



1. **EC-TYPE EXAMINATION CERTIFICATE**

2. **Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

3. Reference: **VTT 02 ATEX 013X**

4. Equipment: **Head lamp**

Certified type: **HL-800**

5. Manufactured by: **Mica Elektro Oy LTD.**

6. Address: **P.O. Box 42
FIN-00381 Helsinki
Finland**

7. This equipment or protective system and any acceptable variations thereto is specified in the schedule and possible supplement(s) to this Certificate and the documents therein referred to.

8. VTT Industrial Systems, notified body number 0537, in accordance with Article 9 of the Council Directive 94/9/EC of March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective system intended for use in potentially explosive atmospheres given in Annex II to the Directive

The examination and test results are recorded in confidential report no AUT46-000467.

9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with the standards:

**EN 50014 (1997) +A1&A2
EN 50019 (1994)
EN 50020 (2002)
EN 62013-1 (2002)**



10. If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
11. This EC-Type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. This certificate does not cover these.
12. The marking of the equipment or protective system shall include the following:

**I M2****EEx I****II 2 G D****EEx eib IIC 220 °C**

Espoo, 8.11.2002

VTT INDUSTRIAL SYSTEMS
Ex-LaboratoryRisto Sulonen
Senior research scientist**I018**
(EN45004, liite A)Martti Siirola
Research scientist

13.

Schedule

14.

EC-TYPE EXAMINATION CERTIFICATE VTT 02 ATEX 013X

15.

Description of Equipment

The head lamp MICA HL-800 is a battery-operated helmetbandlamp or a headbandlamp depending of the attachment. The rechargeable battery package 6 V, 1350 mA·h, NiMH is integrated to the headband. The replaceable battery package, HB-800 includes a current limiting electric device. The battery container, the battery package and the housing of the light unit are of anti-static plastic. The light unit is equipped with a switch.

Documents:

Document list of the HL-800, Id AS-116	01.10.2002
Description of the device MICA HL-800, Id AS-116, 2 pages	17.10.2002
Critical parts, 'HL-800 ATEX Kriittiset osat luettelo', 2 pages	16.10.2002
HL-800 lamp assembly, Id 001075_X	19.09.2002
Battery package and battery HL-800, Id 001210_X	19.09.2002
Battery package HB-800, Assembly, Id 001207_X	27.02.2001
Battery printed circuit board, BCX:	
Schematic drw, Circuit diagram, BCX-pcb, Id 001309	02.11.2000
Printed circuit board, Id 001311_X, rev C, 3 pages	14.01.2000
Component part list, Doc. No. 001342_X, 2 pages	03.10.2002
Switch printed circuit board, HL-EB:	
Schematic drw, Circuit diagram, HL-EB, Id 001410 rev 1.3	03.10.2002
Printed circuit board HL-ESU, Id 001375, rev C, 4 pages	09.06.2000
Component part list, Doc. No. 001595_X, 2 pages	03.10.2002
HL lens, Draw Id. 001021_X	28.07.1997
Cable, Id 001431, 5 pages	
Rechargeable battery, Id 7HH10111, 8 pages	
Used enclosure plastics, Id 001427, 2 pages and Id 001423, 2 pages	
Label, Mica Head Lamp, Type MICA HL-800, Id 001620_X	30.10.2002
Label, Battery pack, Mica HB-800, Id 001621_X	30.10.2002

16.

Report No. AUT46-000467

17.

Special conditions for safe use:

- The halogen bulb shall be of type 2,4 W or 4 W, 6 V, PX13,5S, Philips type HPR60 or HPR59 or Ceiec type 2,4 W or 4 W.

- The battery package must not be charged in hazardous area.
- Only battery packages type HB-800 shall be used.
- The battery HB-800 shall be charged according to the manufactures recommendations.
- The bulb must not be replaced in hazardous area.

18. Essential Health and Safety Requirements

Met by compliance with the standards referred in point 9.

