

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线）传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

样品承认书

SPECIFICATIONS OF NICKEL METAL HYDRIDE BATTERY

客户代号(Customer P/N): 2020640

产品型号(Model Name): BPI-89F13000L mAh*20

发行日期(Issued Date): 2024-07-12

确 认(APPROVED):

客户/Customer		倍特力/BPI	
确 认/Checked By		编 制/Audited By	钟鸿涛/Mr. Zhong hongtao
		确 认/Checked By	官洞山/ Mr. Guan dongshan
批 准/Approved By		批 准/Approved By	叶凯/ Mr. Ye kai
签 章/Signature & chop		签 章/ Signature & chop	

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线） 传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

变更记录/Modification Record Table

NO:	版本/version	日期/ Date	修改描述/ Modification description	修订者/ Modification Manager
1	A	2024-06-20	新制作/ New formulation	钟鸿涛/Mr. Zhong hongtao
2	B	2024-07-02	更改蓝线，改为独立感温线	钟鸿涛/Mr. Zhong hongtao
3	C	2024-07-03	红线黑线由 14AWG 更改为 18AWG	钟鸿涛/Mr. Zhong hongtao
4	D	2024-07-06	温控并联导线外露线长改为 150mm 温感线外露线长改为 80mm	钟鸿涛/Mr. Zhong hongtao
5	E	2024-07-012	温控由 TB05-BB5D 60℃改为 TB11-BB5D 60℃	钟鸿涛/Mr. Zhong hongtao

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线）传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

圆柱密封式镍氢电池出厂规格报告

Specification for Cylindrical Sealed Nickel Metal Hydride Batteries

适用范围：本规格书只作为验货（收到货一个月内进行）标准，不作为存货检验标准

APPLICATION: The applicable range: This specification is available only for the testing within one month since receipt of batteries. It's not a standard for stored goods.

1. 产品型号/ Model: BPI-89F13000L*20

2. 额定参数/RATINGS:

◇ 额定电压/Nominal Voltage	<u>24 V</u>
◇ 额定容量/ Nominal	<u>13000mAh</u>
◇ 最小容量/ Minimum	<u>12500mAh/0.2C</u>
◇ 标准充电/Standard charge rate	<u>1300mA×14hrs</u>
◇ 快速充电/ Rapid charge rate	<u>2600mA×360min (-ΔV= 3mV/pcs)</u>
◇ 作用温度范围/ Operating temperature range	湿度/ Humidity: +65%± 20%
标准充电/Standard charge	0~60°C(32 to 140°F)
快速充电/ Rapid charge	+10~50°C(50 to 122°F)
浮 充 电/ Floating charge	-10~40°C(14 to 104°F)
放 电/ Discharge	-30~70°C(-22 to 158°F)
◇ 贮存温度范围/ Storage temperature range	湿度/Humidity : +65%±20%
长期贮存（1 年内）/ Within 1 year	-20°C~35°C(-4 to 95°F)
6 个月内 / Within 6 months	-20°C~45°C(-4 to 113°F)
1 个月内 / Within 1 month	-20°C~55°C(-4 to 131°F)

备注：（1）所有的快速充电方法应与我们的工程师讨论；

All rapid charge methods should be discussed with our engineer.

（2）本公司规定电池的出货带电量≤50%，带电量超过 50%的情况下，电池具有一定的潜在危险性。对出货要求带电量超过 50%可能带来的质量问题，由双方共同协商后执行；

We stipulate to charge less than 50% fully power for delivery, if the charge is more than 50%, the battery has a certain latent risk. If the charge requirement is over 50% which caused quality problem, executed after the mutual consultation .

（3）批量电池在储存期间要求带 50%电量存放，电池在储存超过 3 个月时，建议 0.2C 清电后补充 50%的电量； / During storage period the batch battery is requested by the 50% electric charge, the battery storage surpasses 3 months, the recommendations 0.2C discharge to 20.0V and then add 50% of the electricity storage.

（4）电池保质期：12 个月。Our battery guarantee time: 12 months.

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线）传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

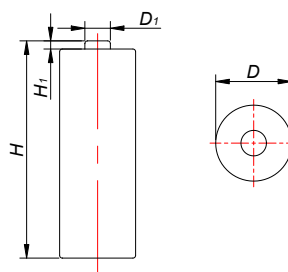
电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

3. 尺寸及形状(单体)/Measurement & Dimensions(cell)

如图所示/ to see the drawing:

D	32.0~32.5mm
H	87.5~89.0mm
D1	$10.0 \pm 0.2\text{mm}$
H1	$0.8 \pm 0.3\text{mm}$



4. 测试/ Performance Testing

4.1 测试条件/ TEST CONDITIONS

4.1.1 测试电池为用户收到后不超过 1 个月的产品/The battery to be tested is the product within one month after being received by customer.

