BARTEC

ATEX   Zone 1 und Zone 21

Mobile Computing

User Manual

Barcode Hand Scanner BCS 160ex Series

Type 17-21BA-M31S/........ and Type 17-21BA-M32S/........

BARTEC

User Manual – TRANSLATION

Barcode Hand Scanner

BCS 160ex Series

Type 17-21BA-M31S/……..

Type 17-21BA-M32S/……..

ATEX Zone 1 and Zone 21

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Basic Safety Instructions

1. Basic Safety Instructions

1.1 Notes on this User Manual

Please read carefully before commissioning the devices.

The user manual is a constituent part of the product. It must be kept in the direct vicinity of the device and accessible at all times to installation, operating and maintenance personnel.

It contains important notes, safety instructions and test certificates which are necessary for perfect functioning when the devices are being operated and handled.

The user manual is written for all people who carry out assembly, installation, commissioning and maintenance work on the product, whereby the directives and standards applicable to areas with a gas or dust atmosphere (99/92/EC, EN 60079-17, EN 60079-19, IEC 60079-17, IEC 60079-19) must be observed when doing such work.

Familiarity with and strict adherence to the safety instructions and warnings in this manual are essential for safe installation and commissioning. Careful handling and consistent observation of these instructions can prevent accidents, personal injuries and damage to property.

The illustrations in these operating instructions serve to make the information and descriptions more clear. They are not necessarily true to scale and may deviate slightly from the actual construction of the device.

Safety instructions and warnings are specially highlighted in this manual and marked by symbols.

⚠ **DANGER**

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING**

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION**

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

ATTENTION

ATTENTION identifies a potentially damaging situation which, if not avoided, could damage the equipment or something in its environment.

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

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Basic Safety Instructions

Barcode Hand Scanner
BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

1.1.1 Languages

The original user manual is written in German. All other available languages are translations of the original user manual.

The user manual is available in German, English and French. If you require any other languages, please ask BARTEC or request them when placing the order.

1.1.2 Changes to the document

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

The respective up-to-date versions of data sheets, manuals, certificates, EC Declaration of Conformity may be downloaded at www.bartec-group.com under products and solutions in the area "Automatic Technology" or ordered directly from BARTEC GmbH.

1.2 Handling the Product

The product described in these user manual has been tested and left the factory in perfect condition as regards meeting safety requirements. To maintain this condition and ensure that this product operates perfectly and safely, it may be used only in the manner described by the manufacturer. Appropriate transportation, suitable storage and careful operation are also essential for the perfect and safe operation of this product.

The hand scanner must be installed properly and securely if it is to work perfectly and correctly.

1.3 Use in Accordance with the Intended Purpose

1.3.1 Exclusive Purpose

The barcode hand scanner from the BCS 160ex series is a hand-guided piece of electrical equipment. It serves the purposes of mobile capture, processing and wired or radio transmission of data inside hazardous (potentially explosive) areas.

It is used exclusively in combination with operating equipment which conforms to the requirements for Overvoltage Category I.

It is essential to comply with the permissible operating data for the device being used.

1.3.2 Improper Use

Any other use is not in accordance with the intended purpose and can cause damage and accidents. The manufacturer will not be liable for any use beyond that of its exclusive intended purpose.

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Basic Safety Instructions

1.4   Owner's/Managing Operator's Obligations

The owner/managing operator undertakes to restrict permission to work with the barcode hand scanner to people who:

▶ are familiar with the basic regulations on safety and accident prevention and have been instructed in the use of the barcode hand scanner;

▶ have read and understood the documentation and the chapter on safety and the warnings.

The owner/managing operator must check that the safety regulations and accident prevention rules valid for the respective application are being observed.

1.5   Safety Instructions

1.5.1   General Safety Instructions

▶ Take the device out of the hazardous area before wiping it with a dry cloth or cleaning it!

▶ Do not open devices in a hazardous area.

▶ The general statutory regulations or directives relating to safety at work, accident prevention and environmental protection legislation must be observed, e.g. the German industrial health and safety ordinance (BetrSichV) or the applicable national ordinances.

▶ In view of the risk of dangerous electrostatic charging, wear appropriate clothing and footwear.

▶ Avoid the influence of heat that is higher or lower than the specified temperature range.

▶ Protect the device from external influences! Do not expose the device to any caustic/aggressive liquids, vapours or mist! In the event of malfunctioning or damage to the enclosure, take the device out of the potentially explosive area immediately and bring it to a safe place.

1.6   Safety Instructions for Operation

For electrical systems the relevant installation and operating regulations must be complied with (e.g. Directive 99/92/EC, Directive 94/9/EC and the national applicable ordinances IEC 60079-14 and the DIN VDE 0100 series)!

The disposal of this equipment must comply with the national regulations on the disposal of waste.

1.6.1   Maintenance

Regular servicing is not necessary if the equipment is operated correctly in accordance with the installation instructions and environmental conditions. In this context, please refer to Chapter "Maintenance, Inspection, Repair".

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Basic Safety Instructions

Barcode Hand Scanner
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1.6.2 Inspection

Under IEC 60079-19 and EN 60079-17, the owner/managing operator of electrical installations in hazardous areas is obliged to have these installations checked by a qualified electrician to ensure that they are in a proper condition.

1.6.3 Repairs

Repairs on explosion-protected operating equipment may be done only by authorised persons working in accordance with the latest developments in technology and using original spare parts. The applicable regulations must be observed.

1.6.4 Commissioning

Before commissioning, check that all components and documents are there.

1.7 Ex Protection Type, Certification and Standards

Markings specifying Ex protection and certification are put on the device. For Ex protection markings, see Chapter 3 "Technical Data".

The barcode hand scanner series conform to Directive 94/9/EC for devices and protective systems for use to their intended purpose in potentially explosive areas (ATEX Directive). For the standards conformed to, see Chapter 3 "Technical Data".

1.8 Warranty

> ⚠ **WARNING**
>
> **No changes or conversions may be made without the manufacturer's written consent.**
>
> If components other than those specified are used, explosion protection will no longer be assured. It cannot be guaranteed that parts procured from other suppliers have been designed and manufactured in conformance to safety requirements and with the necessary stress tolerance.
> ▶ Contact the manufacturer and obtain his approval before performing any changes or retrofits. Use only original spare and expendable parts.

ⓘ The manufacturer grants complete warranty only and exclusively for the spare parts he supplies.

Our "General Terms and Conditions of Sale and Delivery" apply as a basic rule. These are made available to the owner / managing operator at the latest on conclusion of the contract. Warranty and liability claims for personal injury and damage to property will be inadmissible if they are attributable to one or more of the following reasons:

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Barcode Hand Scanner
BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

Basic Safety Instructions

Usage of the barcode hand scanner for a purpose other than that for which it is intended.

– Incorrect handling, commissioning, operation and maintenance.

– Non-compliance with the instructions in the User Manual regarding transport, storage, commissioning, operation and maintenance.

– Unauthorized structural modifications.

– Inadequate monitoring of parts that are subject to wear.

– Incorrectly performed repairs.

– Disasters caused by the effects of foreign substances or events beyond human control.

We guarantee the barcode hand scanner and its accessories for a period of one year (exception: battery for ½ year) starting on the date of delivery from the Bad Mergentheim factory. This guarantee covers all parts of the delivery and is restricted to the replacement free of charge or the repair of defective parts in our Bad Mergentheim factory. As far as possible, the delivery packaging should be kept for this purpose. In the event of such a claim, the goods must be returned to us after written arrangement. The customer will not have the right to demand to have the repairs done at the site of installation.

The versions, components, screens and windows shown in this User Manual are merely examples and can deviate from the actual display.

The information it contains refers to the explosion-protected version of the barcode hand scanner from the BCS 160ex series.

This User Manual contains all important information relating to the subject of explosion protection. Original user manuals and product information from SICK with information on handling and commissioning are available also. In the case of overlaps, the information in this User Manual will take priority and supersede the information from SICK.

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Basic Safety Instructions

Barcode Hand Scanner
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1.9 Other Applicable literature - Set of Documents

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– User Manual for the Barcode Hand Scanner from the BCS 160ex series – In this User
  Manual a description is given of the explosion-protected version of the
  BCS 160ex series barcode hand scanner

– Technical datasheet for the explosion-protected version of the hand scanner from the
  BCS 160ex series – this technical datasheet contains the most important explosion-
  protection technical data as well as general technical data.

– Manual of the power supply module, type 17-21BA-17xx.

SICK

The set of documents for the IDM160 hand scanner (non Ex version) contains information
on the respective user requirements and covers the following:

– Quick Start Guide for the IDM160 hand scanner – This Quick Start Guide describes
  the commissioning of the IDM160 hand scanner in short steps.

– Programming Manual for the IDM160 hand scanner – This manual describes the use
  and programming (by means of a barcode) of the IDM160 hand scanner.

– Product information for the IDM160 hand scanner – This Product Information
  describes the IDM160 hand scanner series in general.

– Software tools for:
  Configuration and Firmware Upgrade Tool for IDM160 (wired and bluetooth)

– USB emulation driver to convert the USB signals into serial signals (can only function
  with USB leads up to 1.8 m in length)

1.10 Configuration

This manual refers to the following configurations:

Configuration	Radio connection	Data capture
BCS 160ex barcode hand scanner	None	1D laser scanner or 1D/PDF scanner
BCS 160ex BT bluetooth hand scanner	bluetooth V2.1EDR 2.4 to 2.4835 GHz (ISM band)	
Ex base station only for BCS 160ex BT	bluetooth V2.1EDR 2.4 to 2.4835 GHz (ISM band)	none
Non-Ex base station only for BCS 160ex BT	bluetooth V2.1EDR 2.4 to 2.4835 GHz (ISM band)	none

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Barcode Hand Scanner
BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

Product Description

2. Product Description

2.1 Definition

The BCS 160ex series consists of wired hand scanners for capturing 1D and/or PDF codes. The BCS 160ex BT with bluetooth (ISM band) rounds off the series for mobile wireless capture. BARTEC has modified the BCS 160ex specially for use in the hazardous area in

– **ATEX Zone 1** and **Zone 21**.

Its ergonomic design and easy operation make the BCS 160ex series an ideal support in attaining fast data availability in enterprise processes and replacing manual data capture.

Other available barcode capture options are a standard 1D or 1D/PDF scan engine. The ergonomic design allows data to be captured easily in one-hand operation.

