



昌 勃 股 份 有 限 公 司

Dr . POWER CORPORATION

零 件 規 格 書/承 認 書

SPECIFICATION FOR APPROVAL

CUSTOMER : \_\_\_\_\_

DESCRIPTION :                     Battery Pack                    

MODEL :                     8 F!%!; 5                    

CUSTOMER PART NO : \_\_\_\_\_

**APPROVED SIGNATURES**

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Rev	Date	Description	Designed	Checked	Approved
A	2021/8/24	Release		Dc 7 \ Yb	

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OUR MODEL	DR-10-GA	Date	2021/11/18
OUR P/N	-	Rev.	1.0

1. Scope

This specification shall be applied to the lithium battery to be supplied by Japone. The battery pack is use for Tablet Products

2. Name and Model

Customer Model Name :

Model Name : DR-10-GA

Cell Type : NCR 18650GA

Cell Configuration : 2S-3P

3. Product Specification

No	Item	Rate performance	Remark
1	Typical capacity	10350 mAh	Discharge at 3.45A until cell voltage under 2.5V
2	Normal voltage	7.2 V	
3	Charge voltage	8.4 V	
5	Continuous charge current	5 A	
6	Max discharge current	10 A	
8	Suggest system cutoff voltage	9V	
9	Operation temperature	Charge 0~45 °C	
		Discharge -20~60 °C	
10	Storage temperature	0~40 °C	Storage less than 3 months
11	Power consumption	Average $\leq 800 \mu A$ $\leq 300 \mu A$ $\leq 1 \mu A$	If the battery need to storage in the long term, please charge the battery once time between half year, that can above the battery over discharge by itself, it will keep the battery more healthy.
	normal mode		
	sleep mode		
	shutdown mode		

4. Protection Function of Protect IC(Ta = 25 °C)

Function item	Control function and operation	Remark
Over charge detection voltage	4.25 ± 0.01 V	
Over charge delay time	1~3 Sec	
Over charge release voltage	4.1 ± 0.1 V	
Over discharge detection voltage	2.8 ± 0.1 V	
Over discharge delay time	2~4 Sec	
Over discharge release voltage	3.1 ± 0.1 V	
Over charge prohibition current	6 ± 1 A	
Over charge prohibition delay time	2~4 Sec	
Over discharge prohibition current 1 <sup>st</sup>	12 ± 1 A	
Over discharge prohibition 1 <sup>st</sup> delay time	3~5 Sec	
Over discharge prohibition current 2 <sup>nd</sup>	15 ± 1 A	
Over discharge prohibition 2 <sup>nd</sup> delay time	1~3 Sec	
Hardware discharge prohibition current	22 ± 1 A	
Over discharge prohibition 2 <sup>nd</sup> delay time	29~33 mSec	
Short protection delay time	122 ± 300 uSec	
Over temperature of charge	45 ± 3 °C	

Delay of charge over temperature	2~4 Sec	
Release temperature of charge	40 ± 3 °C	
Over temperature of discharge	60 ± 3 °C	
Delay of discharge over temperature	2~4 Sec	
Release temperature of discharge	55 ± 3 °C	
Under temperature of charge	0 ± 3 °C	
Delay of charge under temperature	2~4 Sec	
Release temperature of charge	5 ± 3 °C	
Under temperature of discharge	-20 ± 3 °C	
Delay of discharge under temperature	2~4 Sec	
Release temperature of discharge	-15 ± 3 °C	

#### 5. Protection Function of Permanent Fail(Non-recoverable)

Function Item	Control Function and Operation	Remark
Over charge detection voltage	Anyone cell ≥ 4.4 V	5 Sec
Over Temperature Protect	Mosfet Temp ≥ 95°C	5 Sec
	Cell Temp ≥ 75°C	5 Sec
FET Failure	C-FET cut off & current > 100 mA	5 Sec
	D-FET cut off & current > -100 mA	

#### 6. Connect Pin Define

Name	Function	Remark
1	P+	
2	SMBus Clock	
3	SMBus Data	
4	ID	510Ω connect to P-
5	P-	

#### 7. Handling Warning

The battery used in this device may present a risk of fire or chemical burn if mistreated. Do not disassemble heat above 60°C, Crush or puncture short circuit external contacts, or dispose in fire or water.

電池組在以下情況使用可能造成起火或是爆炸情況產生，禁止操作環境超過60度、輾壓、刺穿電池組、外部短路、丟入水中及火源。

#### 8. Storage Condition

In case of long storage less than 1 month, store the battery at temperature range -20 ~ +50, low humidity(less than 70%RH).  
儲存時間低於一個月，建議儲存溫度-20 ~ 50度，濕度< 70%。

In case of long storage less than 3 months, store the battery at temperature range 0 ~ +40, low humidity(less than 70%RH).  
儲存時間低於三個月，建議儲存溫度0 ~ 40度，濕度< 70%。

In case of long storage more than 3 months, store the battery at temperature range 0 ~ +20, low humidity(less than 70%RH).  
儲存時間高於三個月，建議儲存溫度0 ~ 20度，濕度< 70%。

#### 9. Disposal Consideration

Recommended methods for safe and environmentally preferred disposal : Product (waste from residues) Do not throw out a used battery cell. Recycle it through the recycling company. Contaminated packaging Neither a container nor packing is contaminated during normal use. When internal materials leaked from a battery cell contaminates, dispose as industrial wastes subject to special control.

廢棄物建議的處理方式：不要隨意丟棄使用過的鋰電池，應交由專業的回收公司處理。電池在正常使用情況下，電池並非是污染品，但是當電池有漏液、破損現象，請根據工業污染品規定報廢處理

LITHIUM ION BATTERY  
SPECIFICATION

BATTERY CLASSIFICATION

LITHIUM ION BATTERY

PRODUCT CODE

CLIENT

Client Agreement:

Signature:	_____
Name in Block Letters:	_____
Date:	_____

\* Please return this document with the signature within 30 days after receiving, or reply the requests of modification.

Panasonic Industrial Devices Sales Taiwan Co.,Ltd.  
Battery Technology First Sect.  
Battery Technology Dept.  
1st Ind. Components Business Group

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<b>1 Revision History</b>					
No.	Date	Class	Description		
(a)	2021/1/26	-	Issue	Dft.	Mick
				Chk.	K.Kobayashi
				App.	T.Nakaguchi
				Dft.	
				Chk.	
				Chk.	
				App.	
				Dft.	
				Chk.	
				Chk.	
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				App.	
				Dft.	
				Chk.	
				Chk.	
				App.	
* Legend: A for Added, D for Deleted, R for Revised					
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## 2 Safety Instructions

The battery contains flammable materials such as organic solvents. Mishandling the battery may cause fire, smoke, or an explosion and the battery's functionality will be seriously damaged. Protection circuitry must be designed into the application device to protect the battery. Additionally, PIDSTW highly recommends adding these instructions to the owner's manual. Please read and check the following prohibited actions.

<b>Danger</b>
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### Immersion

*Do not immerse the battery in liquid such as water, beverages, or other fluids.*

Exposure to liquid may damage the battery or the battery pack (including protection circuit).

As a result, the battery may generate heat, smoke, catch fire, or explode.

### High Temperature

*Do not use or place the battery near an open flame, heater or high temperature (above 80°C).*

Subjecting the battery to high temperature may damage the polyolefin separator and can cause an internal short circuit. This may cause the battery to generate heat, smoke, catch fire or explode.

### Chargers and Charge Conditions

*Do not use unauthorized chargers.*

Only charge the battery within specified conditions (e.g., temperature range, voltage, and current).

Use of an unauthorized charger could cause the battery to generate heat, smoke, catch fire, or explode.

### Reverse Polarity

*Do not attach or insert battery with polarity reversed.*

A battery has polarity. If the battery does not easily fit into the charger or device, check the battery's orientation. Do not force the battery into the battery compartment. If attached to the device with reversed polarity, the battery may generate heat, smoke, catch fire, or explode.

### Direct Connection

*Do not connect the battery to an AC outlet or DC automotive plug.*

The battery requires a specific charger. If the battery is connected directly to a power outlet, the battery may generate heat, smoke, catch fire, or explode.

