# 1. Description

The supply module was developed specially for direct mounting in hazardous areas in Zone 1 and 21 and is ATEX-certified.

The supply module is a permanently installed piece of electrical operating equipment and serves to supply power to intrinsically safe operating equipment and components in hazardous areas (e.g. the BCS 160ex hand scanner series). The supply module is installed in areas designated for the use of devices from Equipment Group II, Category 2G and 2D.

It is used exclusively in combination with operating devices which satisfy the requirements of Overvoltage Category I. The supply module may not be installed in Zone(s) 0/20.

The system supplies intrinsically safe supply voltage at the output and converts data for RS232/RS422 or USB (on the input side).

Two variants are available for the supply voltage:

- AC 90 V to 253 V with RS232/RS422 or USB interface
- DC 24 V with RS232/RS422 or USB interface

It is not necessary to install it in an Ex e or in an Ex tD enclosure.

# 2. Explosion Protection

| ATEX | |
|---|---|
| Ex protection type | ⟨Ex⟩ II 2G Ex e q [ib] IIC T4 Gb<br>⟨Ex⟩ II 2D Ex tb IIIC T135°C Db<br>-25 °C ≤ Ta ≤ +60 °C |
| Certification | IBExU 09 ATEX 1091<br>See the EC Type Examination Certification for further details. |
| Product marking | CE 0044 |
| Directives | 94/9/EC<br>2004/108/EC |
| Standards | EN 60079-0:2009<br>EN 60079-5:2007<br>EN 60079-7:2007<br>EN 60079-11:2012<br>EN 60079-31:2009<br>EN 61000-6-2:2005<br>EN 61000-6-4:2007 |
| Other applicable documents | Declaration of EC Conformity |

# 3. Safety Information

The "Supply module" may be used only if it is clean and free of any damage and only within the specified temperature class and the temperature range indicated for it. It is essential to comply with the permissible operating data for the device being used. Using the product in areas other than those specified or modifying it will exempt BARTEC from liability for defects or any further liability.

If it is installed incorrectly without protection, it can malfunction and the Ex protection can be lost.

The supply module may be connected and assembled/disassembled only by qualified personnel who are authorised and trained to assemble electrical components in hazardous areas.

For electrical systems the relevant installation and operating regulations must be complied with, such as e.g. Directive 99/92/EC, Directive 94/9/EC, German industrial health and safety ordinance (BetrSichV), EN 60079-14, the DIN VDE 0100 series or other applicable national standards or ordinances. The operator of an electrical system in a hazardous environment must keep the operating equipment in good condition, operate and monitor it properly and do maintenance and repairs.

The generally applicable statutory rules and other binding directives relating to workplace safety, accident prevention and environmental protection must be observed.

## Danger, Warning and Note Symbols

Safety instructions and warnings are specially highlighted in these operating instructions and marked by symbols.

**DANGER** The DANGER sign draws attention to a direct threat which, if not avoided, will lead to death or very serious injuries.

**WARNING** WARNING draws attention to a possible threat which, if not avoided, can lead to death or very serious injuries.

**CAUTION** CAUTION draws attention to a possible danger, which, if not avoided, can lead to slight or minor injuries.

**ATTENTION** ATTENTION draws attention to a potentially damaging situation, which, if not avoided, can cause damage to the equipment or objects in its vicinity.

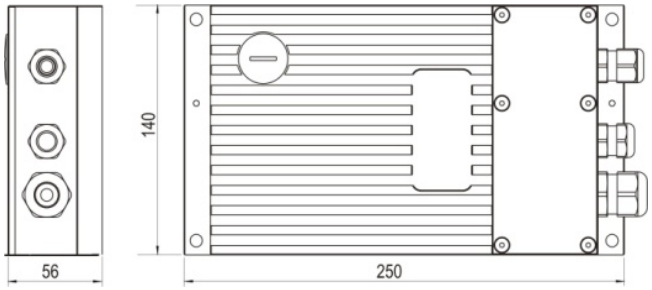
Important instructions and information on effective, economical and environmentally compatible handling.



