

## P/N: 72003-0404

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### Website

<http://www.flir.com>

### Customer support

<http://support.flir.com>

### Disclaimer

Specifications subject to change without further notice. Camera models and accessories subject to regional market considerations. License procedures may apply. Products described herein may be subject to US Export Regulations. Please refer to [exportquestions@flir.com](mailto:exportquestions@flir.com) with any questions.



### NOTE

Only educational institutions are eligible for purchasing this product.

### Imaging and optical data

NETD	100 mK
Field of view	41° × 31°
Minimum focus distance	<ul style="list-style-type: none"> <li>Thermal: 0.15 m (0.49 ft.)</li> <li>MSX: 1.0 m (3.3 ft.)</li> </ul>
Focal length	1.54 mm (0.061 in.)
Spatial resolution (IFOV)	11 mrad
F-number	1.1
Image frequency	9 Hz
Focus	Focus free

### Detector data

Focal Plane Array	Uncooled microbolometer
Spectral range	7.5–14 μm
Detector pitch	17 μm
IR sensor size	80 × 60

### Image presentation

Display (color)	<ul style="list-style-type: none"> <li>3.0 in.</li> <li>320 × 240 pixels</li> </ul>
Display, aspect ratio	4:3
Auto orientation	Yes
Touch screen	Yes, capacitive
Image adjustment (alignment calibration)	Yes

### Image presentation modes

Infrared image	Yes
Visual image	Yes
MSX	Yes
Gallery	Yes
Picture in Picture	IR area on visual image



## FLIR C3 (incl. Wi-Fi) Educational Kit

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Measurement		
Camera temperature range	Object temperature range	Accuracy — for ambient temperature +25°C (+77°F) nominal.
-10 to +150°C (+14 to +302°F)	-10 to +100°C (+14 to +212°F)	±2°C (±3.6°F)
	+100 to +150°C (+212 to +302°F)	±2%

Measurement analysis	
Spotmeter	On/off
Area	Box with max./min.
Emissivity correction	Yes; matt/semi-matt/semi-glossy + custom value
Measurements correction	<ul style="list-style-type: none"><li>Emissivity</li><li>Reflected apparent temperature</li></ul>

Set-up	
Color palettes	<ul style="list-style-type: none"><li>Iron</li><li>Rainbow</li><li>Rainbow HC</li><li>Gray</li></ul>
Set-up commands	Local adaptation of units, language, date and time formats
Languages	Arabic, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Simpl. Chinese, Spanish, Swedish, Trad. Chinese, Turkish.

Lamp	
Output power	0.85 W
Field of view	60°

Service functions	
Camera software update	Using FLIR Tools

Storage of images	
Storage media	Internal memory store at least 500 sets of images
Image file format	<ul style="list-style-type: none"><li>Standard JPEG</li><li>14-bit measurement data included</li></ul>

Video streaming	
Non-radiometric IR video streaming	Yes
Visual video streaming	Yes

Digital camera	
Digital camera	640 × 480 pixels
Digital camera, focus	Fixed focus

Data communication interfaces	
Wi-Fi	Peer-to-peer (ad hoc) or infrastructure (network)
USB, connector type	USB Micro-B: Data transfer to and from PC
USB, standard	USB 2.0



