Leuze electronic

IT 6320 DPM
2D-code hand-held scanner with RF transmission

Quick start user's guide

Leuze electronic

Preface

We congratulate you on the purchase of one of the most powerful hand-held scanners. This document is intended to provide information on the handling and use of the IT 6320 produced by Leuze electronic.
It includes explanations of the most important information necessary for operation. In addition, the most important connection types are explained and information is provided on programming with the aid of codes.
Additional information can be found in the online help system, which is installed together with the setup tool.
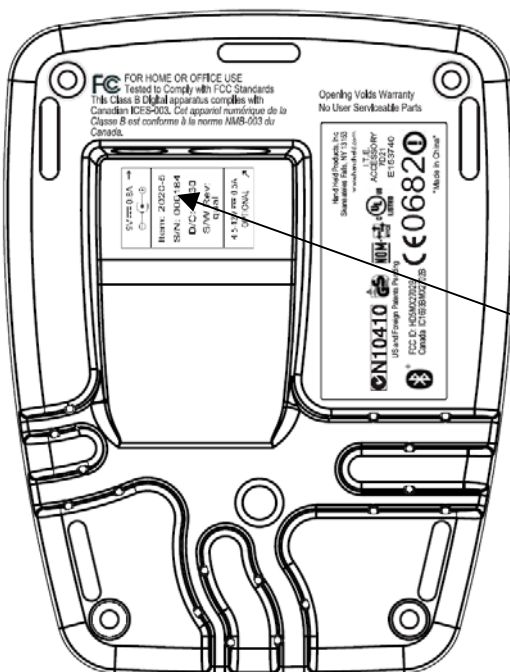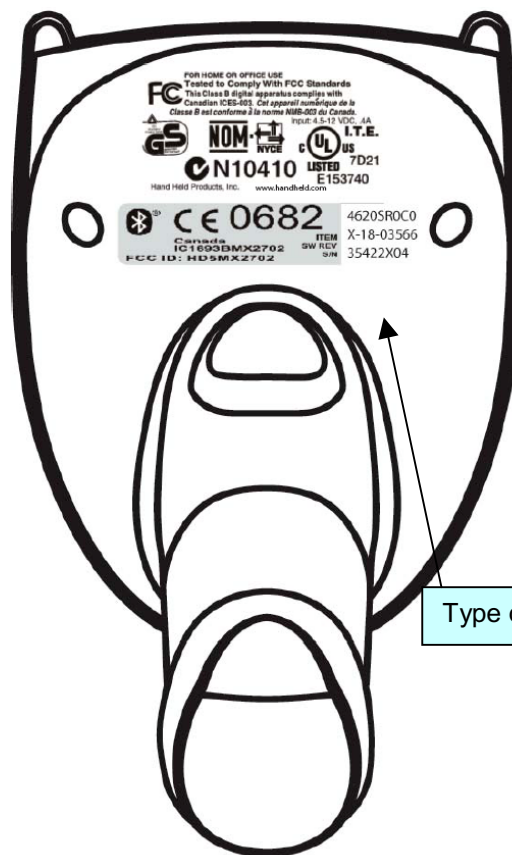
Contents

Scope of delivery

- **IT 6320 DPM**
  Part No. 50105382

1. Hand-held scanner 6320 IDP-351S
2. Rechargeable battery (installed)
3. CD-ROM

- **ST 2020**
  Part No. 50103990

1. Base station ST 2020-5B

Type designation

Type designation

An overview of the types can be found on page 18

For accessories, see page 18

Installation

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 base station

Shown in the figure below are the locations for installing the cable on the base station; these steps are described in the following.

Connection for interface cable

Connection for power supply unit
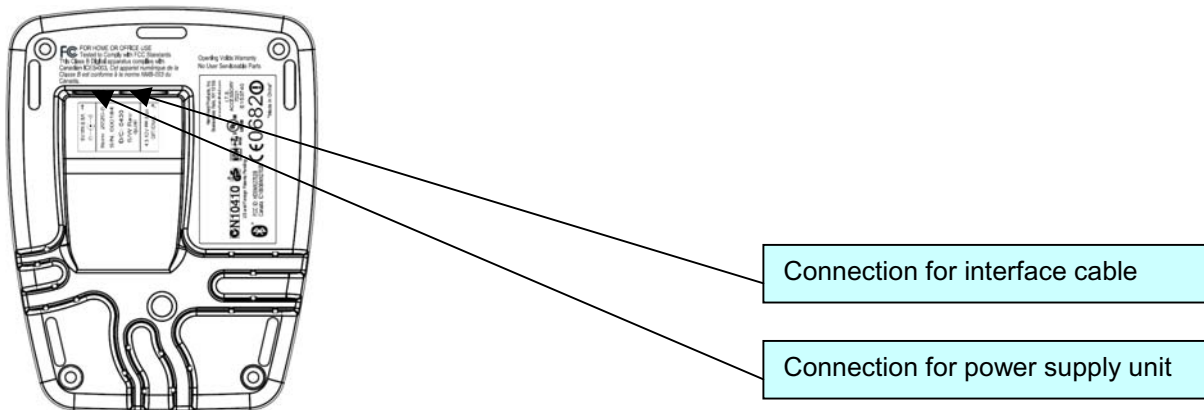
Connecting the cable for the ST 2020