BARTEC GmbH Max-Eyth-Straße 16 97980 Bad Mergentheim Germany
Phone: +49 7931 597-0 Fax: +49 7931 597-119 info@bartec.de www.bartec.de

# 4. Technical Data

| Physical features | |
|---|---|
| Enclosure material | Aluminium |
| Electrical connections | Terminal 2.5 mm², fine-stranded |
| Weight without supply cable | approx. 3.1 kg (without supply cable) |
| Dimensions in mm/inch (length x width x depth) | 140 mm x 250 mm x 56 mm |




| User environment | |
|---|---|
| Operating temperature | -25 °C to +60 °C |
| Storage temperature and transport temperature | -25 °C to +60 °C |
| Relative air humidity | 5 % to 95 % (non-condensing) |
| Protection class (EN 60529) | IP 64 |

| Electrical input data | | |
|---|---|---|
| Type | | Supply voltage |
| 17-21BB-1705 and 17-21BB-1706 | | AC 90 V to 253 V, 50 to 60 Hz |
| 17-21BB-1703 and 17-21BB-1704 | | DC 24 V ± 25 % |

| Electrical output data | | |
|---|---|---|
| Rated voltage | $U_m$ | DC 253 V |
| Maximum output voltage | $U_o$ | DC 4.9 V |
| Maximum output current | $I_o$ | 440 mA |
| Maximum output power | $P_o$ | 1.20 W |
| Maximum external capacitance | $C_o$ | 113 µF |
| Maximum external inductance | $L_i$ | 0.1 mH |

| Data circuits – non-intrinsically safe data circuits | | |
|---|---|---|
| RS232 | TxD, GND | ± 12 V / 4 mA |
| RS422 | T+, T- | ± 12 V / -7 V / 4 mA |
| USB | Shielding, GND, D+, D- | USB + 5V / 68 mA |

| Data circuits –intrinsically safe data circuits | | |
|---|---|---|
| RS232 | RxD; GND | $U_i$ = DC 5.5 V |
| USB | D+, D-, GND, PE | $U_{o\ D+/D-}$ = 4.9 V<br>$I_{o\ D+/D-}$ = 20 mA per data line<br>$P_{o\ D+/D-}$ = 24 mW per data line<br>Linear characteristic curve |

| Interface ranges | | | | |
|---|---|---|---|---|
| Interface | Range | Connection terminal | | |
| RS232 | up to 20 m | X4 (GND) | X5 ($T_x$) | |
| RS422 | up to 1000 m | X6 (PE) | X7 ($T_{+}$) | X8(T.) |
| USB | up to 5 m | X7 ($D_+$) | X8 (D.) | |

# 5. Transport and Storage

**ATTENTION**

Damage due to inappropriate transport or incorrect storage!

- ▶ Observe the admissible storage and transport temperatures.
- ▶ Condensation can form on the device in a cold environment.
- ▶ Use the original packaging for transport/storage.

# 6. Mounting

Only qualified personal, i.e. trained electricians, will have the necessary specialist know-how to be able to do all the electrical work. Familiarity with and the technically perfect implementation of the safety instructions described in this manual are preconditions for safe installation and commissioning.

Before assembling the device, make sure that all components and documents are there.

Scope of supply: 1 x supply module
1 x pre-assembled supply cable
1 x operating instructions

**DANGER**

There is a risk to life in explosive atmospheres!

- ▶ The device must be completely assembled and free of damage before it may be operated.
- ▶ Do not alter or modify the device in any way.
- ▶ Avoid the influence of heat that is higher or lower than the specified temperature range.



BARTEC GmbH Max-Eyth-Straße 16 97980 Bad Mergentheim Germany
Phone: +49 7931 597-0 Fax: +49 7931 597-119 info@bartec.de www.bartec.de

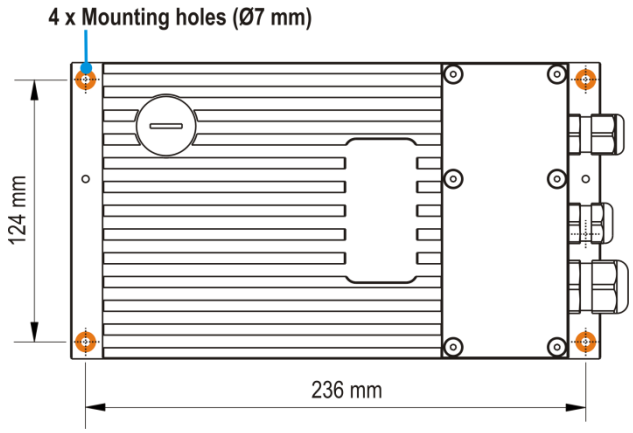
## Fixing to a stable supporting surface

**DANGER**

Electrical voltage!
There is a risk of a fatal injury in an explosive atmosphere!