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<p><b>Use in Other Equipment</b>  <i>Do not use the battery in equipment for which it was not intended.</i>            If the battery is used in unapproved applications or systems, the battery may become damaged and generate heat, smoke, catch fire, or explode.</p> <p><b>Incineration and Heat</b>  <i>Keep the battery away from heat and fire.</i>            Heat will damage the battery and may cause it to generate heat, smoke, catch fire, or explode.</p> <p><b>Short-Circuit</b>  <i>Do not apply a short-circuit.</i>            Do not connect the positive (+) and negative (-) terminals with a conductive material.            Do not carry or store the battery with any metal objects. If the battery is shorted, the shorting item may overheat and the battery may generate heat, smoke, catch fire, or explode.</p> <p><b>Impact</b>  <i>Avoid excessive impact to the battery.</i>            Excessive impact may damage the battery. This may cause the battery to leak, generate heat, smoke, catch fire, or explode.</p> <p><b>Penetration</b>  <i>Do not penetrate the battery with a nail or strike with a hammer.</i>            If subjected to a hard strike or penetrated by an object, the battery may be damaged or destroyed, thereby causing an internal short-circuit. This may cause the battery to generate heat, smoke, catch fire, or explode.</p> <p><b>Soldering</b>  <i>Do not directly solder to the battery.</i>            Soldering directly to the battery could melt the separator or damage the gas release vent or other safety mechanisms. This may cause the battery to generate heat, smoke, catch fire, or explode.</p> <p><b>Disassembly</b>  <i>Do not disassemble the battery cell and battery pack.</i>            Battery cell and/or battery pack may be deformed and damaged by disassembly.            Disassembly or modification of the battery cell and/or battery pack may damage the protection functions. This may cause the battery cell and/or battery pack to generate heat, smoke, catch fire, or explode.</p> <p><b>Charge near High Temperatures</b>  <i>Do not charge the battery near high temperature.</i>            If the battery is charged while exposed to high temperature, the battery's protection circuit may activate and prevent charging, or fail and cause the battery to generate heat, smoke, catch fire, or explode.</p>			
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<div data-bbox="572 383 1043 443" style="border: 1px solid black; padding: 5px; margin: 0 auto; width: fit-content;"><b>Warning</b></div> <p data-bbox="188 472 300 501">Ingestion</p> <p data-bbox="188 501 557 530"><i>Keep away from small children.</i></p> <p data-bbox="188 533 1390 602">Keep the battery away from small children. If the battery or any of its component parts is swallowed, seek medical attention immediately.</p> <p data-bbox="188 622 280 651">Storage</p> <p data-bbox="188 651 1090 680"><i>Do not place the battery in or near a microwave or other cooking appliances.</i></p> <p data-bbox="188 683 1378 752">If subjected to heat or electromagnetic radiation, the battery may leak, generate heat, smoke, catch fire, or explode.</p> <p data-bbox="188 772 312 801">Mixed Use</p> <p data-bbox="188 801 563 831"><i>Do not mix with other batteries.</i></p> <p data-bbox="188 833 1326 902">The battery should not be used with other batteries having a different capacity, chemistry, or manufacturer. Doing so could cause the battery to generate heat, smoke, catch fire, or explode.</p> <p data-bbox="188 934 544 963">Discoloration and Deformities</p> <p data-bbox="188 963 552 992"><i>Do not use abnormal batteries.</i></p> <p data-bbox="188 994 1399 1104">Immediately stop using the battery if there are noticeable abnormalities, such as smell, heat, discoloration, or deformity. The battery may be defective and could generate heat, smoke, catch fire, or explode with continued use.</p> <p data-bbox="188 1120 357 1149">Charging Time</p> <p data-bbox="188 1149 847 1178"><i>Stop charging if the charging process cannot be finished.</i></p> <p data-bbox="188 1180 1383 1249">If the battery can not finish the charging process within the specified time, halt the charging process. The battery may generate heat, smoke, catch fire, or explode.</p> <p data-bbox="188 1301 325 1330">Leakage ①</p> <p data-bbox="188 1332 722 1361"><i>Do not use a leaking battery near open flame.</i></p> <p data-bbox="188 1364 1402 1433">If the battery or liquid leaking from the battery has an irritating odor, the battery should be kept away from any open flame. If exposed to an open flame, the battery could ignite and explode.</p> <p data-bbox="188 1480 325 1509">Leakage ②</p> <p data-bbox="188 1512 552 1541"><i>Do not touch a leaking battery.</i></p> <p data-bbox="188 1543 1407 1612">If liquid leaking from the battery gets into your eyes, immediately flush your eyes with clean water and seek medical attention. If left untreated, it will cause significant eye damage.</p> <p data-bbox="188 1637 300 1666">Transport</p> <p data-bbox="188 1666 643 1695"><i>Pack the battery securely for transport.</i></p> <p data-bbox="188 1697 1347 1727">To prevent short-circuit or damage during transport, securely pack the battery in a case or carton.</p> <p data-bbox="188 1765 509 1794">Exposure to Direct Sunlight</p> <p data-bbox="188 1794 1015 1823"><i>Do not use or leave the battery in a location exposed to excessive heat.</i></p> <p data-bbox="188 1825 1422 1935">If the battery is used in a location such as in direct sunlight or in a car, it could cause the battery to leak, generate heat, smoke, catch fire, or explode. It may also cause the battery's performance and life to deteriorate.</p>			
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<p><b>Recycling</b>  <i>Do not throw away used batteries as home rubbish.</i>            When disposing of the battery, recycle it according to local rules and regulations.            If used batteries are thrown away as home rubbish, there is possibility that batteries catch fire or smoke according to damage in rubbish collection.</p> <div data-bbox="571 674 1038 734" style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 20px auto;"><b>Caution</b></div> <p><b>Static Electricity</b>            The battery pack has a protection circuit. Do not use the battery where static electricity in excess of 100V is generated as it may damage the protection circuit. If the protection circuit fails, the battery performance and life to deteriorate.</p> <p><b>Charging Temperature Range</b>            Only charge the battery at our specified temperature range. Charging outside of this temperature range may cause the battery to leak, generate heat, or result in serious damage. It may also cause the battery's performance and life to deteriorate.</p> <p><b>Manual</b>            Read the manual before use. Keep for future reference.</p> <p><b>Charging Method</b>            Read the charger's manual before use for proper charging method.</p> <p><b>First Time Usage</b>            Please contact the supplier if the battery gives off an unusual odor, generates heat, or shows signs of rust prior to its initial use.</p> <p><b>Use by Children</b>            Parents must explain how to use the system and the battery. Please check back periodically to ensure children are using the system and the battery correctly.</p> <p><b>Flammable Materials</b>            Do not charge or discharge near flammable materials. Doing so could result in fire.</p> <p><b>Leakage</b>            If electrolyte leaks from the battery and comes into contact with skin or clothing, immediately flush with water. Otherwise, it may cause skin irritation.</p> <p><b>Handling of Exposed Contacts or Conductors</b>            If the battery pack has a system interface consisting of stripped lead wires or exposed contact plates, as polypropylene tape or polyvinylchloride tape. Failure to do so could result in an electrical shock; a short circuit causing the battery to generate heat, smoke, catch fire, or explode; or the combustion of other materials.</p>			
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### 3 Scope

This specification applies to the Lithium Ion Battery (Cylindrical type) NCR18650G-HOTLA for Pedelects by

Do not use this battery in applications other than described above.

If the battery was used in other applications, it may cause performance degradation and safety deterioration depending on the usage of the battery in the equipment.

Incorrect handling of the battery may cause potential hazards of overheat, smoke, fire, or explosion.

Battery usage other than described above could result in bodily injury or property damage.

This Specification shall not apply to special applications requiring a high degree of quality and reliability where the failure or malfunction of the products may directly jeopardize life or cause threat of personal injury.

A non-exhaustive list of such applications includes: weapons, aircraft and aerospace equipment, aircraft electronics equipment, medical equipment (excluding Class 1 equipment), intrinsically safe equipment, electric vehicles, hybrid electric vehicles, and electric motorcycles (excluding electric bicycles).