1. To secure the interface cable to the base station, proceed as follows: plug the RJ 41 connector into the socket on the bottom of the station until the cable clicks into place.

2. Connect the other end of the interface cable to the appropriate connection socket on the computer.

3. You will need a power supply unit for voltage supply if you would like to charge the hand-held scanner at the basis station or if you use an RS 232 interface. Use the pin assignments (see page 5) to select the appropriate cable for your application.

4. Connect the power supply unit to the power socket.

5. To configure the hand-held scanner, use the codes for the given application, provided in chapter "Configuration", or use the setup tool.

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.

Testing the scanner

The adjacent bar code is for testing the scanner,
the module size is 0.5 mm (20 mil)

Code 39 bar code sample

Specifications

The technical data can be found in the data sheet for the IT 6320 / ST 2020.

Pin assignments of the connection cable

TTL-RS 232 cable/PIN9 IT 4xxx   Part No. 50104586

Pin assignments of the 9 pin D-sub socket (female) for cable 42203758-03

Pin number	Signal	Designation
1	Shield	Shield
2	TX	Transmission line / Transmit Data (-5…+5V)
3	RX	Receiving line / Receive Data (-5…+5V)
5	GND	Signal ground
7	CTS	Clear to send
8	RTS	Request to send
9	VCC IN	4.5…12 V DC

PS2 cable IT 4xxx   Part No. 50103409

Pin assignments of the Mini DIN socket or connector for cable 42206132-02S

Pin connector	Pin socket	Signal	Designation
1	-	PC data	PC data line
2	2	NC	Not used
3	3	GND	Signal ground
4	4	VCC IN	5 Volts DC
5	-	PC Clock	PC clock line
6	6	NC	Not used
-	1	KB Data	Keyboard data line
-	2	KB Clock	Keyboard clock line

USB cable IT 4xxx   Part No. 50103404

Pin assignments of the Mini DIN socket or connector for cable 42206161-01

USB type A connector	Signal	Designation
1	VCC IN	5 Volts DC
2	Data -	Data line -
3	Data +	Data line +
4	GND	Signal ground

Reading fields

IT 6320 DPM

1D Codes		
	13 mil	0 - 62mm (0 - 2.4in)

2D Codes		
	5 mil	0 - 35mm (0 - 1.4in)
	10 mil	0 - 55mm (0 - 2.1in)
	20 mil	0 - 85mm (0 - 3.3in)
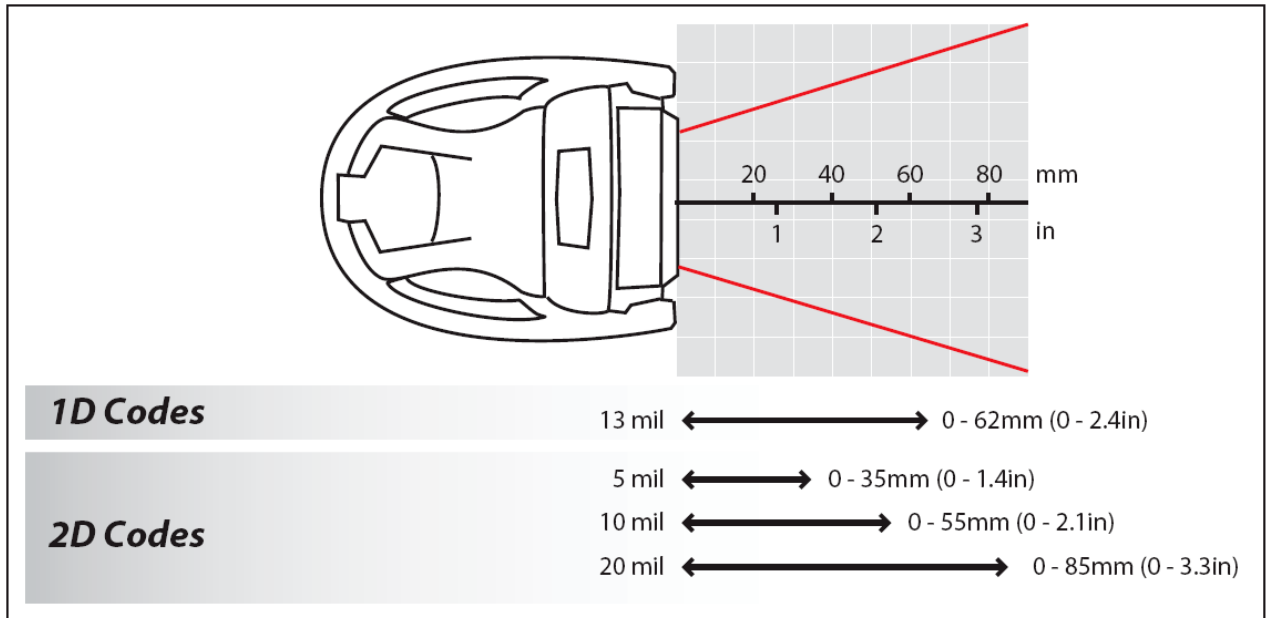
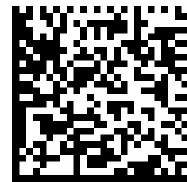# Resetting the IT 6320 to factory settings

