IR Boroscope

P/N: VS290-32

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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 with any questions.



General description	
The FLIR VS290-32 is the first industrial-grade Thermal MSX® Videoscope. The patented FLIR MSX (Multi-Spectral Dynamic Imaging) enhancement improves image clarity by embossing visual scene details on full thermal images, providing added context to help you accurately target potential issues in electrical, mechanical or building applications. The 2 m replaceable camera probe with flex points and low profile tip allows you to inspect hard to reach areas and take corrective action. The bright LED worklight helps navigate dark environments like attics, crawlspaces, underground utilities, etc. The FLIR VS290-32 is a rugged and versatile tool for the most demanding inspection jobs.	

Key features:

- Identify and troubleshoot problems faster with the 160 × 120 true thermal imager and 2 MP visual camera.
- Includes 2 m replaceable camera probe with flex points for maneuverability.
- Use color alarms (Isotherms) to quickly identify areas of concern.
- Transfer images and video via USB Cable or wirelessly via Wi-Fi.
- IP Rated (IP67 camera tip, IP54 base unit and probe) provides a high level of protection against dust and water.
- CAT IV 600 V rated for electrical inspections.

Imaging and optical data	
IR resolution	160 × 120 pixels
Digital image enhancement	Yes
Thermal sensitivity/NETD	<100 mK
Field of view (FOV)	57° × 44°
Minimum focus distance	0.15 m
Minimum focus distance with MSX	0.65 m
Image frequency	8.7 Hz
Focus	Fixed

Detector data	
Focal plane array/spectral range	Uncooled microbolometer/7.5–14 µm
Detector pitch	12 µm

Image presentation	
Display resolution	320 × 240 pixels
Surface brightness (cd/m2)	1000
Screen size	3.5"

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Image presentation	
Viewing angle	70°
Color depth (bits)	18-bit (262,144 color)
Aspect ratio	4:3
Display technology	TFT
Image modes	• IR only • Visual only • MSX
Gallery	Yes

Measurement	
Object temperature range	–10°C to 400°C (14°F to 752°F) (at room temperature)
Accuracy	At ambient temp. 15 to 35°C (59 to 95°F) and object temp. above 0°C (32°F). 0 to 100°C (32 to 212°F): ±3°C (±5.5°F) 100 to 400°C (212 to 752°F): ±3%

Measurement analysis	
Spotmeter	• Center spot • Hot spot • Cold spot
Color palettes	• Iron • Rainbow • Gray • Below alarm • Above alarm

Probe	
Structure and Dimensions	2 m total length with 3 segments: • 1.2 m semi-rigid • 0.7 m rigid • 0.1 m semi-rigid Probe tip dimensions: 71.7 x 40.5 x 11 mm (2.8 x 1.6 x 0.43 in)
Probe Insulation	2-layers of ruggedized insulating material. Black outer layer and bright yellow inner layer.

Set-up	
Set-up commands	Local adaptation of units, language, date, and time formats Screen brightness (high, medium, low) Gallery, deletion of images
Emissivity correction	3 pre-set and 1 custom emissivity setting
Languages	Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, simplified Chinese, Spanish, Swedish, traditional Chinese, Turkish

Service functions	
Camera software update	Download from http://support.flir.com

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Storage of images	
Storage media	16 GB SDHC
Image storage capacity	80 000
Image file format	Radiometric JPEG
Video file format	MPEG 4

Digital camera	
Resolution	2 MP (1600 × 1200 pixels)
Field of view	83°

Worklight	
Model	CREE XPG2
LED CCT	6500 K
LED CRI	70
Beam angle	120°
Rated power	0.7 W
Light output (Lumens)	117 lm

Data communication interfaces	
USB	USB Type-C: data transfer/power
Wi-Fi	Peer to peer (ad hoc) or infrastructure (network)

Power system	
Battery type	Rechargeable Li ion battery
Battery voltage	3.65 V, 5.7 Ah, 21 Wh
Battery operating time	>5 hours (full LCD brightness and worklight on)
Charging system	In camera or two-bay charger
Charging time (using two-bay charger)	2.5 hours to 90% capacity with charging status indicated by LEDs
Power management	Adjustable: off, 5 minutes, 15 minutes, 30 minutes

