User Manual – Translation of the original

Hand-held scanner

BCS 3608\textsuperscript{ex-NI}, BCS 3608\textsuperscript{ex-IS}
BCS 3678\textsuperscript{ex-NI}, BCS 3678\textsuperscript{ex-IS}

ATEX / IECEx Zone 1 and Zone 21
ATEX / IECEx Zone 2 and Zone 22
NEC / CEC Class I, II, III DIV 1
NEC / CEC Class I, II, III DIV 2

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1 About this documentation

Read carefully before commissioning the device.

The User Manual is an integral part of the device.
The User Manual is directed at all persons who are entrusted with handling the device.
Knowledge of the safety instructions and warnings in this User Manual and strict compliance with them is essential for safe handling.
— Carefully read the User Manual and especially the safety instructions before using the device.
— Keep the User Manual throughout the service life of the device.
— Make the User Manual accessible to all people who are entrusted with handling the device.

1.1 Target groups

<table>
<thead>
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<th>Tasks</th>
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<td>• Connection</td>
</tr>
<tr>
<td></td>
<td>• Commissioning and decommissioning</td>
</tr>
<tr>
<td></td>
<td>• Repair</td>
</tr>
<tr>
<td></td>
<td>• Cleaning</td>
</tr>
<tr>
<td>IT specialist</td>
<td>• Configuration</td>
</tr>
<tr>
<td></td>
<td>• Cleaning</td>
</tr>
<tr>
<td>Forwarding agent</td>
<td>• Transport</td>
</tr>
<tr>
<td>Operator</td>
<td>• Operating the scanner after instruction by the operating company</td>
</tr>
<tr>
<td></td>
<td>• Changing batteries</td>
</tr>
<tr>
<td></td>
<td>• Bluetooth version: charging the battery</td>
</tr>
<tr>
<td></td>
<td>• Cleaning</td>
</tr>
</tbody>
</table>

Table 1 Tasks of the various target groups
1.2 Explanation of Symbols

1.2.1 Warnings

Warnings are used in this User Manual to warn of the risks of damage to property and personal injuries.

Always read and follow these warnings.

Warnings in this User Manual are specially highlighted and indicated by symbols:

- **DANGER** designates a hazardous situation that can lead to death or serious, permanent injuries if safety measures are disregarded.

- **WARNING** designates a hazardous situation that can lead to serious but not permanent injuries if safety measures are disregarded.

- **CAUTION** designates a hazardous situation that can lead to minor injuries if safety measures are disregarded.

- **ATTENTION** designates a hazardous situation that can lead to material damage if safety measures are disregarded.

Explanation of the structure of a warning

- **WARNING TERM**
  
  Specification of the source of danger, cause of danger or type of danger
  
  Consequence if the safety measures described are disregarded.

  - Safety measure

Example of a warning

- **DANGER**
  
  Changing the battery in a potentially explosive atmosphere!

  Death or serious injury.

  - Only change the battery outside the potentially explosive atmosphere.
1.2.2 Symbols and means of presentation

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>✂️</td>
<td>Important advice and information for the effective, efficient and environmentally sound use of the product.</td>
</tr>
<tr>
<td>✔️</td>
<td>Condition that must be met before the subsequent actions can be performed.</td>
</tr>
<tr>
<td>▶️</td>
<td>Individual steps you must take.</td>
</tr>
<tr>
<td>1., 2., …</td>
<td>Various steps to be performed in the order specified.</td>
</tr>
<tr>
<td>➔</td>
<td>Indication of the results of a step or of several steps for monitoring success.</td>
</tr>
</tbody>
</table>

Table 2 Symbols and means of presentation

1.2.3 Explanation of terms

Some abbreviations are used in the documentation.

**IS** - Intrinsically Safe → is used as an umbrella term for the Zone 1 and Division 1 versions.

**NI** - Non Incendive → is used as an umbrella term for Zone 2 and Division 2.

**BCS 3600ex** - stands for the entire explosion-protected product range.

1.3 Technical changes

The current versions of data sheets, operating instructions, certificates, EU declarations of conformity and information about new accessories can be downloaded from www.bartec.com under “Products” in the “Automation & Enterprise Mobility” product area or can be requested directly from BARTEC GmbH (see Chapter 1.5).

Please find further Service and Support download information on http://automation.bartec.de/indexE.htm

1.4 Languages

The original User Manual was drawn up in German. All other available languages are translations of the original User Manual.

The User Manual is available in German, English and French. If other languages are required, these should be requested from BARTEC or specified when placing the order.
1.5 Reference documents

All documents are available online from the following websites:
- BARTEC (global): www.bartec.com
- BARTEC: http://automation.bartec.de
- ZEBRA (ZEB): www.zebra.com

In the event of an overlap with Zebra user manuals, the instructions in the BARTEC User Manual apply. The BARTEC User Manual takes priority.

<table>
<thead>
<tr>
<th>Document</th>
<th>Explanation</th>
<th>Download site</th>
</tr>
</thead>
<tbody>
<tr>
<td>BARTEC</td>
<td></td>
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</tr>
<tr>
<td>Quick Start Guide</td>
<td>Guidelines on commissioning and the safe use of hand-held scanners (including installation, safety information related to explosion protection and information regarding programming)</td>
<td>global</td>
</tr>
<tr>
<td>BCS 3608ex-NI/BCS 3608ex-IS/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCS 3678ex-NI/BCS 3678ex-IS</td>
<td></td>
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</tr>
<tr>
<td>Data sheet</td>
<td>Data on explosion protection and technical data for hand-held scanners, universal supply module and accessories</td>
<td>global</td>
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<td></td>
</tr>
<tr>
<td>BCS 3678ex-NI/BCS 3678ex-IS</td>
<td></td>
<td></td>
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<tr>
<td>ZEBRA</td>
<td></td>
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</tr>
<tr>
<td>For DS3608-HP and DS3678-HP:</td>
<td>Instructions for commissioning, operating, configuring, programming and maintaining hand-held scanners (full information can be found on the ZEBRA support page).</td>
<td>ZEB</td>
</tr>
<tr>
<td>• Product Reference Guide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Multicode Data Formatting and Preferred Symbol</td>
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<td></td>
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<tr>
<td>• Advanced Data Formatting (ADF)</td>
<td></td>
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<tr>
<td>• Simple Serial Interface</td>
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<td>Programmer’s Guide</td>
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Table 3 Reference documents

Further information on programming hand-held scanners can be found in the original Zebra documentation. The explosion protected BARTEC BCS 3608ex-NI / BCS 3608ex-IS / BCS 3678ex-NI / BCS 3678ex-IS hand-held scanners are based on the Zebra DS3608-HP and DS3678-HP hand-held scanners.
2 Safety

2.1 Intended use

The hand-held scanners in the BCS 3600ex series are hand-operated items of electrical equipment. They are used for the mobile capture, processing and transfer of data within potentially explosive atmospheres.

The data are transferred either using a connection cable (BCS 3608ex) or using a Bluetooth connection (BCS 3678ex).

The hand-held scanners in the BCS 3600ex series have been modified for use in the following potentially explosive atmospheres:

<table>
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<th>Configuration</th>
<th>Approved zone</th>
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<td>BCS 3678ex-IS</td>
<td>ATEX / IECEx Zone 1 and Zone 21</td>
</tr>
<tr>
<td>(Type 17-A1S4-XXXX)</td>
<td>NEC / CEC Class I, II, III DIV 1</td>
</tr>
<tr>
<td>BCS 3608ex-IS</td>
<td>ATEX / IECEx Zone 2 and Zone 22</td>
</tr>
<tr>
<td>(Type 17-A1S4-XXXX)</td>
<td>NEC / CEC Class I, II, III DIV 2</td>
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<td>ATEX / IECEx Zone 1 and Zone 21</td>
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<td>NEC / CEC Class I, II, III DIV 1</td>
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<tr>
<td>BCS 3608ex-NI</td>
<td>ATEX / IECEx Zone 2 and Zone 22</td>
</tr>
<tr>
<td>(Type B7-A2S4-XXXX)</td>
<td>NEC / CEC Class I, II, III DIV 2</td>
</tr>
</tbody>
</table>

Table 4 Assignment configuration for the explosion protected area

The hand-held scanners may only be used together with operating equipment that corresponds to Installation Category I.

You must comply with the permissible ambient conditions for the device used (see chapter 14).
2.2 Personnel qualifications

The following skills are required for handling the device:

<table>
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<tr>
<th>Target group</th>
<th>Skills</th>
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<tbody>
<tr>
<td>Qualified electricians</td>
<td>• Professional training</td>
</tr>
<tr>
<td></td>
<td>• Knowledge and experience to recognise and avoid risks that can emanate from electricity</td>
</tr>
<tr>
<td></td>
<td>• Understanding of the overall system</td>
</tr>
<tr>
<td></td>
<td>• Special instruction for potentially explosive atmospheres</td>
</tr>
<tr>
<td>IT specialists</td>
<td>• Understanding of the overall system</td>
</tr>
<tr>
<td></td>
<td>• Configuration/programming</td>
</tr>
<tr>
<td></td>
<td>• Understanding of programming manuals</td>
</tr>
<tr>
<td>Warehouse and transport employees</td>
<td>• Loading and transport activities</td>
</tr>
<tr>
<td></td>
<td>• Correct storage</td>
</tr>
<tr>
<td>Operators</td>
<td>• Instruction by the operating company on operation, changing and loading the battery</td>
</tr>
<tr>
<td></td>
<td>• Special instruction for potentially explosive atmospheres</td>
</tr>
</tbody>
</table>

Table 5 Personnel qualifications

2.3 Explosion protection

Incorrect use of the hand-held scanner and its accessories can trigger fires and explosions in potentially explosive atmospheres.

➤ Read the instructions in this Manual thoroughly and follow them when using the device.

In the event of an overlap with user manuals from Zebra, the instructions in the BARTEC User Manual apply. The BARTEC User Manual takes priority.

2.3.1 Using hand-held scanners and accessories

➤ Always carry out an inspection prior to use (see Chapter 8.2).
➤ Ensure that the application area corresponds to the explosion protection marking and permissible ambient conditions (see chapter 14).
➤ Remove the device from the potentially explosive atmosphere immediately in the event of a malfunction or damaged enclosure.
➤ Only use accessories specified by BARTEC in the potentially explosive atmosphere.
➤ Have all maintenance work on and inspections of accessories conducted by authorised personnel.
➤ Have all repairs to the hand-held scanner conducted by BARTEC.
2.4 Residual risks

2.4.1 Risk of an explosion caused by electrical ignition sources

Electrical ignition sources can trigger fires and explosions in a potentially explosive atmosphere.

Non-approved components
Specific hand-held scanners and accessories (including universal supply module, battery, cable) are suitable for each potentially explosive atmosphere. Hand-held scanners and components that have not been approved for the respective potentially explosive atmosphere may trigger explosions.
▶ Only use components that have been approved for the relevant potentially explosive atmosphere.

Spark formation during battery change and cable connection
Sparks can arise when changing the battery or connecting cables. Sparks can trigger an explosion in a potentially explosive atmosphere.
▶ Only insert or remove the battery outside the potentially explosive atmosphere.
▶ Only connect or disconnect the cable outside the potentially explosive atmosphere.
▶ Always have cables connected by a qualified electrician.

Spark formation caused by the battery falling out / the connection cable coming unplugged
The following risks arise if the safety lock on the underside of the hand-held scanner is not correctly closed:
— The battery on a Bluetooth hand-held scanner can fall out.
— The connection cable on a corded hand-held scanner can come unplugged.
This can produce sparks which can trigger an explosion.
▶ Check that the safety lock is correctly closed before taking the hand-held scanner into the potentially explosive atmosphere.

Broken enclosure: loss of explosion protection
The hand-held scanner has been tested for falls from a height of up to 2.4 m (7.9 ft) (Zone 2 / Div. 2) and 1.2 m (4 ft) (Zone 1 / Div. 1). There is a risk of the enclosure breaking during falls from a greater height, in which case the explosion protection is no longer guaranteed.
▶ Protect hand-held scanners from falling from a greater height.
▶ If the hand-held scanner has fallen from a greater height or you suspect a damaged enclosure:
— Remove the hand-held scanner from the potentially explosive atmosphere immediately.
— Send the faulty hand-held scanner to BARTEC and reference the RMA number you were issued.

Corrosion: loss of explosion protection
The enclosure of the hand-held scanner has protection class IP 65, however constant exposure to moisture can lead to corrosion. This may lead to the loss of the explosion protection.
▶ Protect hand-held scanners against constant exposure to moisture.
▶ Do not subject hand-held scanners to any damp weather conditions.
2.4.2 **Damage to eyes caused by laser light**

The hand-held scanner operates with a Class 2 laser. Laser beams can damage eyes.

- Do not look into the laser beam.

2.4.3 **Risks of cuts if the scan window is broken**

The scan window may become damaged if the hand-held scanner falls down. There is a risk of cuts if you reach into the broken or cracked area.

- When getting the hand-held scanner out, secure it to prevent it falling down.
- Only get the hand-held scanner out when it reaches its destination.
- If the scan window is broken:
  - Do not touch the broken area.
  - Do not use the hand-held scanner.
  - Send the faulty hand-held scanner to BARTEC and reference the RMA number you were issued.

2.4.4 **Health hazard in the case of incorrect disposal**

Lithium ion batteries on the Bluetooth hand-held scanner contain pollutants that can be harmful to health.

- Dispose of batteries in an environmentally sound way in accordance with regional regulations.

2.5 **Preventing damage to property**

2.5.1 **Short circuit caused by incorrect connection**

Incorrect electrical connection can cause a short circuit, thereby damaging the hand-held scanner.

- Always have the hand-held scanner connected by a qualified electrician in accordance with the connection diagram.

2.5.2 **Storage at too high a temperature**

A thermal fuse prevents the hand-held scanner getting too hot during operation and triggering an explosion. There is also a risk of the hand-held scanner getting too hot if the hand-held scanner is stored outside of the permissible ambient temperatures. The hand-held scanner is damaged as soon as the thermal fuse responds.

- Only store the hand-held scanner within the permissible ambient temperatures.

2.5.3 **Contact with chemicals**

The enclosure of the hand-held scanner consists of polycarbonate that has only limited chemical resistance. Contact with chemicals can break the enclosure.

- Do not bring the hand-held scanner into contact with chemicals.

2.5.4 **Aggressive cleaning agents**

Aggressive cleaning agents can attack and fade the scan window, thereby impairing the scanning functionality. In extreme cases scanning is no longer possible.

- Only use a damp cloth to clean the hand-held scanner.
3 Approval, standards

3.1 Hand-held scanner BCS 3608ex-IS

<table>
<thead>
<tr>
<th>Standard</th>
<th>Ex protection type</th>
<th>Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATEX Zone 1/21</td>
<td>II 2G Ex ia ma op is IIC T4 Gb II 2D Ex ia ma op is IIIC T135°C Db IP 64</td>
<td>EPS 18 ATEX 1 199 X</td>
</tr>
<tr>
<td>IECEx Zone 1/21</td>
<td>Ex ia ma op is IIC T4 Gb Ex ia ma op is IIIC T135°C Db IP 64</td>
<td>IECEx EPS 18.0100X</td>
</tr>
<tr>
<td>NEC/CEC Div 1</td>
<td>Class I, II, III Div 1 Class I Div 1 Groups A, B, C and D Class II Div 1 Groups E, F Class III Class I Div 1 Class I Div 1 Groups A, B, C and D T4</td>
<td>Applied for</td>
</tr>
</tbody>
</table>

Table 6 Hand-held scanner BCS 3608ex-IS

Further approvals and certificates can be found at www.bartec.com

3.2 Hand-held scanner BCS 3678ex-IS

<table>
<thead>
<tr>
<th>Standard</th>
<th>Ex protection type</th>
<th>Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATEX Zone 1/21</td>
<td>II 2G ia ma op is IIC T4 Gb II 2D Ex ia ma op is III T135 °C Db IP 64</td>
<td>EPS 17 ATEX 1 177 X</td>
</tr>
<tr>
<td>IECEx Zone 1/21</td>
<td>Ex ia ma op is IIC T4 Gb Ex ia ma op is IIIC T135°C Db IP 64</td>
<td>IECEx EPS 17.0090X</td>
</tr>
<tr>
<td>NEC/CEC Div 1</td>
<td>Class I, II, III Div 1 Class I Div 1 Groups A, B, C and D Class II Div 1 Groups E, F Class III Class I Div 1 Class I Div 1 Groups A, B, C and D T4</td>
<td>Applied for</td>
</tr>
</tbody>
</table>

Table 7 Hand-held scanner BCS 3678ex-IS

Further approvals and certificates can be found at www.bartec.com
3.3 **Universal supply module 3678\textsuperscript{ex-IS}/3608\textsuperscript{ex-IS}**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Ex protection type</th>
<th>Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATEX Zone 1/21</td>
<td>(\text{II} 2G \text{Ex [ia] IIC T4 Gb}) (\text{II} 2D \text{Ex ma [ia] IIC T135\degree C Db IP 64})</td>
<td>Applied for</td>
</tr>
<tr>
<td>IECEx Zone 1/21</td>
<td>(\text{Ex ma [ia] IIC T4 Gb}) (\text{Ex ma [ia] IIC T135\degree C Db IP 64})</td>
<td>Applied for</td>
</tr>
<tr>
<td>NEC/CEC Div 1</td>
<td>Class I, II, III Div 1 (\text{Class I Div 1 Groups A, B, C und D}) (\text{Class II Div 1 Groups E, F}) (\text{Class III}) (\text{Class I Div 1}) (\text{Class I Div 1 Groups A, B, C und D T4})</td>
<td>Applied for</td>
</tr>
</tbody>
</table>

*Table 8 Universal Versorgungsmodul 3678\textsuperscript{ex-IS}/3608\textsuperscript{ex-IS}*

Further approvals and certificates can be found at www.bartec.com

The universal supply module Zone 2/22 and Div 2 are included in the certificate of the Zone 2/22 and Div 2 hand-held scanner.