To reset all parameters to factory settings, scan the code shown below.

Attention: All settings are lost!!!

Resetting the scanner

Resetting the base station

Return the IT 6320 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.

Configuration

The hand-held scanner can always be configured using bar codes. To do this, first select the bar code in the manual and then actuate the trigger button 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 RS232 interfaces with the aid of the "6300 Series Setup Tool" 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 the same configuration can be reused at a later time.

The standard applications are described in the following; each is summarised on a separate page.
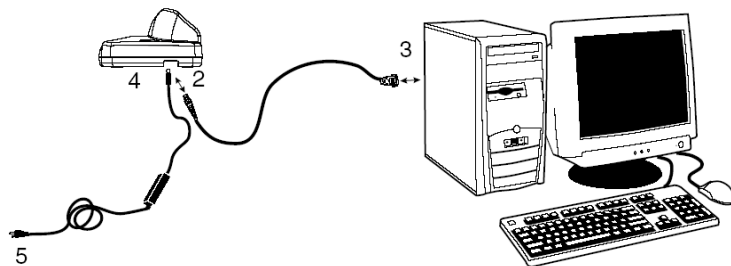
IT 6320 on the serial PC interface

With TTL-RS 232 cable/PIN9 IT 4xxx   Part No. 501 04586

Please connect the IT 6320 + ST2020 acc. to the adjacent figure.

Required parts:
1x   501 05 382   IT 6320 DPM 351S
1x   501 03 990   ST 2020
1x   501 04 586   Cable TTL-RS232/PIN9
1x   501 03 989   Power supply unit ST 2020

Pin assignments of the 9 pin D-socket (female) for cable 42203758-03 sub

Pin number	Signal	Designation
1	Shield	Shield
2	TX	Transmit data
3	RX	Receive data
5	GND	Signal ground
7	CTS	Clear to send
8	RTS	Request to send
9	VCC IN	Is not required!

RS 232 transmission with 115200 baud, 8 data bits, 1 stop bit, no parity, postfixes CR/LF.

Return the IT 6320 to the base station to apply the settings. This procedure is concluded with optical confirmation signals (green LED on the ST 2020).

Configuration for the Leuze standard protocol

Leuze standard protocol:
RS 232 with 9600 baud, 8 data bits, 1 stop bit, no parity, prefix STX and postfixes CR/LF

Factory setting

Return the IT 6320 to the base station to apply the settings. This procedure is concluded with audible confirmation signals.