4.1.2 测试条件

Ambient conditions:

温度 $20 \pm 5^\circ\text{C}$

Temperature $+20^\circ\text{C} \pm 5^\circ\text{C}$

湿度 $65 \pm 20\%$

Humidity $+65\% \pm 20\%$

4.2 测试工具/ Testing Tools

4.2.1 电压计 IEC 51/IEC 485 所规定的 0.5 级或以上。内阻大于 $10\text{K}\Omega/\text{V}$ 。

Voltage meter 0.5 level or higher as required in IEC51/IEC485. Internal impedance exceeds $10\text{K}\Omega/\text{V}$.

4.2.2 电流计 IEC 51/IEC 485 所规定的 0.5 级或以上。包括引线总电阻小于 0.01Ω 。

Current meter 0.5 level or higher as required in IEC51/IEC485. Internal impedance should be less than $0.01\Omega/\text{V}$ (including wires).

4.2.3 卡尺 读数值 0.02MM

Micrometer caliper With precision of 0.02mm .

4.2.4 内阻计 交流 1000HZ 正弦波 4 端子测量装置。

Internal impedance meter Alternating current of 1000HZ , connector measuring equipment with sin wave of 4.

4.2.5 负载电阻 包括外部线路,电阻值允许误差为 $\pm 5\%$ 。

Impedance loaded meter Value of impedance is with $\pm 5\%$ error allowed (including external wires).

4.3 测试方法及基准/ Test methods and benchmarks

项目/ Item	试验方法/ Test Method	基准/ Benchmark
1. 外观、包装 Appearance	◇ 肉眼测试 ◇ eyeballing	◇ 目测电池应无任何会减少其商业价值的缺陷，如污迹、变形、及划痕。 ◇ batteries shall be free from any stains; scratches or deformations, which may reduce the commercial value when visually inspected

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线）传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

2. 尺寸/ Size	◇ 卡尺测量。 ◇ caliper measurement	◇ 符合附图所示尺寸。 ◇ The size shall comply with the specified size as the attached drawing
3. 绝缘电阻 Insulate impedance	◇ 用兆欧表测量电池外包装及电极之间的绝缘度。 ◇ measured with a Megger overpack and battery electrode between the degree of insulation	◇ 大于 <u>10MΩ</u>。 ◇ outer sleeve shall exceed <u>10 MΩ</u>
4. 重量/ Weight	◇ 用电子秤测量。 ◇ Use an electronic scale to measure	◇ 约等于 <u>4750 g</u>。 ◇ Unit cell approximate <u>4750g/cell</u>
5. 充电电压 Charge Voltage	◇ 将电池以 <u>0.2CmA</u> 电流放电到终止电压，然后进行标准充电，在充电结束前 5 分钟内测定电压。 ◇ Following a period of discharge at <u>0.2CmA</u> down to a terminal voltage of 20.0V, standard charge, the cell or battery shall be checked at 5 minutes before finish charging	◇ 小于 <u>32.0V</u>。 ◇ The voltage shall be less than <u>32.0V</u>
6. 开路电压 Open circuit voltage: (O.C.V.)	◇ 在标准充电结束后 1 小时内测定电池之开路电压。 ◇ Following a standard charge period, the open circuit voltage of the cell or battery shall be checked within 1 hour.	◇ 大于 <u>25 V</u>。 ◇ The O.C.V. shall exceed <u>25 V</u>
7. 闭路电压 Closed circuit voltage: (C.C.V.)	◇ 在标准充电结束后 1 小时内测定电池之闭路电压。负载电阻 <u>17.2Ω</u>。 ◇ Following a standard charge period, the closed circuit voltage of the cell or battery shall be checked with a <u>17.2Ω</u> load within 1 hour	◇ 大于 <u>24V</u>。 ◇ The C.C.V. shall exceed <u>24V</u>。
8. 内阻 Internal impedance	◇ 标准充电结束后 1 小时内测定电池的内阻。 ◇ Following a standard charge period, the internal impedance of the cell or battery shall be checked at 1000Hz within 1 hour	◇ 小于等于 <u>220 mΩ</u>。 ◇ The internal impedance shall not be more than <u>220 mΩ</u> unit cell
9. 容量/ Capacity	◇ 标准充电结束后 1 小时以内将电池以 <u>0.2CmA</u> 放电至 20.0V 测定电池的容量； ◇ Following a standard charge period, the cell shall be stored for a period of 1 hour. The capacity shall be equal or more than minimum capacity when discharged at <u>0.2C</u> mA down to a terminal voltage of 20.0V; ◇ 第一次充放电之后，所得的容量值可能与标明的数值有出入，在这种情况下，应再重复	◇ 大于等于最低容量。 ◇ The capacity is greater than or equal to the minimum capacity

