

Section 1: Identification

Product name: Battery pack (Li-ion) for cNODE Micro, part number 426688

The battery is included in the following model:

- cNODE Micro 31–180, part number 424770

Manufacturer: Kongsberg Maritime AS

Address: Strandpromenaden 50, 3190 Horten, Norway

Telephone, 24 h support: +47 33 03 24 07

Website: <http://www.km.kongsberg.com>

Support website: http://www.km.kongsberg.com/support_hpr

E-mail: km.support.hpr@kongsberg.com

Section 2: Hazards identification

The battery is not provided with any hazards identification. It is not classified as dangerous or hazardous with normal use. The battery should not be opened or burned. The battery contains dangerous ingredients. Exposure to the ingredients contained within the battery cells could be harmful. There is no expected release during use of the battery pack. The battery cells includes a barrier preventing exposure to the user and the environment. The battery cells are not classified as hazardous according to Regulation (EC) No.1272/2008.

The chemicals in the battery cells are contained in a sealed enclosure. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur

by inhalation, ingestion, eye contact and skin contact. The electrolyte solution would be corrosive and can cause irritation and burns.

Other hazards:

- **Over charge** – If the cells that form the battery are overcharged, the results may be thermal runaway.
- **External fire** – Internal pressure and thermal runaway may be the consequence if the cells inside the battery are exposed to temperatures above 85°C.
- **Internal short circuit** – Internal short circuit in a cell. Destruction of the separator can cause a short circuit between the node and cathode. Thermal runaway and fire is possible.
- **Water ingress** – Internal pressure, thermal runaway and chemical reactions may be the consequence.

The transponder has a pressure relief valve at the bottom of the unit. The relief valve prevents overpressure. Noxious gases and ingredients will then leak out of the transponder until the chemical reactions have stopped.

Section 3: Composition

- **Battery chemistry:** The battery consist of Li-Ion cells with chemistry Lithium iron phosphate – LiFePO₄
- **Cell manufacturer:** A123 Systems
- **Cell size:** 18650
- **Battery configuration:** 4S1P
- **Nominal capacity:** 1100 mAh/14.52 Wh
- **Equivalent Lithium content:** 1.33 g

- **Certification:** UN 38.3

Note _____

For additional information about these cells, see the safety data sheet provided by the cell manufacturer.

Section 4: First aid measures

The battery will release toxic fumes if burned or exposed to fire. If subjected to gas from a burning transponder or battery, remove source of contamination or move victim to fresh air. In all cases, seek immediate medical attention.

Inhalation:	Remove from exposure, rest and keep warm.
Skin contact:	Wash off skin thoroughly with water and soap for at least 15 minutes. Remove contaminated clothing and wash it before reuse.
Eye contact:	Irrigate thoroughly with water for at least 15 minutes.
Ingestion:	Wash out mouth thoroughly with water and give plenty of water to drink.

Section 5: Firefighting measures

The transponder in which the battery pack is used is designed with an overpressure vent to the internal battery pack. Nonflammable material are used. In case of fire, move transponder from fire area if you can do it without risk. Extreme mechanical, thermal or electrical abuse to the transponder may result in ruptured seal, and expose the battery. The individual cells in the

battery pack contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (> 150 °C (302 °F)), when damaged or abused. A burning battery can ignite other batteries in close proximity. Suitable extinguishing media are dry chemical, CO₂, water spray or regular foam. Cool down the battery/transponder with copious amounts of cold water.

The interaction with water or water vapor and exposed lithium hexafluorophosphate (Li PF₆) may result in the generation of hydrogen and hydrogen fluoride (HF) gas. Contact with battery electrolyte may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. Fumes may cause dizziness or suffocation. Wear positive pressure self-contained breathing apparatus (SCBA).

Section 6: Accidental release measures

During normal operation, accidental release measures are not applicable. Extreme mechanical, thermal or electrical abuse to the transponder in which the battery is used may result in ruptured seal and exposure. As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed areas before entering. Wear adequate personal protective equipment. Prevent material from contaminating soil and from entering sewers or waterways. Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately. 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 relevant regulations. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.

Section 7: Handling and storage

Do not open, disassemble, crush or burn the battery. Do not expose the battery to temperatures outside the range of -30°C to 70°C. Store the battery in a dry location. To minimize any adverse effects on battery performance it is recommended that it is kept at room temperature (25°C +/- 5°C). Elevated temperatures can result in shortened life.

For long term storage the transponders should be fully charged and recharged every 6 months. If transponders are left to deplete completely, it might be impossible to charge them again.

Section 8: Exposure control and personal protection

Airborne exposures to hazardous substances are not expected when the battery is used for its intended purpose. No protection (respirator, skin and/or eye) are then required. If the battery is damaged, and you are exposed to the chemicals inside it, proper personal protection is required.

Personal protective equipment for damaged battery should include chemical resistant gloves and safety glasses. Use positive pressure self-contained breathing apparatus (SCBA) if batteries or transponders are involved in a fire.

Section 9: Physical and chemical properties

The battery is solid with a firm and hard appearance. No chemicals are exposed during normal use and transportation. For more information about the individual battery cells, observe the manufacturer's safety data sheet.

Section 10: Stability and reactivity

The battery is stable. No specific handling requirements apply. Avoid exposing the battery to fire or temperatures above 80°C. Do not disassemble, crush, short or install the battery

with incorrect polarity. Avoid mechanical or electrical abuse. Do not immerse in seawater or other high conductivity liquids. The battery may release toxic fumes if burned or exposed to fire. Breaching of the individual cell enclosure may lead to generation of hazardous fumes which may include extremely hazardous HF (hydrofluoric acid).

Section 11: Toxicological information

Acute oral, dermal and inhalation toxicity data are not available for this battery. Risk of irritation occurs only if the battery is abused to the point of breaking the container and opening it to reveal the individual cells. Risk of irritation occurs only if an individual cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.

Section 12: Ecological information

Provided that the battery pack is disposed of according to local regulations and/or law, it will not have any environmental impact.

Section 13: Disposal considerations

Dispose of in accordance with local, state and federal laws and regulations for batteries.

Section 14: Transport information

Required battery state for transportation is 30% or less remaining capacity to comply with regulations.

- Shipment of transponder

Each transponder unit is transported as a closed and sealed unit, and shall not be opened by unauthorized personnel. As a single unit containing a battery with less than 100 Wh capacity, the transportation is made according to

ICAO/IATA packing instructions 967 Section II; Cells or batteries installed in equipment.

The cNODE Micro transponder unit must be shipped in accordance with the prevailing national regulations; **UN No. 3481**, Miscellaneous (*Lithium Ion batteries included in equipment*).

- Shipment of separate battery

Separate transponder batteries conform to **ICAO/IATA packing instructions 965 Section II; Cells or battery in a package, without electronic equipment**. If the battery is shipped separately, the following prevailing national regulations apply: **UN No. 3480**, Miscellaneous (*Lithium Ion battery*).

For all shipments – transponder and separate batteries – use lithium battery handling label as specified in the additional requirements of Section II of packing instructions 965, 966 and 967.

Transport identification codes:

- **Aircraft:** IATA DGR

- **Sea transport:** IMDG codes
- **Railway:** RID
- **Road transport:** ADR

Note _____

Damaged transponders returned to the manufacturer for repair shall be transported without batteries. Damages or spent batteries that have been recalled by the manufacturer for safety reasons shall not be transported by air.

Section 15: Regulatory information

Not applicable.

Section 16: Other information

The battery cell manufacturer's safety data sheet is available on the following internet address:

- **A123 Systems:** www.a123systems.com