### 4 Battery Classification and Product Code

▪4.1 Battery Classification	Lithium Ion Battery
▪4.2 Product Code	
▪4.3 Model Name	NCR18650G-HOTLA
▪4.4 Cell Type	NCR18650GA

### 5 Nominal Specifications

Item	Specifications	Notes	
5.1 Rated Capacity	4.20V Charge	0.67 A discharge at 20°C	
	4.15V Charge*1		
5.2 Capacity (Minimum)	4.20V Charge	0.67 A discharge at 25°C	
	4.15V Charge*1		
5.3 Capacity (Typical)	4.20V Charge	Reference only	
	4.15V Charge*1		
5.4 Nominal Voltage	4.20V Charge	0.67 A discharge at 25°C	
	4.15V Charge*1		
5.5 Discharging End Voltage	2.50V		
5.6 Charging Current	Low Temp.	838 mA or less	0 ~ +10°C
	Std. Temp.	1400 mA or less	+10 ~ +45°C
5.7 Charging Voltage*1	4.20V Charge	4.20 ± 0.03V	Follow LEM Charging Control
	4.15V Charge*1	4.15 ± 0.03V	
5.8 Charging Time (Std.)	4.0 hours	0.5CA, 1/50CA taper current cut-off	
5.9 Continuous Discharge Current (Max.) * 2	10A	Initial ambient TEMP 0 ~ +40°C	
5.10 Internal Resistance	Less than 50mΩ	AC impedance 1 kHz	
5.11 Weight	Less than 49.5g	With tube	
5.12 Operating Temperature	Charge	0~45°C	Follow Item 21
	Discharge	-20 ~ +60°C	Cell surface Temperature
5.13 Storage Conditions*3	Less than 1 month	-20 ~ +50°C	Recoverable Capacity: 80% * 4
	Less than 3 month	-20 ~ +40°C	
	Less than 1 year	-20 ~ + 20°C	

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- \*1 Regarding Charging Voltage Control, please refer to Item 6 "Charging control for Life End" and Item 11 " Standard Charging Method".
- \*2 The maximum discharge current for a single cell use. However after the battery pack assembly, maximum discharge current will be limited by a protection circuit or device.
- \*3 Amount of charging is 30%.

\*4 Recoverable Capacity = 
$$\frac{\text{Discharge Time after Storage}}{\text{Initail Discharge Time}} * 100$$

The discharge time is measured by fully charging the battery at 25°C and then discharging it at a current of 0.67A to 2.50V per cell in series.

**6 Charging Control for Life End**

Safety and cycle characteristics of Lithium-ion batteries can be improved by reducing the voltage lower than the rated charging voltage.  
 Therefore, when designing the battery pack using this cell, Panasonic will request to reduce the charging voltage from the beginning.  
 Or Panasonic will request to add a function to reduce the charging voltage when the deterioration rate reaches a certain level.

- 6.1 During usage, if charging voltage can NOT be changed.
  - The charging voltage should be reduced from the beginning.
- 6.2 During usage, if charging voltage can be changed.
  - The charging voltage should be reduced before SOH (State of Health) reaches 70%.
    - \* One of 6.1 or 6.2 above must be the mandatory item.

**7 Electrical Characteristics**

Item	Conditions	Criteria
7.1 Full Charge	[4.20V Charge] The battery is charged at 1.4A constant current until the voltage reaches 4.20V. The current is then reduced to keep a constant voltage of 4.20V. The total charging time is 4 hours at 25°C.  [4.15V Charge] The battery is charged at 1.4A constant current until the voltage reaches 4.15V. The current is then reduced to keep a constant voltage of 4.15V. The total charging time is 4 hours at 25°C.	
7.2 Capacity	(1) Within 1 hour after fully charging at 25°C as per item 7.1, the battery is discharged at 0.67A continuously to 2.50V at 25°C.  (2) Within 1 hour after fully charging at 25°C as per item 7.1, the battery is discharged at 3.35A continuously to 2.50V at 25°C.	[4.20V Charge] More than 300 min. [4.15V Charge] More than 289 min.  [4.20V Charge] More than 54 min. [4.15V Charge] More than 52 min.

