# KCR Lead-Calcium Battery

## FOR SWITCHGEAR AND CONTROL APPLICATIONS

Capacities from 192 to 824 Ampere-hours

C&D TECHNOLOGIES

**FLOODED**

**12-316-KCR**

C&D Technologies, Inc. has engineered flooded batteries to provide superior performance and reliability over the life of the product. These batteries are designed using proprietary techniques and quality components and materials for reduced maintenance and extended battery life.

EVERY BATTERY 100% CAPACITY TESTED

### FEATURES & BENEFITS

- Electrical testing to 100% capacity on every battery string prior to shipping assures performance of every battery string upon delivery
- Long life positive plates cast with a proprietary process and high-purity alloy
- 20 year environmental and seismic qualification
- Computer-controlled charging results in consistently formed plates for reliable performance out of the box (no cycling required in the field)
- Suspended positive plates permit free growth without pressure on jar and cover

### SAFE OPERATION

| |
|---|
| Flame-retardant covers enhance battery plant safety with self-extinguishing properties, LOI>32%, UL 94V-0 |
| Low-evaporation, flame-arrester vent to extend watering intervals and prevent external sparks from reacting with the hydrogen inside the cell |

### COST SAVINGS

| |
|---|
| Transparent container allows visual inspection of plates |
| Soft rubber post seal minimizes stress on post reducing maintenance requirements |
| Computer controlled heli-arc welded post seals result in consistent and reliable seals for less maintenance and longer product life |

### APPLICATIONS

- Electric Power Generation Facilities
- Nuclear Power Plants
- Electric Utility Substations
- Emergency Systems
- Manufacturing Facilties
  - Assembly Lines
  - Process Controls
- Petrochemical processing plants
- Pipelines

LEAD RETURN RECYCLE

MADE IN THE USA OF U.S. AND IMPORTED PARTS

# SPECIFICATIONS

| PLATES | HEIGHT | WIDTH | THICKNESS |
|---|---|---|---|
| POSITIVE | 11.38 in (289 mm) | 8.75 in (222 mm) | 0.312 in (7.90 mm) |
| NEGATIVE | 11.38 in (289 mm) | 8.75 in (222 mm) | 0.210 in (5.30 mm) |
| OUTSIDE NEGATIVE | 11.38 in (289 mm) | 8.75 in (222 mm) | 0.120 in (3.05 mm) |
| ELECTROLYTE HEIGHT ABOVE PLATES | 2.06 in (52 mm) | | |
| SEDIMENT SPACE | 0.75 in (19.1 mm) | | |
| ELECTROLYTE @ + 77°F (+25°C) | Sulfuric acid, 1.215 specific gravity nominal | | |
| RECOMMENDED FLOAT VOLTAGES (AVERAGE STRING VOLTAGE) | 2.20 - 2.25 volts per cell | | |
| CONTAINER - STANDARD | Thermoplastic, transparent, (SAN) | | |
| COVER - STANDARD | High impact, flame-retardant thermoplastic with tongue-and-groove seal.<br>Flammability ratings: UL 94-V0; ASTM D-635 self extinguishing | | |
| SEPARATOR | Microporous with fibrous glass mat | | |
| SAFETY VENT SYSTEMS | Flame-arrester type with dust cover | | |
| TERMINALS<br>KCR (5 THROUGH 13 PLATES)<br>KCR (15 THROUGH 21 PLATES) | Two, 1-inch (25 mm) square posts with two thru-holes<br>Two, 1-inch (25 mm) square copper-inserted posts with two thru-holes | | |
| WITHDRAWAL TUBES | Two per cell | | |
| OPTIONAL CONTAINER | Transparent, flame-retardant polycarbonate. Flammabilty ratings: UL 94-HB; ASTM D-635 self-extinguishing | | |

