback period depend on environment



#### Technical specifications

| Electrical data          |   |
|--------------------------|---|
| Nominal voltage          | 2 V   |
| Number of cells          | 1   |
| Rated capacity           | 1500Ah -150A for 10h to 1.80V/cell(25°C)<br>1578Ah - 157.8A for 10h to 1.80V/cell(35°C) |
| Internal resistance      | 0.12mΩ(acc.to IEC 60896-21)   |
| Short circuit current    | 16882 A(acc.to IEC 60896-21)  |
| Self discharge(35°C)     | less than 5% per month  |
| Design life at 35°C      | 15 years  |
| Mechanical data          |   |
| Weight ready for use     | 110 kg(242.5 lbs)   |
| Length                   | 235 mm(9.25 in)   |
| Width                    | 317 mm(12.48 in)  |
| Height of monobloc       | 502 mm(19.76 in)  |
| Total height             | 514 mm(20.24 in)  |
| Terminal                 | M8 female   |
| Terminal hardware torque | 10 -12Nm  |

#### Constant Current Discharge Data Units:Amperes(35°C, 95°F)

| End Voltage | 15 min | 30 min | 60 min | 3 hour | 5 hour | 8 hour | 10 hour | 24 hour | 48 hour | 72 hour | 120 hour | 240 hour |
|-------------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|----------|----------|
| 1.75V       | 1565.8 | 1167.1 | 846.9  | 409.8  | 279.3  | 191.8  | 159.9   | 72.1    | 36.8    | 25.2    | 16.0     | 8.24     |
| 1.80V       | 1460.3 | 1092.8 | 804.4  | 400.7  | 272.9  | 188.2  | 157.8   | 70.6    | 36.4    | 24.9    | 15.8     | 8.13     |
| 1.83V       | 1344.2 | 1019.9 | 758.9  | 388.5  | 268.7  | 187.1  | 157.1   | 70.6    | 36.2    | 24.8    | 15.7     | 8.09     |
| 1.85V       | 1242.1 | 960.7  | 710.3  | 367.5  | 255.7  | 180.6  | 151.4   | 68.5    | 34.9    | 23.9    | 15.3     | 7.88     |
| 1.88V       | 1123.6 | 889.4  | 645.0  | 346.6  | 243.8  | 174.0  | 145.7   | 66.5    | 33.6    | 23.0    | 14.6     | 7.51     |
| 1.90V       | 980.7  | 798.3  | 587.3  | 328.3  | 231.6  | 163.7  | 138.0   | 64.0    | 31.8    | 21.7    | 13.8     | 7.11     |

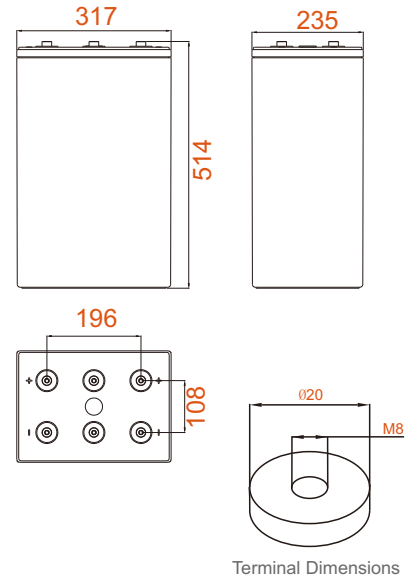
#### Constant Power Discharge Data Units:Watts per cell(35°C,95°F)