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Title	Lithium Ion Battery Specification (CylindricalType)		Page	8 /18
Item	Conditions	Criteria		
7.3 Cycle Life	<p>[4.20V Charge] After the battery has been subjected to 300 repeated charge and discharge cycles (charged by CC-CV of 1.4A - 4.20V for 4 hours; discharged by CC of 3.35A to 2.50V at 25°C), the discharge time is measured as per Item 7.2, (2).</p> <p>[4.15V Charge] After the battery has been subjected to 300 repeated charge and discharge cycles (charged by CC-CV of 1.4A - 4.15V for 4 hours; discharged by CC of 3.35 A to 2.50V at 25°C), the discharge time is measured as per Item 7.2, (2).</p>	More than 38 min.		
7.4 Temperature Characteristics	<p>(1) Within 1 hour after fully charging at 25°C as per item 7.1, the battery is stored at 0°C for 3 hours. The discharge time is then measured as per Item 7.2, (2) at 0°C.</p> <p>(2) Within 1 hour after fully charging at 25°C as per item 7.1, the battery is stored at 60°C for 3 hours. The discharge time is then measured as per Item 7.2, (2) at 60°C.</p>	<p>More than 36 min.</p> <p>[4.20V Charge] More than 30 min. [4.15V Charge] More than 28 min.</p> <p>[4.20V Charge] More than 50 min. [4.15V Charge] More than 48 min.</p>		
7.5 Storage at Fully Charged State	<p>After fully charging at 25°C as per item 7.1, the battery is stored for 20 days at 60°C After storage, the battery is held at 25°C for 3 hours. Then, the discharge time is measured as per Item 7.2, (2).</p> <p>Then, the same battery is fully charged again and discharged a second time and measured as per Item 7.2, (2) at 25°C.</p>	<p>[4.20V Charge] More than 30 min. [4.15V Charge] More than 28 min.</p> <p>[4.20V Charge] More than 40 min. [4.15V Charge] More than 38 min.</p>		
7.6 Storage at Full Discharge State	<p>After fully charging at 25°C, the battery is discharged as per Item 7.2, (2). Then, the battery is stored for 20 days at 60°C. After storage, the battery is held at 25°C for 3.0 hours and is then fully charged as per Item 7.1 Then, the discharge time is measured as per Item 7.2, (2) at 25°C.</p>	<p>[4.20V Charge] More than 50 min. [4.15V Charge] More than 48 min.</p>		
7.7 Drop	<p>After fully charging at 25°C, the cell is dropped 3 times in random directions from a height of 1m onto a flat surface of concrete.</p>	No rupture, no fire		
<p><b>STANDARD TEST CONDITIONS:</b></p> <p>All tests shall be conducted with new batteries delivered within the last 7 days. Tests shall be performed at a temperature of 25±2°C and a humidity of 65±20% (the standard temperature tolerance for Class 2 and the standard humidity tolerance for Class 20, respectively, as specified by JIS Z 8703, Standard Atmospheric Conditions for Testing). The precision of the voltmeter and ammeter used in the tests shall be higher than Class 0.5 as specified by JIS C 1102-2, Special Requirements for Ammeters and Voltmeters.</p> <p><b>8 Design and Dimensions</b></p> <p>The battery design is shown in the following documents or drawings.</p> <ul style="list-style-type: none"> <li>• Drawing number NCR18650GA</li> </ul>				
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<p><b>9 Appearance</b></p> <p>There shall be no such defects as followings, which may adversely affect commercial value of the cell:</p> <ul style="list-style-type: none"> <li>● Scratch</li> <li>● Rust</li> <li>● Discoloration</li> <li>● Dirt</li> <li>● Deformation</li> </ul> <p><b>10 State of Charge at Time of Shipment</b></p> <p>At time of shipment, the battery's state of charge shall be 30% of its rated capacity or less.</p> <p><b>11 Standard Charging Method</b></p> <ol style="list-style-type: none"> <li>(1) The standard charge condition is a constant current – constant voltage method with a current of 1.4A and a maximum voltage of 4.20V. The charging process should be halted when either time, battery voltage, or current reach certain values.</li> <li>(2) Battery voltage can be decreased by storage and over-discharge protection can be triggered. To charge from this condition, the battery should be charged by a pre-charge function described in the next section.</li> <li>(3) The pre-charging current should be approximately 335mA. Once over-discharge protection is released by charging, the charger can resume the standard charging method. The pre-charge function should have a cut-off timer in order to detect a short circuit. If the voltage does not recover to the value of detection voltage within the specified time, charging must be terminated.</li> <li>(4) The current interrupt device (CID) may work if the battery is charged continuously after fully-charged and / or is charged at high temperature. Please consult PIDSTW for charging method instructions.</li> </ol> <p><b>12 Precautions for Designing of Pedelecs, the Chargers and the Battery packs</b></p> <p>Please comply with the following instructions during every stage of application, charger, battery pack design and assembly processes otherwise the battery may experience a deterioration of functionality, quality, and safety. In the worst case, the battery may generate heat, smoke, catch fire, or explode.</p> <p><b>12.1 Precautions for Designing of Pedelecs and the Chargers</b></p> <ol style="list-style-type: none"> <li>(1) Charge <ul style="list-style-type: none"> <li>● The battery is charged by a method of constant current-constant voltage.</li> <li>● Regarding NCR18650G-H0TLA, the charging current should be 1.4A/cell or less.</li> <li>● The charging voltage is required to be set at less than or equal to 4.20V/cell or less.</li> <li>● The charging voltage should not exceed 4.20V/cell with considering the accuracy of charger. However, when the charging voltage control is necessary, the charging voltage after the charging control should not exceed 4.15V/cell, and the charging voltage is required to be set to less than 4.18V/cell with considering the accuracy of charger. Even if the charger is failed, the total safety shall be secured.</li> </ul> </li> </ol>			
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<ul style="list-style-type: none"> <li>● The charger shall be equipped with a pre-charge system.</li> <li>● If battery voltage goes down to less than 2.50V/cell, the battery should be charged by pre-charge current of maximum 335mA. Once, the battery reached more than 2.50V/cell by the pre-charging, the charger can resume the standard charging method. However, if the battery voltage never recovers more than 2.50V/cell, the charger must be stopped and turned off.</li> <li>● The charger shall be equipped a full charge detection.</li> <li>● The charger shall detect the full-charged state by a timer, current detection or open circuit voltage detection. When the charger detects the full-charge, the charger shall stop charging. Do not apply the continuous charging (trickle charging) method.</li> <li>● The charging temperature should be confined to the range 0°C to +45°C."</li> <li>● It is recommended that charging should be stopped to avoid continuous charging, when either of the following conditions are met; <ul style="list-style-type: none"> <li>- The charging current reaches approximately 67mA in CV mode.</li> <li>- The charging time reaches 4 hours in case of charging at 1.4A.</li> </ul> </li> </ul> <p>(2) Discharge</p> <ul style="list-style-type: none"> <li>● The discharge current should not exceed 10A/cell.</li> <li>● The discharge temperature should be between -20°C to +60°C.</li> <li>● The discharge end voltage should be more than 2.50V/cell. If cells are to be connected in series, please refer to Item 14.1.</li> </ul> <p>(3) Over discharge</p> <ul style="list-style-type: none"> <li>● Do not discharge the battery at less than 2.0V/cell.</li> </ul> <p>(4) Design of Pedelecs and chargers.</p> <ul style="list-style-type: none"> <li>● The cells should be kept away from heat generating electronic parts in order to avoid deterioration of battery performance.</li> </ul> <p>(5) Strength of the battery pack enclosure</p> <ul style="list-style-type: none"> <li>● The battery pack enclosure must be designed to have sufficient strength to resist damage from specified or typical expected mechanical stresses such as bending, twisting, and impact due to drop of application.</li> </ul> <p><b>12.2 Precautions for Battery Pack Design</b></p> <p>(1) Shape, mechanism and material of battery packs</p> <ul style="list-style-type: none"> <li>● The battery pack should be designed so it cannot connect to unauthorized chargers.</li> <li>● The battery pack should be designed so it cannot connect with unauthorized equipment and/or devices.</li> <li>● The terminal shape should be designed to avoid short circuit issues. In addition, the battery pack should be equipped with an over current protection function in order to prevent from external short circuit issues.</li> <li>● The terminal shape and structure should be designed so that it cannot connect in backwards.</li> <li>● The battery pack should be designed to prevent static electricity, electrolyte, or water ingress issues.</li> <li>● The battery pack should be designed so the protection circuit functions can be inspected during the assembly process.</li> <li>● The battery pack should be designed so electrolyte cannot reach to the protection circuit board even if electrolyte leak out of the cells.</li> </ul>			
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<ul style="list-style-type: none"> <li>● The cells should be fixed by tape or glue in the case. If the battery pack is dropped, the cells should be protected against dents, deformations, and other mechanical stresses.</li> <li>● Plastic cases should be closed with glue. If an ultra sonic welding method is applied to the case sealing, PIDSTW will not accept any responsibilities for any defects.</li> <li>● The pack shall be designed so end users cannot remove or disassemble the cells.</li> <li>● Improper usage may damage the gas release vent on the cell, which generates flammable gas. If the flammable gas is generated, the battery could ignite and explode. Therefore, the battery pack should be designed that the flammable gas doesn't stay inside the pack.</li> <li>● The battery pack or module shall be designed for the functions of anti-thermal propagation and flame containment in all usage. For reference, the battery design items are shown as follows. <ul style="list-style-type: none"> <li>- Gas management structure not to remain heated-gases.</li> <li>- Prevention of large current flow from other cells.</li> <li>- Prevention of heat transfer to neighbor cells.</li> </ul> </li> </ul> <p>(2) Protection circuit</p> <p>The following protection circuit should be equipped in the battery pack:</p> <ul style="list-style-type: none"> <li>● <b>Overcharge protection</b> We recommend the over charge protection engages when cell voltage reaches more than 4.25V/cell then, the current shall be shut down. However, when the charging control for life end is necessary, the operation voltage of overcharge protection after the charging control is recommended to 4.20V/cell.</li> <li>● <b>Over discharge protection</b> If cell voltage reaches approximately 2.20V/cell, we recommend that the over discharge protection circuit shuts down the discharge current and the circuit consumption current is set to less than 1μA.</li> <li>● <b>Over current protection</b> If discharge current exceeds approximately 10A/cell, the over current protection will shut down the current.</li> </ul> <p>(3) Electric circuit</p> <ul style="list-style-type: none"> <li>● To avoid over discharge mode during long storage times, the consumption current of the battery protection circuit should be set as low as possible.</li> </ul> <p>(4) Cell connection</p> <ul style="list-style-type: none"> <li>● The cells should not be connected using a soldering process. In order to avoid any damages, cells pack's should be connected to lead plates by a spot welding method.</li> </ul> <p>(5) Precautions on label</p> <ul style="list-style-type: none"> <li>● The rating label should indicate required information and precautions.</li> <li>● The precautions should be based on the information in section 2.</li> </ul>			
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<p><b>13 Storing Conditions</b></p> <p><b>13.1 Storage Temperature and Humidity (Within 3 months)</b></p> <ul style="list-style-type: none"> <li>• Cells should be stored in a stable environment characterized by low-humidity (less than 70%RH), free of corrosive gasses, and an ambient temperature between -20°C and +40°C.</li> <li>• To prevent rust, avoid conditions that can create condensation such as rapid fluctuations in the ambient.</li> </ul> <p><b>13.2 Long Duration Storage</b></p> <ul style="list-style-type: none"> <li>• When long duration storage cells should be stored in a stable environment characterized by low humidity (less than 70%RH), free of corrosive gasses, and an ambient temperature between -20°C and +20°C.</li> <li>• To prevent rust, avoid conditions that can create condensation such as rapid fluctuations in the ambient.</li> <li>• For long term storage, a discharged or partial charged state of charge per section 9 is recommended.</li> </ul> <p><b>14 Handling Precautions for Lithium Ion Cells</b></p> <ul style="list-style-type: none"> <li>• This section describes handling precautions for lithium ion cells which will be assembled as battery packs with This battery pack consists of NCR18650GA .</li> </ul> <p><b>14.1 Series Connections Precautions</b></p> <ul style="list-style-type: none"> <li>• This information is described in the carton.</li> <li>• In addition, the cell voltage should be checked prior to battery assembly and the voltage should be within 25mV.</li> <li>• When cells are connected in series, use the same capacity rank and the charge date within 7days.</li> </ul> <p><b>14.2 Inspection of the Battery Pack before Shipping</b></p> <p>All battery packs shall be inspected for :</p> <ul style="list-style-type: none"> <li>• Voltage</li> <li>• Internal impedance</li> <li>• Function of protection circuit</li> <li>• Thermistor resistance</li> <li>• Thermal fuse</li> </ul> <p><b>14.3 Precautions on Pack Assembly</b></p> <ul style="list-style-type: none"> <li>• Do not bring battery near or into contact with heat sources such as soldering irons.</li> <li>• Do not allow any metal to come into direct contact with cells inside the battery pack compartment.</li> <li>• Do not lift the core pack by holding the lead wires or the printed circuited board.</li> <li>• Do not unnecessarily twist or bend the lead wires or the printed circuited board.</li> <li>• Do not re-work the battery.</li> <li>• Do not use potentially abnormal cells which have been dropped, shorted, or deformed during handling or assembly--even if no damage is readily apparent. Do not use cells giving off the odor of electrolyte.</li> </ul>			
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<p><b>15 Warranty Exemptions</b></p> <ul style="list-style-type: none"> <li>• PIDSTW will not be liable for any damages that are caused by violations of the prohibited matters (section 2) and the precautions (section 11, 13~15) in this specification. If some problem happen in the battery, please handle this matter under : responsibility.</li> <li>• PIDSTW will not be liable for any problems caused by design defects of the battery packs, Pedelecs, or chargers.</li> <li>• PIDSTW will not accept return of any abnormal cells that were damaged due to any incorrect assembly process.</li> </ul> <p><b>16 Remark of Safety Design</b></p> <ul style="list-style-type: none"> <li>• PIDSTW has been addressing to enhance the quality and the reliability of battery cell, but we also require our customers to introduce the safety design into the battery pack for avoiding unsafety situation.</li> <li>• The event such as abnormal heat generation, smoke, fire and explosion might happen due to the failure of battery cell and the use out of the specification. should discuss to the product manufacturer about having the safety design such as redundant design, the prevention design against the spread of the fire, and so on, in order to prevent the accident of injury, death, fire, social harm as the result of battery cell failure.</li> <li>• PIDSTW will not be liable for any damage due to slack safety design.</li> </ul> <p><b>17 Other Remarks</b></p> <ul style="list-style-type: none"> <li>• If there are problems in this specification, PIDSTW will take them into consideration.</li> <li>• PIDSTW can discuss specification or precautions that are not described in this specification.</li> <li>• Do not use the provided cells for other applications.</li> </ul> <p><b>18 Battery Warranty</b></p> <p>Unless specifically agreed otherwise between the parties in written agreement(s) signed by authorized representatives of SANYO and , the warranty terms and conditions of the Lithium Ion Battery Cells shall be as set forth in Appendix 2.</p> <p><b>19 Battery Safety and Reliability Requirements</b></p> <p>In order to ensure the safety of the battery, please contact PIDSTW to discuss design of the application from a mechanical and electrical perspective. Also, if there are special usage conditions (for example: a large current load, a quick charge method, or a special usage pattern), please consult PIDSTW before finalizing the product specification.</p> <p><b>20 Document Terms</b></p> <ul style="list-style-type: none"> <li>• The expiration period for this document is 6 months from the cover date.</li> <li>• If a new revision of the document is released, please return or destroy the previous revision.</li> <li>• This document is still in a preliminary state. The contents are not yet fixed.</li> </ul> <p><b>21 Battery Operation Region</b></p> <ul style="list-style-type: none"> <li>• The charging voltage and current should be designed to be lower than following maximum charging voltage and charging current in performance operation region and must not exceed safety operation region. Please design and evaluate the system so that charging voltage and current in per cell does not exceed the operation region.</li> <li>• Repeated peak discharge current can cause overheat and/or over discharge condition. Please design and evaluate the system so that battery is used within the nominal spec.</li> </ul>			
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**21-1 Performance operation region**

