



# ALPHA HOUSE powered by MONBAT®

TDS-404, Issue date: 12.2021

## 12HVR190C FRONT TERMINAL CARBON AGM VRLA

### PRODUCT CHARACTERISTICS:

- Valve-regulated lead-acid battery
- Stationary and reserve power applications
- EUROBAT design life definition: Very Long Life 12+ years
- Extremely long float life performance
- Superior cycling endurance
- Compact design with high energy density
- ETSI Rack integration
- Low installation cost, maintenance free product
- Sealed for leak-proof operation
- Delivered ready for use
- Non-hazardous cargo for ground, sea and air transport
- Fully recyclable product



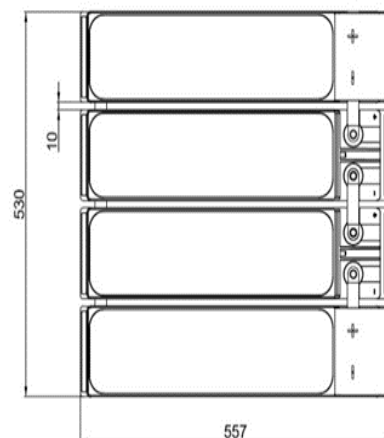
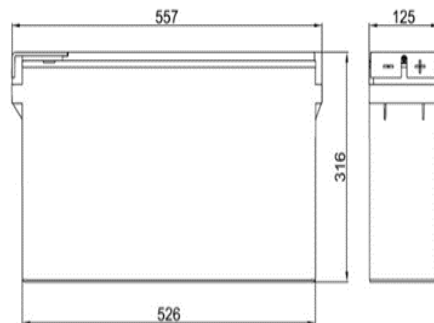
### TECHNICAL SPECIFICATIONS:

| Electrical specifications:  |   |
|---|---|
| Nominal voltage:  | 12V   |
| Number of cells:  | 6   |
| Rated capacity:   | 190 Ah (10 h rate to 1.80 Vpc at 20 °C)   |
| Internal resistance:  | 3.9 mOhm (IEC 60 896 -21/22)  |
| Short circuit current:  | 3 250 A (IEC 60 896 -21/22)   |
| Float charge voltage:   | 2.27 V per cell (Vpc) at 20 °C  |
| Design features:  |   |
| Floating design life at 20°C:   | 15 years  |
| Plates:   | Tick Flat Pasted  |
| Active material:  | Very high purity virgin lead  |
| Grid alloy:   | Lead-Calcium-Tin alloy  |
| Electrolyte:  | Sulphuric acid, Analytical grade  |
| Separator:  | Absorbing Glass Mat (AGM)   |
| Operating temperature:  | -20 °C to +60 °C<br>+15 °C to +25 °C (recommended)  |
| Venting valve:  | Rubber, one way, self resealing<br>- Opening pressure: 1.7 PSI<br>- Resealing pressure: 1.5 PSI |
| Internal gas recombination efficiency:  | more than 99%   |
| Flame arrestor:   | Available   |
| Central degassing system  | Available   |
| Storage temperatures:   | -20 °C to +40 °C  |
| Self discharge:   | Less than 2.0% per month at 20°C  |
| Storability without recharging:   | Up to 6 months at 20°C  |
| Shelf life:   | Up to 1 year  |
| Container / lid material:   | Shock resistant ABS FR; flammability class UL94 V0  |
| Terminal position:  | Front   |
| Terminal sealing:   | Mechanical + epoxy double sealing   |
| Terminal type:  | Brass; Female; M8 thread  |
| Terminal torque:  | 7 Nm  |
| Transport terminal cover:   | Available   |
| Carrying Handles:   | Available (2)   |
| Connectors and bolts:   | Supplied as standard  |
| Applicable standards and recommendations:   |   |
| IEC 60896 - 21/22; EN 50272 - 2; IEC 61427 - 1/2; IEC 61056 - 1;<br>IEEE 1184; IEEE 1187; IEEE 1188 |   |
| Manufacture standards:  |   |
| ISO 9001; ISO 14001; OHSAS 18001; AQAP 2110   |   |

### PHYSICAL CHARACTERISTICS:

|        | SI Units | US Units    |
|--------|----------|-------------|
| Length | 557 mm   | 21.9 inches |
| Width  | 125 mm   | 4.9 inches  |
| Height | 316 mm   | 12.4 inches |
| Weight | 59.2 kg  | 130.5 lbs   |

### DRAWINGS:





## PERFORMANCE CHARACTERISTICS

### DISCHARGE PERFORMANCE AT CONSTANT CURRENT DISCHARGE (AH) FOR BATTERY 12HVR190C AT 20°C

| Uf, Vpc | 15 min | 30 min | 1h    | 2h    | 3h    | 4h    | 5h    | 6h    | 8h    | 10h   | 20h   | 120h  |
|---------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1.6     | 68.0   | 98.0   | 119.3 | 138.9 | 152.6 | 162.5 | 170.2 | 176.1 | 187.9 | 195.7 | 209.4 | 236.8 |
| 1.65    | 68.0   | 97.0   | 118.8 | 138.3 | 152.0 | 161.7 | 169.5 | 175.4 | 187.0 | 194.8 | 208.2 | 235.6 |
| 1.7     | 68.0   | 97.0   | 118.2 | 137.6 | 151.2 | 160.9 | 168.5 | 174.4 | 186.0 | 193.8 | 207.3 | 234.5 |
| 1.75    | 67.0   | 96.0   | 117.0 | 136.2 | 149.7 | 159.2 | 167.0 | 172.7 | 184.3 | 191.9 | 205.2 | 232.2 |
| 1.8     | 67.0   | 95.0   | 115.9 | 134.9 | 148.2 | 157.7 | 165.3 | 171.0 | 182.4 | 190.0 | 203.3 | 229.9 |
| 1.85    | 65.0   | 93.0   | 113.1 | 131.5 | 144.4 | 153.9 | 161.1 | 166.8 | 177.8 | 185.3 | 198.2 | 224.2 |