Environmental data	
Operating temperature range	–10 to +50°C (14 to 122 °F)
Storage temperature range	–20 to +60°C (-4 to 140 °F)
Humidity (operating and storage)	5% to 90% relative humidity (RH) non-condensing
EMC	EN 61326-1, EN 61000-6-2 (Immunity), EN 61000-4-2 (ESD), EN61000-6-3 (Emissions), FCC 47 CFR Part 15 Class B
Magnetic fields	EN 61000-4-8
Radio spectrum	2.4 GHz
Encapsulation	Probe tip : IP67 (IEC 60529) Main body/Tube : IP54
Shock	25 g (IEC 60068-2-29)
Vibration	2 g (IEC 60068-2-6)
Drop	Designed for 2 m (6.6 ft)

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P/N: VS290-32

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Environmental data	
Safety	CAT IV 600 V
Environmental safety	ETL (EN 61010-1), CE, RCM, FCC WEEE, RoHS, REACH Department of Energy and California Title 20 Battery Charging Systems Efficiency

Physical data	
Weight (including battery)	1.14 kg (2.52 lbs)
Size (L × W × H)	• Complete kit with case: 120 × 48 × 20 cm (47 × 18.9 × 7.9 in) • Display: 26.4 × 11 × 11 cm (10.4 × 4.3 × 4.3 in) • Probe: 212.2 × 0.69 cm (83.5 × 0.3 in) • Probe length: 2 m (6.6 ft) without probe tip • Probe tip: 71.71 × 40.52 × 11 mm (2.8 × 1.6 × 0.4 in)

Warranty and service	
Warranty	https://www.flir.com/testwarranty

Shipping information	
Packaging, type	Cardboard box
Packaging, contents	• Videoscope display (FLIR P/N VS290-00) • MSX camera probe (FLIR P/N VSC-IR32) • Battery × 2 (FLIR P/N T199330ACC) • Battery charger adapter (FLIR P/N T911633ACC) • USB cable type A to C (1 m) • Sandisk SD card 16 GB • Wrist strap • Printed documentation
Packaging, weight	13.0 kg (28.66 lbs)
Packaging, size	120 × 48 × 20 cm (47 × 18.90 × 7.87 in)
EAN-13	0793950429020
UPC-12	793950429020
Country of origin	Taiwan

Technical support	
Website	http://support.flir.com

Accessories
• T199330ACC: Battery • T199425ACC: Battery charger • T911633ACC: Power supply for battery charger • T911631ACC: USB 2.0 A to USB Type-C cable, 0.9 m

Supplies & accessories:

- VS290-00; Videoscope display and battery for VS290 series (no probes)
- VSC-IR32; Thermal 160x120 MSX camera probe with rectangular tip

FLIR COMMERCIAL SYSTEMS, INC.
9 Townsend West, Nashua NH 03063 / Phone: 603.324.7800 / Fax: 603.324.7864

Declaration of Conformity

Flir Model: ***VS290-32***
Description: ***Thermal MSX Videoscope Kit with Rectangular Probe***
Date of Issue: ***15-Dec-20***

We, FLIR Commercial Systems, Inc., 9 Townsend West, Nashua, NH 03063 declare that a sample of the product listed above has been tested by a third party for CE marking according to:

EMC Directive: **2014/30/EU**
Report Number: **200500187TWN-001**
Report Date of Issue: **10/12/2020**

Standards:
EN 61000-3-3: 2013+A1: 2019
EN 61326-1: 2013
EN IEC 61000-3-2: 2019
EN IEC 61000-6-2: 2019
EN IEC 61000-6-4: 2019

LVD Directive: **2014/35/EU**
Report Number: **200500199TWN-001**
Report Date of Issue: **11/12/2020**

Standards:
EN 61010-1: 2010/A1: 2019

RED Directive: **2014/53/EU**
Report Number: **200500190TWN-001**
Report Date of Issue: **10/12/2020**

Standards:
ETSI EN 301 489-1 V2.2.3
Draft ETSI EN 301 489-17 V3.2.2

RoHS Directive: **EU Directive 2015/863/EU (RoHS 3)**

The test reports show that the product fulfills the requirement in the EC Low Voltage Directive, EMC Directive, RED Directive, and RoHS Directive for CE Marking. On this basis, together with the manufacturer's own documented production control, the manufacturer (or his European authorized representative) can in his EC Declaration of Conformity verify compliance with the EC Low Voltage Directive, EMC Directive, RED Directive, and RoHS Directive.