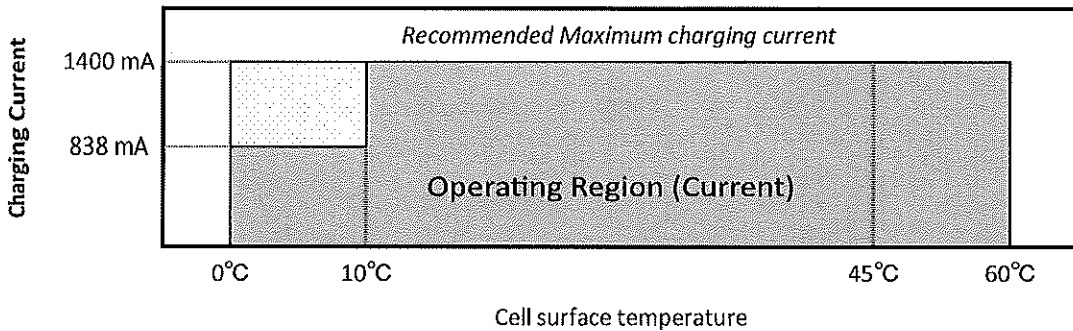
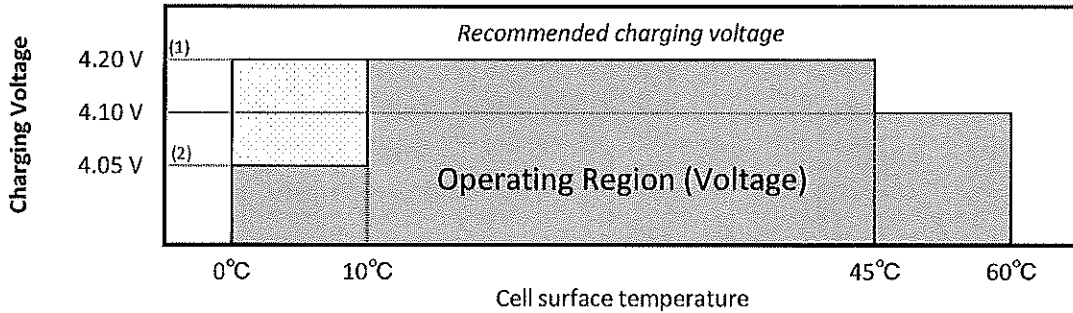
Regarding Operating Region for Performance, please follow the below condition.

The charging voltage and current should be lower than following Recommended charging voltage and Recommended maximum charging current in Table.1 for suppression of deterioration.

Model: [NCR18650G-H0TLA]

Table.1 Operating region (Cell surface temperature, voltage, current)

Temperature		Recommended charging voltage	Recommended Maximum charging current
0°C~10°C	(1)	4.20 V	838 mA
	(2)	4.05 V	1400 mA
10°C~45°C		4.20 V	1400 mA
45°C~60°C		4.10 V	1400 mA



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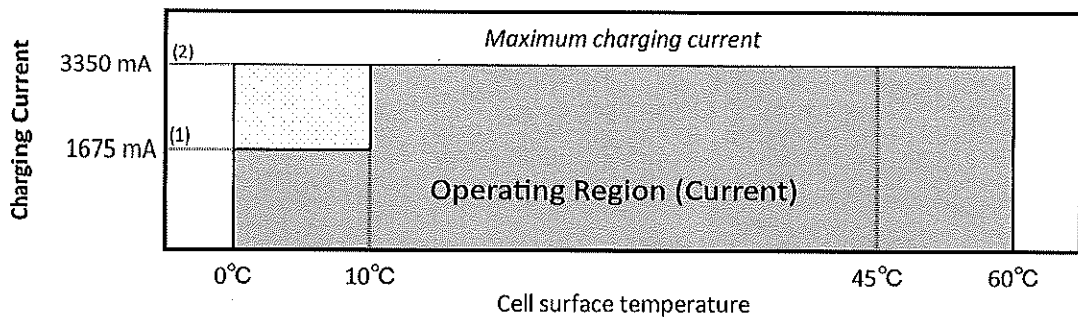
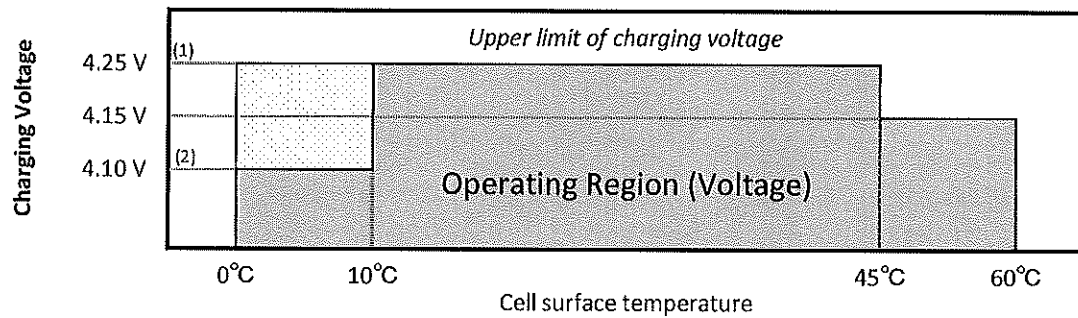
**21-2 Safety operation region**

Regarding Operating Region for Safety please follow the below condition.  
 The charging voltage and current shall not exceed following Upper limit of charging voltage and Maximum charging current in Table.2 for safe use.