To configure the device, please scan the codes in the specified order.
The read operation is confirmed by an audible signal.
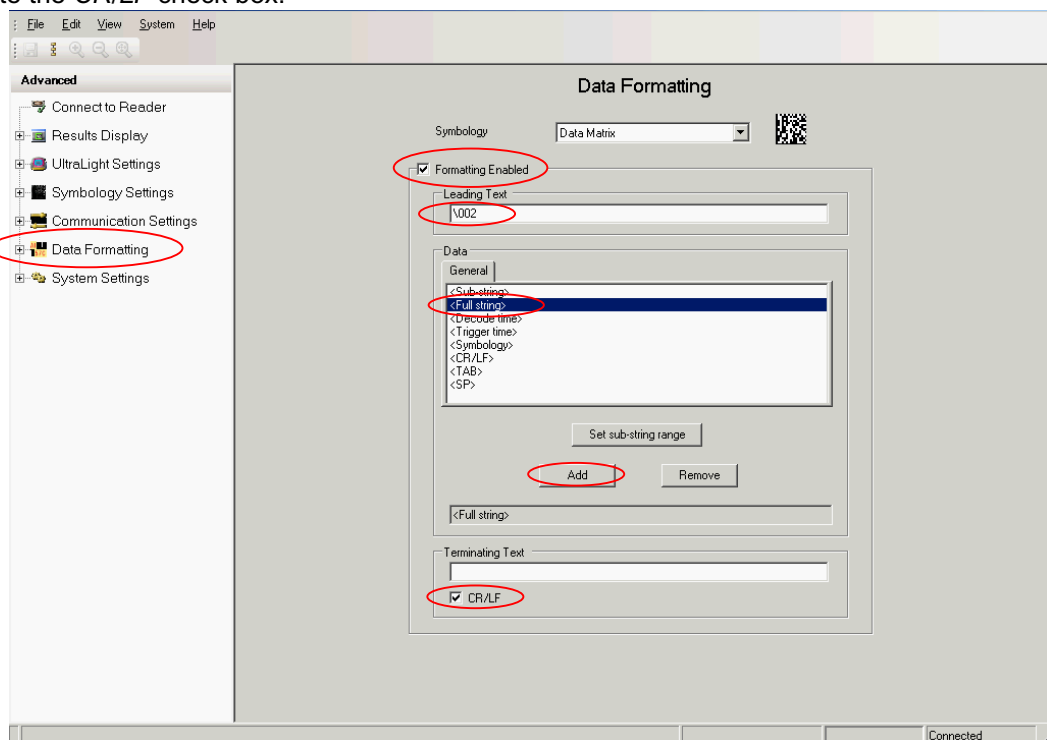
RS 232 interface ①

Prefix STX ②

The setup tool must be used in order to configure the prefix.
The following settings must be performed:
- Activate the *Formatting Enabled* check box.
- Please enter *\002* in the Leading Text field.
- Select *Full string* and click *Add*.
- Activate the *CR/LF* check box.

RS 232 baud rate: 9600 baud ③

IT 6320 on MA 41 DP-K or MA 41 IS

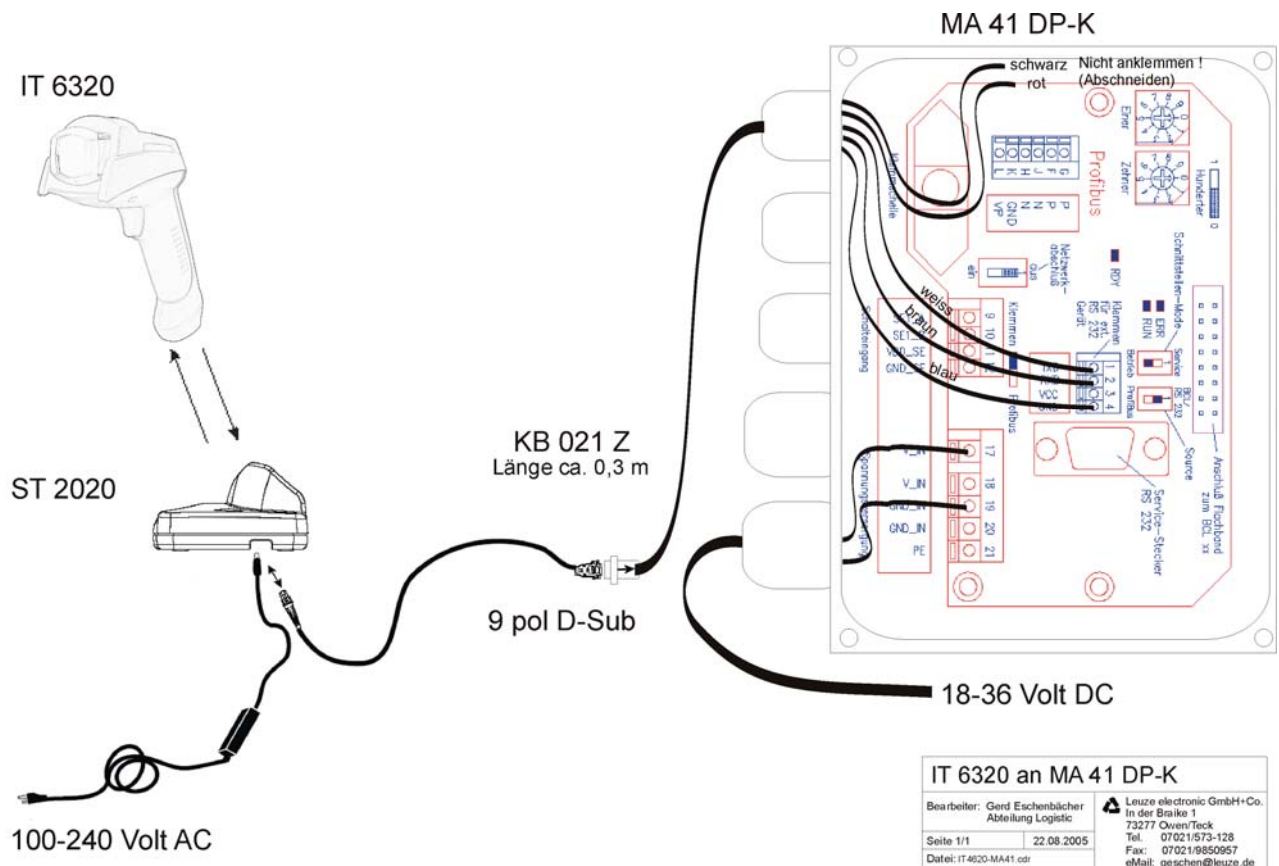RS 232 transmission with 9600 baud, 8 data bits, 1 stop bit, no parity, postfixes CR/LF.
Required parts:

1x	501 05 382	IT 6320 DPM 351S
1x	501 03 990	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 KB021 Z

Core colour:	Signal	Terminal in MA 41:
brown	(RXD)	2
white	(TXD)	1
blue	(GND)	4
red	(VCC)	✂
black	(GND)	✂
bare (shield)	(PE)	21

Please connect the IT 6320 + ST 2020 acc. to the figure below.

Configuration

Factory setting

Return the IT 6320 to the base station to apply the settings. This procedure is concluded with audible confirmation signals.

To configure the device, please scan the codes in the specified order.
The read operation is confirmed by an audible signal from the IT 6320.

RS 232 interface ①

RS 232 baud rate: 9600 ②

IT 6320 to MA 21

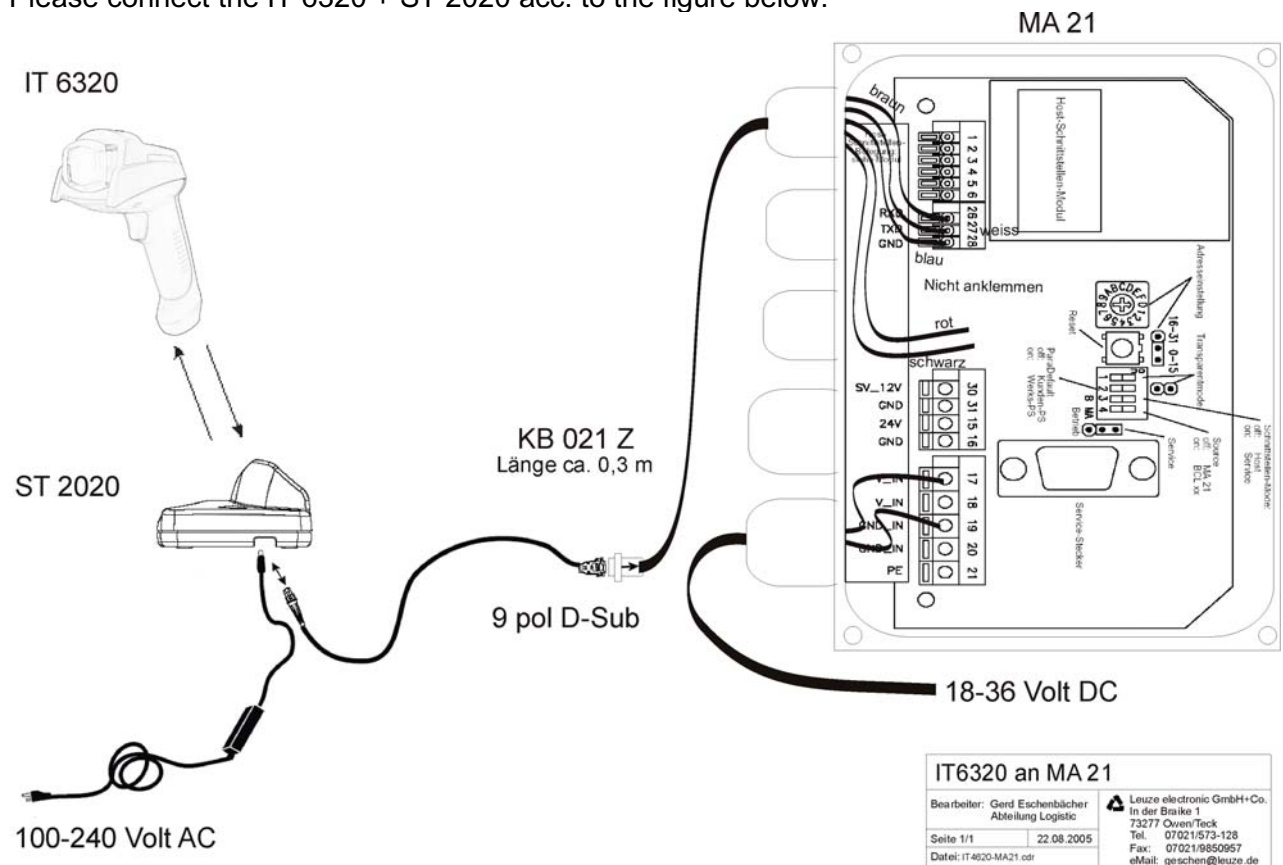RS 232 transmission with 9600 baud, 7 data bits, 1 stop bit, even parity, postfixes CR/LF.
Required parts:

1x	501 05 382	IT 6320 DPM 351S
1x	501 03 990	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 MA 21:
brown	(RXD)	26
white	(TXD)	27
blue	(GND)	28
red	(VCC)	✂
black	(GND)	✂
bare (shield)	(PE)	21

Please connect the IT 6320 + ST 2020 acc. to the figure below.

Configuration

Factory setting

Return the IT 6320 to the base station to apply the settings. This procedure is concluded with audible confirmation signals.

To configure the device, please scan the codes in the specified order.
The read operation is confirmed by an audible signal from the IT 6320.

RS 232 interface   ①

RS 232 baud rate: 9600   ②

7 data bits, even parity, 1 stop bit   ③

IT 6320 to PS2 interface

The operation of the IT 6320 in keyboard-wedge mode is described in this chapter. 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.
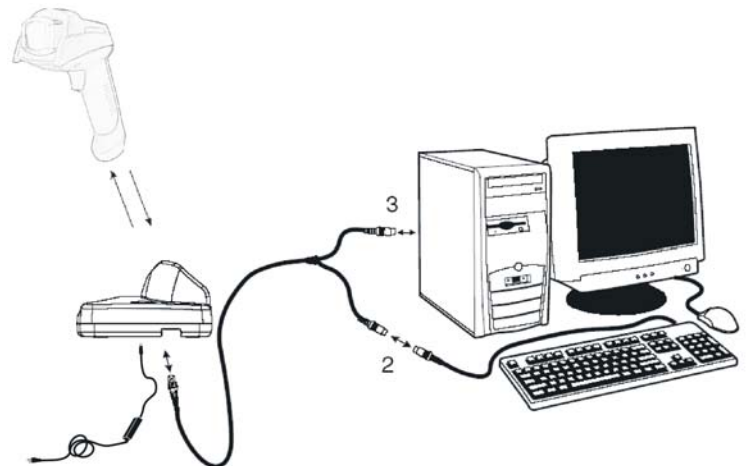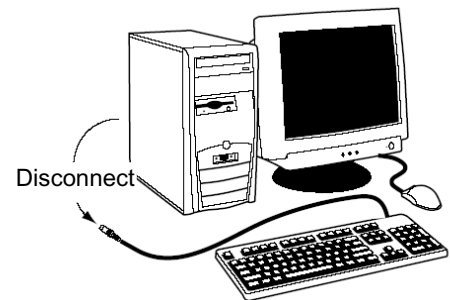
Required parts:
1x 501 05 382 IT 6320 DPM 351S
1x 501 03 990 ST 2020
1x 501 03 989 Power supply unit ST 2020
1x 501 03 409 Cable PS2

Please connect IT 6320 and ST 2020 acc. to the adjacent figures.

To do this, proceed as follows:
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 code shown below.

