



Technical Documentation

SK-200

Ex-i bar code laser scanner
for zones 1 and 2



SK-200

Instruction Manual SK-200

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General Information

1 Brief Description

Features of the bar code laser scanner **SK-200**:

- Handheld and desk operation
- extremely light weight (240 g)
- wide scan field (up to 40 cm)
- automatic laser beam activation by infrared distance sensor
- acoustical and optical feedback by lamps of different colours
- automatic switching between standard bar code types
- most simple programming of properties by reading bar code fields
- mounted in the stand: automatic scanning after approximation
- automatic distinction between handheld and stand operation
- automatic standby
- RS232 or PS/2 transmission
- special cable with power supply wedge inserted in the RS232 cable

2 Delivery Components

Delivery includes:

- bar code scanner SK-200
- PS/2 or RS232 cable
- stand
- manual
- programming guide
- wall hanger (option)

3. Operation

3.1 Start-up

1. Switch your terminal or PC off.
2. Insert the 10-pole RJ45 plug into the scanner. (This plug is fixed in scanners for combustible dust areas.)
3. Connect the PS/2 or the 9-pole RS232 plug of the scanner cable to the terminal or PC.
4. Switch your terminal or PC on.
5. Start the configuration of the scanner via bar codes, if desired (see programming guide).

Correct cable connections do not guarantee correct data transmission. Please refer to the terminal description on page 5. For changing of the scanner configuration, see "Metrologic Configuration Guide" or "Programming guide".

3.2 Data transmission

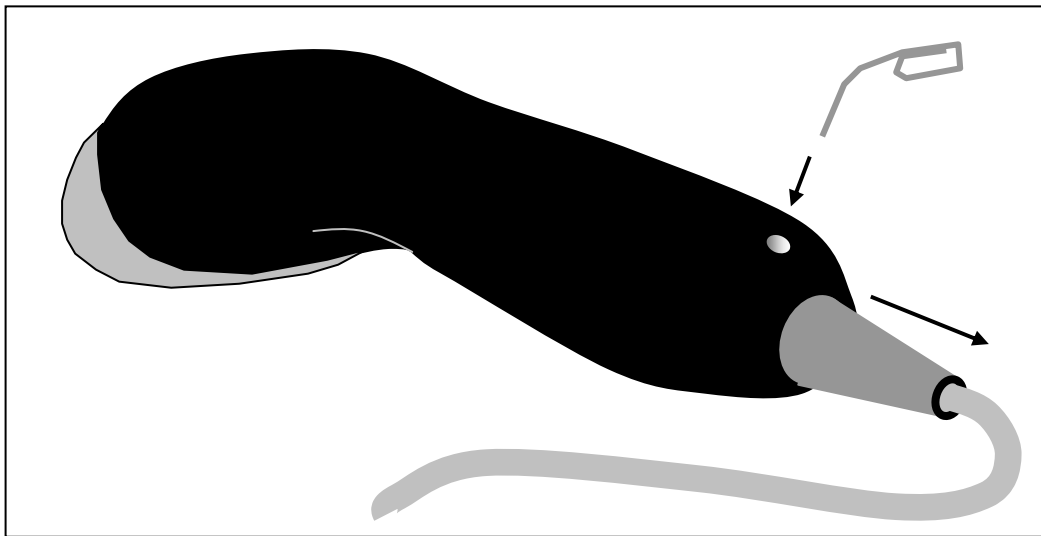
Scanners with the suffix "CG" in the order number (see chapter 8) have a „code gate button". Data transmission starts only when the code gate button is pressed. This is useful, when there are different bar codes close to each other. Scanners without this button transmit data automatically after recognition.

When a scanner with code gate button is used in a stand, then the button is bypassed, so that all data is transmitted immediately too. The yellow lamp is constantly on then. Please refer to the „Installation and user's guide“, page 13.

Scanners with order numbers without the suffix "CG" (see chapter 8) and scanners for combustible dust areas have no „code gate button“.

3.3 Unplugging (Not possible with scanners for dust areas)

- Release the bolt by putting a pin of less than 1 mm (paper clip) diameter into the hole above the socket.
- Pull the plug out of the socket simultaneously.