- ▶ Do not mount components or put them into operation in a cold environment. Take condensation into account!
- ▶ Do not open the device! Exception: terminal connection chamber
- ▶ Always disconnect the terminal connection chamber from voltage before opening it!

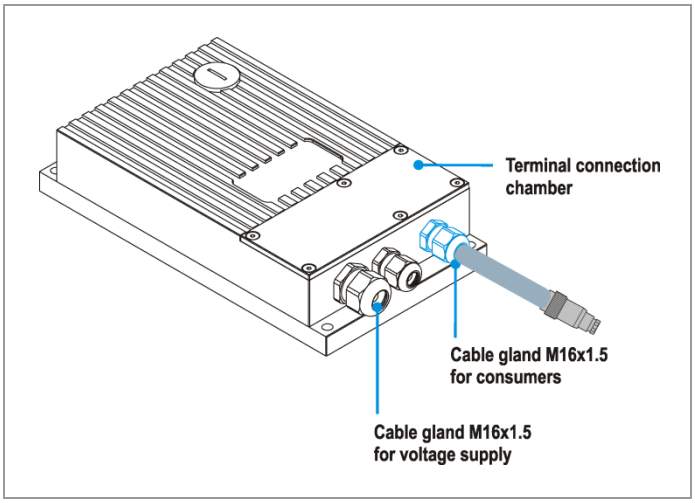
Four mounting holes (∅7 mm) are provided on the base plate of the supply module to facilitate secure mounting.




*Drilling pattern , 4 x mounting holes, dia. 7 mm*

(1) Mount the supply module on a stable supporting surface.
(2) Choose a mounting location where the supply module will not be at risk from falling parts or impacts.
(3) Do not open the terminal connection chamber.

# 7. Installation




**ATTENTION**

Damage through incorrect use!
Product may be damaged!

- ▶ The core insulation must not show any signs of damage.
- ▶ The connection and data line must be laid with protection (e.g. cable duct)
- ▶ Adjust the connection cable and data line to the thermal and mechanical requirements in the area of use.

## Rated connection capacity of the terminals

| Permissible core cross-sections | |
|---|---|
| Conductor cross-section rigid | 0.2 mm² to 2.5 mm² |
| Conductor cross-section flexible | 0.2 mm² to 2.5 mm² |
| Conductor cross-section flexible with wire-end sleeve without plastic cover | 0.25 mm² to 1.5 mm² |
| Conductor cross-section flexible with wire-end sleeve with plastic cover | 0.25 mm² to 1.5 mm² |
| Conductor cross-section AWG/kcmil | 24 to 14 |

## Permissible connection cable diameters

| | |
|---|---|
| Cable gland Ex e M20x1.5 (black) | 6 - 13 mm |
| Cable gland Ex e M16x1.5 (black) | 4 - 9 mm |

## Terminals for external conductors

EN 60079-14 (Explosive Atmospheres - Part 14: Electrical Installations Design, Selection and Erection) must be observed when connecting the external conductors to the terminals in the hazardous area.

The conductors must be connected in accordance with the terminal connection diagram.



