

## Intelligent Battery and Power System

### Specifications: Batteries, Battery Controller Modules & DC-DC Options

<b>Battery Management Modules</b>	Module Size, PC104 Form Factor MP-04R, MP-08R, BB-04FR, MP-04FR, MP-08FR, XP-04FR, XP-08FR	3.6" X 3.8" (excluding cable connector projections) Typical, Module standoff spacing 0.6"
	Module Size, Small Outline Form Factor BB-04SR, MP-04SR, XP-04SR, MP-08SR, XP-08SR (Can also be ordered in PC104 size)	2.91" X 3.58" (excluding cable connector projections) Typical module standoff spacing 0.6"
	Connectors	Molex Mini-fit Jr. family, 9 or 11 Amp pins.
	Environmental Limits	0 – 50 <sup>0</sup> C, 90% RH (non-condensing)
	Charge Current per Pair of Batteries	4 Amps, 16 Amps total for the two module set
	Charge Method	Smart Charger, Level III
	Battery Technology Supported	SMB Smart packs, Li-Ion, NiMH, others (up to ~20V series arrangement) 4S-3P Li-Ion BA95
	Discharge Current/Watt Allowed – (at battery voltage)	Battery Max discharge current = 6Amps, Fuse blows @ 7Amps  Absolute Maximum Allowable System Watt Draw per Pack BB Series 40 Watts per Pack MP Series 60 Watts per Pack XP Series 80 Watts per Pack  Not to exceed the controller: BB-04SR/FR: 13.25 Amps Max MP-04SR/FR: 20 Amps Max MP-08SR/FR: 40 Amps Max BB-04SR/FR: 13.25 Amps Max MP-04SR/FR: 20 Amps Max XP-04SR/FR: 26.5 Amps Max MP-08SR/FR: 40 Amps Max XP-08SR/FR: 53.25 Amps Max  (Note: Power = V <sub>b</sub> x Current)
	Battery Voltage Range (discharge)	16.6V – 12.0V (if DC-DC present)

	Battery Self Heating	Function of the current draw on the battery pack. At low current draws say less than 1.5 A you can stack the packs on each other.
	Charge DC Voltage	Pack charge V + 1V and < 24V. Power supplies offered are at 18.5V and 20V.
	Module Cooling	Still air cooling is sufficient for lower power levels, thermocouple points; FETS case < 110°C and Inductor cores < 100°C
	Charge Current Regulator	> 95% conversion efficiency
<b>DC-DC Converter (DC-023R)</b>	Maximum Current per Voltage (single DC-DC converter module) Legacy part only used with older designs.	12V @ 7A; 5V @ 10A; 3.3V @ 10A
	Maximum Current, Dual Parallel Configuration DC-023 (two stacked DC-DC modules for increased current)	12V @ 13A; 5V @ 19A; 3.3V @ 19A
<b>DC-DC Converter (DC-123SR)</b>	Maximum Current per Voltage (single DC-DC converter module) Works with the small outline (BB/MP/XP-xxS units)	12V @ 12A; 5V @ 10A; 3.3V @ 10A
	Connectors	Molex Mini-fit Jr. family, 9 or 11 Amp pins. [Users can build cables using a low cost crimping tool and parts from mouser.com, or digikey.com]
	Environmental Limits	0 <sup>0</sup> – 50 <sup>0</sup> C, 90% RH (non-condensing)
	Module Size, PC104 Form Factor	3.6" X 3.8" (excluding cable connector projections) Module standoff spacing 0.6"
	Output Voltage Regulation	5% On all voltages (ripple and noise < 150mv pp)
	Conversion Efficiency	> 95% based on current draw
	Maximum Power	150W (Single module), 260W (Dual module)
	Module cooling	Typically still air cooling is sufficient, thermocouple points; FETS case < 120C and Inductor cores < 110C
	Current Limiting	Voltage foldback at ~+10% over current spec.
<b>DC-DC Converter (DC2U-1V)</b>	Maximum Current per Voltage (additional specifications can be found in DC2U-1V Quick Start Guide)	19V @ 12.6, 24V @ 10A, 28V @ 8.5A, or 48V @ 5A (Single Voltage Jumper Selectable)

<b>Smart Battery Packs (BA-95HC, BA-95HCL-FL, BA-95HC-FL)</b>	Weight, approximate	1.425 Lbs, 0.647 Kg
	Size	See download Page for different Sizes (mechanical drawings)
	Cells	12 X 18650 Li-ion
	Arrangement	4 Series x 3 Parallel
	Discharge Temperature Limits	- 10 <sup>0</sup> to 50 <sup>0</sup> C, <=80% RH
	Charge Temperature Limits	0 <sup>0</sup> to 45 <sup>0</sup> C, <=80% RH
	Storage Temperature Limits	- 20 <sup>0</sup> to 60 <sup>0</sup> C, <=80% RH
	Safety Circuits	Thermal Fuse, Slow blow fuse, over current, over charge, over discharge, FET isolated on faults

Please Note: "R" at the end of the part number indicates RoHS compliant part

## Customer Support

Send technical questions to: [support@ocean-server.com](mailto:support@ocean-server.com)

Or call us at 508-678-0550 during normal business hours.

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