

产品规格书

Product Specification

锂离子动力电池模组

Lithium-ion Traction Battery Module

型号：CNS-N2562

Model: CNS-N2562

版本：V2.0

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目录 Content

1. 介绍 Introduction.....	3
1.1 目的 Purpose.....	3
1.2 保密 Confidentiality	3
1.3 产品主要特点及功能 Key Product Features & Functions	3
1.4 声明 Document Declaration	4
2. 电池信息 Battery Data	5
2.1 电池整包外观 Battery Pack Image	5
2.2 电池模组外观 Battery Module Image	6
2.3 电池包尺寸 Battery Pack Dimensions	7
2.4 电池包性能数据 Battery Pack Performance Specifications	8
2.5 电芯性能数据 Cell Performance Specifications	10
2.6 模组设计 Module Design	11
2.7 机械结构设计 Mechanical Structure Design	12
2.8 电性能 Electrical properties	12
2.9 接口设计 Interface Design	12
3. 测试验证 Testing and Verification	13
3.1 测试条件 Test Conditions	14
3.2 测试项目 Test Items	14
4. 产品发货 Product Shipment.....	18
4.1 模组发货清单 Module-Level Shipping Manifest	18
4.2 整包发货清单 Pack-Level Shipping Manifest.....	23
4.3 包装 Packaging	24
5. 产品操作 Product Handling	24
5.1 运输 Transportation	24
5.2 贮存 Storage	24
5.3 安装 Installation.....	25
6. 安全说明 Safety Instructions	27
7. 生产商信息 Manufacturer Information.....	28

1. 介绍 Introduction

1.1 目的 Purpose

本文件主要介绍了河南中赛能源科技有限公司生产的锂离子动力电池模组的产品特性以及使用规范。

This document defines the product characteristics and usage specifications for lithium-ion traction battery modules manufactured by Henan Cns Energy Technology Co., Ltd.

1.2 保密 Confidentiality

本文件所载信息仅供授权的个人或实体使用，内含涉密信息。任何针对本文件内容的披露、复制、分发或其他行为都是严格禁止的，甚至是非法的。

The information contained herein is proprietary and confidential to Henan Cns Energy Technology Co., Ltd. It is solely for the use of authorized recipients. Any unauthorized disclosure, reproduction, distribution, or reliance upon this document's contents is strictly prohibited and constitutes unlawful misappropriation of trade secrets.

1.3 产品主要特点及功能 Key Product Features & Functions

62kWh 电池整包由 6 个模组组成，是 Leaf 动力电池总成的重要组成部分，用来给车载高压电气系统提供电能的吸收，存储和供应，主要特点如下：

The 62kWh battery pack comprises 6 integrated modules, serving as the core power source for Nissan LEAF vehicles, responsible for receiving, storing, and supplying electrical energy to the vehicle's high-voltage system. Key features include:

- 采用了 CATL 180Ah 电芯，其优越的充放电性能可有效提升车辆的动力性能和续航能力，以及良好的环境适应能力。

CATL 180Ah Cells: Utilize industry-leading CATL 180Ah cells, delivering superior charge/discharge performance for enhanced vehicle driving dynamics, extended range, and robust operation across environmental conditions.

- 采用了包括机械、化学、电气和功能安全等多重主动和被动安全设计，通过全方位的安全防护，确保产品操作和运行安全。

Comprehensive Safety Architecture: Incorporates multiple layers of active and passive safety (mechanical, chemical, electrical) ensuring operational integrity and personnel safety.

- 适用于 NISSAN LEAF ZE0/AZE0/ZE1 车型。

Strictly compatible with NISSAN LEAF models ZE0/AZE0/ZE1.

1.4 声明 Document Declaration

 本文件中所包含的所有规范和说明在编制时都被证实是准确的。然而，由于持续改进是 CNS 的核心理念，我们保留在任何时候进行产品修改的权利。

All specifications and descriptions herein were validated at time of publication. CNS reserves the right to implement product modifications at any time without prior notice, in alignment with our core principle of continuous improvement

 本文档中提供的图像仅供演示目的使用。根据产品版本的不同，细节可能会略有不同。要传达本手册中任何不准确之处，请发送电子邮件至：info@cnsbattery.com

