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*Experts on International Rules&Regulations for Training, Packing, Storage&Transport of Hazardous Goods*

*Dangerous Goods Management(China) Ltd.*

## 安全技术说明书

## Safety Data Sheet

产品名称: 智能组串式储能系统  
Product name: Smart String ESS  
型号: LUNA2000-97KWH-1H1  
Model:  
委托单位: 华为数字能源技术有限公司  
Applicant: Huawei Digital Power Technologies Co., Ltd.



## 安全技术说明书

### Safety Data Sheet

#### 第一部分 产品及企业标识

#### Section 1 product and company identification

产品名称: 智能组串式储能系统

**Product name:** Smart String ESS

型号: LUNA2000-97KWH-1H1

**Model:** LUNA2000-97KWH-1H1

安全技术说明书申请者详情:

#### SDS Applicant details:

企业名称 Company name	华为数字能源技术有限公司 Huawei Digital Power Technologies Co., Ltd.
地址 Address	深圳市福田区香蜜湖街道香安社区安托山六路 33 号安托山总部大厦 A 座研发 39 层 01 号 Office 01, 39th Floor, Block A, Antuoshan Headquarters Towers, 33 Antuoshan 6th Road, Futian District, Shenzhen, 518043, P.R.C.
邮编 Post code	518043
电子地址邮件 E-mail	liuzhicheng20@huawei-partners.com
企业应急电话 Emergency Phone	+86 13560398611
主要用途 Main purpose	环境温度调节 Ambient temperature regulation

#### 第二部分 危险性概述

#### Section 2 hazards summarizing

GHS 危险性类别: 液化气体

**Product hazard category:**Liquefied gas



## GHS 标签要素

### Label content

象形图:

Hazard pictogram(s):



信号词: 警告

Signal word: Warning

危险说明: H280 内含压力下气体, 遇热可能爆炸。

Hazardous warnings: H280 Contains gas under pressure, may explode if heated

防范说明: P410+P403 避免日晒, 存放于通风良好处。

Precautionary Statement: P410+P403 Protect from sunlight, Store in a well-ventilated place.

环境危害: 参阅第 12 部分。

Environmental Hazards: See Section 12.

其它危害:

由于心脏受到影响,所以故意的或不当心的不良的呼吸习惯会引起死亡, 并不一定有先兆症状。蒸汽比空气重, 可能因缺氧而造成人员窒息。液体的迅速气化会引起冻伤。

Other hazards:

Misuse or intentional inhalation abuse may lead to death without warning. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Rapid evaporation of the liquid may cause frostbite.

## 第三部分 成分/组成信息

### Section 3 composition/information on ingredients

纯品

混合物

Pure chemical

Mixture

产品组成 Product composition	装载量 Quantity
系统机柜 System cabinet	主要组成铁 Main composition iron
制冷剂 R134a Refrigerant R134a	700g × 2/Pcs



制冷剂 R134a 化学组成 Refrigerant R134a chemical ingredients	分子式 Molecular formula	CAS No.
1,1,1,2-四氟乙烷 1,1,1,2-Tetrafluoroethane	C <sub>2</sub> H <sub>2</sub> F <sub>4</sub>	811-97-2

#### 第四部分 急救措施

##### Section 4 first-aid measures

切勿给失去知觉者从嘴里喂食任何东西。在症状持续或有疑问情况下,寻求医生建议。

**Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt seek medical advice.**

吸入: 转移到新鲜空气处。让患者保持暖和和休息。如有必要, 进行人工呼吸和/或供氧。

**Inhalation:** Remove from exposure, lie down. Move to fresh air, Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary. Consult a physician.

