

**DEEP CYCLE
GEL BATTERY**

ES-150 GEL



MADE IN VIETNAM

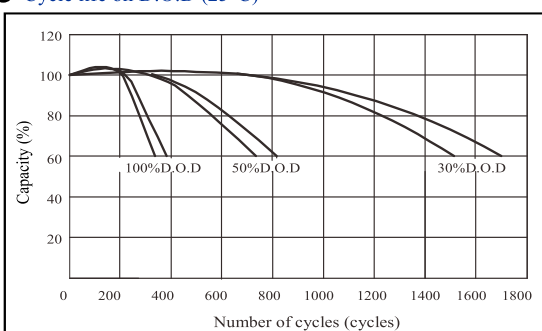
Special Features :

- Superior deep cycle design
- Very long life in deep cycle applications
- Superior recovery from deep discharge
- Wide working environment

● **Specifications**

| | | |
|-----------------------|------------------------|-------------------|
| Nominal voltage | 12V (6 cells per unit) | |
| Rated capacity (10HR) | 150Ah/10.8V | |
| Dimensions | Length | 485±2mm (48.5 cm) |
| | Width | 172±2mm (17.2 cm) |
| | Height | 240±2mm (24 cm) |
| | Total height | 240±2mm (24 cm) |
| Approx. weight | 44.50kg (98.10lbs)±3% | |

● **Cycle life on D.O.D (25°C)**



Applications :



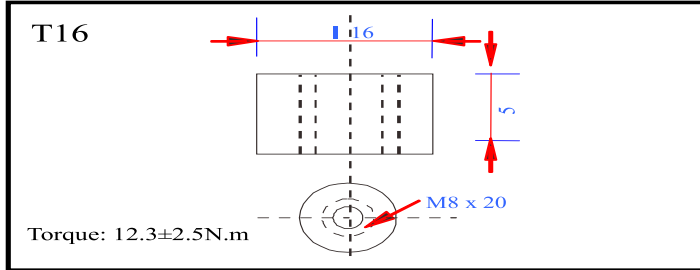
Certifications :



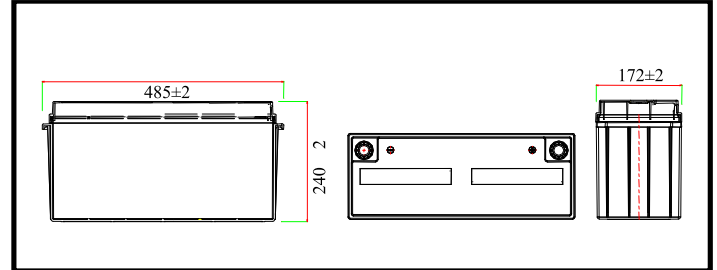
● **Characteristics**

| | | |
|---|---|--|
| Capacity (25°C) | 10HR (10.8V) | 150Ah |
| | 3HR (10.8V) | 112.5Ah |
| | 1HR (10.5V) | 83Ah |
| Terminal type | | T16 |
| Internal resistance (Fully charged, 25°C) | | Approx. 3.8mΩ |
| Capacity affected by temperature (10HR) | 40°C | 102% |
| | 25°C | 100% |
| | 0°C | 85% |
| | -15°C | 65% |
| Self-discharge (25°C) | 3 months | Remaining capacity: 91% |
| | 6 months | Remaining capacity: 82% |
| | 12 months | Remaining capacity: 65% |
| Nominal operating temperature | | 25°C± 3°C (77°F± 5°F) |
| Operating temperature range | Discharge | - 15°C~ 50°C (5°F ~ 122°F) |
| | Charge | - 10°C~ 50°C (14°F ~ 122°F) |
| | Storage | - 20°C~ 50°C (-4°F ~ 122°F) |
| Float charging voltage (25°C) | | 13.50 to 13.80V Temperature compensation: -18mV/°C/Block |
| Cycle charging voltage (25°C) | | 14.50 to 14.70V Temperature compensation: -30mV/°C/Block |
| Cycle Life | | >750 cycles @ 0.2C 50% DOD. |
| Maximum charging current | | 30 A |
| Pulse discharge current | | 1200 A (5 sec.) |
| Design life | 12 years for floating (25°C) | |
| | Eurobat (20°C): 10-12 years, long life. | |

● Terminal type (mm)



● Outer dimensions (mm)