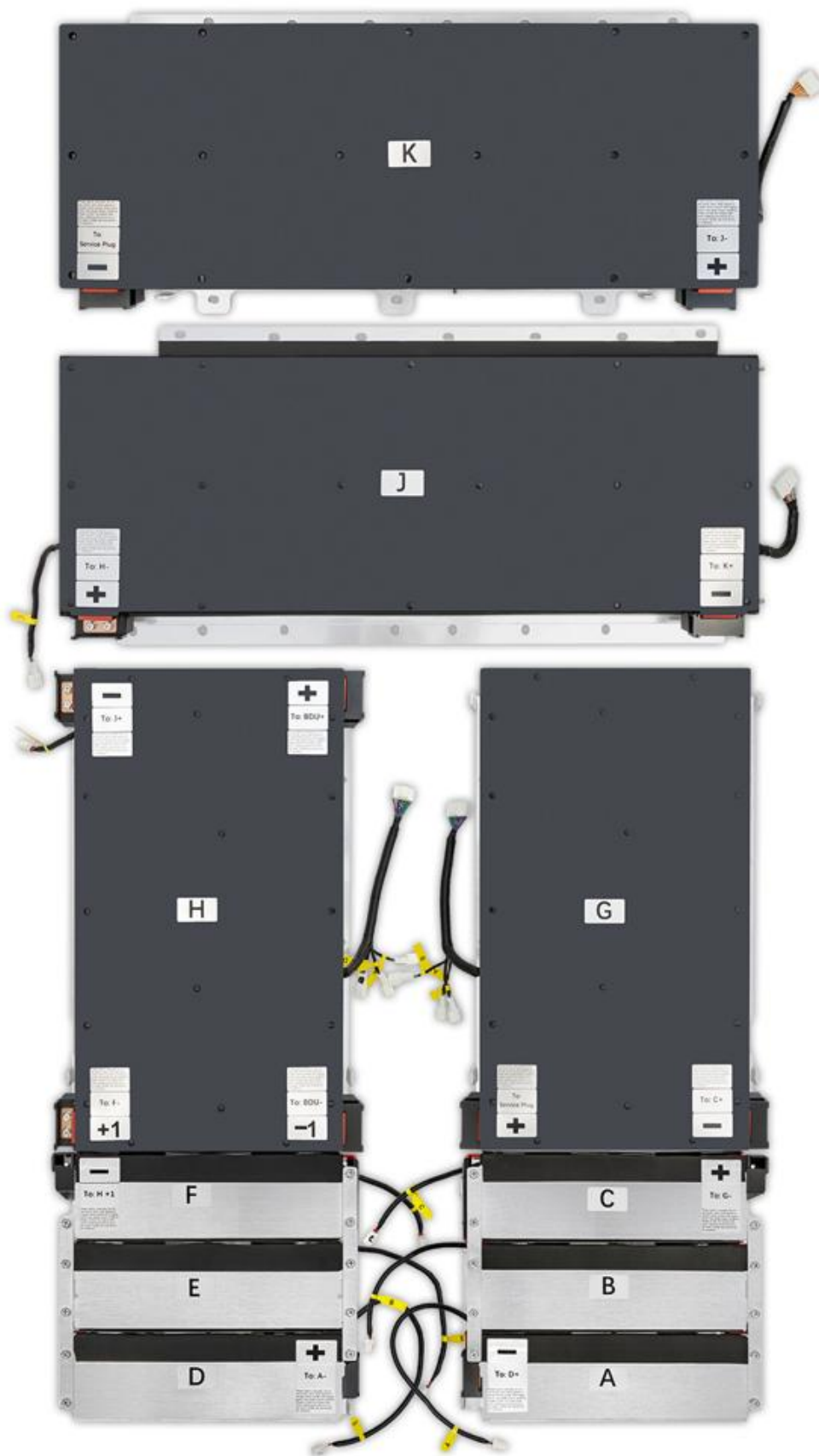
Images in this document are for demonstration only. Actual product appearance may vary slightly between versions. Notify inaccuracies via email: info@cnsbattery.com

2. 电池信息 Battery Data

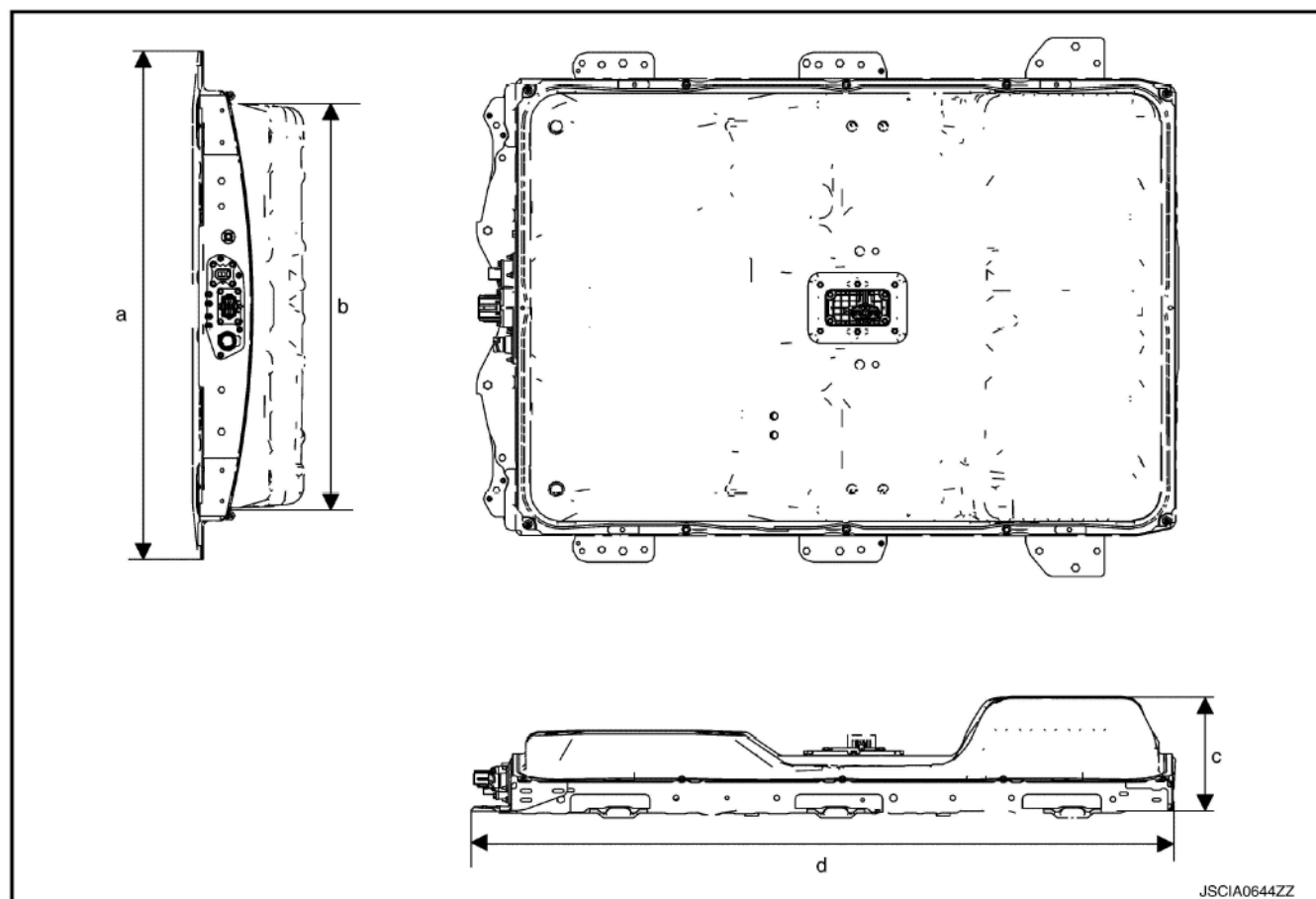
2.1 电池整包外观 Battery Pack Image



2.2 电池模组外观 Battery Module Image



2.3 电池包尺寸 Battery Pack Dimensions



项目 Items	单位 Unit	尺寸 Dimensions
a	mm (in)	1188 (46.77)
b	mm (in)	1007 (39.65)
c	mm (in)	264 (10.39)
d	mm (in)	1547 (60.90)