3.4 **Hand-held scanners BCS 3608\textsuperscript{ex-NI}/BCS 3678\textsuperscript{ex-NI}**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Ex protection type</th>
<th>Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATEX Zone 2/22</td>
<td>(\text{II} 3G \text{Ex ic IIC T4 Gc}) (\text{II} 3D \text{Ex ic IIB T135\degree C Dc IP 64})</td>
<td>EPS 16 ATEX 1113 X</td>
</tr>
<tr>
<td>IECEx Zone 2/22</td>
<td>(\text{Ex ic IIC T4 Gc}) (\text{Ex ic IIB T135\degree C Dc IP 64})</td>
<td>IECEx EPS 16.0050X</td>
</tr>
<tr>
<td>ETL Div 2</td>
<td>Class I,II,III Div 2 (\text{Class I Div 2 Groups A,B,C,D}) (\text{Class II Div 2 Group F,G}) (\text{Class III}) (\text{Class I Div 2}) (\text{Class I Div 2 Groups A,B,C and D T4}) (\text{Conforms to ANSI/UL Std. 60950}) (\text{Cert. to CAN/CSA Std. C22.2 No. 60950})</td>
<td>5012876</td>
</tr>
</tbody>
</table>

*Table 9 Hand-held scanner BCS 3608\textsuperscript{ex-NI}/BCS 3678\textsuperscript{ex-NI}*

Further approvals and certificates can be found at www.bartec.com
3.5 Ex-relevant parameters for connection to universal supply module or other systems

Important information for connecting the corded hand-held scanner BCS 3608ex-NI to a Universal Supply Module (USM) or to third-party systems.

- ATEX/IECEEx – Zone 2/22
- Class I, II Division 2
- Class III

![Diagram of connection](image)

**Figure 1 Ex relevant parameters for the connection of the USM**

| USM Output values: | Ex-relevant parameters for BCS 3608ex-NI
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{oc}$</td>
<td>5 V</td>
</tr>
<tr>
<td>$I_{sc}$</td>
<td>1 A</td>
</tr>
<tr>
<td>$C_a$</td>
<td>1000 μF</td>
</tr>
<tr>
<td>$L_a$</td>
<td>80 μH</td>
</tr>
</tbody>
</table>
| Input values: | Ex-relevant parameters for BCS 3608ex-NI
| $V_{max}$ | 5 V |
| $I_{max}$ | 1 A |
| $C_i$ | 0.3 μF |
| $L_i$ | 0.1 μH |

Table 10 Available USM

<table>
<thead>
<tr>
<th>Available USM:</th>
<th>USM for BCS 3608ex-NI</th>
<th>available for input voltage</th>
<th>available for use in hazardous areas:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type: B7-A2Z0-0042</td>
<td>24 V DC</td>
<td>85 to 250 V AC</td>
<td>ATEX/IECEEx Zone 2/22</td>
</tr>
<tr>
<td>Version for US + Canada</td>
<td></td>
<td></td>
<td>Class I, II Division 2</td>
</tr>
<tr>
<td>Type: B7-A2Z0-004200US</td>
<td></td>
<td></td>
<td>Class III</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Important Ex-relevant technical data for the connection of a non-incendive wired field device (e.g. BCS 3608ex-NI) with another associated non-incendive wired field device (e.g. USM B7-A2Z0-0042). The USM can also be replaced by power supply modules from other manufacturers provided that the following calculation formula is adhered to.

<table>
<thead>
<tr>
<th>Calculation formula</th>
<th>BCS 3608ex-NI</th>
<th>Maximum output values of the used supply module:</th>
<th>Functional minimum values</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{\text{max}} \geq V_{\text{oc}}$</td>
<td>$V_{\text{max}}$ 5 V DC</td>
<td>$V_{\text{oc}}$ 5 V</td>
<td>4,8 V DC</td>
</tr>
<tr>
<td>$I_{\text{max}} \geq I_{\text{sc}}$</td>
<td>$I_{\text{max}}$ 1 A</td>
<td>$I_{\text{sc}}$ 1 A</td>
<td>500 mA</td>
</tr>
</tbody>
</table>

Minimum output values of the used supply module:

- $C_a \geq C_i + C_{\text{kabel}}$
  - BARTEC USM: $C_a = 1000 \mu F$ (is $\geq C_i + C_{\text{kabel}}$)
  - external system $C_a \geq C_i + C_{\text{kabel}}$
    - (kundenspezifisch)
    - -

- $L_a \geq L_i + L_{\text{kabel}}$
  - BARTEC USM: $L_a = 80 \mu H$ (is $\geq L_i + L_{\text{kabel}}$)
  - external system: $L_a \geq L_i + L_{\text{kabel}}$
    - (customized)
    - -

Table 11  Ex relevant data for the connection of the USM

$C_{\text{kabel}}$ and $L_{\text{kabel}}$ depend on the connection cable used on the BCS 3608ex-NI.
4 Product description

The BCS 3608ex-NI and BCS 3608ex-IS series consists of corded hand-held scanners for capturing 1D/2D barcodes and for OCR text recognition. The BCS 3678ex-NI and BCS 3678ex-IS hand-held scanners with Bluetooth supplement the series with wireless data capture.

The hand-held scanners in the BCS 36x8ex-NI- and BCS 36x8ex-IS series have been modified for use in potentially explosive atmospheres (see Chapter 2.1).

The barcodes are captured by a 1D/2D scan engine. The ergonomic design permits 1-handed operation.

4.1 Configurations and comparison with ZEBRA hand-held scanners

Configurations

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Data transfer</th>
<th>Data capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCS 3608ex-NI</td>
<td>Connection cable</td>
<td>1D-/2D-Imager (SE4750)</td>
</tr>
<tr>
<td>BCS 3608ex-IS</td>
<td>(see Chapter 4.3)</td>
<td></td>
</tr>
<tr>
<td>BCS 3678ex-NI</td>
<td>Bluetooth 4.0 2.4 GHz to 2.4835 GHz</td>
<td>None</td>
</tr>
<tr>
<td>BCS 3678ex-IS</td>
<td>(see Chapter 4.4)</td>
<td></td>
</tr>
<tr>
<td>Base station for non- hazardous area; only for BCS 3678ex-NI / BCS 3678ex-IS</td>
<td>Bluetooth 4.0 2.4 GHz to 2.4835 GHz, (see Chapter 4.4.4)</td>
<td></td>
</tr>
</tbody>
</table>

Table 12 Configurations

Comparison

Tab. 13 compares the hand-held scanners that have been modified for potentially explosive atmospheres to the original hand-held scanners from ZEBRA.

<table>
<thead>
<tr>
<th>BARTEC</th>
<th>ZEBRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCS 3608ex-NI</td>
<td>DS3608-HP</td>
</tr>
<tr>
<td>BCS 3608ex-IS</td>
<td></td>
</tr>
<tr>
<td>BCS 3678ex-NI</td>
<td>DS3678-HP</td>
</tr>
<tr>
<td>BCS 3678ex-IS</td>
<td></td>
</tr>
</tbody>
</table>

Table 13 Comparison with ZEBRA hand-held scanners
### 4.2 Possible system configurations

#### 4.2.1 Corded hand-held scanner BCS 3608ex-NI / BCS 3608ex-IS with universal supply module

![Diagram of BCS 3608ex-NI / BCS 3608ex-IS hand-held scanner with universal supply module in a potentially explosive atmosphere](image)

**Table 14** Description of the needed components to build the connection between BCS 3608ex-NI / BCS 3608ex-IS corded hand-held scanners with universal supply module

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power supply (230 V&lt;sub&gt;AC&lt;/sub&gt; or 24 V&lt;sub&gt;DC&lt;/sub&gt; for Zone 2/22 and Zone 1/21, 24 V&lt;sub&gt;DC&lt;/sub&gt; only for Div 2)</td>
</tr>
<tr>
<td>2</td>
<td>Host PC</td>
</tr>
<tr>
<td>3</td>
<td>Data cable host PC – universal supply module (RS 232, RS 422, RS 485 or USB) → this cable has to be provided by the customer</td>
</tr>
<tr>
<td>4</td>
<td>Universal supply module for hand-held scanners</td>
</tr>
<tr>
<td>5</td>
<td>Connection cable BCS 3608ex-NI / BCS 3608ex-IS</td>
</tr>
<tr>
<td>6</td>
<td>Hand-held scanner BCS 3608ex-NI / BCS 3608ex-IS</td>
</tr>
</tbody>
</table>

The universal supply module can be operated in a potentially explosive atmosphere. The universal supply module is used for data transfer and power supply. The power source for the universal supply module and the system to which the data are to be transferred must lie outside the potentially explosive atmosphere.

3 different cables can be used to connect the hand-held scanner to the universal supply module (see table 13). The universal supply module and connection cables are not included with delivery.

The universal supply module for US and Canada can only be used with DC 24 V.
4.2.2 Corded hand-held scanner BCS 3608ex-NI with HMI (only Zone 2 and 22) and HMI limiting cable*

* Internal power supply at the HMI USB module must be at least 500 mA

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HMI (approved for a potentially explosive atmosphere)</td>
</tr>
<tr>
<td>2</td>
<td>HMI Limiting cable (B7-A2Z0-0041 or B7-A2Z0-0054)</td>
</tr>
<tr>
<td>3</td>
<td>Hand-held scanner BCS 3608ex-NI / BCS 3608ex-IS</td>
</tr>
</tbody>
</table>

Table 15 Description of the needed components to build the connection between corded hand-held scanner BCS 3608ex-NI with HMI (only Zone 2 and 22) and HMI limiting cable

The limiting cable that is connected to the HMI is used for data transfer and power supply. This connection is only approved for Zone 2, 22 and Division 2.
### 4.2.3 Corded hand-held scanner BCS 3608ex-NI / BCS 3608ex-IS with universal supply module

![Diagram of hand-held scanner with universal supply module](image)

**Table 16** Description of the needed components to build the connection between corded hand-held scanner BCS 3608ex-NI / BCS 3608ex-IS with universal supply module

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Connection cable BCS 3608ex-NI / BCS 3608ex-IS</td>
</tr>
<tr>
<td>2</td>
<td>Hand-held scanner BCS 3608ex-NI / BCS 3608ex-IS</td>
</tr>
<tr>
<td>3</td>
<td>Data cable HMI – universal supply module (RS 232, RS 422, RS 485 or USB) → this cable has to be provided by the customer</td>
</tr>
<tr>
<td>4</td>
<td>Universal supply module for hand-held scanners</td>
</tr>
<tr>
<td>5</td>
<td>HMI (approved for a potentially explosive atmosphere)</td>
</tr>
</tbody>
</table>

The hand-held-scanner can be connected with 3 different cables to the universal supply module (see Tab.15). Universal supply module and connecting cable are not included into the scope of delivery.

The universal supply module for US and Canada can only be used with DC 24 V.
4.2.4 Bluetooth hand-held scanners BCS 3678ex-NI / BCS 3678ex-IS with base station and Bluetooth-enabled device

Figure 5 Bluetooth hand-held scanner BCS 3678ex-NI / BCS 3678ex-IS with base station (cradle) and Bluetooth-enabled device

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Host PC</td>
</tr>
<tr>
<td>2</td>
<td>Power supply (12 VDC)</td>
</tr>
<tr>
<td>3</td>
<td>Base station (Cradle) only for the use in safe areas</td>
</tr>
<tr>
<td>4</td>
<td>Bluetooth-enabled device (approved for a potentially explosive atmosphere):</td>
</tr>
<tr>
<td></td>
<td>• Agile X IS for Zone 1/21 / Division 1</td>
</tr>
<tr>
<td></td>
<td>• Agile X for Zone 2/22 / Division 2</td>
</tr>
<tr>
<td></td>
<td>• TC 7x series for Zone 2/22 / Division 2</td>
</tr>
<tr>
<td>5</td>
<td>Bluetooth hand-held scanner BCS 3678ex-NI / BCS 3678ex-IS</td>
</tr>
<tr>
<td>6</td>
<td>Bluetooth-enabled device (outside the potentially explosive atmosphere)</td>
</tr>
</tbody>
</table>

Table 17 Description of the needed components to build the connection between BCS 3678ex-NI / BCS 3678ex-IS Bluetooth hand-held scanners with base station and Bluetooth-enabled device

The BCS 3678ex-NI / BCS 3678ex-IS Bluetooth hand-held scanners can optionally communicate with the following devices:

- Outside the potentially explosive atmosphere:
  - Host PC (1)
  - Bluetooth-enabled base station (3)
  - Bluetooth-enabled device (6)

- In the potentially explosive atmosphere (4):
  - Agile X IS for Zone 1/21 / Division 1
  - Agile X for Zone 2/22 / Division 2
  - Other devices approved for explosion-proof certified devices
4.2.5 Bluetooth hand-held scanners BCS 3678ex-NI / BCS 3678ex-IS via Bluetooth universal supply module

![Diagram of Bluetooth hand-held scanner with universal supply module](image)

**Figure 6** BCS 3678ex-NI / BCS 3678ex-IS Bluetooth hand-held scanner with universal supply module in a potentially explosive atmosphere

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Supply voltage (230 V&lt;sub&gt;AC&lt;/sub&gt; or 24 V&lt;sub&gt;DC&lt;/sub&gt; for Zone 2/22 and Zone 1/21, 24 V&lt;sub&gt;DC&lt;/sub&gt; only for Div 2)</td>
</tr>
<tr>
<td>2</td>
<td>Host PC</td>
</tr>
<tr>
<td>3</td>
<td>Data cable host PC – universal supply module (RS 232, RS 422, RS 485 or USB) → this cable has to be provided by the customer</td>
</tr>
<tr>
<td>4</td>
<td>Bluetooth universal supply module</td>
</tr>
<tr>
<td>5</td>
<td>Bluetooth hand-held scanner BCS 3678ex-NI / BCS 3678ex-IS</td>
</tr>
</tbody>
</table>

**Table 18** Description of the needed components to build the connection between Bluetooth hand-held scanners BCS 3678ex-NI / BCS 3678ex-IS via Bluetooth universal supply module

The universal supply module can be operated in a potentially explosive atmosphere. The universal supply module is used for data transfer.

The power supplies for the universal supply module and the system to which the data are to be transferred must lie outside the potentially explosive atmosphere.

