

# OPzV Series-Tubular Gel

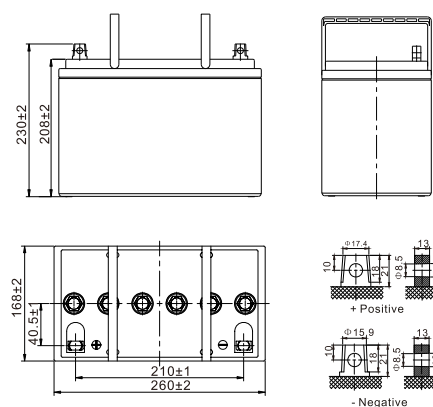
## 12V 3OPzV60(12V60Ah)

### Specifications

|                               |                       |                                |
|-------------------------------|-----------------------|--------------------------------|
| Rated Voltage                 | 12V                   |                                |
| Nominal Capacity              | 60.0Ah                | (C <sub>10</sub> , 1.80V/cell) |
| Dimension                     | Length                | 260mm(10.24 in.)               |
|                               | Width                 | 168mm(6.61 in.)                |
|                               | Container Height      | 208mm(8.19 in.)                |
|                               | Total Height          | 230mm(9.06 in.)                |
| Approx Weight                 | 23.7Kg (52.25 lbs)    |                                |
| Terminal                      | T14                   |                                |
| Container Material            | ABS                   |                                |
| Rated Capacity (25°C)         | 60.0 Ah               | (10hr, 6.00A, 1.80V/cell)      |
|                               | 52.5 Ah               | (5hr, 10.5A, 1.75V/cell)       |
|                               | 45.3 Ah               | (3hr, 15.1A, 1.75V/cell)       |
|                               | 35.6 Ah               | (1hr, 35.6A, 1.67V/cell)       |
| Max. Discharge Current(5s)    | 480A                  |                                |
| Internal Resistance(25°C)     | Approx. 9.6mΩ         |                                |
| Operating Temp. Range         | Discharge             | -20°C~55°C (-4°F~131°F)        |
|                               | Charge                | 0°C~40°C (32°F~104°F)          |
|                               | Storage               | -20°C~50°C (-4°F~122°F)        |
| Nominal Operating Temp. Range | 25±3°C (77±5°F)       |                                |
| Max. Charging Current(25°C)   | 15.0A                 |                                |
| Charge voltage(25°C)          | Float                 | 13.5V                          |
|                               | Temp. Coefficient     | -3mV/cell/°C                   |
|                               | Cycle(Equalization)   | 14.1~14.4V                     |
| Effect of temp. to Capacity   | 40°C (104°F)          | 106%                           |
|                               | 25°C (77°F)           | 100%                           |
|                               | 0°C (32°F)            | 86%                            |
| Self Discharge                | ≤3% per month at 25°C |                                |



### Layout



### Constant Current Discharge (Amperes) at 25 °C (77°F)

| F.V/Time   | 10min | 15min | 30min | 1h   | 2h   | 3h   | 5h   | 8h   | 10h  |
|------------|-------|-------|-------|------|------|------|------|------|------|
| 1.85V/cell | 57.9  | 51.1  | 38.2  | 27.9 | 17.7 | 13.5 | 9.66 | 6.78 | 5.73 |
| 1.80V/cell | 69.6  | 59.0  | 42.8  | 30.6 | 19.1 | 14.5 | 10.1 | 7.08 | 6.00 |
| 1.75V/cell | 79.9  | 65.9  | 46.1  | 32.6 | 20.1 | 15.1 | 10.5 | 7.26 | 6.12 |
| 1.70V/cell | 87.2  | 71.6  | 49.3  | 34.4 | 20.8 | 15.7 | 10.8 | 7.38 | 6.18 |
| 1.67V/cell | 95.4  | 76.8  | 51.6  | 35.6 | 21.5 | 16.3 | 11.0 | 7.50 | 6.30 |
| 1.60V/cell | 101.8 | 81.2  | 53.5  | 36.6 | 22.3 | 16.6 | 11.3 | 7.62 | 6.42 |

