

## SAFETY DATA SHEET

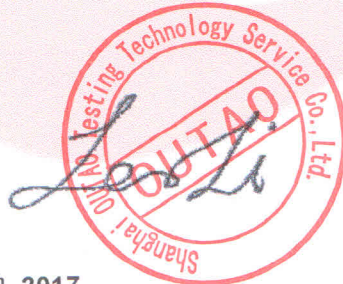
**Product Name** : Li-ion battery Pack, AreaRAE Pro / AreaRAE Plus

**Applicant** : RAE Systems (Shanghai) Inc.

**Address** : No. 990 East Huiwang Road, Jiading District, Shanghai,  
China

Signed by Shanghai Outao Testing Technology Service Co., Ltd

**Written by** :



**Date:** December 18<sup>th</sup>, 2017

Shanghai OUTAO Testing Technology Service Co., Ltd  
Room 10H, Greenland S&T Building, N. 201 Ningxia Road, Shanghai, China  
Tel: +86-21-51078336  
Fax: +86-21-62153262  
E-mail: nick@pct-ce.com  
Web: www.pct-ce.com

**SAFETY DATA SHEET****Section 1 – Chemical Product and Company Identification****1.1 Product identifier**

**Product name** Li-ion battery Pack, AreaRAE Pro / AreaRAE Plus  
**Model** W01-3007-100  
**Product description** Li-ion rechargeable battery

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

**Relevant identified uses** Li-ion rechargeable battery  
**Uses advised against** No data available

**1.3 Details of the supplier of the SDS**

**Company name** RAE Systems (Shanghai) Inc.  
**Address** No. 990 East Huiwang Road, Jiading District, Shanghai, China  
**Contact person** Yang Xiaojing  
**Tel** +86-21-67090791  
**Email** Xiaojing.Yang@Honeywell.com

**1.4 Emergency telephone number**

Call the emergency number (24 hours): +86-21-67090791

**Section 2 – Hazards Identification****2.1 Classification of the substance or mixture****Classification acc. to Regulation (EC) No 1272/2008/EC (CLP/GHS)**

Product definition: Mixture

The product is not classified as hazardous according to Regulation (EC) 1272/2008 as amended.

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

**2.2 Label Elements Symbol(s)****Signal Words**

No signal word

**Hazard Statement****PHYSICAL HAZARDS:**

Not classified as a physical hazard under CLP/GHS criteria.

**HEALTH HAZARDS:**

Not classified as an health hazard under CLP/GHS criteria.

**ENVIRONMENTAL HAZARDS:**

Not classified as an environmental hazard under CLP/GHS criteria.

**GHS Precautionary Statements****Prevention**

Not applicable.

**Response**

Not applicable.

**Storage**

Not applicable.

**Disposal**

Not applicable.

**2.3 Other hazard**

Do not short circuit, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion. The rechargeable lithium-ion batteries described in this Product Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer.

Under normal conditions of use, the electrode materials and liquid electrolyte they contain are not exposed to the outside, provided the



battery integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery container. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/explosion/fire may follow, depending upon the circumstances.

In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns to skin and eyes.

### Section 3 – Composition/Information on Ingredient

#### 3.1 Mixture information

Ingredient name	CAS No.	EINECS	Weight %	REACH No.	Classification
Battery cell	Not assigned	Not assigned	63%	Not available.	No classification
Circuit board	Not assigned	Not assigned	4%	Not available.	No classification
Battery pack enclosure	Not assigned	Not assigned	32%	Not available.	No classification
Accessories	Not assigned	Not assigned	1%	Not available.	No classification

#### 3.2 Substance information

Not applicable

### Section 4 – First Aid Measures

#### 4.1 Description of first aid measures

<b>Inhalation</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
<b>Skin contact</b>	Remove/Take off immediately all contaminated clothing. Gently wash with plenty of soap and water. If skin irritation or burn occurs: Get medical advice/attention.
<b>Eye contact</b>	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.
<b>Ingestion</b>	Get medical advice/attention. Rinse mouth.