4 Cleaning

You may clean the scanner with a damp cloth or a brush. Clean the laser window from time to time with a very soft cloth. No cleaning inside of the Ex area because of potential charging of the cleaning tool!

Technical Data

5 Operating Data

Circuitry:

Consumption:	ca.165 mA (120 mA /standby) at 5 V
Supply voltage:	4.4 V ... 5.45 V
Data voltage:	max. value: $U_0 = \pm 5,45$ V
Power limitation:	$P_i = 1.3$ W
Effective capacitance:	negligible
Effective inductance:	negligible
Permissible ambient temperature:	$-30^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$

Mechanical data:

Dimensions:	198 x 78 x 40 mm
Weight:	approx. 240 g
Cable length:	2.7 m (ca. 1.5m coiled)
IP protection:	IP65 for dust atmosphere, optionally the same for gas atmosphere and the plug, otherwise IP30

Laser:

Visible red (650 nm), class 1 (< 1mW light power)

EEx Data:

- Bar code laser scanner SK-200
- TÜV 02 ATEX 1823 (zone 1) resp. TÜV 03 ATEX 2030 (zone 2)
- Ex II2G EEx ib IIC T4 resp. Ex II 2 D T 70°C or both or Ex II3G EEx nA II T4
- $-30^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$

Supply circuits:

Zone 1: Only for connection to certified intrinsically safe circuits

$$U_i \leq 5,45 \text{ V}, P_i \leq 1,3 \text{ W}$$

Zone 2: For connection to energy limited circuits

$$U_i = 5,45 \text{ V}, I_i = 500 \text{ mA in normal operation}$$

Effective inner capacitance and inductance negligibly small.

Data circuits, zone 1:

Max values: $U_0 \leq |\pm 5,45| \text{ V}; I_0 \leq |\pm 54| \text{ mA}$

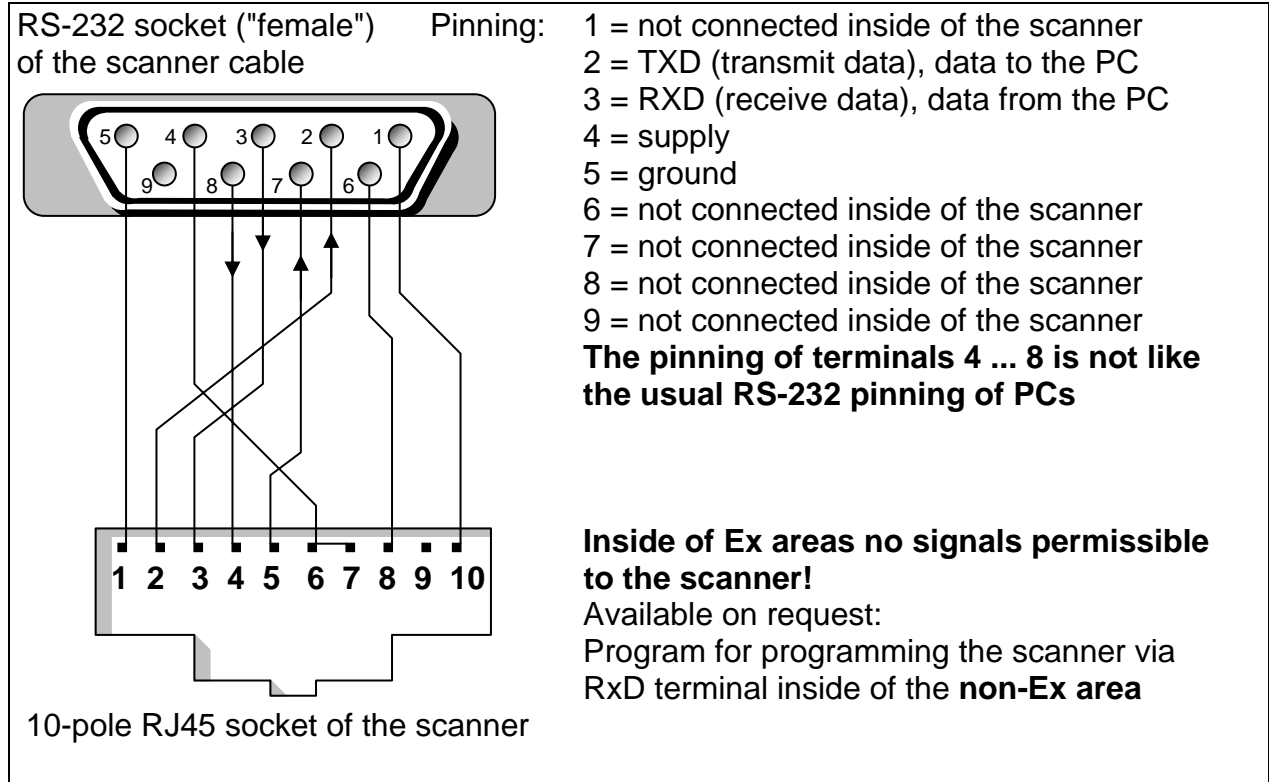
Note: U_0 is the scanner output voltage. No data transfer allowed to the scanner inside of Ex areas !