2.4 电池包性能数据 Battery Pack Performance Specifications

序号 NO.	项目 Items	单位 Unit	参数 Value / Condition	备注 Test Conditions / Notes
1	组装方式 Configuration	-	1P96S	-
2	电芯类型 Cell Chemistry	-	NMC	-
3	整包重量 Pack Weight	kg	363±1	-
4	额定容量 Rated Capacity	Ah	180	标准放电 Standard discharge
5	额定电压 Nominal Voltage	V	355	标准放电 Standard discharge
6	额定能量 Rated Energy	kWh	63.9	标准放电 Standard discharge
7	充电截止电压 Maximum Charge Voltage	V	398.4	0°C ≤ T ≤ 55°C
8	放电截止电压 Minimum Discharge Voltage	V	288	0°C ≤ T ≤ 55°C
9	最大持续充电电流 Max. Continuous Charge Current	A	180	25°C, 50% SOC, ≤180s duration
10	最大峰值充电电流 Max. Peak Charge Current	A	360	25°C, 50% SOC, ≤10s duration
11	最大持续放电电流 Max. Continuous Discharge Current	A	360	25°C, 50% SOC, ≤180s duration
12	最大峰值放电电流 Max. Peak Discharge Current	A	540	25°C, 50% SOC, ≤10s duration

13	充电温度范围 Charge Temperature Range	°C	-20 to 55	-
14	放电温度范围 Discharge Temperature Range	°C	-30 to 55	-
15	存储温度范围 Storage Temperature Range	°C	-30 to 55	-
16	月自放电率 Monthly Self-Discharge	%/month	≤3%	@70%SOC
17	出厂电量 Shipment SOC	%	40±10	-
18	出厂压差 Shipment Voltage Difference	mV	≤30	-
19	标准充电方式 Standard charging method	在 25±2°C 环境下，以 0.2C 的电流恒流充电至单体电芯电压上限后，转为恒压充电，至充电电流小于 0.05C 时，停止充电，并且在下一个工步开始前需静置 30 分钟； 1. CC Phase: Charge at 0.2C constant current to 4.2V/cell at 25±2°C. 2. CV Phase: Maintain 4.2V until current drops to ≤0.05C. 3. Rest: Allow 30-minute electrochemical stabilization before subsequent steps.		
20	标准放电方式 Standard discharging method	在 25±2°C 环境下，以 0.2C 的电流恒流放电至单体电芯电压下限后，停止放电，并且在下一个工步开始前需静置 30 分钟。 1. Discharge at 0.2C constant current to 2.8V/cell at 25±2°C. 2. Terminate discharge. 3. Rest: Allow 30-minute electrochemical stabilization before subsequent steps.		

2.5 电芯性能数据 Cell Performance Specifications

序号 NO.	项目 Items	单位 Unit	参数 Parameter	备注 Remarks
1	电芯品牌 Manufacturer	-	CATL	-
2	额定容量 Rated Capacity	Ah	180	标准放电 Standard discharge
3	额定电压 Nominal Voltage	V	3.7	标准放电 Standard discharge
4	额定能量 Rated Energy	Wh	666	标准放电 Standard discharge
5	电池重量 Cell Mass	kg	2.60±0.09	-
6	质量能量密度 Gravimetric Energy Density	Wh/kg	252	标准放电 Standard discharge
7	电芯尺寸 Cell Dimensions (L x W x H)	mm	148.44*79*102.77	-
8	充电温度范围 Charge Temperature Range	°C	-20 to 55	-
9	放电温度范围 Discharge Temperature Range	°C	-30 to 55	-
10	存储温度范围 Storage Temperature Range	°C	-30 to 55	-
11	电芯内阻 DCIR	mΩ	≤0.8	标准放电 Standard discharge
12	电压范围 Operating Voltage Range (per cell)	V	2.8 to 4.2	T>-5°C
13	循环寿命(剩余80%SOH) Cycle Life(EOL = 80% SOH)	Cycle	≥2000	标准充放电 Standard charge & discharge, 25°C, 1C

2.6 模组设计 Module Design

2.6.1 模组组成及特点 Module Composition & Key Features

模组主要由以下几个部分组成：电芯、模组底板壳体、模组侧板壳体、环氧板(FR-4 epoxy insulation board)、Busbar、电压采样线束、正负极输出端板、上盖等部分组成。

The module comprises the following core components: battery cells, module baseplate housing, module sideplate housing, FR-4 epoxy insulation board, busbar, voltage sensing harness, positive and negative output terminal plates, upper cover assembly, and other parts.

该模组结构简单，零件数量少，可靠性高，采用激光焊接，焊接稳定，内阻低，易于安装和接线，U型结构的铝板外壳可提供强大的机械防护。

Key design features of the module:

- Simplified Architecture: Low part count for enhanced reliability.
- Laser-Welded Connections: Ensures joint integrity and minimizes DCIR.
- Rapid Mechanical Integration: Bolt-on installation using standard hand tools.
- Plug-and-Play Wiring: Pre-terminated HV/LV connectors.
- High-Strength Aluminum Enclosure: 2.5mm/4mm trough-formed plates deliver robust mechanical protection and weight-optimized design.