| TYPE OF CELL | OVERALL DIMENSIONS | | | APPROX. WEIGHT LBS (KGS) | | ELECTROLYTE PER CELL LBS (KGS) |
|---|---|---|---|---|---|---|
| CALCIUM | L IN (MM) | W IN (MM) | H IN (MM)* | NET FILLED | DOM. PACKED | |
| KCR-5 | 3.62 (91.9) | 10.44 (265) | 18.25 (464) | 45 (20.4) | 51 (23.1) | 12 (5.4) |
| KCR-7 | 3.62 (91.9) | | | 56 (25.4) | 61 (27.7) | 15 (6.8) |
| KCR-9 | 4.62 (117) | | | 73 (33.1) | 80 (36.3) | 20 (9.1) |
| KCR-11 | 4.62 (117) | | | 82 (37.2) | 89 (40.4) | 19 (8.6) |
| KCR-13 | 5.59 (142) | | | 97 (44.0) | 105 (47.6) | 23 (10.4) |
| KCR-15 | 6.59 (167) | | | 114 (51.7) | 124 (56.2) | 28 (12.7) |
| KCR-17 | 8.53 (217) | | | 134 (60.8) | 145 (65.8) | 39 (17.7) |
| KCR-19 | 8.53 (217) | | | 143 (64.9) | 155 (70.3) | 38 (17.2) |
| KCR-21 | 8.53 (217) | | | 152 (68.9) | 165 (74.8) | 36 (16.3) |

Note: Electrolyte weighs approximately 10 lbs per gallon (1.215 kgs per liter).
*H (Height) dimension is to the top of the flame arresting vent (highest point on the cell).

**For information on battery racks, please refer to brochure 12-560.**

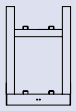
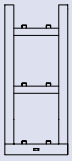
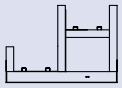
## RATINGS TABLE: AMPERES

| FINAL VOLTS | MODELS | NOMINAL AH RATING | *NOMINAL RATES @ +77°F (+25°C) IN 1.215 NOMINAL SG (INCLUDES CONNECTION VOLTAGE DROP) AMPERES | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 8 HR | 4 HR | 3 HR | 1.5 HR | 1 HR | 30 MIN | 15 MIN | 1 MIN |
| 1.75 | KCR-5 | 192 | 24 | 39 | 48 | 72 | 88 | 121 | 158 | 230 |
| | KCR-7 | 240 | 30 | 53 | 65 | 101 | 126 | 173 | 220 | 308 |
| | KCR-9 | 328 | 41 | 70 | 86 | 134 | 168 | 230 | 294 | 411 |
| | KCR-11 | 408 | 51 | 87 | 107 | 165 | 206 | 284 | 364 | 508 |
| | KCR-13 | 491 | 61 | 106 | 130 | 203 | 254 | 350 | 450 | 654 |
| | KCR-15 | 573 | 71 | 123 | 152 | 237 | 296 | 411 | 531 | 797 |
| | KCR-17 | 648 | 81 | 141 | 174 | 271 | 339 | 469 | 603 | 870 |
| | KCR-19 | 738 | 92 | 159 | 195 | 302 | 377 | 519 | 664 | 948 |
| | KCR-21 | 824 | 103 | 175 | 215 | 331 | 412 | 567 | 727 | 1028 |
| 1.78 | KCR-5 | 188 | 23 | 38 | 46 | 69 | 85 | 115 | 147 | 201 |
| | KCR-7 | 232 | 29 | 50 | 61 | 94 | 116 | 158 | 198 | 264 |
| | KCR-9 | 312 | 39 | 67 | 82 | 125 | 155 | 210 | 264 | 352 |
| | KCR-11 | 400 | 50 | 84 | 102 | 155 | 191 | 259 | 326 | 435 |
| | KCR-13 | 477 | 59 | 101 | 124 | 190 | 235 | 320 | 404 | 560 |
| | KCR-15 | 557 | 69 | 118 | 145 | 222 | 275 | 375 | 477 | 682 |
| | KCR-17 | 636 | 79 | 135 | 165 | 254 | 315 | 428 | 541 | 745 |
| | KCR-19 | 717 | 89 | 152 | 185 | 283 | 350 | 474 | 596 | 812 |
| | KCR-21 | 801 | 100 | 168 | 204 | 310 | 382 | 518 | 653 | 881 |
| 1.81 | KCR-5 | 185 | 23 | 37 | 45 | 66 | 81 | 108 | 134 | 172 |
| | KCR-7 | 232 | 29 | 48 | 58 | 88 | 107 | 143 | 175 | 220 |
| | KCR-9 | 304 | 38 | 64 | 78 | 117 | 143 | 190 | 233 | 294 |
| | KCR-11 | 389 | 48 | 80 | 97 | 144 | 176 | 235 | 288 | 363 |
| | KCR-13 | 464 | 58 | 97 | 118 | 177 | 217 | 289 | 357 | 466 |
| | KCR-15 | 540 | 67 | 113 | 137 | 207 | 254 | 339 | 421 | 568 |
| | KCR-17 | 618 | 77 | 129 | 157 | 236 | 290 | 388 | 478 | 621 |
| | KCR-19 | 697 | 87 | 145 | 176 | 264 | 323 | 429 | 526 | 677 |
| | KCR-21 | 778 | 97 | 161 | 194 | 289 | 352 | 469 | 577 | 736 |