Max. permissible inductance: 13 mH

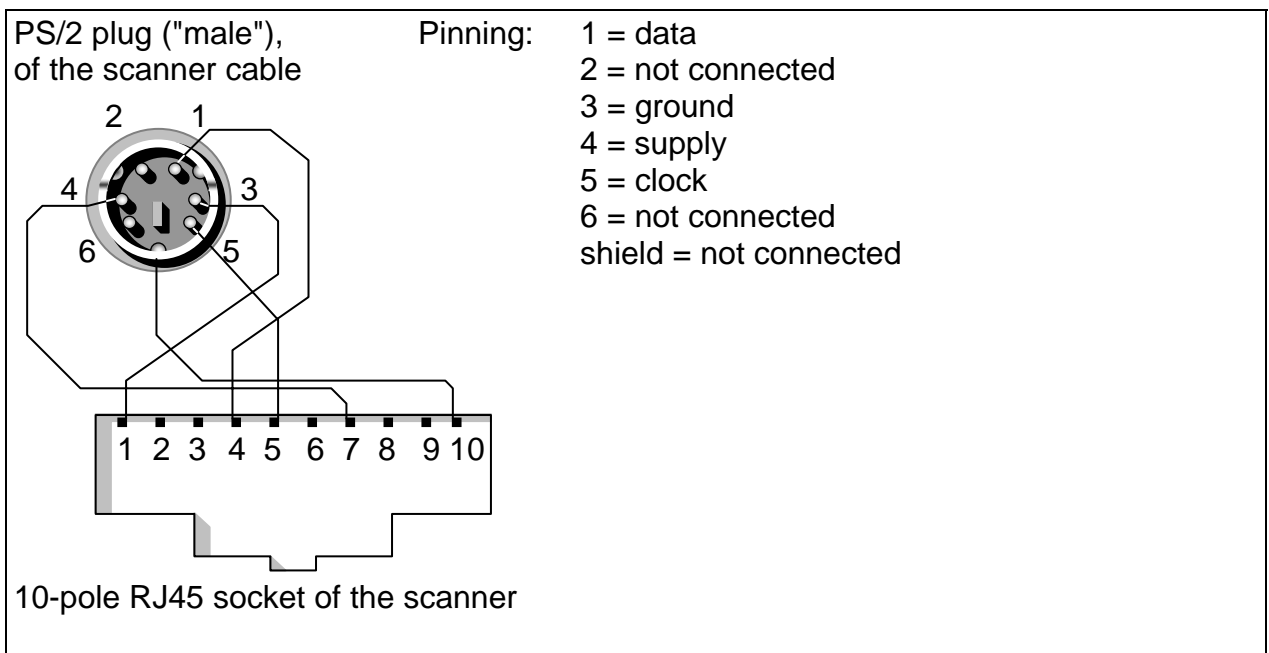
Max. permissible capacitance: 65 μF

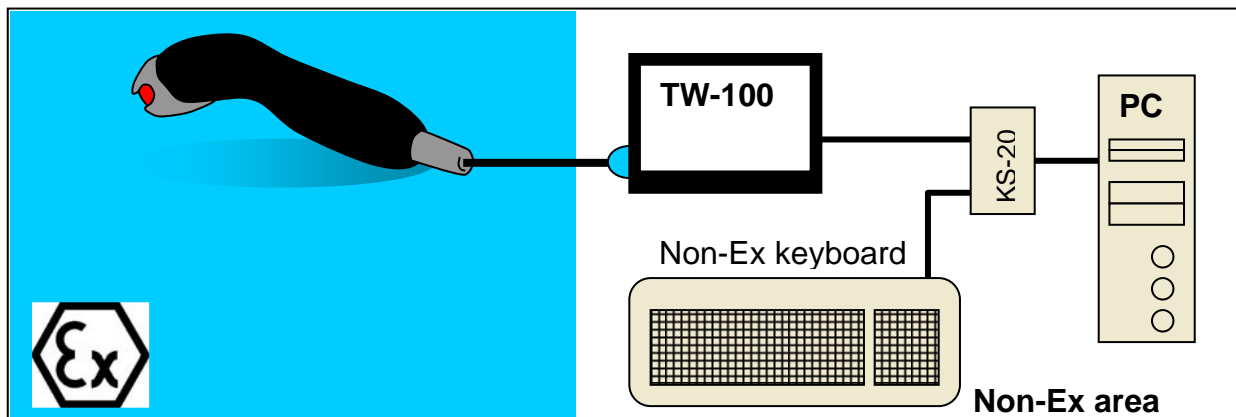
6 Terminals

RS-232 version:



PS/2 version:



Keyboard wedge (KS-20) between keyboard and scanner:**7 Safety Advices**

Bar code scanner SK-200 for atmosphere G is only allowed for connection to certified intrinsically safe circuits with maximum values up to the maximum scanner values.

Max. values of the scanner see chapter 5 and certificates

Type label for gas atmosphere, zone 1:

E.L.B. Ex-Geräte Bachmann GmbH	
An der Hartbrücke 8, D-64625 Bensheim	
Typ: SK-200 serial no.: XXX, date: XX,XX,2XXX	
	II 2 G EEx ib IIC T4
	$-30^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$
	TÜV 02 ATEX 1823
	0032

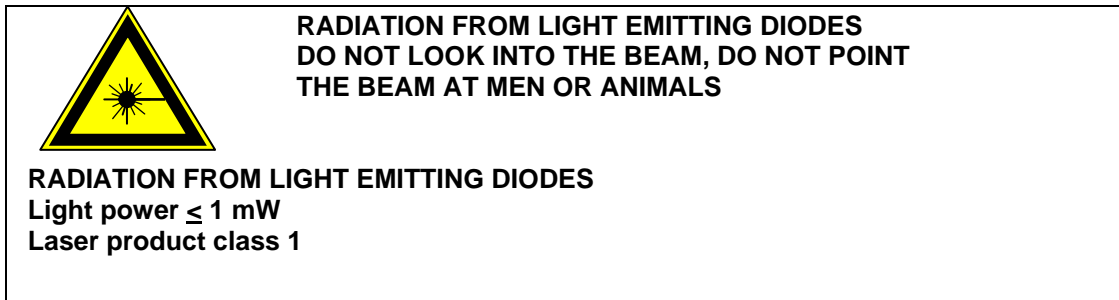
Type label for dust atmosphere, zone 21:

E.L.B. Ex-Geräte Bachmann GmbH	
An der Hartbrücke 8, D-64625 Bensheim	
Typ: SK-200 serial no.: XXX, date: XX,XX,2XXX	
	II 2 D T 70°C IP65
	$-30^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$
	TÜV 02 ATEX 1823
	0032

(IP65 means the IP protection of the scanner only; plug protection on request)

Type label for zone 2:

E.L.B. Ex-Geräte Bachmann GmbH	
An der Hartbrücke 8, D-64625 Bensheim	
Typ: SK-200 serial no.: XXX, date: XX,XX,2XXX	
	II 3 G EEx nA II T4
	$-30^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$
	TÜV 03 ATEX 2030



Read the manual completely and carefully before operation. Only the latest documentation is valid.

Installation, maintenance and cleaning of the units must only be performed by persons trained and authorized for this purpose, insofar as they are familiar with the units.

If it can be assumed that safe operation is no longer possible, switch off the unit and secure it against renewed switching-on.

