12-1068 /

VR SOLAR® TRUE FRONT ACCESS

Power Solutions

For Renewable Energy Storage Up to 178 Ampere-Hour Capacity



VRS 12-175F & VRS 12-155F

E ECHNOLOG<u>IES®</u>



The VR Solar[®] TFA, with its grid alloy and high paste density, provides superior performance in both high cycling and float applications. This VRLA/AGM battery is designed to be easy to install and maintain, and offers long life and exceptional performance.

FEATURES AND BENEFITS

- High density pasted plates for high cycle life
- Low calcium Lead/Tin alloy plates for efficient gas
 recombination for long life in both cycling and float applications
- Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99% and freedom from electrolyte maintenance.
- Multicell design for economy of installation and maintenance.
- True Front Access threaded copper alloy inserts for reduced maintenance and increased safety.
- Terminal versatility ease of diagnostic readings with C&D Ohmic Ring[®]
- Reduced headspace driving higher energy density, in cabinet or rack applications.
- Can be used in any orientation. Upright, side, or end mounting recommended.
- Thermally welded case-to-cover bond to eliminate leakage.
- High-strength, leak-free polymer container allows for non-restricted shipping;
 Water: non-hazardous per IMDG Amendment 27 Surface: non-hazardous per DOT-CFR title 49, 171-189 Air: IATA/ICAO, provision A67
- UL-recognized component

BATTERY CHARACTERISTICS

- · Battery hardware and removable carrying handles included
- Excellent choice for both stand alone PV systems and hybrid systems

AVAILABLE RACK OPTIONS

(SEE BROCHURE 12-1064 FOR RACKS AND TRAYS)

Standard and EP racks with multiple tiers

Capacity vs. Temperature Cycle Life Comparison - 5 Hour Rate Expected Life vs Temperature 100 105 10000 90 100 5000 95 80 90 % of Expected Life 70 f Capacity 08 22 22 60 Cycles 1800 1000 50 40 5 500 70 % 30 425 C/100 65 20 60 — - C(20) 10 55 100 50 0 10% 20% 50% 80% 100% 100F 80F 90F 110F 120F -22F -4F 14F 32F 50F 68F 86F 104F (-30C)(-20C)(-10C)(0C)(10C)(20C)(30C)(40C) (21C) (27C) (32C) (38C) (43C) (49C) (54C) Depth Of Discharge Temperature Temperature

INDUSTRY LEADING CYCLE LIFE

TECHNOLOGIES

Power Solutions

VRS

12-1068

| Mardal | Discharge Amperes per Unit @ 77°F (25°C) | | | | | | | | | | | |
|-------------|--|------|------|------|------|------|------|------|------|------|-------|--|
| Model | End Voltage | 1 H | 3 H | 4 H | 5 H | 8 H | 12 H | 20 H | 24 H | 48 H | 100 H | |
| VRS 12-155F | 1.90 | 60.6 | 31.8 | 26.2 | 22.0 | 15.2 | 10.8 | 6.89 | 5.82 | 3.02 | 1.49 | |
| | 1.85 | 70.9 | 34.3 | 27.7 | 23.2 | 16.1 | 11.4 | 7.34 | 6.22 | 3.25 | 1.61 | |
| | 1.80 | 82.2 | 36.4 | 29.3 | 24.5 | 16.8 | 11.8 | 7.54 | 6.42 | 3.36 | 1.67 | |
| | 1.75 | 89.1 | 38.1 | 30.1 | 25.2 | 17.1 | 12.1 | 7.69 | 6.54 | 3.41 | 1.69 | |
| | | | | | | | | | | | | |
| | Discharge Watts per Cell @ 77°F (25°C) | | | | | | | | | | | |

| Madal | Discharge watts per Cell @ 77 F (25 C) | | | | | | | | | | | |
|-------------|--|-------|------|------|------|------|------|------|------|------|-------|--|
| wodel | End Voltage | 1 H | 3 H | 4 H | 5 H | 8 H | 12 H | 20 H | 24 H | 48 H | 100 H | |
| VRS 12-155F | 1.90 | 118.6 | 63.2 | 52.2 | 44.0 | 30.5 | 21.6 | 13.8 | 11.6 | 6.04 | 3.00 | |
| | 1.85 | 137.5 | 67.5 | 54.9 | 46.3 | 32.0 | 22.8 | 14.7 | 12.4 | 6.50 | 3.24 | |
| | 1.80 | 157.7 | 71.1 | 57.6 | 48.5 | 33.4 | 23.6 | 15.1 | 12.8 | 6.72 | 3.36 | |
| | 1.75 | 170.5 | 74.2 | 59.1 | 49.6 | 33.9 | 24.1 | 15.4 | 13.1 | 6.82 | 3.39 | |