BARTEC GmbH Max-Eyth-Straße 16 97980 Bad Mergentheim Germany
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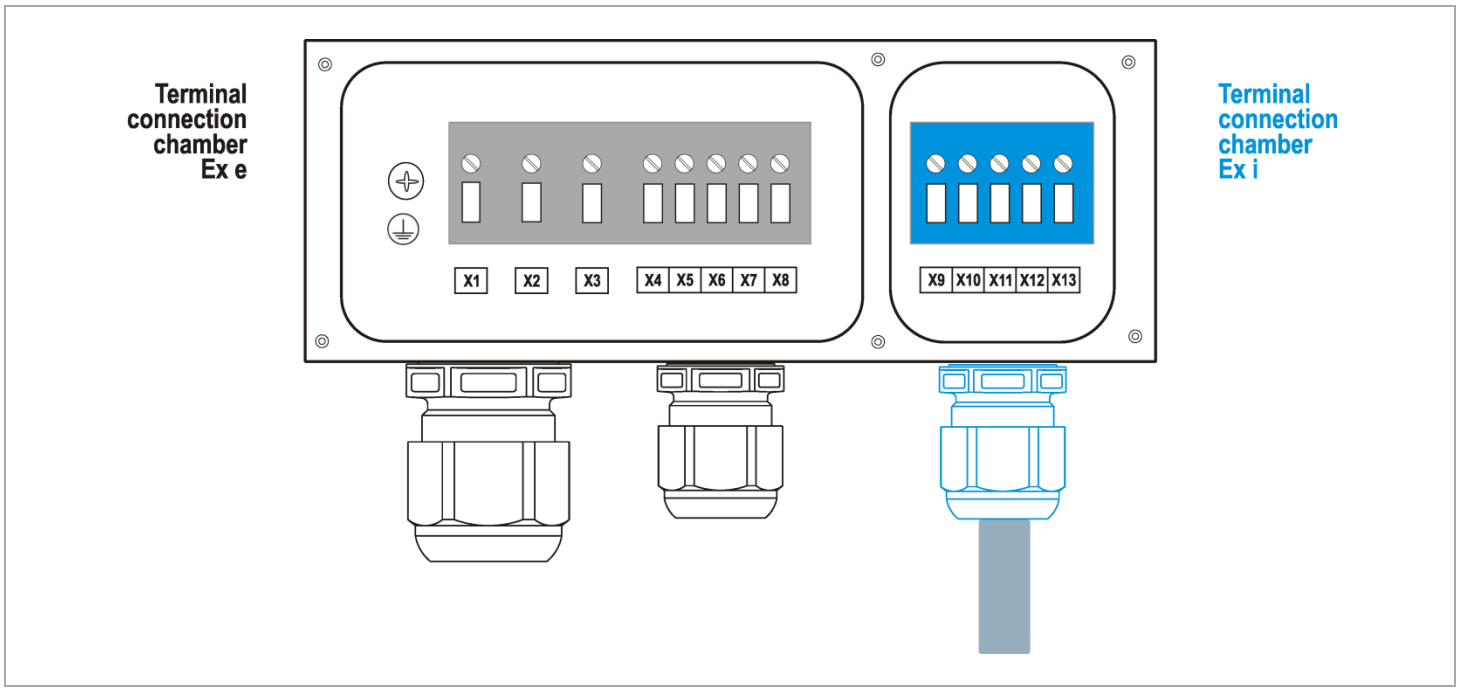
## Terminal compartment




## Terminal connection plan RS232/RS422 Ex e variant

| Terminal | Marking | Description | Type / Comments |
|---|---|---|---|
| X1 | + / -L | L = AC 100 V to 250 V<br>+ = DC 24 V | 17-21BB-1705<br>17-21BB-1703 |
| X2 | - / N | N = Neutral conductors<br>- = Minus | 17-21BB-1705<br>17-21BB-1703<br>internally connected to PE |
| X3 | PE | | - |
| X4 | GND | RS232 | connected internally to PE |
| X5 | TxD | RS232 | - |
| X6 | Shielding | RS232/RS422 | connected internally to PE |
| X7 | T+ | RS422 | - |
| X8 | T- | RS422 | - |

## Terminal connection plan variant USB Ex e

| Terminal | Marking | Description | Type /Note |
|---|---|---|---|
| X1 | + / -L | L = AC 100 V to 250 V<br>+ = DC 24 V | 17-21BB-1706<br>17-21BB-1704 |
| X2 | - / N | N = Neutral conductor<br>- = Minus | 17-21BB-1706<br>17-21BB-1704<br>connected internally to PE |
| X3 | PE | PE | - |
| X4 | GND | USB | connected internally to PE |
| X5 | Shielding | USB | connected internally to PE |
| X6 | not assigned | | |
| X7 | D+ | USB | - |
| X8 | D- | USB | - |

## Terminal connection plan variant RS232/RS422 Ex i

| Terminal | Marking | Description | Type /Note |
|---|---|---|---|
| X9 | RxD | RS232 | |
| X10 | GND | RS232 | connected internally to PE |
| X11 | PE | Shielding | connected internally to PE |
| X12 | GND | | internally connected to PE |
| X13 | +UB | Intrinsically safe output voltage | |

## Terminal connection plan variant USB Ex i

| Terminal | Marking | Description | Type /Note |
|---|---|---|---|
| X9 | D+ | USB | |
| X10 | D- | USB | |
| X11 | PE | Shielding | connected internally to PE |
| X12 | GND | | connected internally to PE |
| X13 | +UB | Intrinsically safe output voltage | |