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Radio	
Wi-Fi	<ul style="list-style-type: none"><li>• Standard: 802.11 b/g/n</li><li>• Frequency range:<ul style="list-style-type: none"><li>◦ 2400–2480 MHz</li><li>◦ 5150–5260 MHz</li></ul></li><li>• Max. output power: 15 dBm</li></ul>
Power system	
Battery type	Rechargeable Li-ion polymer battery
Battery voltage	3.7 V
Battery operating time	2 h
Charging system	Charged inside the camera
Charging time	1.5 h
External power operation	<ul style="list-style-type: none"><li>• AC adapter, 90–260 VAC input</li><li>• 5 V output to camera</li></ul>
Power management	Automatic shut-down
Environmental data	
Operating temperature range	–10°C to +50°C (14 to 122°F)
Storage temperature range	–40°C to +70°C (–40 to 158°F)
Humidity (operating and storage)	IEC 60068-2-30/24 h 95% relative humidity +25°C to +40°C (+77°F to +104°F) / 2 cycles
Relative humidity	95% relative humidity +25°C to +40°C (+77°F to +104°F) non condensing
EMC	<ul style="list-style-type: none"><li>• WEEE 2012/19/EC</li><li>• RoHS 2011/65/EC</li><li>• C-Tick</li><li>• EN 61000-6-3</li><li>• EN 61000-6-2</li><li>• FCC 47 CFR Part 15 Class B</li></ul>
Radio spectrum	<ul style="list-style-type: none"><li>• ETSI EN 300 328</li><li>• FCC 47 CSR Part 15</li><li>• RSS-247 Issue 2</li></ul>
Magnetic fields	EN 61000-4-8
Battery regulations	UL 1642
Encapsulation	Camera housing and lens: IP 40 (IEC 60529)
Shock	25 g (IEC 60068-2-27)
Vibration	2 g (IEC 60068-2-6)
Drop	2 m (6.6 ft.)
Physical data	
Weight (incl. Battery)	0.13 kg (0.29 lb.)
Size (L × W × H)	125 × 80 × 24 mm (4.9 × 3.1 × 0.94 in.)
Tripod mounting	No
Housing material	<ul style="list-style-type: none"><li>• PC and ABS, partially covered with TPE</li><li>• Aluminum</li></ul>
Color	Black and gray



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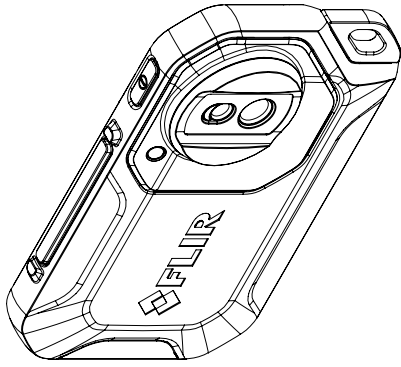
#72003-0404; r. 53317;

Shipping information	
Packaging, type	Cardboard box
List of contents	<ul style="list-style-type: none"><li>• FLIR C3 educational kit card with download links for FLIR Tools+, FLIR ResearchIR Standard (incl. printed license key), and educational resources.</li><li>• Infrared camera</li><li>• Lanyard</li><li>• Pouch</li><li>• Power supply/charger with EU, UK, US, CN and Australian plugs</li><li>• Printed documentation</li><li>• Tripod mount</li><li>• USB cable</li></ul>
Packaging, weight	TBD
Packaging, size	175 × 110 × 105 mm (6.9 × 4.3 × 4.1 in.)
EAN-13	4743254002852
UPC-12	845188014100
Country of origin	Estonia

### Supplies & accessories:

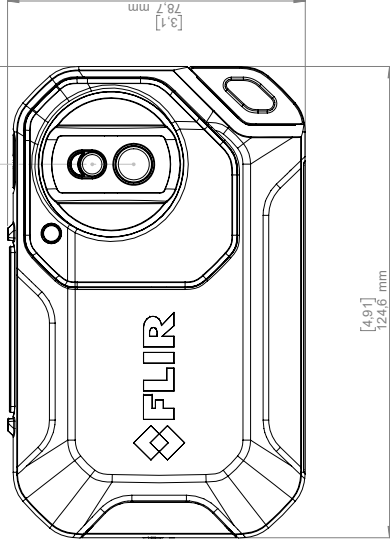
- T198532; Car charger
- T198534; Power supply USB-micro
- T198533; USB cable Std A <-> Micro B
- T199564; Tripod adapter
- T130129ACC; Pouch
- T198584; FLIR Tools
- T198583; FLIR Tools+ (download card incl. license key)
- T199233; FLIR Atlas SDK for .NET
- T199234; FLIR Atlas SDK for MATLAB
- INST-EW-0100; Extended Warranty 1 Year for C2, C3
- INST-EWGM-0100; Premium Service Package for C2, C3
- INST-GM-0100; General Maintenance Package for C2, C3