Mark Sultzbach / QA Manager

Taipei, Taiwan Aug 3, 2021

UK Declaration of Conformity

Product: FLIR VS290-32

Name and address of the manufacturer: Teledyne FLIR LLC,
9 Townsend West,
Nashua, NH 03063

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

The object of the declaration: FLIR VS290-32.

The object of the declaration described above is in conformity with the relevant statutory requirements applicable to the specific product:

Standards review between UK and EU

UK legislation refr.	UK designated standard*	EU regulation refr.	EU harmonised standard
EMC		**EMC**	
S.I. 2016 No. 1091	EN 61000-3-3	2014/30/EU	EN 61000-3-3:2013+A1:2019
S.I. 2016 No. 1091	EN 61000-3-2	2014/30/EU	EN 61000-3-2: 2019
S.I. 2016 No. 1091	EN 61000-6-2	2014/30/EU	EN 61000-6-2: 2019
S.I. 2016 No. 1091	EN 61000-6-4	2014/30/EU	EN 61000-6-4: 2019
S.I. 2016 No. 1091	EN 61326-1	2014/30/EU	EN 61326-1: 2013
S.I. 2016 No. 1091	EN 301 489-1	2014/53/EU	DRAFT EN 301 489-1 v2.2.1:2019-03
S.I. 2016 No. 1091	EN 301 489-1	2014/53/EU	DRAFT EN 301 489-17 v3.2.0:2017-03
LVD Directive		**LVD Directive**	
S.I. 2016 No. 1101	EN 61010-1	2014/35/EU	EN 61010-1: 2010/A1: 2019
RoHS			
S.I. 2012 No. 3032	EN 50581:2012	2015/65/EU (RoHS)	EN 50581:2012

* https://www.gov.uk/guidance/designated-standards
Designated standards: EMC – consolidated list, version 1, 1 January 2021
Designated standards: Low voltage equipment – consolidated list, version 1, 1 January 2021
Designated standards: RoHS – consolidated list, version 1, 1 January 2021

FLIR Commercial Systems
Quality Assurance

Hank Tsai

Hank Tsai
Quality Manager

Safety Data Sheet
MSDS 2.001.031

Rechargeable Lithium-Ion Battery
Series: LIC..., LIP..., LPP...

1 Identification of the product and of the company undertaking

Product details

Trade name	Rechargeable lithium ion battery
Electrochemical system:	Lithium ion
Anode (negative):	Carbon (proprietary)
Cathode (positive):	Metal oxide (proprietary)

This MSDS applies to the following cell types and batteries assembled from these types.

The values listed for energy and voltage are given for reference only; they are not contractual assurances of product attributes and may differ from values given in specifications, data sheets or other documents or on the products.

Type	Energy per cell	Nominal voltage per cell
LIC 14500 PD	3.0 Wh	3.7 V
LIC 18650-15 LC	5.6 Wh	3.6 V
LIC 18650-20 RC	7.2 Wh	3.6 V
LIC 18650-22 AL *	7.9 Wh	3.6 V
LIC 18650-22 BT	8.1 Wh	3.6 V
LIC 18650-22 FC	8.0 Wh	3.6 V
LIC 18650-22 PC	7.8 Wh	3.7 V
LIC 18650-22 S3B *	8.0 Wh	3.6 V
LIC 18650-25 FKD	9.3 Wh	3.7 V
LIC 18650-26 FC	9.6 Wh	3.7 V
LIC 18650-26 HC	9.4 Wh	3.7 V
LIC 18650-26 JC	9.5 Wh	3.63 V
LIC 18650-26SKE	9.5 Wh	3.65 V
LIC 18650-29 EC	10.4 Wh	3.7 V
LIC 18650-29 FC	10.7 Wh	3.7 V
LIC 18650-30 BC	11.2 Wh	3.7 V
LIC 18650-32MH1B	11.8 Wh	3.7 V
LIC 18650-35EC	12.2 Wh	3.6 V
LIC 18650-FTC1H	3.5 Wh	3.2 V
LIC 18650-M26B	9.4 Wh	3.6 V

