

Pure Lead - Long Life



The NSB RED Battery® delivers long life for reliable and unreliable grid conditions.

- Pure lead electrochemistry greatly increases temp and corrosion resistance, while reducing component aging
- Thin plates deliver large surface area, high power density and low resistance
- Design life 15+ years at 20°C (68°F)
- EUROBAT design life definition: Long Life (12+ years) Fastrecharging
- Operating temperature range -40°C to +65°C (-40°F to 149°F)
- State-of-the-art automated manufacturing ensures consistency and reliability
- Shelf life of up to 24 months
- Advanced 3 stage terminal design to ensure leak-free operation - brass terminals provide maximum performance
- High modulus Polyphenylene Oxide (PPO) plastic materials designed to withstand extended elevated operating temperatures and maintain high battery compression essential for reliable operation
- Non-halogenated, thermally sealed plastic casing
- Flame retardant (UL 94 VO) and LOI of at least 28%
- Approved as non-hazardous cargo for ground, sea, and air transport - DOT 49CFR 173.159(d), (i) and (ii)

NSB 155FTRED

Nominal Technical Specifications

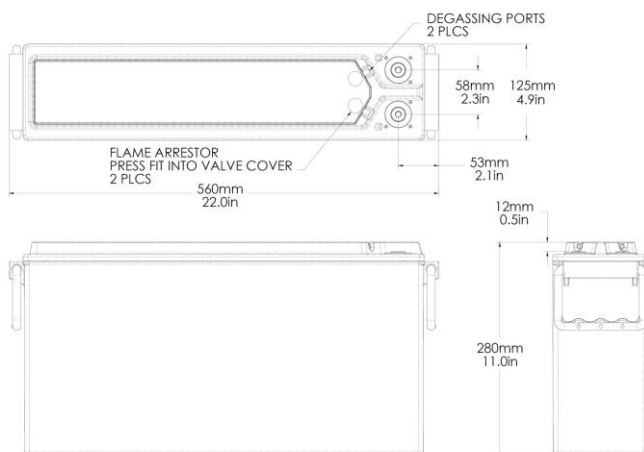
Dimensions

| | | | |
|--------|--------|--------|--------|
| Height | 280 mm | Width | 125 mm |
| Length | 560 mm | Weight | 46 kg |

Electrical

| | |
|---|----------------------|
| Terminal | Female M8 x 1.25 |
| Terminal torque | 8.0 Nm (71 in-lbs) |
| 1 hr capacity to 1.70VPC @ 20/25°C (68/77°F) | 106 / 110 Ah |
| 3 hr capacity to 1.75VPC @ 20/25°C (68/77°F) | 133 / 137 Ah |
| 8 hr capacity to 1.75VPC @ 20/25°C (68/77°F) | 150 / 153 Ah |
| 10 hr capacity to 1.80VPC @ 20/25°C (68/77°F) | 153 / 155 Ah |
| Float voltage @ 20/25°C (68/77°F) | 2.28 / 2.27 VPC |
| Impedance (1Khz) | 3.1 mΩ @ 25°C (77°F) |
| Conductance | 1648 S |
| Short circuit current | 4200 A |
| Operation temperature range | -40°C to +65°C |
| Nominal voltage | 12 V |

Technical Drawing



All NorthStar batteries are compliant with: Telcordia SR4228, IEC 60896; Bellcore GR-63-Core, Issue 1; British, German, and Russian telecom standards; UL approved and UN2800 certified. NorthStar is registered to ISO 9001 and ISO 14001.

