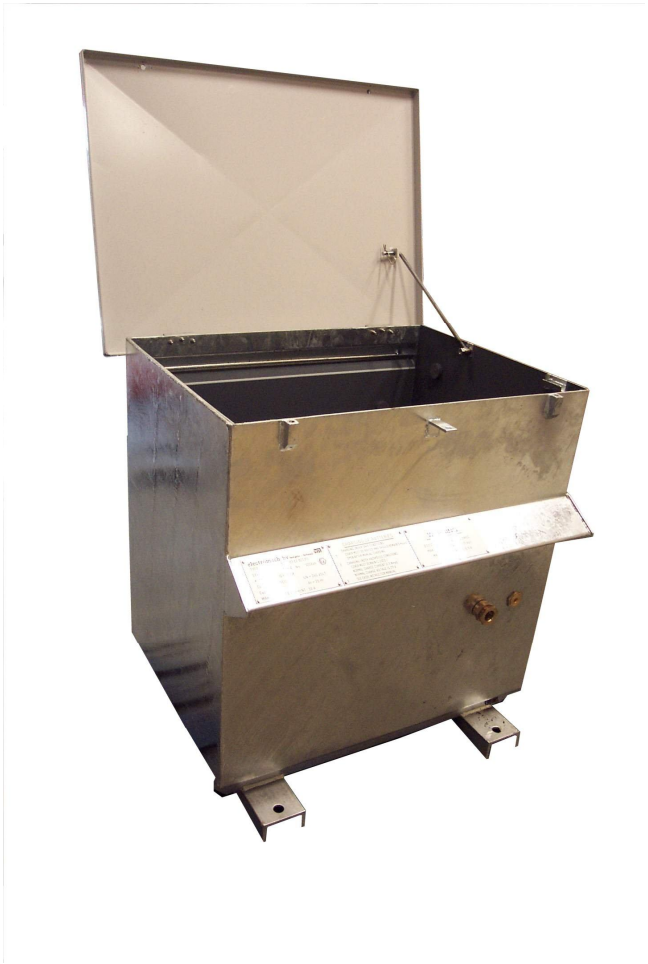
ELECTROMACH member of the R.STAHL Technology Group

OPERATING INSTRUCTIONS

EXPLOSION-PROTECTED BATTERY CONTAINERS TYPE BC (ATEX)



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1 SAFETY INSTRUCTIONS

The most important safety instructions are summarised in this section. They supplement the relevant regulations which must be studied by the personnel responsible.

When working in hazardous areas, the safety of personnel and plant depends on complying with all relevant safety regulations. Assembly and maintenance staff working on installations therefore have a particular responsibility. They require precise knowledge of the applicable standards and regulations.

As user, please observe:

- National safety and accident prevention regulations;
- National installation regulations (e.g. IEC 60079-14);
- Generally recognised technical regulations;
- Safety guidelines and information in these operating instructions as well as the enclosed mechanical assembly drawings, wiring diagrams and operating instructions of the subassembly devices;
- Characteristic values and rated operating conditions on the rating and data plates;
- Instruction plates on the device;
- That any damage can invalidate the Ex-protection;
- That switchgear combinations are only to be operated within enclosures that are completely closed.

Use the devices in accordance with the regulations and for it's intended purpose only. Incorrect and impermissible use or non-compliance with these instructions invalidates our warranty provision. No changes to the devices or components impairing their explosion protection are permitted. Further, they may only be fitted and operated if they are undamaged, dry and clean.

1.1 CONFORMITY TO STANDARDS

The devices comply with the following standards and directive:

- Directive 94/9/EC;
- EN 60079-0:2006, EN 60079-7:2007.

The devices are approved for use in hazardous area zone 1 and 2.

2 FUNCTION

The battery box Type BC is used as a (back-up) power supply in hazardous areas. The charging system should be in accordance with the battery manufacturer's recommendations. Charge the standard batteries in the battery box Type BC according to the IU characteristic.

Fully-charged state

The fully-charged state has been reached when the residual charging current no longer changes within 2 hours.