The universal supply module is not included in the scope of delivery.
4.3 Corded hand-held scanners BCS 3608ex-NI/BCS 3608ex-IS

4.3.1 Construction of the corded hand-held scanners

Figure 7 Corded hand-held scanner BCS 3608ex

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Scan window</td>
<td>Scanning barcodes</td>
</tr>
<tr>
<td>2</td>
<td>Trigger button</td>
<td>Starting the scan process</td>
</tr>
<tr>
<td>3</td>
<td>Safety lock</td>
<td>Securing the connection cable to prevent it coming unplugged</td>
</tr>
<tr>
<td>4</td>
<td>Lug</td>
<td>Attaching cord to the hand-held scanner</td>
</tr>
<tr>
<td>5</td>
<td>Status LEDs</td>
<td>Displaying the status of the hand-held scanner</td>
</tr>
<tr>
<td>6</td>
<td>Beeper</td>
<td>Transmitting beeps or sequences of beeps indicating events</td>
</tr>
</tbody>
</table>

Table 19 Construction of hand-held scanner BCS 3608ex
## 4.3.2 Contacts / cables

The function is only guaranteed if the cables you connect for your configuration have been specified by BARTEC (see system overview, Chapter 15.2).

**Figure 8 External contact on cabled hand-held scanner**

### 1. Connection of hand-held scanners to a universal supply module

The Hand-held scanners BCS 3608ex-NI and BCS 3608ex-IS can be connected to the following universal supply module:

<table>
<thead>
<tr>
<th>Version</th>
<th>BARTEC Order No. Zone 1 / Division 1</th>
<th>BARTEC Order No. Zone 2 / Zone 22</th>
<th>BARTEC Order No. Division 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluetooth</td>
<td>Coming Soon</td>
<td>B7-A2Z0-0043</td>
<td>B7-A2Z0-0043US</td>
</tr>
<tr>
<td>Cable</td>
<td>Coming Soon</td>
<td>B7-A2Z0-0042</td>
<td>B7-A2Z0-0042US</td>
</tr>
<tr>
<td>HMI</td>
<td>Coming Soon</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Table 20 Universal supply module*

The hand-held scanners BCS 3608ex-NI and BCS 3608ex-IS can be connected by the following cables to the universal supply module:

<table>
<thead>
<tr>
<th>Version</th>
<th>Length</th>
<th>BARTEC Order No. Zone 1 / Division 1</th>
<th>BARTEC Order No. Zone 2 / Zone 22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain</td>
<td>1.9 m</td>
<td>17-A1Z0-0015</td>
<td>B7-A2Z0-0037</td>
</tr>
<tr>
<td>Plain</td>
<td>4.5 m</td>
<td>17-A1Z0-0016</td>
<td>B7-A2Z0-0038</td>
</tr>
<tr>
<td>Spiral</td>
<td>2.7 m</td>
<td>17-A1Z0-0017</td>
<td>B7-A2Z0-0039</td>
</tr>
</tbody>
</table>

*Table 21 Connection cable for hand-held scanner BCS 3608ex (assembled) to the universal supply module*

The cables set out in Tab. 13 have been modified for use in the following potentially explosive atmospheres:

- ATEX/IECEx Zone 1 and Zone 21
- ATEX/IECEx Zone 2 and Zone 22
- Class I, II, III DIV 1
- Class I, II, III DIV 2
Connection of hand-held scanners to HMI (only Zone 2 and 22)

The hand-held scanner BCS 3608ex-NI can be connected to the HMI using the following cables:

<table>
<thead>
<tr>
<th>Cable specified for connection to HMI</th>
<th>Version</th>
<th>Length</th>
<th>BARTEC Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limiting cable</td>
<td>USB</td>
<td>1.9 m</td>
<td>B7-A2Z0-0041</td>
</tr>
<tr>
<td>Limiting cable</td>
<td>USB</td>
<td>4.5 m</td>
<td>B7-A2Z0-0054</td>
</tr>
</tbody>
</table>

Table 22  Connection cable for hand-held scanner to the host PC

The cables set out in Tab. 11 have been approved for use in potentially explosive atmospheres in Zones 2, 22 and Class I Division 2.

Internal power supply at the HMI USB module must be at least 500 mA

Data cable from the universal supply module to the host PC

We recommend using a standard, shielded data cable (e.g. CAT 5 or superior grade) as data line to prevent external disturbances to data transfer.

<table>
<thead>
<tr>
<th>Interface</th>
<th>Recommended cross-section</th>
<th>Number of cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS232/RS482/RS485</td>
<td>0.2 mm² to 2.5 mm²</td>
<td>5</td>
</tr>
<tr>
<td>USB</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Table 23  Data line from the universal supply module to the host PC

The connection to the host PC is provided by the customer.
4.4  Bluetooth hand-held scanner BCS 3678ex-NI / BCS 3678ex-IS

4.4.1  Construction of the Bluetooth hand-held scanner

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Scan window</td>
<td>Scanning barcodes</td>
</tr>
<tr>
<td>2</td>
<td>Contact for base station (cradle)</td>
<td>• Charging the battery&lt;br&gt;• Transferring data to base station (cradle)</td>
</tr>
<tr>
<td>3</td>
<td>Trigger button</td>
<td>Starting the scan process</td>
</tr>
<tr>
<td>4</td>
<td>Battery compartment cover with safety lock</td>
<td>• Securing the battery to stop it falling out&lt;br&gt;• Opening only possible using special tool (included with delivery)</td>
</tr>
<tr>
<td>5</td>
<td>Lug</td>
<td>Attaching cord to the hand-held scanner</td>
</tr>
<tr>
<td>6</td>
<td>Status LEDs</td>
<td>Displaying the status of the hand-held scanner</td>
</tr>
<tr>
<td>7</td>
<td>Battery LED</td>
<td>Displaying the charge status of the battery</td>
</tr>
<tr>
<td>8</td>
<td>Bluetooth LED</td>
<td>Displaying the status of the Bluetooth connection</td>
</tr>
<tr>
<td>9</td>
<td>Beeper</td>
<td>Transmitting beeps or sequences of beeps indicating events</td>
</tr>
</tbody>
</table>

Table 24  Construction of BCS 3678ex
4.4.2 External contacts

**DANGER**

Non-approved accessories!

Loss of function and risk of explosion.

- Only connect base stations and chargers that have been specified by BARTEC.

The approved accessories are shown in the system overview (see system overview, Chapter 15.2). The model is clearly indicated on the type label.

![External contact on Bluetooth hand-held scanner](image)

**Figure 10** External contact on Bluetooth hand-held scanner

4.4.3 Communication via Bluetooth

Three types of connection are available for communication of the hand-held scanner via Bluetooth:

<table>
<thead>
<tr>
<th>Type of connection</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point-to-point mode</td>
<td>Hand-held scanner is connected to a base station, standard mode</td>
</tr>
<tr>
<td>Multi-point-to-point mode</td>
<td>Up to 7 hand-held scanners are connected to one base station. The connection between base station and hand-held scanner can only be made with one device. (No multi-point-to-point is possible with the universal supply module. Only 1 hand-held scanner can therefore be connected to the universal supply module).</td>
</tr>
<tr>
<td>HID mode</td>
<td>Direct communication with Bluetooth host without base station. The Bluetooth hand-held scanner can communicate with a Bluetooth-enabled device (e.g. smartphone) directly without a base station.</td>
</tr>
</tbody>
</table>

*Table 25 Communication via Bluetooth*
4.4.4 Construction of base station (cradle)

**DANGER**

Spark formation!

Explosion.

- Only use the base station outside the potentially explosive atmosphere.

The function is only guaranteed if the base station you use for your configuration has been specified by BARTEC (see system overview, Chapter 15.2).

The model is clearly indicated on the type label.

The base station charges the battery on the Bluetooth hand-held scanner and connects it to the host PC.

---

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Retainer</td>
<td>Holding the hand-held scanner in place in the base station</td>
</tr>
<tr>
<td>2</td>
<td>Connection code (for connection to BCS 3678 ex-NI / BCS 3678 ex-IS)</td>
<td>Establishing a connection between base station and hand-held scanner</td>
</tr>
<tr>
<td>3</td>
<td>Holes</td>
<td>Water drainage</td>
</tr>
<tr>
<td>4</td>
<td>Drill holes</td>
<td>Mounting the base station to the wall</td>
</tr>
<tr>
<td>5</td>
<td>Contact</td>
<td>Charging the battery, transferring data</td>
</tr>
<tr>
<td>6</td>
<td>LEDs</td>
<td>Displaying the status of the base station</td>
</tr>
</tbody>
</table>

Figure 11 Construction of the base station (cradle)
## 4 Product description

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Page button</td>
<td>Connected hand-held scanners transmit a beep when the page button has been pressed</td>
</tr>
<tr>
<td>8</td>
<td>Retainer</td>
<td>Holding the hand-held scanner in the base station</td>
</tr>
<tr>
<td>9</td>
<td>Drill hole</td>
<td>Mounting the base station to the wall</td>
</tr>
<tr>
<td>10</td>
<td>Hole</td>
<td>Water drainage</td>
</tr>
<tr>
<td>11</td>
<td>Connection</td>
<td>Connecting connection cable to base station</td>
</tr>
<tr>
<td>12</td>
<td>Rubber feet</td>
<td>Prevent the base station slipping</td>
</tr>
<tr>
<td>13</td>
<td>Drill holes</td>
<td>Mounting the base station to the wall</td>
</tr>
<tr>
<td>14</td>
<td>Adjusting screw</td>
<td>Adjusting retainer to wall mounting or for use on the desk top</td>
</tr>
<tr>
<td>15</td>
<td>Cable routing</td>
<td>Feeding the connection cable to the connection</td>
</tr>
<tr>
<td>16</td>
<td>Connection</td>
<td>Protecting the connection</td>
</tr>
<tr>
<td>17</td>
<td>Cover</td>
<td>Relieving the strain on the connection cable</td>
</tr>
<tr>
<td>18</td>
<td>Drill holes</td>
<td>Mounting the base station to the wall</td>
</tr>
<tr>
<td>19</td>
<td>Rubber feet</td>
<td>Prevent the base station slipping</td>
</tr>
</tbody>
</table>

*Table 26 Construction base station*
4.4.5 Construction of 4-slot charging station for spare batteries

**DANGER**

Spark formation!

Explosion.
- Only use the 4-slot charging station outside the potentially explosive atmosphere.

The function is only guaranteed if the 4-slot charging station you use for your configuration has been specified by BARTEC (see system overview, Chapter 15.2). The model is clearly indicated on the type label.

![Diagram of the 4-slot charging station for spare batteries](image)

**Table 27 Construction 4 slot battery charger**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Battery compartments (4)</td>
<td>2</td>
<td>LEDs (4)</td>
</tr>
<tr>
<td>3</td>
<td>Power connection</td>
<td>4</td>
<td>Mounting holes, wall mounting (2)</td>
</tr>
<tr>
<td>5</td>
<td>Power cable groove</td>
<td>6</td>
<td>USB connection</td>
</tr>
<tr>
<td>7</td>
<td>Cable groove</td>
<td>8</td>
<td>Rubber feet (4)</td>
</tr>
<tr>
<td>9</td>
<td>Cable routing, power cable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 12 Construction of the 4-slot charging station for spare batteries**
4.5 Meaning of LED display / beeps

4.5.1 Hand-held scanner

<table>
<thead>
<tr>
<th>LED display</th>
<th>Colour</th>
<th>Beep sequence</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status LEDs (on switching on)</td>
<td>Green flashes</td>
<td>Low – medium – high</td>
<td>Hand-held scanner is switched on</td>
</tr>
<tr>
<td>Status LEDs (when scanning)</td>
<td>Red</td>
<td>High (4 short beeps)</td>
<td>Transmission error Data are ignored</td>
</tr>
<tr>
<td></td>
<td>Green</td>
<td>Medium</td>
<td>Barcode has been read successfully</td>
</tr>
<tr>
<td>On Bluetooth hand-held scanners:</td>
<td>Red</td>
<td>–</td>
<td>Battery charge less than 20 %</td>
</tr>
<tr>
<td></td>
<td>Yellow</td>
<td>–</td>
<td>Battery charge 20 - 50 %</td>
</tr>
<tr>
<td></td>
<td>Green</td>
<td>–</td>
<td>Battery charge over 50 %</td>
</tr>
<tr>
<td>On Bluetooth hand-held scanners:</td>
<td>Red</td>
<td>Low (4 long beeps)</td>
<td>No Bluetooth pairing</td>
</tr>
<tr>
<td></td>
<td>Green</td>
<td>2 short beep sequences</td>
<td>Paired to Bluetooth device</td>
</tr>
</tbody>
</table>

Table 28 Meaning of the LED display, hand-held scanner

When searching the scanner with the paired base station, the search LED on the scanner lights red for zone 1 and blue for zone 2.

Other LED displays and beeps are described in the ZEBRA Product Reference Guide.

4.5.2 Base station

<table>
<thead>
<tr>
<th>LED display</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lights up green</td>
<td>Base station is switched on</td>
</tr>
<tr>
<td>Lights up blue</td>
<td>Page button is pressed</td>
</tr>
<tr>
<td>Flashes yellow</td>
<td>Battery is being charged</td>
</tr>
<tr>
<td>Flashes green</td>
<td>Battery has been fully charged</td>
</tr>
<tr>
<td>Flashes quickly, yellow</td>
<td>Fault during charging</td>
</tr>
</tbody>
</table>

Table 29 Meaning of the LED display, base station
4.6 Construction of the universal supply module

⚠️ DANGER

Non-approved accessories!

Loss of function and risk of explosion.
- Only use universal supply modules that have been specified for the relevant configuration by BARTEC.

The approved accessories are shown in the system overview (see system overview, Chapter 15.2). The model is clearly indicated on the type label.

Figure 13 Construction of the universal supply module

⚠️ DANGER

Ignition!

Do not open under voltage!
Do not open the device in hazardous areas during operation!

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cable gland</td>
<td>Feeding data cable to terminals</td>
</tr>
<tr>
<td>2</td>
<td>Cable gland</td>
<td>Feeding power cord to terminals</td>
</tr>
<tr>
<td>3</td>
<td>Terminals X1 to X2</td>
<td>Connecting 85 - 250 VAC power supply</td>
</tr>
<tr>
<td>4</td>
<td>7-pole round plug</td>
<td>Connecting corded hand-held scanner</td>
</tr>
<tr>
<td>5</td>
<td>Cover</td>
<td>Protecting the terminal connection chamber</td>
</tr>
<tr>
<td>6</td>
<td>DIP switch</td>
<td>Selecting the interface used</td>
</tr>
<tr>
<td>7</td>
<td>Terminals X3 to X4</td>
<td>Connecting the data line</td>
</tr>
<tr>
<td>8</td>
<td>Terminals X5 to X9</td>
<td>Connecting the 24 VDC power supply</td>
</tr>
</tbody>
</table>

Table 30 Construction universal supply module

*Is not needed with the Bluetooth version
4.6.1 Terminal assignment

Terminal assignment for installing power cords and RS 232, RS 422, RS 485 and USB-SPP types of connection cable on the host PC side:

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Marking</th>
<th>RS 232</th>
<th>RS 422</th>
<th>RS 485</th>
<th>USB-SPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>L</td>
<td>L = 85 VAC bis 250 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X2</td>
<td>N</td>
<td>N = Neutral conductor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X3</td>
<td>24 Vdc+</td>
<td>24 Vdc+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X4</td>
<td>24 Vdc–</td>
<td>24 Vdc–</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X5</td>
<td>TxD; RX–; TXRX–; M (D–)</td>
<td>TxD</td>
<td>TxD–</td>
<td>TxD/RxD–</td>
<td>M (D–)</td>
</tr>
<tr>
<td>X6</td>
<td>RxD; RX+; P (D+)</td>
<td>RxD</td>
<td>RxD–</td>
<td>–</td>
<td>P (D+)</td>
</tr>
<tr>
<td>X7</td>
<td>RTS; TX–; TXRX+</td>
<td>RTS</td>
<td>TxD+</td>
<td>TxD/RxD+</td>
<td>–</td>
</tr>
<tr>
<td>X8</td>
<td>CTS; TX+</td>
<td>CTS</td>
<td>RxD+</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>X9</td>
<td>GND</td>
<td>GND</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>X10</td>
<td>Shield</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 31 Terminal connection plan

The wire braid of the data cable must be inserted into the shield terminal and the braid must also be connected to terminal X10.

Connection examples see chapter 7.5 or separate description available on the BARTEC download page.