Camera with build-in IR lens f=1,54mm



Optical axis

[1,02]  
25,9 mm

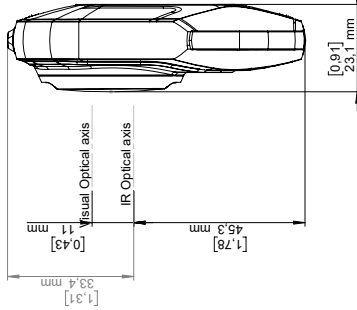


[4,91]  
124,6 mm

[3,1]  
76,7 mm

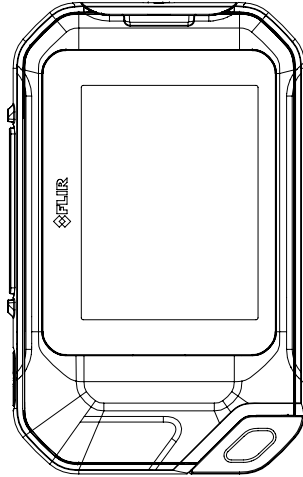
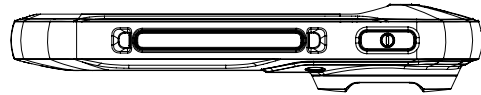


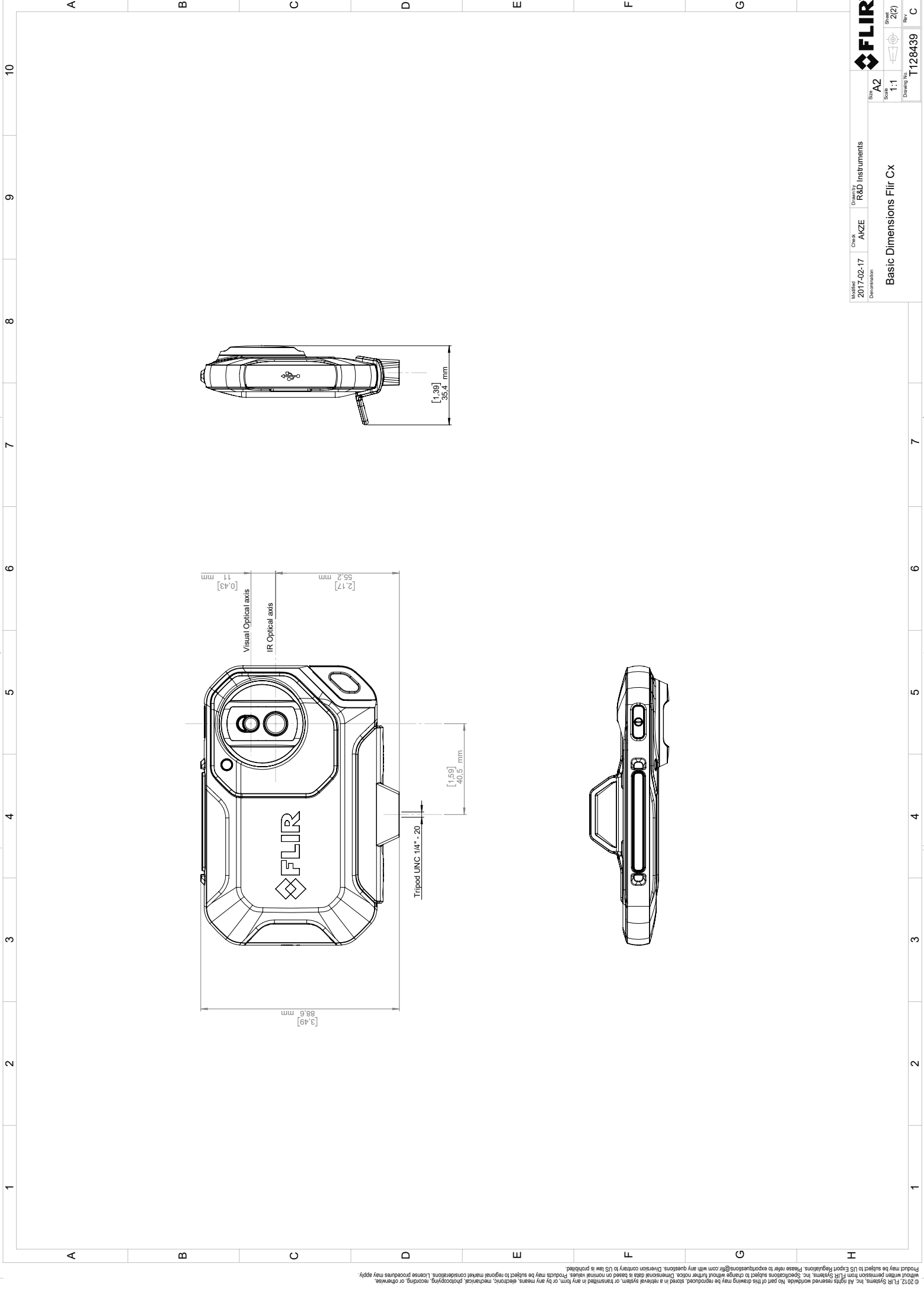
[0,58]  
14,8 mm



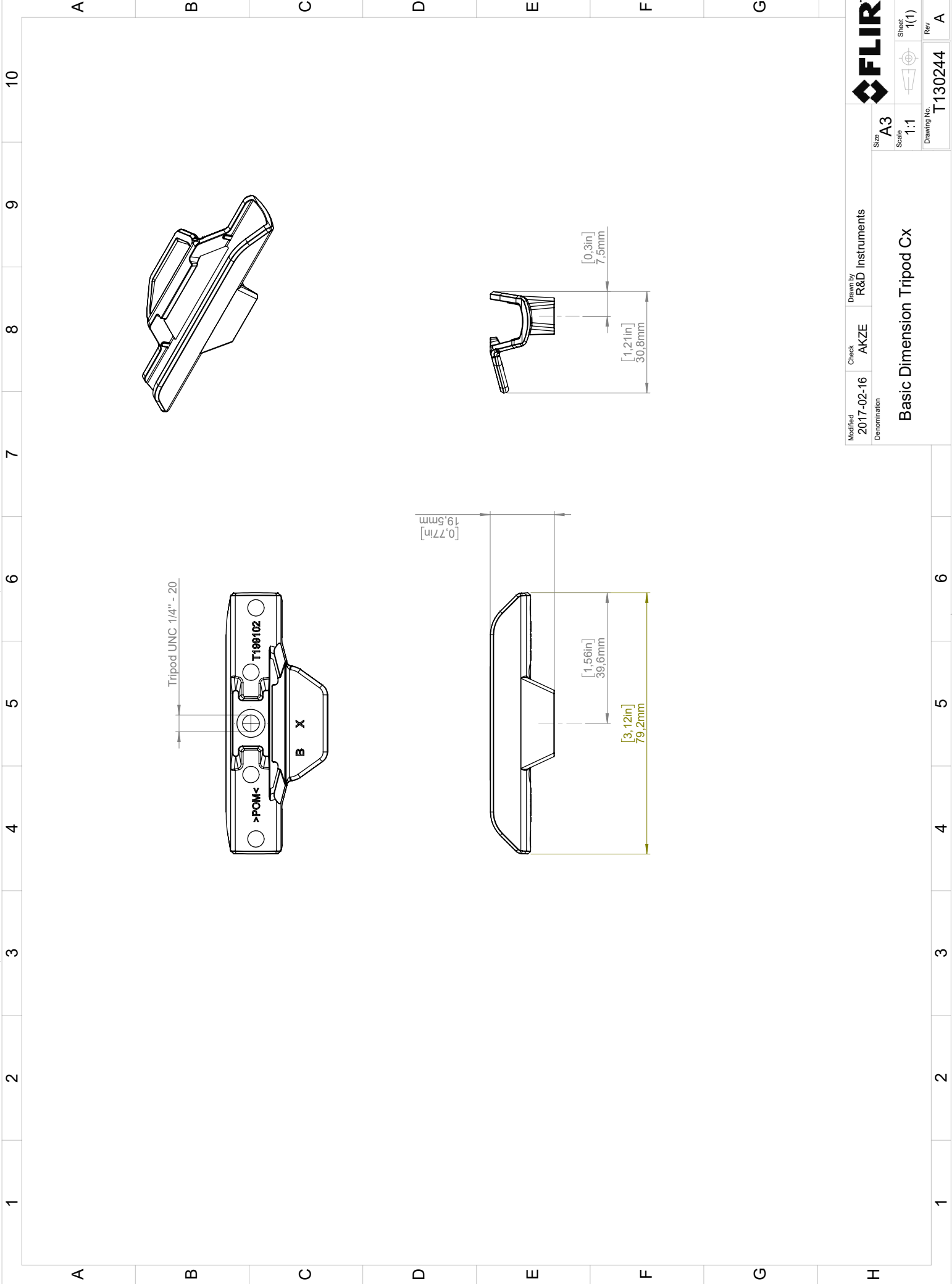
Visual Optical axis

IR Optical axis





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Modified 2017-02-16 Denomination	Check AKZE	Drawn by R&D Instruments	FLIR	
Basic Dimension Tripod Cx			Size A3	Sheet 1(1)
			Scale 1:1	Rev A
			Drawing No. T130244	



The World's Sixth Sense™

October 31, 2018 Täby, Sweden

AQ320279

## CE Declaration of Conformity – EU Declaration of Conformity

Product: FLIR C3-series

Name and address of the manufacturer:

FLIR Systems AB

PO Box 7376

SE-187 15 Täby, Sweden

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The object of the declaration: FLIR C3 -series (Product Model Name FLIR-C7200)

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