食入: 不认为是潜在的暴露途径。

**Ingestion:** Is not considered a potential route of exposure.

皮肤接触: 用温水洗涤。立即脱掉所有污染的衣服。

**Skin contact:** Take off contaminated clothing and shoes immediately. Flush area with lukewarm water.

眼睛接触: 立即用大量水淋洗并寻求医治。

**Eye contact:** Rinse immediately with plenty of water and seek medical advice.

急性的和延时的最重要症状/影响: 无资料。

**Most important symptoms/effects of acute and delayed:** No applicable data available

急救人员的防护: 无资料。

**Protection of first-aiders:** No applicable data available

给医治人员的提示: 不要给予肾上腺素或类似的药物。

**Notes to physician:** Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.



## 第五部分 消防措施

### Section 5 fire-fighting measures

灭火方法及灭火剂：在一般环境的温度和压力下此产品不易燃。

**Suitable extinguishing media:** Special protective equipment for firefighters: Non-flammable under normal ambient temperature and pressure.

特别的危险性:压力逐渐增加。

**Special dangers:** Pressure increase gradually.

特殊灭火方法及保护消防人员的特殊防护装备:无资料

**Special protective equipment for firefighters:** No applicable data available

## 第六部分 泄露应急处理

### Section 6 accidental release measures

作业人员防护措施、防护装备和应急处置程序：将人员撤离到安全区域，给该区域通风，请参阅第7和第8节的化学品安全技术说明书所列的防护措施。

**Safeguards (Personnel):** Evacuate personnel to safe areas. Ventilate area, especially low or enclosed places where heavy vapors might collect.

环境保护措施:不应释放进环境。

**Environmental precautions:** Should not be released into the environment, In accordance with local and national regulations.

泄漏化学品的收容、清除方法及所使用的处置材料:蒸发

**Spill Cleanup:** Evaporates. Ventilate area using forced ventilation, especially low or enclosed places where heavy vapors might collect.

防范二次危害:无资料。

**Prevent secondary damage:** No applicable data available

## 第七部分 操作处置与储存

### Section 7 handling and storage

技术操作注意事项：在工作室内提供充足的空气流通和/或排风。有关个人防护，请看化学品安全技术说明书的第8章。

**Handling (Personnel):** Avoid breathing vapors or mist. Avoid contact with skin, eyes and clothing. Provide sufficient air exchange and/or exhaust in work rooms. For personal protection



see section 8.

安全操作的注意事项:无特殊的防火保护措施。

Safety considerations of the operation: No special fire protection measures

卫生措施:按照良好工业和安全规范操作。

Sanitary measure: In accordance with industrial and safety standard

合适的储存条件 : 容器保持紧闭,储存在干燥通风处。储存于原装容器中。贮存温度:< 52 °C

**Proper storage condition:** The container tightly closed, store in a dry ventilated place,Store in the original container.

Storage temperature: < 52 °C

## 第八部分 接触控制/个体防护

### Section 8 exposure controls/personal protection

工程技术控制 : 保证充分的通风,特别是在密闭区内。

**Engineering controls:** Ensure adequate ventilation, especially in the enclosed area.

最高容许浓度Exposure Limit Values:

化学品名称 Chemical name	最高允许浓度 Exposure Limit Value	法规基准 Regulations
1,1,1,2-四氟乙烷 1,1,1,2-Tetrafluoroethane	无资料 No applicable data available	无资料 No applicable data available

生物职业暴露极限: 无资料。

**Biological occupational exposure limit value:** No applicable data available

人身保护设备

**Personal protective equipment**

呼吸系统防护: 在贮槽内进行营救和维修工作时使用自给式呼吸器。蒸汽比空气重,可能因缺氧而造成人员窒息。

**Respiratory protection:** take a self-contained breathing apparatus when rescuing or maintaining in the storage tank. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing

手部防护: 绝热性手套

**Hand protection:** Insulated gloves

眼睛防护: 安全眼镜

**Eye protection:** safety glasses

皮肤防护: 无资料。

**Skin protection:** No applicable data available



## 第九部分 理化特性

### Section 9 physical and chemical properties

外观与性状 <b>Appearance Characters</b>	白色长方体 white cuboid
型号 <b>Model</b>	LUNA2000-97KWH-1H1
尺寸 <b>Size</b>	1810mm×2135mm×1200mm
机构空调型号 <b>The model of Cabinet Air Conditioner</b>	PC3000D-3
制冷剂型号 <b>Refrigerant Model</b>	R134a
制冷剂充注量 <b>Refrigerant Charge</b>	700g×2/Pcs