Version 1 and version 2 differ in the color of the seal on the RJ45 connector.
Version 1 black gasket, version 2 green gasket
4.6.2 Setting the DIP switches (only for Zone 2/22 and Div 2)

The DIP switches (X18) must be set as follows depending on the interface used:

![Figure 14 DIP switches and switch positions](image)

<table>
<thead>
<tr>
<th>Interface</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS 232</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>RS 422</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>RS 485</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>USB-SPP</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 33 Setting Interface (Dipp-switch S1, S2 and S3)

<table>
<thead>
<tr>
<th>Version</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
</tr>
</thead>
<tbody>
<tr>
<td>corded</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Bluetooth</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 34 Settings USM Version (Dipp-switch S4)

4.6.3 Ranges / maximum cable length of connected cable from the universal supply module to the host or PC

<table>
<thead>
<tr>
<th>Interface</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS 232</td>
<td>15 m</td>
</tr>
<tr>
<td></td>
<td>50 ft.</td>
</tr>
<tr>
<td>RS 422</td>
<td>1000 m</td>
</tr>
<tr>
<td></td>
<td>3280 ft</td>
</tr>
<tr>
<td>RS 485</td>
<td>1200 m</td>
</tr>
<tr>
<td></td>
<td>3937 ft</td>
</tr>
<tr>
<td>USB-SPP</td>
<td>5 m</td>
</tr>
<tr>
<td></td>
<td>16 ft.</td>
</tr>
</tbody>
</table>

Table 34 Ranges / maximum cable length of connected cable
4.6.4 Permissible core cross-sections

<table>
<thead>
<tr>
<th>Description of the conductor</th>
<th>Permissible core cross-section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigid</td>
<td>0.08 mm² - 2.5 mm², 28 – 14 AWG</td>
</tr>
<tr>
<td>Flexible</td>
<td>0.08 mm² - 2.5 mm², 28 – 14 AWG</td>
</tr>
<tr>
<td>Flexible with wire end ferrule, without plastic sleeve</td>
<td>0.25 mm² - 1.5 mm², 24 – 16 AWG</td>
</tr>
<tr>
<td>Flexible with wire end ferrule, with plastic sleeve</td>
<td>0.25 mm² - 1.5 mm², 24 – 16 AWG</td>
</tr>
<tr>
<td>Wire diameter (AWG)</td>
<td>28 - 12 kcmil, 36 – 39 AWG</td>
</tr>
</tbody>
</table>

Table 35 Permissible core cross sections

4.6.5 Permissible connection cable diameter

<table>
<thead>
<tr>
<th>Interfaces</th>
<th>Cable gland</th>
<th>Possible cable dimensions for the cable gland on the USM</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>pipeline diameter</td>
<td>Shield diameter</td>
</tr>
<tr>
<td>USB-SPP*</td>
<td>Ex e M16x1,5 (black)</td>
<td>4,5-5,7mm</td>
<td>3-6 mm</td>
</tr>
<tr>
<td>RS232</td>
<td></td>
<td>4,5-9mm</td>
<td>3-6 mm</td>
</tr>
<tr>
<td>RS422</td>
<td></td>
<td>4,5-9mm</td>
<td>3-6 mm</td>
</tr>
<tr>
<td>RS485</td>
<td></td>
<td>4,5-9mm</td>
<td>3-6 mm</td>
</tr>
</tbody>
</table>

Table 36 Permissible connection cable diameter

4.6.6 Terminals for outer conductors

To connect the outer conductors to the terminals in hazardous areas, observe EN 60079-14 (Explosive atmospheres - Part 14: Design, selection and installation of electrical systems).

- Connect the conductors according to the terminal assignment. Equipotential bonding is not necessary because the power supply is electrically isolated.
4.6.7 Recommendation for data line

BARTEC recommends the use of the following cables:
- Commercially available shielded data cable to avoid external interference into the data cable e.g. min. CAT5 cable or other shielded cable to avoid external interference into the data cable
- The following core cross-sections and number of cores:

<table>
<thead>
<tr>
<th>Interfaces</th>
<th>Recommended wire cross section</th>
<th>Number of conductor</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS 232</td>
<td>0,2 mm² bis 2,5 mm²</td>
<td>5</td>
</tr>
<tr>
<td>RS 422</td>
<td>24 – 14 AWG</td>
<td>4</td>
</tr>
<tr>
<td>RS 485</td>
<td>24 – 14 AWG</td>
<td>4</td>
</tr>
<tr>
<td>USB-SPP</td>
<td>24 – 14 AWG</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 37. Recommended conductor cross-sections and number of conductors

4.6.8 Ferrite core for data cable

A plastic bag with a shield clamp and a ferrite core is supplied with each universal supply module.

The ferrite core is only needed when using the USB-SPP interface. It is used for shielding and avoiding external interferences on the data line.

The ferrite core must be mounted as follows:
- Strip the insulation of data cable
- Push the ferrite core over the data cable.
- Snap the shield clamp onto the DIN rail in the universal supply module.
- Press the ferrite core into the shield terminal.
- Place the data cable with bare shield in the shield terminal.
- Connect the data line to the terminal.
### Shield clamp

- For snapping onto the top-hat rail in the universal supply module.
- Fixes the ferrite core

### Ferrite core

- Ferrite core for shielding external interference signals

#### Installation in a universal supply module

![Image of universal supply module]

**Table 38** Connection of the ferrite core to the USM
### 4.7 Product marking hand-held scanner

![Product marking](image)

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><img src="image" alt="Type label" /></td>
<td>Type label (here: BCS 3678ex-NI)</td>
</tr>
<tr>
<td>2</td>
<td><img src="image" alt="Warning of laser beam" /></td>
<td>Warning of laser beam</td>
</tr>
<tr>
<td>3</td>
<td><img src="image" alt="Warning opening battery compartment" /></td>
<td>Warning opening battery compartment</td>
</tr>
</tbody>
</table>
| 4    | ![Product designation](image) | Product designation  
- BCS 3678ex-IS  
- BCS 3608ex-IS |
| 5    | ![Battery label](image) | Battery label: information concerning use and disposal  
Batteries for IS are provided with a BARTEC label  
Batteries for NI are provided with a ZEBRA label |

Table 39: Product labeling hand-held scanner
## 4.8 Product marking universal supply module

![Product marking universal supply module](image)

### Table 40  Product marking universal supply module

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><img src="image" alt="Type label" /></td>
<td>Type label (here: Universal supply module corded)</td>
</tr>
</tbody>
</table>
| 2    | ![Product designation IS](image) | Product designation IS  
  - UVM – bluetooth  
  - UVM – corded |
|      | ![Product designation NI](image) | Product designation NI  
  - UVM – Bluetooth  
  - UVM – corded |
| 3    | ![Bluetooth only: Scan to Connect Barcode](image) | Bluetooth only:  
  Scan to Connect Barcode |
| 4    | ![In the universal supply module: Serial number Barcode](image) | In the universal supply module:  
  Serial number Barcode |
| 5    | ![Label for cable assignment](image) | Label for cable assignment |
| 6    | ![Bluetooth only: Master Barcode](image) | Bluetooth only:  
  Master Barcode |

Figure 16  Product marking universal supply module
4.9 Decodable barcode types

Further information about decodable barcode types can be found in the ZEBRA Product Reference Guide for the SE4750-HP Scan Engine.

<table>
<thead>
<tr>
<th>Decoding options</th>
<th>Code type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1D barcodes</td>
<td>Code 39, Code 128, Code 93, Codabar/NW7, Code 11, MSI Plessey, UPC/EAN, I 2 of 5, Korean 3 of 5, GS1 DataBar, Base 32 (Italian Pharma)</td>
</tr>
<tr>
<td>2D barcodes</td>
<td>PDF417, Micro PDF417, Composite Codes, TLC-39, Aztec, DataMatrix, MaxiCode, QR-Code, Micro QR, Chinese Sensible (Han Xin), Postcodes</td>
</tr>
<tr>
<td>OCR (Optical Character Recognition)</td>
<td>OCR-A/B, MICR-E13B, serial number of US currency</td>
</tr>
</tbody>
</table>

Table 41 Decodable barcode types
5 Transport and storage

5.1 Check the contents and condition of delivery

1. Unpack the product on delivery.
   – Repack for transport to the product’s destination.
2. Check that the contents are complete (see Chapter 14).
3. Check all components for transport damage.
4. Report transport damage and missing components to the transport company and your local BARTEC sales office immediately.

Keep the transport packaging for any future returns.

5.2 Storage

Pay attention to the ambient conditions when storing the hand-held scanner and battery (see Chapter 14).

5.2.1 Battery

Heat, cold, extreme environmental influences and serious damage caused by falls can lead to restricted charge capacity, the rusting of metal parts and the escape of electrolyte.
There may a permanent reduction in quality if the battery is stored for more than six months.

The standard warranty period for batteries from BARTEC is 6 months, irrespective of whether they are bought separately or together with a hand-held scanner.

► Always store batteries charged to at least 50 % in a cool and dry place outside the device.
► When storing for more than one year: check the state of charge at least once a year and charge to at least 50 % of the charge capacity where necessary.
► Replace the battery if there is a substantial reduction in the operating time.

Battery is UN38.3 conform.
Due to the transport guidelines for air freight, all batteries are delivered ex works charged to max. 30 %.
6 Configuration

6.1 Programming tools

Zebra offers a range of different tools for the programming and simple connection of the hand-held scanners. All tools are available to download from Zebra at the following address:

Area: UTILITIES

6.1.1 Programming manuals

Various programming manuals for simple programming are available from Zebra. The scanner can be set up with the help of the programming barcodes.

- DS36X8 Product Reference Guide
- Advanced Data Formatting Programmer Guide
- Multicode Data Formatting and Preferred Symbol User Guide

6.1.2 Zebra 123Scan Utility

BARTEC recommends using the Zebra 123Scan Utility for programming with the aid of a PC. Zebra 123Scan Utility offers the following advantages:

- Simple and fast configuration of hand-held scanners
- Creation of profiles and saving the configurations on the PC
- Duplication of configurations on further hand-held scanners
- Firmware updates
- Other

The Zebra 123 Scan Tool only supports USB connection.

To use the Ex-certified hand-held scanners, plug-ins are required so that the 123Scan Utility recognizes the connected scanners and a software update or configuration is possible.

The plugins are already implemented in the currently available versions.

When using older, not updated 123 Scan Tool applications, the plugin must be installed manually.
The plugins can be downloaded from the BARTEC Support page at the following address:
http://automation.bartec.de/indexE.htm
- Data Capture (Barcode Scanner)
- BCS 3600 Hand-Held Scanner
- Driver & Plugins

The following plugins are available:
- For the BCS 3608ex series: DS3608-STANDARD SR MODELS-S-011.scnplg
- For the BCS 3678ex series: DS3678-STANDARD SR MODELS + CRADLE-S-002.scnplg

Install Plugin
1. Start 123Scan Utility
2. Select the Import plug-in into 123Scan² function in the Tools menu.
3. select and install plugin

The hand-held scanners are recognized by 123 Scan Utility as follows:
6.1.3 Required programming cables

The programming cables specified by BARTEC are required for programming on a PC in the safe area.

<table>
<thead>
<tr>
<th>Programming cable</th>
<th>Potentially explosive atmosphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-A1Z0-0020</td>
<td>BCS 36x8ex-IS Zone 1 / Div. 1</td>
</tr>
<tr>
<td>B7-A220-0046</td>
<td>BCS 36x8ex-NI Zone 2 / Div. 2</td>
</tr>
</tbody>
</table>

6.1.4 Further tools

Further tools can be found on the Zebra support page. One example is the “ScanToConnect Utility for Android”. Using this tool, you can connect the Bluetooth hand-held scanner to a smartphone or tablet in a single step without changing the configuration.

6.2 Manuals for general programming

The following programming manuals are available:

– Product Reference Guide
– Advanced Data Formatting (ADF)
– Multicode Data Formatting and Preferred Symbol

Advantage: programming is possible using programming barcodes also without a PC in the field (potentially explosive atmosphere)

The programming manuals are available online at the following address:
6.3 Programming for software developers

The following programming tools are available to software developers. The programming tools are available online at the following address:

6.3.1 Programming manuals

- Simple Serial Interface – Programmer's Guide
- Cordless Simple Serial Interface – Programmer's Guide
- Zebra Scanner SDK for Android - Developer Guide
- Zebra Scanner SDK for iOS - Developer Guide

6.3.2 Developer tools

- Scanner SDK for Windows
- Scanner SDK for Android
- Scanner SDK for iOS
- EMDK for Xamarin (designed for Visual Studio or Xamarin Studio with Xamarin.Android)

6.3.3 Drivers

Details of the various drivers provided by Zebra can be found on the Zebra support page.
6.4 Functions

In terms of function, the hand-held scanners are based on the original Zebra models.

6.4.1 Comparison

<table>
<thead>
<tr>
<th>BARTEC</th>
<th>ZEBRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCS 3608ex</td>
<td>DS3608-HP</td>
</tr>
<tr>
<td>BCS 3678ex</td>
<td>DS3678-HP</td>
</tr>
</tbody>
</table>

Table 44  Comparison with ZEBRA hand-held scanners

With a few exceptions, the functions can be applied one-to-one as with Zebra. When implementing a HID solution, a software wedge application must be installed on the PC / host when using a universal power supply module (not distributed by BARTEC). The software wedge application serves to convert the incoming data as keyboard input and to enter the data into the currently active field on the PC / host.

The complete list of all functions with a detailed functional description can be found in ZEBRA’s Product Reference Guide.

Some important functions are explained in the following chapters.

6.4.2 General Device Settings (User Preferences)

A variety of settings on how the device should behave can be made using the Zebra Product Manual or the 123 Scan Utility.

Examples:
- Beep - Adjusts the sound, duration, and volume of the beeper.
- Consumption Mode - Enables or disables the Low Consumption Mode.
- Trigger Mode - Sets various trigger modes such as "Standard", "Presentation", "Auto Aim" and others.
- Selection List Mode - The Selection List mode allows the digital scanner to decode only barcodes aligned below the LED target.

See the Zebra documentation for a complete overview.

Detailed and full list of information and programming barcodes about “user preferences” can be found in Zebra product reference guide “chapter 5 – user preferences”.
6.4.3 Pairing (only with BCS 3678ex)

Pairing registers a hand-held scanner at the base station so that the hand-held scanner and base station can exchange data and information. The base station type 17-A1Z0-0014 and G7-A0Z0-0010 (functionally based on the Zebra STB3678) operate in two modes:
- Point-to-point (point to point)
- Multipoint-to-Point (Multipoint to Point)

In point-to-point mode, the hand-held scanner is coupled to the base station either by plugging it into the base station (if “Pair on Contacts” is enabled) or by scanning the pairing barcode at the base station.

In Multipoint-to-Point mode, you can connect up to seven scanners to one base station. To use this feature, you must scan the Multipoint barcode in the Multipoint-to-Point Communication in ZEBRA’s Product Reference Guide.

For pairing with the universal supply module:
The Universal Power Supply Module supports only one point-to-point connection.
6.4.4 Number of Bluetooth Connections (only for BCS 3678ex)

<table>
<thead>
<tr>
<th>Connection with</th>
<th>Number of connections</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base station</td>
<td>Up to 7</td>
<td>Up to 7 BCS 3678ex can be connected to one base station. A point-to-point connection is activated in the basic settings. A multipoint connection can be activated via the programming manual. Chapter 4 &quot;Radio Communications&quot;</td>
</tr>
<tr>
<td>Universal supply module (USM)</td>
<td>1</td>
<td>One hand-held scanner can be connected to a UVM. A multipoint connection is not supported.</td>
</tr>
<tr>
<td>Bluetooth devices</td>
<td>Depends on the used device</td>
<td>How many hand-held scanners can be connected to a Bluetooth device depends on the Bluetooth module installed. Please refer to the product descriptions of your Bluetooth enabled device for more details.</td>
</tr>
</tbody>
</table>

Table 45 Connection possibilities of the BCS 3678ex

6.4.5 Unpairing the Bluetooth hand-held scanner

![Barcode Image]

Figure 17 Unpairing Barcode for Bluetooth hand-held scanner

- Scan the unpairing barcode with the hand-held scanner
- The hand-held scanner is unpaired from the USM
6.4.6 Pairing with other Bluetooth-enabled devices (only with BCS 3678ex)

The hand-held scanner can communicate with other devices via Bluetooth or by pairing with a base station. Detailed information about the operating modes, Bluetooth and pairing can be found in the ZEBRA Product Reference Guide in Chapter 4 “Radio Communications”.