2.1.1 Data Communication Using the BCS 160ex

The wired versions can be installed without restriction in hazardous areas if used with an explosion-protected power pack. The scanners themselves are produced to be capable of being plugged into the power pack. There are several variants of power packs available to suit different voltage ranges and for RS232/RS422 (TTL) interfaces or USB.
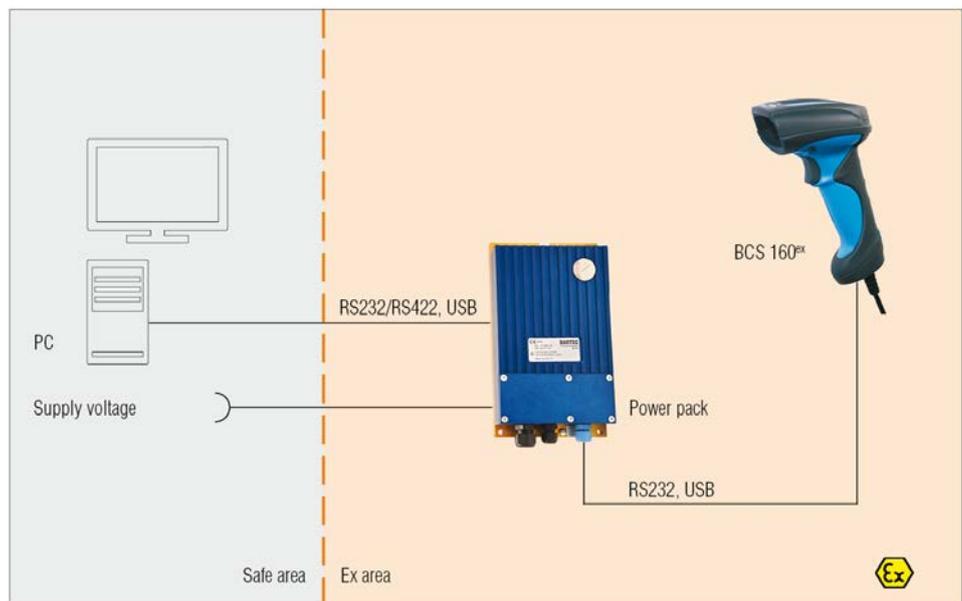
Illustration 1: Docking example BCS 160ex Hand scanner

In this example the BCS 160ex with the corresponding Ex power pack is connected to a PC. There are several available versions of the Ex power pack which can be installed directly in the hazardous area. The power supply module and the connection cables are not included in delivery.

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Product Description

Barcode Hand Scanner
BCS 160ex Series, Type 17-21BA-M31S/…….. and 17-21BA-M32S/……..

2.1.2 Data Communication Using the BCS 160ex BT

For data communication, the bluetooth variants require a base station, which is available for both the safe area and also for the hazardous area. If there is an unobstructed line of sight to the base station, the bluetooth hand scanner can transmit data over a range of up to 30 m.

The base station in the safe area can transmit the data to a PC through an RS232/RS422 or USB interface. The explosion-protected version requires supply voltage and data communication through an explosion-protected power pack. The power pack is identical to that for the wired version of the BCS 160ex series.
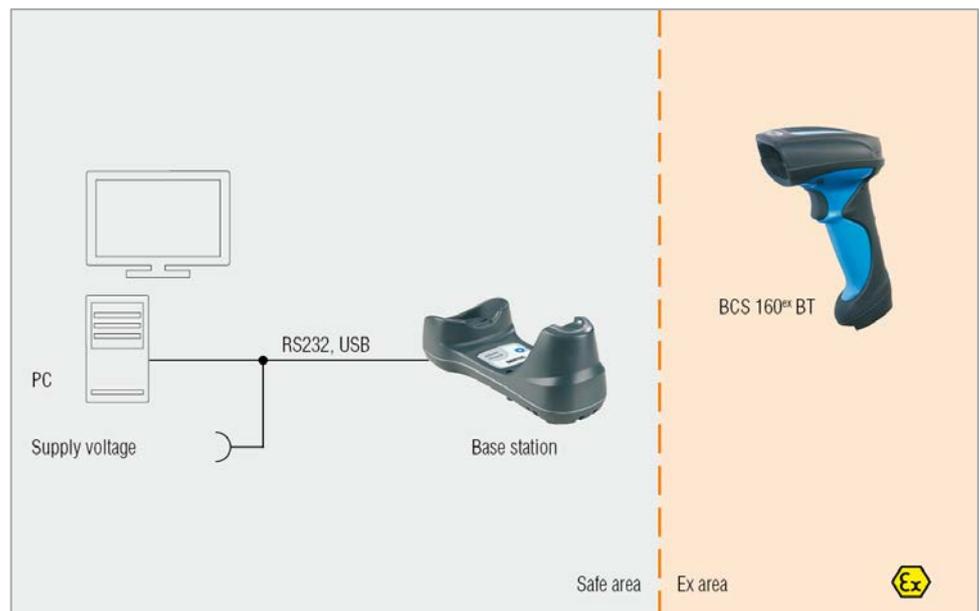
Illustration 2: Docking example BCS 160ex BT with Non-Ex base station

In this example the BCS 160ex BT is used in the hazardous area. The non-Ex base station serves as a radio receiver station and charging station. The non-Ex base station is connected either directly through the RS232/RS422 or the USB and is supplied with voltage through its 5 V DC power supply. The non-Ex base station and the connection cables are not included in delivery.
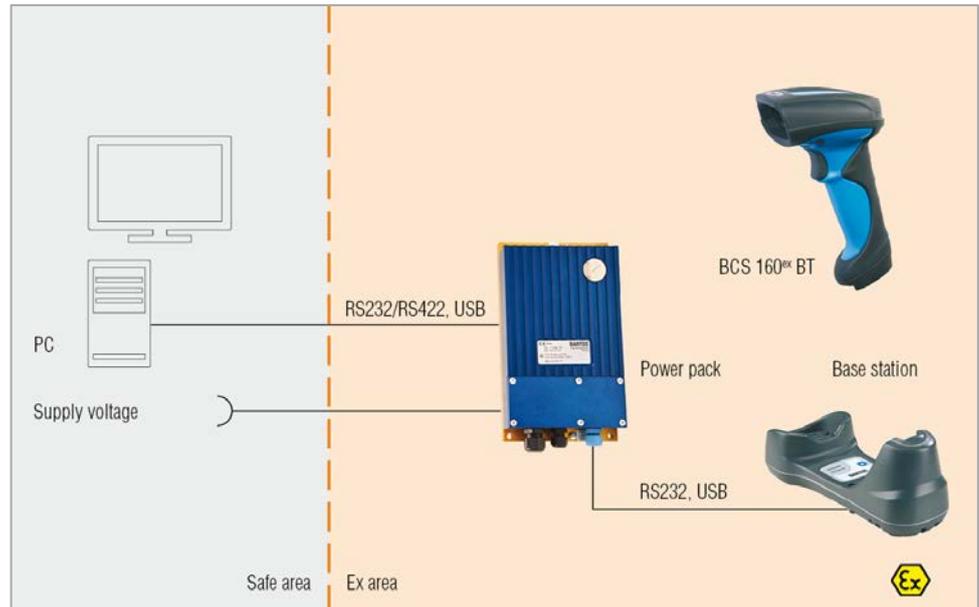
Illustration 3: Docking example BCS 160ex BT with Ex base station and Ex power pack

In this example, the BCS 160ex BT is used in the hazardous area. The Ex base station serves as a radio receiver station and as a charging station. Voltage is supplied to the Ex base station through one of the available Ex power packs.

The BCS 160ex BT is connected to the PC by means of its power pack with the RS232/RS422 or USB interface. The base station and the connection cables are not included in delivery.

2.1.3 Functions

PAIRING mode 1 scanner is connected to a base station

■ Standard mode

PICO mode – up to 7 scanners are connected to one base station

■ Enables the simultaneous operation of up to 7 bluetooth hand scanners from one base station.

HID mode – direct HID communication with bluetooth host without base station

■ The bluetooth hand scanner can communicate directly, i.e. without a base station, with a bluetooth-capable host system.

Clone function

■ Greater convenience for the user is enabled by the parameters for the host interface, which can be transmitted from one connected hand scanner to all other connected scanners in the PICO mode.

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Product Description

Barcode Hand Scanner
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Scanning outside the range

■ If there is a radio connection between the hand scanner and the base station, the hand scanner will transmit all scanned data directly after scanning the barcode.

■ If there is no radio connection, it will not be possible to scan the barcode data (basic setting).

■ If the scanning function is **activated** for scanning outside the range, it is still possible to scan barcode data outside of the base station radio range. All scanned data are stored temporarily in a buffer memory inside the hand scanner until the radio connection is available.

Scanning in the batch mode (inventory mode)

■ A special function of the hand scanner, for saving up to 5,000 EAN codes (cost-effective solution for goods stocktaking applications).

(i) For more information, please refer to the Programming Manual from Sick.

2.2 Usage

The hand scanners from the BCS160ex series are hand-guided pieces of electrical equipment. They are used for the capture, processing and (radio) transmission of data inside hazardous areas.

The **hand scanner from the BCS 160ex series, types 17-21BA-M31S/…….** and **17-21BA-M32S/…….** have been modified for use in the following hazardous areas

– ATEX Zone 1 and Zone 21
– ATEX Zone 2 and Zone 22

The **hand scanner from the BCS 160ex series, types 17-21BA-M31S/…….** and **17-21BA-M32S/…….** must **not**-be used in the following areas:

– ATEX Zone 0

3. Technical Data

3.1 Explosion Protection

ATEX Zone 1 and Zone 21 (Zone 2 and Zone 22 are covered as well)	
Type 17-21BA-M31S/……. 17-21BA-M32S/…….	BCS 160ex (wired hand scanner) BCS 160ex BT (bluetooth hand scanner)
Ex protection marking	⟨Ex⟩ II 2G Ex ib IIC T4 Gb ⟨Ex⟩ II 2D Ex ib IIIC T135°C Db
Certification BCS 160ex BCS 160ex BT	IBExU 13 ATEX 1083 IBExU 13 ATEX 1084
Standards	EN 60079-0:2009 EN 60079-11:2012
Directive	94/9/EC ATEX (**AT**mosphère **Ex**plosive)

3.2 Other Applied Standards and Directives

Directive	
2004/108/EC	EMC
1999/5/EC	R & TTE
Electrical Safety	
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + AC2011	Information Technology Equipment – Safety - Part 1. General Requirements
EMC	
EN 61000-6-2:2005 +AC:2005	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-4:2007 +A1:2011	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments
EN 301489-17 V2.1.1:2009	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 301489-1 V1.8.1:2008	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
EN 300328 V1.7.1:2006	Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2.4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

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3.3 Characteristics BCS 160ex and BCS 160ex BT

3.3.1 Electrical Data BCS 160ex

Type 17-21BA-M31S/*0000000 – RS232/RS422; 5.6 V		
maximum input voltage	U_i =	5.6 V
maximum input current	I_i =	480 mA
maximum input power	P_i =	1.25 W
maximum internal inductance	L_i =	negligible
maximum internal capacitance	C_i =	46 µF

ⓘ The input voltage is reduced from 5.6 V to 4.9 V and comes through the connection cable to the hand scanner (connection cable 17-21BE-M0*0/0000).

Type 17-21BA-M31S/*0000000 – RS232/RS422; 4.9 V		
Maximum input voltage	U_i =	4.9 V
Maximum input current	I_i =	480 mA
Maximum input power	P_i =	1.25 W
Maximum internal inductance	L_i =	negligible
Maximum internal capacitance	C_i =	102 µF

ⓘ The input voltage of 4.9 V comes through the power pack to the hand scanner (power pack 17-21BB-1703/0000 and 17-21BB-1705/0000)

Type 17-21BA-M31S/*0000000 – USB		
Maximum input voltage	U_i =	4.9 V
Maximum input current	I_i =	480 mA
Maximum input power	P_i =	1.25 W
Maximum internal inductance	L_i =	negligible
Maximum internal capacitance	C_i =	102 µF

ⓘ The input voltage of 4.9 V comes through the power pack to the hand scanner (power pack 17-21BB-1704/0000 and 17-21BB-1706/0000)

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3.3.2   Electrical Data BCS 160ex BT

Supply voltage	Lithium-ion battery 3.6 V/2250 mAh

3.3.3   Physical characteristics

Dimensions in mm/inches (length x width x depth)	104 x 76 x 185 mm 4.1 x 3.0 x 73.3 inches
Weight 　　　　BCS 160ex 　　　　BCS 160ex BT	depends on the version and configuration ca. 200 g / ca. 7.1 oz (without connection cable) ca. 280 g /ca. 9.9 oz (including battery)
Visual feedback 　　　　BCS 160ex 　　　　BCS 160ex BT	2 LEDs (operating status, good-read feedback) 2 LEDs (operating status, good-read feedback, 　　　　　　state of battery charge, radio connection)
Acoustic feedback	Beeper/buzzer, can be switched off (good-read feedback)
Vibration	Yes
Interfaces	RS232 TTL or USB

3.3.4   Radio Data Transmission (only BCS 160ex BT)

Bluetooth	Bluetooth™ V2.1 EDR
Frequency	2.4 to 2.4835 GHz (ISM band) frequency hopping
Maximum data rate	up to 2.1 Mbit/s
Antenna	internal
Range	Functioning radius of 30 m with unobstructed line of sight, batch function to extend the radio radius
Intermediate storage of codes	5000 codes (EAN)

3.3.5   User Environment

Operating temperature	-20 °C to +50 °C -4 °F to +122 °F
Operating temperature only BCS 160ex BT when charging	0 °C to +40 °C +32 °F to +104 °F
Storage temperature (without battery)	-30 °C to +70 °C -22 °F to +158 °F
Air humidity	5 % to 95 % (non-condensing)
Degree of Protection (EN 60529)	IP 65

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3.3.6 Configuration Software

The "IDM Set Up Tool" from Sick is Windows-based configuration software for the BCS 160ex series (conforms to the IDM160 Series from Sick)
The "IDM Set Up Tool" can be downloaded free of charge from www.sick.com. ■ Link Software – further configuration software ■ Product family IDM160 ■ Configuration and firmware upgrade tool for IDM120, IDM140 and IDM160 (wired and bluetooth)

> For further information, see the programming manual from Sick.
> – for the IDM1xx wired hand scanner or
> – for the IDM1xx bluetooth hand scanner

3.3.6.1 Scan Engine

Source of light	visible red light (630 nm)
Scanning frequency	≤ 500 Hz
Code resolution	≥ 0.076 mm
Reading distance (with code resolution)	50 mm to 800 mm (0.5 mm)
Reading field (at distance)	200 mm (200 mm)

3.3.7 Decodable Barcode Types

Standard Range Scan Engine			
1D Codes			
Code 128	UCC/EAN128	UPC-A	UPC-A with 2 add-ons
UPC-A with 5 add-ons	UPC-E	UPC-E with 2 add-ons	UPC-E with 5 add-ons
EAN-13	EAN-13 with 2 add-ons	EAN-13 with 5 add-ons	EAN-8
EAN-8 with 2 add-ons	EAN-8 with 5 add-ons	Codabar/NW-7	Code 39
Code 32	Trioptic Code 39	Matrix 2 of 5	Interleaved 2 of 5
China Postal code	German Postal code	Code 93	Code 11
MSI/Plessey	UK/Plessey	Telepen	GS1 Data Bar
IATA	Coupon-Code	Korea Post Code	
PDF codes only readable by PDF scan engine			
PDF417		MicroPDF417	
Composite (type-dependent)		Codablock F	

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Technical Data

3.4 Characteristics of Explosion-Protected Base Station for BCS 160ex BT

3.4.1 Electrical Data

Type 17-21BB-1707/0000			
Nominal voltage	U	=	5 V
Power requirements	I	=	85 mA in standby
Maximum input voltage	Ui	=	4.9 V through connection cable Type 17-21BE-M0*0/0000
	Ui	=	5.6 V through connection cable Type 03-9828-004*
Maximum input current	Ii	=	490 mA
Maximum input power	Pi	=	1.25 W
Maximum internal inductance	Li	=	negligible
Maximum internal capacitance	Ci	=	46 µF through connection cable Type 17-21BE-M0*0/0000
	Ci	=	109 µF through connection cable Type 03-9828-004*

ⓘ The input voltage to the explosion-protected base station comes through the connection cable and is reduced from 5.6 V to 4.9 V
(Connection cable 17-21BE-M0*0/0000).

3.4.2 Physical Features

Dimensions in mm/inches (length x width x depth)	230 x 100 x 90 mm 9.0 x 3.9 x 3.5 inches
Weight (without connection cable)	approx. 285 g approx. 10.0 oz
Visual feedback	2 LEDs (operating status, good-read feedback, power status, radio connection)
Interfaces	RS232 TTL or USB

3.4.3 Radio Data Transmission (only in combination with BCS 160ex BT)

Bluetooth	Bluetooth™ V2.1 EDR
Frequency	2.4 to 2.4835 GHz (ISM band) frequency hopping
Maximum data rate	up to 2.1 Mbit/s
Antenna	internal
Range	Functioning radius 30 m with unobstructed line of sight, Batch function to extend radio radius

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3.4.4 User Environment

Operating temperature	-20 °C to +50 °C -4 °F to +122 °F
Operating temperature only BCS 160ex BT when charging	0 °C to +40 °C +32 °F to +104 °F
Storage temperature (without BCS 160ex BT with battery)	-30 °C to +70 °C -22 °F to +158 °F
Air humidity	5 % to 95 % (non-condensing)
Degree of Protection (EN 60529)	IP 54

3.5 Battery (only for BCS 160ex BT)

Battery Type 17-21BE-M040/0000	Lithium-ion battery 3.6 V/2250 mAh (rechargeable only in the safe area)
Operating temperature when charging when discharging	0 °C to +40 °C +32 °F to 104 °F -20 °C to +50 °C -4 °F to 122 °F
Storage temperature	-20 °C to +50 °C -4 °F to 122 °F
Relative air humidity	20 % to 95 % (non-condensing)
Battery power	depends on the device settings over 45,000 scans when fully charged

The bluetooth hand scanner BCS 160ex BT functions:

ⓘ For information, see the Programming Manual from Sick for the IDM160 hand bluetooth scanner.

3.6 External contacts

> ⚠ **DANGER**
>
> **Any use that is not in accordance with the intended purpose will endanger explosion protection.**
> **There is a risk of a fatal injury in an explosive atmosphere!**
> ▶ Only cables and components (e.g. base station and charging station) specified by BARTEC may be connected to the external contacts.
> ▶ Do not use any imitation cables or accessories from other manufacturers.
> ▶ It must be ensured that the cables are securely positioned and locked or screwed in place.

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Technical Data

3.6.1 External contacts (only BCS 160ex)
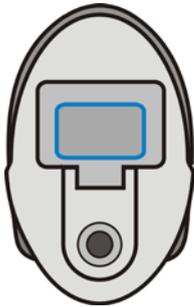
Only cables specified by BARTEC may be connected to the external contact for the connection cable.

Cable specified for connection to:	Scanner cable	Version	Length	BARTEC order no.
Power pack Type 17-21BB-1703/0000 to Type 17-21BB-1706/0000	RS232/RS422 RS232/RS422 USB USB	smooth spiral smooth spiral	1.8 m 3.8 m 1.8 m 3.8 m	03-9828-0034 03-9828-0035 03-9828-0036 03-9828-0037

Cable specified for connection to:	Scanner cable	Version	Length	BARTEC order no.
POLARIS supply module Type17-71V1-…./….	RS232/RS422 RS232/RS422	smooth spiral	1.8 m 3.8 m	17-21BE-M000/0000 17-21BE-M010/0000
BCS 302ex supply unit 17-21BB-0217 to 17-21BB-0220				
BCS 3800ex supply unit 17-21BB-1700 to 17-21BB-1702				

3.6.2 External contacts (only BCS 160ex BT)

Only the base stations and charging stations specified by BARTEC may be connected to the external contact.

Specified base stations and charging stations	BARTEC order no.
Base station, without cable, Zone 1 Ui = 4.9 V to 5.6 V (only in combination with explosion-protected power pack)	17-21BB-1707/0000
Base station, without cable, not explosion-protected	03-9849-0063
Charging station without bluetooth function, not explosion-protected	03-9849-0064

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Barcode Hand Scanner
BCS 160ex Series, Type 17-21BA-M31S/…….. and 17-21BA-M32S/……..

3.6.3 External Contacts Explosion-Protected Base station (only BCS 160ex BT)
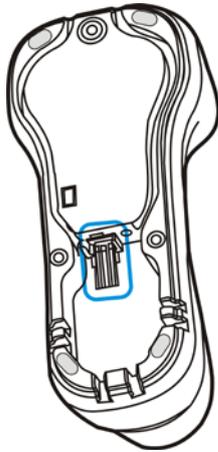
Only cables and explosion-protected power packs specified by BARTEC may be connected to the external contacts.

Cable specified for connection to:	Scanner cable	Version	Length	BARTEC order no.
Explosion-protected base station Type17-21BB-1707/0000	RS232/RS422 RS232/RS422 USB USB	smooth spiral smooth spiral	1.8 m 3.8 m 1.8 m 3.8 m	03-9828-0044 03-9828-0045 03-9828-0046 03-9828-0047

Cable specified for connection to:	Scanner cable	Version	Length	BARTEC order no.
POLARIS supply module Type17-71V1-…./….				
BCS 302ex supply unit 17-21BB-0217 to 17-21BB-0220	RS232/RS422 RS232/RS422	smooth spiral	1.8 m 3.8 m	17-21BE-M020/0000 17-21BE-M030/0000
BCS 3800ex supply unit 17-21BB-1700 to 17-21BB-1702				

Cable specified for connection to:	Power Pack	Version	BARTEC order no.
Explosion-protected power pack 17-21BB-1703 to 17-21BB-1706	RS232/RS422 USB RS232/RS422 USB	DC 24 V DC 24 V AC 230 V AC 230 V	17-21BB-1703/0000 17-21BB-1704/0000 17-21BB-1705/0000 17-21BB-1706/0000

3.7   Data line from the Power Pack to the PC or Host

It is recommendable to use a standard commercially available shielded data line to prevent external interference affecting the data line.

Recommended cross-section:	RS232/RS422 USB	0.2 - 2.5 mm^2	3-wire 4-wire

Barcode Hand Scanner
BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

Technical Data

3.8 Connection Cable for Power Pack (type, version, diameter)

3.8.1 Connection cable to Barcode Hand scanner BCS 160ex (pre-assembled)

Connection cable for	Type	Version	Length	Diameter	BARTEC order no.
Power Pack to BCS 160ex	RS232/RS422 RS232/RS422 USB USB	smooth spiral smooth spiral	1.8 m 3.8 m 1.8 m 3.8 m	5 mm	03-9828-0034 03-9828-0035 03-9828-0036 03-9828-0037
POLARIS supply module BCS 302ex supply unit BCS 3800ex supply unit	RS232/RS422 RS232/RS422	smooth spiral	1.8 m 3.8 m	5 mm	17-21BE-M000/0000 17-21BE-M010/0000

3.8.2 Connection cable to Bluetooth hand scanner BCS 160ex BT (pre-assembled)

Connection cable for	Type	Version	Length	Diameter	BARTEC order no.
Power Pack to BCS 160ex BT with <u>non</u>-Ex base station	RS232/RS422 RS232/RS422 USB USB	smooth spiral smooth spiral	1.8 m 3.8 m 1.8 m 3.8 m	5 mm	03-9828-0040 03-9828-0041 03-9828-0042 03-9828-0043
Power Pack to BCS 160ex BT with Ex base station	RS232/RS422 RS232/RS422 USB USB	smooth spiral smooth spiral	1.8 m 3.8 m 1.8 m 3.8 m	5 mm	03-9828-0044 03-9828-0045 03-9828-0046 03-9828-0047
POLARIS supply module BCS 302ex supply unit BCS 3800ex supply unit	RS232/RS422 RS232/RS422	smooth spiral	1.8 m 3.8 m	5 mm	17-21BE-M020/0000 17-21BE-M030/0000

3.8.3 Extension cable optional (for RS232/RS422 interface)

Extension cable for	Type	Version	Length	Diameter	BARTEC order no.
Power Pack to hand scanner	coupling plug	smooth	6 m	6.5 mm	03-9828-0038
		spiral	4.5 m	5 mm	03-9828-0039

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3.9 ATEX Product Marking

A Warnings scanner and laser

B Type label (under the enclosure)

C Type label and warnings on battery

A Laser and Scanner Warning

DO NOT STARE INTO OPTICAL BEAM

DO NOT SCRATCH THE SCAN WINDOW

B Type labels for BCS 160ex   BCS 160ex BT

BCS 160ex

Type: 17-21BA-M31S/R0000000
SN: 000000-MMJJJJ

CE 0044

Ⓔ II 2G Ex ib IIC T4 Gb
Ⓔ II 2D Ex ib IIIC T135°C Db
-20°C ≤ Ta ≤ +50°C
IBExU 13 ATEX 1083

BCS 160ex BT

Type: 17-21BA-M32S/R0000000
SN: 000000-MMJJJJ

CE 0044

Ⓔ II 2G Ex ib IIC T4 Gb
Ⓔ II 2D Ex ib IIIC T135°C Db
-20°C ≤ Ta ≤ +50°C
IBExU 13 ATEX 1084
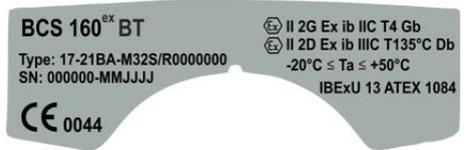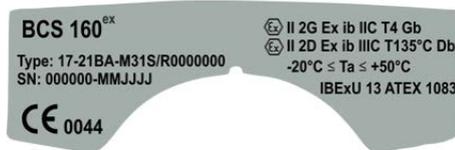
C Battery type label

Type 17-21BE-M040/0000
SN 000000-MMJJJJ   DC 3,7V   2200mAh
Lithium Rechargeable Battery   Only for use with
BARTEC   type 17-21BA-M.

WARNING !
May explode if deisposed of in fire. Burn hazard.
Do not expose to temperatures above 60!C/140°F
Do not short circuit. Do not incinerate.
Do not disassemble. Do not pierce.
Must be recycled or disposed of property.
Do not change in hazardous location.

Strip to aid battery removal

Type number:	**WARNING !**
17-21BE-M040/0000	May explode if disposed of in fire. Burn hazard.
Serial number:	Do not expose to temperatures above 60 °C/140 °F.
Consecutive number – date	Do not short circuit. Do not incinerate.
Technical data:	Do not disassemble. Do not pierce.
Lithium-ion battery	Must be recycled or disposed of property.
DC 3.6 V / 2250 mAh	Do not change in hazardous location.

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Barcode Hand Scanner
BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

Technical Data

4. Transport and Storage

4.1 Transport

ⓘ
Report any transport damage or incomplete deliveries in writing to the forwarding company and to BARTEC GmbH immediately on receipt of the deliveries.

Any damage caused by incorrect storage will not be covered by BARTEC GmbH's guarantee provisions.

4.2 Storage

ATTENTION

Damage to property due to incorrect storage!
▶ Observe storage temperatures.
▶ Keep the hand scanners away from moisture.

Additional information on the batteries

The BARTEC batteries (type 17-21BE-M040/0000) are developed and manufactured in accordance with the highest industrial standards. The operating time or storage period of a battery is limited however. The actual lifetime of a battery is influenced by various factors, e.g. heat, cold, rough operating environment and falling from a great height. If a battery is kept longer than six months, the performance may be impaired permanently. Keep the batteries in a cool, dry place. For longer periods of storage, take the batteries out of the device to prevent self-discharge, rusting of metal parts and the leakage of electrolyte.

Batteries kept for a period of 6 months or longer should be charged and discharged again at least every 3 months. If electrolyte escapes, do not touch the areas affected and dispose of the batteries as prescribed. Replace the battery if the operating time becomes much shorter.

The standard guarantee period for all BARTEC batteries is six months, whereby it is irrelevant whether the battery was acquired separately or if it was included in the scope of supply of the BCS 160ex BT.

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Commissioning

Barcode Hand Scanner
BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

5. Commissioning

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

> ⚠ **DANGER**
>
> **Avoid electrostatic charging in hazardous areas.**
> **There is a risk of a fatal injury in an explosive atmosphere!**
>
> ▶ Do not use a dry cloth to wipe or clean devices.
>
> ▶ Wear suitable clothing and shoes.
>
> ▶ Do not use rubber gloves or suchlike.

> ⚠ **DANGER**
>
> **Any use which is not in accordance with the intended purpose will endanger explosion protection. There is a risk of a fatal injury in an explosive atmosphere!**
>
> ▶ Do not alter the hand scanner in any way.
>
> ▶ If any damage is done to the enclosure or if the device malfunctions, remove the device from the hazardous area into the safe area.
>
> ▶ Take the battery out of the BCS 160ex BT in order to put the device out of operation!
>
> ▶ Do not use any rebuild batteries or batteries from other manufacturers.

5.1 Scope of delivery

1 x BCS 160ex or BCS 160 ex BT

1 x Lithium-ion battery (only with the BCS 160ex BT)

1 x User manual

5.1.1 Accessories optional

Approved accessories from BARTEC:

– Power pack

– Connection cable

– Extension cable

– Base station   (only for BCS 160ex BT)

– Charging station   (only for BCS 160ex BT)

– Spare battery   (only for BCS 160ex BT)

– Stand holder

– Desktop holder

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5.2   Requirements in Hazardous Areas

Hand Scanner

1. The hand scanner must not be opened.

2. Do not use, swap for or replace any non-specified components.

3. Do not retrofit any components on the internal plug connectors or slots.

4. Protect the hand scanner from the effects of impacts!

5. Do not expose the hand scanner to any caustic/aggressive liquids, vapours, mists!

6. Avoid the impacts of moisture outside the specified range.

7. Avoid thermal impacts outside the specified temperature range.

8. Use the external contacts only with the devices specified by the manufacturer!

Battery

1. The battery must not be opened.

2. Take the device out of the hazardous area before changing the battery.

3. In the hazardous area use only the accessories specified by BARTEC to charge the battery.
   Ex base station (type 17-21BB-1707/0000)

4. Use the battery only for the purpose specified in this User Manual. It is only suitable for use in the BCS 160ᵉˣ BT hand scanner (type 17-21BA-M32S/…….).

5. If not used properly, there is a risk of burns.

6. Do not expose the battery to any temperatures higher than +60 °C (140 °F).

7. In the event of damage, it is possible for battery acid to leak from the cells and cause acid burns.

8. Defective batteries must be disposed of immediately, whereby the battery disposal regulations that apply in the respective region must be observed.

9. The battery can explode if it catches fire!

10. Do not short-circuit the batteries!

Accessories

1. Accessories that were not explicitly approved for use in the hazardous area must be installed or replaced only outside the hazardous area.

2. Use only accessories which have been tested or certified by BARTEC for this purpose.

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Commissioning

Barcode Hand Scanner
BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

5.3 First Steps

5.3.1 BCS 160ex Hand Scanner

▶ Unpack the hand scanner.

▶ Connect the hand scanner to the power pack.

▶ Program the hand scanner with the aid of the programming manual.

Optional:

▶ Program the hand scanner with the aid of the "IDM Set Up Tool" from Sick.

BCS 160ex Construction
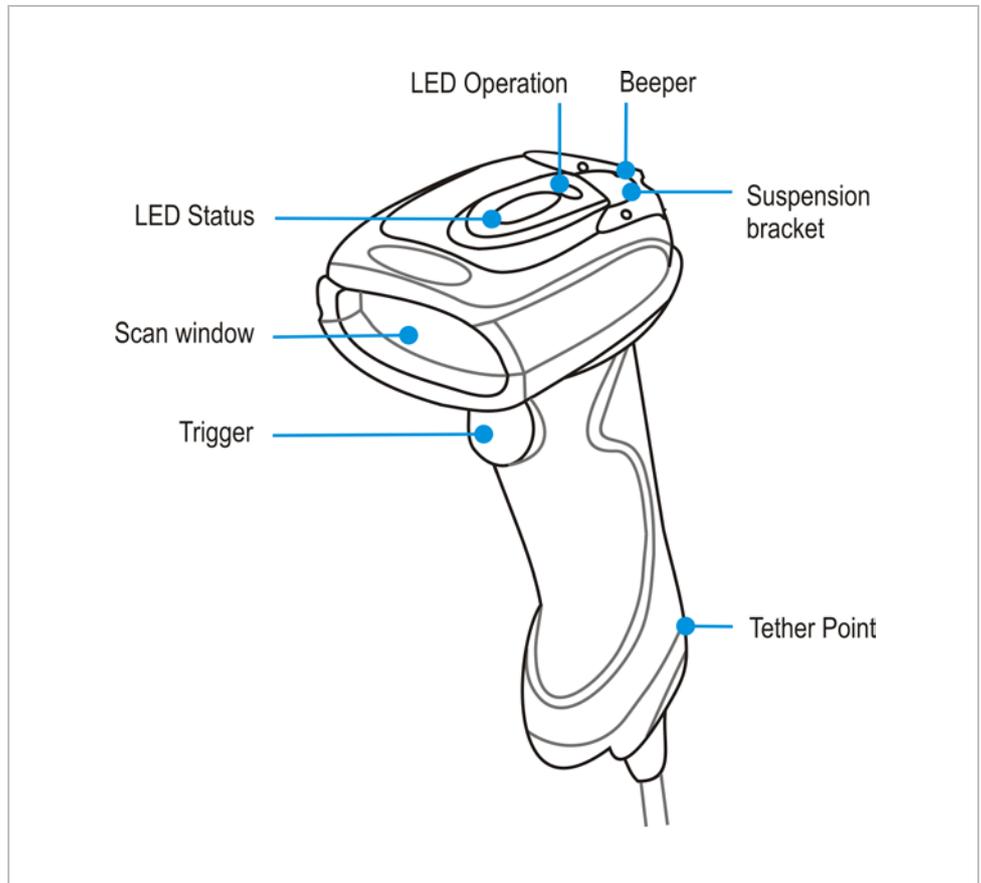
Illustration 4: BCS 160ex Hand scanner

5.3.2   BCS 160ex BT Bluetooth Hand Scanner

▶   Unpack the hand scanner.

▶   Insert the battery into the hand scanner.

▶   Charge the hand scanner on the base station.

▶   Turn on the hand scanner.

▶   Program the hand scanner with the aid of the programming manual.

Optional:

▶   Charge the hand scanner in a charging station.

▶   Program the hand scanner with the aid of the "IDM Set Up Tool" from Sick.

The individual steps are explained on the following pages.

BCS 160ex BT Construction
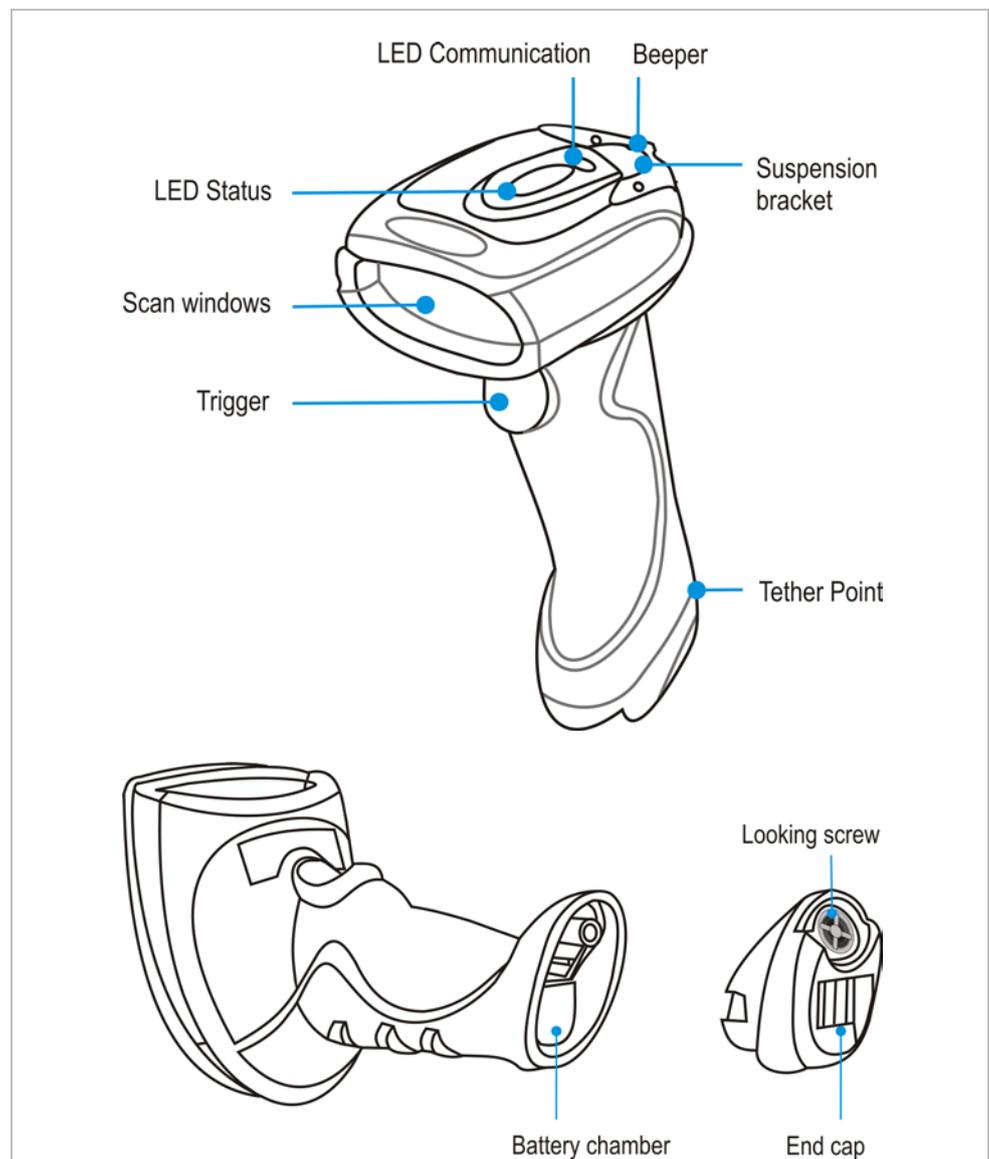
Illustration 5: BCS 160ex BT Bluetooth hand scanner

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Commissioning

Barcode Hand Scanner
BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

Base Station for BCS 160ex BT

Construction
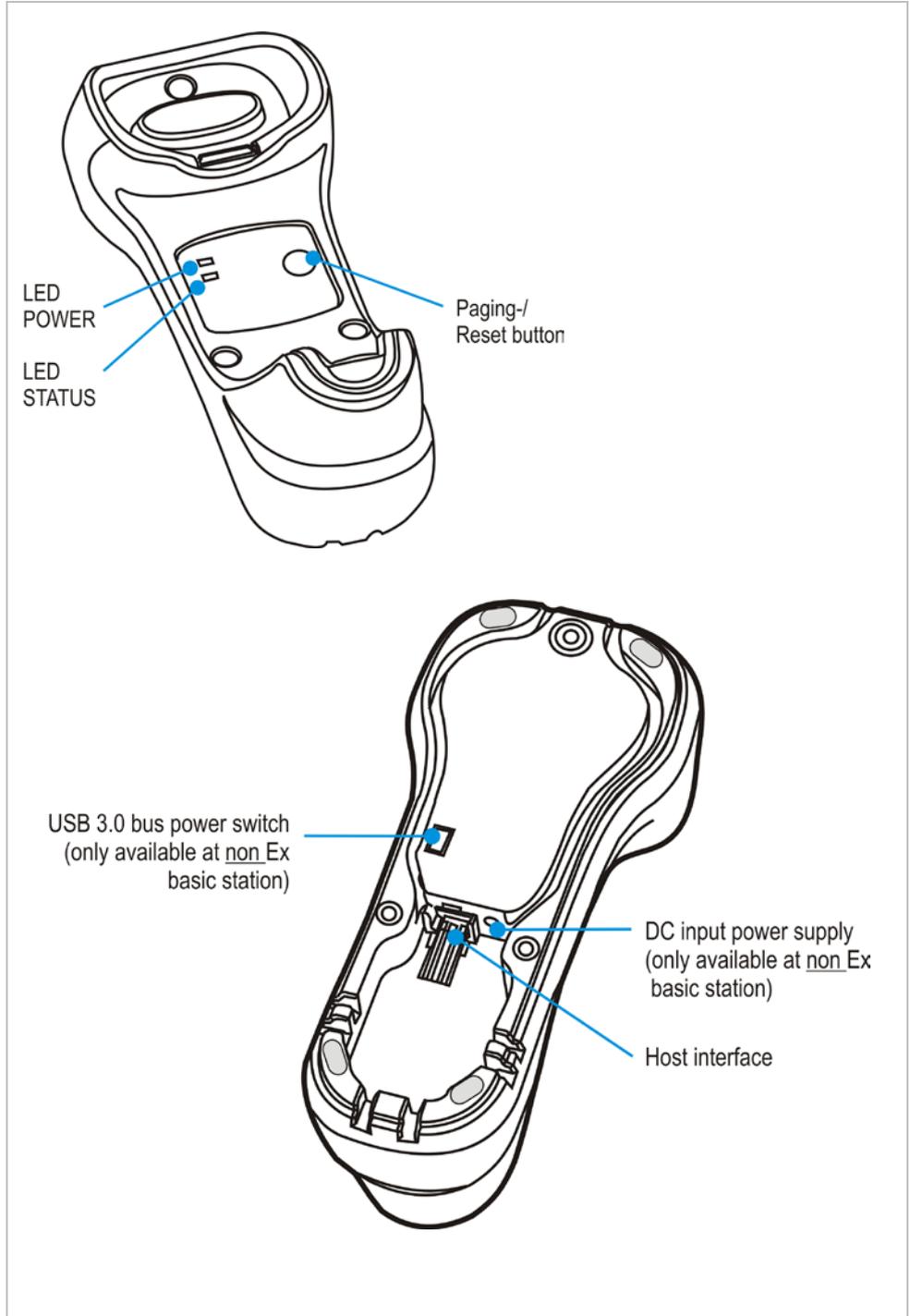
Illustration 6: Base station for BCS 160ex BT Bluethooth hand scanner

ⓘ   The base station can be used for wall mounting.

Barcode Hand Scanner
BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

Commissioning

5.4 Terminal Assignment

> ### ⚠ DANGER
>
> Non-certified accessories will endanger explosion protection.
> In hazardous areas there is a risk of a fatal injury!
>
> ▶ Use only original-accessories from BARTEC.

> ### ⚠ DANGER
>
> Usage for purposes other than the intended purpose will endanger explosion protection.
> There is a risk of a fatal injury in an explosive atmosphere!
>
> ▶ Ex power pack is factory-sealed and must not be opened.
>   An exception to this rule is the junction box!
>
> ▶ Before commissioning make sure that the enclosure is completely sealed and screwed securely.
>
> ▶ Disconnect the junction box from voltage before opening it!
>
> ▶ Disconnect from voltage before doing any connection or wiring work!

ⓘ Only instructed qualified personnel may make any alterations to the pin assignment.

5.4.1 BCS 160ex Hand Scanner with Power Pack RS232/RS422 or USB

RS232/422 connetion cable			4-pin plug	Ex power pack	
RJ45 pin assignment	Wire colour	Signal	pin assignment	Designation Terminal	Terminal
6	WH	TxD	3	RxD	X9
NC	-	shield	4	GND	X10
				PE	X11
4	BR	GND	2	GND	X12
7	YE	+UB	1	+UB	X13
Anschlussleitung USB			4-pin plug	Ex power pack	
RJ45 pin assignment	Wire colour	Signal	pin assignment	Designation Terminal	Terminal
2	GN	D+	3	D+	X9
10	WH	D-	2	D-	X10
4	BK	GND	4	PE	X11
				GND	X12
7	BR	+UB	1	+UB	X13

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Barcode Hand Scanner
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5.4.2 BCS 160ex BT and Ex Base Station with power pack RS232/RS422 or USB

RS232/422 connection cable			4-pin plug	Ex power pack	
RJ45 pin assignment	Wire colour	Signal	Pin assignment	Designation Terminal	Terminal
6	White	TxD	3	RxD	X9
NC	-	shield	4	GND	X10
				PE	X11
4	Brown	GND	2	GND	X12
7	Yellow	+UB	1	+UB	X13
USB connection cable			4-pin plug	Ex power pack	
RJ45 pin assignment	Wire colour	Signal	Pin assignment	Designation Terminal	Terminal
2	Green	D+	3	D+	X9
10	White	D-	2	D-	X10
4	Black	GND	4	PE	X11
				GND	X12
7	Brown	+UB	1	+UB	X13

5.4.3 BCS 160ex BT and Non-Ex Base Station

> ⚠ **DANGER**
>
> **Usage for purposes other than those for which it was intended will endanger explosion protection. There is a risk of a fatal injury in an explosive atmosphere!**
> ▶ The non-Ex base station may be operated only outside the hazardous area!
> ▶ Disconnect from voltage before doing any connection or wiring work!

ⓘ For more information, please also refer to the Programming Manual from Sick.

5.5 Handling the Accessories

> ⚠ **DANGER**
>
> **Non-certified accessories will endanger explosion protection.**
> **There is a risk of a fatal injury in an explosive atmosphere!**
> ▶ Use only original accessories from BARTEC.
>
> **Use only outside the hazardous area:**
> ▶ Replace the battery.

ⓘ For more information, see the documentation from Sick.

Barcode Hand Scanner
BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

Commissioning

5.5.1 Inserting the Battery (only for the BCS 160ex BT)

The BCS 160ex BT Bluetooth hand scanner is supplied with a battery.

Type	Order number	Charging time
Battery Lithium-ion battery 3.6 V /2250 mAh	17-21BE-M040/0000	Less than 8 hours

> ⚠ **DANGER**
>
> **Non-certified accessories will endanger explosion protection.**
> **There is a risk of a fatal injury in hazardous areas!**
>
> ▶ Use only the Ex base station approved by BARTEC in combination with the Ex power pack when charging in the hazardous area.
>
> Type17-21BB-1707/0000 Ex base station
> Type17-21BB-170x/0000 Power pack for hazardous areas

Work steps:

1. Take the hand scanner out of the hazardous area before inserting or replacing the battey.

2. Use only batteries which have been tested or certified by BARTEC for this purpose.

3. Use a suitable tool to remove the locking screw on the closing cap on the handle of the BCS 160ex BT (see illustration, step 1)

4. Apply a bit of force to pull down the closing cap (see illustration, step 2).

5. Insert the battery with the contacts first into the battery compartment in the handle of the BCS 160ex BT Bluetooth hand scanner and make sure the battery has been pushed in completely (see illustration, step 3).

6. Put the closing cap on again and use a suitable tool to tighten the locking screw on the cap (see illustration, step 4 and 5).

7. The Bluetooth hand scanner is ready for operation or charging.
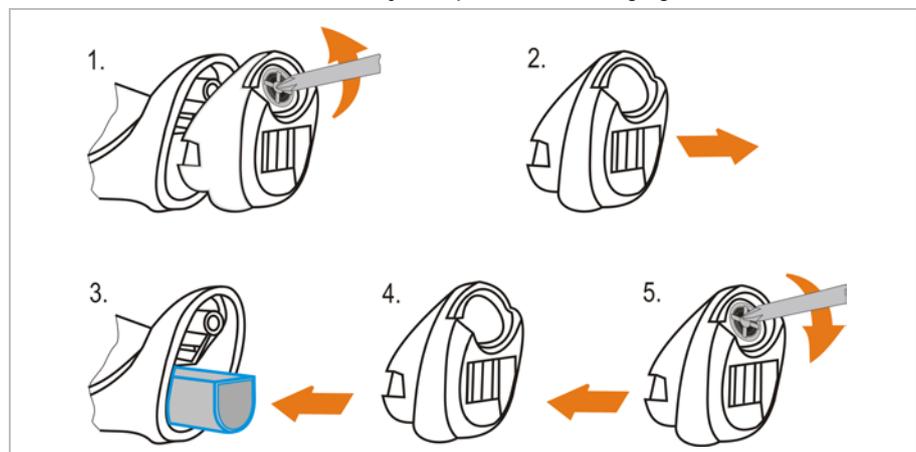
ⓘ There will be an audible and visual signal if the battery has been inserted correctly (connection established with contacts).

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5.5.2 Charging the Battery in the Non-Ex Base Station

ⓘ Charge the battery before using it for the first time.
The charging process takes 8 hours.

A charging station for charging the hand scanner is available too.
It is identical to the base station but without radio connection.

Work steps:

1. Use the non-Ex base station only outside the hazardous area.

2. It is important to keep the battery sufficiently charged so that the bluetooth hand scanner does not lose the radio connection to the base station.

3. Plug the power supply into the socket.

4. Insert the mains lead into the DC input in the non-Ex base station. Acoustic signals from the non-Ex base station will confirm the connection to voltage. The "POWER" LED on the non-Ex base station will light up in blue once. The "POWER" LED will light up in a steady blue on the non-Ex charging station.
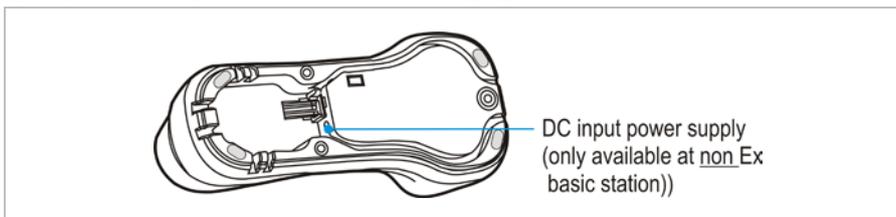
DC input power supply
(only available at non Ex
basic station))

5. Insert the bhand scanner with the inserted battery into the base station by first pushing in the bottom (see illustration, step 1) and then the hand scanner head (see illustration, step 2).

6. If the battery is not fully charged, the "STATUS" LED on the hand scanner will light up in a steady red.

7. If the battery is fully charged, the "STATUS" LED on the hand scanner will flash in green at regular intervals.

Base station, without cable, non-Ex	03-9849-0063
Charging station without bluetooth function, non-Ex	03-9849-0064
DC 5 V power supply, for base station/charging station, non-Ex	03-9911-0039

ⓘ For more information, see documentation from Sick.

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5.5.3   Charging the Battery in the Ex Base Station

ⓘ   Charge the battery before using it for the first time.
The charging process takes 8 hours.

Work steps:

1. The Ex base station can be used in the hazardous area.

2. An appropriate Ex power pack must be used to power supply to the Ex base station.

3. It is important to keep the battery sufficiently charged always so that the bluetooth hand scanner does not lose the radio connection to the base station.

4. The Ex base station must be connected to its Ex power pack and supplied with voltage.

5. Supply voltage to the Ex power pack.

6. The base station confirms with acoustic signals that this is connected to voltage. The LED "POWER" on the base station lights up in blue once.

7. Insert the bluetooth hand scanner with the inserted battery into the base station by first pushing in the bottom and then the hand scanner head.

8. If the battery is not fully charged, the "STATUS" LED on the hand scanner will light up in a steady red.

9. If the battery is fully charged, the "STATUS" LED on the hand scanner will flash in green at regular intervals.

Base station, without cable, Zone 1 Ui = 4.9 V to 5.6 V (only in combination with the Ex power pack)	17-21BB-1707/0000
Ex power pack DC 24 V RS232/RS422 DC 24 V USB AC 230 V RS232/RS422 AC 230 V USB	17-21BB-1703/0000 17-21BB-1704/0000 17-21BB-1705/0000 17-21BB-1706/0000

ⓘ   For more information, please refer to the documentation from Sick.

Technical data subject to change without notice.
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5.5.4 Removing the Battery

Work steps:

1. Take the hand scanner out of the hazardous area before inserting or replacing the battery.

2. Use only batteries which have been tested or certified by BARTEC for this purpose.

3. Use a suitable tool to remove the locking screw on the end cap on the handle of the BCS 160ex BT (see illustration, step 1).

4. Apply a bit of force to pull the end cap down (see illustration, step 2).

5. The battery can be pulled out of the battery compartment with the aid of the strip (see illustration, step 1).
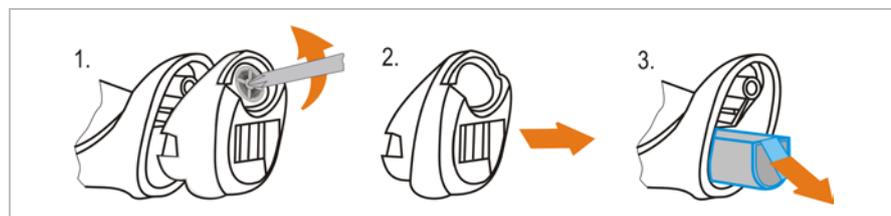
5.6 Connection to the PC or Host

The hand scanner from the BCS 160ex series can be connected to a PC or other host system through the RS 232/RS 422 or USB.

⚠️ **WARNING**

Improper usage or application can void the operating licence.

▶ Make sure the connection cables (specified connection cables from BARTEC) are securely positioned and locked or screwed in place.

5.6.1 Serial connection

When using the Ex base station, the following power pack to the supply voltage and data transmission must be used.

Power pack, DC 24 V, RS232/RS422	17-21BB-1703/0000
Power pack, AC 230 V, RS232/RS422	17-21BB-1705/0000

ⓘ **Non-Ex base station**

Can be connected directly to a serial interface on the PC or host.

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Maximum ranges	Type	Interface	Maximum length
Ex base station to the power pack	17-21BB-1707/0000	RS232/RS422	9.8 m
<u>Non</u>-Ex base station to the PC or other host	03-9849-0064	RS232/RS422	9.8 m
Power pack to the PC or other host	17-21BB-1703/0000	RS232	20 m
	17-21BB-1705/0000	RS422	1000 m

The hand scanner must be adapted at least to the following PC or host parameters so that a connection can be established.

1. Baud rate

2. Data frame consists of data bit, parity and stop bit

3. Handshake protocol/ flow control

(i) For more information and parameters, please see the programming manual from Sick.

5.6.2 USB Connection

When using the Ex base station, the following power pack must be used for supply voltage and data transmission.

The hand scanner is connected to a power pack of the following type.

Power pack, DC 24 V, USB	17-21BB-1704/0000
Power pack, AC 230 V, USB	17-21BB-1706/0000

(i) **<u>Non</u>-Ex base station**
Can be connected directly to a USB interface on the PC or host.

Maximum ranges	Type	Interface	Maximum length
Ex base station to the power pack	17-21BB-1707/0000	USB	3.8 m
<u>Non</u>-Ex base station to the PC or other host	03-9849-0064	USB	3.8 m
Power pack to the PC or other host	17-21BB-1704/0000	USB	5 m
	17-21BB-1706/0000	USB	

(i) For more information and parameters, please refer to the Programming Manual from Sick.

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5.6.3 "IDM Set Up Tool" Configuration Software

Settings on the BCS 160ex series

■ By means of the "IDM Set Up Tool" configuration software from Sick.

The "IDM Set Up Tool" from Sick is configuration software for Windows operating systems.

The software is available for downloading free of charge from Sick on the www.sick.com homepage.

■ With the Programming Manual from Sick.

The hand scanner can be programmed by scanning special programming barcodes from the Programming Manual.

Comparison of the BARTEC types and the corresponding Sick types in the following table.

BARTEC Type	Sick Type
BCS 160ex	IDM 160
BCS 160ex BT	IDM 160BT

System Requirements for the "IDM Set Up Tool"

Processor	Standard Intel Pentium PC or compatible
Interface	USB or serial interface
Operating system	Windows 98, Windows 2000, Windows NT, Windows XP
Screen	At least 256 colours - recommended 65,536 colours (16-bit high colour)
Minimum resolution	800 px x 600 px

ⓘ For detailed information on the "IDM Set Up Tool", please refer to the documentation from Sick.

5.6.4 Establishing the BCS 160ex BT Connection to the Base Station

The BCS 160ex BT offers various settings in order to communicate with the host system.

PAIR mode	1 bluetooth hand scanner is connected to a base station
PICO mode	up to 7 Bluetooth hand scanners are connected to a base station
HID mode	direct HID communication with the bluetooth host without a base station
SPP master-slave mode	direct serial communication with bluetooth host without a base station

ⓘ Detailed information and instructions on the functions can be found in the programming manual from Sick for the IDM160 Bluetooth hand scanner.

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BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

Commissioning

ⓘ

If it is not possible to establish a connection between the scanner and the base station by means of pairing:

Press the reset button on the base station for 5 sec in order to reset all existing connections.

After that, repeat the pairing procedure in accordance with the instructions.

Paging-/
reset button

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Operation

Barcode Hand Scanner
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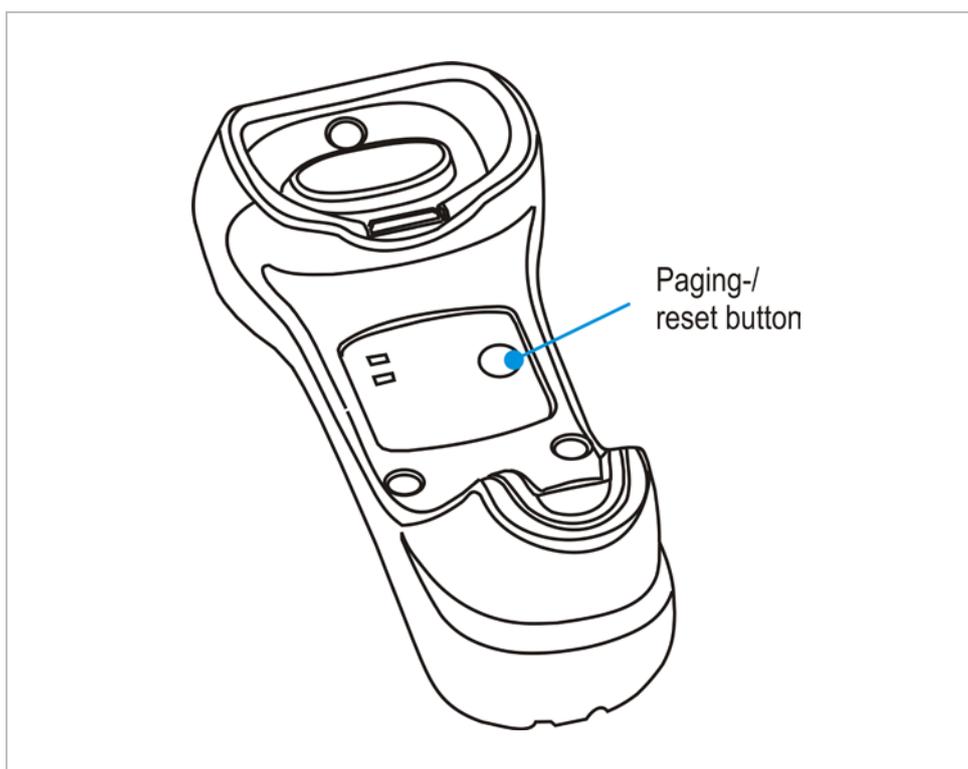
6. Operation

The operator using an electrical system in a hazardous environment must keep the associated equipment in good working condition, operate and monitor it correctly and do the necessary maintenance work and repairs. Before commissioning the devices, make sure you have all components and documents.

6.1 Final Inspection

Before commissioning the device, the following conditions must be checked:

▶ Is there any damage to the scan window and/or enclosure?

▶ Is the BCS 160ex used inside the specified temperature range?

▶ Are the accessories (cable, base station, power pack, etc.) that are being used free of damage?

▶ Has the battery that is being used been certified?

▶ Is the battery compartment cover closed?

▶ Is an Ex base station used in applications in the hazardous area?

▶ Are the spower packs used with the BCS 160ex series hand scanners suitable and certified?

▶ Are the power packs connected properly?

▶ Is the power pack terminal junction box sealed?

6.2 Handling

Scanning
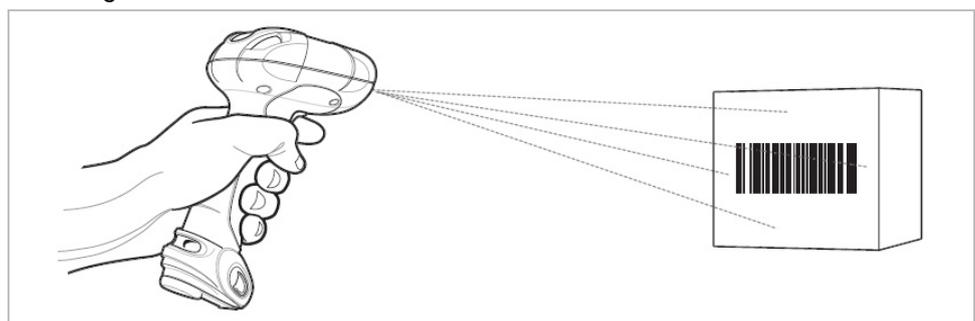
Aim

Aim the beam at the barcode. The decoding/reading process starts once the trigger button is released.

Optimum reading position
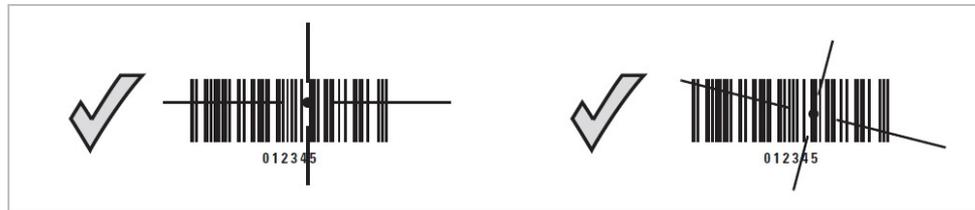
Correct:

The hand scanner can read barcodes even if the scanner beam is not centred directly on the barcode.
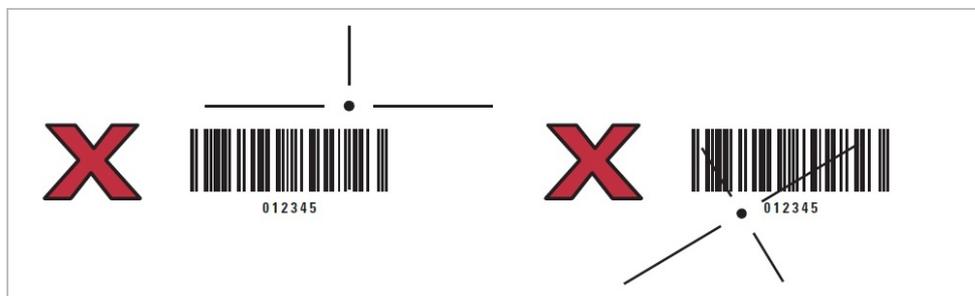
Wrong:

The hand scanner cannot decode/read a barcode if the scanner beam does not capture the entire width of the barcode.

6.3 Care and Cleaning

For smooth and trouble-free operation we recommend cleaning the devices at regular intervals depending on the degree of stress to which they are exposed and handling them with care.

6.3.1 Care

Enclosure	– Protect the device from impacts
	– Do not expose the device to any extreme stress, e.g. violent jolts and drops from great heights
Environment	– Do not expose to any extreme temperatures
	– Do not put it down in a dirty, damp or wet environment.
Battery	– Replace regularly
	– Discharge and recharge regularly (every 3 months)

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6.3.2 Cleaning

⚠ DANGER
There is a risk of a fatal injury in hazardous areas!
▶ Clean the devices or the accessories only outside the hazardous area.

ATTENTION
Devices and accessories can be destroyed if handled inappropriately.
For your own safety and to ensure that the device will operate reliably:
▶ In general, disconnect the charging station from the power supply.
▶ Disconnect the cable plug connector from the power supply.
▶ Remove the battery before cleaning the contacts.
▶ There must not be any residues, e.g. fluff, sticking to the contacts.
▶ There may not be any moisture left on the contacts.
▶ When drying with compressed air, comply with the safety regulations.

6.3.3 Suitable Materials

– Alcohol cleaning wipes

– Lens cleaning wipes

– Cleaning cotton buds

– Isopropyl

– Compressed-air spray with hose

Enclosure	– with alcohol cleaning wipes
Scan window	– Means of cleaning for optical devices
Battery Contacts	Take the battery out of the device before starting to clean. – Dip the cleaning cotton buds in the alcohol solution to remove all deposits of grease and dirt on the contacts. – Repeat cleaning several times. Before you insert the battery, make sure the contacts are completely dry and that there is no fluff sticking to them.

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Operation

Base station Contacts	To clean the contacts, take the battery out of the device and close the battery compartment.
	– Dip the cleaning cotton buds in alcohol solution and then use them to remove every deposit of grease and dirt on the contacts.
	– Repeat cleaning several times.
	Make sure the contacts are completely dry and there is no fluff left sticking to them before you put the device back onto the cradle.
Charging Station Plug connectors	Before you start to clean the charging station contacts, disconnect the charging station from the power supply.
	– Dip the cleaning cotton buds into the alcohol solution and then use them to remove every deposit of grease and dirt on the contacts.
	– Repeat cleaning several times.
	Make sure the contacts are completely dry and there is no fluff left sticking to them before you reconnect the charging station to the power supply.
Cable Connectors	Before you start to clean the cable connectors, disconnect the hand scanner from the power supply.
	– Dip the cleaning cotton buds into the alcohol solution and then use them to remove every deposit of grease and dirt on the contacts.
	– Repeat cleaning several times.
	Make sure the cable connectors are completely dry and there is no fluff left sticking to them before you reconnect the cable connectors to the power supply.

6.4 Operation, Recommendations and Requirements

6.4.1 Basic Safety and Health Protection Requirements

Please consult your local health and safety officer to ensure that you are familiar with the safety regulations your company has put in place in order to protect employees in the workplace.

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6.4.1.1 Ergonomic Recommendation

The following recommendations for everyday work at the workplace should be heeded:

– Avoid using just one side of your body for constantly repeated movements.

– Body posture should be as neutral as possible.

– Avoid using a lot of force.

– Keep frequently used objects within functional reach.

– Adjust the working height to your own height and the type of work you are doing.

– Set up objects without vibrations.

– Avoid exercising direct pressure.

– Ensure that the tables and chairs are adjustable.

– There must be sufficient room for body movements.

– Make sure the working environment is suitable.

– Optimize workflows.

– Alternate between the left and right hands as often as possible when conducting repetitive tasks.

6.4.1.2 Notes on the Use of Wireless Devices

Observe all warnings relating to the use of wireless devices.

6.4.1.3 Cardiac pacemakers

Manufacturers recommend a minimum distance of 15 cm between a wireless handheld device and a pacemaker to prevent potential interference. This guideline is in line with independent research results and recommendations from Wireless Technology Research.

– People with implanted pacemakers

– People with implanted pacemakers should ALWAYS keep at least 15 cm away from the device when it is switched on.

– People with implanted pacemakers must not wear this device in a breast pocket.

– The device should be held to the ear which is furthest away from the pacemaker.

– If you have reason to suspect interference, SWITCH OFF your device immediately.

6.4.1.4 Restrictions on Wireless Devices

The use of wireless devices might be forbidden or restricted. This is particularly the case on board aircraft, in hospitals, in the vicinity of explosive substances or under other hazardous conditions. If you are not sure which regulations apply to the use of the device, ask permission before switching it on.

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Malfunctioning and
Troubleshooting

7.   Malfunctioning and Troubleshooting

⚠ **DANGER**
There is a risk of a fatal injury in hazardous areas!
▶   Before you start to inspect defective devices or accessories, take them out of the hazardous area.

ⓘ   Information on troubleshooting can be found in the User Manual from Sick.

Fault	Possible cause	Solution
General Points		
Hand scanner does not react	– Software error	Scan in the barcode for "Factory standard setting" from the Sick programming manual. **Caution:** All previous settings must be entered again.
The scanner beam does not appear when the trigger is pressed.	– No power supply – Battery out of charge	– Connect the power pack. – Charge the battery.
	– Wrong connection cable.	– Check cables.
	– No connection between the connection cable and supply module or to the host	– Check and connect the cable.
	– Scanner beam is deactivated.	– Activate >> Please refer to the Programming Manual from Sick
The scanner beam is visible but the barcode is not decoded	– The hand scanner is not programmed to the barcode type.	– Activate >> Please refer to the Programming Manual from Sick
	– The barcode is not readable – The barcode is damaged	– Test a barcode of the same type or – Create a new barcode
	– The scanner beam does not capture the complete barcode.	– Select the optimum reading position for the barcode. >> see Chapter 6.2
Decoded data is not transmitted to the host.	– The hand scanner is not programmed to the correct interface parameters.	– Check the interface type. – Set the interface parameters. >> Please refer Manual from Sick

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Fault	Possible cause	Solution
	– No connection between the connection cable and supply module or to the host	– Check and connect the cable.
Incorrect transmission of scanned data.	– The hand scanner was not programmed to the correct interface parameters.	– Check the interface type. – Set the interface parameters. – Check or set barcode options.
Only BCS160ex BT Bluetooth hand scanner		
Hand scanner does not react	– Software error	– Reboot – Switch off the voltage supply for the base station or, if that is not possible, disconnect the base station from the supply module. Reconnect the voltage supply then. – Take the battery out of the hand scanner and insert it again.
	– Battery out of charge	– Charge the hand scanner or the battery.
	– No battery inserted	– Insert a battery.
4 descending signal tones are sounded.	– Radio connection lost.	– Reduce the range to the base station in order to establish the radio connection. or – Activate the "Scanning outside the range" function.

Barcode Hand Scanner
BCS 160ex Series, Types 17-21BA-M31S/…….. and 17-21BA-M32S/……..

Maintenance, Inspection,
Repairs

8.   Maintenance, Inspection, Repairs

Only trained and qualified personnel may commission and do maintenance work on the hand scanner and bluetooth hand scanner! This personnel is familiar with the installation, assembly, commissioning and operation of the hand scanner and bluetooth hand scanner, have been instructed about the risks and, by virtue of the work they do, have the required qualifications.

8.1   Maintenance intervals

The mechanical status of the device should be checked at regular intervals. The maintenance intervals depend on the ambient conditions. We recommend checking at least once a year. Regular maintenance is not necessary if the device is operated appropriately in conformance to the installation instructions and with due consideration to the ambient conditions.

⚠ **DANGER**
Prevent electrostatic charging in hazardous areas. **There is a risk of a fatal injury in an explosive atmosphere!**
▶   Do not use a dry cloth to wipe or clean the devices.

8.2   Inspection

Under EN 60079-17 and EN 60079-19 the owner / managing operator of electrical systems in hazardous areas is obliged to have these systems checked by an electrician to ensure that they are in proper working condition.

8.3   Maintenance and Repair Work

When doing maintenance and repairs and when testing associated equipment, comply with the 99/92/EC directive and the EN 60079-17 and EN 60079-19 standards.

Only trained personnel may do any work relating to assembly/disassembly, operation and maintenance. All statutory regulations and other binding directives on workplace protection, accident prevention and environment protection must be observed.

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8.3.1 Notes Concerning Returns for Repairs

The following information is required for repairs.

– The device's serial number (see manufacturer's label)

– Model number or product name (see manufacturer's label)

– Detailed description of the fault / problem
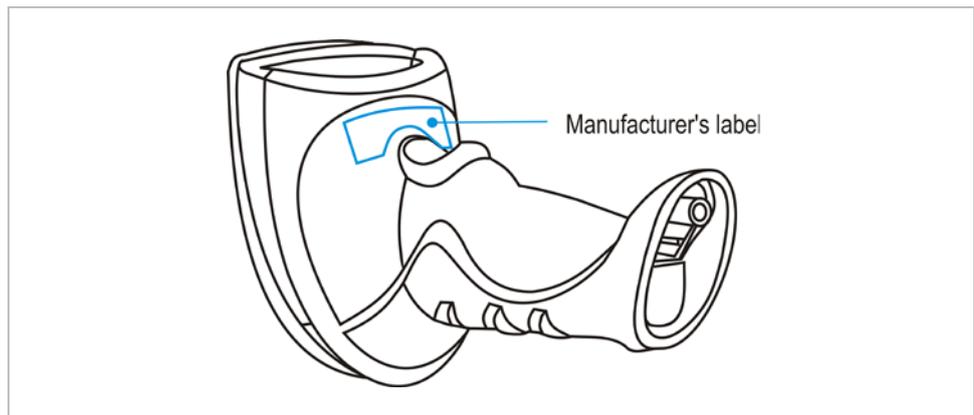
BARTEC answers enquiries by email, telephone or fax. If the problem cannot be rectified by the BARTEC sales companies or commercial representations, you may need to return the device to us for maintenance.

If you wish to send in a defective device for repairs please first read the RMA procedure guide. Then fill in and sign the RMA (Return Merchandise Authorisation) form and send it to our "Retouren Centre".

Email: services@bartec.de
Fax: +49 7931 597-119

We cannot guarantee any contractually agreed processing times for devices that are sent in without an RMA number.

The RMA guide and the RMA form are available on our homepage for downloading.

http://www.bartec.de   >> Quality and culture
                                     >> RMA form

Any questions? Send us an e-mail or call us.

E-mail: services@bartec.de
Phone: +49 7931 597-444

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Maintenance, Inspection,
Repairs

9. Disposal

The hand scanners contain metal parts, plastic parts and electronic components.

ⓘ

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

Any product we supply can be returned by our customers to us when the time has come to dispose of it. We will ensure that it is disposed of in accordance with the respective applicable statutory regulations.

The sender pays the costs of the dispatch/packaging.

10. Dispatch and Packaging Instructions

ATTENTION
Sensitive devices! Damage to property due to incorrect packaging!
▶ Use the original packaging for transport.

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Accessories, Spare Parts

Barcode Hand Scanner
BCS 160ex Series, Type 17-21BA-M31S/…….. and 17-21BA-M32S/……..

11. Accessories, Spare Parts

BCS 160ex				
Description				**Order numbers**
Power Pack				
Power pack	DC 24 V	RS232/RS422		17-21BB-1703/0000
Power pack	DC 24 V	USB		17-21BB-1704/0000
Power pack	AC 230 V	RS232/RS422		17-21BB-1705/0000
Power pack	AC 230 V	USB		17-21BB-1706/0000
Connection cable				
Scanner cable	RS232	smooth	1.8 m	03-9828-0034
Scanner cable	RS232	spiral	3.8 m	03-9828-0035
Scanner cable	USB	smooth	1.8 m	03-9828-0036
Scanner cable	USB	spiral	3.8 m	03-9828-0037
Connection cable to the POLARIS, power pack and **BCS 302ex supply unit : 17-21BB-0217 to 17-21BB-0220** **BCS 3800ex supply unit: 17-21BB-1700 to 17-21BB-1702**				
Scanner cable	RS232	smooth	1.8 m	17-21BE-M000/0000
Scanner cable	RS232	spiral	3.8 m	17-21BE-M010/0000
Extension cable - Zone 1				
Extension cable	female/male connector	smooth	6 m	03-9828-0038
Extension cable	female/male connector	spiral	4.5 m	03-9828-0039

BCS 160ex BT				
Description				**Order numbers**
Spare battery				
3.6 V / 2250 mAh Li-ion spare battery				17-21BE-M040/0000
Ex base station (charging and BT connection in the Ex area)				
Base station, without cable, Zone 1 Ui = 4.9 V to 5.6 V (only in combination with the Ex power pack)				17-21BB-1707/0000
Non-Ex base station (charging only in the safe area)				
Base station, without cable		Non-Ex		03-9849-0063
DC 5 V power supply, for base or charging station		Non-Ex		03-9911-0039
Non-Ex charging station (charging only in the safe area)				
Charging station without bluetooth function		Non-Ex		03-9849-0064
DC 5 V power supply, for base or charging station		Non-Ex		03-9911-0039
Connection cable for Non-Ex base station				
Scanner cable	RS232	smooth	1.8 m	03-9828-0040
Scanner cable	RS232	spiral	3.8 m	03-9828-0041
Scanner cable	USB	smooth	1.8 m	03-9828-0042
Scanner cable	USB	spiral	3.8 m	03-9828-0043
Connection cable for Zone 1 Base station				
Scanner cable	RS232	smooth	1.8 m	03-9828-0044
Scanner cable	RS232	spiral	3.8 m	03-9828-0045
Scanner cable	USB	smooth	1.8 m	03-9828-0046
Scanner cable	USB	spiral	3.8 m	03-9828-0047
Connection cable to POLARIS, power pack and **BCS 302ex supply unit: 17-21BB-0217 to 17-21BB-0220** **BCS 3800ex supply unit: 17-21BB-1700 to 17-21BB-1702**				
Scanner cable	RS232	smooth	1.8 m	17-21BE-M020/0000
Scanner cable	RS232	spiral	3.8 m	17-21BE-M030/0000

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Order Numbers

12.   Order Numbers

BCS 160ex Hand Scanner

Selection chart	
Barcode options	**Code no.**
1D Scan Engine	R
1D/PDF Scan Engine	T

➡ **Complete order no. 17-21BA-M31S/** ☐ **000/0000**
Hand scanner BCS 160ex without connection cable

BCS 160ex BT Bluetooth Hand Scanner

Selection chart	
Barcode options	**Code no.**
1D Scan Engine	R
1D/PDF Scan Engine	T

➡ **Complete order no. 17-21BA-M32S/** ☐ **000/0000**
Bluetooth hand scanner BCS 160ex BT
without connection cable or base station

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Additional Information

Barcode Hand Scanner
BCS 160ᵉˣ Series, Type 17-21BA-M31S/…….. and 17-21BA-M32S/……..

13. Additional Information

13.1 Links

http://www.bartec-group.com
BARTEC homepage

http://www.bartec.de/automation-download/
BARTEC download homepage

http://www.sick.com/
Sick homepage

Sick:

IDM160 user manuals for the non-explosion-protected version

- Documentation
- Select Documentation
- Product family: select IDM160

The entire documentation is available for downloading on the IDM160 page.

- Operating Instructions
- Quick Start
- Product information

Sick:

IDM160 software for the non-explosion-protected version

- Software
- Product family: Select IDM 160

The following downloads are available:

- Configuration and firmware upgrade tool for IDM120, IDM140 and IDM160 (wired and Bluetooth)
- USB emulation driver to convert the USB signals into serial signals
  (can function only with USB cables up to 1.8 m in length)

Declaration of Conformity

Barcode Hand Scanner BCS 160ex

Barcode Bluetooth Hand Scanner BCS 160ex BT

► All certificates see www.bartec-group.de

BARTEC protects

p e o p l e   a n d

the environment

by the safety

of components,

s y s t e m s

and plants.

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