*Data based on discharge directly from a 72-hour float condition per IEEE-450 procedures.

**Additional ratings and application information is available in the battery solution portal at solutionportal.cdtechno.com**

## BATTERIES AND RACKS

| BATTERY | # OF CELLS PER STRING | RACKS | | | | | |
|---|---|---|---|---|---|---|---|
| LEAD-CALCIUM | | TWO TIER RACK  | | THREE TIER RACK  | | TWO STEP RACK  | |
| | | RACK QTY | RACK P/N* | RACK QTY | RACK P/N* | RACK QTY | RACK P/N* |
| KCR-5 | 58 | 1 | RDB0801-10P | 1 | RDB0802-07P | 1 | RDB0803-10P |
| KCR-7 | 58 | 1 | RDB0801-10P | 1 | RDB0802-07P | 1 | RDB0803-10P |
| KCR-9 | 58 | 1 | RDB0801-13P | 1 | RDB0802-09P | 1 | RDB0803-13P |
| KCR-11 | 58 | 1 | RDB0801-13P | 1 | RDB0802-09P | 1 | RDB0803-13P |
| KCR-13 | 58 | 1 | RDB0801-15P | 1 | RDB0802-11P | 1 | RDB0803-15P |
| KCR-15 | 58 | 2 | RDB0801-09P | 1 | RDB0802-12P | 2 | RDB0803-09P |
| KCR-17 | 58 | 2 | RDB0801-12P | 1 | RDB0802-16P | 2 | RDB0803-12P |
| KCR-19 | 58 | 2 | RDB0801-12P | 1 | RDB0802-16P | 2 | RDB0803-12P |
| KCR-21 | 58 | 2 | RDB0801-12P | 1 | RDB0802-16P | 2 | RDB0803-12P |
| | | | | | | | |
| KCR-5 | 60 | 1 | RDB0801-11P | 1 | RDB0802-07P | 1 | RDB0803-11P |
| KCR-7 | 60 | 1 | RDB0801-11P | 1 | RDB0802-07P | 1 | RDB0803-11P |
| KCR-9 | 60 | 1 | RDB0801-13P | 1 | RDB0802-09P | 1 | RDB0803-13P |
| KCR-11 | 60 | 1 | RDB0801-13P | 1 | RDB0802-09P | 1 | RDB0803-13P |
| KCR-13 | 60 | 1 | RDB0801-16P | 1 | RDB0802-11P | 1 | RDB0803-16P |
| KCR-15 | 60 | 2 | RDB0801-09P | 1 | RDB0802-12P | 2 | RDB0803-09P |
| KCR-17 | 60 | 2 | RDB0801-12P | 1 | RDB0802-16P | 2 | RDB0803-12P |
| KCR-19 | 60 | 2 | RDB0801-12P | 1 | RDB0802-16P | 2 | RDB0803-12P |
| KCR-21 | 60 | 2 | RDB0801-12P | 1 | RDB0802-16P | 2 | RDB0803-12P |

* For Seismic racks, add EP1 and EP2 to the rack part number - example RDB0801-10EP1P.

*** IEEE-693-2005 qualified racks are available for 2 tier and 2 step racks. Contact C&D Product Management.**

World Headquarters
200 Precision Road
Horsham, PA 19044 USA
T: +1 (800) 543-8630 +1 (215) 619-2700





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