* These cells contain SVHC substances $>$ 0.1 % (see section 3)

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Type	Energy per cell	Nominal voltage per cell
LIC 18650-M26SB	9.4 Wh	3.6 V
LIC 18650-M29B	10.5 Wh	3.67 V
LIC 18650-VTC4H	7.6 Wh	3.6 V
LIC 18650-VTC5AH	9.4 Wh	3.6 V
LIC 26650-30 H	9.6 Wh	3.2 V
LIP 103450 AC	8.4 Wh	3.7 V
LIP 103450 SC	7.5 Wh	3.7 V
LIP 103450-CAT	7.3 Wh	3.7 V
LIP 383450 AJL *	2.8 Wh	3.7 V
LIP 423048 AJL *	2.6 Wh	3.7 V
LIP 423450 AJL *	3.2 Wh	3.7 V
LIP 423450 AR	3.0 Wh	3.7 V
LIP 463048 FD	2.7 Wh	3.7 V
LIP 523450 AJL *	4.1 Wh	3.7 V
LIP 553450 WC	4.2 Wh	3.7 V
LIP 663450 MTC	4.9 Wh	3.7 V
LPP 383450 PL *	2.6 Wh	3.7 V
LPP 402025 CE *	0.5 Wh	3.7 V
LPP 402934 E *	1.1 Wh	3.7 V
LPP 422339 PL *	1.3 Wh	3.7 V
LPP 423566 BE *	4.2 Wh	3.7 V
LPP 442834 PVL *	1.5 Wh	3.7 V
LPP 443441 S *	2.4 Wh	3.7 V
LPP 454261 8TH	5.9 Wh	3.7 V
LPP 454261 8TSH	5.9 Wh	3.7 V
LPP 463149 S *	2.6 Wh	3.7 V
LPP 486588 H	13.0 Wh	3.7 V
LPP 503562 S *	4.5 Wh	3.7 V
LPP 503759 8HH	5.2 Wh	3.7 V
LPP 503759 DL *	4.6 Wh	3.7 V
LPP 523450 S *	3.7 Wh	3.7 V
LPP 553048 PL *	3.0 Wh	3.7 V
LPP 553436 S *	2.9 Wh	3.7 V
LPP 683566 BE *	6.7 Wh	3.7 V
LPP 702035 PVL *	1.6 Wh	3.7 V
LPP 702035 S *	1.6 Wh	3.7 V
LPP 751930 PL *	1.5 Wh	3.7 V

* These cells contain SVHC substances $>$ 0.1 % (see section 3)

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Supplier details

Address: VARTA Storage GmbH
Nürnberger Straße 65
D-86720 Nördlingen
Germany

Emergency Phone Number: +49 7961 921 110 (VAC)

Legal remark (EU)

These batteries are no *"substances"* or *"mixtures"* according to Regulation (EC) No 1907/2006 EC. Instead they have to be regarded as *"articles"*, no substances are intended to be released during handling. Therefore there is no obligation to supply a safety data sheet according to Regulation (EC) 1907/2006, Article 31.

General remark

This information is provided as a service to our customers. The details presented are in accordance with our present knowledge and experiences. They are no contractual assurances of product attributes.

2 Hazards identification

The battery is sealed hermetically. Thus, the ingredients have no hazard potential, except the battery is violated or dismantled.

If in case of mistreatment the ingredients are released, a spontaneously flammable gas mixture may be released under certain circumstances (measures according to sections 4 to 6).