#### 4.2 Most important symptoms and effects, both acute and delayed

##### Potential acute health effects

<b>Inhalation</b>	No known significant effects or critical hazards.
<b>Skin contact</b>	No known significant effects or critical hazards.
<b>Eye contact</b>	No known significant effects or critical hazards.
<b>Ingestion</b>	No known significant effects or critical hazards.

##### Potential acute health effects

<b>Inhalation</b>	No known significant effects or critical hazards.
<b>Skin contact</b>	No known significant effects or critical hazards.
<b>Eye contact</b>	No known significant effects or critical hazards.
<b>Ingestion</b>	No known significant effects or critical hazards.

#### 4.3 Indication of the immediate medical attention and special treatment needed

<b>Notes to physician</b>	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
<b>Specific treatments</b>	No specific treatment

### Section 5 – Fire Fighting Measures



### 5.1 Extinguishing media

#### Suitable extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

#### Unsuitable extinguishing media

No data available

### 5.2 Special hazards arising from the substance or mixture

Lithium ion batteries contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures ( $> 150\text{ }^{\circ}\text{C}$ ), when damaged or abused (e.g., mechanical damage or electrical overcharge). Burning cells can ignite other batteries in close proximity.

### 5.3 Hazardous thermal decomposition products

Carbon monoxide, carbon dioxide, lithium oxides, hydrogen fluoride.

### 5.4 Advice for fire-fighters

Fire-extinguishing work is done from the windward and the suitable fire-extinguishing method according to the surrounding situation is used. Uninvolved persons should evacuate to a safe place. In case of fire in the surroundings: Keep containers cool by spraying with water. Eliminate all ignition sources if safe to do so. When extinguishing fire, be sure to wear personal protective equipment.

## Section 6 – Accidental Release Measures

### 6.1 Personal precautions, protective equipment and emergency procedures:

As an immediate precautionary measure, isolate spill or leak area for at least 25 meters in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed areas before entering.

Wear adequate personal protective equipment as indicated in Section 8.

### 6.2 Environmental precautions

Prevent material from contaminating soil and from entering sewers or waterways.

### 6.3 Methods and materials for containment and cleaning up

Stop the leak if safe to do so.

Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.

### 6.4 Reference to other sections

See Section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

## Section 7 – Handling and Storage

### 7.1 Precautions for safe handling

Do not open, disassemble, crush or burn battery. Do not expose cell to temperatures outside the range of  $-20\text{ }^{\circ}\text{C}$  to  $55\text{ }^{\circ}\text{C}$ .

### 7.2 Conditions for safe storage, including any incompatibilities

Store battery in a dry location. To minimize any adverse effects on battery performance it is recommended that the batteries be kept at room temperature ( $35\text{ }^{\circ}\text{C} \pm 20\text{ }^{\circ}\text{C}$ ). Elevated temperatures can result in shortened cell life. Keep out of reach of children.

### 7.3 Specific end use(s)

Not available.

## Section 8 – Exposure Controls, Personal Protection



### 8.1 Control parameters

**Occupational exposure limits values:** No data available

### 8.2 Exposure controls

#### Appropriate engineering controls:

Airborne exposures to hazardous substances are not expected when product is used for its intended purpose.

Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fume and vapor.

#### Personal protective equipment

<b>Respiratory protection</b>	Not necessary under normal conditions. Wear self-contained breathing apparatus (SCBA) if handling an open or leaking battery.
<b>Hand protection</b>	Not necessary under normal conditions. Wear neoprene or natural rubber gloves if handling an open or leaking battery.
<b>Eye / Face protection</b>	Not necessary under normal conditions. Wear safety glasses if handling an open or leaking battery.
<b>Skin and body protection:</b>	Not necessary under normal conditions. Wear protective clothing and boots if handling an open or leaking battery.

#### Environmental exposure controls:

Should not be released into the environment.