### DISCHARGE PERFORMANCE AT CONSTANT CURRENT DISCHARGE (A) FOR BATTERY 12HVR190C AT 20°C

| Uf, Vpc | 15 min | 30 min | 1h    | 2h   | 3h   | 4h   | 5h   | 6h   | 8h   | 10h  | 20h   | 120h |
|---------|--------|--------|-------|------|------|------|------|------|------|------|-------|------|
| 1.6     | 274.0  | 196.0  | 119.3 | 69.4 | 50.9 | 40.6 | 34.0 | 29.4 | 23.5 | 19.6 | 10.47 | 1.97 |
| 1.65    | 273.0  | 195.0  | 118.8 | 69.2 | 50.7 | 40.4 | 33.9 | 29.2 | 23.4 | 19.5 | 10.41 | 1.96 |
| 1.7     | 271.0  | 194.0  | 118.2 | 68.8 | 50.4 | 40.2 | 33.7 | 29.1 | 23.3 | 19.4 | 10.36 | 1.95 |
| 1.75    | 269.0  | 192.0  | 117.0 | 68.1 | 49.9 | 39.8 | 33.4 | 28.8 | 23.0 | 19.2 | 10.26 | 1.93 |
| 1.8     | 266.0  | 190.0  | 115.9 | 67.5 | 49.4 | 39.4 | 33.1 | 28.5 | 22.8 | 19.0 | 10.17 | 1.92 |
| 1.85    | 259.0  | 185.0  | 113.1 | 65.7 | 48.1 | 38.5 | 32.2 | 27.8 | 22.2 | 18.5 | 9.91  | 1.87 |

### DISCHARGE PERFORMANCE AT CONSTANT POWER DISCHARGE W (PER CELL) FOR BATTERY 12HVR190C AT 20°C

| Uf, Vpc | 15 min | 30 min | 1h    | 2h    | 3h    | 4h   | 5h   | 6h   | 8h   | 10h  | 20h   | 120h |
|---------|--------|--------|-------|-------|-------|------|------|------|------|------|-------|------|
| 1.6     | 547.0  | 391.0  | 238.6 | 138.9 | 101.7 | 81.2 | 68.1 | 58.7 | 47.0 | 39.1 | 20.94 | 4.10 |
| 1.65    | 546.0  | 390.0  | 237.5 | 138.3 | 101.3 | 80.9 | 67.8 | 58.4 | 46.7 | 39.0 | 20.82 | 4.07 |
| 1.7     | 543.0  | 388.0  | 236.4 | 137.6 | 100.3 | 80.5 | 67.4 | 58.1 | 46.5 | 38.8 | 20.73 | 4.07 |
| 1.75    | 538.0  | 384.0  | 234.1 | 136.2 | 99.3  | 79.6 | 66.8 | 57.6 | 45.9 | 38.4 | 20.52 | 4.03 |
| 1.8     | 532.0  | 380.0  | 231.8 | 134.9 | 98.8  | 78.9 | 66.1 | 57.0 | 45.6 | 38.0 | 20.33 | 3.99 |
| 1.85    | 518.0  | 371.0  | 226.1 | 131.5 | 96.3  | 77.0 | 64.4 | 55.6 | 44.5 | 37.1 | 19.82 | 3.88 |

### TEMPERATURE CORRECTION FACTOR OF CAPACITY AT CONSTANT CURRENT DISCHARGE

| Discharge time       | -10 °C | 0 °C | 10 °C | 15 °C | 20 °C | 25 °C | 30 °C | 35 °C | 40 °C | 45 °C |
|----------------------|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| From 5 to 59 minutes | 0.70   | 0.80 | 0.90  | 0.95  | 1.00  | 1.05  | 1.10  | 1.13  | 1.15  | 1.16  |
| From 1 to 20 hours   | 0.82   | 0.88 | 0.94  | 0.97  | 1.00  | 1.03  | 1.05  | 1.07  | 1.08  | 1.10  |

### BATTERY CHARGE CONDITIONS AT 20° CONSTANT VOLTAGE AND LIMITED CURRENT (IU)

| Charge current limit  | Float charge voltage   | Equalization charge voltage  | Boost charge voltage  |
|---|--|--|---|
| 0.1 – 0.25C <sub>10</sub> A<br>Recommended: 0.20C <sub>10</sub> A | 2.27 V per cell at 20 °C;<br>Temperature correction:-3mV / cell / °C | 2.32 V per cell at 20 °C<br>Recommended: every 3 months for 24h during long time float operation | 2.40 V per cell at 20°C;<br>Temperature correction:-4mV / cell / °C |

Float application: 0.20C<sub>10</sub> A / 2.27 V per cell at 20 °C

Cycling applications: 0.20C<sub>10</sub> A / 2.40 V per cell at 20 °C

Recharge Ah input at least 105% from previous discharge Ah

