



HRL Series

HRL 1225W Datasheet

12V Top Terminal VRLA-AGM

Specifications

| | |
|--|--|
| Voltage (Vdc) | 12 |
| Nominal Capacity (1.67 VPC @25°C) | 25W @15min-rate |
| Watts Per Cell (30-Sec 1.67 VPC @ 25°C) | -- |
| Watts Per Cell (5-Min 1.67 VPC @ 25°) | 54.16 |
| Watts Per Cell (15-Min 1.67 VPC @ 25°) | 25.67 |
| Max Charge Current (A) | 2.50 |
| Max Discharge Current (A) | 130 |
| Short Circuit Current (A) | 328 |
| Internal Resistance (mΩ) | Approx. 19.60 |
| Terminal Type | F2 terminal -Faston Tab 250 |
| Terminal Torque | -- |
| Container Material | ABS (UL 94-HB) & Flame Retardant (94-V0) available upon request |
| Weight (kg. / lb., Approx.) | Approx. 1.95 / 4.30 |
| Length (L) (mm / in) | 90.0±1.0 / 3.54±0.04 |
| Width (W) (mm / in) | 70.0±1.0 / 2.76±0.04 |
| Height (H) (mm / in) | 106.1±1.5 / 4.18±0.06 |
| Design Life | Up to 8 Years in Standby Service at 25°C Eurobat (20°C): 10-12 Years Standard Commercial Nominal: 25°C (77°F) Discharge: -15°C - 50°C (5°F-122°F) Charge/Storage: -15°C - 40°C (5°F - 104°F) |
| Operating Temperature | |
| Float Charging Voltage | 13.5 - 13.8 Vdc/battery 25°C (77°F) |
| Eq. Charging Voltage | 14.4 - 15.0 Vdc/battery 25°C (77°F) |
| Self-Discharge | Less than 10% after 90 days, can be stored up to 6 months at 25°C (77°F); Fully recharging is required before usage, and charged sooner if stored at higher temperature than 25°C (77°F). |



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Applications

Built in Accordance with IEC
61056-1/2:2012 and UL1989
Recognized (MH14533)





HRL Series

HRL 1225W Datasheet

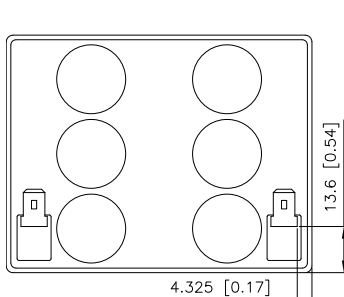
12V Top Terminal VRLA-AGM

Constant Current Discharge Characteristics Unit: A (25°C, 77°F)

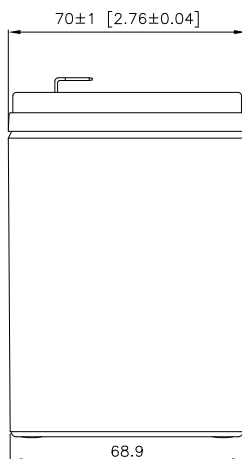
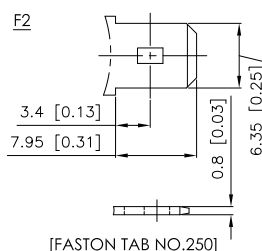
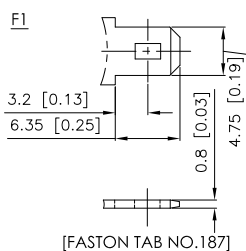
| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 51.9 | 36.0 | 31.7 | 26.9 | 21.7 | 18.8 | 13.7 | 10.9 | 7.85 | 5.63 | 4.45 | 3.19 |
| 10.50V (1.75 VPC) | 44.8 | 33.5 | 28.1 | 24.3 | 20.5 | 17.9 | 13.2 | 10.5 | 7.60 | 5.48 | 4.35 | 3.13 |
| 10.80V (1.80 VPC) | 39.1 | 29.2 | 24.9 | 22.5 | 19.3 | 16.7 | 12.5 | 10.0 | 7.32 | 5.30 | 4.21 | 3.05 |

Constant Power Discharge Characteristics Unit: W (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 539 | 369 | 325 | 292 | 242 | 208 | 154 | 123 | 89.2 | 64.1 | 50.7 | 36.4 |
| 10.50V (1.75 VPC) | 453 | 340 | 302 | 273 | 231 | 199 | 149 | 119 | 87.1 | 62.8 | 49.8 | 35.9 |
| 10.80V (1.80 VPC) | 403 | 312 | 280 | 254 | 218 | 188 | 143 | 115 | 84.3 | 61.0 | 48.5 | 35.1 |



Detail A Drawing(3:1)





HRL Series

HRL 1234W Datasheet

12V Top Terminal VRLA-AGM

Specifications

| | |
|--|--|
| Voltage (Vdc) | 12 |
| Nominal Capacity (1.67 VPC @25°C) | 34W @15min-rate |
| Watts Per Cell (30-Sec 1.67 VPC @ 25°C) | -- |
| Watts Per Cell (5-Min 1.67 VPC @ 25°) | 75.34 |
| Watts Per Cell (15-Min 1.67 VPC @ 25°) | 35.50 |
| Max Charge Current (A) | 3.40 |
| Max Discharge Current (A) | 130 |
| Short Circuit Current (A) | 367 |
| Internal Resistance (mΩ) | Approx. 17.0 |
| Terminal Type | F2 terminal -Faston Tab 250 |
| Terminal Torque | -- |
| Container Material | ABS (UL 94-HB) & Flame Retardant (94-V0) available upon request |
| Weight (kg. / lb., Approx.) | 2.70 / 5.95 |
| Length (L) (mm / in) | 150.9±2.0 / 5.94±0.08 |
| Width (W) (mm / in) | 64.8±1.0 / 2.55±0.04 |
| Height (H) (mm / in) | 98.6±1.0 / 3.88±0.04 |
| Design Life | Up to 8 Years in Standby Service at 25°C Eurobat (20°C): 10-12 Years Standard Commercial Nominal: 25°C (77°F) Discharge: -15°C - 50°C (5°F-122°F) Charge/Storage: -15°C - 40°C (5°F - 104°F) |
| Operating Temperature | |
| Float Charging Voltage | 13.5 - 13.8 Vdc/battery 25°C (77°F) |
| Eq. Charging Voltage | 14.4 - 15.0 Vdc/battery 25°C (77°F) |
| Self-Discharge | Less than 10% after 90 days, can be stored up to 6 months at 25°C (77°F); Fully recharging is required before usage, and charged sooner if stored at higher temperature than 25°C (77°F). |