### Directives:

Directive	2012/19/EU	Waste electrical and electric equipment
Directive:	2011/65/EU	RoHS
Directive	2014/53/EU	Radio Equipment Directive (RED)

### Standards:

EMC:	ETSI EN 301 489-1 v1.9.2	EMC and ERM Common Reqs
	ETSI EN 301 489-17 v2.2.1	Broadband data transmission systems
Restricted substances (RoHS):	EN 50581:2012	Technical documentation
Radio:	ETSI EN 300 328 v2.1.1	Harmonized EN covering essential OK
	ETSI EN 301 893 v1.8.1	requirements of the RED/R&TTEE OK
SAR:	IEEE 1528-2013 2013-06	Peak Spatial-Average Absorption rates
	RSS-102 Iss 5	Compliance radio communication OK

**FLIR Systems AB**

Quality Assurance

Lea Dabiri

Quality Manager





# **MATERIAL SAFETY DATA SHEET**

## **Lithium-ion Polymer Cell**

**Model: Lithium-ion Polymer Cell**

<b>Prepared by</b>	<b>Approved by</b>
Guanzhongpei	Zhangwangmei
Date: Jan 1,2015	Date: Jan 1,2015



## Material Safety Data Sheet

### Section 1-Chemical Product and Company Identification

#### Product Identification

**SP Lithium-Ion Polymer battery**

Norminal Voltage : 3.7 V  
Equivalent Lithium content :  $\leq 20$  Wh  