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

## Section 9 – Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

<b>Physical appearance(20°C)</b>	Black solid
<b>Odor</b>	Odorless
<b>Odor threshold</b>	No data available
<b>pH</b>	No data available
<b>Melting point/range</b>	No data available
<b>Boiling point/range</b>	No data available
<b>Flash Point</b>	No data available
<b>Explosion Limits</b>	
Lower	No data available
Upper	No data available
<b>Ignition Temperature</b>	No data available
<b>Vapour Pressure</b>	No data available
<b>Vapour Density</b>	No data available
<b>Density</b>	No data available
<b>Solubility</b>	insoluble in water

### 9.2 Other information

Other physical-chemical data were not identified

## Section 10 – Stability and Reactivity

### 10.1 Reactivity

No special reactivity has been reported.

### 10.2 Chemical Stability

This product is stable under normal conditions.

### 10.3 Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

### 10.4 Conditions to avoid

Avoid exposing the battery to fire or temperatures above 80°C. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse.

Shanghai OUTAO Testing Technology Service Co., Ltd  
 Room 10H, Greenland S&T Building, N. 201 Ningxia Road, Shanghai, China  
 Tel: +86-21-51078336  
 Fax: +86-21-62153262  
 E-mail: nick@pct-ce.com  
 Web: www.pct-ce.com



**10.5 Incompatible materials**

Do not immerse in seawater or other high conductivity liquids, strong oxidizers.

**10.6 Hazardous decomposition products**

This material may release toxic fumes if burned or exposed to fire. Breaching of the battery enclosure may lead to generation of hazardous fumes which may include extremely hazardous HF (hydrofluoric acid).

**Section 11 – Toxicological Information****11.1 Toxicokinetics, metabolism and distribution**

No data available

**11.2 Information on toxicological effects**

**Acute toxicity** No data available

**Skin corrosion/irritation** No data available

**Serious eye** No data available

**damage/irritation**

**Respiratory or skin** No data available

**sensitization**

**Germ cell mutagenicity**

This product is not reported to have any mutagenic effects.

**CMR effects (Carcinogenicity, Mutagenicity and Toxicity for Reproduction)**

This product is not reported to have any carcinogenic effects.

**STOT-single exposure and repeated exposure**

This product is not reported to have any specific target organ repeat effects.

**Aspiration Hazard**

This product is not reported to have any aspiration hazard effects.

**Section 12 – Ecological Information**

**12.1 Ecotoxicity** No data available

**12.2 Persistence/ degradability** No data available

**12.3 Bioaccumulative potential** No data available

**(BCF)**

**12.4 Mobility in soil** No data available

**12.5 Result of PBT and vPvB** No data available

**assessment**

**12.6 Other adverse effects** No data available

**Section 13 – Disposal Considerations****13.1 Material Disposal**

Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.

**13.2 Container Disposal**

Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

**13.3 Local Legislation**

Disposal should be in accordance with applicable regional, national, and local laws and regulations.  
Hazard waste.



## Section 14 – Transport Information

lithium-ion batteries are designed to comply with all applicable shipping regulations as prescribed by industry and legal standards which includes compliance with the UN Recommendations on the Transport of Dangerous Goods; IATA Dangerous Goods Regulations and applicable U.S. DOT regulations for the safe transport of lithium-ion batteries and the International Maritime Dangerous Goods Code. Each of the listed cells in Section 1 have passed the UN Manual of Tests and Criteria Part III Subsection 38.3, which is required by all of the directives listed above.

In the US, shipments of lithium ion batteries are classified as Class 9, UN3480, Packing Group II, by the U.S. Hazardous Materials Regulations (HMR). Packaging, markings and documentation requirements are defined in Title 49 of the Code of Federal Regulations (CFR), Section 173.185. of the U.S. HMR. Excepted cells and batteries are allowed to be transported within the US without Class 9 packaging and markings, but must conform to other requirements as stipulated in Special Provisions 188 and 189 in the 49 CFR Section 173.185 of the U.S. HMR.

International shipments of lithium ion cells and batteries are generally classified as Class 9, UN3480, Packing Group II, by the International Civil Aviation Organization (ICAO) and the International Maritime Dangerous Goods (IMDG) Code. Packaging, markings and documentation requirements are defined in the International Air Transport Association (IATA) Dangerous Goods Regulations (DGR) Packing Instructions 965 and Packing Instruction P903 of the IMDG Code.