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Recognized (MH14533)





HRL Series

HRL 1280W Datasheet

12V Top Terminal VRLA-AGM

Specifications

| | |
|--|--|
| Voltage (Vdc) | 12 |
| Nominal Capacity (1.67 VPC @25°C) | 80W @15min-rate |
| Watts Per Cell (30-Sec 1.67 VPC @ 25°C) | -- |
| Watts Per Cell (5-Min 1.67 VPC @ 25°) | 161.83 |
| Watts Per Cell (15-Min 1.67 VPC @ 25°) | 80.83 |
| Max Charge Current (A) | 8.0 |
| Max Discharge Current (A) | 300 |
| Short Circuit Current (A) | 723 |
| Internal Resistance (mΩ) | Approx. 9.00 |
| Terminal Type | I1 thread lead alloy terminal to accept M5 bolt |
| Terminal Torque | 30.4±6.1 Kgf·cm / 26.4±5.3 Lbf·in / 3.0±0.6 N·m |
| Container Material | ABS (UL 94-HB) & Flame Retardant (94-V0) available upon request |
| Weight (kg. / lb., Approx.) | 6.60 / 14.55 |
| Length (L) (mm / in) | 181.0±2.0 / 7.13±0.08 |
| Width (W) (mm / in) | 76.0±1.0 / 2.99±0.04 |
| Height (H) (mm / in) | 165.0±2.0 / 6.50±0.08 |
| Design Life | Up to 8 Years in Standby Service at 25°C Eurobat (20°C): 10-12 Years Standard Commercial Nominal: 25°C (77°F) Discharge: -15°C - 50°C (5°F-122°F) Charge/Storage: -15°C - 40°C (5°F - 104°F) |
| Operating Temperature | |
| Float Charging Voltage | 13.5 - 13.8 Vdc/battery 25°C (77°F) |
| Eq. Charging Voltage | 14.4 - 15.0 Vdc/battery 25°C (77°F) |
| Self-Discharge | Less than 10% after 90 days, can be stored up to 6 months at 25°C (77°F); Fully recharging is required before usage, and charged sooner if stored at higher temperature than 25°C (77°F). |



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HRL Series

HRL 1280W Datasheet

12V Top Terminal VRLA-AGM

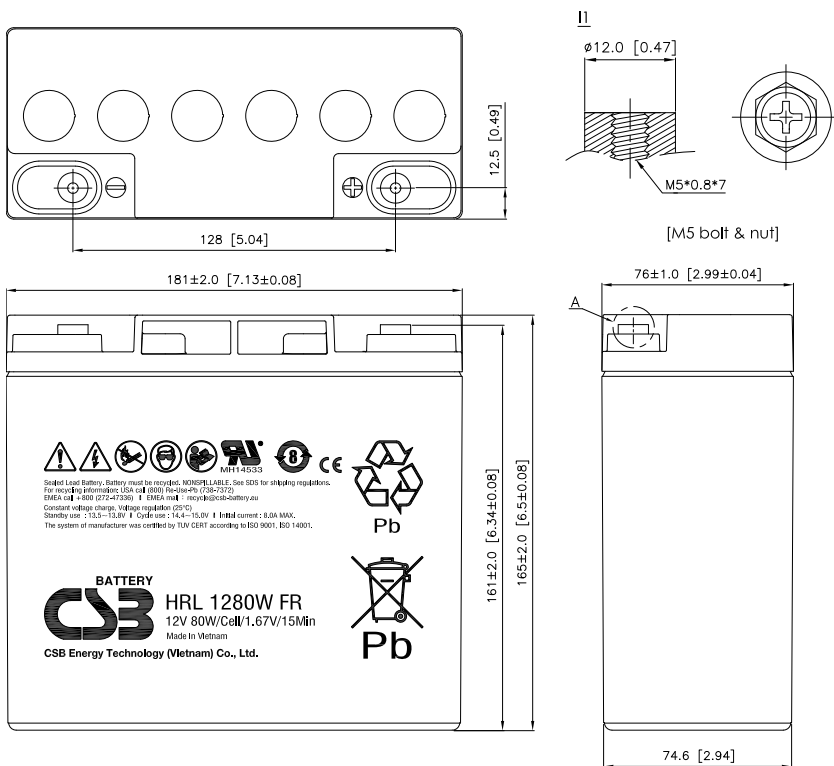
Constant Current Discharge Characteristics Unit: A (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 142 | 103 | 90.7 | 81.7 | 69.5 | 58.7 | 43.5 | 34.0 | 24.6 | 18.0 | 14.4 | 10.4 |
| 10.50V (1.75 VPC) | 119 | 92.3 | 82.6 | 75.5 | 64.3 | 54.3 | 41.6 | 32.9 | 23.7 | 17.4 | 14.0 | 10.1 |
| 10.80V (1.80 VPC) | 105 | 83.2 | 75.7 | 70.0 | 60.8 | 51.8 | 39.8 | 32.1 | 23.0 | 16.9 | 13.6 | 10.0 |

Constant Power Discharge Characteristics Unit: W (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 1431 | 1073 | 971 | 895 | 761 | 661 | 485 | 382 | 280 | 207 | 167 | 121 |
| 10.50V (1.75 VPC) | 1270 | 983 | 897 | 832 | 708 | 626 | 468 | 370 | 270 | 200 | 161 | 117 |
| 10.80V (1.80 VPC) | 1173 | 909 | 836 | 781 | 679 | 593 | 453 | 364 | 266 | 197 | 159 | 116 |

Detail A Drawing(3:1)