| End Voltage | 5 min  | 15 min | 30 min | 60 min | 90 min | 2 hour | 3 hour | 4 hour | 5 hour | 6 hour | 8 hour | 10 hour | 12 hour | 24 hour |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| 1.70V       | 3524.6 | 2997.5 | 2442.2 | 1785.1 | 1361.2 | 1121.6 | 862.9  | 695.8  | 587.9  | 516.5  | 423.9  | 352.5   | 293.7   | 154.2   |
| 1.75V       | 3380.3 | 2868.3 | 2296.0 | 1683.3 | 1282.2 | 1072.6 | 846.2  | 683.7  | 577.3  | 501.4  | 414.8  | 349.4   | 291.2   | 152.7   |
| 1.80V       | 3228.4 | 2704.3 | 2145.9 | 1549.6 | 1204.8 | 1033.1 | 820.4  | 673.0  | 562.1  | 490.7  | 405.6  | 343.3   | 286.1   | 150.4   |
| 1.83V       | 3038.5 | 2529.5 | 2005.4 | 1449.4 | 1147.0 | 995.1  | 802.2  | 654.8  | 546.9  | 477.0  | 395.0  | 337.3   | 281.1   | 148.1   |
| 1.85V       | 2846.7 | 2362.4 | 1853.5 | 1327.8 | 1078.7 | 957.1  | 774.8  | 636.6  | 531.7  | 463.4  | 382.5  | 325.1   | 270.9   | 144.3   |
| 1.88V       | 2654.9 | 2170.6 | 1671.2 | 1215.4 | 1033.1 | 908.5  | 732.3  | 610.7  | 516.5  | 452.7  | 372.2  | 316.0   | 263.3   | 140.5   |
| 1.90V       | 2392.8 | 1914.2 | 1515.4 | 1125.8 | 972.3  | 862.9  | 706.4  | 589.5  | 496.8  | 437.5  | 358.5  | 306.0   | 255.0   | 135.2   |
| 1.94V       | 2164.9 | 1749.0 | 1338.8 | 1014.9 | 885.7  | 794.6  | 646.4  | 537.1  | 452.7  | 393.5  | 322.1  | 275.6   | 229.7   | 133.7   |

## Construction

|                 |   |
|-----------------|---|
| Positive plate  | Reinforced grids in a corrosion-resistant pure lead, high tin, low calcium alloy  |
| Negative plate  | Lead-calcium alloy grid   |
| Separator       | High density microporous glass mat with low electrical resistance   |
| Container & lid | High temperature ABS. Optional flame retardant versions available (UL94 FV-0 with L.O.I. of 28%)                        |
| Electrolyte     | Sulphuric acid with a density of 1.28g/ml absorbed in AGM   |
| Terminal design | Patented leak resistant seal configuration with brass insert  |
| Safety valve    | Calibrated opening pressure, the valve equipped with flame arrestors for increased operational safety and service life. |

## Dimensions (mm)



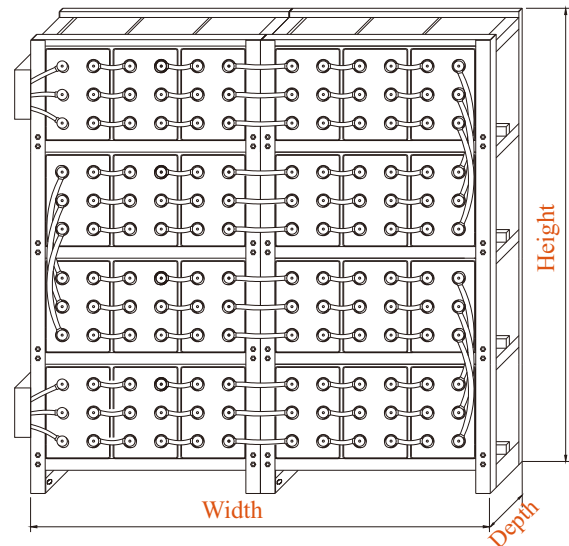
## Installation and operation

- Recommended float charge voltage compensation in function of temperature: 2.24V per cell at 35°C, -3mV/°C/cell
- Cycle and equalize charge voltage: 2.30V per cell at 35°C, or case by case compensation in function of temperature: -5mV/°C/cell
- CC-CV charge current: unlimited, otherwise 0.25C10A max. if T>25°C
- Preferred operating temperature range: 15°C to 35°C (68°F to 95°F)
- Maximum operating temperature range: -40°C to 80°C (-40°F to 176°F)
- A separate battery room: is not necessary
- Reduced maintenance: no water addition required

## Racking (optional)

Narada racks are constructed using strong, easy to assemble, powder-coated steel tubing and come complete with sliding cover terminal (take-off) plates.

|                    |                   |                  |                       |
|--------------------|-------------------|------------------|-----------------------|
| Cell model:        | HTB-1500          |                  |                       |
| Number of cells:   | 24                |                  |                       |
| System Voltage:    | 48                |                  |                       |
| Cell Configuration | 2 high<br>12 wide | 4 high<br>6 wide | In outdoor cabinet    |
| Rack width (mm)    | 3304              | 1652             | Cabinet width (1520)  |
| Rack depth (mm)    | 511.5             | 511.5            | Cabinet depth (1710)  |
| Rack height (mm)   | 1336              | 1568             | Cabinet height (1520) |
| System weight (kg) | 2829              | 2815             | 3130                  |



\* Please allow 100mm for terminal boxes

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