NSB 155FT RED Battery®

Discharge tables @ 20°C (68°F)



Current / A

| Duration | | End of Discharge Voltage | | | | | | | | |
|----------|-------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Minutes | Hours | 1.85 | 1.80 | 1.75 | 1.70 | 1.67 | 1.65 | 1.60 | 1.55 | 1.50 |
| 2 | 0.03 | 366.1 | 416.1 | 466.9 | 517.3 | 546.7 | 565.7 | 610.8 | 651.1 | 685.2 |
| 5 | 0.08 | 327.9 | 362.1 | 395.5 | 427.4 | 445.3 | 456.7 | 482.8 | 504.8 | 522.1 |
| 10 | 0.17 | 264.8 | 286.4 | 306.8 | 325.7 | 336.2 | 342.7 | 357.2 | 368.9 | 377.6 |
| 15 | 0.25 | 223.1 | 238.5 | 252.8 | 265.8 | 272.9 | 277.3 | 286.9 | 294.5 | 299.8 |
| 20 | 0.33 | 193.9 | 205.5 | 216.3 | 226.0 | 231.2 | 234.4 | 241.4 | 246.8 | 250.4 |
| 30 | 0.50 | 155.1 | 162.7 | 169.6 | 175.7 | 178.9 | 180.9 | 185.1 | 188.3 | 190.3 |
| 45 | 0.75 | 120.8 | 125.4 | 129.6 | 133.3 | 135.2 | 136.3 | 138.7 | 140.4 | 141.5 |
| 60 | 1 | 99.6 | 102.8 | 105.6 | 108.1 | 109.3 | 110.1 | 111.6 | 112.7 | 113.3 |
| 120 | 2 | 59.9 | 61.0 | 61.9 | 62.7 | 63.1 | 63.4 | 63.8 | 64.1 | 64.2 |
| 180 | 3 | 43.4 | 43.9 | 44.3 | 44.7 | 44.8 | 44.9 | 45.1 | 45.2 | 45.2 |
| 240 | 4 | 34.1 | 34.4 | 34.7 | 34.8 | 34.9 | 35.0 | 35.1 | 35.1 | 35.1 |
| 300 | 5 | 28.2 | 28.4 | 28.5 | 28.6 | 28.7 | 28.7 | 28.8 | 28.8 | 28.7 |
| 480 | 8 | 18.7 | 18.7 | 18.8 | 18.8 | 18.8 | 18.8 | 18.8 | 18.8 | 18.8 |
| 600 | 10 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 |
| 1200 | 20 | 8.0 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 |

Capacity / Ah

| Duration | | End of Discharge Voltage | | | | | | | | |
|----------|-------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Minutes | Hours | 1.85 | 1.80 | 1.75 | 1.70 | 1.67 | 1.65 | 1.60 | 1.55 | 1.50 |
| 2 | 0.03 | 12.2 | 13.9 | 15.6 | 17.2 | 18.2 | 18.9 | 20.4 | 21.7 | 22.8 |
| 5 | 0.08 | 27.3 | 30.2 | 33.0 | 35.6 | 37.1 | 38.1 | 40.2 | 42.1 | 43.5 |
| 10 | 0.17 | 44.1 | 47.7 | 51.1 | 54.3 | 56.0 | 57.1 | 59.5 | 61.5 | 62.9 |
| 15 | 0.25 | 55.8 | 59.6 | 63.2 | 66.5 | 68.2 | 69.3 | 71.7 | 73.6 | 75.0 |
| 20 | 0.33 | 64.6 | 68.5 | 72.1 | 75.3 | 77.1 | 78.1 | 80.5 | 82.3 | 83.5 |
| 30 | 0.50 | 77.5 | 81.3 | 84.8 | 87.8 | 89.5 | 90.5 | 92.6 | 94.1 | 95.1 |
| 45 | 0.75 | 90.6 | 94.1 | 97.2 | 99.9 | 101.4 | 102.2 | 104.0 | 105.3 | 106.1 |
| 60 | 1 | 99.6 | 102.8 | 105.6 | 108.1 | 109.3 | 110.1 | 111.6 | 112.7 | 113.3 |
| 120 | 2 | 119.8 | 122.0 | 123.9 | 125.5 | 126.3 | 126.7 | 127.6 | 128.2 | 128.4 |
| 180 | 3 | 130.1 | 131.6 | 133.0 | 134.0 | 134.5 | 134.8 | 135.4 | 135.7 | 135.7 |
| 240 | 4 | 136.5 | 137.7 | 138.6 | 139.4 | 139.7 | 139.9 | 140.3 | 140.4 | 140.4 |
| 300 | 5 | 141.1 | 141.9 | 142.6 | 143.2 | 143.4 | 143.6 | 143.8 | 143.8 | 143.8 |
| 480 | 8 | 149.2 | 149.7 | 150.0 | 150.3 | 150.4 | 150.4 | 150.4 | 150.4 | 150.4 |
| 600 | 10 | 152.5 | 152.9 | 153.1 | 153.3 | 153.4 | 153.4 | 153.4 | 153.4 | 153.4 |
| 1200 | 20 | 160.9 | 161.4 | 161.9 | 162.3 | 162.5 | 162.6 | 162.8 | 162.9 | 162.9 |