Configuration

-
PS2 keyboard emulation with CR LF

Return the IT 6320 to the base station to apply the settings. This procedure is concluded with audible confirmation signals.
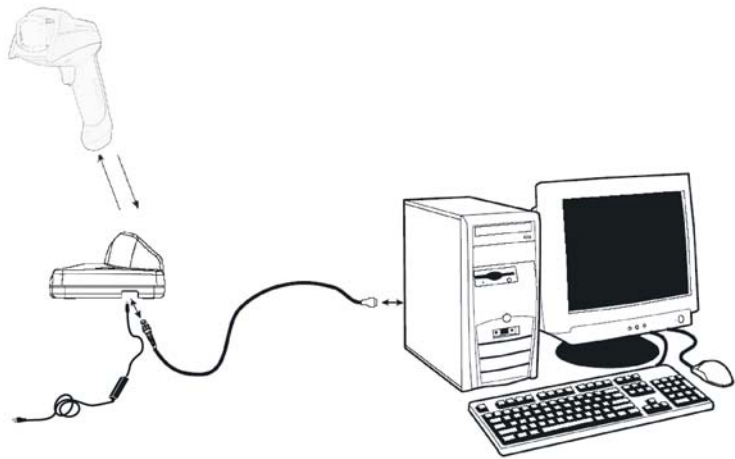
IT 6320 to USB interface (keyboard emulation)

The operation of the IT 6320 in keyboard-wedge mode on a USB port is described in this chapter. 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 05 382	IT 6320 DPM 351S
1x	501 03 990	ST 2020
1x	501 03 989	Power supply unit ST 2020
1x	501 03 404	Cable USB

Please connect IT 6320 and ST 2020 acc. to the adjacent figures.

To do this, proceed as follows:
1. Connect the cable for the ST 2020 base station to a free USB port.
2. The scanner acknowledges this connection with an audible signal.
3. Scan the code shown below.

Configuration

USB keyboard emulation with CR LF

Return the IT 6320 to the base station to apply the settings. This procedure is concluded with audible confirmation signals.

IT 6320 to USB interface (COM port emulation)

The operation of the IT 6320 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 found on the CD-ROM or 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 05 382   IT 6320 DPM 351S
1x   501 03 990   ST 2020
1x   501 03 989   Power supply unit ST 2020
1x   501 03 404   Cable USB

Please connect IT 6320 and ST 2020 acc. to the adjacent figures.

To do this, proceed as follows:
1. Connect the cable for the ST 2020 base station to a free USB port.
2. The scanner acknowledges this connection with an audible signal.
3. Scan the code 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 38400, 8 data bits, 1 stop bit and no parity. A CR is still transmitted as terminator.
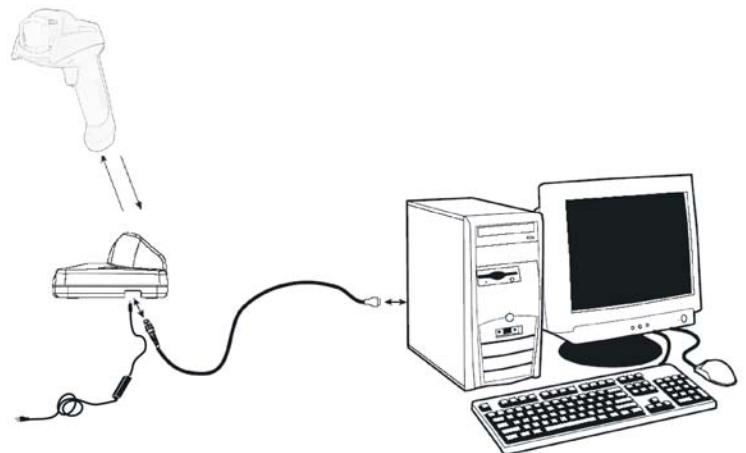
Configuration

COM port emulation on the next free COM address with 38400 baud,
8 data bits, 1 stop bit, no parity and a CR as postfix.

Return the IT 6320 to the base station to apply the settings. This procedure is concluded with audible confirmation signals.

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: **+**   ASCII decimal values: 043; 013
To cancel read readiness, send a deactivation.

The command for deactivation is: **-**   ASCII decimal values: 045; 013
Following a successful read operation, the IT 6320 deactivates itself.
As a second option, read readiness can also be established with the trigger button.

Troubleshooting

For problem detection and troubleshooting, examine your scanner as follows:

1. Is the scanner supplied with power via the interface cable? For power to be supplied, the scanner and computer must be connected to one another before the scanner is commissioned, whereby the

computer must provide a power supply of 5 volt DC for the scanner. Check the manual for your computer to ensure that the power supply is adequate for connecting your scanner.

2. Make certain that the interface cable is securely connected to the computer. You can find information on properly connecting the scanner in the manual for your computer. Support is also available from your technical staff.