2.6.2 零部件设计 Part Design

零部件 Parts	材质 Material	尺寸 Dimensions	颜色 Color
底板壳体 Baseplate housing	Al3003	厚度(Thickness) 4 mm	铝原色 Natural Aluminum Finish
侧板壳体 Side plate housing	Al3003	厚度(Thickness) 2.5 mm	铝原色 Natural Aluminum Finish
环氧板 FR-4 epoxy insulation board	FR-4	厚度(Thickness) 0.3/0.5 mm	黄色 Yellow
上盖 Upper cover	阻燃绝缘 PC Insulating flame retardant PC	厚度(Thickness) 1 mm	黑色 Black

正负极端板 Terminal plate	Al6061	厚度(Thickness) 3 mm	铝原色 Natural Aluminum Finish
	阻燃绝缘 ABS Insulating flame retardant ABS	-	黑色 Black

2.7 机械结构设计 Mechanical Structure Design

模组外壳由 5 块铝板通过激光焊接组成，电芯之间的连接铝巴采用低阻抗高强度激光焊接，电压采样线采用焊锡焊接。

The module housing is formed by five aluminum plates joined via laser welding. Inter-cell connections utilize low-impedance aluminum busbars with laser-welded joints. Voltage sampling wires employ soldered terminations.

2.8 电性能 Electrical properties

电池整包允许进行正常的脉冲充电或持续放电，异常的脉冲或持续充放电会影响电池寿命及性能，甚至带来安全问题。具体的充放电参数请参考本文档 2.4 整包性能数据。

The battery pack permits standard pulse charging and continuous discharging operations. Non-compliant pulse or sustained charge/discharge profiles will accelerate performance degradation and introduce safety hazards (including thermal runaway risks). All operational parameters must strictly adhere to the performance data specified in Section 2.4 of this document.

2.9 接口设计 Interface Design

2.9.1 固定孔位 Mounting Hole Positions

模组的安装固定孔位与原车电池仓的固定孔位完全匹配，不需要切割、改造电池仓。推荐使用强度等级 10 级的 M8 螺母和强度等级 10.9 级的 M6 螺丝进行锁紧，M8 螺母的推荐安装力矩为 23 ± 2 Nm，M6 螺丝的推荐安装力矩为 $9 \text{ Nm} \pm 1 \text{ Nm}$ ，建议采用标识或复检等方式保证所有螺母/螺丝已锁紧。

The module mounting holes precisely align with the vehicle's battery case fastening points, requiring no structural modification or cutting. Secure modules using:

- M8 nuts: Grade 10 (or original equivalents) @ 23 ± 2 Nm torque.
- M6 screws: Grade 10.9 @ 9 ± 1 Nm torque.
- Verification: Implement marking/re-inspection protocol to confirm all nut/screw installations.

2.9.2 低压接口 Low-Voltage Connectors

ABC/DEF 模组对外有 3 个低压接口，G 模组对外有 4 个低压接口，H 模组对外有 5 个低压接口，J 模组对外有 2 个低压接口，K 模组对外有 1 个低压接口。进行低压电气连接时，要求线束两端的标

签必须一一对应，并检查接口是否清洁干净无油污，确保没有金属等粉末掉进连接器内。将线束端插头插入后，应检查插头的卡扣是否已经卡到位。

Low-voltage interface configurations:

- ABC/DEF Modules: 3 interfaces
- G Module: 4 interfaces
- H Module: 5 interfaces
- J Module: 2 interfaces
- K Module: 1 interface

When making low-voltage connections:

- Harness Label Verification
 - Match end-to-end labeling rigorously..
 - Ensure 100% correspondence.
- Interface Pre-inspection.
 - Confirm cleanliness (oil-free surface).
 - Eliminate metallic particulates.
- Connection Procedure.
 - Insert connectors until fully seated.
 - Confirm audible engagement of latches.

2.9.3 高压接口 High-Voltage Terminals

模组对外输出高压连接包括正极输出端子、负极输出端子，推荐选用强度等级 8.8 级的 M6*12 螺丝进行锁紧。螺丝的安装力矩要求 $9 \pm 0.5 \text{ Nm}$ ，采用标识或复检等方式保证所有螺丝已锁紧，反复拆卸次数不超过 5 次。

The module's external HV connections consist of:

- Positive Output Terminal (+)
- Negative Output Terminal (-)

Installation Specifications:

- Fasteners: Grade 8.8 M6×12 screws.
- Torque: $9 \pm 0.5 \text{ Nm}$.
- Verification: Marking or re-inspection to ensure full fastener engagement.
- Reusability: ≤ 5 installation/removal cycles.

2.9.4 吊装孔位 Lifting Points

模组底板两侧设计有吊装孔位，方便模组装配及搬运移动。吊装移动加速度 $\leq 2g$ 。

Dedicated hoisting holes on the baseplate enable safe handling. Maximum lifting acceleration: $\leq 2g$.

3. 测试验证 Testing and Verification

电池模组在生产完成后会进行性能、功能、可靠性、安全性等方面的设计及过程验证，确保电池模组各项参数达标。

Battery modules undergo design and process verification for performance, functionality, reliability, and safety upon production completion to ensure all parameters comply with specifications.

3.1 测试条件 Test Conditions

测试均在温度为 10℃~35℃，相对湿度为 25%~85%，大气压力 86kPa~106kPa 的环境中进行。

All tests are conducted in an environment with a temperature of 10°C to 35°C, relative humidity of 25% to 85%, and atmospheric pressure of 86 kPa to 106 kPa.