	测试两到三次以上，以达到标明数值。 ✧ The capacity returned might not initially attain the specified value following the first charge – discharge cycle. In this event, the test may be repeated a further two or three times to attain the minimum capacity	
10. 大电流放电特性/High Drain Discharge	✧ 标准充电结束后 1 小时以内以 <u>0.5C</u> 放电至 20.0V，测定放电时间。 ✧ To discharge by <u>0.5C</u> to 20.0V within 1 hour after standard charge	✧ 大于等于 <u>108</u> 分钟。 ✧ The Capacity is higher than or equal to <u>108</u> min
11. 自放电特性 Self discharge	✧ 将电池以 <u>0.2CmA</u> 放电至 20.0V，然后标准充电常温放置 28 天，再以 <u>0.2CmA</u> 放电，测定剩余容量。 ✧ Following a period of discharge at <u>0.2C mA</u> down to a terminal voltage of 20.0V, standard charge and then the cell or battery shall be stored for 28 days below 20°C	✧ 大于等于额定容量的 <u>70%</u>。 ✧ The subsequent capacity shall not be less than <u>70%</u> of rated capacity when discharged at <u>0.2C mA</u>
12. 过充电特性 Over-charge	✧ 将电池以 <u>0.2CmA</u> 放电至 20.0V，先标准充电，再以 <u>0.1CmA</u> 充电 48 小时后，以 <u>0.2CmA</u> 放电至 20.0V，测定电池容量。 ✧ Following a period of discharge at <u>0.2C mA</u> down to a terminal voltage of 20.0V, standard charge and then charge for 48hrs at <u>0.1C mA</u>. The capacity of the cell or battery shall not be less than the rated capacity when discharged at <u>0.2C mA</u>	✧ 无外观变形，无漏液。 ✧ 容量大于等于额定容量。 ✧ It shall not be externally deformed and no leakage of electrolyte in liquid form shall be observed.
13. 过放电特性 Over-discharge	✧ 将电池以 <u>0.2CmA</u> 放电至 20.0V，然后将电池串联负载 <u>17.2Ω</u> 的内阻继续放电 24 小时，再将电池标准充电后以 <u>0.2CmA</u> 放电，测定电池的容量。 ✧ Following a period of discharge at <u>0.2C mA</u> down to a terminal voltage of 20.0V, combine the cells with a <u>17.2Ω</u> load. After stored for a period of 24 hours, standard charged and then discharge at <u>0.2C mA</u>	✧ 无外形变形 ✧ 容量大于等于额定容量的 <u>80%</u>。 ✧ the cell or battery shall not be externally deformed and no leakage of electrolyte in liquid form shall be observed, and the subsequent capacity shall not be less than <u>80%</u> of rated capacity
14. 循环寿命 Cycle Life	✧ 按照 IEC61951(2017)实验方法(参照备注标准测试条件)。 ✧ Based on clause IEC61951(2017) (Reference standard test conditions)	✧ 循环寿命大于 <u>500</u> 次。 ✧ The charge-discharge cycles shall exceed <u>500</u> times
15. 密封性测试	✧ 将电池标准充电后，在温度 33±3°C，湿度	✧ 肉眼观察无漏液现象。

(单只) Humidity(cell)	80±5%的环境中放置 14 天。 ✧ Standard charge and store for 14 days under the following storage conditions: 33°C±3°C(91.4°F±5.4°F), Relative humidity of 80%±5%. (Salting is permitted).	✧ No leakage of electrolyte in liquid form shall be observed
16. 耐振动性 Vibration	✧ 将电池标准充电后放置 24 小时以上，然后以下列条件使电池振动，测定振动前后的特性变化。 振幅： 4MM 频率： 1000 次/分 时间、方向：任意方向，连续 60 分 ✧ Store the cell or battery more than 24 hours after standard charge, following vibration tests over an amplitude of 4 mm (0.1575 inches) at a frequency of 16.7 Hz(1000 cycles per minute) and repeated through any axes during 60mins	✧ 开路电压变化在 0.4V/支以下，内阻变动 100 mΩ/支以下，外观无明显变化。 ✧ The subsequent fluctuation of open circuit voltage and internal impedance shall be less than 0.4 V/Cell and 100mΩ/Cell respectively, and the cell or battery shall not be externally deformed and no leakage of electrolyte in liquid form shall be observed.
17. 耐撞击性能 Free falling: (Drop)	✧ 将电池标准充电后放置 24 小时以上，然后使电池垂直跌落，测定跌落前后的特性变化。 跌落高度： 450mm 跌落面： 硬木板 跌落次数： 任意方向，3 次 ✧ Store the cell or battery more than 24 hours after standard charge, following a drop test from 450mm (17.717 inches) on to a hard-wood board in a vertical axis 2 times on each of 2 mutually perpendicular axes	✧ 开路电压变化在 0.4V/支以下，内阻变动在 100mΩ/支以下，外观无明显变化。 ✧ The subsequent fluctuation of open circuit voltage and internal impedance shall be less than 0.4 V/Cell and 100mΩ/Cell respectively, and the cell or battery shall not be externally deformed and no leakage of electrolyte in liquid form shall be observed.
18. 短路测试 (单只) Short-circuit testing (cell)	✧ 将单体电池标准充电后，放置 1 个小时，然后用导线使单支正负极短路，导线截面在 0.75mm ² 以上，导线长度为正负极间最短距，短路时间 1 小时。 ✧ to store it for 1 hour after standard charged, and to make positive and negative electrode short-circuit with a wire with the section 0.75mm ² min and shortest length, the short-circuit time is 1 hour	✧ 电池无破裂现象，允许有漏液、变形及外观包装破裂现象。 ✧ It shall not explode during or at the end of a 1 hour short-circuit test. However, leakage of electrolyte, external deformation or outer sleeve cracking is permitted.
19 安全阀启动性能 (过放电)(单只) Safety Valve	✧ 将单体电池以 0.2C 放电到 0 V，再将电流提高 1C，放电 60min ✧ The battery to 0.2C discharge to 0V, then raise	✧ 安全阀必须正常启动，电池无破裂现象，允许有漏液、变形及外包装破裂现象。