| | | Discharge Amperes per Unit @ 77°F (25°C) | | | | | | | | | | | |
|-------------|-------------|--|------|------|------|------|------|------|------|------|-------|--|--|
| Model | End Voltage | 1 H | 3 H | 4 H | 5 H | 8 H | 12 H | 20 H | 24 H | 48 H | 100 H | | |
| VRS 12-175F | 1.90 | 70.0 | 36.8 | 30.3 | 25.4 | 17.6 | 12.5 | 8.0 | 6.73 | 3.49 | 1.77 | | |
| | 1.85 | 82.0 | 39.7 | 32.1 | 26.9 | 18.6 | 13.2 | 8.5 | 7.20 | 3.76 | 1.91 | | |
| | 1.80 | 95.0 | 42.0 | 33.9 | 28.3 | 19.4 | 13.7 | 8.7 | 7.42 | 3.89 | 1.98 | | |
| | 1.75 | 103.0 | 44.0 | 34.9 | 29.1 | 19.8 | 14.0 | 8.9 | 7.56 | 3.95 | 2.00 | | |

| | Discharge Watts per Cell @ 77°F (25°C) | | | | | | | | | | |
|-------------|--|-------|------|------|------|------|------|------|------|------|-------|
| Model | End Voltage | 1 H | 3 H | 4 H | 5 H | 8 H | 12 H | 20 H | 24 H | 48 H | 100 H |
| VRS 12-175F | 1.90 | 137.1 | 73.1 | 60.4 | 50.9 | 35.3 | 25.0 | 15.9 | 13.5 | 6.99 | 3.53 |
| | 1.85 | 159.0 | 78.1 | 63.5 | 53.5 | 37.0 | 26.4 | 17.0 | 14.4 | 7.52 | 3.81 |
| | 1.80 | 182.3 | 82.2 | 66.6 | 56.0 | 38.6 | 27.3 | 17.4 | 14.8 | 7.77 | 3.95 |
| | 1.75 | 197.1 | 85.8 | 68.3 | 57.3 | 39.2 | 27.8 | 17.7 | 15.1 | 7.89 | 4.00 |

SPECIFICATIONS

| Cells Per Unit | 6 |
|--|--|
| Nominal Voltage Per Unit | 12 |
| Weight | VRS12-155F 115lbs (53kg) VRS12-175F 131lbs (60kg) |
| Operating Temperature Range (with temperature compensation) | Discharge: -40°F (-40°C) to +160°F (71°C) Charge: -10°F (-23°C) to +140°F (60°C) |
| Optimal Operating Temperature Range | +74°F (23°C) to +80°F (27°C) |
| Recommended Maximum Charging Current Limit | 30 amperes per 100Ah @ C ₂₀ |
| Float Charging Voltage | 13.62 to 13.8 VDC/unit Average at 77°F (25°C) |
| Equalization and Cycle Service Charging Voltage | 14.4 to 14.8 VDC/unit Average at 77°F (25°C) |
| Maximum AC Ripple (Charger) | 0.5% RMS or 1.5% P-P of float charge voltage recommended for best results Maximum voltage allowed = 4% P-P Maximum current allowed = C_{20} RMS (20 Amps) |
| Self Discharge | Up to 6 months at 77°F (25°C) and then a freshening charge is required. Batteries stored at temperatures at greater than $+77°F$ (25°C) will require recharge sooner than batteries stored at temperatures less than $77°F$ (25°C). See C&D bulletin 41-7272, Self Discharge and Inventory Control for details. |
| Temperature Compensation Factor (Charging) | +3 mv/F per cell when operating, below 77°F (25°C) -3 mv/F per cell when operating, above 77°F (25°C) |
| Terminal | Threaded copper alloy insert terminal to accept 1/4-20 UNC bolt |
| Terminal Hardware Torque | 110 inIbs (12.4 N-m) |



MODE in in in in in in mm in mm mm mm in mm mm mm mm VRS12-155F 20.35 516.86 21.51 546.25 22.01 559.05 20.16 512.17 10.73 272.47 11.14 282.96 4.95 125.73 4.86 123.39
 VRS12.175F
 20.35
 516.86
 21.51
 546.25
 22.01
 559.05
 20.16
 512.17
 12.19
 309.55
 12.60
 320.04
 4.95

 * All dimensions in inches and (millimeters). All dimensions are for reference only. Contact a C&D Representative for complete dimensions information.
 * Note: Batteries to be mounted with 0.5 IN (12.5MM) spacing minimum and free air ventilation.
 125.73 4.86 123.39



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