Testing Period : Dec 29,2014 To Dec 31,2014

#### Manufacturer

SPRINGPOWER TECHNOLOGY SHENZHEN CO.,LTD  
Chaoshun Industrial Zone, Renmin Road, Fumin, Guanlan, Baoan, Shenzhen, Guangdong, China  
Postcode : 518110  
Telephone : +86-755- 61862699-818  
Fax : +86-755-29522241  
E-mail : zpguan@highpowertech.com

### Section 2-Composition/Information on Ingredients

Chemical Composition	Molecular Formula	Weight%	CAS No	OSHA(PEL)	ACGIH(TLV)
Lithium Cobalt Oxide	LiCoO <sub>2</sub>	35~38%	12190-79-3	N/A	N/A
Graphite powder	C	23~25%	7782-42-5	N/A	N/A
Electrolyte	LiPF <sub>6</sub> C <sub>3</sub> H <sub>4</sub> O <sub>3</sub> C <sub>4</sub> H <sub>6</sub> O <sub>3</sub> C <sub>3</sub> H <sub>10</sub> O <sub>3</sub>	12~15%	21324-40-3	N/A	N/A
Polyethylene	(C <sub>2</sub> H <sub>4</sub> ) n	0.5~1%	9002-88-4	N/A	N/A
Cu	Cu	5~10%	7440-50-8	N/A	N/A
Nickel	Nickel	2~3%	7440-02-0	N/A	N/A
Polyvinylidene fluoride	(CH <sub>2</sub> CF <sub>2</sub> ) n	0.5~2%	24937-79-9	N/A	N/A
Polypropylene	(C <sub>3</sub> H <sub>6</sub> ) n	2~5%	9003-07-0	N/A	N/A
Aluminum foil	Al	7~10%	7429-90-5	N/A	N/A