6.4.7 Scanning when out of range - Out of Range & Batch Mode (only with BCS 3678ex)

If there is a radio link between the hand-held scanner and the base station, the hand-held scanner transmits all scanned data immediately after scanning the barcode.

If there is no radio connection, the scanning of barcode data is not possible (basic setting).

If the Out-of-Range Scanning function is enabled, barcode data can also be scanned outside the radio range of the base station. All scanned data is buffered in the hand-held scanner until the radio link is available.

The digital scanner supports five versions of the batch mode. If the digital scanner is configured for one of the batch modes, it will attempt to store barcode data (not parameter barcodes) until transmission is initialized or the maximum number of barcodes is stored. When a barcode has been successfully saved, a decoding tone sounds and the LED flashes green. If the digital scanner cannot save a new barcode, a beep sounds.

The digital scanner has sufficient on-board memory to store 500 barcodes of typical size (UPC/EAN).

**Number of barcodes that can be stored =**

\[
30,720 \text{ Byte memory / (number of characters in barcode + 3)}
\]

If the batch mode selection is changed while data is in batch mode, the new batch mode will not take effect until all previously stacked data has been sent.

Detailed information and programmable codes for "out of range" and "batch mode" can be found in the Zebra product reference system "Chapter 4 - Radio Communication".

**Operating modes**

- **Normal (Standard)**
  
  No batch data. The digital scanner attempts to transfer each scanned barcode.

- **Batch mode out of range**

  The digital scanner starts storing barcode data when it loses its connection to a remote device (e.g. when a user holding the digital scanner goes out of range). The data transfer is triggered by re-establishing the connection with the remote device (e.g. when a user holding the digital scanner returns to range).

- **Standard Batch Mode**

  The digital scanner starts saving barcode data after the batch mode has been activated. Data transmission is triggered by scanning transmission batch data.
- **Cradle Contact Batch Mode**
  The digital scanner starts saving barcode data when batch mode is activated. Data transfer is initiated by inserting the digital scanner into the holder.

- **Batch Mode Only**
  The scanner radio is turned off and the scanner stores all barcode data. The data transfer is triggered by inserting the scanner into the holder.

- **Batch Mode Parameters**
  When parameter batch mode is enabled and there is no connection to the base station, the scanner starts saving parameter barcode data intended for the base station. The transfer of the parameter barcode is triggered by inserting the scanner into the base station. The Batch Mode parameter is exited at the end of the transfer. Alternatively, the dosing of parameter barcodes can be aborted by scanning the output parameter batch mode before inserting the scanner into the holder.

The parameter batch mode can be used when the station and/or scanner is configured with the radio turned off or connected to a non-battery charger.

### 6.4.8 Prefix and Suffix

Detailed information and programmable codes for "Prefix" and "Suffix" can be found in the Zebra Product Reference Manual "Chapter 5 - User Settings & Other Options --- User Settings --- Prefix/Suffix Values". Another way to set up prefix and suffix is to use the Zebra 123 Scan Utility.

<table>
<thead>
<tr>
<th>Data chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
</tr>
</tbody>
</table>

**Prefix**: Add a character or string before the scanned data.  
**Suffix**: Adds a character or string after the scanned data.

**Adding an Enter key**
To add an Enter key (carriage return/line feed) after the scanned data, scan the following barcode. To program other prefixes and/or suffixes, refer to the Zebra Product Reference Guide.

<table>
<thead>
<tr>
<th>Adding an Enter field (Carriage Return/Line Feed)</th>
</tr>
</thead>
</table>

Table 46: Barcode for adding an Enter field
6.4.9 Advanced Data Formatting (ADF)

Advanced Data Formatting (ADF) - Scan one bar code per trigger pull

Advanced Data Formatting (ADF) is a means of customizing data from before transmission to the host device. Use ADF to edit scan data to suit your host’s requirements. With ADF you scan one bar code per trigger pull. ADF is programmed using 123Scan.

For an ADF tutorial and a 123Scan programming example, go to the 123Scan section of our How To Videos:
http://www.zebra.com/ScannerHowToVideos
For additional information, refer to the “Advanced Data Formatting” Programmer Guide.

“Advanced Data Formatting” programmer Guide, p/n 72E-69680-xx - provides information on ADF, a means of customizing data before transmission to a host.

6.4.10 Multicode Data Formatting (MDF)

Multicode Data Formatting (MDF) - Scan many bar codes in one trigger pull

Multicode Data Formatting (MDF) enables a 2D imaging scanner to scan all bar codes on a label with a single trigger pull, and then modify and transmit the data to meet host application requirements. MDF supports programming up to nine unique labels into one scanner. MDF also supports scanning multiple bar codes on opposite sides of a box by holding the trigger.

Programming options include:
- Output all or specific bar codes
- Control the bar code output sequence
- Apply unique multicode data formatting (MDF) to each output bar code
- Discard scanned data if all required bar codes are not present

For an MDF tutorial and a 123Scan programming example, go to the 123Scan section of our How To Videos:
http://www.zebra.com/ScannerHowToVideos
For more information, refer to the “Multicode Data Formatting and Preferred Symbol” User Guide. "Multicode Data Formatting and Preferred Symbol", p/n MN-002895-xx - provides information on multicode, data formatting, rules and preferred symbol prioritization.

Programming Options

Using 123Scan, programming an MDF Group is similar to setting an ADF rule. MDF programming is saved in the 123Scan configuration file.

MDF can be deployed to a fleet of 2D imaging scanners using the Scanner Management Service (SMS) through a traditional SMS package.
MDF Terms and Definitions

- **Multicode** - Industry term for the ability to scan multiple bar codes with one trigger pull.
- **Multicode Data Formatting (MDF)** - Zebra's name for Multicode.
- **MDF Session** - The act of decoding a label from trigger pull to either data transmission or decode session termination.
- **MDF Group** - The complete set of commands for processing a single label which contains multiple bar codes. 123Scan can program from one to nine MDF Groups.
- **MDF Rule** - The programming steps for processing a single bar code. Similar to an ADF Rule, the MDF Rule contains both criteria and actions. One MDF Rule identifies a single bar code and how to format its data; more bar codes require more MDF Rules.
- **Pattern Match** - The criteria used to determine if a set of scanned bar codes qualify for Multicode Data Formatting. If the pattern match criteria are not met, Multicode Data Formatting is not applied.

Each bar code within the pattern match is defined according to the bar code criteria identified below.

- **Code Type**
  This is a required field when specifying a bar code within the pattern match.
- **Code Length**
  This is an optional field when specifying a bar code within the pattern match.
- **String**
  This is an optional field when specifying a bar code within the pattern match.
- **String Starting Position**
  Specific location: This is an optional field when specifying a bar code within the pattern match.

**Preferred Symbol**

Preferred Symbol is a bar code prioritization technique that enables favored decoding of user designated high priority bar code(s). The Preferred Symbol is the only bar code that is decoded and output within the preset Preferred Symbol Timeout. During this time, the scanner attempts to decode the prioritized bar code and reports only this bar code.

For more information, refer to the MDF and Preferred Symbol User Guide.

**Programming Options**

To program Preferred Symbol via 123Scan, select **123Scan > Configuration Wizard > Symbologies** screen, and then select **Preferred Symbol** from the drop-down menu. Preferred Symbol programming is saved in the 123Scan configuration file.

Preferred Symbol can be deployed to a fleet of 2D imaging scanners using the Scanner Management Service (SMS) through a traditional SMS package.
6.5 Pairing options for Bluetooth hand-held scanner (only for BCS 3678ex)

6.5.1 Radio Communication General

This chapter provides information about the operating modes and functions available for wireless communication between the BCS 3678ex Wireless Digital Scanner, Base Station (Cradle), Universal Power Supply Module, and other Bluetooth enabled devices.

Associated with this section is the Zebra "Product Reference Guide" for the DS36X8. Available on the BARTEC or Zebra Support website.

Contents:
- General information on radio communication
- Programmable codes
- Detailed instructions on all available settings
- Default settings of the radio communication parameters
- Host types of radio communication
- Bluetooth Friendly Name
- Wi-Fi friendly mode
- Radio output power
- Bluetooth radio status
- HID host parameters
- Try reconnecting the beeper feedback.
- Overrange indicator
- Digital scanner for charging station (base station) Support
- Paddocks
- Batch mode
- Bluetooth security
- Bluetooth radio, linking and batch operation
6.5.2 Pairing between Bluetooth hand-held scanner and base station (cradle)

Base station is installed in the safe area and connected to a PC. The following interfaces are supported:

<table>
<thead>
<tr>
<th>Interfaces</th>
<th>Distances</th>
<th>Connection cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB (HID or SPP)</td>
<td>4,5 m*</td>
<td>Yes, see accessories list for the respective Ex-version of the scanner.</td>
</tr>
<tr>
<td>RS232</td>
<td>4,5 m**</td>
<td>On request (no cables in current program)</td>
</tr>
<tr>
<td>Keyboard Wedge</td>
<td>4,5 m</td>
<td>On request (no cables in current program)</td>
</tr>
<tr>
<td>IBM 468X/469X</td>
<td>4,5 m</td>
<td></td>
</tr>
</tbody>
</table>

* Maximum working range for USB is 5m.
** Maximum working range for RS232 is 15m.

Maximum functional ranges below.
Extension cables are not included in the product range.

Figure 18 Connection example between BCS 3678ex and the base station

There are two methods to realize the pairing with the base station.

**Pairing – Methode 1**

Each base station has an individual barcode for pairing.
The MAC address of the base station is stored in the barcode.
By scanning the pairing barcode in the default setting, a scanner can establish a point-to-point connection with a base station.

Figure 19 Representation of the pairing between scanner and base station

- Use the hand-held scanner to scan the barcode (1) attached to the base station.
- The hand-held scanner is connected to the base station and ready for use.
The barcode can be recreated using the Zebra 123Scan tool in case the barcode is damaged or detached. The required MAC address can be found on the type label of the base station.

**Pairing - Method 2**

With this method, the scanner automatically connects to the contacts when inserted into the base station.

It is not necessary to scan the base station barcode. If the pairing is successful, a low/high connection beep will sound a few seconds after the digital scanner is inserted into the docking station. More audio sequences can be found in the Zebra "Product Reference Guide" under Definitions for the Wireless Beeper.

In the default settings, pairing via the base station contacts (Enable Pair on Contacts) is enabled.

<table>
<thead>
<tr>
<th>Enable Pair On Contacts</th>
<th>Disable Pair on Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default = activated (Enabled)</td>
<td></td>
</tr>
</tbody>
</table>

*Table 47 Pairing barcodes for the connection to the base station*

If the BCS 3678ex is paired with other Bluetooth devices (not with the base station) we recommend to deactivate the function "Pair on Contacts". Otherwise the BCS 3678ex may establish the connection with the base station. This will delete the connection with other Bluetooth devices.
6.5.3 Pairing between Bluetooth hand-held scanner and universal power supply module

The USM can be installed in hazardous areas and connected to a PC.

The following interfaces are supported:

<table>
<thead>
<tr>
<th>Interfaces</th>
<th>Max. Distance</th>
<th>Connection cable (USM to PC/Host)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB (SPP)</td>
<td>5 m</td>
<td>Yes</td>
</tr>
<tr>
<td>RS232</td>
<td>15 m</td>
<td></td>
</tr>
<tr>
<td>RS422</td>
<td>1000 m</td>
<td></td>
</tr>
<tr>
<td>RS485</td>
<td>1200 m</td>
<td></td>
</tr>
</tbody>
</table>

Table 48 Interfaces of the USM

Connection cables are not included in the scope of delivery and are not offered by BARTEC.

Use commercially available shielded data cables to avoid external interference. Recommendation: e.g. min. CAT5 cable or other shielded cable

USB-HID is not supported!

Figure 20 Connection example of the USM with the BCS 3678ex

Pairing

Two barcodes are attached to each USM. The "Master Barcode" is located in the cover.

Figure 21 Display of the attached master barcode at the UVM

If the digital scanner is configured as Master (SPP), the radio connection to a Slave device is established. The connection is initiated by scanning a pairing barcode for the remote device.

The pairing barcode for the remote device is attached to the outside of the universal supply module (USM).
Use the hand-held scanner to scan the barcodes in the following order.

1. Scan the Bluetooth Serial Port Profile (Master) in the cover.
2. Scan the pairing barcode (Scan To Connect) on the outside of the cover.

The hand-held scanner is connected to the USM and ready for use.

The barcode for the pairing contains the MAC address of the installed BT module. The MAC address is printed on the cover.

The barcode can be recreated using the Zebra 123Scan tool in case the barcode is damaged or has become detached.

The required MAC address can be found on the type label of the base station or on the Bluetooth chip (marked red in the picture).
6.5.4 Pairing between Bluetooth hand-held scanner and Bluetooth enabled device

The hand-held scanner can also be connected directly to any Bluetooth enabled device via Bluetooth (pairing).

The following interfaces are supported:

<table>
<thead>
<tr>
<th>Interfaces</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USB (HID)</strong></td>
<td>Keyboard Emulation (HID) / Keyboard Emulation (HID) Select this host type when connecting to a PC / Tablet / Phone that simulates a Bluetooth keyboard. Available Modes: - HID Bluetooth Classic - HID BT LE (Discoverable) This function is not supported for connection via USM.</td>
</tr>
<tr>
<td><strong>USB (SPP)</strong></td>
<td>Serial Port Profile (SPP) Select this host type when connecting to a PC / Tablet / Phone via a Bluetooth serial connection. - SPP BT Classic (Non-Discoverable) - SPP BT Classic (Discoverable)</td>
</tr>
<tr>
<td><strong>USB (SSI)</strong></td>
<td>Simple Serial Interface (SSI) / Simple Serial Interface (SSI) Select this host type when connecting to a mobile Zebra device or a PC / Tablet / Phone with Zebra scanner SDK app. - SSI BT Classic (Non-Discoverable) - SSI BT Classic (Discoverable) - SSI BT LE</td>
</tr>
</tbody>
</table>

Table 49  Supported interfaces with other Bluetooth enabled device

For more information and detailed descriptions, refer to the Zebra "Product Reference Guide" for the DS36X8.
Chapter 4 - "Radio Communication"

<table>
<thead>
<tr>
<th>Explanation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The hand-held scanner can be connected to other Bluetooth capable BARTEC devices in Ex-areas and safe areas. In the example with the Tablet PC's of the Agile X series. (Also possible with devices of other Ex device manufacturers)</td>
<td><img src="image1.png" alt="Example Image" /></td>
</tr>
<tr>
<td>The hand-held scanner can be connected to all Bluetooth enabled device</td>
<td><img src="image2.png" alt="Example Image" /></td>
</tr>
</tbody>
</table>

Table 50  Connection examples of the BCS 3678ex with Bluetooth enabled device
There are the following methods to realize pairing with Bluetooth enabled device.

**Pairing – Programmable codes for different host types**
Scanning the respective programmable code from the corresponding Zebra "Product Reference Guide" for the DS36X8.
Chapter 4 - "Radio Communication" - "Host Types"
- Keyboard Emulation
- Simple Serial Interface (SSI)
- Serial Port Profile (SPP)
Detailed explanations of the individual host types can be found in the Zebra manual.

**Pairing – Keyboard Emulation**
The most common method to connect the hand-held scanner to a Bluetooth enabled device is described in detail below.

Prepare the hand-held scanner for pairing with other Bluetooth enabled device.

**Keyboard Emulation (HID)**
"HID BT LE (Discoverable)" scanning the barcode. Enables the host PC to establish an HID (Human Interface Device) connection to the hand-held scanner via Bluetooth low-energy radio. The hand-held scanner can be recognized on the host PC (slave mode).

How to establish a connection (initial setup only):
- Scan the barcode HID BT LE (Discoverable).
- In the Bluetooth Manager on your host PC, find the hand-held scanner as a "DS36xx" device.
- Select your hand-held scanner and establish the connection.

For more information and detailed descriptions, refer to the Zebra "Product Reference Guide" for the DS36X8.
Chapter 4 - "Radio Communication"
Pairing – Scan-To-Connect Application from Zebra

Another way to create a simple pairing is to use the Scan-To-Connect application from Zebra. The application can be downloaded from the Zebra Support page or from the Google Play Store.

