Spec No.	INR21700E	Version No.	Tentative

Specification of Product

Tentative Version

For Lithium-ion rechargeable cell

Model: INR21700E 5000mAh

Spec No.	INR21700E	Version No.	Tentative

1. Scope

This product specification has been prepared to specify the lithium-ion cell ("cell") to be supplied to the customer.

2. Description and Model

2.1 Description Cell (Lithium-ion rechargeable cell)

2.2 Model INR21700E

3. Nominal specification

Item	Specification
Standard discharge capacity	Min. 5000mAh(Typical 4,800mAh) - Charge: 0.3C(1440mA),4.2V, 0.02C(96mA) cutoff @ RT - Discharge: 0.2C(96mA) 2.5V cutoff @ RT *1C = 4,800mA
Standard discharge capacity	Min. 17.04Wh(Typical 18.5Wh) -Charge:0.3C(1440mA),4.2V, 0.02C(96mA) cutoff @ RT -Discharge: 0.2C (960mA),2.5V Cutoff @ RT
Charging voltage	4.2V
Nominal voltage	3.6V (0.2C discharge)
Charging method	CC-CV (Constant voltage with limited current)
Charging current	Standard charge: 1,440mA Rapid charge: 4,800mA
Charging time	Standard charge: 5hours Rapid charge: 2.5hours
Max. charge current	Refer to Fig.1
Max. pulse charge current	TBD

Max. discharge current	5000mA (not for cycles life)
Max. pulse discharge current	35A for 10sec, 25A for 30sec, 18A for 60sec (ambient temperature 23℃)
Discharge cut-off voltage	2.50V
Cell weight	Max. 69g
Cell dimension (W/O tube, W/O washer)	Refer to cell drawing Fig. 2
Operating temperature (Cell surface temperature)	Charge: 0 to 50℃(Fig.1) Discharge:-20 to 60℃
Storage temperature	-20-45℃

Note 1: Rapid charge current of 5000mA is not recommended for long life cycle.

Max charge current for reliable cycle life at T2~T4 region is 0.33C (1,584mA) in Fig.1, charge current of 0.3C (11,440mA) is recommended for long life cycle at standard temperature region

Note 2: If the cell is kept as ex-factory status (30% of charge), the capacity recovery rate is more than 90%

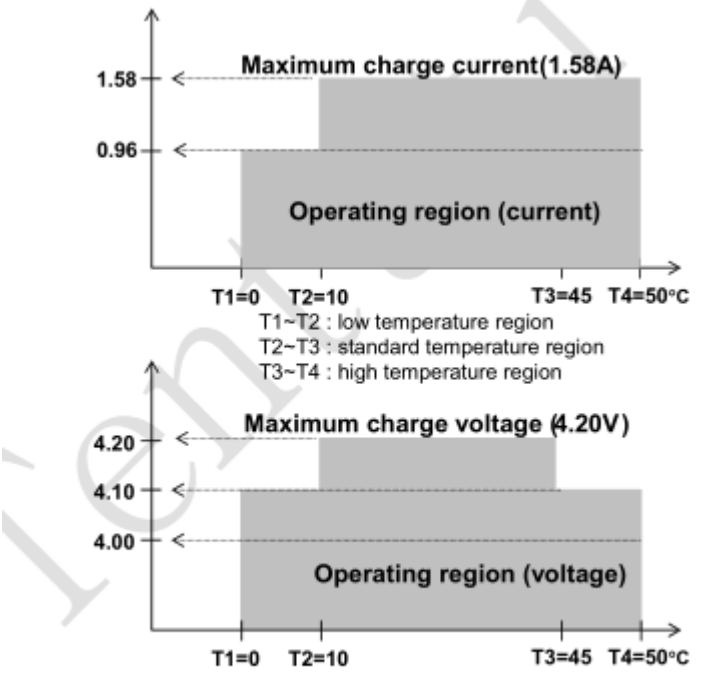
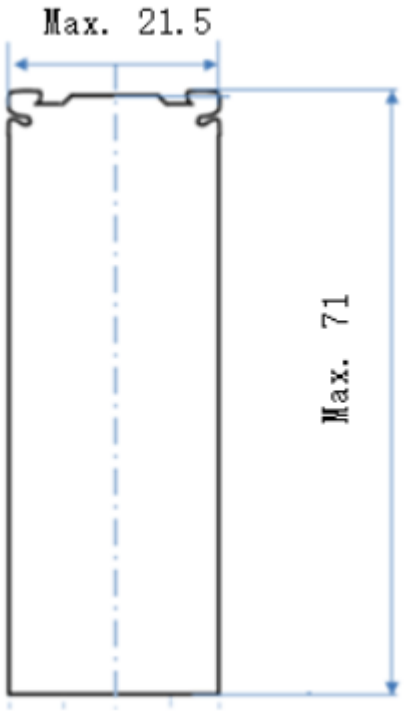