Power / WPC

| Duration | | End of Discharge Voltage | | | | | | | | |
|----------|-------|--------------------------|-------|-------|-------|-------|-------|-------|--------|--------|
| Minutes | Hours | 1.85 | 1.80 | 1.75 | 1.70 | 1.67 | 1.65 | 1.60 | 1.55 | 1.50 |
| 2 | 0.03 | 547.4 | 639.3 | 732.7 | 824.0 | 876.2 | 909.3 | 984.6 | 1046.1 | 1090.7 |
| 5 | 0.08 | 551.9 | 613.0 | 671.9 | 726.8 | 757.0 | 775.8 | 817.1 | 849.3 | 871.1 |
| 10 | 0.17 | 475.5 | 512.5 | 547.0 | 578.2 | 594.9 | 605.1 | 627.2 | 643.7 | 654.2 |
| 15 | 0.25 | 412.6 | 438.1 | 461.6 | 482.4 | 493.4 | 500.1 | 514.4 | 524.8 | 531.1 |
| 20 | 0.33 | 364.7 | 383.7 | 401.0 | 416.2 | 424.1 | 428.9 | 439.0 | 446.3 | 450.6 |
| 30 | 0.50 | 297.7 | 309.7 | 320.4 | 329.6 | 334.4 | 337.3 | 343.3 | 347.5 | 349.8 |
| 45 | 0.75 | 235.5 | 242.6 | 248.9 | 254.2 | 257.0 | 258.6 | 261.9 | 264.2 | 265.3 |
| 60 | 1 | 195.9 | 200.7 | 204.9 | 208.4 | 210.2 | 211.2 | 213.3 | 214.7 | 215.4 |
| 120 | 2 | 119.4 | 121.0 | 122.4 | 123.6 | 124.1 | 124.4 | 125.1 | 125.5 | 125.6 |
| 180 | 3 | 86.8 | 87.6 | 88.3 | 88.8 | 89.1 | 89.3 | 89.6 | 89.7 | 89.7 |
| 240 | 4 | 68.5 | 69.0 | 69.4 | 69.7 | 69.8 | 69.9 | 70.1 | 70.2 | 70.2 |
| 300 | 5 | 56.7 | 57.0 | 57.3 | 57.5 | 57.6 | 57.6 | 57.7 | 57.8 | 57.8 |
| 480 | 8 | 37.5 | 37.7 | 37.8 | 37.9 | 38.0 | 38.0 | 38.0 | 38.1 | 38.1 |
| 600 | 10 | 30.7 | 30.8 | 30.9 | 31.0 | 31.0 | 31.1 | 31.1 | 31.1 | 31.1 |
| 1200 | 20 | 16.2 | 16.3 | 16.4 | 16.4 | 16.4 | 16.5 | 16.5 | 16.5 | 16.5 |

NSB 155FT RED Battery®

Discharge tables @ 25°C (77°F)