HRL Series

HRL 12110W Datasheet

12V Top Terminal VRLA-AGM

Specifications

| | |
|--|---|
| Voltage (Vdc) | 12 |
| Nominal Capacity (1.67 VPC @25°C) | 110W @15min-rate |
| Watts Per Cell (30-Sec 1.67 VPC @ 25°C) | -- |
| Watts Per Cell (5-Min 1.67 VPC @ 25°) | 211 |
| Watts Per Cell (15-Min 1.67 VPC @ 25°) | 111 |
| Max Charge Current (A) | 11.0 |
| Max Discharge Current (A) | 225 |
| Short Circuit Current (A) | 884 |
| Internal Resistance (mΩ) | Approx. 8.10 |
| Terminal Type | 11 thread lead alloy terminal to accept M5 bolt |
| Terminal Torque | 30.4±6.1 Kgf·cm / 26.4±5.3 Lbf·in / 3.0±0.6 N·m |
| Container Material | ABS (UL 94-HB) & Flame Retardant (94-V0) available upon request |
| Weight (kg. / lb., Approx.) | 9.90 / 21.82 |
| Length (L) (mm / in) | 166.0±2.0 / 6.54±0.08 |
| Width (W) (mm / in) | 125.0±1.5 / 4.92±0.06 |
| Height (H) (mm / in) | 175.0±2.0 / 6.89±0.08 |
| Design Life | Up to 10 Years in Standby Service at 25°C Eurobat (20°C): >12 Years Very Long Life |
| Operating Temperature | Nominal: 25°C (77°F) Discharge: -15°C - 50°C (5°F-122°F) Charge/Storage: -15°C - 40°C (5°F - 104°F) |
| Float Charging Voltage | 13.5 - 13.8 Vdc/battery 25°C (77°F) |
| Eq. Charging Voltage | 14.4 - 15.0 Vdc/battery 25°C (77°F) |
| Self-Discharge | Less than 10% after 90 days, can be stored up to 6 months at 25°C (77°F); Fully recharging is required before usage, and charged sooner if stored at higher temperature than 25°C (77°F). |



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HRL Series

HRL 12110W Datasheet

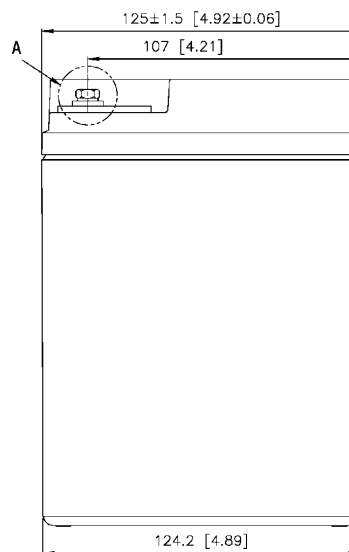
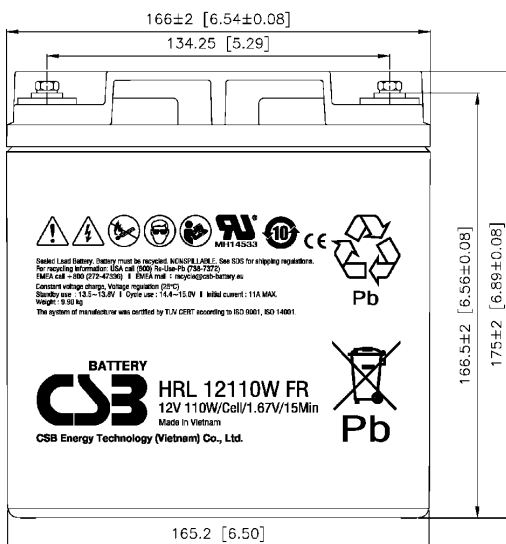
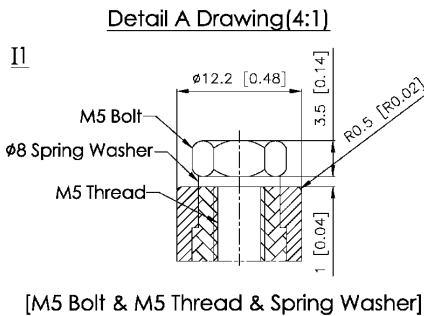
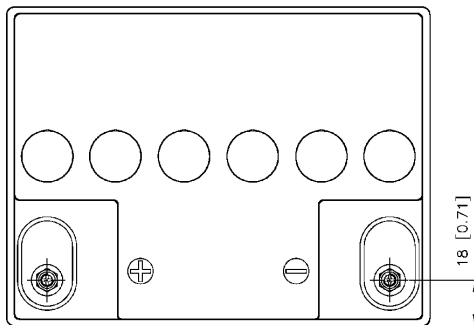
12V Top Terminal VRLA-AGM

Constant Current Discharge Characteristics Unit: A (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 151 | 129 | 117 | 108 | 91.1 | 77.5 | 59.6 | 47.0 | 33.2 | 25.3 | 20.8 | 14.7 |
| 10.50V (1.75 VPC) | 125 | 108 | 100 | 93.2 | 82.7 | 72.2 | 56.1 | 44.7 | 32.3 | 24.4 | 20.0 | 14.4 |
| 10.80V (1.80 VPC) | 109 | 94.0 | 88.2 | 83.7 | 76.4 | 68.7 | 53.7 | 42.5 | 31.9 | 24.0 | 19.6 | 14.2 |

Constant Power Discharge Characteristics Unit: W (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 1624 | 1386 | 1263 | 1171 | 988 | 852 | 665 | 535 | 377 | 292 | 243 | 173 |
| 10.50V (1.75 VPC) | 1358 | 1190 | 1093 | 1020 | 900 | 796 | 636 | 510 | 361 | 280 | 234 | 170 |
| 10.80V (1.80 VPC) | 1177 | 1054 | 990 | 941 | 851 | 764 | 610 | 495 | 352 | 274 | 229 | 168 |





HRL Series

HRL 12150W Datasheet

12V Top Terminal VRLA-AGM

Specifications

| | |
|--|---|
| Voltage (Vdc) | 12 |
| Nominal Capacity (1.67 VPC @25°C) | 150W @15min-rate |
| Watts Per Cell (30-Sec 1.67 VPC @ 25°C) | -- |
| Watts Per Cell (5-Min 1.67 VPC @ 25°) | 271 |
| Watts Per Cell (15-Min 1.67 VPC @ 25°) | 156 |
| Max Charge Current (A) | 15.0 |
| Max Discharge Current (A) | 225 |
| Short Circuit Current (A) | 1116 |
| Internal Resistance (mΩ) | Approx. 7.30 |
| Terminal Type | I2 thread lead alloy terminal to accept M6 bolt |
| Terminal Torque | 51.7±10.3 Kgf·cm / 44.9±9.0 Lbf·in / 5.10±1.0 N·m |
| Container Material | ABS (UL 94-HB) & Flame Retardant (94-V0) available upon request |
| Weight (kg. / lb., Approx.) | 11.95 / 26.34 |
| Length (L) (mm / in) | 195.6±2.0 / 7.70±0.08 |
| Width (W) (mm / in) | 130.0±1.5 / 5.12±0.06 |
| Height (H) (mm / in) | 174.8.0±2.0 / 6.88±0.08 |
| Design Life | Up to 10 Years in Standby Service at 25°C Eurobat (20°C): 10-12 Years Standard Commercial |
| Operating Temperature | Nominal: 25°C (77°F) Discharge: -15°C - 50°C (5°F-122°F) Charge/Storage: -15°C - 40°C (5°F - 104°F) |
| Float Charging Voltage | 13.5 - 13.8 Vdc/battery 25°C (77°F) |
| Eq. Charging Voltage | 14.4 - 15.0 Vdc/battery 25°C (77°F) |
| Self-Discharge | Less than 10% after 90 days, can be stored up to 6 months at 25°C (77°F); Fully recharging is required before usage, and charged sooner if stored at higher temperature than 25°C (77°F). |