3.2 测试项目 Test Items

3.2.1 电芯容量测试和配组 Cell Capacity Testing and Sorting

模组在组装前须对电芯进行容量测试，然后再进行筛选配组。分容具体操作方法如下：

Prior to module assembly, cells shall undergo capacity testing, followed by sorting and grouping. The capacity grading procedure is as follows:

序号 NO.	工步 Step	详细描述 Description
1	静置 Rest	静置 2 小时 Rest for 2 hours
2	满充 Full Charge (CC/CV)	以 0.2C 恒流充至 4.2V Charge at 0.2C constant current (CC) to 4.2V
3	静置 Rest	静置 10 分钟 Rest for 10 minutes
4	满充 Top-up Charge	以 0.05C 恒压充至 4.2V Charge at 0.05C constant voltage (CV) to 4.2V
5	静置 Rest	静置 24 小时 Rest for 24 hours
6	筛选 Screening (ΔV)	筛选自放电异常的电芯（电芯衰减率 $\geq 1\text{mV/h}$ ） Screen cells with excessive self-discharge (Voltage decay rate $\geq 1\text{mV/h}$)
7	恒流放电 Discharge (CC)	以 0.2C 恒流放电至 2.8V Discharge at 0.2C constant current (CC) to 2.8V
8	静置 Rest	静置 30 分钟 Rest for 30 minutes

9	恒流充电 Charge (CC)	以 0.2C 恒流充至 3.7V Charge at 0.2C CC to 3.7V
10	静置 Rest	静置 24 小时 Rest for 24 hours
11	筛选 Screening (Δ OCV)	筛选出自放电异常的电芯 (开路电压差 $\leq 10\text{mV}$) Screen cells with excessive self-discharge (OCV difference $\leq 10\text{ mV}$ after rest)

3.2.2 电芯分容后的筛选标准 Cell Screening Criteria After Capacity Grading

序号 NO.	项目 Item	筛选标准 Screening Criteria
1	容量 Capacity	实际容量 $\geq$ 标称容量*97%，且容量差异 $\leq 3\%$ Actual capacity $\geq 97\%$ of rated capacity, with cell-to-cell capacity deviation $\leq 3\%$
2	内阻 Internal Resistance	内阻差 $\leq 0.1\text{m}\Omega$ Internal Resistance Difference $\leq 0.1\text{ m}\Omega$
3	电压差 Voltage Difference	静置 24h 后开路电压差 $\leq 10\text{mV}$ Open Circuit Voltage Difference $\leq 10\text{ mV}$ after 24 hours rest

3.2.3 绝缘测试 Insulation Test

模组在生产过程中和生产结束后会进行多次的绝缘性能检测，确保模组的绝缘性能满足 GB/T 31485 标准，即电动汽车动力电池绝缘电阻值需大于 $100\Omega/\text{V}$ ，400V 电池系统的绝缘电阻值应 $\geq 40\text{k}\Omega$ 。CNS的测试方法和标准如下：

Module insulation performance is verified multiple times during and after the production process to ensure compliance with GB/T 31485. This standard requires an insulation resistance $> 100\Omega/\text{V}$ for electric vehicle traction batteries. For a 400V battery system, the insulation resistance shall be $\geq 40\text{ k}\Omega$. CNS's test method and standard are as follows:

序号	项目 Item	测试方法及标准 Test Method and Standard
1	绝缘测试 Insulation Test	使用绝缘电阻测试仪, 选择 500V 直流测试档位, 测试线连接电池正极与模组外壳, 保持 30s 后读取并记录绝缘电阻值, 同样的方法测试负极对地绝缘电阻值。测试标准: 正负极对地绝缘电阻值都需 $\geq 50\text{M}\Omega$。 Using an insulation resistance tester, select the 500V DC range. 1. Connect the test lead between the battery positive terminal and the module casing. Maintain for 30 seconds, then read and record the insulation resistance value. 2. Repeat the same procedure to measure the negative terminal insulation resistance to ground. Standard: Insulation resistance for both positive and negative terminals to ground shall be $\geq 50\text{M}\Omega$.

3.2.4 老化测试 Aging Test

老化测试以电池包的形式进行。模组在生产完成后会与同批次生产的另外 5 个模组组成一套完整的动力电池包, 并进行老化测试, 确保动力电池包的各项参数达标。老化测试在 10%~100%SOC 范围进行。

The aging test is conducted at the battery pack level. Upon production completion, a module is assembled with five other modules from the same production batch to form a complete traction battery pack. This pack then undergoes the aging test to ensure all parameters comply with specifications. The aging test is performed within the 10% to 100% State of Charge (SOC) range.

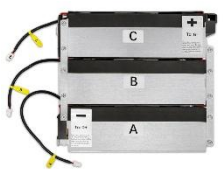
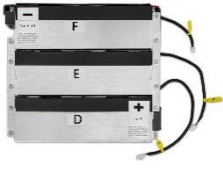
序号 NO.	工步 Step	详细描述 Description
1	筛选 Screening	动力电池包内 6 个模组电压差 $\leq 15\text{mV}$, 温度传感器采样值差 $\leq 3^\circ\text{C}$ Voltage difference between the 6 modules $\leq 15\text{ mV}$; Temperature sensor reading difference $\leq 3^\circ\text{C}$
2	满充 Full Charge	以 15A 恒流充电至 SOC100% Charge at 15A constant current (CC) to 100% SOC
3	静置 Rest	静置 10 分钟 Rest for 10 minutes
4	快放电 High-rate Discharge	以 100A~120A 电流持续放电 15 分钟 Discharge continuously at 100A to 120A for 15 minutes
5	放电 Discharge	以 40A~100A 电流持续放电至 360V Discharge continuously at 40A to 100A down to 360V

Product Specification of CNS-N2562

6	峰值放电冲击 Peak Discharge Pulse	以 200A 瞬时电流持续 10S，重复 10 次 Apply 200A instantaneous current pulse for 10 seconds; Repeat 10 times
7	放电 Discharge	以 15A~30A 电流持续放电至 SOC10% Discharge continuously at 15A to 30A down to 10% SOC
8	快充电 High-rate Charge	以 100A~120A 电流持续充电至 SOC40%，达到出厂标准 Charge continuously at 100A to 120A to 40% SOC (reaching shipment standard)
9	测试标准 Pass Criteria	测试过程中电压、温度值无异常波动，完成测试后 SOH 值 $\geq 99\%$ No abnormal voltage or temperature fluctuations during test; State of Health (SOH) $\geq 99\%$ upon test completion