● Construction

| Component | Positive plate | Negative plate | Container | Cover | Separator | Electrolyte | Safety valve | Terminal |
|--------------|----------------|----------------|-----------|-------|-----------|-------------|--------------|----------|
| Raw material | Lead dioxide | Lead | ABS | ABS | AGM | Gel | Rubber | Copper |

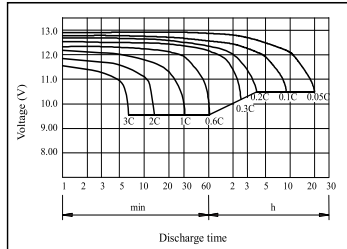
● Constant current discharge characteristics unit: Ampere/Cell (at 25°C, 77°F)

| F.V/Time | 10min | 15min | 30min | 60min | 2h | 3h | 4h | 5h | 8h | 10h | 20h |
|----------|-------|-------|-------|-------|------|------|------|------|------|------|------|
| 9.60V | 293 | 240 | 146 | 90.0 | 54.8 | 39.0 | 30.6 | 26.0 | 18.4 | 15.3 | 8.09 |
| 9.90V | 284 | 234 | 143 | 88.7 | 54.5 | 38.8 | 30.4 | 25.9 | 18.3 | 15.2 | 8.08 |
| 10.2V | 272 | 226 | 138 | 86.4 | 54.0 | 38.5 | 30.2 | 25.7 | 18.1 | 15.2 | 8.05 |
| 10.5V | 260 | 218 | 135 | 83.7 | 53.2 | 38.3 | 30.0 | 25.5 | 18.0 | 15.1 | 8.01 |
| 10.8V | 246 | 206 | 130 | 81.0 | 51.8 | 37.5 | 29.1 | 24.7 | 17.5 | 15.0 | 7.95 |

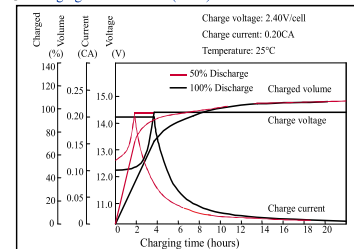
● Constant power discharge characteristics unit: Watt/Cell (at 25°C, 77°F)

| F.V/Time | 10min | 15min | 30min | 60min | 2h | 3h | 4h | 5h | 8h | 10h | 20h |
|----------|-------|-------|-------|-------|-----|-----|-----|-----|-----|-----|------|
| 9.60V | 3159 | 2635 | 1633 | 1026 | 635 | 459 | 360 | 307 | 218 | 182 | 97.1 |
| 9.90V | 3064 | 2572 | 1600 | 1011 | 631 | 456 | 358 | 306 | 217 | 182 | 96.9 |
| 10.2V | 2938 | 2477 | 1551 | 985 | 625 | 453 | 355 | 304 | 215 | 181 | 96.6 |
| 10.5V | 2812 | 2393 | 1513 | 954 | 616 | 450 | 353 | 301 | 214 | 180 | 96.1 |
| 10.8V | 2654 | 2266 | 1458 | 923 | 600 | 441 | 342 | 292 | 207 | 179 | 95.4 |

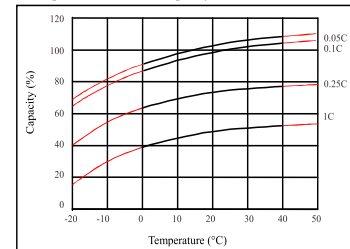
● Discharge characteristics (25°C)



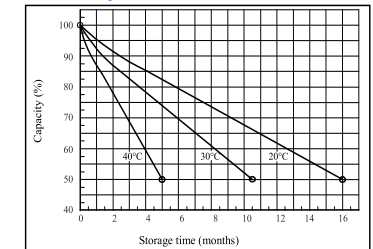
● Charging characteristics (25°C)



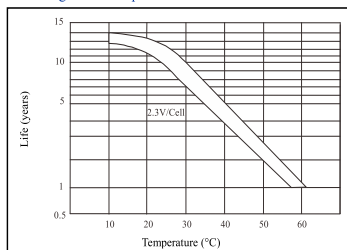
● Temperature effects on capacity



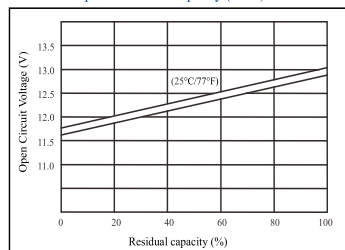
● Self-discharge characteristics



● Floating life on temperature



● Relationship for OCV and capacity (25°C)



● Relationship for charging voltage and temperature