Attention: If batteries are treated wrong the danger of burns or bursts occurs. Batteries must not be heated above 100 °C or incinerated. The battery contents must not get in contact with water. If the negative electrode gets in contact with water or humidity hydrogen gas is formed, which may inflame spontaneously.

3 Composition/information on ingredients

Ingredients

Content	CAS no.	EC no.	Material	Hazard Categories	Hazard Statements
20 – 50 %	proprietary	proprietary	Metal oxide (proprietary)	Skin Sens. 1, Acute Tox. 2, Resp. Sens. 1, Carc. 1B, STOT RE 1, Aquatic Chronic 3	H317, H330, H334, H350, H372, H412
10 – 30 %	proprietary	proprietary	Carbon (proprietary)		
10 – 20 %	proprietary	proprietary	Electrolyte (proprietary)	Flam. Liq. 2, Skin Corr. 1B, Eye Dam. 1, Skin Sens. 1, Muta. 2, Carc. 2, Aquatic Chronic 2	H225, H312, H314, H317, H341, H351, H411

continued on next page

Content	CAS no.	EC no.	Material	Hazard Categories	Hazard Statements
2 – 10 %	7429-90-5	231-072-3	Aluminum foil		
2 – 10 %	7440-50-8	231-159-6	Copper foil		
<5 %	proprietary	proprietary	Binder		
Remainder	proprietary	proprietary	Inert materials		

For full text of hazard statements see section 16.

During charge process a lithium carbon intercalation phase is formed, which is highly flammable and corrosive, but not released under the circumstances of normal usage.

SVHC substances according to REACH (Article 33)

Content	CAS no.	EC no.	Material
> 0.1 %	1120-71-4	214-317-9	1,3-Propanesultone (only for cells marked with * in section 1)

For information to allow safe use: see section 7.

Substances relevant for Battery Directive 2006/66/EC

Content	CAS no.	EC no.	Material
<0.0010 %	7439-92-1	231-100-4	Lead
<0.0001 %	7440-43-9	231-152-8	Cadmium
<0.0001 %	7439-97-6	231-106-7	Mercury (none intentionally introduced, see section 12)

4 First-aid measures

After inhalation:	Fresh air. Seek for medical assistance.
After skin contact:	Remove solid particles immediately. Flush affected areas with plenty of water (at least 15 min). Remove contaminated cloth immediately. Seek for medical assistance.
After eye contact:	Flush the eye gently with plenty of water (at least 15 min). Seek for medical assistance.
After ingestion of battery components:	Drink plenty of water. Avoid vomiting. Seek for medical assistance. No trials for neutralization.

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5 Fire-fighting measures

Suitable extinguishing media:	Metal fire extinction powder, rock salt or dry sand shall be used. In case only water is available, it can be used in large amounts.
Extinguishing media with limited suitability:	Carbon dioxide (CO_2) is not suitable. Water in small quantities may have adverse effects.
Special protection equipment during fire-fighting:	Contamination cloth including breathing apparatus.
Special hazard:	Cells may explode and release metal parts. At contact of electrolyte with water traces of hydrofluoric acid may be formed. In this case avoid contact and take care for good ventilation. At contact of charged anode material with water extremely flammable hydrogen gas is generated.
Attention:	Do not let used extinguishing media penetrate into surface water or ground water. If necessary, thicken water or foam with suitable solids. Dispose of properly.

6 Accidental release measures

Person related measures:	Wear personal protective equipment adapted to the situation (protection gloves, face protection, breathing protection).
Environment protection measures:	In the event of battery rupture, prevent skin contact and collect all released material in a plastic lined container. Bind released ingredients with powder (rock salt, sand). Dispose of according to the local law and rules. Avoid leached substances to penetrate into the earth, canalization or water.
Treatment for cleaning:	If battery casing is dismantled, small amounts of electrolyte may leak. Package the battery tightly including ingredients together with lime, sand or rock salt. Then clean with water.

