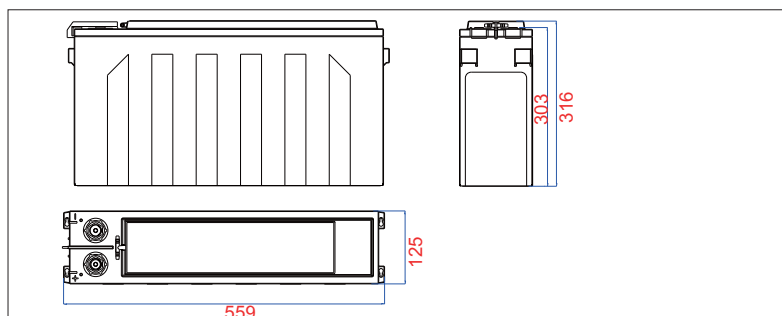


Narada's HTB-F series battery special designed for high temperature floating application, idea for telecom service where the temperature is higher. With CCPP thin plate technique, innovative structure design, high quality manufacturing and high quality high-temperature-resistant material, HTB-F batteries have 10 years design life at 35°C. HTB-F series also meet the standard <YD/T2657-2013 High temperature valve-regulated lead acid batteries for telecommunications>.

### Dimensions-mm



### Specifications

| Battery Model                              | 12HTB190F                                                           |
|--------------------------------------------|---------------------------------------------------------------------|
| Nominal Voltage                            | 12V                                                                 |
| Rated Capacity                             | 190Ah (10 hour rate) to 1.80V/cell @25°C(77°F)                      |
| Typical Weight                             | Approx 57.5 kg                                                      |
| Internal Resistance                        | Approx 4.22mΩ                                                       |
| Temperature Ranges                         | Operation (maximum): -40°C to 65°C(-40°F to 149°F)                  |
|                                            | Operation (recommended): 15°C to 35°C(59°F to 95°F)                 |
|                                            | Storage: -20°C to 40°C(-4°F to 104°F)                               |
| Float Voltage                              | 2.25V/cell@25°C(77°F)                                               |
| Recommended Maximum Charging Current Limit | 47.5 A                                                              |
| Equalize and Cycle Service                 | 2.35V/cell@25°C(77°F)                                               |
| Self Discharge                             | The residual capacity is above 96% after 28 days storage(35°C/95°F) |
| Terminal                                   | M6 Female                                                           |
| Terminal Hardware Torque                   | 8~10N·m                                                             |
| Container Material                         | High temperature ABS                                                |

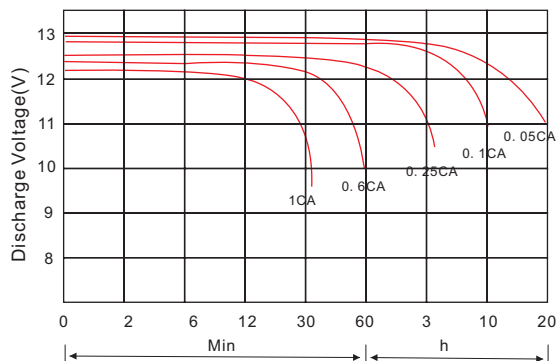
### Constant Current Discharge Characteristics Units: Amperes (35°C, 95°F)

| End voltage per cell | 1HR | 2HR  | 3HR  | 4HR  | 5HR  | 8HR  | 10HR | 12HR | 20HR |
|----------------------|-----|------|------|------|------|------|------|------|------|
| 1.67V                | 130 | 75.9 | 54.5 | 42.8 | 35.5 | 23.6 | 21.1 | 18.1 | 12.6 |
| 1.70V                | 129 | 75.7 | 54.4 | 42.7 | 35.3 | 23.5 | 20.9 | 17.7 | 12.4 |
| 1.75V                | 126 | 75.5 | 54.3 | 42.6 | 35.2 | 23.3 | 20.3 | 16.8 | 10.7 |
| 1.80V                | 123 | 75.4 | 54.2 | 42.4 | 35.1 | 22.6 | 19.4 | 16.6 | 10.4 |
| 1.83V                | 119 | 75.2 | 53.9 | 42.2 | 34.9 | 22.1 | 19.0 | 16.3 | 10.1 |
| 1.85V                | 114 | 72.1 | 52.9 | 41.7 | 34.3 | 21.8 | 18.6 | 15.6 | 9.29 |