Charging voltage

The charging voltage recommended by the manufacturer for the respective type of battery is decisive.

Temperature compensation of the charging voltage

When the temperature fluctuates, temperature compensation of the charging voltage is necessary. This prevents a higher gassing voltage in the case of higher temperatures. We recommend temperature compensation:
In the case of standby parallel operation outside the range of 15-25°C
In the case of cyclic operation outside the range of 10-30°C

It is not permissible to charge the battery above +50°C

The batteries must not be overcharged!

Bear in mind that:

- The freezing range of electrolytes begins at –15°C;
- The capacity depends on the ambient temperature;
- The discharge current to the battery allocated to the end-point must not be exceeded;
- Not more than the rated capacity may be withdrawn;
- The battery must be recharged immediately after discharges of partial discharges.

Also bear the deep discharge in mind!

3 TECHNICAL DATA

When changing the batteries in the hazardous area and when transporting them through the hazardous area, ensure that there is no risk of explosion.
The batteries are only to be charged with the appurtenant charger and according to the manufacturer's instructions.

4 ASSEMBLY

Assemble and install the battery box in a stationary position.

Information regarding mechanical mounting, such as location of attachment points, dimensions or weight of the device, can be found in the project assembly drawings.

5 INSTALLATION

Built-in batteries open and maintain the device only when in possession of special work approval.

Installation and start-up must be performed by a skilled electrician!

Open the housing only

- If there is no risk of explosion!
- To change the batteries and to perform installation, maintenance and repairs. After completion of the work, the housing must be carefully closed again.

Lead the connection cabling into the container. Ensure that the wire cross section agrees with the specifications of the cable gland.
Arrange the connection cables in such as way that:

- The minimum permissible bending radii for the respective wire cross section are not violated;
- No mechanical damage to the conductor insulation rubbing against sharp-edged metal parts results.

When installing, please note that:

- Particular care should be taken when making the connections. The connection cabling must correspond to the applicable standards and possess the required cross-sectional area. The cross-sectional area must meet the specifications for cabling.
- Ensure that the maximum permissible conductor temperatures are not exceeded by selecting suitable cables and a suitable means of running them.
- When stripping wire endings, make sure that the insulation extends up to the terminal block.
- Do not damage the conductor when stripping off the insulation.
- Prevent moisture and dirt from entering the interior of the enclosure by performing installation work in a clean, dry area.

Connection torque values at the terminals

Tighten the screws of the connection terminals in accordance with the specified connection torques given by the battery manufacturer.

Mains connection

Open the enclosure.

- Lead the connection cabling into the container.
- Arrange the connection cables in the terminal chamber in such a way that the minimum permissible bending radii are not exceeded.
- Connect the connectors in accordance with the enclosed documentation (e.g. wiring diagrams).
- In all cases, connect the protective earth conductor.
- If applicable, remove loose metal particles, dirt and traces of moisture.
- Carefully close the enclosure after concluding the connection work.

6 COMMISSIONING

Before commissioning, ensure that:

- The device is installed in accordance with the regulations.
- The connections have been correctly made.
- The device is not damaged.
- No extraneous particles are present in the container.
- The cables and leads are inserted properly.
- All bolts and nuts are tightened firmly.
- The cable entries and stopping plugs are connected firmly.
- Unused cable entries are sealed with plugs certified as per Directive 94/9/EC.
- Unused drill holes are sealed with stopping plugs certified as per Directive 94/9/EC for the relevant type of explosion protection.
- All covers and partition plates associated with energised components are in place and firmly attached.

7 MAINTENANCE AND SERVICING

Pay attention to the national regulations applicable in the country of deployment!
Maintenance, repair and servicing work on the devices must only be performed by personnel who are both authorised and suitably trained for this purpose!

Always de-energize the devices prior to beginning maintenance work!
To prevent defects in the system, perform maintenance work regularly. The intervals between inspections should however not exceed a maximum of three years.