7 Handling and storage

Guideline for safe handling:

- Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types.
- Keep batteries away from children. Keep small cells and batteries which are considered swallowable out of the reach of children.
- For devices to be used by children, the battery casing should be protected against unauthorized access.
- Unpacked batteries shall not lie about in bulk.
- In case of battery change always replace all batteries by new ones of identical type and brand.
- Do not swallow batteries. Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion. In case of ingestion of a cell or battery, seek medical assistance promptly.
- Do not throw batteries into water.
- Do not throw batteries into fire.
- Avoid deep discharge.
- Do not short-circuit batteries.
- Use recommended charging time and current.
- Do not open or disassemble batteries.

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Supply to private end users:	In case the products are supplied to private end users packed with equipment or contained in equipment it is strongly recommended to follow UL product and instruction manual requirements. The product is required to be marked with a graphical symbol that alerts the user to refer to the instruction manual. The instruction manual itself is required to contain • a warning marking with text to alert the user of the potential chemical burn hazard associated with coin/button battery ingestion, • an instruction as to the presence of a coin/button cell battery, • possible effects of battery ingestion, • an instruction to keep batteries away from children, • an advice to seek immediate medical attention if it suspected that batteries have either been swallowed or placed inside any part of the body. Further advice for parents: http://buttonbatterysafety.com http://www.productsafety.gov.au/news/the-battery-controlled-button-battery-safety
Environmental conditions:	–20 °C to 20 °C for storage –20 °C to 60 °C for short exposition (e.g. transport) Avoid large temperature changes. Do not store close to heating devices. Avoid direct sunlight. At higher temperature the electrical performance may be reduced. Storage of unpacked batteries can cause short circuit and heat generation.
Storage category according to TRGS 510:	It is recommended to consider the *"Technical Rule for Hazardous Substances TRGS 510 - Storage of hazardous substances in nonstationary containers"* and to handle lithium ion batteries according to storage category 11 (*"combustible solids"*).
Storage of large amounts:	Follow the recommendations of the German Insurance Association (GDV - *"Gesamtverband der Deutschen Versicherungswirtschaft e.V."*) concerning lithium batteries: VdS 3103. In case of storage of large amounts (used storage volume $> 7\,m^3$ and/or more than 6 pallets) batteries shall be stored in fire-resistant or separated rooms or areas (e.g. warehouse or container for hazardous materials). Mixed storage with other products is not allowed. The storage area shall be monitored by an automatic fire detection system, connected to a permanently manned place. A fire-extinguishing system shall reflect the extinguishing agents mentioned in section 5.

8 Exposure controls/personal protection

Under normal conditions (during charge and discharge) release of ingredients does not occur.

9 Physical and chemical properties

Not applicable if closed.

10 Stability and reactivity

Dangerous reactions:	When heated above 100 °C the risk of rupture occurs.

11 Toxicological information

Under normal conditions (during charge and discharge) release of ingredients does not occur. In case of accidental release see information in sections 2 to 4 and 6.

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Swallowing of a battery can be harmful. Call the local Poison Control Centre for advice and follow-up. See section 4.

12 Ecological information

VARTA LIC/LIP/LPP series lithium ion batteries do not contain heavy metals as defined by the European directives 2006/66/EC Article 21; they comply with the chemical composition requirements of this Directive.

Mercury has not been *"intentionally introduced (as distinguished from mercury that may be incidentally present in other materials)"* in the sense of the U.S.A. *"Mercury-Containing and Rechargeable Battery Management Act"* (May 13 1996).

The Regulation on Mercury Content Limitation for Batteries promulgated on 1997-12-31 by the China authorities including the State Administration of Light Industry and the State Environmental Protection Administration defines *"low mercury"* as *"mercury content by weight in battery as less than 0.025 %"*, and *"mercury free"* as *"mercury content by weight in battery as less than 0.0001 %"*. And therefore: VARTA LIC/LIP/LPP series lithium ion batteries belong to the category of mercury-free battery (mercury content lower than 0.0001 %).