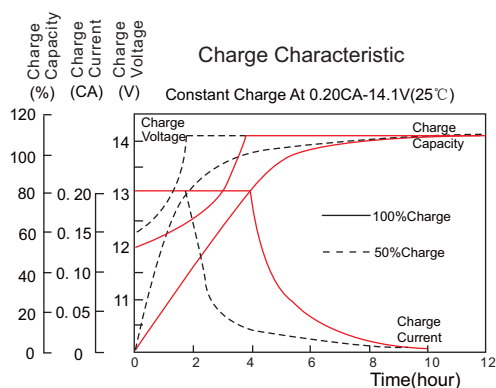
### Discharge Data with Constant Power Units: Watts per cell (35°C, 95°F)

| End voltage per cell | 1HR | 2HR   | 3HR   | 4HR  | 5HR  | 8HR  | 10HR | 12HR | 20HR |
|----------------------|-----|-------|-------|------|------|------|------|------|------|
| 1.67V                | 252 | 152.0 | 109.4 | 86.2 | 72.1 | 47.9 | 42.6 | 36.3 | 23.1 |
| 1.70V                | 250 | 151.0 | 109.3 | 86.1 | 72.0 | 47.6 | 42.4 | 36.0 | 22.5 |
| 1.75V                | 244 | 149.9 | 109.2 | 85.9 | 71.8 | 47.3 | 41.7 | 35.0 | 21.0 |
| 1.80V                | 240 | 149.9 | 109.1 | 85.8 | 71.6 | 46.3 | 40.0 | 32.8 | 19.2 |
| 1.83V                | 233 | 148.9 | 108.1 | 85.6 | 71.5 | 45.7 | 39.4 | 32.3 | 17.9 |
| 1.85V                | 224 | 144.8 | 107.1 | 85.0 | 70.1 | 45.1 | 39.1 | 32.2 | 16.7 |

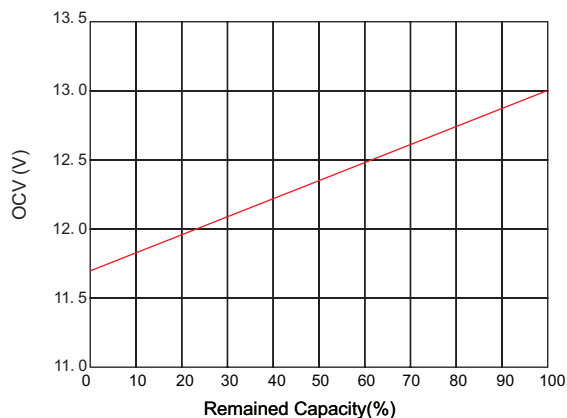
Terminal Voltage(V) Vs. Discharge Time (25°C, 77°F)



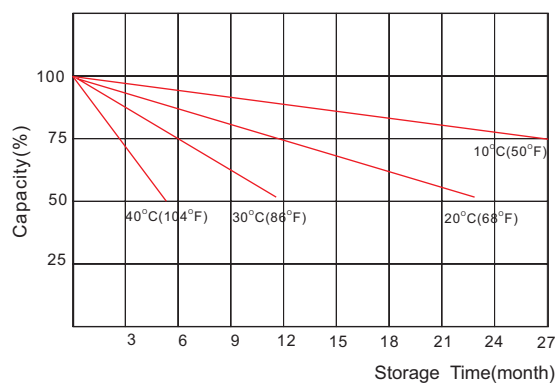
Battery Voltage Vs. Charge Time



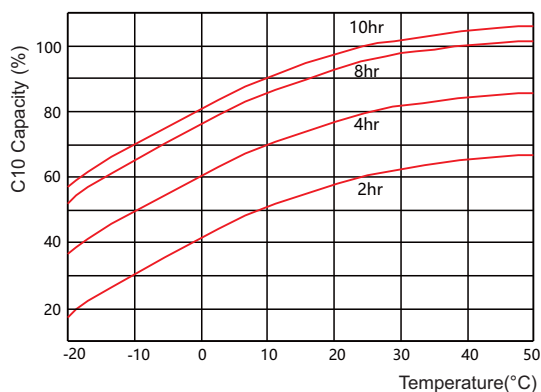
Relationship of OCV Vs. State of Charge



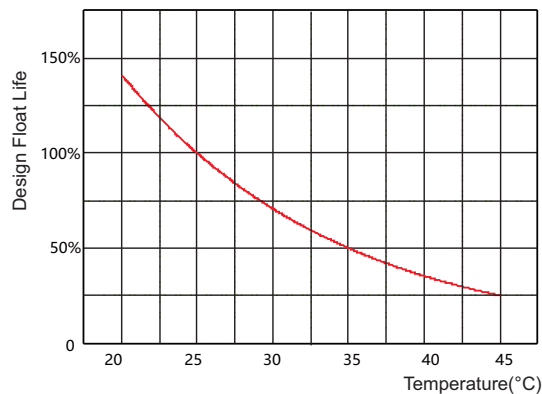
Capacity Retention Characteristic



Capacity vs temperature curve



Float life vs temperature curve



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