Model: [NCR18650G-H0TLA]

Table.2 Operating region (Cell surface temperature, voltage, current)

Temperature		Upper limit of charging voltage	Maximum charging current
0°C~10°C	(1)	4.25 V	1675 mA
	(2)	4.10 V	3350 mA
10°C~45°C		4.25 V	3350 mA
45°C~60°C		4.15 V	3350 mA



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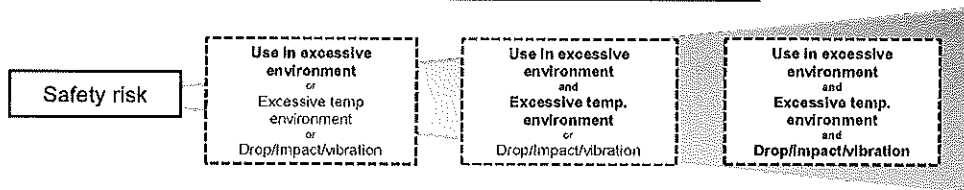
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<p><b>Appendix1 &lt;Safety risk of lithium ion batteries&gt;</b></p> <p>Depending on the usage condition and environment, lithium ion batteries may become unstable and may cause serious risks such as heat generation, smoke, ignition or rupture.</p> <p>Please ensure the safety of the battery packs for use in various usage conditions and environments, in consideration of multiple risk factors.</p> <p><b>&lt;Safety risks&gt;</b></p> <p>a) Cell electrolyte leakage from battery cells  Electrolyte leakage may cause short-circuit internally or externally of the battery packs, causing the battery cells to generate heat, smoke, fire or rupture.</p> <ul style="list-style-type: none"> <li>• Please ensure the battery packs are designed so that the battery packs will not easily short-circuit even if electrolyte leaks from the battery cell.</li> </ul> <p>b) High temp/flammable gas release from battery cells  High temperature gas from battery cells may cause the battery cells to generate heat, smoke, fire or rupture. Additionally, ignition of flammable gas may cause explosion of the battery cells.</p> <ul style="list-style-type: none"> <li>• Please ensure the battery packs are designed with a gas release route so that the gas will not accumulate within the battery packs.</li> </ul> <p>c) Deterioration of insulation and short-circuit due to vibration, drop and impact  Vibration, fall and shock causing damage (impact, deformation) to the battery cells may result in short-circuit of the battery cells, which may lead to a risk of tab break, leakage, heat generation, fire or rupture. Additionally, ignition of flammable gas may cause explosion of the battery cells.</p> <ul style="list-style-type: none"> <li>• Please ensure the battery packs are designed so that (i) short-circuit will not occur even if the battery is dropped or damaged in consideration of the actual usage condition, (ii) the battery cells will not deform in case of a drop.</li> <li>• Please ensure the battery packs are designed to be safe even if the battery is repeatedly dropped or impacted by all potential misuse</li> </ul> <p>d) Abnormal heat generation of battery cell by usage outside the specification temperature  Use of the battery packs outside the temperature range as set forth in the Specification may cause the battery cells to leak, generate heat, smoke, fire or rupture.</p> <ul style="list-style-type: none"> <li>• In order to use the battery cells within the specification temperature range, please monitor the cell temperature in appropriate position/method and appropriately control charge/discharge.</li> <li>• Temperature distribution in the battery pack will greatly affect the safety when charging, so please ensure the battery packs are designed so that battery cell temperature within the battery pack is even.</li> </ul> <p>※ Note that safety risks may increase when more than one of factors a) –d) is combined.  Battery packs must be designed in consideration of safety risk associated with multiple factors such as a)- d).</p> <p><b>&lt;Danger of electric shock&gt;</b></p> <p>In the case of high voltage battery pack, there may be a risk of life-threatening electric shock.</p> <ul style="list-style-type: none"> <li>• Please ensure the battery packs are designed with insulation measures, which does not directly touch (+) and (-) polar.</li> <li>• Please ensure the battery packs are designed so that electric shock will not occur even if the battery pack is damaged by drop and impact, or is submerged.</li> </ul>			
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### Safety risk associated with multiple factors

To reduce the safety risk associated with multiple factors, please ensure the safety of the battery packs by conducting severe and marginal tests.

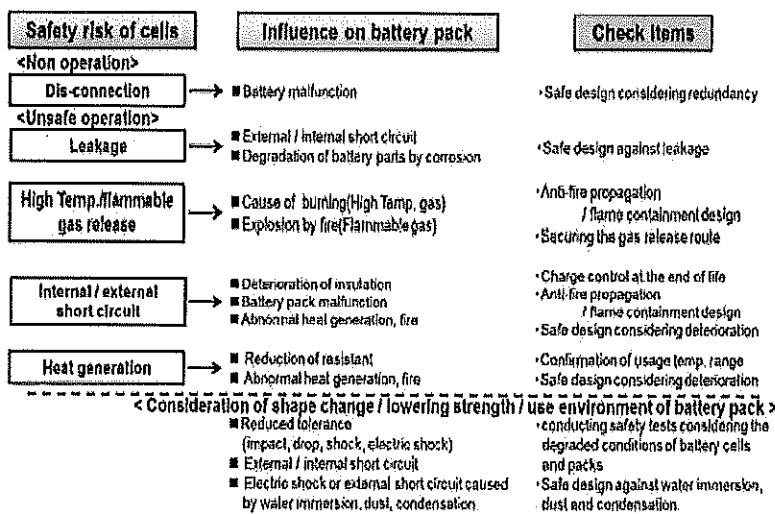
#### <Example of multiple factors : Use in excessive environments>



- As multiple factors increase, safety risk will also increase
- Suggested action for
  - 1) Confirmation the safety risk associated with multiple factors:  
Please make sure you to conduct severe and marginal test, based on actual and all foreseeable usage conditions.  
(i.e. Safety test after excessive temperature environment test, extension of test as in time and number for drop/impact/vibration)
  - 2) Instructions to end users:  
Please make sure you warn your customers against inappropriate usage of the battery packs in the user's manual.

### Important safety items about battery pack

- Please design the battery packs to ensure safety in case of any leakage of the battery cells.
- Please design the battery packs and systems to ensure safety of equipment and users in case the current is cut off.
- Please design the battery packs considering any impact, drop, shock, vibration, or electric shock in case of deterioration of battery pack components.
- \* Please consult with the final product manufacturer with respect to the assumed deterioration period, as-sumed drop, shock or vibration of the final products.