4. 产品发货 Product Shipment

4.1 模组发货清单 Module-Level Shipping Manifest

序号 NO.	图片 PIC	项目 Item	规格 Specification	备注 Remark
1		模组 ABC Module ABC	数量：1 件/套 Qty: 1 module per set	-
2		模组 DEF Module DEF	数量：1 件/套 Qty: 1 module per set	-
3		模组 G Module G	数量：1 件/套 Qty: 1 module per set	-
4		模组 H Module H	数量：1 件/套 Qty: 1 module per set	-
5		模组 J Module J	数量：1 件/套 Qty: 1 module per set	-
6		模组 K Module K	数量：1 件/套 Qty: 1 module per set	-

Product Specification of CNS-N2562



EV BATTERY REPLACEMENT
BATTERY SUPPLY FOR [NISSAN / BMW]

7		高压铜排 HV Busbar	材料: T2 紫铜 宽度 18mm*厚度 2.5mm Material: T2 Copper 18mm(W)×2.5mm(T)	用于连接模组 H- to J+ Electrical connection: Module H- to J+
8		高压铜排 HV Busbar	材料: T2 紫铜 宽度 18mm*厚度 2.5mm Material: T2 Copper 18mm(W)×2.5mm(T)	用于连接模组 J- to K+ Electrical connection: Module J- to K+
9		高压铜排 HV Busbar	材料: T2 紫铜 宽度 18mm*厚度 2.5mm Material: T2 Copper 18mm(W)×2.5mm(T)	用于连接模组 Service Plug to G+ Electrical connection: Service Plug to Module G+
10		高压铜排 HV Busbar	材料: T2 紫铜 宽度 18mm*厚度 2.5mm Material: T2 Copper 18mm(W)×2.5mm(T)	用于连接模组 G- to C+, F- to H+1 Electrical connection: Module G- to C+, F- to H+1
11		高压铜排 HV Busbar	材料: T2 紫铜 宽度 18mm*厚度 2.5mm Material: T2 Copper 18mm(W)×2.5mm(T)	用于连接模组 A- to D+ Electrical connection: Module A- to D+
12		高压铜排 HV Busbar	材料: T2 紫铜 宽度 18mm*厚度 2.5mm Material: T2 Copper 18mm(W)×2.5mm(T)	用于连接模组 H-1 to BDU- Electrical connection: Module H-1 to BDU-
13		高压动力线 HV Power Cable	50mm ² 铜芯电缆 50mm ² copper core	用于连接模组 K- to Service Plug, H+ to BDU+ Electrical connection: Module K- to Service Plug, Module H+ to BDU+

Product Specification of CNS-N2562



EV BATTERY REPLACEMENT
BATTERY SUPPLY FOR [NISSAN / BMW]

14		模组 J 垫块 Module J Shim Block	620mm(L)×25mm(W)×15mm(H)	用于安装模组 J Module J installation
15		模组 K 垫块和 紧固螺丝 Module K Mounting Kit	铝垫块 3 个 M6*120mm 螺丝 3 套 Al blocks*3 pcs M6×120mm screws*3 sets	用于固定模组 K Module K fixation
16		M6*40 螺丝+ 垫片 M6×40 Screw + Washer	数量：5 个 Qty: 5 pcs	用于固定模组 K&J Module K & J fixation
17		M6*20 螺丝+ 垫片 M6×20 Screw + Washer	数量：5 个 Qty: 5 pcs	用于固定模组 J Module J fixation
18		M6*12 螺丝 M6×12 Screw	数量：6 个 Qty: 6 pcs	用于安装 BMS，维修 插座动力线，电流传 感器铜排 BMS/Service Plug/Current Sensor
19		M6*28+8 螺柱 M6×28+8 Stud	数量：4 个 Qty: 4 pcs	用于加高和固定维修 插座 Service Plug height adjustment
20		M6*10+8 螺柱 M6×28+8 Stud	数量：4 个 Qty: 4 pcs	用于加高和固定维修 插座 Service Plug height adjustment

Product Specification of CNS-N2562

21		BMS 支架 BMS Bracket	数量: 2 个 Qty: 2 pcs	用于安装固定 BMS BMS mounting
23		M6 螺母 M6 Nut	数量: 9 个 Qty: 9 pcs	用于安装固定 BMS 和 温度传感器 For mounting the BMS and temperature sensors
24		热缩管 Heat Shrink Tube	Φ25*200mm	用于连接模组 Service Plug to G+的高压铜排 Insulation for HV busbar
25		低压信号采集 转接线束 LV Signal Harness	数量: 1 套 Qty: 1 set	用于模组 G/H to BMS Module G/H to BMS
26		温度传感器线 束 Temp Sensor Harness	数量: 1 套 Qty: 1 set	-
27		扎带 Cable Tie	宽 2.7mm*长 150mm, 数量 20 个 2.7mm(W)×150mm(L), Qty: 20 pcs	用于电池包内线束整 理 Harness routing
28		棘轮扳手 Ratchet Wrench	数量: 1 套 Qty: 1 set	用于 M6 螺丝紧固 For M6 fasteners

Product Specification of CNS-N2562



EV BATTERY REPLACEMENT
BATTERY SUPPLY FOR [NISSAN / BMW]