Consider the following items when determining the inspection interval:

- Ambient conditions (set-up in the open, degree of wind, rain and sunlight exposure).
- Operating conditions (duty cycle of the battery boxes, operator errors).
- Manufacturer information in the technical documentation.
- Extensive modifications in the entire plant (e.g. changes in the zone classification).

Remedy damage to the insulation of the connection terminals of the batteries prior to starting up again!
Depending on the local conditions, perform the inspections as visual, close, or detailed inspections!
Detected defects which have an effect on the explosion protection must be remedied immediately!
Shut down the unit in order to remedy the defect!

8 ACCESSORIES AND SPARE PARTS

Use only accessories and spare parts form the original battery manufacturer or Electromach. Use of another company's accessories and spare parts invalidates the warranty of Electromach.

9 STORAGE

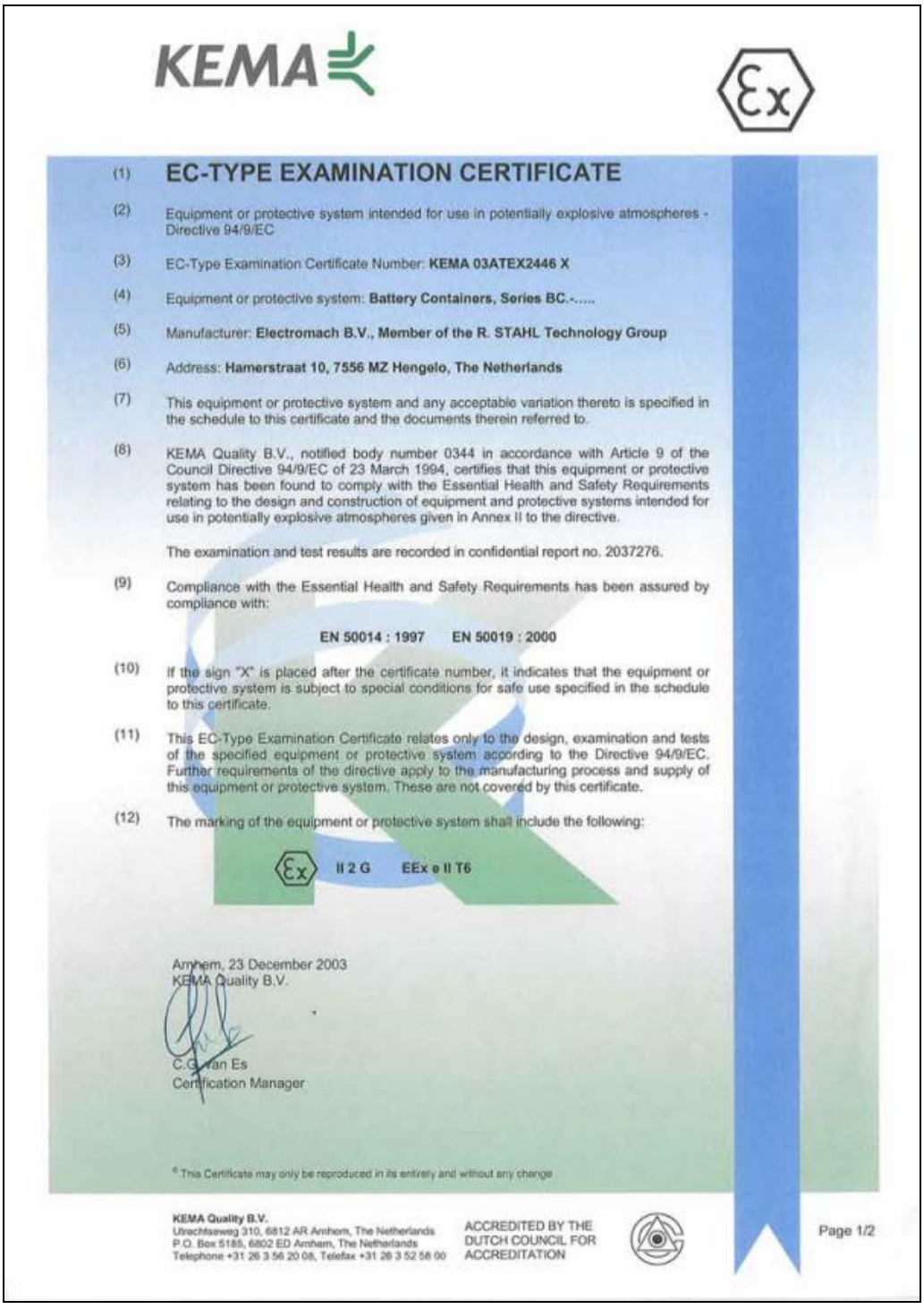
If the battery boxes are stored in a fully charged state, the following values must be maintained