Zebra Support page:

- Barcode Scanners
- Ultra Rugged Scanners --- DS3608-HP/DS3678-HP
- Utility - Select Scan-To-Connect for Android or Windows

The applications are compatible with the following systems:

<table>
<thead>
<tr>
<th>Android</th>
<th>v4.4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>v5.x</td>
</tr>
<tr>
<td></td>
<td>v6.x</td>
</tr>
<tr>
<td></td>
<td>v7.x</td>
</tr>
<tr>
<td></td>
<td>v8.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Windows</th>
<th>Windows 7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Windows 8.1</td>
</tr>
<tr>
<td></td>
<td>Windows 10</td>
</tr>
</tbody>
</table>

Installation requirements

- Hardware requirements
  - Pentium Dual-Core E214 1.6 GHz or Pentium Mobile Dual Core T2060 or
  - Pentium Celeron E1200 1.6 GHz
  - 2 GB RAM
  - 1.2 GB free hard disk space
  - Minimum display resolution = 1024 x 768 pixels

Operating system requirements

- Scan-To-Connect is compatible with the native Bluetooth driver of your Windows PC / Tablet operating system

<table>
<thead>
<tr>
<th>Table 52 Scan To Connect Connection to Bluetooth enabled device</th>
</tr>
</thead>
<tbody>
<tr>
<td>The latest versions, requirements and further information can be found in the corresponding Zebra product descriptions.</td>
</tr>
</tbody>
</table>

With the Scan-To-Connect application, a Bluetooth scanner can be connected directly to a PC/Tablet/Smartphone by scanning a barcode on the display. No printed pairing barcode is required. This paperless pairing solution connects the scanner directly to the host without the need for a docking station.

Once a scanner and host are paired, no rescanning of the Scan-To-Connect Pairing barcode is required, even if the device is woken up/activated (Wake Up), provided automatic reconnection has been enabled.

Unlike the standard HID keyboard, the STC utility supports the extended HID keyboard, which ensures that your data is received by your Windows PC. If it is damaged, it will be retransmitted. If it is lost, you will hear an error tone to rescan the object.
### 6.5.5 Check if pairing is OK

Whether the scanner is paired can be checked in the following way.

At the universal supply module (only in the safe area):

**GEFAHR**

Caution Voltage when opening the housing.
Risk of death due to electric shock!

An LED (green) on the built-in Bluetooth chip flashes every second.

![Figure 24 Checking the connection of the hand-held scanner with the UVM](image)

At the scanner:

<table>
<thead>
<tr>
<th>Not paired</th>
<th>Bluetooth - LED flashes red/orange</th>
</tr>
</thead>
<tbody>
<tr>
<td>paired</td>
<td>Bluetooth – LED flashes green</td>
</tr>
</tbody>
</table>

![Figure 25 Checking the connection between hand-held scanner and USM on the BCS 3678ex](image)

### 6.5.6 Radio ranges

The digital scanner BCS 3678ex is equipped with a Bluetooth Class 1 radio which achieves a range up to 100m (open air, line of sight). The actual range is affected by the presence of other radios, shelving and wall materials, as well as the type of mount being tested. The surrounding areas are very different and often influence the radio ranges.
6.5.7 Creating Pairing Barcodes with Zebra 123 Scan Utility

Start the Zebra 123Scan Tool application.
Select the following menu items in the start screen.

In the field "Pairing value": enter the MAC address of the Bluetooth module.

"Select "generate bar code"

Then scan the two barcodes one after the other for pairing.

---

6.6 Threshold values for battery level for Bluetooth hand-held scanners

The thresholds for displaying the battery status are defined as follows:

<table>
<thead>
<tr>
<th>Status</th>
<th>Factory settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BCS 3678ex-NI</td>
</tr>
<tr>
<td>High – green LED</td>
<td>50 %</td>
</tr>
<tr>
<td>Middle – orange LED</td>
<td>20 %</td>
</tr>
<tr>
<td>Low – red LED</td>
<td>10 %</td>
</tr>
<tr>
<td>Overall condition Low</td>
<td>60 %</td>
</tr>
</tbody>
</table>

Table 53 Thresholds

However, you can change the threshold values individually within the value range from 0 to 99 %.
For configuration information, see the ZEBRA Product Reference Guide.

### Barcode to adjust the status LED display of the BCS 3678*-IS version:

![Barcode image]

**Table 54  Barcode to adjust the status LED**

Due to the Ex modifications of the BCS 3678*-IS series, the default values of Zebra can no longer be adopted 1 to 1. With the help of the barcode the values for the different LED statuses are adapted.

#### 6.6.1 Default values of the hand-held scanner

A list of all default values of the hand-held scanners can be found in the Zebra product manual. Zebra Product Reference Guide - Appendix A - Standard Default Parameters.

Further information on the hand-held scanner default values and the reset options can be found under:
Zebra Product Reference Guide - Chapter 5 - User Preferences & Miscellaneous Options --- User Preferences --- Default Parameters
6.6.2 Default values of the universal supply module

The following table lists the default values of the serial interfaces.

<table>
<thead>
<tr>
<th>Interface parameter</th>
<th>USM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USB-HID Interfaces</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>for BCS 3608\textsuperscript{ex}</td>
</tr>
<tr>
<td></td>
<td>Is not supported</td>
</tr>
<tr>
<td><strong>USB-SPP interfaces</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>for BCS 3608\textsuperscript{ex}</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>9600 Baud</td>
</tr>
<tr>
<td>Parität</td>
<td>None</td>
</tr>
<tr>
<td>Stopp bits</td>
<td>1 Bit</td>
</tr>
<tr>
<td>Data bits</td>
<td>8 Bit</td>
</tr>
<tr>
<td>Hardware Handshake</td>
<td>None</td>
</tr>
<tr>
<td>Software Handshake</td>
<td>None</td>
</tr>
<tr>
<td><strong>RS232 Interfaces</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>for BCS 3608\textsuperscript{ex}</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>9600 Baud</td>
</tr>
<tr>
<td>Parity</td>
<td>None</td>
</tr>
<tr>
<td>Stopp bits</td>
<td>1 Bit</td>
</tr>
<tr>
<td>Data bits</td>
<td>8 Bit</td>
</tr>
<tr>
<td>Hardware Handshake</td>
<td>None</td>
</tr>
<tr>
<td>Software Handshake</td>
<td>None</td>
</tr>
<tr>
<td><strong>RS422 Interfaces</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>for BCS 3608\textsuperscript{ex}</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>9600 Baud</td>
</tr>
<tr>
<td><strong>Standard RS422 Interface</strong></td>
<td></td>
</tr>
<tr>
<td><strong>RS485 Interface</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>for BCS 3608\textsuperscript{ex}</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>9600 Baud</td>
</tr>
<tr>
<td><strong>Standard RS485 Interface</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Table 55 Default values of the serial interfaces*
### 6.6.3 Programming the interface parameters

**Programming the universal supply module corded:**
The universal supply module transmits the data of the serial interface 1 to 1. In order to establish a connection with a PC, the interface parameters on the hand-held scanner and the PC/host must be identical.

The interface parameters of the hand-held scanner can be adjusted via the programmable codes in the Zebra product manual or by using the Zebra 123 Scan Utility.
The interface parameters of the PC/host can be adjusted via the settings e.g. in the device manager.

**Programming the universal supply module Bluetooth:**
The Bluetooth hand-held scanner is connected to the USM via Bluetooth. Interface parameters cannot therefore be adjusted on the Bluetooth hand-held scanner (e.g. by scanning programmable codes or via 123 Scan Utility).
The settings are made directly on the USM Bluetooth.
There is a separate manual for programming on the BARTEC Support Download page.
http://automation.bartec.de/indexE.htm
The manual describes the programming of the baud rate via a terminal program. The Bluetooth USM must be connected to a PC via a serial interface (RS232 or USB-SPP). A terminal program is required on the PC to transfer the settings.

**Programming of the hand-held scanner:**
The interface parameters of the hand-held scanner can be adjusted via the programmable codes in the Zebra Product Manual or when using the Zebra 123 Scan Utility.
7 Connection / commissioning (qualified personnel)

7 Connection / commissioning (qualified personnel)

**DANGER**
Spark formation when connecting a cable!
Explosion.
- Always have cables connected by a qualified electrician.
- Only connect or disconnect a cable in the potentially explosive atmosphere when the cable is not connected to the power supply.
- If the cable cannot be disconnected from the power supply, only connect or disconnect the cable outside the potentially explosive atmosphere.

7.1 Corded hand-held scanner BCS 3608ex-NI / BCS 3608ex-IS

7.1.1 Connecting the connection cable to the hand-held scanner

- The function is only guaranteed if the cables you connect for your configuration have been specified by BARTEC (see system overview, Chapter 15.2).

1. Insert the connection cable completely in the hand-held scanner.
2. Insert the plug until it lies flush with the surface of the hand-held scanner.
3. Unscrew the Phillips screw on the safety lock.
4. Push the safety lock into the closed position.

**DANGER**

Spark formation caused by the connection cable coming unplugged!

Explosion.

► Close the safety lock carefully.

5. Screw the Phillips screw on the safety lock tight.
7.2 Universal supply module

7.2.1 Establishing universal supply module connections

**DANGER**

Non-approved accessories!

Loss of function and risk of explosion.

» Only use universal supply modules that have been specified for the relevant configuration by BARTEC.

The approved accessories are shown in the system overview (see system overview, Chapter 15.2). The model is clearly indicated on the type label.

✔ The universal supply module is mounted to a secure base.

![Mounting the hand-held scanner with the Universal Supply Module](image)

1. When using the corded hand-held scanner: connect the connection cable of the hand-held scanner to the USM, turning the connection cable clockwise to screw tight.
2. When using the Bluetooth hand-held scanner: connect the hand-held scanner via pairing to the USM (see Chapter 6.4.1).
3. Feed the connection cable for the power supply through the cable gland into the USM.
4. Feed the data cable between the PC and universal supply module through the cable gland into the USM.
5. Connect the connection cable for the power supply to the USM according to the terminal connection plan (see Chapter 4.6.1).
6. Connect the data cable between the PC and USM to the USM according to the terminal connection plan and interface type (see Chapter 4.6.1).
7. Check connections and terminal assignments.
8. Connect data cable between the PC and USM to the PC.
9. Set the DIP switch (see Chapter 4.6.2 for configuration).
10. Close the cover of the USM.
11. Connect the connection cable for the power supply to the power source.
12. For connection to an HID device or to a PLC: note further information on the interfaces (HID device: see Chapter 7.2.2; PLC: see Chapter 7.2.3)
7.2.2 Connecting the USM to an HID device

All interfaces used on the USM (USB, RS232, RS422 and RS485) can be connected to an HID device.

The prerequisite is a software wedge application on the PC/host using which the interface data can be converted into USB-HID. Software wedge applications are not supplied by BARTEC, but they are available on the market (e.g., T-Wedge).

7.2.3 Connecting the USM to a PLC

All used interfaces of the USM (USB, RS232, RS422 and RS485) can be connected to a PLC.

There are a number of different manufacturers for SPS/PLC. The connection of a hand-held scanner depends on the availability of an interface to the SPS/PLC and the ability of the SPS/PLC to process the incoming data. The SPS/PLC must support the open ASCII protocol.

There is no compatibility list.

The following must be observed when connecting to a PLC:

- What interfaces are available on the SPS/PLC? The USM supports the following interfaces.
  - USB-SPP (virtual serial interface)
  - RS232
  - RS422
  - RS485

The SPS/PLC supports the open ASCII protocol.

- What interface parameters are set on the SPS/PLC?
  All interconnected components must be set to the same parameters. Otherwise a communication cannot function correctly or not at all.
  - Baud Rate
  - parity
  - Stop Bit
  - Data Bit
  - Hardware/Software Handshaking

How the data is processed at the SPS/PLC and what has to be set at the scanner is the responsibility of the plant operator.

For example, a serial interface has no intelligence of its own and cannot process incoming data independently. This means that the controller must monitor the serial interface and process incoming data (read/write routine).

An example project for scanner connection to a Siemens Simatic-S7 SPS/PLC is available on the BARTEC Support Download page.
http://automation.bartec.de/indexE.htm
Content:
- Description with components used
- Sample project for use as a project template
### Solution 1: Availability on the SPS/PLC side

**Figure 27** Availability on the PLC side

- Communication controller / processor (CP)
- Open ASCII driver

### Solution 2: Availability on the PROFIBUS DP side

**Figure 28** Availability on the DP side

- PROFIBUS DP converter to serial
  
  or

- PROFIBUS compatible terminal equipment such as HMI Polaris with the possibility of connecting the scanner
7.3 Bluetooth hand-held scanner BCS 3678ex-NI / BCS 3678ex-IS

7.3.1 Connecting the base station to the host PC and power source

---

**DANGER**

Spark formation when connecting a cable!

Explosion.

► Only use the base station outside the potentially explosive atmosphere.

---

1. Connect the data cable to the host PC.

2. Open the cover, connect the data cable and close the cover.

3. Feed the connection cable through the cable gland.

4. Connect the base station to the power source.

---

Power is supplied to the base station either by means of the connection cable to the host PC if this is conductive or using a separate power connection. Further information about the power supply to the base station can be found in the ZEBRA Product Reference Guide.

If a separate power cable is used, this must always be disconnected from the power source before disconnecting the data cable from the host PC or from the base station. It is otherwise possible that the base station will be unable to establish any connection to a new host PC.
### Connection / commissioning (qualified personnel)

#### Handscanner

**BCS 3600ex series**

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Subject to technical modifications

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<table>
<thead>
<tr>
<th>Connection via USB</th>
<th>Connection via RS232</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Diagram" /></td>
<td><img src="image2.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

Figure 29 Connecting the AC Cable

Needed power supply:

<table>
<thead>
<tr>
<th>Part</th>
<th>BCS 3678<strong>ex</strong>-IS-Version ATEX / IECEx Zone 1/21 CSA Class I, II, III Division 1</th>
<th>BCS 3678<strong>ex</strong>-NI-Version ATEX / IECEx Zone 2/22 CSA Class I, II, III Division 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base station for hand-held scanner BCS 3678<strong>ex</strong> Bluetooth</td>
<td>Type: 17-A1Z0-0014</td>
<td>Type: G7-A0Z0-0010</td>
</tr>
</tbody>
</table>
| Connecting cable  
- Connection between base station and PC  
- With terminal for 12V power supply | RS232; 1.9 m (plain)  
- Type: 17-A1Z0-0026  
RS232; 4.5 m (plain)  
- Type: 17-A1Z0-0027  
USB; 1.9 m (plain)  
- Type: 17-A1Z0-0020  
Identical with programming cable | RS232; 2 m (plain)  
- Type: G7-A0Z0-0014  
RS232; 4.6 m (plain)  
- Type: G7-A0Z0-0015  
RS232; 2.8 m (spiral)  
- Type: G7-A0Z0-0016  
USB; 2 m (plain)  
- Type: G7-A0Z0-0018 |
| Power supply with DC connecting cable | Type: G7-A0Z0-0019 |

Table 56 Needed power supply

Note on the power supply of the base station via the PC/Host:

**RS232:**

The RS232 does not provide a supply voltage to operate the base station functionally. External power supply of type G7-A0Z0-0019 is mandatory.

**USB:**

The supply voltage via the USB interface is sufficient to ensure data transmission via the base station.

If the base station is also used as a charging station it is strongly recommended to use an external power supply type G7-A0Z0-0019.

The charging current via the USB interface is too low to allow a fast charging of the battery.
7.4 Connecting to the HMI: connecting the hand-held scanner to the HMI

The function is only guaranteed if the cables you connect for your configuration have been specified by BARTEC (see system overview, Chapter 15.2, P. 104).

Pay attention to the HMI manual.

When connecting to an HMI or other device, it must be ensured that the Ex-technically relevant values are not exceeded or undercut.

Chapter 3.5 Observe Ex-relevant values when connecting to UVM or other systems.

Furthermore, it must be noted that the functional values listed in chapter 3.5 are also observed.