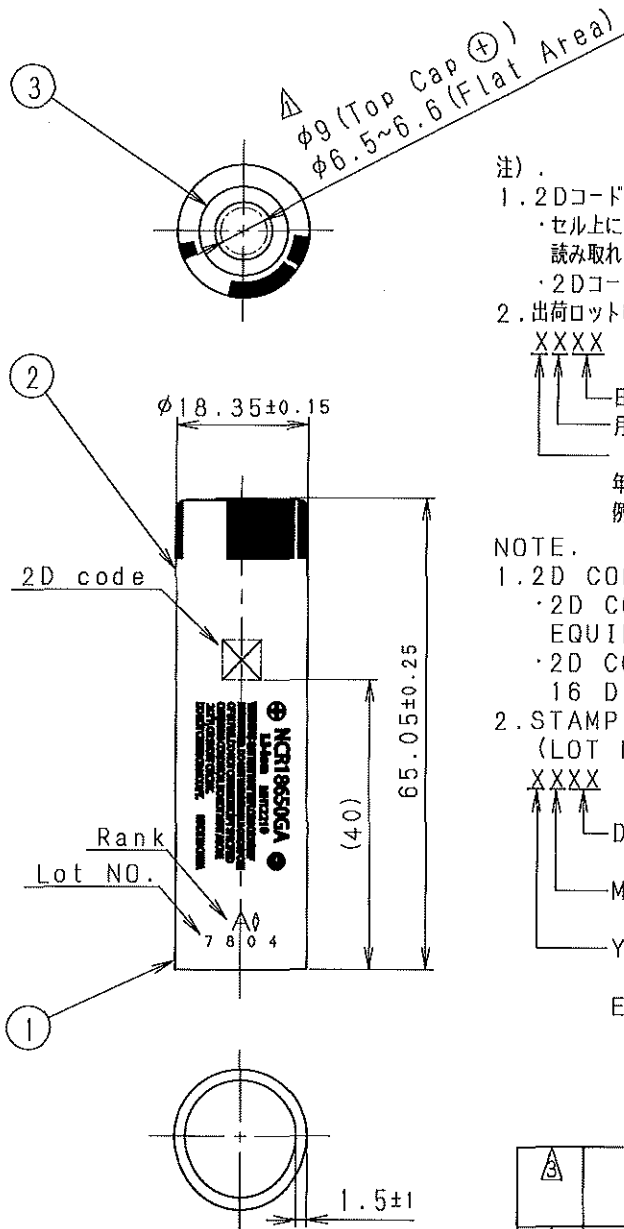


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<p><b>Appendix2 &lt; Battery Warranty&gt;</b></p> <p>For clarification, in this Appendix. "Company" means " Mobile Energy Technology " , the "Battery Cells" means the Lithium Ion Battery Cells " NCR18650GA" ,the "Battery" means Lithium Ion battery packs manufactured by or for Company incorporating the Battery Cells, and the "Specification" means this specification for the Battery Cells.</p> <p><b>1. PIDSTW warrants to Company:</b></p> <p>(a) Upon delivery of the Battery Cells:  The Battery Cells shall conform only to the section titled "Battery Classification and Product Code" , "Nominal Specifications" , "Characteristics" , "Design and Dimensions" and "Appearance" of this Specification.  *The incoming inspection shall be conducted promptly after the arrival of PIDSTW Cells on Company's premises or any other place designated in writing by Company and in any event no later than seven (7) days after the arrival of PIDSTW Cells at Company's premises or any other place designated in writing by Company ( "Incoming Inspection Period" ). If PIDSTW does not receive a written report of a claim within the Incoming Inspection Period, such PIDSTW Cells shall be deemed to have passed the incoming inspection and be accepted by Company, and Company shall be deemed to have waived any claim therefor.</p> <p>(b) Following one (1) year after the shipment of the Battery Cells ( "Warranty Period" ):</p> <p>(1) Before incorporation into Battery Packs  The Battery Cells shall be charged and discharged during storage, so long as the Battery Cells are stored in accordance with the "Storage Temperature and Humidity" of the "Storage Condition" as set forth in this Specification.</p> <p>(2) After incorporation into Battery Packs (including use by customers of Company and by final users)  The Battery Cells shall be charged under the standard charge conditions and discharged under the standard discharge conditions as set forth in this Specification, so long as the Battery Cells are used in accordance with this Specification.</p> <p>For the avoidance of doubt, PIDSTW makes no warranty for any period after the Warranty Period.  *In the event that Company provides PIDSTW with reasonable evidence and/or data supporting the return, including but not limited to specifying the location of PIDSTW Cell in the Returned Battery Packs within seven (7) days after the receipt of the Returned Battery Packs by Company, PIDSTW shall be responsible for the non-conforming PIDSTW Cells only if, as a result of the investigation of all relevant information and data, the re-inspection of such PIDSTW Cells and Returned Battery Packs by PIDSTW, PIDSTW concludes the cause of return is a product failure due to failure or defect in the PIDSTW Cells supplied by PIDSTW.</p> <p><b>2. The warranty set forth above shall not apply to:</b></p> <p>(a) .Any failure by Company to comply with the handling instructions or advice PIDSTW provides for the Battery Cells;  (b) Normal wear-and-tear arising from operation of the Battery Cells;  (c) .Any non-compliance to the extent arising out of PIDSTW's compliance with Company's specifications;  (d) Any defects relating to the design, assembly or manufacture of the Battery Packs, and any defects directly or indirectly influenced by or in connection with the installed condition of the Battery Packs and/or the circumstances under which the Battery Packs are used.  (e) Any defects in the Battery Cells caused by (i) Company's shipment or storage of the Battery Cells, (ii) articles not supplied by PIDSTW, including the Battery Packs, (iii) cell propagation, (iv) wet conditions, an impact force of shock, or any other conditions (v) accident, misuse, neglect, abuse, mishandling, misapplication, modification, alteration, acts of God or improper installation, service or maintenance, (vi) any failure due to an external natural phenomena or an animal, bird or insect, or (vii) excessive dust, chemicals, oils, salt water and sun light; or  (f) Any instance in which the Battery Packs are resold or transferred and used for other applications or models than the agreed application.</p> <p><b>3. PIDSTW shall be responsible for the non-conforming Battery Cells only if, as a result of the investigation of all relevant information and data submitted by Company, PIDSTW concludes the cause of return is a product failure due to failure or defect in the Battery Cells. In such case, Company will be entitled to request PIDSTW, upon the mutual agreement of the parties, to (1) refund the amount PIDSTW received from Company for the non-conforming Battery Cells in the same currency that PIDSTW received from Company in its original payment or (2) provide Company with substitute Battery Cells. The parties agree that such refund or replacement shall constitute Company's sole remedy against PIDSTW with respect to the subject non-conforming Battery Cells. PIDSTW's responsibility is strictly limited to the Battery Cell itself in which PIDSTW concludes the cause of return is a product failure due to failure or defect, and in no event shall PIDSTW be responsible for the Battery Packs.</b></p>			
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NO.	PART NAME	APPLICATION PART CODE	QTY.	MATERIAL SPECIFICATION	品質文書 NOTE
①	CELL	NCR18650GA	1		
②	OUTER JACKET	SHRINK TUBE	1		
③	INSULATOR	PAPER	1		



注).

- 2Dコードは外装の上に捺印されていること。  
・セル上に印字される2Dコードは、SR-1000 (KEYENCE製) で読み取れること。  
・2Dコード仕様: データマトリックスコード (ECC200), 16桁の英数字
- 出荷ロット印はチューブ上に捺印すること。(出荷ロットは充電日とする。)  
XXXX    Δ およびランク表示は外装の上に  
  - 日 (1日=01, 2日=02, ... 30日=30, 31日=31)
  - 月 (1月=1, 2月=2, ... 9月=9, 10月=X, 11月=Y, 12月=Z)
  - 年 ('96=6, '97=7, ... '17=7, '18=8...)
例.) 2017年8月4日...7804

NOTE.