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HRL Series

HRL 12150W Datasheet

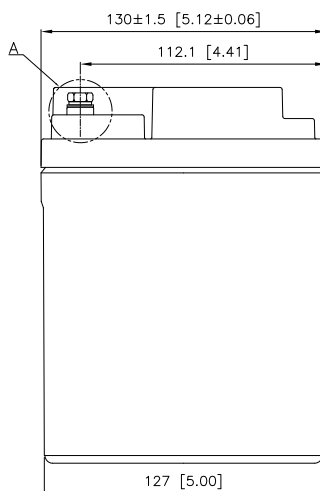
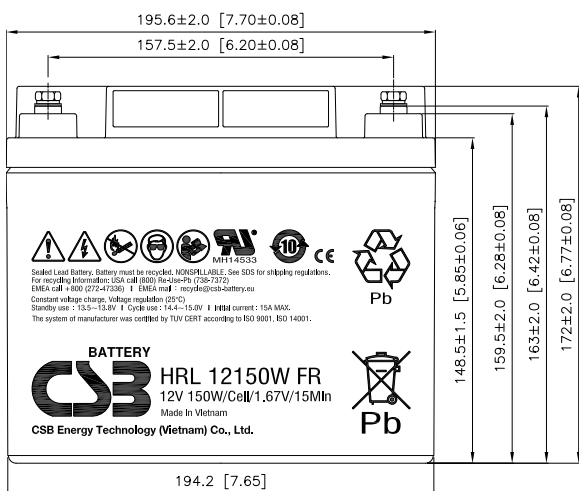
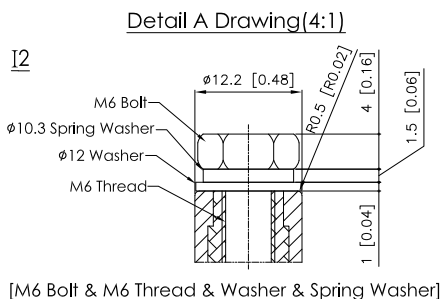
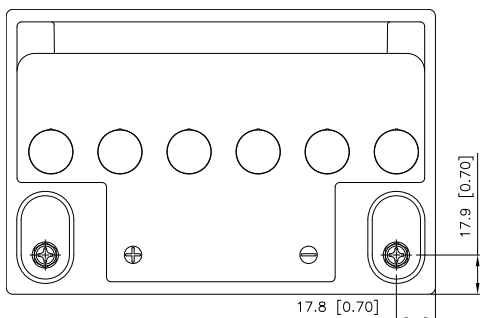
12V Top Terminal VRLA-AGM

Constant Current Discharge Characteristics Unit: A (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | -- | -- | 152 | 139 | 116 | 107 | 82.2 | 66.3 | 48.4 | 35.3 | 28.6 | 20.5 |
| 10.50V (1.75 VPC) | -- | -- | 132 | 122 | 104 | 96.8 | 76.0 | 62.0 | 45.7 | 33.6 | 27.8 | 20.0 |
| 10.80V (1.80 VPC) | -- | -- | 119 | 111 | 96.2 | 90.0 | 71.1 | 58.4 | 43.8 | 32.2 | 26.8 | 19.5 |

Constant Power Discharge Characteristics Unit: W (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | -- | -- | 1624 | 1494 | 1275 | 1182 | 935 | 753 | 559 | 415 | 334 | 239 |
| 10.50V (1.75 VPC) | -- | -- | 1422 | 1321 | 1149 | 1075 | 877 | 704 | 530 | 399 | 325 | 231 |
| 10.80V (1.80 VPC) | -- | -- | 1302 | 1217 | 1069 | 1006 | 825 | 675 | 507 | 383 | 314 | 226 |





HRL Series

HRL 12200W Datasheet

12V Top Terminal VRLA-AGM

Specifications

| | |
|--|---|
| Voltage (Vdc) | 12 |
| Nominal Capacity (1.67 VPC @25°C) | 200W @15min-rate |
| Watts Per Cell (30-Sec 1.67 VPC @ 25°C) | -- |
| Watts Per Cell (5-Min 1.67 VPC @ 25°) | 385 |
| Watts Per Cell (15-Min 1.67 VPC @ 25°) | 218 |
| Max Charge Current (A) | 20.0 |
| Max Discharge Current (A) | 400 |
| Short Circuit Current (A) | 1509 |
| Internal Resistance (mΩ) | Approx. 5.50 |
| Terminal Type | 12 thread lead alloy terminal to accept M6 bolt |
| Terminal Torque | 51.7±10.3 Kgf·cm / 44.9±9.0 Lbf·in / 5.10±1.0 N·m |
| Container Material | PP (UL 94-HB) & Flame Retardant (94-V0) available upon request |
| Weight (kg. / lb., Approx.) | 17.30 / 38.13 |
| Length (L) (mm / in) | 228.0±2.5 / 8.98±0.10 |
| Width (W) (mm / in) | 138.4±1.5 / 5.45±0.06 |
| Height (H) (mm / in) | 206.3±2.5 / 8.12±0.10 |
| Design Life | Up to 10 Years in Standby Service at 25°C Eurobat (20°C): >12 Years Very Long Life |
| Operating Temperature | Nominal: 25°C (77°F) Discharge: -15°C - 50°C (5°F-122°F) Charge/Storage: -15°C - 40°C (5°F - 104°F) |
| Float Charging Voltage | 13.5 - 13.8 Vdc/battery 25°C (77°F) |
| Eq. Charging Voltage | 14.4 - 15.0 Vdc/battery 25°C (77°F) |
| Self-Discharge | Less than 10% after 90 days, can be stored up to 6 months at 25°C (77°F); Fully recharging is required before usage, and charged sooner if stored at higher temperature than 25°C (77°F). |