Espoo, 8.11.2002

VTT INDUSTRIAL SYSTEMS
Ex-Laboratory



Risto Sulonen
Senior research scientist



I018
(EN45004, liite A)



Martti Siirola
Research scientist

1. **SUPPLEMENT 2 TO EC-TYPE EXAMINATION
CERTIFICATE VTT 02 ATEX 013X**

2. Equipment: **Head lamp**

Certified type: **MICA HL-800**

3. Manufactured by: **Mica Elektro Oy LTD.**

4. Compliance with the standards EN 61241-0 and EN 61241-11 has been excluded from the certificate. The use of halogen bulbs Philips HPR60 4 W 6 V and Ceiec 4W has been excluded. The current version of the MICA HL-800 Head lamp can only be equipped with halogen bulb types Philips HPR60 2,4 W 6 V or Ceiec 2,4 W. Bulb base type is P13,5s/ PX13,5s. The current version of HL-800 can also be equipped with Philips LED lamp, type P160S.

The irradiances of the bulbs and the LED are below 5 mW/mm² (Research report 13230-07-003). The HL-800 is equipped with stationary low power white led functioning as a secondary light source in case of bulb breakage.

5. Compliance with the Essential Health and Safety Requirements has been assured by compliance with the standards:

EN 60079-0 (2006)
EN 60079-7 (2007)
EN 60079-11 (2007)
EN 60079-28 (2007)
EN 62013-1 (2006)

6. The marking of the equipment shall include the following:



**I M2
II 2G**

**Ex I IEC 62013-1
Ex eib op is IIC T4**



7. New documents:

HL-800 ATEX toiminnan kuvaus.doc. Date: 22.6.2009

HL-800 ATEX loppukokoonpano.xls, AS-104. Date: 16.06.2009

HL-800 EX ATEX Kriittiset osat luettelo (2).xls Date: 16.6.2009

"HB-800 kilpi ATEX 2009 FINAL" (in MAC HD) DRW Id:001621_X.
Date: 16.6.2009

"HL-800 kilpi ATEX 2009 FINAL" (in MAC HD) DRW Id:001620_X.
Date: 16.6.2009

Espoo, 25.06.2009

VTT
Technical Research Centre of Finland



Risto Sulonen
Senior research scientist



Martti Siirola
Research scientist

1. **SUPPLEMENT 3 TO EC-TYPE EXAMINATION
CERTIFICATE VTT 02 ATEX 013X**

2. Equipment: **Head lamp**

Certified type: **MICA HL-800**

3. Manufactured by: **Mica Elektro Oy LTD.**

4. New LED lamp type has been specified. Philips LED lamp, type P161S, has been deemed equivalent to obsolete Philips type 160S. The current version of the MICA HL-800 Head lamp can only be equipped with halogen bulb types Philips HPR60 2,4 W 6 V or Ceiec 2,4 W, or with Philips LED lamps, types P160S or P161S. Bulb base type is P13,5s/ PX13,5s. The HL-800 is equipped with stationary low power white led functioning as a secondary light source in case of bulb breakage. The irradiances of the bulbs and the LED are below 5 mW/mm² (Research report 13230-07-003).

Use of 6 V HB-800 battery pack with Sanyo HR-4/5AAU 1,2 V 1350 mAh NiMH cells has been excluded from the certificate. The current version of MICA HL-800 Head lamp can only be equipped with 6 V HB-800 battery pack with Panasonic HHR120AA 1,2 V 1200 mAh NiMH cells. Testing of the sample cells was made according to EN 60079-11 (2007) clauses 10.5.2 and 10.5.3. Detected minor electrolyte leakage was not deemed to risk the intrinsic safety of the battery. Surface temperatures during short circuit test of the cells under maximum ambient temperature +40°C did not exceed temperature class T3 200°C limit.

5. Compliance with the Essential Health and Safety Requirements has been assured by compliance with the standards:

EN 60079-0 (2006)
EN 60079-7 (2007)
EN 60079-11 (2007)
EN 60079-28 (2007)
EN 62013-1 (2006)

6. The marking of the equipment shall include the following:



I M2
II 2G

Ex I IEC 62013-1
Ex eib op is IIC T3

7. This supplement supersedes supplements 1 and 2

8. New documents:

HL-800 ATEX toiminnan kuvaus.doc. Date: 08.03.2010
HB-800 ATEX akkupaketti, Loppukokoonpano. Date: 08.03.2010
HL-800 EX ATEX Kriittiset osat luettelo.xls Date: 08.03.2010
HB-800 kilpi ATEX 2009 FINAL, Id:001621_X, Date: 01.03.2010
HL-800 kilpi ATEX 2009 FINAL, Id:001620_X, Date: 19.02.2010

Espoo, 09.03.2010

VTT
Technical Research Centre of Finland



Martti Siirola
Research scientist



Kari Koskela
Technician