Current / A

| Duration | | End of Discharge Voltage | | | | | | | | |
|----------|-------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Minutes | Hours | 1.85 | 1.80 | 1.75 | 1.70 | 1.67 | 1.65 | 1.60 | 1.55 | 1.50 |
| 2 | 0.03 | 406.3 | 461.8 | 518.2 | 574.0 | 606.6 | 627.8 | 677.8 | 722.5 | 760.4 |
| 5 | 0.08 | 357.0 | 394.2 | 430.6 | 465.3 | 484.9 | 497.3 | 525.7 | 549.7 | 568.5 |
| 10 | 0.17 | 284.5 | 307.7 | 329.7 | 350.0 | 361.2 | 368.2 | 383.8 | 396.4 | 405.7 |
| 15 | 0.25 | 238.0 | 254.3 | 269.6 | 283.5 | 291.1 | 295.7 | 306.0 | 314.1 | 319.8 |
| 20 | 0.33 | 205.8 | 218.1 | 229.6 | 239.9 | 245.4 | 248.8 | 256.2 | 261.9 | 265.8 |
| 30 | 0.50 | 163.5 | 171.5 | 178.8 | 185.2 | 188.6 | 190.7 | 195.2 | 198.5 | 200.6 |
| 45 | 0.75 | 126.5 | 131.4 | 135.8 | 139.6 | 141.6 | 142.8 | 145.3 | 147.1 | 148.2 |
| 60 | 1 | 103.9 | 107.3 | 110.2 | 112.7 | 114.0 | 114.8 | 116.4 | 117.6 | 118.2 |
| 120 | 2 | 61.9 | 63.0 | 64.0 | 64.8 | 65.2 | 65.4 | 65.9 | 66.2 | 66.3 |
| 180 | 3 | 44.6 | 45.1 | 45.5 | 45.9 | 46.1 | 46.2 | 46.4 | 46.5 | 46.5 |
| 240 | 4 | 35.0 | 35.2 | 35.5 | 35.7 | 35.8 | 35.8 | 35.9 | 36.0 | 35.9 |
| 300 | 5 | 28.8 | 29.0 | 29.1 | 29.2 | 29.3 | 29.3 | 29.4 | 29.4 | 29.4 |
| 480 | 8 | 19.0 | 19.0 | 19.1 | 19.1 | 19.1 | 19.1 | 19.1 | 19.1 | 19.1 |
| 600 | 10 | 15.5 | 15.5 | 15.5 | 15.5 | 15.6 | 15.6 | 15.6 | 15.5 | 15.5 |
| 1200 | 20 | 8.1 | 8.1 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 |

Capacity / Ah

| Duration | | End of Discharge Voltage | | | | | | | | |
|----------|-------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Minutes | Hours | 1.85 | 1.80 | 1.75 | 1.70 | 1.67 | 1.65 | 1.60 | 1.55 | 1.50 |
| 2 | 0.03 | 13.5 | 15.4 | 17.3 | 19.1 | 20.2 | 20.9 | 22.6 | 24.1 | 25.3 |
| 5 | 0.08 | 29.7 | 32.9 | 35.9 | 38.8 | 40.4 | 41.4 | 43.8 | 45.8 | 47.4 |
| 10 | 0.17 | 47.4 | 51.3 | 54.9 | 58.3 | 60.2 | 61.4 | 64.0 | 66.1 | 67.6 |
| 15 | 0.25 | 59.5 | 63.6 | 67.4 | 70.9 | 72.8 | 73.9 | 76.5 | 78.5 | 79.9 |
| 20 | 0.33 | 68.6 | 72.7 | 76.5 | 80.0 | 81.8 | 82.9 | 85.4 | 87.3 | 88.6 |
| 30 | 0.50 | 81.8 | 85.8 | 89.4 | 92.6 | 94.3 | 95.4 | 97.6 | 99.2 | 100.3 |
| 45 | 0.75 | 94.9 | 98.6 | 101.8 | 104.7 | 106.2 | 107.1 | 109.0 | 110.3 | 111.1 |
| 60 | 1 | 103.9 | 107.3 | 110.2 | 112.7 | 114.0 | 114.8 | 116.4 | 117.6 | 118.2 |
| 120 | 2 | 123.8 | 126.0 | 128.0 | 129.6 | 130.4 | 130.9 | 131.8 | 132.4 | 132.6 |
| 180 | 3 | 133.7 | 135.3 | 136.6 | 137.7 | 138.3 | 138.6 | 139.1 | 139.4 | 139.5 |
| 240 | 4 | 139.8 | 141.0 | 142.0 | 142.7 | 143.1 | 143.3 | 143.7 | 143.8 | 143.8 |
| 300 | 5 | 144.1 | 145.0 | 145.7 | 146.2 | 146.5 | 146.6 | 146.8 | 146.9 | 146.9 |
| 480 | 8 | 151.7 | 152.1 | 152.5 | 152.7 | 152.8 | 152.8 | 152.9 | 152.8 | 152.8 |
| 600 | 10 | 154.7 | 155.0 | 155.3 | 155.4 | 155.5 | 155.5 | 155.6 | 155.5 | 155.5 |
| 1200 | 20 | 162.1 | 162.6 | 163.1 | 163.5 | 163.7 | 163.8 | 164.0 | 164.1 | 164.1 |