### Section 3-Hazards Identification

Preparation hazards and classification	Not dangerous with normal use. Do not dismantle, open or shred Li-ion Battery. Exposure to the ingredients contained within or their ingredients products could be harmful.
Appearance, Color, and Odor	Solid object with no odor, no color.
Primary Route(s) of Exposure	These chemicals are contained in a sealed Aluminum soft packaging film 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.
Potential Health Effects:	<p>ACUTE (short term): see Section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.</p> <p>Inhalation: Inhalation of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.</p> <p>Ingestion: Swallowing of materials from a sealed battery is not an expected route of exposure. Swallowing the contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.</p> <p>Skin: Contact between the battery and skin will not cause any harm. Skin contact with contents of an open battery can cause severe irritation or burns to the skin.</p> <p>Eye: Contact between the battery and the eye will not cause any harm. Eye contact with contents of an open battery can cause severe irritation or burns to the eye.</p> <p>CHRONIC (long term): see Section 11 for additional toxicological data</p>
Medical Conditions Aggravated by Exposure	Not applicable
Reported as carcinogen	Not applicable

### Section 4-First-aid Measures

Inhalation	If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice.
Skin contact	If skin contact with contents of an open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention.



	Completely decontaminate clothing, shoes and leather goods before reuse or discard.
Eye contact	If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.
Ingestion	If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2-8 oz.) of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

### Section 5-Fire Fighting Measures

Flammable Properties	In the event that this battery has been ruptured, the electrolyte solution contain within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials.
Suitable extinguishing Media	Use extinguishing media suitable for the materials that are burning.
Unsuitable extinguishing Media	Not available
Explosion Data	Sensitivity to Mechanical Impact: This may result in rupture in extreme cases Sensitivity to Static Discharge: Not Applicable
Specific Hazards arising from the chemical	Fires involving Li-ion Battery can be controlled with water. When water is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended to extinguish the fire
Protective Equipment and precautions for firefighters	As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus(SCBA) with full protective gear.
NFPA	Health: 0 Flammability: 0 Instability: 0



## Section 6-Accidental Release Measures

Personal Precautions, protective equipment, and emergency procedures	Restrict access to area until completion of clean-up. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 8.
Environmental Precautions	Prevent material from contaminating soil and from entering sewers or waterways.
Methods and materials for Containment	Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately.
Methods and materials for cleaning up	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.

## Section 7-Handling and Storage

Handling	Don't handling Li-ion Battery with metalwork. Do not open, disassemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace. Prevent formation of dust. Information about protection against explosions and fires: Keep ignition sources away- Do not smoke.
Storage	If the Li-ion Battery are subject to storage for such a long term as more than 3 months, it is recommended to recharge the Li-ion Battery periodically. 3 months: -10 °C ~+40 °C , 45 to 85%RH And recommended at 0°C~+35°C for long period storage. The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more. The voltage for a long time storage shall be 3.7V~4.2V range.



Do not storage Li-ion Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.  
Keep out of reach of children.  
Do not expose Li-ion Battery to heat or fire.  
Avoid storage in direct sunlight.  
Do not store together with oxidizing and acidic materials.

## Section 8-Exposure Controls/Personal Protection

Engineering Controls	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place.
Personal Protective Equipment	Respiratory Protection: Not necessary under normal conditions. Skin and body Protection: Not necessary under normal conditions, Wear neoprene or nitrile rubber gloves if handling an open or leaking battery. Hand protection: Wear neoprene or natural rubber material gloves if handling an open or leaking battery. Eye Protection: Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery.
Other Protective Equipment	Have a safety shower and eye wash fountain readily available in the immediate work area.
Hygiene Measures	Do not eat, drink, or smoke in work area. Maintain good housekeeping.

