PIBAS®
Power & Industrial Battery Systems GmbH

ILLUMINA

# RANGE SUMMARY ILLUMINA NI-CD BATTERIES FOR DEMANDING PV APPLICATIONS

## PIBAS® Illumina Range

Based on the more than 130 years of experience PIBAS® Illumina range is built on the well proven pocket plate design combined with the break-through PIBAS® AFM-Technology (absorbed fibre mat) ensuring the highest possible recombination efficiency. PIBAS® Illumina is leading the battery world in being employed in photovoltaic applications with most punishing environments for energy storage only the toughest battery can survive. The plate technology and special lithiumized electrolyte tolerates temperature fluctuations from –50°C to +70°C with no effect on plate structure. The high temperature characteristics offer the unchallenged, longest lifetime of any battery in this hostile environment. The PIBAS® Illuminia design offers a 20 years+ service life, while it requires a minimum of maintenance. All this makes PIBAS® Illumina batteries the perfect product when the total cost of ownership (TOC) and an optimized OPEX is considered.

### Advanced-Technology Build In

PIBAS® Illumina range has been especially designed to be used in uncertain conditions to offer highest reliability. The nickel plated iron & corrosion free internal construction, the special lithiumized electrolyte combined with the PIBAS® Modular Single Cell Concept and the PIBAS® AFM-Technology (absorbed fibre mat) make Illumina range to be the perfect choice for energy storage installations which are too important to fail.

### PIBAS® Modular Single Cell Concept

All Illumina single cell cases are made by robust polypropylene container material moulded out of one piece to ensures 100% leak free operation, easy and fast installation and economical replacement/reduced OPEX throughout the lifetime.

### Advantages of PIBAS® Illumina Batteries

- Excellent resistance against electrical and mechanical stress
- No risk of terminal decompose or sudden death due to plate construction
- Excellent cycling – 8.000 cycles at 15% dod (depth of discharge)
- Extremely long lifetime - 20 years+ service life in cycling applications at average 15% DoD
- Robust costruction - hard-wearing and insensitive to faults in maintenance
- PIBAS® single cell concept for economical replacement and highest safety
- Wide operational temperature range
- More than 4 years without topping up – maintenance - possible

### Configuration Forms

PIBAS® Illumina cells can be assembled into many different configuration forms, for example:

- Putting up on battery racks and cabinets
- Mounting as compact blocks
- Assembling in plastic/ stainless steel crates or battery troughs
- Can be equipped with a central water and degassing system

### Important

The rated capacity $C_{120}$ is not the basis for the performance of the batteries. It is to take into account that the performance depends on the battery construction, i e on the different battery ranges. Therefore, our discharge tables should be used to find out the appropriated cell type for a specific application in comparison to prices, dimensions ...

The rated capacity $C_{120}$ of PIBAS® Illumina range batteries is based on the available ampere hours (Ah) at a discharge rate of 120 hours to the final discharge voltage which is stated in technical specification table per cell at 20 °C ± 5 °C.

Nominal voltage per cell is 1.2 V.

PIBAS® Illumina battery cells fulfil all requirements according to IEC 62259 and IEC 61427.

### Discharging Conditions

The rated capacities $C_5$ given in this brochure are only valid for fully charged cells in accordance with IEC 62259.

### Charging Conditions - Constant Voltage Limitation

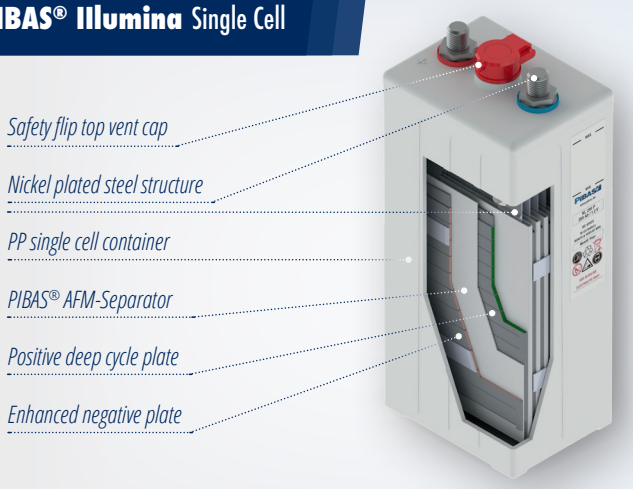
| | |
|---|---|
| Float level: | 1.5 V/cell |
| Boost (optional): | 1.65 V/cell |

### Charging Conditions - Regulator Based Switching

| | |
|---|---|
| Float level: | 1.55 V/cell |
| Boost (optional): | 1.65 V/cell |
| Battery reconnect: | 1.45 V/cell |

For temperatures higher than +25°C, a temperature compensation is not recommended, for lower temperatures the correcting factor for charge voltage is –3 mV/K.