BARTEC GmbH Max-Eyth-Straße 16 97980 Bad Mergentheim Germany
Phone: +49 7931 597-0 Fax: +49 7931 597-119
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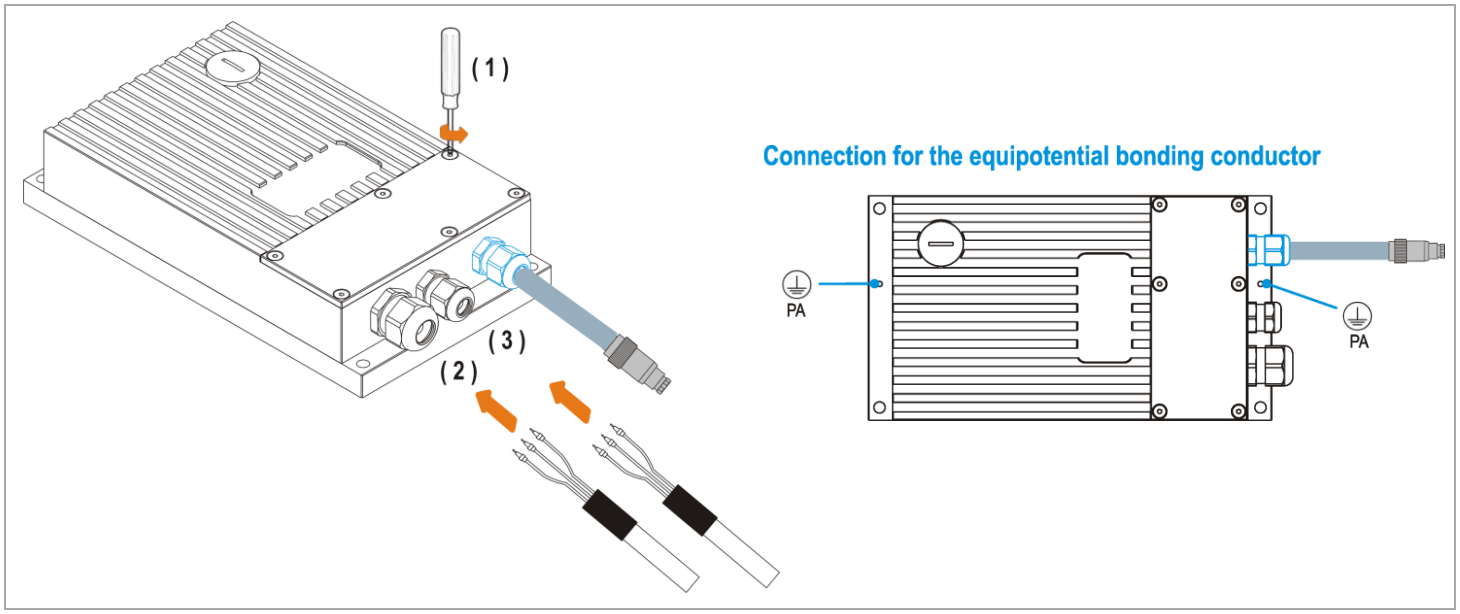


## Work steps

(1) Use a Torx screwdriver to loosen and remove the screws on the cover plate on the terminal connection chamber.

(2) Insert the voltage supply cable through the M20x1.5 cable gland.

(3) Insert the data line to the PC (terminals X4-X8) through the M16x1.5 cable gland.

(4) Connect the equipotential bonding conductor to the equipotential bonding.

(5) Connect the voltage supply cable as shown in the terminal connection plan (terminals X1-X3).

(6) Connect the data line for the PC (terminals X4-X8) as shown in the terminal connection plan (terminals X4-X8).

(7) The supply cable for the hand-held scanner is already connected to terminals X9-X13.

(8) Check the connections and the terminal assignment.

(9) Close the cover on the terminal connection chamber and tighten the screws with max. 0.5 Nm.

(10) Connect the supply cable to the consumer and the data line to the PC.

(11) Connect the voltage supply cable to the all-pole mains isolating switch or fuse.

## Equipotential bonding conductor

Connect the equipotential bonding conductor to the equipotential bonding. As the intrinsically safe circuits are galvanically connected to earth, there must be equipotential bonding along the entire course of the intrinsically safe circuits.