- Storage temperature range: -40°C to +50°C.
- Maximum storage time: 2 years at + 20°C.
- Constant storage temperatures > + 30°C: Recharge after 12 months.
- Constant storage temperatures > + 40°C: Recharge after 6 months.

10 DISPOSAL

Please observe the national waste-disposal regulations.

11 EC-TYPE EXAMINATION CERTIFICATE



KEMA

(1) **EC-TYPE EXAMINATION CERTIFICATE**

(2) Equipment or protective system intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) EC-Type Examination Certificate Number: **KEMA 03ATEX2446 X**

(4) Equipment or protective system: **Battery Containers, Series BC.-.....**

(5) Manufacturer: **Electromach B.V., Member of the R. STAHL Technology Group**

(6) Address: **Hamerstraat 10, 7556 MZ Hengelo, The Netherlands**

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 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 systems 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. 2037276.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014 : 1997 EN 50019 : 2000

(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 according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

(12) The marking of the equipment or protective system shall include the following:

II 2 G EEx e II T6

Arnhem, 23 December 2003
KEMA Quality B.V.

C.G. van Es
Certification Manager

* This Certificate may only be reproduced in its entirety and without any change

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ACCREDITED BY THE DUTCH COUNCIL FOR ACCREDITATION

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12 DECLARATION OF CONFORMITY

EG-Konformitätserklärung
EC-Declaration of Conformity
CE-Déclaration de Conformité

Wir *(we; nous)*

ELECTROMACH BV, Hamerstraat 10, 7556 MZ Hengelo

BC.-...

erklären in alleiniger Verantwortung, daß das Produkt **Batterie Container**
hereby declare in our sole responsibility, that the product *Battery Container*
déclarons de notre seule responsabilité, que le produit *Coffret/Bac d'accumulateur*

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokumenten übereinstimmt
which is the subject of this declaration, is in conformity with the following standard(s) or normative documents
auquel cette déclaration se rapporte, est conforme aux norme(s) ou aux documents normatifs suivants

Bestimmungen der Richtlinie *terms of the directive* *prescription de la directive*	**Titel und/oder Nr. sowie Ausgabedatum der Norm** *title and/or No. and date of issue of the standard* *titre et/ou No. ainsi que date d'émission des normes*
94/9 EG: Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen *94/9 EC: Equipment and protective systems intended for use in potentially explosive atmospheres* *94/9 CE: Appareils et systèmes de protection destinés á être utilisés en atmosphéres explosibles*	EN 50 014 (1997) EN 50 019 (2000)
89/336 EWG: Elektromagnetische Verträglichkeit *89/336 EEC: Electromagnetic compatibility* *89/336 CEE: Compatibilité électromagnétique*	-
EG-Baumusterprüfbescheinigung: *EC-Type Examination Certificate:* *Attestation d'examen CE de type:*	**KEMA 03 ATEX 2446 X**
Qualitätssicherung Produktion: *Production Quality Assessment:* *Assurance Qualitée Production:*	KEMA 01 ATEX Q3201

Hengelo, 14.11.2003

Ort und Datum
Place and date
lieu et date

J.F.W. Wijnen
Geschäftsführer
Managing Director
Directeur Général

W.H. Moelard
Leiter Qualitätsmanagement
Head of quality management dept.
Chef du dept. assurance de qualité