Fig. 1. Charging operating window for reliable cycle life.

Spec No.	INR21700E	Version No.	Tentative

4. Outline dimensions



5. Bottom vent corrosion resistance

Corrosion under 2mm and no electrolyte leakage after 1,500 hours of High Temperature (65˚C) and Humility (85% RH) Endurance test

6. Standard test conditions

6.1 Environmental conditions

Unless otherwise specified, all tests stated in this specification are conducted at temperature conducted at temperature 23±3˚C and humility under 65%

6.2 Measuring equipment

(1) Ammeter and Voltmeter

The ammeter should have an accuracy of grade 0.5mA or higher.

The voltage should have an accuracy of the grade 0.5mV or higher.

(2) Slide caliper
The slide caliper should have 0.05 mm scale or higher.

(3) Impedance meter
The impedance meter with AC 1kHz should be used.

(4) Weighing machine
The weighing machine should have an accuracy of the grade 0.001g or higher

7. Characteristics

7.1 Standard charge

This “Standard charge” means charging the cell with charge current

1440mA and constant voltage 4.2V at 23℃, 96mA cutoff.

7.2 Standard discharge capacity

The standard discharge capacity is the initial discharge capacity of the cell, which is measured with discharge current of 960mA with 2.5V cut-off at 23℃ within 1 hour after the “Standard charge”. In this case the minimum capacity of the standard discharge capacity is 4,700mAh in warranty.

7.3 Standard discharge energy

The standard energy is the initial discharge energy of the cell, which is measured with discharge current of 960mA with 2.5 cut-off at 23℃within 1 hour after the “Standard charge”. In this case the minimum capacity of the standard discharge capacity is 17.04Wh in warranty.

7.4 Initial internal impedance (AC resistance)

Initial internal impedance measured at AC 1kHz after standard charge

Initial internal impedance ≤ 15mΩ

7.5 Temperature dependence of discharge capacity

Discharge capacity comparison according to the discharging temperature, measured with constant current at 23℃ with 960mA and 2.5V cut-off after charging at the following temperatures.

Charge temperature	Discharge temperature			
23℃	-10℃	0℃	23℃	60℃
Relative capacity	70%	80%	100%	90%

Notes: If the charge temperature and discharge temperature is not same, the interval for temperature change is 3 hours.

7.6 Discharge rate capabilities

Discharge capacity according the discharging current is measured with 2.5V cut-off after standard charge is as follows

	Discharge Condition			
Current	0.2C (960mA)	0.5C (2,400mA)	1C (4,800mA)	2C (9,600mA)
Relative capacity	100%	95%	90%	80%

7.7 Cycle life performance

Temperature		23℃	45℃
Charge (CC-CV)	Voltage	4.2 V	
	Current	1,440mA (0.3C)	
	Cut-off	240mA	
Discharge (CC)	Current	4,800mA (1.0C)	
	Cut-off	2.5V	
Cycle		500 cycles	500 cycles
Capacity		3,525mAh	3,290mAh
DC-IR (%) increase		60 %	70 %

Capacity after 500 cycles:

Capacity ≥3,525mAh (75% of the minimum standard capacity)

8. Packaging

TBD