29		704 硅橡胶 Silicone Sealant (704)	数量: 1 个 Qty: 1 pcs	用于电气绝缘处理 Electrical insulation
30		模组吊装绳 Module Sling	宽 3.8mm*长 100mm, 数量 2 个 3.8mm(W)×100mm(L), Qty: 2 pcs	用于模组吊装 Module hoisting SWL: 100kg
31		M6*70mm 螺杆+ 螺母 M6×70 Stud + Nut	数量: 10 套 Qty: 10 sets	用于安装电池仓上盖 Battery cover installation
22		M6 法兰螺母 M6 Flange Nut	数量: 11 个 Qty: 11 pcs	用于安装电池仓上盖 Battery cover installation
32		EPDM 三元乙丙 橡胶条 EPDM Rubber Seal	规格: 30mm*30mm 长度: 4.9m 30mm×30mm×4.9m	用于加高电池仓上盖 Battery cover height adjustment
33		硅酮密封胶 Silicone Sealant	数量: 3 个 Qty: 3 pcs	用于电池包密封 Pack sealing
34		M12*60mm 螺丝 +铝垫块 M12×60 Screw + Al Block	数量: 10 套 Qty: 10 sets	用于安装固定电池包 Pack mounting

4.2 整包发货清单 Pack-Level Shipping Manifest

序号 NO.	图片 PIC	项目 Item	规格 Specification	备注 Remark
1		电池整包 Battery Pack	数量: 1 套 Qty: 1 set	-
2		M12*60mm 螺丝 + 铝垫块 M12×60 Screw + Al Block	数量: 10 套 Qty: 10 sets	用于安装固定电池包 Pack mounting
3		电池包吊装绳 Pack Sling	长度: 1m 数量: 4 个 Length: 1m Qty: 4 pcs	用于电池包吊装 Battery pack hoisting SWL: 1200kg

 上述发货清单可能因车型不同而略有不同, 请以发货时实际情况为准, 如有疑问, 请联系 CNS 工作人员, 邮箱: info@cnsbattery.com。

Note: The shipping manifest may have minor variations depending on vehicle models. The actual components shipped shall prevail. For clarification, contact CNS support at: info@cnsbattery.com.

4.3 包装 Packaging

模组/整包使用符合海运标准的免熏蒸木箱进行包装。模组发货时，模组与木箱之间须填充泡沫进行减震并确保模组在木箱内不会晃动。配套的辅材（详见 4.1 模组发货清单）按装箱单装入模组木箱内，随电池模组一起发给客户。整包发货时，木箱内须安装金属支架以确保整个包装的结构强度，配套的辅材（详见 4.2 整包发货清单）按装箱单固定在整包外壳上，随电池整包一起发给客户

Modules or complete packs are shipped in ISPM 15-compliant fumigation-exempt wooden crates.

- **Module-Level Packaging:** Foam cushioning must be filled between the module and the crate to absorb shock and ensure the module is immobilized within the crate. Associated accessories (detailed in Section 4.1 Packing List) are packed according to the packing list into the module crate and shipped together with the battery module to the customer.
- **Pack-Level Packaging:** Structural metal bracing is installed inside crates to ensure packaging integrity. Associated accessories (detailed in Section 4.2 Packing List) are placed on the pack casing per the packing list and shipped with the battery pack to the customer.

5. 产品操作 Product Handling

5.1 运输 Transportation

模组或整包在不完全充电状态下运输。在运输过程中，应防止剧烈振动、冲击、日晒、雨淋，不得倒置，确保不会发生短路。在装卸过程中，应轻搬轻放，严防摔掷，翻滚、重压和倒置。

Modules or battery pack are shipped in a partially charged state. During transport, protect against:

- Severe vibration and impact
- Direct sunlight and rain exposure
- Inversion (must not be inverted)
- Short circuits

During loading/unloading, handle with care. Strictly avoid dropping, throwing, rolling, crushing, or inverting the modules.

5.2 贮存 Storage

未装车前存储要求，模组或整包在 30%~70%SOC 状态下贮存。产品贮存环境要求如下：

Pre-installation storage requirements: Modules or battery pack must be stored at 30% to 70% State of Charge (SOC).

Storage environment requirements:

(1) 存放温度：可存储温度范围是-30℃~55℃，在-30℃~5℃和 30℃~55℃下存放不超过 1 周，存放时间超过 1 周，需在常温 5℃~ 30℃范围内贮存；

(1) Storage temperature: Permissible range: -30°C to 55°C.

- Storage at -30°C to 5°C or 30°C to 55°C must not exceed 1 week.
- For storage exceeding 1 week, maintain within the ambient temperature range of 5°C to 30°C.

(2) 存放湿度：湿度不超过 95%RH，推荐在 10% ~ 85% RH 范围内贮存；

(2) Storage humidity: Relative Humidity (RH) $\leq$ 95%. Recommended RH range: 10% to 85%.

(3) 存放环境: 产品应存储在干净、通风、阴凉的环境中, 避免阳光直射、高温、腐蚀性气体、剧烈振动、机械冲击和重压等状况; 远离热源; 海拔高度小于 1500 米, 大气压为 86kPa~106kPa。

(3) Storage Environment: Store in a clean, well-ventilated, cool location. Avoid:

- Direct sunlight.
- High temperatures.
- Corrosive gases.
- Severe vibration.
- Mechanical impact.
- Crushing loads.
- Keep away from heat sources.
- Altitude $<$ 1500 meters above sea level.
- Atmospheric pressure: 86 kPa to 106 kPa.

(4) 产品贮存期间应防止出现 SOC 低于 5% 以下, 维护测试方法如下:

- 常温条件下, 对于产品低于存储 SOC 要求的产品进行一次充放电, 充放电电流 $\leq$ 1C, 充电完成后将 SOC 调整至 30%~70%。

(4) Storage SOC maintenance: Prevent SOC from falling below 5% during storage. Maintenance testing procedure:

- If the SOC falls below the required storage range (30%-70%), perform one charge-discharge cycle at ambient temperature with current $\leq$ 1C.
- After charging, adjust the SOC back to the 30% to 70% range.

5.3 安装 Installation

本文档所述产品仅适用于 NISSAN LEAF ZE0/AZE0/ZE1 车型作动力电池使用。请勿做他用, 并请严格遵守以下安装注意事项:

This product is exclusively designed as a traction battery replacement for NISSAN LEAF models ZE0/AZE0/ZE1. Any other use is strictly prohibited.