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HRL Series

HRL 12200W Datasheet

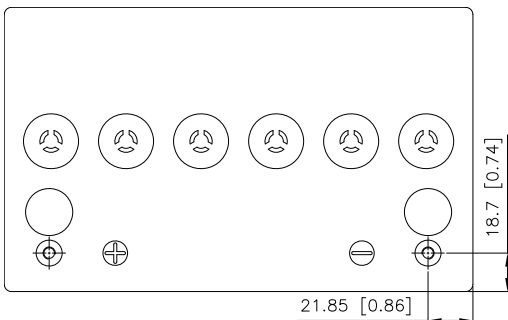
12V Top Terminal VRLA-AGM

Constant Current Discharge Characteristics Unit: A (25°C, 77°F)

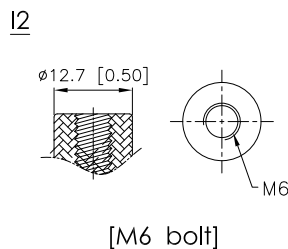
| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 279 | 232 | 218 | 205 | 177 | 157 | 118 | 97.0 | 71.2 | 52.0 | 41.2 | 29.5 |
| 10.50V (1.75 VPC) | 233 | 197 | 192 | 176 | 156 | 141 | 111 | 92.0 | 68.2 | 50.7 | 40.3 | 29.1 |
| 10.80V (1.80 VPC) | 198 | 172 | 165 | 156 | 140 | 126 | 102 | 85.2 | 64.6 | 48.7 | 38.9 | 28.2 |

Constant Power Discharge Characteristics Unit: W (25°C, 77°F)

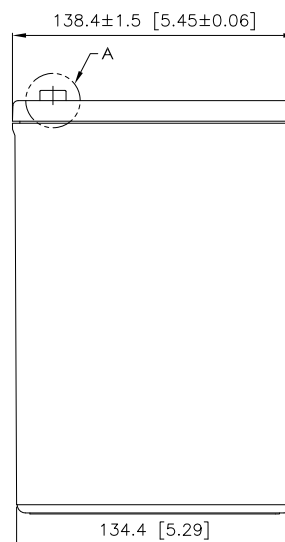
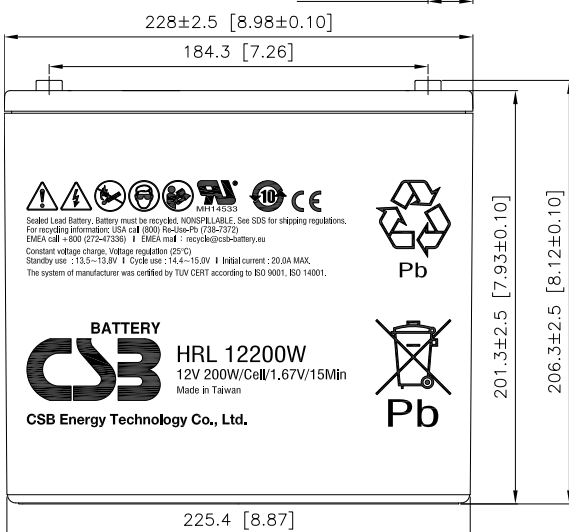
| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 2861 | 2395 | 2306 | 2127 | 1874 | 1666 | 1308 | 1083 | 809 | 600 | 475 | 342 |
| 10.50V (1.75 VPC) | 2458 | 2120 | 2022 | 1904 | 1717 | 1523 | 1232 | 1027 | 772 | 585 | 464 | 335 |
| 10.80V (1.80 VPC) | 2231 | 1889 | 1840 | 1765 | 1562 | 1409 | 1158 | 959 | 738 | 564 | 452 | 326 |



Detail A Drawing(3:1)



[M6 bolt]





HRL Series

HRL 12280W Datasheet

12V Top Terminal VRLA-AGM

Specifications

| | |
|--|---|
| Voltage (Vdc) | 12 |
| Nominal Capacity (1.67 VPC @25°C) | 280W @15min-rate |
| Watts Per Cell (30-Sec 1.67 VPC @ 25°C) | -- |
| Watts Per Cell (5-Min 1.67 VPC @ 25°) | 506 |
| Watts Per Cell (15-Min 1.67 VPC @ 25°) | 284 |
| Max Charge Current (A) | 28.0 |
| Max Discharge Current (A) | 800 |
| Short Circuit Current (A) | 2576 |
| Internal Resistance (mΩ) | Approx. 3.50 |
| Terminal Type | I2 thread lead alloy terminal to accept M6 bolt |
| Terminal Torque | 51.7±10.3 Kgf·cm / 44.9±9.0 Lbf·in / 5.10±1.0 N·m |
| Container Material | PP (UL 94-HB) & Flame Retardant (94-V0) available upon request |
| Weight (kg. / lb., Approx.) | 25.80 / (56.86 |
| Length (L) (mm / in) | 261.0±2.5 / 10.28±0.10 |
| Width (W) (mm / in) | 168.5±2.0 / 6.63±0.08 |
| Height (H) (mm / in) | 213.5±2.5 / 8.41±0.10 |
| Design Life | Up to 10 Years in Standby Service at 25°C Eurobat (20°C): >12 Years Very Long Life |
| Operating Temperature | Nominal: 25°C (77°F) Discharge: -15°C - 50°C (5°F-122°F) Charge/Storage: -15°C - 40°C (5°F - 104°F) |
| Float Charging Voltage | 13.5 - 13.8 Vdc/battery 25°C (77°F) |
| Eq. Charging Voltage | 14.4 - 15.0 Vdc/battery 25°C (77°F) |
| Self-Discharge | Less than 10% after 90 days, can be stored up to 6 months at 25°C (77°F); Fully recharging is required before usage, and charged sooner if stored at higher temperature than 25°C (77°F). |



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HRL Series

HRL 12280W Datasheet

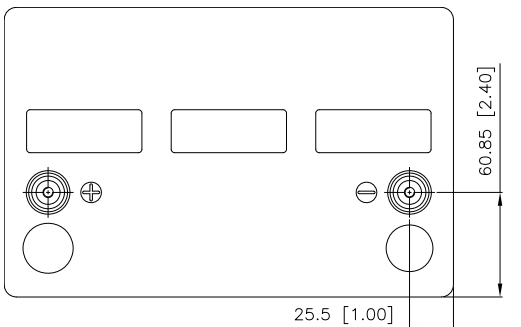
12V Top Terminal VRLA-AGM

Constant Current Discharge Characteristics Unit: A (25°C, 77°F)