- 2D CODE TO BE PRINTED ON THE CAN.  
・2D CODE ON CELL CAN BE READ BY THE EQUIPMENT SR-1000 (KEYENCE).  
・2D CODE TYPE: DATA MATRIX CODE (ECC200), 16 DIGIT CHARACTER INSIDE.
- STAMP LOT NO. ON THE ~~TUBE~~ (LOT NO IS CHARGING DATE)  
XXXX    Δ AND RANK ON THE CAN  
  - DAY (1ST=01, 2ND=02, ... 30TH=30, 31TH=31)
  - MONTH (JAN=1, FEB=2, ... SEP=9, OCT=X, NOV=Y, DEC=Z)
  - YEAR ('96=6, '97=7, ... '17=7, '18=8...)
例.) AUG.04.2017...7804

DRAWING NOT TO SCALE

DATE	REMARK	SYM	DATE	DESCRIPTION
Oct./30/2020		Δ	Dec.3.2020	寸法追記および出荷ロット, ランク印字箇所変更 Add dimension and Revise Shipment LOT NO.Rank Mark.
D R	Segi			
ENG	Mori			
CHK	Subimoto			
CHK	Inaba			
APP	Oshita			

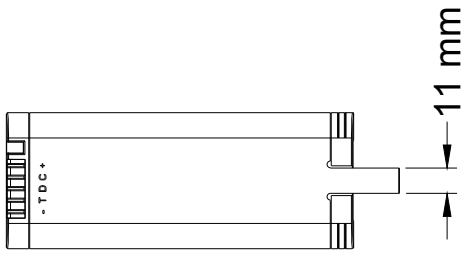
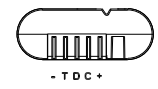
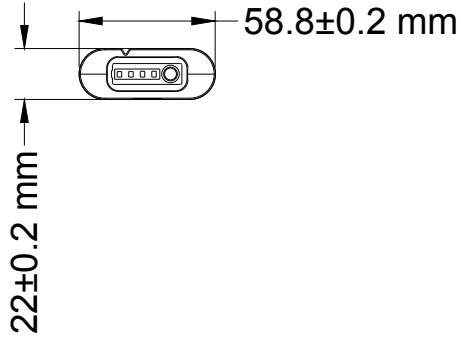
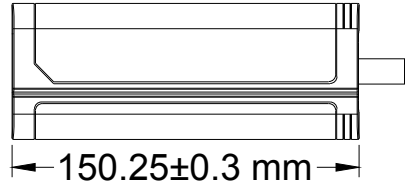
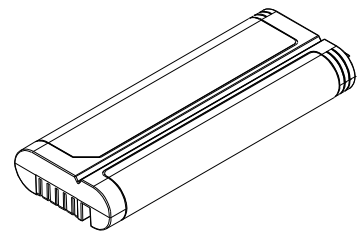
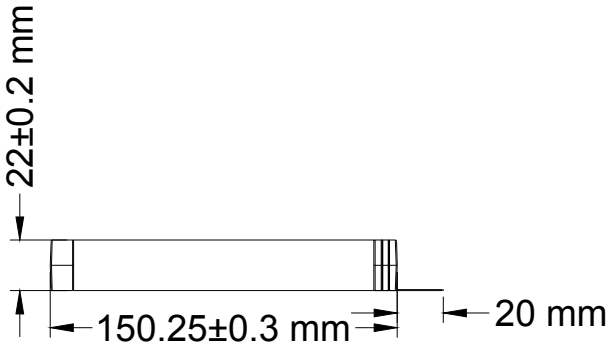
MODEL:	CUSTOMER CODE:	TOLERANCE	WEIGHT	UNIT	部 品 名
NCR18650GA6W		60 < L ±0.3	Approx. g	mm	Dimension Sketch
		30 < L ≤ 60 ±0.3			
		6 < L ≤ 30 ±0.2			
		3 < L ≤ 6 ±0.1			
		L ≤ 3 ±0.1			

QTY	SCALE	PART CODE	Rev.
1	1:1		1

A B C D E F G H I

1  
2  
3  
4  
5  
6



**Japone Technology Inc.**

Date	Rev.	Description	Approval
20210901	1.0	New Design	Winyi

APPROVED	CHECKED	DESIGNED	RANGE	TOLERANCE	MODEL NO.:
			201 ABOVE	±0.30mm	DR-10
			101-200	±0.25mm	PART NAME:
			51-100	±0.20mm	Outline Drawing
			31-50	±0.15mm	PART NO.:
			30 BELOW	±0.10mm	
			UNIT:MM	DRAWING NO.	REV. 1.0

A B C D E F G H I

REV.	DESCRIPTION	ECN NO.	DATE	DRAWER
A	New Release		12/22/2008	Hyde
B	Add Plating Option $\triangle_B \times 1$	EC0908043	08/18/2009	Hyde

Notes:

- Material :  
Housing : Thermoplastic UL 94V-0, Black  
Terminal : Copper Alloy
- Finish :  
Terminal : Selected Gold on Contact Area, Gold Flash on Solder Tails, Both over 50u" Min. Ni
- Order Information :

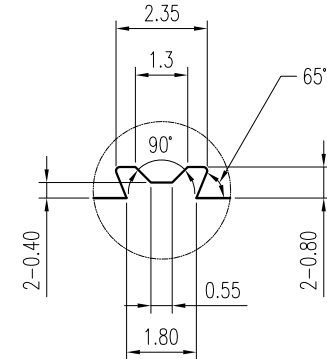
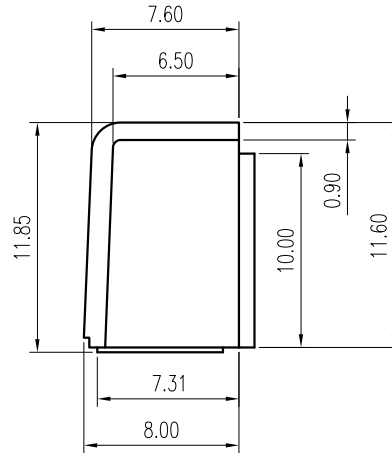
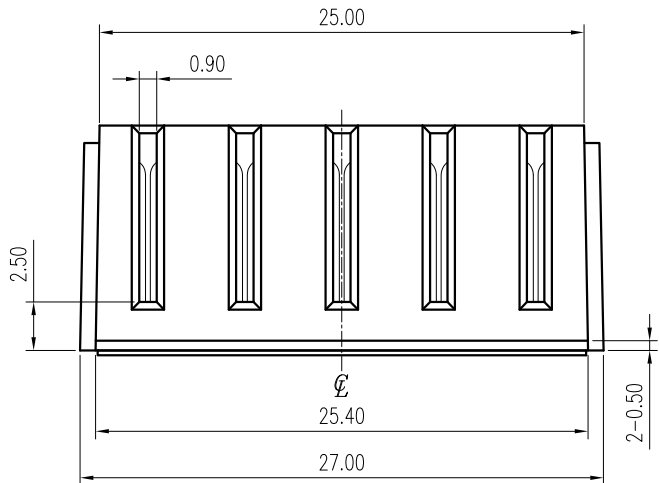
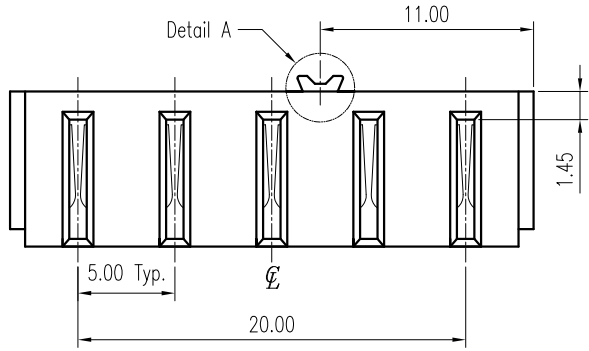
T SDO-021 05 -10T X A

T: RoHS (for High Temperature)

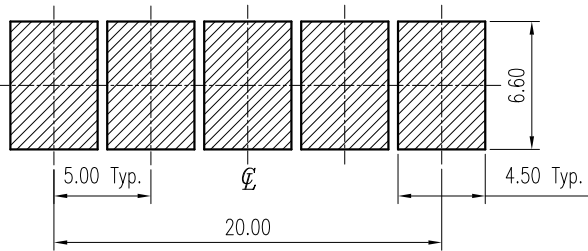
Amount of Pins  
05 : 5 Pins

Plating

- 0 : 15u" Min. Ni Overall
- 3 : 5u" Min. Gold on Contact Area.
- $\triangle_B$  Y : 80u" Min. Tin Overall



Detail "A"  
Scale 5:1



Recommended P.C.B. Layout  
Layout Tolerance =  $\pm 0.05$  mm

DIMENSION IN mm [inch]	
Tolerance unless otherwise specified	
X.	X.* $\pm 10'$
X.X $\pm 0.38$	X.X* $\pm 5'$
X.XX $\pm 0.25$	X.XX* $\pm 2'$
X.XXX $\pm 0.13$	X.XXX* $\pm$

**CEN** 欣訊科技股份有限公司  
CEN LINK CO., LTD.  
CUSTOMER DRAWING

Title 5.0mm Pitch Battery Conn.  
Female Type

Dwg No. TSD0-02105-10TXA

File No.

Approver:

Checker:

Drawer: Hyde

08/18/2009

	Scale: 2.5 : 1
	Size: A 4
	Rev : B
	Sheet: 1 / 1