## Before commissioning check that:

- ▶ the device has been installed correctly?
- ▶ the device is not damaged?
- ▶ the connection has been established properly ?
- ▶ the terminal connection chamber is closed?
- ▶ the equipotential bonding terminal is connected correctly to earth potential?

# 8. Commissioning

Once the final inspection has been carried out, the device can be put into operation.

- ▶ Connect the supply voltage.

**⚠ DANGER**

Avoid electrostatic charging in hazardous areas! There is a risk of a fatal injury in an explosive atmosphere!

- ▶ Do not use a dry cloth to wipe or clean the devices.
- ▶ Wear suitable clothing and shoes.
- ▶ Do not use rubber gloves or suchlike.

## Maintenance

Regular maintenance is not necessary if the device is operated appropriately in conformance to the installation instructions and with due consideration to the ambient conditions.

Dust Ex:

Dust deposits on and around the enclosure must be removed at regular intervals.

# 9. Fault Clearance, Repairs

1. Check the wiring and connections.
2. Check voltage.
3. It is not possible to do any repairs.

Faults when making a connection:

1. Is the voltage supply active?
2. Are all screw-type terminals tightened correctly?



BARTEC GmbH Max-Eyth-Straße 16 97980 Bad Mergentheim Germany
Phone: +49 7931 597-0 Fax: +49 7931 597-119
info@bartec.de www.bartec.de

## 10. Disposal

The components for the supply modules contain metal, plastic parts and electronic components.

Our devices are intended as professional electric devices for business use only, referred to as B2B devices under the WEEE directive. The WEEE directive sets the framework conditions for an EU-wide applicable handling of waste electric and electronic equipment. This means that it is not permitted to dispose of this equipment in normal household waste. It should not be given to the collection sites set up by the public waste management authorities either but instead it should be disposed of in a separate collection in an environmentally sound manner.

All products acquired from us can be sent back to us when our customers wish to dispose of them. We ensure that they are disposed of in accordance with the respective applicable statutory regulations.

The sender pays the costs of the dispatch/packaging.

## 11. Order number

| Supply module | | |
|---|---|---|
| with AC 90 V to 253 V | RS 232/RS422 | Type 17-21BB-1705 |
| with DC 24 V | RS 232/RS422 | Type 17-21BB-1703 |
| with AC 90 V to 253 | USB | Type 17-21BB-1706 |
| with DC 24 V | USB | Type 17-21BB-1704 |

## 12. Changes to the Document

BARTEC GmbH reserves the right to alter the contents of this document without notice. No guarantee is given for the correctness of the information. In case of doubt the German safety instructions shall apply because it is not possible to rule out errors in translation or in printing. In the event of a legal dispute, the “General Terms and Conditions” of the BARTEC group will apply in addition.

The up-to-date versions of the data sheets, manuals, certificates and EC Declarations of Conformance may be downloaded from www.bartec-group.com under “Products & Solutions” in the “Automation Technology” product area or ordered directly from BARTEC GmbH.

## 13. Service Address

BARTEC GmbH
Max-Eyth-Straße 16
97980 Bad Mergentheim
Germany

Tel. +49 7931 597-0
Fax +49 7931 597-119

E-mail: info@bartec.de
Internet: www.bartec-group.com

# 14. Declaration of Conformity

Erklärung der Konformität
Declaration of Conformity
Attestation de conformité

N° 11-21BB-7C0001_A

BARTEC
BARTEC GmbH
Max-Eyth-Straße 16
97980 Bad Mergentheim
Germany

| Wir | We | Nous |
|---|---|---|
| **BARTEC GmbH,** | | |
| erklären in alleiniger Verantwortung, dass das Produkt | declare under our sole responsibility that the product | attestons sous notre seule responsabilité que le produit |
| **Versorgungsmodul für Handscanner** | **Power module for handheld scanner** | **Unité d'alimentation Pour lecteur de code-barres** |