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线）传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

Performance (Over dis-charging) (cell)	the current 1.0C discharge 60min	✧ The safety valve must start normally , battery without breakage;Leakage, distortion and outer package breakage are allowed
20 安全阀启动性能 (过充电) (单只) Safety Valve Performance (over charging) (cell)	✧ 将单体电池以 0.5CmA 充电 5 小时。 ✧ to be charged with <u>0.5C</u> mA for 5 hours	✧ 电池无破裂现象，允许有漏液、变形及外包装破裂现象。 ✧ No explosion, but leakage, distortion and out package breakage are allowed
21. 低温放电 To discharge at low temperature	✧ 单体电池标准充电后，在 0°C±2°C 的温度条件下存放 16 小时，在环境温度 0°C±2°C，以 0.2CmA 的电流放电。 ✧ Standard charge and stored for 16 hours at 0°C±2°C, and discharged at <u>0.2C</u> mA at 0°C±2°C	✧ 放电时间大于 <u>4</u> 小时 ✧ Discharge duration shall exceed <u>4</u> hour

备注/Remark:

循环寿命/IEC Cycle life: IEC61951(2017)

Cycles	Charge	rest	Discharge
1	0.1C×16hrs	0	0.25C×2hrs 20mins
2~48	0.25C×3hrs 10mins	0	0.25C×2hrs 20mins
49	0.25C×3hrs 10mins	0	0.25C to 2.0V/cell
50	0.1C×16hrs	1~4hrs	0.2C to 2.0V/cell

重复工步 1~50，直到任何第 50 工步放电时间小于 3 小时，测试终止。

Cycl 1~50 shall be repeated until the discharge duration on any 50th cycle become less than 3hrs

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线）传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

5. 电子元器件/Electronic components

5.1 NTC 规格及性能参数/NTC specifications and performance parameters

PART NO: MF58-103F3950FA

Page 8

10. R-T 表

R25=10.00K Ω $\pm$ 1%				B25/50= 3950K				料号: A24C		版本: A	
T(°C)	Rmin(K Ω)	Rnom(K Ω)	Rmax(K Ω)	T(°C)	Rmin(K Ω)	Rnom(K Ω)	Rmax(K Ω)				
-40	273.708	285.900	298.606	-3	36.686	37.550	38.431				
-39	257.151	268.437	280.189	-2	34.900	35.704	36.523				
-38	241.812	252.268	263.149	-1	33.207	33.955	34.716				
-37	227.577	237.271	247.354	0	31.602	32.298	33.006				
-36	214.343	223.339	232.689	1	30.097	30.744	31.402				
-35	202.022	210.375	219.051	2	28.667	29.270	29.881				
-34	190.534	198.294	206.350	3	27.310	27.871	28.439				
-33	179.808	187.022	194.506	4	26.022	26.543	27.071				
-32	169.780	176.490	183.446	5	24.799	25.283	25.774				
-31	160.395	166.637	173.106	6	23.638	24.087	24.543				
-30	151.600	157.411	163.428	7	22.535	22.953	23.376				
-29	143.352	148.762	154.361	8	21.488	21.876	22.268				
-28	135.607	140.646	145.858	9	20.494	20.854	21.218				
-27	128.330	133.025	137.877	10	19.550	19.884	20.221				
-26	121.486	125.860	130.380	11	18.653	18.963	19.275				
-25	115.044	119.121	123.331	12	17.801	18.088	18.378				
-24	108.978	112.778	116.699	13	16.992	17.258	17.526				
-23	103.260	106.803	110.456	14	16.224	16.470	16.717				
-22	97.869	101.172	104.576	15	15.493	15.721	15.950				
-21	92.782	95.862	99.034	16	14.799	15.009	15.221				
-20	87.980	90.852	93.808	17	14.139	14.333	14.529				
-19	83.446	86.123	88.878	18	13.512	13.691	13.872				
-18	79.162	81.658	84.225	19	12.915	13.081	13.247				
-17	75.113	77.440	79.832	20	12.348	12.501	12.654				
-16	71.284	73.455	75.683	21	11.809	11.949	12.090				
-15	67.664	69.687	71.764	22	11.295	11.425	11.554				
-14	64.239	66.125	68.060	23	10.807	10.926	11.045				
-13	60.998	62.756	64.558	24	10.342	10.451	10.561				
-12	57.930	59.569	61.248	25	9.900	10.000	10.100				
-11	55.026	56.553	58.117	26	9.471	9.570	9.670				
-10	52.276	53.700	55.156	27	9.062	9.162	9.261				
-9	49.672	50.998	52.354	28	8.673	8.772	8.872				
-8	47.206	48.441	49.703	29	8.303	8.402	8.501				
-7	44.869	46.020	47.195	30	7.951	8.049	8.147				
-6	42.655	43.727	44.820	31	7.615	7.712	7.810				
-5	40.558	41.555	42.573	32	7.296	7.392	7.489				
-4	38.570	39.498	40.445	33	6.992	7.087	7.182				