Power / WPC

| Duration | | End of Discharge Voltage | | | | | | | | |
|----------|-------|--------------------------|-------|-------|-------|-------|--------|--------|--------|--------|
| Minutes | Hours | 1.85 | 1.80 | 1.75 | 1.70 | 1.67 | 1.65 | 1.60 | 1.55 | 1.50 |
| 2 | 0.03 | 607.4 | 709.5 | 813.1 | 914.4 | 972.3 | 1009.1 | 1092.6 | 1160.9 | 1210.3 |
| 5 | 0.08 | 600.9 | 667.4 | 731.6 | 791.3 | 824.2 | 844.7 | 889.7 | 924.7 | 948.4 |
| 10 | 0.17 | 510.9 | 550.7 | 587.7 | 621.2 | 639.2 | 650.1 | 673.8 | 691.6 | 702.9 |
| 15 | 0.25 | 440.0 | 467.3 | 492.3 | 514.5 | 526.3 | 533.4 | 548.6 | 559.7 | 566.5 |
| 20 | 0.33 | 387.1 | 407.3 | 425.6 | 441.7 | 450.1 | 455.2 | 466.0 | 473.7 | 478.2 |
| 30 | 0.50 | 313.8 | 326.5 | 337.8 | 347.5 | 352.6 | 355.6 | 361.9 | 366.3 | 368.7 |
| 45 | 0.75 | 246.7 | 254.1 | 260.7 | 266.3 | 269.2 | 270.9 | 274.4 | 276.8 | 278.0 |
| 60 | 1 | 204.4 | 209.3 | 213.7 | 217.3 | 219.2 | 220.3 | 222.5 | 224.0 | 224.7 |
| 120 | 2 | 123.4 | 125.0 | 126.5 | 127.6 | 128.2 | 128.5 | 129.2 | 129.6 | 129.7 |
| 180 | 3 | 89.2 | 90.0 | 90.7 | 91.3 | 91.6 | 91.7 | 92.0 | 92.2 | 92.2 |
| 240 | 4 | 70.2 | 70.6 | 71.0 | 71.4 | 71.5 | 71.6 | 71.8 | 71.9 | 71.9 |
| 300 | 5 | 57.9 | 58.2 | 58.5 | 58.7 | 58.8 | 58.9 | 59.0 | 59.0 | 59.0 |
| 480 | 8 | 38.1 | 38.3 | 38.4 | 38.5 | 38.6 | 38.6 | 38.7 | 38.7 | 38.7 |
| 600 | 10 | 31.1 | 31.2 | 31.3 | 31.4 | 31.5 | 31.5 | 31.5 | 31.6 | 31.6 |
| 1200 | 20 | 16.3 | 16.4 | 16.5 | 16.5 | 16.6 | 16.6 | 16.6 | 16.6 | 16.7 |