3. If your system operates with an external voltage supply, make certain that the power supply unit is securely connected to the scanner and power supply.

4. Check that the interface cable is securely connected to the base station. With the ST 2020, please loosen the cable with a small pin: the plug is unlocked by pressing the cable clip.

5. If, even after performing all of these measures, the scanner is not ready for operation, replace the power supply unit with a different recommended power supply unit which you are certain functions properly.

6. Make certain that your scanner's interface is compatible with the computer. Further information on this topic can be found in the manual for your computer. Make sure that the scanner has been configured for the desired application.

7. Check whether the bar code labels which you would like to scan are of suitable quality and that the used bar code symbol is recognised by your scanner. Sample labels for testing are available from your dealer should you require precise information on the label details. Damaged bar code labels (crinkled, torn or soiled) may be recognised poorly or not at all by the scanner. If you suspect that the problem lies with the quality of the label, check the read readiness with a label of relatively good quality.

8. If the problems are still not corrected, please contact Leuze electronic.

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Type overview

IT Reihe / IT series			
Part No.	Bezeichnung/Description	Schnittstelle/Interface	Bild/Picture
Industrie-Handleser (IP 54) für direktmarkierte 2D- Codes Industrial hand-held scanner (IP 54) for DPM 2D-code			
50105382	IT 6320 IDP 351S	Bluetooth	
Basis-Station mit Kommunikation-/ und Ladefunktion Base station for communication and charging			
50103990	ST 2020	PS2 / USB / TTL RS232	

Alle Geräte werden ohne Kabel geliefert, Bitte separat bestellen! / All devices are delivered without cables, please order separately!

Accessories

Zubehör für IT Reihe / Accessories for the IT series				IT 6320 IDP 351S	ST 2020		
Part No.	Bezeichnung/Description	P/N no.	Bild/Picture				
50103409	PS2-Kabel IT 4600/4800 und ST 2020 PS2 cable for IT 4600/4800 and ST 2020	42206132-02S		-	X		
50103404	USB-Kabel IT 4600/4800/4715 und ST 2020 USB cable for IT 4600/4800/4715 and ST 2020	42206161-01		-	X		
50104586	TTL-RS232-Kabel/PIN9 IT 4715 und ST 2020 TTL-RS232-cable/PIN9 for IT 4715 and ST 2020	42203758-03		-	X		
50103989	Netzteil für ST 2020 Power supply for ST 2020 (9 V DC)	PS9U-22		-	X		

Spare parts

				IT 6320 IDP 351S	ST 2020		
50105384	Akku für IT 4620 und IT 6320 Rechargeable battery for IT 4620 and IT 6320	100000495		X	-		

Connecting to Leuze multiNet Plus

- MA 21 100   Interface converter / multiNet slave
  Part No. 500 30 481

- KB 021 Z   Connection cable MA 21 to IT 4600/4800
  Part No. 500 35 421

Connecting to Profibus

- MA 41 DP-K   PROFIBUS gateway
  Part No. 500 33 638

- KB 021 Z   Connection cable MA 21 to IT 4600/4800
  Part No. 500 35 421

Connecting to Interbus

- MA 41 IS   Interbus gateway
  Part No. 500 28 994

- MA 41 IS PDP   Interbus gateway with long data protocol
  Part No. 500 30 085

- KB 021 Z   Connection cable MA 21 to IT 4600/4800
  Part No. 500 35 421

Codes for fast configuration

Reset scanner to
Factory setting

Reboot scanner

Disconnect Bluetooth connection

Only activate setup 1 (default)

Only activate setup 2

Only activate setup 3

Only activate setup 4

Reset base station to factory settings

Activate USB keyboard

Activate keyboard wedge (default)

Activate keyboard emulation

Activate USB-COM

Activate RS-232 interface

RS232: 9600 baud

RS232: 19200 baud

RS232: 38400 baud

RS232: 57600 baud

RS232: 115200 baud (default)

7 data bits, even parity, 1 stop bit

7 data bits, no parity,
1 stop bit

7 data bits, odd parity, 1 stop bit

7 data bits, even parity,
2 stop bits

7 data bits, no parity, 2 stop bits

7 data bits, odd parity,
2 stop bits

8 data bits, even parity, 1 stop bit

8 data bits, no parity,
1 stop bit (default)

8 data bits, odd parity, 1 stop bit

Hardware handshake RTS/CTS off
(default)

Hardware handshake RTS/CTS on

Keyboard layout USA (default)

Keyboard layout Germany

Keyboard layout France

Kurzanleitung IT6320-v2.doc
07.2006