## 第十部分 稳定性和反应活性

### Section 10 stability and reactivity

稳定性：无资料

**Stability:** No applicable data available

特定条件下的可能发生的危险反应：无资料

**Hazardous reaction in certain conditions:** No applicable data available

应避免的条件：在一般环境的温度和压力下此产品不易燃。当压力升高，并与空气或氧气混合，此混合物可能成为可燃的。在一定的条件下,某些HCFCs或HFCs与氯气的混合物会成为可燃的或易反应的。

**Conditions to avoid:** Non-flammable under normal ambient temperature and pressure. When pressured, and mixed with air or oxygen, it may be flammable. Under certain conditions, a mixture of HCFCs/HFCs and chlorine will be flammable or reactive.

避免接触的材料：碱金属，碱土金属，粉末状金属，粉状金属盐

**Materials to avoid:** Alkali metals Alkaline earth metals, powdered metals, powdered metal salts.

有害分解产物：氟化氢，碳氧化物，碳氟化合物，羰基氟化物

**Hazardous decomposition products:** hydrofluoric acid, oxycarbide, fluorocarbon possibly carbonyl fluoride.



## 第十一部分 毒理学资料

### Section 11 toxicological information

#### 急性毒性Acute toxicity:

1,1,1,2-四氟乙烷	吸入（鼠）LC50: 359453.102 ppm4h
1,1,1,2-Tetrafluoroethane	Inhalation(Rat)LC50: 359453.102 ppm4h

皮肤刺激或腐蚀: 无资料

**Skin corrosion/irritation:** No applicable data available

眼睛刺激或腐蚀: 无资料

**Serious eye damage/eye irritation:** No applicable data available

呼吸道或皮肤过敏: 无资料

**Respiratory or skin sensitization:** No applicable data available

生殖细胞突变性: 无资料

**Germ cell mutagenicity:** No applicable data available

致癌性: 无资料

**Carcinogenicity:** No applicable data available

生殖毒性: 无资料

**Reproductive toxicity:** No applicable data available

吸入危险: 无资料

**Aspiration hazard:** No applicable data available

其他: 无资料

**Other:** No applicable data available

## 第十二部分 生态学资料

### Section 12 ecological information

生态毒理作用:

#### Ecological toxicity:

	CAS No.	终点 ENDPOINT	测试持续时间 (小时) TEST DURATION(HR)	种类 SPECIES	价值 VALUE
1,1,1,2-四氟乙烷 1,1,1,2-Tetrafluoroethane	811-97-2	LC50	96	鱼	450mg/l
		EC50	48	甲壳纲动物	980mg/L
		EC50	72	藻类或其他 水生植物	>114mg/L



生物降解性: 无资料

**Biodegradability:** No applicable data available

非生物降解性: 无资料

**Non-biodegradability:** No applicable data available

其它有害作用: 无资料

**Other hazards:** No applicable data available

### 第十三部分 废弃处置

#### Section 13 disposal

废弃处置方法: 建议遵照国家和地方法规处置或再利用。

**Waste treatment:** Recycle or dispose of in accordance with government, state & local regulations.

废弃注意事项: 废弃材料不能被当作普通垃圾。最好的办法是回收利用。

**Attention for waste treatment:** Deserted materials couldn't be treated as ordinary trash. Best way is recycling.

### 第十四部分 运输信息

#### Section 14 transport information

联合国 (UN) 规定的名称: UN2857 Refrigerating machines

**UN proper shipping name:** UN2857 Refrigerating machines

DGR	《危险品规则》(DGR) 特殊规定 A26 Special Provision A26 of Dangerous Goods Regulations	DGR 64th
IMDG CODE	《国际海运危险货物规则》(IMDG CODE) 特殊规定 119 Can be shipped International Maritime Dangerous Goods Code under Special Provision 119	IMDG CODE (Amdt 40-20)
ADR	《国际危险货物道路运输欧洲协定》(ADR) 特殊规定 119 European Agreement concerning the International Carriage of Dangerous Goods by Road under Special Provision 119	ADR 2023
RID	《国际危险货物铁路运输欧洲协定》(RID) 特殊规定 119 Regulations concerning the International Carriage of Dangerous Goods by Rail under Special Provision 119	RID 2023



当符合上述规定时，可不被申报为危险品运输

May be shipped without being declared as dangerous goods, when meet to the requirements above.