Strictly adhere to the following installation precautions:

- 模组安装时轻拿轻放, 防止碰撞、跌落、翻滚、重压和倒置。
Handle with care during installation. Prevent collisions, drops, rolling, crushing loads, and inversion.
- 模组上盖不允许施加持续的 $\geq 1\text{N/mm}^2$ 的作用力。
Do not apply a sustained force $\geq 1\text{N/mm}^2$ to the module top cover.
- 请严格按照图纸、辅材附件上的标签进行操作, 防止在连接过程中出现任何形式的短路。
Strictly follow the provided drawings and labels on accessories. Prevent all forms of short circuits during all operations.
- 模组间的连接铜排在安装前需保证表面清洁, 防止电化学腐蚀。
Ensure the surface is clean on copper busbars before connecting modules to prevent electrochemical corrosion.

- 安装模组间高压铜排时需做好绝缘防护，并使用手动绝缘工具，任何时候请勿徒手操作。
Implement full insulation measures when installing inter-module high-voltage copper busbars, use only manually insulated tools. Never perform bare-handed operations.

- 模组在装配期间任何时候遇到异常阻力，应停止蛮力装配，立即检查孔位/螺纹是否对正，是否有异物、坏牙等情况。

If abnormal resistance is encountered during assembly at any point, cease applying excessive force immediately. Inspect for proper hole/thread alignment, foreign objects, or damaged threads.

- 进行低压电气连接时，要求线束两端的标签必须一一对应，并检查接口是否干净整洁无油污，确保没有金属等粉末掉进连接器内。将线束端插头插入后，应检查插头的卡扣是否已经卡到位。

When making low-voltage connections:

- Harness Label Verification
 - Match end-to-end labeling rigorously
 - Ensure 100% correspondence
- Interface Pre-inspection
 - Confirm cleanliness (oil-free surface)
 - Eliminate metallic particulates
- Connection Procedure
 - Insert connectors until fully seated.
 - Confirm audible engagement of latches.

- 安装的关键点为：确保连接正确、可靠（不会松脱）、接触良好、全过程无短路。

Critical installation objectives: Ensure connections are correct, secure (vibration-proof), exhibit good contact resistance, and remain free of short circuits throughout the entire process.

- 安装完成后，必须逐点测量、确认。

Upon completion, perform point-by-point verification measurements.

- 模块外壳可能因制造工艺而包含锋利边缘。请佩戴防割手套，以防割伤。

Warning: Module housings may contain sharp edges inherent to the manufacturing process. Handle with cut-resistant gloves to prevent lacerations.

- 在安装、移动和搬运过程中，请采用适当的起重方法、机械辅助工具和个人防护装备 (PPE)。防止碰撞、跌落或挤压伤。只有合格人员才能搬运模块。

Warning: Modules are heavy objects. Employ proper lifting techniques, mechanical aids, and personal protective equipment (PPE) during installation, movement and handling. Prevent collisions, drops, or crushing injuries. Only qualified personnel should handle modules.

- 有任何不确定，请立即联系 CNS 寻求帮助。

If any uncertainty arises, contact CNS immediately for assistance.

6. 安全说明 Safety Instructions

为保证电池包在良好的环境下工作，发挥最大性能和减少失效风险，在使用时请注意以下事项：

To ensure optimal battery pack performance, longevity, and minimized failure risk, strictly observe the following precautions during use:

- 因模组不具有防水功能，动力电池包组装时请合理安装电池包上盖，以确保电池包密封性能。不建议涉水行驶。

The modules themselves are not waterproof. The traction battery pack cover must be properly installed to ensure pack sealing integrity. Driving through flooded areas is strongly discouraged.

- 在存储过程中，存储温度及湿度不允许超过上述要求，需防止雨淋。
During storage, temperature and humidity must not exceed the specified limits (Section 5.2). Modules must be protected from rain exposure.

- 未经 CNS 允许，严禁擅自对模组和电池包进行拆卸，由此产生的一切问题 CNS 概不负责。Unauthorized disassembly of modules & battery pack is strictly prohibited. CNS shall bear no responsibility for any issues arising from such actions.

- 尽力保护模组和电池包，使其免受机械振动、碰撞及压力冲击，否则模组或电池包内部可能短路，产生高温和火灾。

Protect modules and the battery pack from mechanical vibration, impact, and crushing loads. Failure to do so may cause internal short circuits, resulting in high temperatures and fire.

- 锂电池是没有记忆效应的，随用随充，浅充浅放，可极大减缓锂电池的衰减。
Lithium batteries exhibit no memory effect. Maintaining partial state-of-charge (SOC) cycling (avoiding full discharges and full charges) significantly reduces degradation rates.

- 长时间行驶后，电池内部温度较高，如不着急继续用车，建议停车一段时间等电池降温后再进行充电。

Avoid charging immediately after extended driving. High internal battery temperatures require a cooling period before charging. Allow the battery to cool to ambient temperature if time permits.

- 尽量使用慢充，少用快充，如需快充，建议每天不超过 1 次，每次充到 90% 为宜。
Prioritize AC (slow) charging. Limit DC (fast) charging to ≤ 1 session per day, charging only to $\approx 90\%$ SOC during fast-charge sessions.

- 过充电和过放电都会对电池造成不可逆的损伤，因此在用车时尽量不要把电量放尽。
Prevent overcharging and deep discharging ($\text{DoD} > 97\%$). Both cause irreversible cell damage and accelerated capacity fade. Avoid depleting the battery completely.

- 长期不使用车辆，建议将电池电量保持在 30%~70%，并定期检查电池电量。
For long-term storage (≥ 1 month), maintain SOC between 30% and 70%. Perform monthly SOC verification and recharge if necessary.

7. 生产商信息 Manufacturer Information

生产商：河南中赛能源科技有限公司

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