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线）传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

PART NO: MF58-103F3950FA

Page 9

R25=10.00K Ω $\pm$ 1%				B25/50= 3950K				料号: A24C		版本: A	
T (°C)	Rmin (K Ω)	Rnom (K Ω)	Rmax (K Ω)	T (°C)	Rmin (K Ω)	Rnom (K Ω)	Rmax (K Ω)				
34	6.702	6.796	6.890	71	1.644	1.690	1.738				
35	6.425	6.518	6.611	72	1.589	1.634	1.681				
36	6.162	6.253	6.346	73	1.536	1.580	1.626				
37	5.911	6.001	6.092	74	1.485	1.529	1.573				
38	5.671	5.760	5.850	75	1.436	1.479	1.522				
39	5.442	5.530	5.618	76	1.389	1.431	1.473				
40	5.224	5.311	5.398	77	1.344	1.385	1.426				
41	5.016	5.101	5.187	78	1.300	1.340	1.381				
42	4.818	4.901	4.985	79	1.259	1.298	1.338				
43	4.628	4.710	4.793	80	1.218	1.256	1.295				
44	4.447	4.527	4.609	81	1.179	1.217	1.255				
45	4.273	4.353	4.433	82	1.142	1.178	1.216				
46	4.108	4.186	4.265	83	1.106	1.142	1.178				
47	3.950	4.026	4.104	84	1.071	1.106	1.142				
48	3.799	3.874	3.950	85	1.038	1.072	1.107				
49	3.654	3.728	3.802	86	1.005	1.039	1.073				
50	3.516	3.588	3.661	87	0.974	1.007	1.040				
51	3.384	3.455	3.526	88	0.944	0.976	1.009				
52	3.257	3.327	3.397	89	0.915	0.947	0.979				
53	3.136	3.204	3.273	90	0.887	0.918	0.949				
54	3.020	3.087	3.155	91	0.860	0.890	0.921				
55	2.909	2.975	3.041	92	0.834	0.864	0.894				
56	2.803	2.867	2.932	93	0.809	0.838	0.868				
57	2.701	2.764	2.828	94	0.785	0.813	0.842				
58	2.604	2.665	2.727	95	0.762	0.789	0.817				
59	2.510	2.570	2.631	96	0.739	0.766	0.794				
60	2.420	2.479	2.539	97	0.717	0.744	0.771				
61	2.334	2.392	2.451	98	0.696	0.722	0.748				
62	2.252	2.308	2.366	99	0.676	0.701	0.727				
63	2.173	2.228	2.284	100	0.656	0.681	0.706				
64	2.097	2.151	2.206	101	0.637	0.661	0.686				
65	2.024	2.077	2.131	102	0.618	0.642	0.666				
66	1.954	2.006	2.059	103	0.600	0.623	0.647				
67	1.887	1.938	1.989	104	0.583	0.606	0.629				
68	1.822	1.872	1.923	105	0.566	0.588	0.611				
69	1.761	1.809	1.859	106	0.550	0.572	0.594				
70	1.701	1.748	1.797	107	0.534	0.556	0.578				

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线）传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