It is prohibited for the operator or his staff to open the units in a way that is not described in this manual. This may only be done by specifically authorized personnel of E.L.B. Ex-Geräte GmbH.

Inside and outside of Ex areas the scanner must only be supplied from circuits which fit to the maximum values mentioned in the certificates.

Modifications and conversions to the units are not permissible and will cause the Ex protection and the guarantee to become void. This includes the removal of the plug of scanners for dust atmosphere.

Light emitting diode radiation. Do not turn the light directly to the eyes of men or animals.

E.L.B. Ex-Geräte GmbH is not liable for any subsequent damage.

The technical data specified for the hazardous area comply with the values certified in the European EEx approval. The user bears the sole responsibility of examining the equipment with regard to its suitability for the intended application and environmental conditions. E.L.B. Ex-Geräte GmbH accepts no liability for any lack of suitability.

For the installation, maintenance and cleaning of the units, it is absolutely necessary to observe the applicable ordinances and provisions concerned with explosion protection (VDE 0160, VDE 0165 or EN 60079-14, EN 50014 - 50039) as well as the Accident Prevention Regulations (UVV).

The conducting layer must not be damaged. If there is visible damage of significant areas of the layer the scanner must not be used inside of Ex areas unless repaired by the manufacturer in advance.

8 List of Accessories and Order Numbers

Pos.	Description	Order no.
1	SK-200 with coiled cable 1,8 m + stand, PS/2 version	SC20-PS
2	SK-200 like Pos. 1, but RS-232 version and cable with flying leads	SC20-RS
3	SK-200 like Pos. 1, but for Ex zone II 3G EEx ib IIC T4	SC15-PS
4	SK-200 like Pos. 2, but for Ex zone II 3G EEx ib IIC T4	SC15-RS
5	wall hanger for SK-200 including all mounting components	SC-20-WH
6	EEx-i Interface TW-100D (isolated supply + transmission) for up to 20 m cable	TW100D
7	coiled cable, 7m, PS/2 or RS-232 version (flying leads)	SC20-SP10
8	cable, 10m uncoiled, PS/2 or RS-232 version (flying leads)	SC20-GL10

9 EC Declaration of Conformity



We hereby confirm the conformity of the equipment listed below with the directives of the Council of the European Community. The safety and installation instructions of the product documentation must be observed.

Model: Radio laser scanner SK-200

Directive: EMC Directive 98/336/EC)*

European Standards: EN 55022: 1998, class B
EN 55024: May 1999

Directive: Low Voltage Directive 73/23/EC*)

European Standards: EN 60950*
EN 60825-1* (Laser)

Directive: 94/9/EC*)

European Standards: EN 50014: 02/2000*
EN 50020: 2002
EN 50028: 07/1988
EN 50281-1-1: 11/2003

*) including amendments

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(1) EG-Baumusterprüfbescheinigung

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**

(3) EG Baumusterprüfbescheinigungsnummer

TÜV 02 ATEX 1823



(4) Gerät: Barcode Handscanner Typ SK-200

(5) Hersteller: E.L.B. Ex-Geräte Bachmann GmbH

(6) Anschrift: D-64625 Bensheim, An der Hartbrücke 8

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Zertifizierungsstelle, bescheinigt als benannte Stelle Nr. 0032 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. 02 YEX 162736 festgelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50014:1997

EN 50020:1994

(10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Prüfung des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes. Diese Anforderungen werden nicht durch diese Bescheinigung abgedeckt.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:



II 2 G EEx ib IIC T4

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Fax: 0511 986-2555

Hannover, 23.04.2002

Strüdel

Der Leiter



TÜV NORD CERT

(13)

A N L A G E

(14) **EG-Baumusterprüfbescheinigung Nr. TÜV 02 ATEX 1823**

(15) Beschreibung des Gerätes

Der Barcode Handscanner Typ SK-200 dient zum Lesen und Verarbeiten von Barcodes innerhalb explosionsgefährdeter Bereiche, die Betriebsmittel der Kategorien 2 bzw. 3 erfordern.

Der zulässige Umgebungstemperaturbereich beträgt -30°C bis $+50^{\circ}\text{C}$.

