

## 1. Preface

The purpose of this product specification is to provide technical information for the rechargeable Lithium-ion button battery LiR1620, manufactured and supplied by Unique Energy.

## 2. Description and Model

2.1 Description	Rechargeable Lithium-ion button battery
2.2 Model	LiR1620

## 3. Specification

3.1 Capacity	Nominal	10mAh
	Typical	12mAh
3.2 Charging Voltage		4.20V
3.3 Nominal Voltage		3.7V at 0.2C mA
3.4 Standard Charging Method		Constant current:5mA Constant voltage 4.20V total 5h
3.5 Cut-off Discharge Voltage		3.00V
3.6 Max.Discharge Current		20mA
3.7 Max.Charge Current		10mA
3.8 Cycle Life		>500 cycles at 0.2C mA discharge
3.9 Ambient Temperature		
	for Standard Charge	0°C~ 45°C
	for Discharge	-20°C~ 60°C
3.10 Storage		
	for within the temperature	-20°C~ 60°C
	for within the humidity	≤ 75%
3.11 Energy Density		
	Wh/L	~300
	Wh/Kg	~120
3.12 Weight of Bare Cell		~1.2g
3.13 Charge State Internal Impedance		<1200mΩ

## 4. Appearance

Appearance shall be free from any remarkable scratch,flaws, rust, discoloration or electrolyte leakage(visible or by smell)

## 5. Standard Test condition

### 5.1 Environment Conditions

Unless otherwise specified,all test stated in this Product Specification are conducted within the temperature 15~25°C and the humidity 45~85%RH.

## 5.2 Test Equipment

### (1) Impedance meter

The impedance meter with AC 1kHz should be used

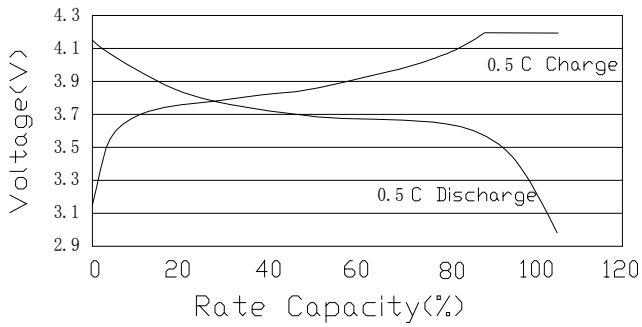
## 6. Test Procedure and Its Standard

Item	Measuring Procedure	Standard
6.1 Appearance	Visual	No Defect and Leak
6.2 Dimension	Caliper	As item 8
6.3 Weight	Scale	As item 3.12
6.4 Maximum Charge Current	CCCV(Constant Current Constant Voltage)	10mA
6.5 Full charge	CCCV	CC-0.2CmA CV- 4.2V total 8h
6.6 Open Circuit Voltage	Within 1hr after full charge,measure Open circuit voltage	>4.15V
6.7 Internal Impedance	Measure the battery with 1kHz AC	<1200m $\Omega$
6.8 Discharge Capacity	Within 1hr after full charge,discharge until final discharge,at 0.2C mA and measure the capacity	>10mAh
6.9 Maximum Discharge Current	Until final discharge voltage	20 mA
6.10 Charge/Discharge Cycle Life	Charge:CCCV,CC- 0.2CmA,CV- 4.2V total 8h Discharge:0.2CmA to 3.00V,This charge/discharge shall be repeated 500 times	Discharge capacity should be >70% of item 6.8
6.11 Leakage Proof	After full charging,the battery shall be stored at 40 $\pm$ 2 $^{\circ}$ C and humidity 80 $\pm$ 5%for 21 days	No leakage should be observed by visual inspection
6.12 Temperature Characteristics	1)After full charge at 20 $\pm$ 5 $^{\circ}$ C ,stand at -20 $\pm$ 2 $^{\circ}$ C for 18h,then discharge at 0.2C mA and measure the capacity 2)After full charge at 20 $\pm$ 5 $^{\circ}$ C ,stand at 55 $\pm$ 2 $^{\circ}$ C for 2hrs ,then discharge at 1C mA and measure the capacity	Discharge capacity should be>60% of item 6.8 and no abnormality on its appearance and stucture
6.13 Charge Retension	After full charging,stand at 20 $\pm$ 5 $^{\circ}$ C for 28 days,measure the discharge capacity according to item 7.8	Discharge capacity should be>85% of item 6.8

### 7.1 Charge/Discharge Characteristics

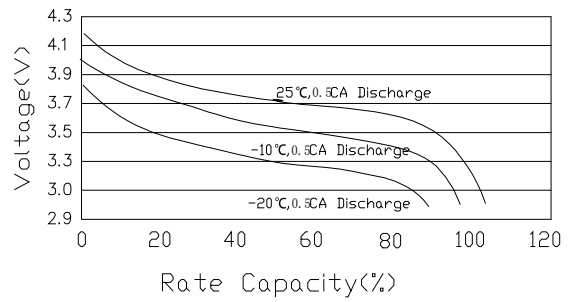
Charge:CC/CV 4.2V, 5mA(0.5C),  
total 5h

Discharge:5mA(0.5C) Cut-off at 3.00V  
Temperature:25°C



### 7.3 Temperature Characteristics

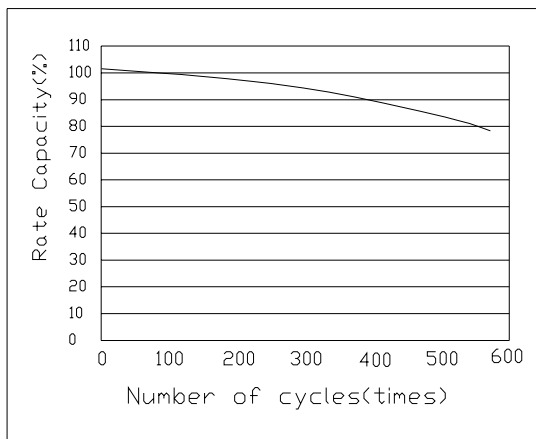
Charge: CC/CV 4.2V 0.5CA, total 5h  
Discharge:0.5CA, Cut-off at 3.00V



### 7.2 Charge/Discharge Cycle Life

Charge:CC/CV 4.2V, 0.2CA,  
total 8h

Discharge:0.2CA, Cut-off at 3.00V  
Temperature:25°C



### 8. Dimension (Bare cell) mm