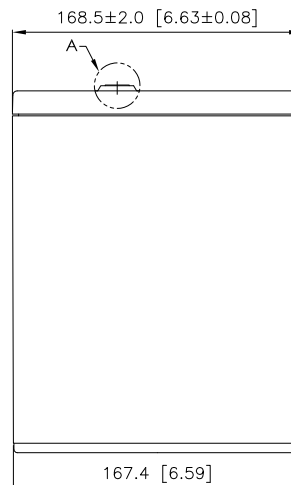
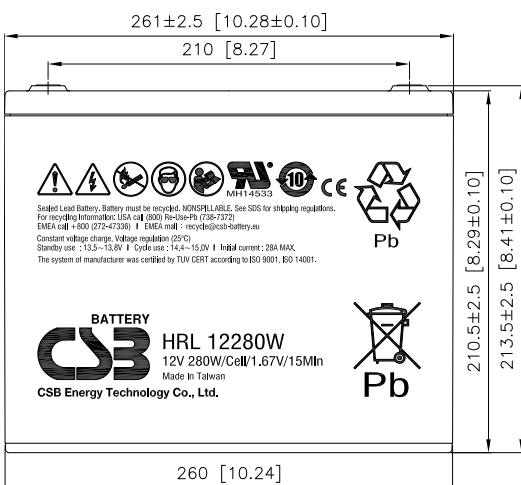
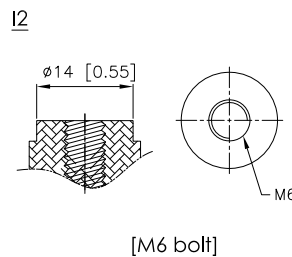
| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 345 | 305 | 283 | 258 | 217 | 200 | 155 | 128 | 98.3 | 72.9 | 57.7 | 42.1 |
| 10.50V (1.75 VPC) | 288 | 254 | 236 | 218 | 188 | 175 | 141 | 117 | 91.3 | 68.5 | 53.8 | 38.5 |
| 10.80V (1.80 VPC) | 249 | 219 | 207 | 194 | 171 | 161 | 131 | 111 | 85.4 | 63.7 | 50.1 | 36.3 |

Constant Power Discharge Characteristics Unit: W (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 3807 | 3150 | 3036 | 2778 | 2347 | 2166 | 1700 | 1417 | 1079 | 804 | 636 | 466 |
| 10.50V (1.75 VPC) | 3244 | 2780 | 2615 | 2422 | 2095 | 1955 | 1575 | 1326 | 1023 | 780 | 600 | 436 |
| 10.80V (1.80 VPC) | 2833 | 2476 | 2329 | 2176 | 1913 | 1800 | 1493 | 1274 | 980 | 738 | 581 | 422 |



Detail A Drawing(4:1)





HRL Series

HRL 12330W Datasheet

12V Top Terminal VRLA-AGM

Specifications

| | |
|--|---|
| Voltage (Vdc) | 12 |
| Nominal Capacity | 330W @ 15min-rate (1.67C) 100AH@ 20hour-rate (1.75V) |
| Watts Per Cell (30-Sec 1.67 VPC @ 25°C) | -- |
| Watts Per Cell (5-Min 1.67 VPC @ 25°) | 627 |
| Watts Per Cell (15-Min 1.67 VPC @ 25°) | 356 |
| Max Charge Current (A) | 33.0A |
| Max Discharge Current (A) | 800 |
| Short Circuit Current (A) | 2386 |
| Internal Resistance (mΩ) | Approx. 3.50 |
| Terminal Type | 12 thread lead alloy terminal to accept M6 bolt |
| Terminal Torque | 51.7±10.3 Kgf·cm / 44.9±9.0 Lbf·in / 5.10±1.0 N·m |
| Container Material | PP (UL 94-HB) & Flame Retardant (94-V0) available upon request |
| Weight (kg. / lb., Approx.) | 29.60 / 65.24 |
| Length (L) (mm / in) | 308.7±2.5 / 12.15±0.10 |
| Width (W) (mm / in) | 169.0±2.0 / 6.65±0.08 |
| Height (H) (mm / in) | 213.6±2.5 / 8.41±0.10 |
| Design Life | Up to 10 Years in Standby Service at 25°C Eurobat (20°C): >12 Years Very Long Life |
| Operating Temperature | Nominal: 25°C (77°F) Discharge: -15°C - 50°C (5°F-122°F) Charge/Storage: -15°C - 40°C (5°F - 104°F) |
| Float Charging Voltage | 13.5 - 13.8 Vdc/battery 25°C (77°F) |
| Eq. Charging Voltage | 14.4 - 15.0 Vdc/battery 25°C (77°F) |
| Self-Discharge | Less than 10% after 90 days, can be stored up to 6 months at 25°C (77°F); Fully recharging is required before usage, and charged sooner if stored at higher temperature than 25°C (77°F). |



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HRL Series

HRL 12330W Datasheet

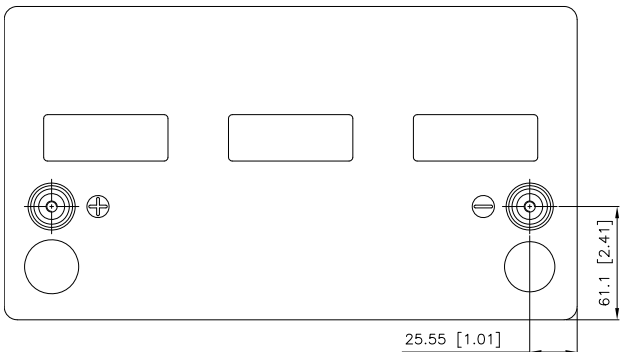
12V Top Terminal VRLA-AGM

Constant Current Discharge Characteristics Unit: A (25°C, 77°F)