Excepted cells and batteries are allowed to be transported internationally without Class 9 packaging and markings, but must conform to other requirements as stipulated in Packing Instructions 965 of the IATA DGR and Special Provision 188 under the IMDG Code.

## Section 15 – Regulatory Information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

<b>USA</b>	All ingredients in the product are listed on the TSCA inventory.
<b>EC Classification for the Substance/Preparation</b>	This product is not classified as hazardous according to Regulation (EC) No. 1272/2008. Keep out of the reach of children.

#### European/International Regulations

##### European Labeling in Accordance with EC Directives

**Hazard Symbols:** Xi, N

##### Risk Phrases

R 20/22	Harmful by inhalation and if swallowed
R 52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

##### Safety Phrases

S 16	Keep away from sources of ignition - No smoking.
S 24/25	Avoid contact with skin and eyes
S 60	This material and/or its container must be disposed of as hazardous waste
S 61	Avoid release to the environment. Refer to special instructions / Safety data sheets

### 15.2 Chemical Safety Assessment

The mixture has undergone any safety assessment.

**For details regulations you should contact the appropriate agency in your country.**

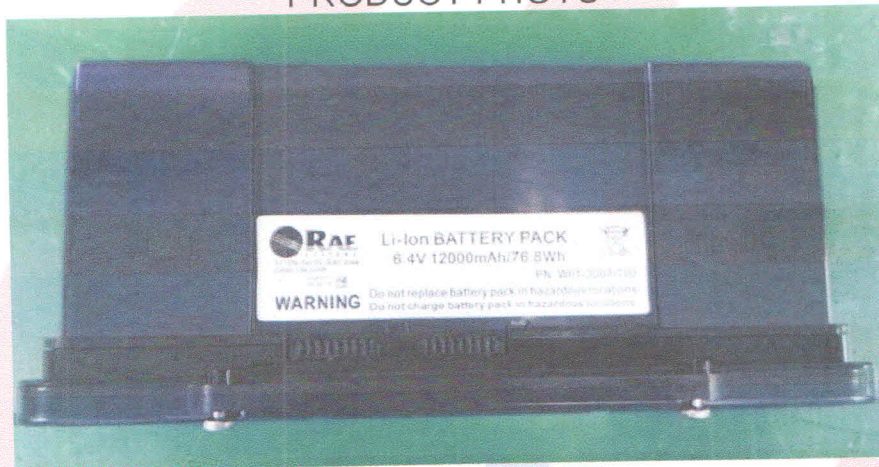
## Section 16 – Additional Information

Shanghai OUTAO Testing Technology Service Co., Ltd  
 Room 10H, Greenland S&T Building, N. 201 Ningxia Road, Shanghai, China  
 Tel: +86-21-51078336  
 Fax: +86-21-62153262  
 E-mail: nick@pct-ce.com  
 Web: www.pct-ce.com



SDS Creation Date: December 18<sup>th</sup>, 2017

This SDS was prepared sincerely on the basis of the information we could obtained, however, any warranty shall not be given regarding the data contained and the assessment of hazards and toxicity. Prior to use, please investigate not only the hazards and toxicity information but also the laws and regulations of the organization, area and country where the products are to be used, which shall be given the first priority. Products are supposed to be used promptly after purchase in consideration of safety. Some new information or amendments may be added afterwards. If the products are to be used far behind the expected time of use or you have any questions, please feel free to contact us. The stated cautions are for normal handling only. In case of special handling, sufficient care should be taken, in addition to the safety measures suitable for the situation. All chemical products should be treated with the recognition of "having unknown hazards and toxicity", which differ greatly depending on the conditions and handling when in use and/or the conditions and duration of storage. The products must be handled only by those who are familiar with specialized knowledge and have experience or under the guidance of those specialists throughout use from opening to storage and disposal. Safe usage conditions shall be set up on each user's own responsibility.

**PRODUCT PHOTO****END OF REPORT**