## 第十五部分 法规信息

### Section 15 regulatory information

**法规信息：**联合国《关于危险货物运输的建议书规章范本》（22版）、国际航空运输协会《危险品规则》（64版）、《国际海运危险货物规则》（IMDG CODE）（40-20版）、《国际危险货物道路运输欧洲协定》（ADR）（2023版）、《国际危险货物铁路运输欧洲协定》（RID）（2023版）

**Regulatory information:** Recommendations on the transport of dangerous goods-model Regulations 22nd, IATA dangerous goods regulations 64th, International Maritime Dangerous Goods Code (40-20), European Agreement concerning the International Carriage of Dangerous Goods by Road (2023), Regulations concerning the International Carriage of Dangerous Goods by Rail (2023)

## 第十六部分 其他信息

### Section 16 other information

**参考文献：**中华人民共和国国家标准（GB/T 16483-2008）化学品安全技术说明书内容和项目顺序、中华人民共和国国家标准（GB/T 17519-2013）化学品安全技术说明书编写指南

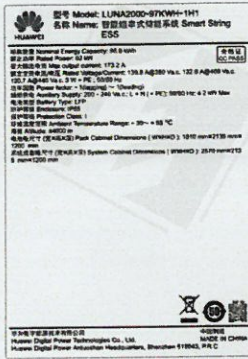
**Reference:** National standard of People's Republic of China.(GB/T 16483-2008) Safety data sheet for chemical products-Content and order of sections, National standard of People's Republic of China.(GB/T 17519-2013) Guidance on the compilation of safety data sheet for chemical products

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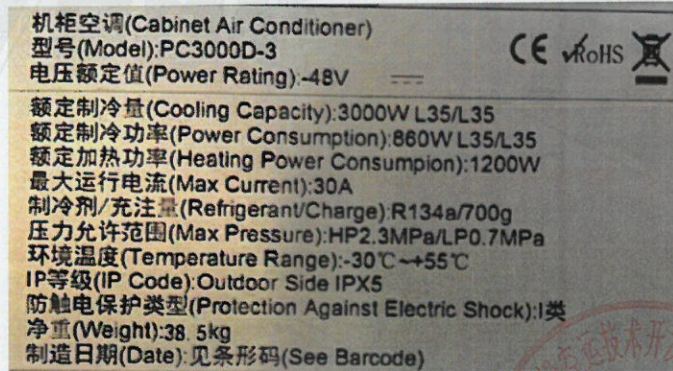
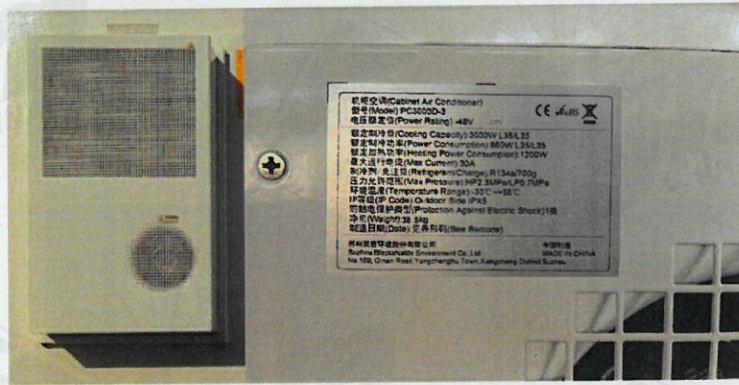
**MSDS creation date:** 2023/06/09 Version: 1.0







型号 Model: LUNA2000-97KWH-1H1  
名称 Name: 智能组串式储能系统 Smart String ESS



样品图片

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