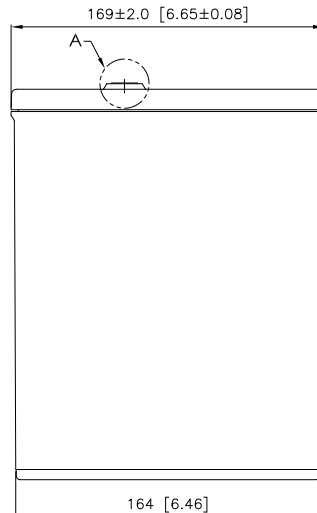
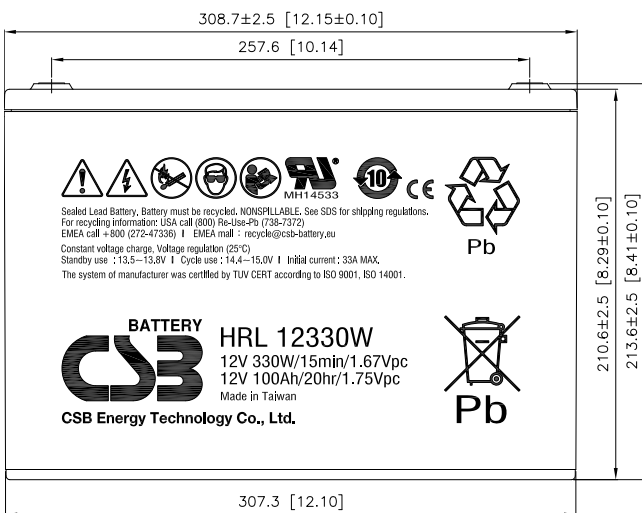
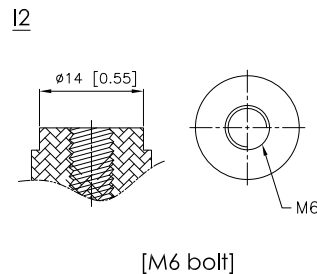
| F.V/Time | 2MIN | 5MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN | 5HR | 10HR | 20HR |
|-------------------|------|------|-------|-------|-------|-------|-------|-------|-------|------|------|------|
| 10.02V (1.67 VPC) | 482 | 369 | 256 | 196 | 158 | 117 | 85.1 | 67.9 | 49.4 | 18.6 | 9.91 | 5.12 |
| 10.50V (1.75 VPC) | 405 | 317 | 230 | 181 | 149 | 112 | 82.6 | 66.4 | 48.9 | 18.2 | 9.74 | 5.06 |
| 10.80V (1.80 VPC) | 337 | 273 | 206 | 168 | 139 | 106 | 79.1 | 64.1 | 47.7 | 17.8 | 9.51 | 4.97 |

Constant Power Discharge Characteristics Unit: W (25°C, 77°F)

| F.V/Time | 2MIN | 5MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN | 5HR | 10HR | 20HR |
|-------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-----|------|------|
| 10.02V (1.67 VPC) | 4397 | 3761 | 2737 | 2131 | 1738 | 1304 | 965 | 779 | 576 | 216 | 116 | 61.0 |
| 10.50V (1.75 VPC) | 4043 | 3300 | 2485 | 2009 | 1656 | 1260 | 941 | 764 | 571 | 214 | 115 | 60.5 |
| 10.80V (1.80 VPC) | 3660 | 2993 | 2276 | 1883 | 1564 | 1204 | 907 | 742 | 559 | 210 | 113 | 59.6 |



Detail A Drawing(4:1)





HRL Series

HRL 12390W Datasheet

12V Top Terminal VRLA-AGM

Specifications

| | |
|--|---|
| Voltage (Vdc) | 12 |
| Nominal Capacity (1.67 VPC @25°C) | 390W @15min-rate |
| Watts Per Cell (30-Sec 1.67 VPC @ 25°C) | -- |
| Watts Per Cell (5-Min 1.67 VPC @ 25°) | 700 |
| Watts Per Cell (15-Min 1.67 VPC @ 25°) | 414 |
| Max Charge Current (A) | 39.0 |
| Max Discharge Current (A) | 800 |
| Short Circuit Current (A) | 2779 |
| Internal Resistance (mΩ) | Approx. 3.00 |
| Terminal Type | 12 thread lead alloy terminal to accept M6 bolt |
| Terminal Torque | 51.7±10.3 Kgf·cm / 44.9±9.0 Lbf·in / 5.10±1.0 N·m |
| Container Material | PP (UL 94-HB) & Flame Retardant (94-V0) available upon request |
| Weight (kg. / lb., Approx.) | 33.00 / 72.73 |
| Length (L) (mm / in) | 343.0±2.5 / 13.50±0.10 |
| Width (W) (mm / in) | 170.0±2.0 / 6.69±0.08 |
| Height (H) (mm / in) | 216.9±2.5 / 8.54±0.10 |
| Design Life | Up to 10 Years in Standby Service at 25°C Eurobat (20°C): >12 Years Very Long Life |
| Operating Temperature | Nominal: 25°C (77°F) Discharge: -15°C - 50°C (5°F-122°F) Charge/Storage: -15°C - 40°C (5°F - 104°F) |
| Float Charging Voltage | 13.5 - 13.8 Vdc/battery 25°C (77°F) |
| Eq. Charging Voltage | 14.4 - 15.0 Vdc/battery 25°C (77°F) |
| Self-Discharge | Less than 10% after 90 days, can be stored up to 6 months at 25°C (77°F); Fully recharging is required before usage, and charged sooner if stored at higher temperature than 25°C (77°F). |



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HRL Series

HRL 12390W Datasheet

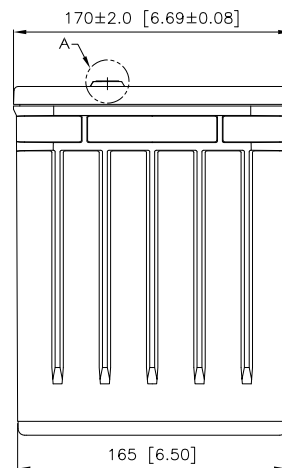
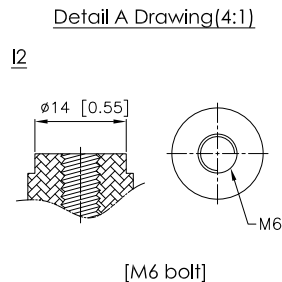
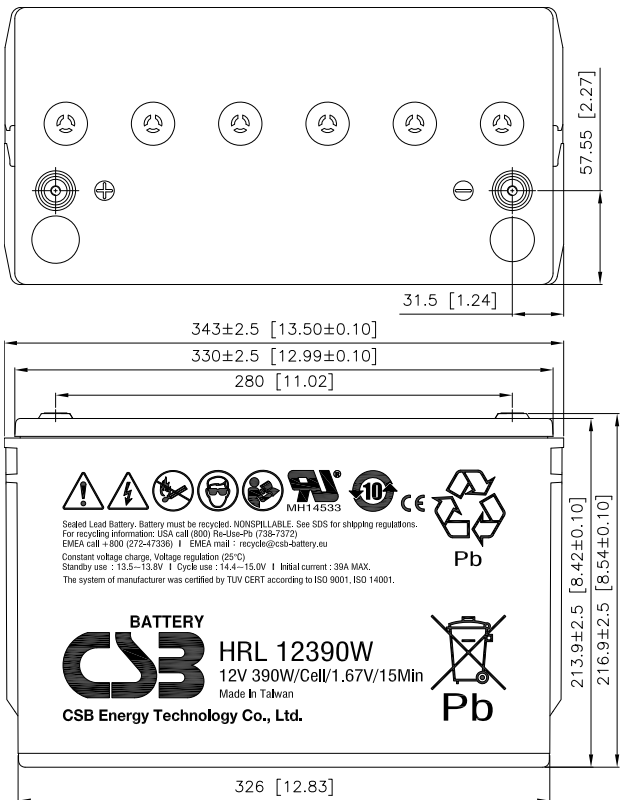
12V Top Terminal VRLA-AGM