13 Disposal considerations

In order to avoid short circuit and heating, used VARTA LIC/LIP/LPP series lithium ion batteries should never be stored or transported in bulk. Proper measures against short circuit are:

- Storage of batteries in original packaging
- Coverage of the terminals
- Embedding in dry sand

European Union

In the European Union, manufacturing, handling and disposal of batteries is regulated on the basis of the DIRECTIVE 2006/66/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC. Customers find detailed information on disposal in their specific countries using the web site of the European Portable Batteries Association (www.epbaeurope.net/legislation_national.html).

Importers and users outside EU should consider the local law and rules.

USA

VARTA LIC/LIP/LPP series lithium ion batteries are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. These batteries, however, do contain recyclable materials and are accepted for recycling by Call2Recycle, Inc. Please go to their website at www.call2recycle.org for additional information.

14 Transport information

VARTA LIC/LIP/LPP series lithium ion batteries are considered to be UN 3480 Lithium Ion Batteries, and are tested according to subsection 38.3 of the *"UN Manual of Tests and Criteria"* for compliance with the requirements of special provisions ADR 188, IMDG 188, as well as the requirements of DOT / 49 CFR § 173.185, and the requirements of IATA DGR packing instruction 965. Test results as well as other relevant information required for transportation are given in dedicated *"Supplier's Test Summaries"*.

Please note that for some products state of charge and VARTA packaging are not designed for air transport in bulk; this does not affect air transport of batteries packed with equipment or contained in equipment.

Transportations of cells or batteries packed with equipment or contained in equipment have to follow the appropriate regulations for UN 3481.

During the transportation of large amounts of batteries by ship, trailer or railway, do not store them in places of high temperature and do not allow them to be exposed to condensation. During the transportation do not allow the packaging to be damaged,

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Supplier's Test Summary

in accordance with UN Manual of Tests and Criteria
Part III, subsection 38.3
ST/SG/AC.10/11/Rev.6/Amend.1

Test report identification no.:	2019-05-29-01	
Producer:	VARTA Microbattery SRL Bulevardul Grivitei 1X, 500177 Brașov, ROMANIA	
Test Laboratory:	Application Test Lab PT. VARTA Microbattery (Indonesia) Batam Industrial Park Jalan Angsana BLK 309 & 310, Mukakuning Pulau Batam Riau 29433 Indonesia	
Lab-internal reference no.:	JT60806	
Lab-internal test date:	2016-11-04	
Object of the declaration:	***Type of battery:***	Rechargeable Lithium ion battery
	Article:	2P/LIC18650-29EC PCM PC – SOC 30%
	Material no.:	718811
	VKB no.:	56636 702 095
	IEC Designation:	1INR19/65-2
	Voltage:	3.65V
	Watt-hour rating:	20Wh
	Mass (approx.):	135 g

The object of the declaration described above is in conformity with the requirements of the following document:

Documents No.	***Title***	***Edition / Date of issue***
ST/SG/AC.10/11/Rev.5	Recommendations on the Transport of Dangerous Goods, UN Manual of Tests and Criteria, Part III, subsection 38.3	2009
Amend. 1		2011

List of tests conducted and results:

Test Item	Test Result
T1. Altitude simulation	Pass
T2. Thermal test	Pass
T3. Vibration	Pass
T4. Shock	Pass
T5. External short circuit	Pass
T6. Impact	Pass*
T7. Overcharge	Pass
T8. Forced Discharge	Pass*

**Reference to report of LIC18650-29EC cell*

Additional information:

In original VARTA packaging the products comply with the following special provisions of international transport regulations:

- IATA DGR: Packing Instruction 965 Section IB (max. 30 % state of charge)
  (Transportations of cells or batteries packed with equipment or contained in equipment have to follow Packing Instructions 966 or 967 Section II.)
- ADR/RID/ADN/IMDG Code: Special Provision 188
- DOT / 49 CFR: §173.185 (c)

The products have been manufactured under a quality management programme according to IATA DGR clause 3.9.2.6, ADR clause 2.2.9.1.7 (e) and IMDG code clause 2.9.4.5.

Singapore, 29 May 2019
(place and date of issue)

(company stamp)

(signature)
(Low Chee Leong)
Manager
Technical Support

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