PART NO: MF58-103F3950FA

Page 10

R25=10.00KΩ±1%				B25/50- 3950K				料号: A24C		版本: A	
T(℃)	Rmin(KΩ)	Rnom(KΩ)	Rmax(KΩ)	T(℃)	Rmin(KΩ)	Rnom(KΩ)	Rmax(KΩ)				
108	0.519	0.540	0.562	145	0.199	0.209	0.220				
109	0.505	0.525	0.546	146	0.195	0.205	0.215				
110	0.491	0.511	0.531	147	0.190	0.200	0.210				
111	0.477	0.497	0.517	148	0.186	0.196	0.205				
112	0.464	0.483	0.503	149	0.182	0.191	0.201				
113	0.451	0.470	0.489	150	0.178	0.187	0.196				
114	0.439	0.457	0.476								
115	0.427	0.445	0.463								
116	0.415	0.433	0.451								
117	0.404	0.421	0.439								
118	0.393	0.410	0.428								
119	0.383	0.399	0.416								
120	0.373	0.389	0.406								
121	0.363	0.379	0.395								
122	0.353	0.369	0.385								
123	0.344	0.359	0.375								
124	0.335	0.350	0.366								
125	0.327	0.341	0.356								
126	0.318	0.333	0.347								
127	0.310	0.324	0.339								
128	0.302	0.316	0.330								
129	0.295	0.308	0.322								
130	0.287	0.300	0.314								
131	0.280	0.293	0.307								
132	0.273	0.286	0.299								
133	0.266	0.279	0.292								
134	0.260	0.272	0.285								
135	0.253	0.266	0.278								
136	0.247	0.259	0.271								
137	0.241	0.253	0.265								
138	0.236	0.247	0.259								
139	0.230	0.241	0.253								
140	0.224	0.235	0.247								
141	0.219	0.230	0.241								
142	0.214	0.225	0.236								
143	0.209	0.219	0.230								
144	0.204	0.214	0.225								

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线）传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

6. 运输、储存/The transportation and storage

6.1 运输/Transportation

电池在运输过程中应保持清洁、干燥、通风的环境，并防止剧烈振动、冲击或挤压，防止日晒雨淋，可使用汽车、火车、轮船和飞机等交通工具。

In the transportation process the battery should maintain at clean, dry, and the well ventilated environment, and prevents the fierce vibration, the impact or the extrusion, prevents to be exposed to the sun and rain. Battery could be transported by automobile, train, steamboat, airplane and other transportation vehicle.

6.2 储存/Storage

6.2.1 储存的温度与湿度，电池应储存在环境温度为 $-20^{\circ}\text{C}\sim 35^{\circ}\text{C}$ （以 $15^{\circ}\text{C}\sim 25^{\circ}\text{C}$ 为宜），相对湿度不大于 85% 的清洁、干燥、通风的室内，应避免与腐蚀性物质接触，应远离火源及热源。

Battery must be stored at $-20^{\circ}\text{C}\sim +35^{\circ}\text{C}$, (It is best at $15^{\circ}\text{C}\sim +25^{\circ}\text{C}$) and put in the clean, dry and ventilated place with relative humidity 85% max.. It must be kept away from corrodent substance, fire hazard and heat resource.

6.2.2 储存的放置方式/ Storage placement way

成箱电池堆放最高层数请勿超过五层，为保证电池箱之间有良好的空气流通状态，请保持纸箱间 5~10cm 以上距离，**防止电池因堆积聚温而引起安全事故。**

The packed battery in a carton stack less than 5 layers, to guarantee that between the cell box has the good air circulation condition, please maintain between the carton above 5~10 cm distance, which prevents the safety incident caused by a pile of agglomeration to heat.

7. 警惕与防范/Warning and Security

为防止因电池影响造成设备故障，确保电路及电池配套使用安全。在设计和生产设备的时候，请充分考虑以下事项：To prevent the impact of equipment failure caused by the battery, and to make sure the security of circuit and battery set, please consider below things when design and produce the production equipment.

▲ 危险！！

★ 违反下述事项将会导致电池漏液、发热、爆炸、着火以及严重的人身伤害！

- (1) 禁止将 BPI 镍氢电池投入火中或加热！
- (2) 禁止将 BPI 镍氢电池用于碰撞或者投掷！
- (3) 勿将导线直接焊接在 BPI 电池上。
- (4) 勿将 BPI 镍氢电池放置于高于 1.5 米容易掉落的地方，勿使其从高于地面 1.5 米以上跌落。
- (5) 勿将 BPI 镍氢电池正负极用导电物，如导线等直接连接。如正负极引出片未套绝缘套，请勿运输或储藏，运输及储藏电池注意勿让金属项链、钥匙等导电物接触，运输或储藏请用专用器具（如专用纸箱）。
- (6) 所有的充电方式应与 BPI 镍氢技术工程师沟通清楚。
- (7) 禁止拆开 BPI 镍氢电池。拆卸电池会引起外部或内部短路，导致暴露的电池成分在空气中发生化学反应，会导致发热、爆炸、着火，还会造成电池碱液的飞溅，非常危险。

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线）传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

Danger !