Constant Current Discharge Characteristics Unit: A (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 532 | 456 | 416 | 386 | 334 | 298 | 230 | 186 | 138 | 99.6 | 78.9 | 56.8 |
| 10.50V (1.75 VPC) | 463 | 384 | 354 | 330 | 296 | 266 | 212 | 174 | 132 | 96.1 | 76.7 | 55.7 |
| 10.80V (1.80 VPC) | 382 | 330 | 310 | 296 | 266 | 239 | 197 | 163 | 125 | 91.8 | 73.8 | 54.2 |

Constant Power Discharge Characteristics Unit: W (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 5312 | 4557 | 4197 | 3919 | 3518 | 3141 | 2483 | 2039 | 1545 | 1130 | 906 | 663 |
| 10.50V (1.75 VPC) | 4583 | 3970 | 3736 | 3555 | 3190 | 2861 | 2348 | 1943 | 1488 | 1098 | 885 | 653 |
| 10.80V (1.80 VPC) | 4044 | 3587 | 3451 | 3253 | 2893 | 2641 | 2215 | 1843 | 1423 | 1059 | 858 | 639 |





HRL Series

HRL 12540W Datasheet

12V Top Terminal VRLA-AGM

Specifications

| | |
|--|---|
| Voltage (Vdc) | 12 |
| Nominal Capacity (1.67 VPC @25°C) | 540W @15min-rate |
| Watts Per Cell (30-Sec 1.67 VPC @ 25°C) | -- |
| Watts Per Cell (5-Min 1.67 VPC @ 25°) | 838 |
| Watts Per Cell (15-Min 1.67 VPC @ 25°) | 542 |
| Max Charge Current (A) | 54 |
| Max Discharge Current (A) | 800 |
| Short Circuit Current (A) | 3523 |
| Internal Resistance (mΩ) | Approx. 2.60 |
| Terminal Type | 12 thread lead alloy terminal to accept M6 bolt |
| Terminal Torque | 51.7±10.3 Kgf·cm / 44.9±9.0 Lbf·in / 5.10±1.0 N·m |
| Container Material | PP (UL 94-HB) & Flame Retardant (94-V0) available upon request |
| Weight (kg. / lb., Approx.) | 43.90 / 96.76 |
| Length (L) (mm / in) | 343.0±2.5 / 13.50±0.10 |
| Width (W) (mm / in) | 170.0±2.0 / 6.69±0.08 |
| Height (H) (mm / in) | 275.7±2.5 / 10.85±0.10 |
| Design Life | Up to 10 Years in Standby Service at 25°C Eurobat (20°C): >12 Years Very Long Life |
| Operating Temperature | Nominal: 25°C (77°F) Discharge: -15°C - 50°C (5°F-122°F) Charge/Storage: -15°C - 40°C (5°F - 104°F) |
| Float Charging Voltage | 13.5 - 13.8 Vdc/battery 25°C (77°F) |
| Eq. Charging Voltage | 14.4 - 15.0 Vdc/battery 25°C (77°F) |
| Self-Discharge | Less than 10% after 90 days, can be stored up to 6 months at 25°C (77°F); Fully recharging is required before usage, and charged sooner if stored at higher temperature than 25°C (77°F). |



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HRL Series

HRL 12540W Datasheet

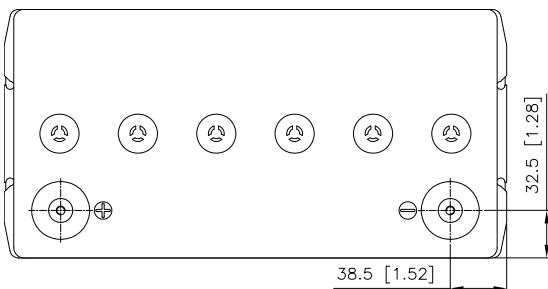
12V Top Terminal VRLA-AGM

Constant Current Discharge Characteristics Unit: A (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 608 | 517 | 480 | 452 | 406 | 370 | 294 | 245 | 181 | 132 | 105 | 74.3 |
| 10.50V (1.75 VPC) | 501 | 440 | 416 | 398 | 365 | 327 | 270 | 228 | 172 | 126 | 101 | 72.0 |
| 10.80V (1.80 VPC) | 430 | 391 | 375 | 362 | 323 | 296 | 252 | 209 | 161 | 120 | 97.9 | 70.3 |

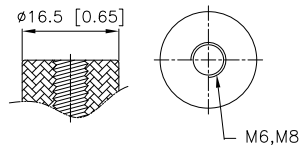
Constant Power Discharge Characteristics Unit: W (25°C, 77°F)

| F.V/Time | 2MIN | 4MIN | 5MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 45MIN | 60MIN | 90MIN |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 10.02V (1.67 VPC) | 6207 | 5325 | 5026 | 4794 | 4282 | 3885 | 3250 | 2630 | 2006 | 1492 | 1210 | 865 |
| 10.50V (1.75 VPC) | 5225 | 4639 | 4390 | 4196 | 3766 | 3472 | 2951 | 2454 | 1925 | 1441 | 1174 | 849 |
| 10.80V (1.80 VPC) | 4561 | 4310 | 4032 | 3818 | 3442 | 3233 | 2723 | 2306 | 1846 | 1385 | 1129 | 824 |



Detail A Drawing(4:1)

12,14



[M6, M8 bolt]