Connect the connection cable of the hand-held scanner in the HMI to the terminals provided for this purpose.
### 7.5 Wiring diagram for Universal Supply Module (USM)

#### 7.5.1 USM with USB-SPP Interface

**USM-Bluetooth with USB-SPP**

<table>
<thead>
<tr>
<th>USM-Bluetooth with USB-SPP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PC/Host with USB Interface</strong></td>
</tr>
<tr>
<td>USB-SPP = Serial Port Profile</td>
</tr>
<tr>
<td>USB = virtual serial COM port</td>
</tr>
<tr>
<td>Max. cable length is 5 m</td>
</tr>
</tbody>
</table>

**USM-corded with USB-SPP**

<table>
<thead>
<tr>
<th>USM-corded with USB-SPP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PC/Host with USB Interface</strong></td>
</tr>
<tr>
<td>USB-SPP = Serial Port Profile</td>
</tr>
<tr>
<td>USB = virtual serial COM port</td>
</tr>
<tr>
<td>Max. cable length is 5 m</td>
</tr>
</tbody>
</table>

**Wiring:**

- **Blue wire** → necessary (example connection to AC)
- **Green line** → necessary

For data cables, we strongly recommend to use shielded (e.g. CAT5, similar or higher quality) cables.

**Dip-Switch**:

- S1 to S4 = Setup for interface
- S4 = 0 = Corded Version
- S4 = 1 = Bluetooth Version

---

Subject to technical modifications
Revision A / 04/2019
7.5.2 USM with RS232 Interface

**USM-Bluetooth with RS232**

PC/Host with serial RS232-interface Max. cable length is 15 m USM-Bluetooth

**USM-corded with RS232**

PC/Host with serial RS232-interface Max. cable length is 15 m USM-corded

Wiring:
- Blue wire → necessary (example connection to AC)
- Green line → necessary
- Orange line → optional only when using software and/or Hardware-Handshake required

For data lines (green and orange) we strongly recommend to use shielded (e.g. CAT5, similar or higher quality) cables.

Dip-Switch:
- S1 to S4 = Setup for interface
- S4 = 0 = Corded Version
- S4 = 1 = Bluetooth Version
7.5.3 USM with RS422 Interface

USM-Bluetooth with RS422

PC/Host with serial RS422-interface  | Max. cable length is 1000m  | USM-Bluetooth

USM-corded with RS422

PC/Host with serial RS422-interface  | Max. cable length is 1000m  | USM-corded

Wiring:
- Blue wire → necessary (example connection to AC)
- Green line → necessary
- Orange line → optional to use only for large potential differences.

For data lines (green and orange) we strongly recommend to use shielded (e.g. CAT5, similar or higher quality) cables.

Dip-Switch:
- S1 to S4 = Setup for interface
- S4 = 0 = Corded Version
- S4 = 1 = Bluetooth Version
### 7.5.4 USM with RS485 Interface

**USM-Bluetooth with RS485**

![Diagram of USM-Bluetooth with RS485 interface]

#### Wiring:
- Blue wire: necessary (example connection to AC)
- Green line: necessary
- Orange line: connect shield to equipotential bonding

For data lines (green and orange) we strongly recommend to use shielded (e.g. CAT5, similar or higher quality) cables.

**Dip-Switch:**
- S1 to S4 = Setup for interface
- S4 = 0 = Corded Version
- S4 = 1 = Bluetooth Version

**USM-corded with RS485**

![Diagram of USM-corded with RS485 interface]

**PC/Host with serial RS485-interface**
- Max cable length is 1200m

**USM-Bluetooth**

**PC/Host with serial RS485-interface**
- Max cable length is 1200m

**USM-corded**

**Revision A / 04/2019**
7.5.5 **Explanation of the interfaces**

- **USB HID (Human Interface Device)**
  The digital scanner establishes a connection to the base station or PC / host via Bluetooth and functions like a keyboard.
  USB (Universal Serial Bus) is also a serial bus. The data transfer takes place via 2 lines (D+ and D-). Two further lines serve the power supply of the connected devices.

- **USB SPP (Serial Port Profile)**
  Der digitale Scanner stellt über Bluetooth eine Verbindung zur Basisstation oder Universal-Versorgungsmodul oder PC / Host her und fungiert als serielle Verbindung.

- **RS232 (Recommended Standard 232 – differential serial interface)**
  The digital scanner establishes a connection to the base station or USM or PC / host via Bluetooth and functions as a serial connection.
  In automation technology, only three lines are usually used from the RS-232 interface.
  TxD (Transmit Data) for transmitting
  RxD (Receive Data) for reception
  GND cable for the common reference potential
  There is no data transmission without connection of the GND line.
  The RS-232 interface is not bus-capable and can only be used for point-to-point connections.
  Functionally ranges up to 15m are possible.

- **RS422 (Recommended Standard 422 – symmetric serial interface)**
  The digital scanner establishes a connection to the base station or universal power supply module or PC / host via Bluetooth and functions as a serial connection.
  Data transmission is via a four-wire line.
  All participants transmit via the data lines TxD+ and TxD- and receive via RxD+ and RxD-.
  The GND line is only to be used for large potential differences and should not be absolutely necessary.
  The RS422 interface is less sensitive to interference than the RS232 interface. The reason for this is that the difference is always considered in the line levels. An electromagnetic interference would increase the potential on both lines to the same extent. Thus the interference would have no influence on the differential signal. (For comparison: With the RS232 interface, the interference would only have an influence on the signal lines, but not on the reference potential).
  The RS422 interface is bus-capable.
  Functionally, ranges of up to 1000m are possible. It may also be possible to install repeaters in the bus for power amplification.
- **RS485** (Recommended Standard 485 – asynchronous serial interface)
  The digital scanner establishes a connection to the base station or universal power supply module or PC / host via Bluetooth and functions as a serial connection.
  Data transmission is via a two-wire line.
  The RS485 interface has similar characteristics to the RS422 interface.
  Ranges of up to 1200m can be achieved.
  The RS485 interface is bus compatible.
  The same applies to repeaters, immunity to interference and voltage levels as described via the RS422 interface.
  The big difference and big advantage of the RS485 interface is that only 2 data lines are needed. The participants send and receive via the lines TxD/RxD+ and TxD/RxD-. This results in less installation effort.

- **Keyboard Wedge**
  This interface connects the digital scanner between the keyboard and the host computer and translates barcode data into keyboard input. The host computer accepts the data as if it came from the keyboard.

- **IBM 468X/IBM469X**
  Connection to IBM 468X/IBM469X Host System.

When using the serial interfaces, please note that software is required to process the data on the PC/host.
BARTEC does not offer its own software solution.

**Background:**
The serial interface does not have its own intelligence. This means that all data arriving at the interface is lost if it is not collected and processed by a software application.

**Possible solution:**
Use of a software keyboard wedge.
7.6 Testing the communication (RS232 or USB-SPP)

The serial communication can be checked with the help of a terminal program. A serial interface does not have its own intelligence. This means that incoming data at the serial interface will be lost if there is no application available that can process incoming data.

There is a large number of terminal programs on the market. E.g. Hyperterminal, Tera Term, Putty or others.

BARTEC does not distribute any terminal program or software keyboard wedge application.

When using a universal power supply module, a software wedge or other application must be installed on the host PC for data transfer. The software wedge or other application serves to convert the incoming data as keyboard input and to enter the data into the currently active field on the host PC.

Terminal Program

The test described below with a terminal program was performed with the H-Term application. Any other terminal program that supports serial communication can be used alternatively.

Test communication/data transmission

1. Open Terminal program
2. Select the serial interface to which the universal power supply module with coupled BCS 36x8ex is connected (In the example COM1).

Can be checked in Device Manager
3. Make settings in the terminal program and connect with Connect.

Example for BCS 3608ex

4. Read the barcode with the scanner and check the data in the terminal program.

5. Data transfer is OK if the barcode data is displayed in the "Received Data" window. Otherwise check connection and programming.
8.1  Bluetooth hand-held scanners BCS 3678ex-NI / BCS 3678ex-IS

8.1.1  Changing the battery

**DANGER**
Mixing up the batteries!
Loss of function and risk of explosion.
- Only use batteries that have been specified by BARTEC.

Only the following batteries are approved:

<table>
<thead>
<tr>
<th>Zone / Div.</th>
<th>Battery type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1 / Div. 1</td>
<td>17-A1Z0-0012</td>
</tr>
<tr>
<td>Zone 2 / Div. 2</td>
<td>B7-A2Z0-0036</td>
</tr>
</tbody>
</table>

*Table 57  Approved batteries*

The model of battery is clearly indicated on the type label.

**DANGER**
Spark formation when changing the battery!
Explosion.
- Only insert or remove the battery outside the potentially explosive atmosphere.

1. Using the special tool, open the safety lock to unlock the battery compartment cover, rotating the safety lock by approximately one quarter in either direction.
2. If a battery has been inserted: remove the battery.
3. Slide the battery into the battery compartment, ensuring the following:
   — Battery contacts point toward the battery compartment.
   — Rounded side of the battery points toward the back of the hand-held scanner.
4. Close the battery compartment cover.

![Danger Warning]

**DANGER**

Spark formation caused by the battery falling out!

Explosion.

▶ Close the safety lock carefully.

5. Turn the safety lock by approximately one quarter in either direction to lock the battery compartment cover.
6. If a new battery has been inserted: charge the battery using the base station.
8.1.2 Placing the hand-held scanner in the base station

**DANGER**

Non-approved base station!
Loss of function and risk of explosion.
- Only use the base station that has been specified for the relevant configuration by BARTEC.

The approved accessory is shown in the system overview (see system overview, Chapter 15.2). The model is clearly indicated on the type label.

**DANGER**

Spark formation!
Explosion.
- Only use the base station outside the potentially explosive atmosphere.

1. Place the head of the hand-held scanner in the base station

2. Press the underneath of the hand-held scanner into the base station until you hear the hand-held scanner click into place.
8.1.3 Connecting the Bluetooth hand-held scanner to the base station

The Bluetooth hand-held scanner sends data to the base station. The base station sends these data to a host PC. To exchange data, the base station must be connected to the hand-held scanner.

- To connect the hand-held scanner to the base station, place the hand-held scanner in the base station (see Chapter 8.1.2)
- or –
Scan the connection code on the base station.

If the display is illuminated in red, the transfer has failed.
If the status LEDs are lit up in green, the hand-held scanner is connected to the base station.

8.1.4 Charging the battery

**DANGER**

Mixing up the batteries!
Loss of function and risk of explosion.
- Only use batteries that have been specified by BARTEC.

Only the following batteries are approved:

<table>
<thead>
<tr>
<th>Zone / Div.</th>
<th>Battery type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1 / Div. 1</td>
<td>17-A1Z0-0012</td>
</tr>
<tr>
<td>Zone 2 / Div. 2</td>
<td>B7-A2Z0-0036</td>
</tr>
</tbody>
</table>

Table 58 Approved batteries

The model of battery is clearly indicated on the type label.

Charging time

<table>
<thead>
<tr>
<th>Battery type for Zone 2 / Div 2</th>
<th>Charging time of the different stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base station Type: G7-A0Z0-0010</td>
<td>4 slot battery charger Type: G7-A0Z0-0013</td>
</tr>
<tr>
<td>B7-A2Z0-0036</td>
<td>Up to 3 hours</td>
</tr>
<tr>
<td></td>
<td>Up to 5 hours</td>
</tr>
<tr>
<td>Battery type for Zone 1 / Div 1</td>
<td></td>
</tr>
<tr>
<td>Base station Type: 17-A1Z0-0014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 slot battery charger Type: 17-A1Z0-0013</td>
</tr>
<tr>
<td>17-A1Z0-0012</td>
<td>Up to 8 hours</td>
</tr>
</tbody>
</table>

Table 59 Charging times of the usable batteries

Note on the power supply of the base station via the PC/Host:

RS232:
The RS232 does not provide a supply voltage to operate the base station functionally.
External power supply of type G7-A0Z0-0019 is mandatory.
USB:
The supply voltage via the USB interface is sufficient to ensure data transmission via the base station.
If the base station is also used as a charging station it is strongly recommended to use an external power supply type G7-A0Z0-0019.
The charging current via the USB interface is too low to allow a fast charging of the battery.
LED display during charging:

<table>
<thead>
<tr>
<th>LED</th>
<th>Bedeutung</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Switched on</td>
</tr>
<tr>
<td>Green flashing</td>
<td>Bluetooth connection established</td>
</tr>
<tr>
<td>Blue</td>
<td>Side button</td>
</tr>
</tbody>
</table>

Battery status LED

<table>
<thead>
<tr>
<th>LED</th>
<th>Bedeutung</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>Preloading in progress</td>
</tr>
<tr>
<td>Yellow flashing</td>
<td>Charging</td>
</tr>
<tr>
<td>Fast yellow flashing</td>
<td>Load error</td>
</tr>
<tr>
<td>Green</td>
<td>Fully charged</td>
</tr>
</tbody>
</table>

Table 60 LED display during charging

Battery charging time

<table>
<thead>
<tr>
<th>Battery type</th>
<th>Runtime Scans per load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery type for Zone 2 / Div 2</td>
<td>B7-A2Z0-0036</td>
</tr>
<tr>
<td>Battery type for Zone 1 / Div 1</td>
<td>17-A1Z0-0012</td>
</tr>
<tr>
<td></td>
<td>Up to 100.000</td>
</tr>
<tr>
<td></td>
<td>Up to 15.000</td>
</tr>
</tbody>
</table>

Table 61 Runtime of the batteries

Battery life depends on various factors.
Ex version of the BCS 3678\textsuperscript{ex}
Device Settings
Device usage
battery care
Age of the battery

Battery Statistics:

<table>
<thead>
<tr>
<th>Battery type</th>
<th>Battery type</th>
<th>Runtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery type for Zone 2 / Div 2</td>
<td>B7-A2Z0-0036</td>
<td>Zebra evaluation can be used 1 to 1</td>
</tr>
<tr>
<td>Battery type for Zone 1 / Div 1</td>
<td>17-A1Z0-0012</td>
<td>Other cell installed, so the battery statistics of Zebra can not be used.</td>
</tr>
</tbody>
</table>

Table 62 Statistics of the batteries

DANGER

Spark formation when charging the battery!
Explosion.

Only charge the battery outside the potentially explosive atmosphere.

Charging the battery with the base station

✓ The base station is connected to a power source.
► Place the hand-held scanner in the base station to charge the battery (see Chapter 8.1.2, P. 86).
← LEDs on the base station flash yellow to indicate the start of the charging process.
← LEDs on the base station flash green to indicate the end of the charging process.
Charging the battery with 4-slot charging station for spare batteries

1. Point the contacts of the battery upwards.

2. Slide the battery underneath the edge of the 4-slot charging station.

3. Press the battery into the 4-slot charging station on the side with the label.
   - You can hear the battery click into place
   - LED on the 4-slot charging station flashes yellow, indicating the start of the charging process.
   - Battery is charged.
   - LED on the 4-slot charging station flashes green, indicating the end of the charging process.
8 Operation

Handscanner

BCS 3600ex series

8.2 Inspection to be conducted prior to use

⚠️ **DANGER**

Spark formation caused by the connection cable or the battery falling out!

Explosion.

Ensure that the safety lock has been correctly closed prior to use in the potentially explosive atmosphere.

The following risks are present if the safety lock on the underside of the hand-held scanner has not been closed correctly:

- The battery on a Bluetooth hand-held scanner can fall out.
- The connection cable on a corded hand-held scanner can come unplugged.

Ensure that the safety lock has been correctly closed prior to use in the potentially explosive atmosphere.