**PIBAS® Illumina** Single Cell



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## PIBAS® ILLUMINA RANGE CELL DIMENSIONAL DETAILS / DESIGN LIFE: 20 YEARS + / NI-CD SINGLE CELL

| TYPE | NOMINAL CAPACITY 120 hr rate [Ah] | | NOMINAL CAPACITY 5 hr rate [Ah] | DIMENSIONS [mm] l | w | h | h1 | TERMINALS Size | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|
| IL | 108 | G | 100 | 74 | 136 | 339 | 357 | 2 x M10 | 6,18 |
| IL | 130 | G | 120 | 74 | 136 | 339 | 357 | 2 x M10 | 6,51 |
| IL | 151 | G | 140 | 112 | 134 | 291 | 327 | 2 x M16 | 7,67 |
| IL | 162 | G | 150 | 112 | 134 | 291 | 327 | 2 x M16 | 7,84 |
| IL | 194 | G | 180 | 118 | 167 | 327 | 362 | 4 x M20 | 10,61 |
| IL | 216 | G | 200 | 118 | 167 | 327 | 362 | 4 x M20 | 10,91 |
| IL | 248 | G | 230 | 118 | 167 | 327 | 362 | 4 x M20 | 11,17 |
| IL | 259 | G | 240 | 118 | 167 | 327 | 362 | 4 x M20 | 11,62 |
| IL | 297 | G | 275 | 129 | 167 | 364 | 400 | 2 x M20 | 12,22 |
| IL | 324 | G | 300 | 129 | 167 | 364 | 400 | 2 x M20 | 16,30 |
| IL | 356 | G | 330 | 129 | 167 | 364 | 400 | 2 x M20 | 16,50 |
| IL | 410 | G | 380 | 171 | 174 | 337 | 372 | 4 x M20 | 17,50 |
| IL | 432 | G | 400 | 171 | 174 | 337 | 372 | 4 x M20 | 18,00 |
| IL | 470 | G | 435 | 171 | 174 | 337 | 372 | 4 x M20 | 18,50 |
| IL | 486 | G | 450 | 171 | 174 | 337 | 372 | 4 x M20 | 18,90 |
| IL | 540 | G | 500 | 155 | 169 | 491 | 527 | 4 x M20 | 22,30 |
| IL | 605 | G | 560 | 155 | 169 | 491 | 527 | 4 x M20 | 24,80 |
| IL | 648 | G | 600 | 155 | 169 | 491 | 527 | 6 x M20 | 25,70 |
| IL | 675 | G | 625 | 195 | 215 | 376 | 405 | 6 x M20 | 28,80 |
| IL | 702 | G | 650 | 195 | 215 | 376 | 405 | 6 x M20 | 30,70 |
| IL | 810 | G | 750 | 195 | 268 | 376 | 405 | 6 x M20 | 32,30 |
| IL | 864 | G | 800 | 195 | 268 | 376 | 405 | 6 x M20 | 35,40 |
| IL | 918 | G | 850 | 195 | 268 | 376 | 405 | 6 x M20 | 37,20 |
| IL | 983 | G | 910 | 195 | 351 | 376 | 405 | 8 x M20 | 49,20 |
| IL | 1080 | G | 1000 | 195 | 351 | 376 | 405 | 8 x M20 | 53,70 |
| IL | 1210 | G | 1120 | 195 | 351 | 376 | 405 | 8 x M20 | 56,20 |
| IL | 1350 | G | 1250 | 195 | 437 | 376 | 405 | 10 x M20 | 53,80 |
| IL | 1458 | G | 1350 | 195 | 437 | 376 | 405 | 10 x M20 | 56,40 |
| IL | 1512 | G | 1400 | 195 | 437 | 376 | 405 | 10 x M20 | 58,00 |
| IL | 1620 | G | 1500 | 195 | 472 | 376 | 405 | 10 x M20 | 62,90 |
| IL | 1728 | G | 1600 | 195 | 472 | 376 | 405 | 10 x M20 | 64,70 |
| IL | 1840 | G | 1700 | 195 | 522 | 376 | 405 | 12 x M20 | 69,00 |

*All dimensions and weights are subject to manufacturing tolerances. Issue January 2020*

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