Elektrische Daten

Versorgungsstromkreis
(D-Sub-Stecker)

in Zündschutzart Eigensicherheit EEx ib IIC
nur zum Anschluss an bescheinigte eigensichere
Stromkreise

Höchstwerte: $U_i = 5,45 \text{ V}$
 $P_i = 1,3 \text{ W}$

Die wirksame innere Kapazität und Induktivität sind vernachlässigbar klein.

Datenstromkreise
(D-Sub-Stecker)

in Zündschutzart Eigensicherheit EEx ib IIC

Höchstwerte: $U_o = \pm 5,45 \text{ V}$
 $I_o = 54 \text{ mA}$

höchstzulässige äußere Induktivität 13 mH
höchstzulässige äußere Kapazität 65 μF

(16) Prüfungsunterlagen sind im Prüfbericht Nr. 02 YEX 162736 aufgelistet.

(17) Besondere Bedingung

keine

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

keine zusätzlichen

Translation
1. SUPPLEMENT
to
EC-TYPE EXAMINATION CERTIFICATE No. TÜV 02 ATEX 1823

Equipment: Barcode handscanner type SK-200
Manufacturer: E.L.B. Ex-Geräte Bachmann GmbH
Address: D-64625 Bensheim, An der Hartbrücke 8

Amendments:

In the future, the Barcode handscanner type SK-200 may also be manufactured according to the test documents. The amendments concern the internal design and the marking of the type.

Additional marking: **II 2 D T 70°C**

The electrical data and all other data apply unchanged for this Supplement.

(16) The test documents are listed in the test report N° 03 YEX 550725.

(17) Special conditions for safe use

no additional ones

(18) Essential Health and Safety Requirements

no additional ones

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Hannover, 2006-03-17



Head of the
Certification Body

Translation
2. SUPPLEMENT
to
EC-TYPE EXAMINATION CERTIFICATE No. TÜV 02 ATEX 1823

Equipment: Barcode handscanner type SK-200
Manufacturer: E.L.B. Ex-Geräte Bachmann GmbH
Address: D-64625 Bensheim, An der Hartbrücke 8

Amendments:

The change concerns the housing of the handset scanner. This is made in the future of the material Lexan Resin 505R of GE Advanced Materials.

The electrical data and all other data apply unchanged for this Supplement.

The equipment incl. of this supplement meets the requirements of these standards:

EN 13 463-1:2001

(16) The test documents are listed in the test report N° 06 YEX 552743.

(17) Special conditions for safe use

no additional ones

(18) Essential Health and Safety Requirements

no additional ones

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Hannover, 2006-03-14



Head of the
Certification Body



Translation

(1) **STATEMENT OF CONFORMITY**

(2) Equipment or Protective System intended for use in potentially explosive atmospheres - **Directive 94/9/EC**



(3) Test certificate number

TÜV 03 ATEX 2030

(4) Equipment: Barcode hand held scanner type SK-200

(5) Manufacturer: E.L.B. Ex-Geräte Bachmann GmbH

(6) Address: D-64625 Bensheim, An der Hartbrücke 8

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

(8) The TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Certification Body, notified body number N° 0032 in accordance with Article 9 of the Council Directive 94/9/EC of March 23, 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 N° 03 YEX 550244.

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

EN 50021:1999

(10) If the sign "X" is placed after the certification 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 statement of conformity certificate relates only to the design, examination and tests of the specified equipment 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. These are not covered by this certificate.

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

 **II 3 G EEx nA II T4**

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Hanover, 2003-03-06

Head of the
Certification Body



TÜV NORD CERT



(13)

SCHEDULE

(14) **STATEMENT OF CONFORMITY N° TÜV 03 ATEX 2030**

(15) Description of equipment or protective system

The barcode hand held scanner type SK-200 is intended for the reading and processing of barcodes in hazardous explosive areas that require apparatus of category 3.

The permissible ambient temperature range is -30°C to $+50^{\circ}\text{C}$.

Electrical data

Supply/data circuit
(D sub plug)

for the connection to an energy limited circuits

Voltage in normal operation: $U_i = 5.45\text{ V}$

Current in normal operation: $I_i = 500\text{ mA}$

The effective internal capacitance and inductance are negligibly small.

(16) Test documents are listed in the test report N° 03 YEX 550244.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones