

IT 3820/3820i

Hand-held barcode scanner with Bluetooth data transmission

Dimensioned drawing



- Hand-held scanner for barcodes
- Transmission to ST 2020 base station via Bluetooth standard V1.2
- Large reading field for the detection of codes
- Robust trigger button
- Built-in decoder
- Read-display
- RS 232, USB and PS/2 interface
- Operating temperature from 0 through 50°C (-10 through 50°C)



IT 3820:



IT 3820i:



Accessories

- **TTL-RS 232-cable/PIN 9 IT 4xxx**
Part No. 501 04586
- **PS/2-cable for IT 4xxx**
Part No. 501 03409
- **USB-cable for IT 4xxx**
Part No. 501 03404
- **Power supply unit for IT 4x2x**
Part No. 501 03989

Electrical connection

for TTL RS 232 cable / PIN 9

9-pin Sub-D	Signal	IT 3820 RJ41
SH	Shield	2
2	TXD	6
3	RXD	5
5	GND	4
7	CTS	9
8	RTS	8
9	5VDC	7

for USB cable

USB type A	Signal	IT 3820 RJ41
1	5VDC	7 + 3
2	Data -	10
3	Data +	2
4	GND	4

for PS/2 cable

Mini DIN connector	Mini DIN socket	Signal	IT 3820 RJ41
1	-	PC Data	6
2	2	NC	
3	3	GND	4
4	4	5VDC	7
5	-	PC Clock	5
6	6	NC	
-	1	KB Data	8
-	5	KB Clock	9

Specifications

Electrical data

Operating voltage U_B
Power consumption

IT 3820

3.7VDC internal battery

ST 2020

9VDC
max. 8W @ 9VDC

Li-ion battery

Capacity
Max. number of scans
Max. operating time
Charging time at 9VDC

2.000mAh
57.000
16h at 1 scan/s
4h for complete charge following complete discharge

RF data transmission

Frequency

2.4 ... 2.4835 GHz (ISM band)
Frequency hopping, Bluetooth® V1.2, Class 2
10m
720kBit/s

Typ. Range

Transmission speed

Interfaces

Interface type

Trigger

TTL-RS 232, PS/2 and USB

via button or serial command

Code types

Bar codes

2/5 Interleaved, Code 39, Code 128, Code 93, Codabar, UPC/EAN, RSS, Codablock

Optical data

Optical system
Contrast
Light source
Read distance
Read angle

3648 linear imager
20% (black/white)
integrated diffuse LED 630nm
25 ... 610mm (UPC 100%)
omnidirectional, various tilt and rotational angles up to 65°

Mechanical data

Housing
Weight
Dimensions
Shock resistance

IT 3820

UL94V0 grade
261g
157x135x81mm
50 falls from a height
of 1.8m

IT 3820i

72g
157x135x81mm
50 falls from a height
of 2m

ST 2020

250g (without cable)
79x142x109mm
50 falls from a height
of 1m

Environmental data

Ambient temp. (operation)
Ambient temp. (storage)
Relative air humidity

0°C ... +50°C
-40°C ... +60°C

-10°C ... +50°C
-40°C ... +70°C

0°C ... +50°C
-40°C ... +60°C

0 ... 95 %

0 ... 95 %

0 ... 95 %

(non-condensing)

(non-condensing)

(non-condensing)

Light source

Protection class

Certifications

exempt group (in acc. with EN 62471)

IP 41

IP 54

IP 41

IEC 60950-1 (US-19800-UL)

Reading field

IT 3820 SR

Module or cell	from	to
Code 39	5 mil / 0.127 mm	105 mm
Code 39	7.5 mil / 0.19 mm	95 mm
Code 39	10 mil / 0.25 mm	55 mm
Code 39	13 mil / 0.33 mm	25 mm
UPC bar code	13 mil / 0.33 mm	25 mm
Code 39	20 mil / 0.50 mm	25 mm
Code 39	55 mil / 1.40 mm	102 mm

Order guide

Hand-held scanner for barcodes (standard range)

IT 3820 SR 0C0BE	IT 3820 SR with RS 232/USB/PS/2 interface
IT 3820i SR E	IT 3820i SR with RS 232/USB/PS/2 interface

Part No.

501 06242
501 10471

Base station for Bluetooth transmission

ST 2020-5BE	ST 2020 with RS 232/USB/PS/2 interface (without cable)
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Part No.

501 10663

Tables

Diagrams

Remarks

Operate in accordance with intended use!

- ☞ The product may only be put into operation by competent persons.
- ☞ Only use the product in accordance with the intended use.

Ergonomically shaped hand-held scanner with integrated decoder for barcodes

Data transmission via configurable RS 232 interface.

Or keyboard-wedge operation via PS/2 or USB interface.

For a functional unit, an IT 3820 hand-held scanner and a ST 2020 base station as well as a power supply unit and corresponding cable must be ordered.



Bluetooth is a trademark owned by Bluetooth SIG, Inc., U.S.A. and licensed to Hand-Held Products

Hand-held barcode scanner with Bluetooth data transmission

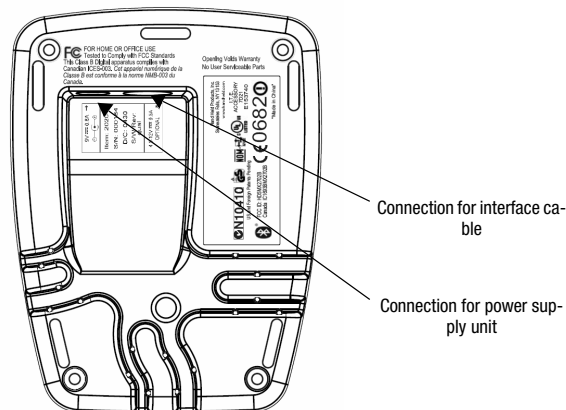
Switching off the computer

Information on switching off and shutting down the connected computer - which must always be performed before connecting peripheral devices, such as a scanner - can be found in the appropriate operating instructions for your computer.

Connecting the IT 3820

Shown in the figure to the right are the locations for installing the cable on the base station. The individual installation steps are described in the following.

1. To secure the interface cable to the scanner, proceed as follows:
plug the RJ 41 connector into the socket on the bottom of the base station until the cable clicks into place.
2. Connect the interface cable to the appropriate connection socket on the computer.
3. You may need a power supply unit for voltage supply if you would like to charge the hand-held scanner at the base station or if you use an RS 232 interface. Use the pin assignments (see "Electrical connection" on page 1) to select the appropriate cable for your application.
4. Connect the power supply unit to the power socket.
5. Use the code for the respective application to configure the hand-held scanner, see chapter "Configuration".
6. Check the operational readiness of the scanner by pointing the scanning surface towards a flat surface and pulling the trigger. A green target line as well as the red illumination should now be visible. Now scan a sample label. The scanner emits an audible signal to confirm that the label has been read; if necessary, the data are now passed on to the computer.



Configuration

The hand-held scanner can always be configured using bar codes. To do this, the barcode must first be selected on the package insert and then the trigger actuated in order to read the code. The configuration is then immediately accepted and executed.

Several of the most important configurations are listed in the following.

A second option is to configure the hand-held scanner with the USB and RS 232 interfaces with the aid of the **VisualMenu** PC program. You can download and install this program from our homepage at www.leuze.de.

The program can be used to make settings and transfer them to the hand-held scanner. The configuration can also be stored so that it can be reused at a later time.

The standard applications are described and summarised below.



Notice!

Additional information on the device and short instructions can be found on the Internet at www.leuze.de.

Resetting the IT 3820 to factory settings

To reset all parameters to factory settings, scan the adjacent barcode.



Attention!

All settings are lost!!!



Return the IT 3820 to the base station to apply the settings. This procedure is concluded with audible confirmation signals.

You may then continue making settings or operation of the device.

Trigger

To activate the read process, a trigger signal is to be sent via the serial RS 232 interface or USB interface (COM port emulation only). The command is to be sent at the set baud rate, parity, and data and stop bits.

The command for activation is: **SYN T CR** ASCII decimal values: 022; 084; 013

To cancel read readiness, send a deactivation.

The command for deactivation is: **SYN U CR** ASCII decimal values: 022; 085; 013

Following a successful read operation, the IT 3820 deactivates itself.

The second option is activation via the built-in trigger button.

Configuration for the Leuze standard protocol

To set the Leuze standard protocol, you must first reset the scanner to factory settings and then individually define each of the transmission parameters using a barcode

Procedure:

1. Scan the adjacent barcode.

The IT 3820 is reset to factory settings.

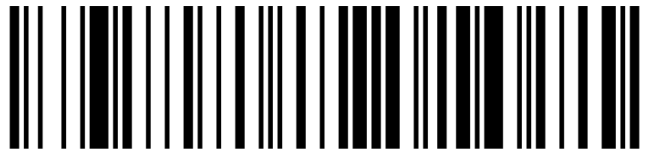
2. Return the IT 3820 to the base station to apply the settings.

This procedure is concluded with audible confirmation signals.

3. Successively scan the 4 barcodes shown below. Each read operation is confirmed by a beep.

The IT 3820 is set to the following transmission parameters: RS 232 transmission with 9,600 baud, 8 data bits, 1 stop bit, no parity, prefix <STX>, terminators <CR><LF>.

9600 Bd



Terminal ID



Prefix STX



Postfix CR/LF

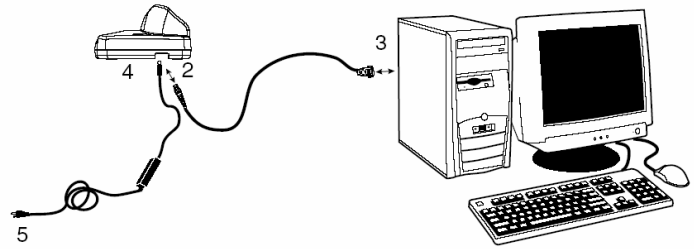


IT 3820/3820i**Hand-held barcode scanner with Bluetooth data transmission****Connecting the IT 3820 to the serial PC interface**

With TTL-RS232 cable/PIN9 IT 4xxx Part No. 501 04586

required parts:

- 1x 501 06 242 IT 3820 SR 0C0BE
- 1x 501 03 990 Base station ST 2020
- 1x 501 04 586 Cable TTL-RS232/PIN9
- 1x 501 03 989 Power supply unit ST 2020

**Procedure:**

1. Switch off the PC.
2. Connect the interface cable to a free COM port (RS 232) on the computer (3) and to the base station (2).
3. Plug one end of the power supply unit cable into the base station (4) and the other end into a free power socket (5).

4. Switch the PC back on.

5. Scan the adjacent barcode.

The IT 3820 is set to the following transmission parameters:

RS 232 transmission with 115,200 baud, 8 data bits, 1 stop bit, no parity, terminators <CR><LF>.

6. Return the IT 3820 to the base station to apply the settings. This procedure is concluded with optical confirmation signals (green LED on the ST 2020).

7. If necessary, adjust the transmission parameters of the used COM port to those of the IT 3820.

**Attention!**

We recommend connecting the IT 3820 directly to a PC or to the MA 21 or MA 41... connector units. If connecting to other components, please note that a voltage level range of -14 ... +14V is maintained on the data lines!

Connecting the IT 3820 to the MA 41 DP-K or MA 41 IS

required parts:

1x 501 06 242	IT 3820 SR 0C0BE	
1x 501 03 990	Base station ST 2020	
1x 501 04 586	Cable TTL-RS232/PIN9	
1x 501 03 989	Power supply unit ST 2020	
1x 500 35 421	KB 021 Z	
1x 500 33 638	MA 41 DP-K for Profibus	(for Interbus: 500 28 994 MA 41 IS or 500 30 085 MA 41 IS PDP)

Pin assignments KB 021 Z:

Core colour:	signal	terminal in the MA 41:
brown	(RXD)	2
white	(TXD)	1
blue	(GND)	4
red	(VCC)	3<
black	(GND)	3<
bare (shield)	(PE)	21

Procedure:

1. Connect cable KB 021 Z to the MA 41... acc. to the above pin assignments.
2. Connect the interface cable to cable KB 021 Z. Connect the interface cable and the power supply unit to the base station (see "Connecting the IT 3820 to the serial PC interface").
3. Scan the adjacent barcode.



The IT 3820 is reset to factory settings.

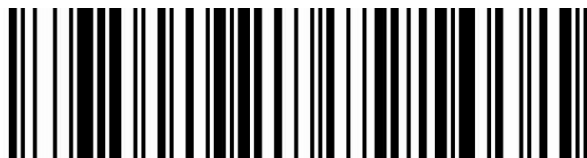
4. Return the IT 3820 to the base station to apply the settings.
This procedure is concluded with audible confirmation signals.
5. Successively scan the 3 barcodes shown below. Each read operation is confirmed by a beep.

The IT 3820 is set to the following transmission parameters: RS 232 transmission with 9,600 baud, 8 data bits, 1 stop bit, no parity, terminators <CR><LF>.

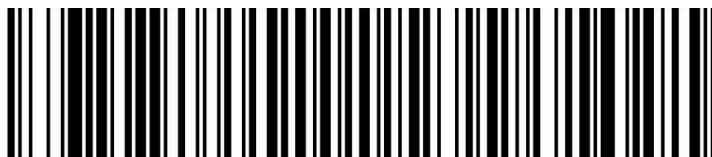
9600 Bd



Terminal ID



Postfix CR/LF



IT 3820/3820i

Hand-held barcode scanner with Bluetooth data transmission

Connecting the IT 3820 to the MA 21

required parts:

1x 501 06 242	IT 3820 SR 0C0BE
1x 501 03 990	Base station ST 2020
1x 501 04 586	Cable TTL-RS232/PIN9
1x 501 03 989	Power supply unit ST 2020
1x 500 35 421	KB 021 Z
1x 500 30 481	MA 21 100

Pin assignments KB021 Z:

Core colour:	signal	terminal in the MA 21:
brown	(RXD)	26
white	(TXD)	27
blue	(GND)	28
red	(VCC)	30
black	(GND)	30
bare (shield)	(PE)	21

Procedure:

1. Connect cable KB 021 Z to the MA 21... acc. to the above pin assignments.

2. Connect the interface cable to cable KB 021 Z. Connect the interface cable and the power supply unit to the base station (see "Connecting the IT 3820 to the serial PC interface").

3. Scan the adjacent barcode.



The IT 3820 is reset to factory settings.

4. Return the IT 3820 to the base station to apply the settings.

This procedure is concluded with audible confirmation signals.

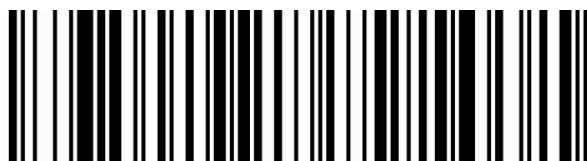
5. Successively scan the 4 barcodes shown below. Each read operation is confirmed by a beep.

The IT 3820 is set to the following transmission parameters: RS 232 transmission with 9,600 baud, 7 data bits, 1 stop bit, even parity, terminators <CR><LF>.

9600 Bd



Terminal ID



7 data bits, even parity, 1 stop bit



Postfix CR/LF

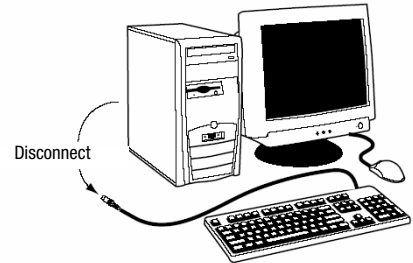


Connecting the IT 3820 to the PS/2 interface

The operation of the IT 3820 in keyboard emulation mode is described in this section. A PC keyboard is emulated in this operating mode. The data which are read are written directly to the currently activated program. Thus, the data can be processed further in all standard programs.

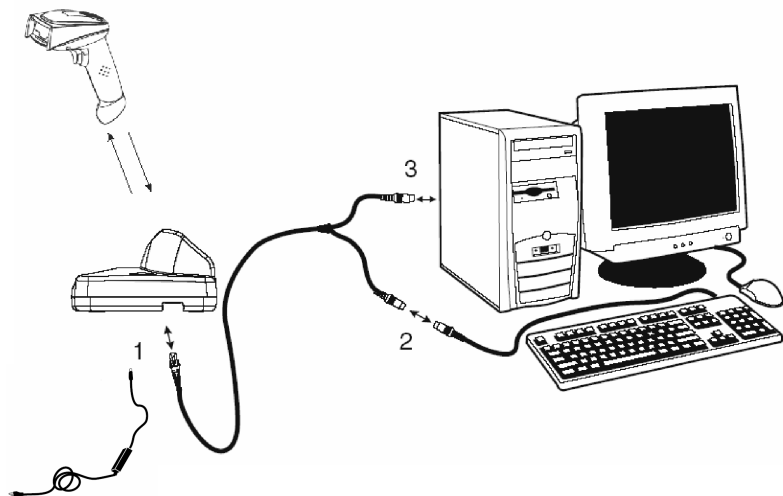
required parts:

- 1x 501 06 242 IT 3820 SR 0C0BE
- 1x 501 03 990 Base station ST 2020
- 1x 501 03 989 Power supply unit ST 2020
- 1x 501 03 409 PS/2 cable



Procedure:

1. Switch off the PC.
2. Disconnect the keyboard.
3. Connect the cable for the ST 2020 base station between the keyboard and the PC.
4. Switch the PC back on.
5. Scan the barcodes shown below.
6. Return the IT 3820 to the base station to apply the settings. This procedure is concluded with audible confirmation signals.



IBM PCs and compatible PCs, postfix



Keyboard layout for Germany/Austria



Notice!

To charge the IT 3820, the power supply unit must be plugged in and the hand-held scanner placed in the ST 2020 base station.

IT 3820/3820i

Hand-held barcode scanner with Bluetooth data transmission

Connecting the IT 3820 to the USB interface (keyboard emulation)

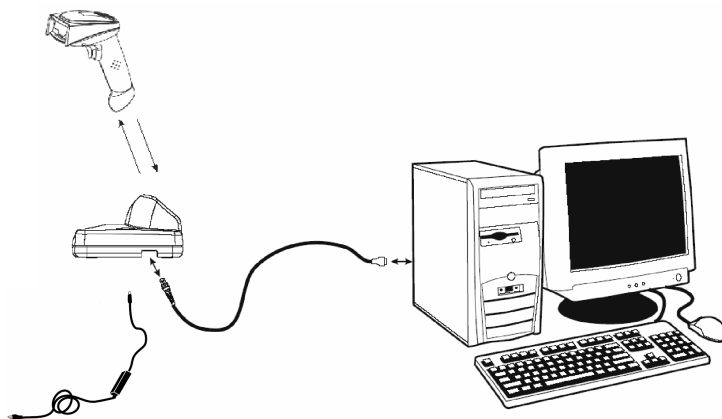
The operation of the IT 3820 in keyboard-emulation mode on a USB port is described in this section. A PC keyboard is emulated in this operating mode. The data which are read in are written directly to the currently activated program. Thus, the data can be processed further in all standard programs.

required parts:

- 1x 501 06 242 IT 3820 SR 0C0BE
- 1x 501 03 990 Base station ST 2020
- 1x 501 03 989 Power supply unit ST 2020
- 1x 501 03 404 USB cable

Procedure:

1. Connect the cable for the ST 2020 base station to a free USB port.
2. The scanner acknowledges this connection with a beep.
3. Scan the barcodes shown below.



USB keyboard emulation with CR LF



Keyboard layout for Germany/Austria



Notice!

To charge the IT 3820, the power supply unit must be plugged in and the hand-held scanner placed in the ST 2020 base station.

Connecting the IT 3820 to the USB interface (COM-port emulation)

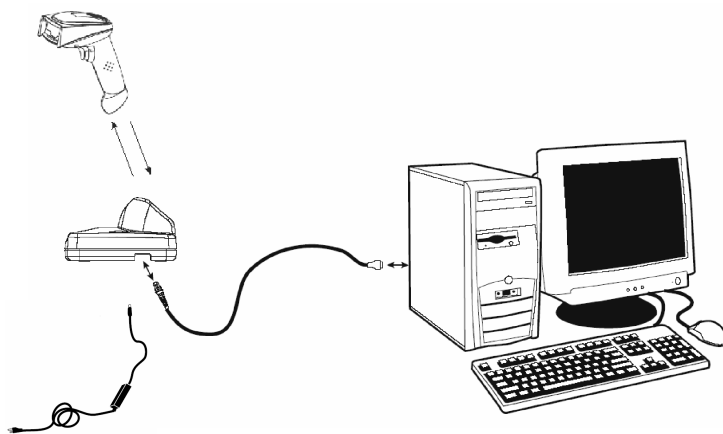
The operation of the IT 3820 as a serial interface on a USB port is described in this chapter. A COM interface is emulated in this operating mode. The data which are read in are sent to a new COM interface. The driver with which you emulate this COM interface can be downloaded from our homepage at www.leuze.de. Thus, the data can be processed further in programs which expect data via COM interfaces.

required parts:

- 1x 501 06 242 IT 3820 SR 0C0BE
- 1x 501 03 990 Base station ST 2020
- 1x 501 03 989 Power supply unit ST 2020
- 1x 501 03 404 USB cable

Procedure:

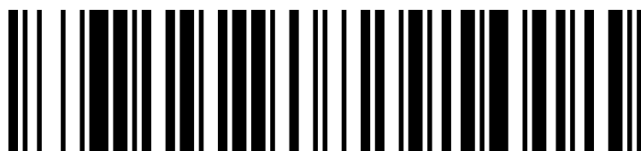
1. Connect the cable for the ST 2020 base station to a free USB port.
2. The scanner acknowledges this connection with a beep.
3. Scan the barcodes shown below.
4. Install the USB serial driver when you are prompted to do so by Windows.
5. Open a terminal program or your program for the serial interface, select the new COM port, and make the following settings: baud rate 38,400, 8 data bits, 1 stop bit, no parity, terminator <CR>.



USB COM-port emulation



Add CR Suffix



Notice!

To charge the IT 3820, the power supply unit must be plugged in and the hand-held scanner placed in the ST 2020 base station.