## Section 9-Physical and Chemical Properties

Physical State	Form: Solid
	Color: White
	Odour: Monotony
Change in condition:	



pH, with indication of the concentration	Not applicable
Melting point/freezing point	Not available.
Boiling Point, initial boiling point and Boiling range:	Not available.
Flash Point	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapor Pressure:	Not applicable
Vapor Density: (Air = 1)	Not applicable
Density/relative desity	Not available.
Solubility in Water:	Insoluble
n-octanol/water partition coefficient	Not available.
Auto-ignition temperature	130°C
Decomposition temperature	Not available.
Odout threshold	Not available.
Evaporation rate	Not available.
Flammability (soil, gas)	Not available.
Viscosity	Not applicable

## Section 10- Stability and Reactivity

Stability	The product is stable under normal conditions.
Conditions to Avoid (e.g. static discharge, shock or vibration)	Do not subject Li-ion Battery to mechanical shock. Vibration encountered during transportation does not cause leakage, fire or explosion. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse.
Incompatible Materials	Not Available
Hazardous Decomposition Products	This material may release toxic fumes if burned or exposed to fire
Possibility of Hazardous Reaction	Not Available



### Section 11-Toxicological Information

Irritation	Risk of irritation occurs only if the 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.
Sensitization	Not Available
Neurological Effects	Not Available
Teratoaenicity	Not Available
Reproductive Toxicity	Not Available
Mutagenicity (Genetic Effects)	Not Available
Toxicologically Synergistic Materials	Not Available

### Section 12-Ecological Information

General note:	Water hazard class 1(Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Anticipated behavior of a chemical product in environment/possible environmental impace/ecotoxicity	Not Available
Mobility in soil	Not Available
Persistence and Degradability	Not Available
Bioaccumulation potential	Not Available
Other Adverse Effects	Not Available

### Section 13-Disposal Considerations

Product disposal recommendation: Observe local, state and federal laws and regulations. Packaging disposal recommendation: Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don't





disassembly the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations.

The potential effects on the environment and human health of the substances used in batteries and accumulations; the desirability of not disposing of waste batteries and accumulators as unsorted municipal waste and of participating in their separate collection so as to facilitate treatment and recycling.

## Section 14-Transport Information

This report applies to by sea, by air and by land;

The Li-ion Battery tested according to the requirements of the 5th revised edition of the UN manual of tests and Criteria, Part III, subsection 38.3;

Lithium ion battery was protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to short circuit;

The LITHIUM ION BATTERY (model: ) according to Section II/IA/IB of PACKING INSTRUCTION 965/ 966 /967 of the 2015 IATA Dangerous Goods regulations 56th Edition may be transported and applicable U.S.DOT regulations for the safe transport of Li-ion Battery.

More information concerning shipping, testing, marking and packaging can be obtained from label master at <http://www.labelmaster.com/>.

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

The package must be handled with care and that a flammability hazard exists if the package is damaged; Each package must be labeled with a Li-ion Battery handling label or in addition to the Class 9 hazard label. With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions.
- The International Air transport Association (IATA) Dangerous Goods Regulations. UN number of lithium battery: UN3480 or UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN Classification (Transport hazard class): Non dangerous;

Marine pollutant (Y/N): N;

- The International Maritime Dangerous Goods (IMDG) Code.

For lithium-ion batteries by sea, provided that packaging is strong and prevent the products from short-circuit. UN number of lithium battery: UN3480 or UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN Classification (Transport hazard class): Non dangerous; Marine pollutant (Y/N): Y;

Special Provision: International maritime dangerous goods code (IMDG) 188, 230, 310, 348, 957;

- The US Hazardous Materials Regulation (HMR) pursuant to a final rule issued by RSPA
- The Office of Hazardous Materials Safety within the US Department of Transportations' (DOT) Research and



## Section 15-Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)

\_\_\_\_\_ Hazardous

\_\_\_\_\_ **V** \_\_\_\_\_ Non-hazardous

## Section 16-Other Information

The information above is believed to be accurate and represents the best information currently available to us. However, Springpower makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration of investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export controlled information.