### Constant Power Discharge (Watts/cell) at 25 °C (77°F)

| F.V/Time   | 10min | 15min | 30min | 1h   | 2h   | 3h   | 5h   | 8h   | 10h  |
|------------|-------|-------|-------|------|------|------|------|------|------|
| 1.85V/cell | 95.3  | 87.6  | 72.8  | 54.3 | 34.6 | 26.4 | 19.0 | 13.4 | 11.5 |
| 1.80V/cell | 115.2 | 104.4 | 81.8  | 59.3 | 37.3 | 28.2 | 19.9 | 14.0 | 11.9 |
| 1.75V/cell | 133.9 | 115.2 | 87.2  | 62.8 | 39.0 | 29.5 | 20.6 | 14.4 | 12.2 |
| 1.70V/cell | 147.6 | 124.1 | 92.5  | 66.0 | 40.2 | 30.5 | 21.1 | 14.6 | 12.3 |
| 1.67V/cell | 155.5 | 129.1 | 95.8  | 67.8 | 41.3 | 31.4 | 21.5 | 14.8 | 12.5 |
| 1.60V/cell | 159.6 | 131.8 | 98.3  | 69.5 | 42.5 | 32.0 | 22.0 | 15.1 | 12.7 |

# OPzV Series-Tubular Gel

## 12V 3OPzV60(12V60Ah)

### Applications

- Telecommunications
- Radio and cellular telephone relay stations
- Emergency lighting systems
- Power stations, Conventional power stations, alternative power (solar, wind)
- Large UPS and computer back-up
- Railway signaling
- Maritime standby power on ships and ashore
- Process and control engineering
- Standby power
- Buoy lighting

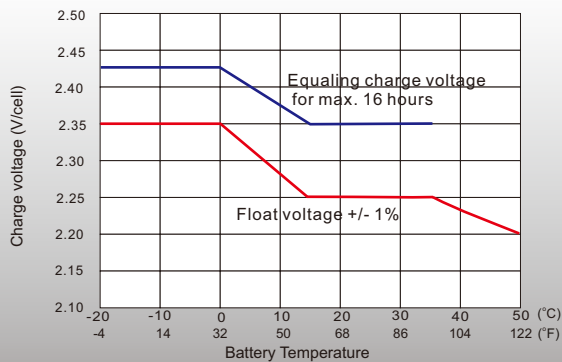
### General Features

- 16 years design life (20°C)
- Better recovery performance
- Wide working temperature range (-20~55)°C
- No electrolyte stratification provides longer service life
- High recombination efficient
- Built in copper core based in lead will carry large current
- Separator imported from AMER-SIL high porosity. PVC-SiO<sub>2</sub> and low resistance
- Pasted negative plate special grid design increase the active material. availability large current discharge and charge ability
- Tubular type positive plate (polyester tube) prevent the active material from falling. Multi metal alloy pressed positive grid increase the anti corrosion ability and service life

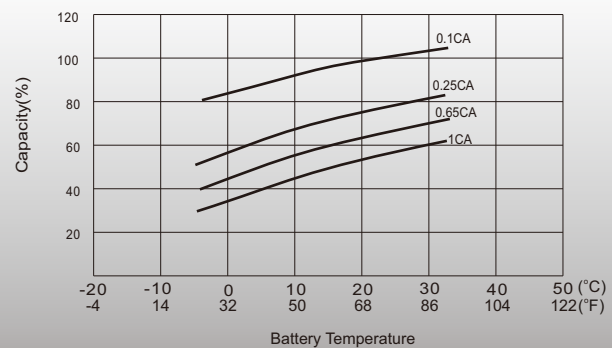
### Standards

- Compliance with IEC 60896, IEC 61427, DIN 40742 standards
- UL, CE Certified
- Manufactured in Leoch® IATF16949, OHSAS 18001, ISO 9001 and ISO 14001 certified production facilities

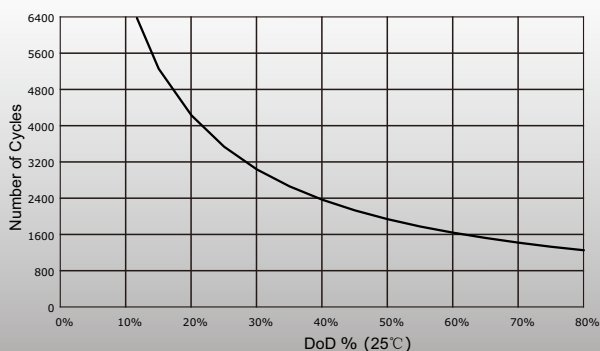
### Charge voltage vs ambient temperature curve



### Temperature effects in relation to battery capacity



### Cycle Life in Relation to DOD



### General Relation of Capacity VS. Storage Time