- (1) Against the following matters will result in battery leakage, heat, explosion, fire and serious personal injury!
- (2) Prohibited to throw the BPI battery into fire or heat!
- (3) Prohibited to collide or throw BPI battery!
- (4) Don't weld the lead on the BPI battery directly.
- (5) Don't put the BPI battery on a place which is more than 1.5 meter in case of dropping. Don't drop it at the height of more than 1.5 meter.
- (6) Don't connect the positive pole and electrode pole directly of BPI battery, such as leading wire. If the tab terminal of poles doesn't set insulation covering, please don't transport or store. Please don't touch the metal necklace, key or any other conductive material. Please use special carton when transport or store.
- (7) All charging methods should be communicated clearly with BPI NI-MH technical engineer.
- (8) Prohibited to disassemble BPI batteries. It will cause external or internal short circuit, and the exposed parts will have chemical reaction then result in very dangerous heat, explosion, fire or splash of electrolyte.

▲ 警告！！

- (1) 勿将水、海水或其他的氧化试剂对电池进行处理，因这会引起电池生锈及发热。如果电池生锈，其减压防爆阀将不能工作，因而会导致爆炸。
- (2) 勿过充 BPI 镍氢电池，即不要超过充电器说明或指示的预设充电时间继续充电。如果 BPI 镍氢电池器预设充电时间充电后仍未满，请停止充电，延长充电时间将会导致电池漏液、发热及爆炸。
- (3) BPI 镍氢电池内含有无色强碱溶液（即电解液），如果皮肤或衣服与 BPI 镍氢电池电解液接触，请用硼酸水或醋酸水进行清洗后，用清水彻底冲洗。电池的电解液会腐蚀皮肤。
- (4) 禁止电池串联数量超过 20 支，因超过 20 支的电池串联会导致触电、漏液或发热。
- (5) 勿将电池外壳拆除，因这样会导致电池短路，引起漏液、发热、着火及爆炸。
- (6) 如 BPI 镍氢电池漏液、变色、变形或有其他变化，请停止使用，否则会导致发热、爆炸、着火。
- (7) 将 BPI 镍氢电池及其用电池驱动之电子产品放置于婴儿、小孩难以触摸的地方，以免出现误吞食电池之意外。如果发生意外，立即请医生处理。
- (8) 当 BPI 镍氢电池充满电后其使用时间远远少于其初始时的工作时间时，即该电池使用寿命已满，须换用另一新电池。

深圳市倍特力电池有限公司

地址：龙华区大浪街道石凹同富邨工业园 11 栋

电话：0755-2807 8088（50 线）传真：0755-2807 8588

网址：www.bpibattery.com

全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司

地址：江西省宜春市经济技术开发区春顺路 999 号

电话：0795-3282999 传真：0795-3175988

邮箱：info@bpibattery.com

Warning！！

- (1) Don't contact batteries with water, sea water or other oxidation reagents, which will cause rustiness and heat. If batteries get rusty, explosive decompression valve won't work and will lead to explosion.
 - (2) Don't over-charge BPI batteries, that is, don't continually charge batteries despite the designed charging time. If the batteries are not fully charged within the designed charging time, please stop to charge. The delay of charging time will lead to leakage, heat and explosion.
 - (3) BPI NI-MH battery includes the colorless strong alkaline liquor (i.e. electrolyte), if the skin or clothes touch BPI NI-MH battery liquor, please use the boron acid water or the vinegar acid water to clean, after that, with the clear water thoroughly flushes. Because the battery's electrolyte can corrode the skin.
 - (4) It is forbidden for more than 20 pcs batteries in series. Because it will result in leakage, getting shock or giving off heat.
 - (5) Don't disassemble the battery, as it will result in short-circuit, leakage, giving off heat, catching fire and explosion.
 - (6) Don't use the batteries when they are leakage, any color deterioration, distortion or other changes are found. Otherwise it will get hot, catching fire or explosion may happen.
 - (7) Please keep the batteries and other electronic products related to battery away from baby, children, to avoid accident of swallowing of battery. If there is any accident, please go to see the doctor.
 - (8) To use new battery when the working time of the battery is far short from the initial working time, as the cycle life of this battery is finished.
8. 其他/ Others

8.1 本公司保留在没有预先通知的情况下改变和修正工艺设计和规格书的权利。

BetterPower reserve the right to change and amend the process design and specifications without prior notice;

8.2 未尽事宜由供求双方讨论决定。

Anything not mentioned in this specifications, customer and BetterPower should discuss to get a solution;

8.3 对未按规格书操作（人为导致短路烧坏）所造成的意外，本公司不承担任何责任。

BetterPower does not undertake any responsibility for the accidents caused by actions not matching with specifications(Man-made short circuit to burn out).