**Typenbezeichnung :** 17-21BB-1700, 17-21BB-1701, 17-21BB-1702, 17-21BB-1703, 17-21BB-1704, 17-21BB-1705, 17-21BB-1706

| | | |
|---|---|---|
| auf das sich diese Erklärung bezieht den Anforderungen der folgenden **Richtlinien (RL)** entspricht | to which this declaration relates is in accordance with the provision of the following **directives (D)** | se référant à cette attestation correspond aux dispositions des **directives (D)** suivantes |
| **ATEX-Richtlinie 94/9/EG** | **ATEX-Directive 94/9/EC** | **ATEX-Directive 94/9/CE** |
| **EMV-Richtlinie 2004/108/EG** | **EMC-Directive 2004/108/EC** | **CEM-Directive 2004/108/CE.** |
| und mit folgenden Normen oder normativen Dokumenten übereinstimmt | and is in conformity with the following standards or other normative documents | et est conforme aux normes ou documents normatifs ci-dessous |
| **EN 60079-0:2009** | **EN 60079-11:2012** | **EN 61000-6-2:2005** |
| **EN 60079-5:2007** | **EN 60079-31:2009** | **EN 61000-6-4:2007** |
| **EN 60079-7:2007** | | |

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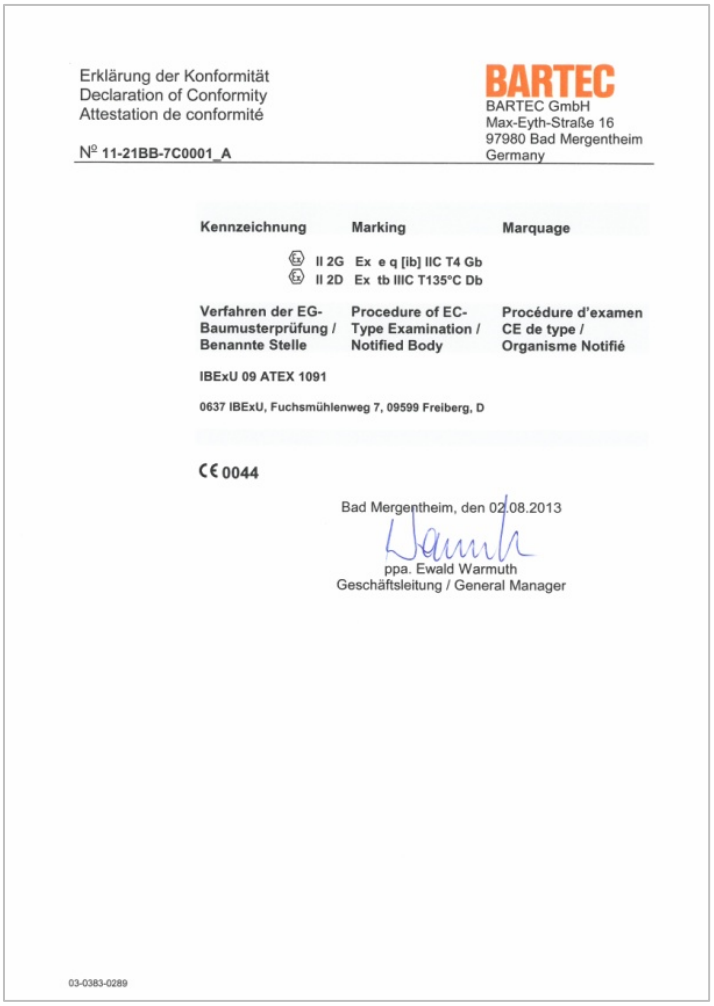

Erklärung der Konformität
Declaration of Conformity
Attestation de conformité

N° 11-21BB-7C0001_A

BARTEC
BARTEC GmbH
Max-Eyth-Straße 16
97980 Bad Mergentheim
Germany

| Kennzeichnung | Marking | Marquage |
|---|---|---|
| | Ex II 2G Ex e q [ib] IIC T4 Gb | |
| | Ex II 2D Ex tb IIIC T135°C Db | |
| **Verfahren der EG-Baumusterprüfung / Benannte Stelle** | **Procedure of EC-Type Examination / Notified Body** | **Procédure d'examen CE de type / Organisme Notifié** |
| **IBExU 09 ATEX 1091** | | |
| **0637 IBExU, Fuchsmühlenweg 7, 09599 Freiberg, D** | | |

CE 0044

Bad Mergentheim, den 02.08.2013

ppa. Ewald Warmuth
Geschäftsleitung / General Manager

03-0383-0289



BARTEC GmbH Max-Eyth-Straße 16 97980 Bad Mergentheim Germany
Phone: +49 7931 597-0 Fax: +49 7931 597-119
info@bartec.de www.bartec.de