Check the following points before operating the device:

**Final inspection of BCS 3608ex-NI / BCS 3608ex-IS (corded)**

<table>
<thead>
<tr>
<th>Check points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan window free from damage, e.g. scratches</td>
</tr>
<tr>
<td>Enclosure free from damage, e.g. crack or break</td>
</tr>
<tr>
<td>Temperature in the area in which the hand-held scanner is used corresponds to the specified temperature range</td>
</tr>
<tr>
<td>Cables are not damaged</td>
</tr>
<tr>
<td>Cables have been certified</td>
</tr>
<tr>
<td>Cable on the hand-held scanner is securely engaged and locked</td>
</tr>
<tr>
<td>Cables on the universal supply module are securely engaged, locked or screwed tight</td>
</tr>
</tbody>
</table>

Table 63 Final inspection before using the BCS 3608ex-NI / BCS 3608ex-IS (corded)

**Final inspection of BCS 3678ex-NI / BCS 3678ex-IS (Bluetooth)**

<table>
<thead>
<tr>
<th>Check points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan window free from damage, e.g. scratches</td>
</tr>
<tr>
<td>Enclosure free from damage, e.g. crack or break</td>
</tr>
<tr>
<td>Temperature in the area in which the hand-held scanner is used corresponds to the specified temperature range</td>
</tr>
<tr>
<td>Cables are not damaged</td>
</tr>
<tr>
<td>Cables have been certified</td>
</tr>
<tr>
<td>Battery has been certified</td>
</tr>
<tr>
<td>Battery compartment cover has been correctly locked</td>
</tr>
<tr>
<td>Cables on the universal supply module/base station are securely engaged, locked or screwed tight</td>
</tr>
</tbody>
</table>

Table 64 Final inspection before using the BCS 3678ex-NI / BCS 3678ex-IS (Bluetooth)
Final inspection of the universal supply module

<table>
<thead>
<tr>
<th>Check points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply module is not damaged</td>
</tr>
<tr>
<td>Universal supply module has been certified</td>
</tr>
<tr>
<td>Universal supply module has been certified for use with the hand-held scanner</td>
</tr>
<tr>
<td>Terminal connection chamber of the universal supply module has been correctly closed</td>
</tr>
<tr>
<td>Universal supply module has been correctly connected</td>
</tr>
</tbody>
</table>

Table 65 Final inspection before using the universal supply module

8.3 Scanning

During scanning, the hand-held scanners in the BCS 3600ex series emit a scanner beam.

1. To scan a barcode, direct the scanner beam onto the barcode so that it captures the whole width of the barcode. While doing so, pay attention to the optimal scan position (see Chapter 8.3.1).
2. Align the hand-held scanner centrally on the barcode.
3. Press the trigger button.
   - White LEDs on the hand-held scanner are switched on to illuminate the barcode.
   - Scanner emits a beep to signalise the successful decoding of the barcode (see Chapter 4.5).
8.3.1 Optimal scan position

Right:
The hand-held scanner can also read barcodes when the scanner beam is not directly centred on the barcode.

![Figure 32 Correct scan position](image)

Wrong:
The hand-held scanner cannot decode/scan a barcode if the scanner beam does not capture the whole width of the barcode.

![Figure 33 Incorrect scan position](image)
9 Cleaning

9.1 Suitable cleaning agents

<table>
<thead>
<tr>
<th>Component</th>
<th>Cleaning agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan window</td>
<td>Cleaning wipes for glasses or for camera lenses</td>
</tr>
<tr>
<td>Hand-held scanner enclosure</td>
<td>Damp cleaning cloths, isopropyl alcohol (70 %)</td>
</tr>
<tr>
<td>Hand-held scanner contacts</td>
<td>Cotton wool buds, isopropyl alcohol (70 %)</td>
</tr>
</tbody>
</table>

Table 66 Suitable cleaning agents

9.2 Cleaning the enclosure

1. Moisten a soft, fluff-free cloth with a suitable cleaning agent and carefully wipe the enclosure of the hand-held scanner.
2. Use a cotton wool bud to clean difficult to reach parts.
3. Allow the device to dry naturally until completely dry.

9.3 Cleaning the scan window

The scan window must be cleaned at regular intervals to ensure that barcodes are correctly decoded.
1. Clean the scan window with a cleaning wipe for glasses or camera lenses or with comparable cleaning wipes.
2. Dry the scan window immediately to prevent smear formation, using a soft, fluff-free cloth to do so.

9.4 Cleaning the contacts

Take the following steps to clean the battery contacts, contacts on the hand-held scanner, contacts on the base station and the cable connectors for the hand-held scanner:
1. Soak cotton wool buds in isopropyl alcohol.
2. Remove grease and dirt deposits from the contacts using the cotton wool buds.
   – Wipe the cotton wool bud over the contacts at least three times.
3. Dry the contacts using a dry cotton wool bud.
   – Wipe the cotton wool bud over the contacts at least three times.
10 Maintenance, inspection, repair

The hand-held scanners may only be maintained, inspected and repaired by trained and qualified personnel:

− The personnel are familiar with the maintenance and inspection of the device.
− The personnel are familiar with the maintenance, inspection and repair of the accessories.
− The personnel have been informed about the risks when carrying out these activities and have the necessary qualifications for this work.

10.1 Maintenance intervals

The maintenance intervals depend on the ambient conditions. Regular maintenance is not necessary if the device is operated according to the installation instructions and the ambient conditions are taken into consideration.

▶ Check the hand-held scanner regularly for external damage.

10.2 Returning faulty devices

The following information is required for a repair:

− Serial number of the device (see Chapter 4.7)
− Model number or product name (see type label)
− Software type and version number (see system information for the control panel)

We are unable to guarantee processing within the contractually agreed period for any returns received without RMA number (Return Merchandise Authorization). The processing guidelines and the RMA form can be downloaded from our website:

Europe:  [http://www.bartec.de](http://www.bartec.de)

1. Read the processing guidelines for the RMA (Return Merchandise Authorization) process before sending a faulty device in for repair.
2. Complete the RMA form, sign it and send it to our “Returns Centre”.

Europe:  Email: services@bartec.de
        Fax: +49 7931 597-119
USA:    Email: service@bartec.us

In the event of questions

▶ Please send us an email or call us:

Europe:  Email: services@bartec.de
        Phone: +49 7931 597-444
USA:    Email: service@bartec.us
# 11 Faults – causes and remedies

Information about the configuration of host parameters and barcode types can be found in the ZEBRA Product Reference Guide.

Please contact BARTEC Automation & Enterprise Mobility Support: Service-mobilecomputing@bartec.de if none of the solutions set out rectify the fault.

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scanner beam does not appear when the trigger button is pressed</td>
<td>No power is supplied to the hand-held scanner</td>
<td>Connect the power supply to the corded hand-held scanner.</td>
</tr>
<tr>
<td></td>
<td>Wrong interface cable is being used</td>
<td>Connect the correct interface cable.</td>
</tr>
<tr>
<td></td>
<td>Hand-held scanner has been deactivated</td>
<td>Activate the hand-held scanner. Further information about this can be found in the ZEBRA Product Reference Guide.</td>
</tr>
<tr>
<td></td>
<td>Scanner beam has been deactivated</td>
<td>Activate the scanner beam. Further information about this can be found in the ZEBRA Product Reference Guide.</td>
</tr>
<tr>
<td>Hand-held scanner emits a scanner beam, but does not decode barcodes</td>
<td>Barcode is not legible</td>
<td>1. To test the scan engine, scan barcodes of the same type.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Print the barcode out again if it is damaged.</td>
</tr>
<tr>
<td></td>
<td>Scanner beam is not capturing the whole width of the barcode</td>
<td>• Select the optimal scan position for the barcode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Move the barcode into the field of vision of the hand-held scanner.</td>
</tr>
<tr>
<td></td>
<td>Distance between barcode and hand-held scanner is wrong</td>
<td>Position the hand-held scanner closer to or farther away from the barcode.</td>
</tr>
<tr>
<td>Hand-held scanner decodes barcodes, but does not send these to the host</td>
<td>Hand-held scanner has not been correctly programmed for the host type</td>
<td>Program the hand-held scanner for the host type. Further information about this can be found in the ZEBRA Product Reference Guide.</td>
</tr>
<tr>
<td></td>
<td>Interface cable has not been correctly connected</td>
<td>Connect the interface cable correctly.</td>
</tr>
<tr>
<td></td>
<td>Base station has not been programmed for the host type</td>
<td>Check the host parameters of the hand-held scanner or change the parameters.</td>
</tr>
<tr>
<td></td>
<td>Hand-held scanner is not connected to the base station</td>
<td>Connect the hand-held scanner to the base station (see Chapter 8.1.3)</td>
</tr>
</tbody>
</table>
### Table 67: Faults and troubleshooting

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base station has lost the connection to the host</td>
<td></td>
<td>Restore the connection between the hand-held scanner and base station (see Chapter 11.1).</td>
</tr>
<tr>
<td>Host displays the scanned data incorrectly</td>
<td>Hand-held scanner has not been configured for communication with the host</td>
<td>Configure the hand-held scanner for the host type.</td>
</tr>
<tr>
<td>With power supply via USB, the hand-held scanner is repeatedly switched on and off</td>
<td></td>
<td>No action. Normal when the host is reset.</td>
</tr>
<tr>
<td>Hand-held scanner emits the following sequence of beeps: short low, short medium, short high (switch-on process)</td>
<td>USB initialisation has not been completed</td>
<td>Wait a few seconds then start the scan process again.</td>
</tr>
<tr>
<td>Hand-held scanner emits the following sequence of beeps: 3 low beeps, 1 very low beep</td>
<td>Receive error during communication via RS-232</td>
<td>Normal when the host is reset.</td>
</tr>
<tr>
<td>The hand-held scanner emits the following sequence of beeps when changing the USB connection: short low, short medium, short high (switch-on process)</td>
<td>Power transmission via USB is being restored</td>
<td>No action. Normal when changing the USB connection.</td>
</tr>
<tr>
<td>Wrong interface cable is being used</td>
<td></td>
<td>1. Check the interface cable.</td>
</tr>
<tr>
<td>2. If the wrong interface cable is being used: connect the correct interface cable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interface cable or mains cable is loose</td>
<td></td>
<td>1. Check cable connections.</td>
</tr>
<tr>
<td>2. Connect loosely connected cables correctly.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subject to technical modifications
Revision A / 04/2019
11.1 Restoring the connection between Bluetooth hand-held scanner and base station

If the hand-held scanner is not transferring any data to the base station, restore the connection as follows:

1. All cables on the host and on the base station are securely connected.
2. Unplug the mains cable from the base station.
3. Unplug the connection cable from the base station.
4. Wait 3 seconds.
5. Connect the connection cable to the base station.
6. Connect the mains cable to the base station.

11.2 Resetting the hand-held scanner

The hand-held scanner can be reset to two types of default settings:

- Scanning barcodes for factory settings (see ZEBRA Product Reference Guide, Chapter 5 - Section "User Preferences - Default Parameters" --- Appendix A lists all standard default parameters)
- Reset to factory default using Zebra 123 Scan Utility Tool. Der Handscanner kann auf zwei Arten von Standardeinstellungen zurückgesetzt werden:

The following reset (default) options are available:

- Factory settings (Factory Default)
- User-Defined Standard (Custom Default)

Scan the appropriate barcode below to reset the hand-held scanner to its factory settings and/or set the current hand-held scanner settings as the user-defined default.

**Restore Defaults - Reset hand-held scanner to default settings**

With the barcode "Restore Defaults" the hand-held scanner is reset to the following default settings:

- Restore Defaults - Resets all default parameters as follows:
  If custom defaults have been configured (see "Write to Custom Defaults"), the custom defaults will be set for all parameters each time the Restore Defaults barcode specified below is scanned.
- If no user-defined defaults have been configured, the factory defaults will be used for all parameters when the Restore Defaults barcode specified below is scanned.

(For Factory Default, see Zebra "Product Reference Guide" for DS36X8. "Appendix A, Standard Default Parameters")

![Restore Default Barcode]

Figure 34 Restore Default Barcode

- Scanning the “Restore Defaults” barcode.
11.2.1 Set Factory Default - Remove Custom Defaults (Reset to Factory Defaults)

Set Factory Default - Scan the "Set Factory Default" barcode below to remove all user-defined defaults and reset the hand-held scanner to the factory defaults.

(For Factory Default, see the Zebra "Product Reference Guide" for the DS36X8. "Appendix A, Standard Default Parameters")

![Barcode Factory Default](image)

Figure 35 Barcode Factory Default

- Barcode “Set Factory Defaults” scanning.

11.2.2 Write to Custom Defaults - Set user-defined default values

Setting custom default values is described in ZEBRA's Product Reference Guide.

- Write custom defaults - Custom defaults can be configured to set unique defaults for all parameters.

After changing all parameters to the desired values, scan the following Write to Custom Defaults barcode to accept/save the new custom default setting.

![Barcode Write to Custom Defaults](image)

Figure 36 Barcode Write to Custom Defaults

- Barcode “Write to Custom Defaults” scanning.
11.2.3 Notes on resetting the hand-held scanners

When using the BCS 3678ex Bluetooth version.

When using "Set Factory Default" the following settings are not reset.
- Multipoint-to-Point connection is not reset.
  May have to be reset manually e.g. when updating the scanner firmware via Zebra 123 Scan Utility (only possible with activated point-to-point connection).
- Existing pairing connections are not reset/deleted.
  Must be done manually by using the barcode "Unpairing" in the Zebra "Product Reference Guide".

When using "Set Factory Default" the following settings are reset.
- When using the BCS 3678ex-IS the barcode for the status LED has to be scanned to adapt the LED display to the Ex modifications.

11.3 Pairing with base station doesn’t work

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Hand-held scanner is already connected to another base station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible solution</td>
<td>Unpair the hand-held scanner from the docking station or from the PC/host to make the docking station available for pairing with another digital device.</td>
</tr>
<tr>
<td></td>
<td>Scan the barcode below to disconnect all existing digital scanner connections to docking station/PC host/other Bluetooth devices.</td>
</tr>
<tr>
<td></td>
<td>Unpairing</td>
</tr>
<tr>
<td></td>
<td>Further information on pairing methods can be found in the corresponding Zebra &quot;Product Reference Guide&quot; in Chapter 4 - &quot;Radio Communication&quot;.</td>
</tr>
</tbody>
</table>

When "Factory Default Barcode" is scanned, all data is reset to factory settings but no existing pairing connection is deleted.
### Base station does not work

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Power supply not connected correctly.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible solution</td>
<td>Check whether the connection cable (1.) is correctly connected to the base station. Insert the cable firmly and the cover (2.) will close slightly.</td>
</tr>
</tbody>
</table>

![Diagram of base station with labels 1. and 2. showing connection points.](image-url)
Hand-held scanner and accessories contains metallic and plastic parts and electronic components.

WEEE registration number of the BARTEC GmbH:
DE 95940350

As professional electrical devices, our devices are intended exclusively for commercial use, so-called B2B devices, in accordance with the WEEE Directive. The WEEE Directive provides the framework for the treatment of old electrical equipment throughout Europe. This means that you may not dispose of these devices in usual household waste but must dispose of them separately in an environmentally compatible manner and can also bring them to the collection points of public disposal companies. All products purchased from us can be returned to us by our customers for disposal. We will ensure disposal in accordance with the applicable laws. The sender shall bear the costs of postage and packaging.
## Ambient conditions

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>• With cable: –30 °C to 50 °C –22 °F to 122 °F</td>
</tr>
<tr>
<td></td>
<td>• Without cable: –20 °C to 50 °C –4 °F to 122 °F</td>
</tr>
<tr>
<td>Storage temperature device</td>
<td>–40 °C to 70 °C –40 °F to 158 °F</td>
</tr>
<tr>
<td>Storage temperature battery</td>
<td>0°C to 50 °C 32 °F to 122 °F</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>5 % - 95 %, condensing</td>
</tr>
<tr>
<td>Protection class</td>
<td>Scanner: IP65; FLB charging station: IP65</td>
</tr>
<tr>
<td>Electrostatic discharge</td>
<td>• EN 61000-4-2</td>
</tr>
<tr>
<td></td>
<td>• ±25 kV discharge via air</td>
</tr>
<tr>
<td></td>
<td>• ±10 kV direct discharge</td>
</tr>
<tr>
<td></td>
<td>• ±10 kV indirect discharge</td>
</tr>
<tr>
<td>Insensitivity towards ambient light</td>
<td>0 – 108,000 Lux (direct sun radiation)</td>
</tr>
</tbody>
</table>

Table 68 Ambient conditions
14 Scope of delivery

- BCS 36x8\textsuperscript{ex}-NI / BCS 36x8\textsuperscript{ex}-IS
- Lithium ion battery and special tool (only with BCS 3678\textsuperscript{ex}-NI / BCS 3678\textsuperscript{ex}-IS)
- Quick Start Guide
15.1 **Technical data**

The technical data are specified on the corresponding data sheet.

15.2 **Approved accessories**

The system overview shows the accessories specified for the different configurations.
15.3 Notice