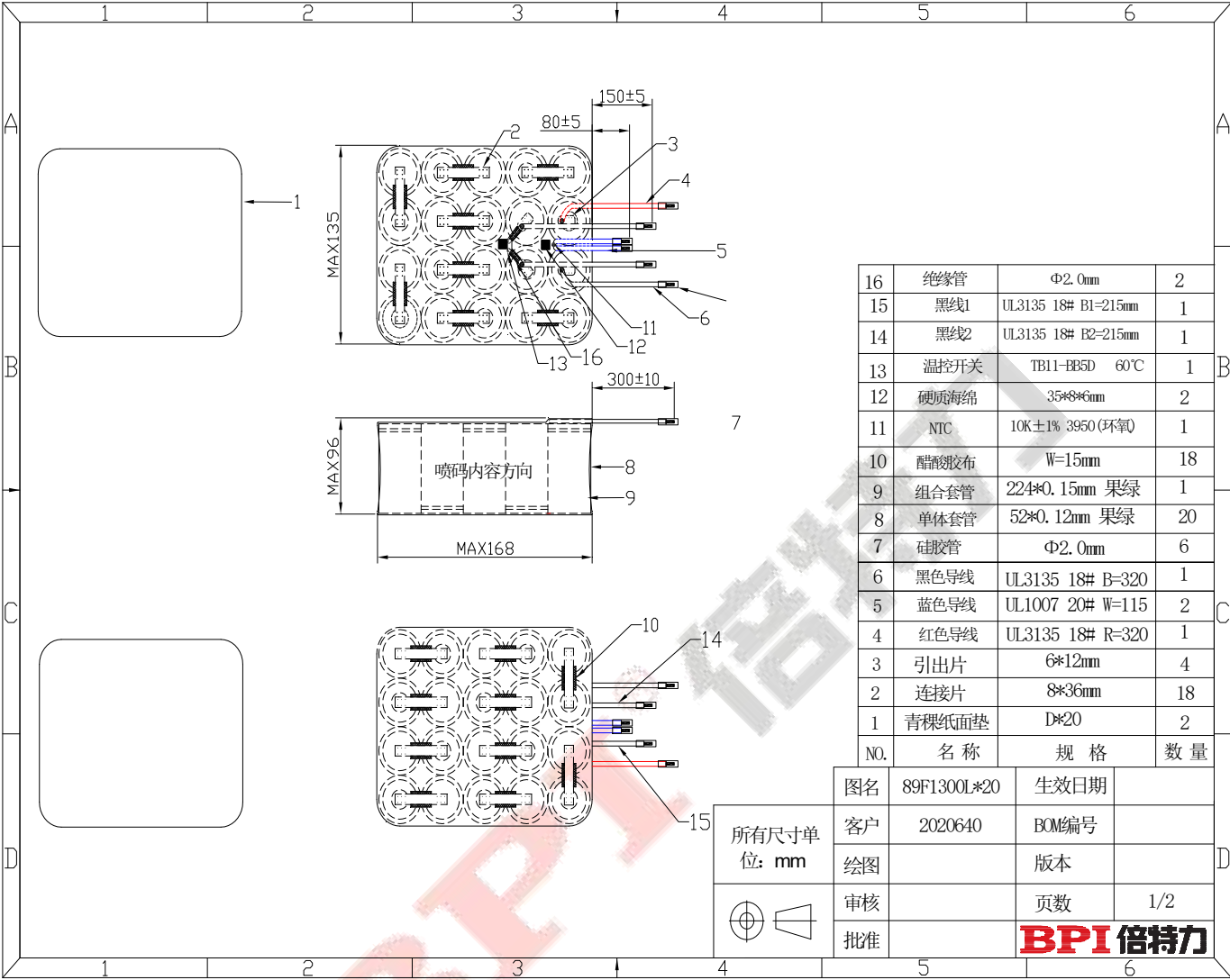
8.4 本产品为江西省倍特力新能源有限责任公司为贵司专项定制开发。双方签订购销合同后，贵司承诺按照合同约定履行付款和提货义务。如违反合同约定拒绝按时付款和提货，贵司承担本产品所有开发费用及相关违约责任。

This product is specially customized and developed by Jiangxi BetterPower New Energy Co., Ltd. for your company. After both parties sign the purchase and sales contract, your company promises to fulfill the payment and delivery obligations as stipulated in the contract. If you refuse to make payment and pick up the goods on time in violation of the contract, your company shall bear all development costs and related breach of contract responsibilities for this product.

深圳市倍特力电池有限公司
地址：龙华区大浪街道石凹同富邨工业园 11 栋
电话：0755-2807 8088（50 线） 传真：0755-2807 8588
网址：www.bpibattery.com
全国服务热线：4000 667 800

江西省倍特力新能源有限责任公司
地址：江西省宜春市经济技术开发区春顺路 999 号
电话：0795-3282999 传真：0795-3175988
邮箱：info@bpibattery.com

9. 附图/ Drawings



***** END *****