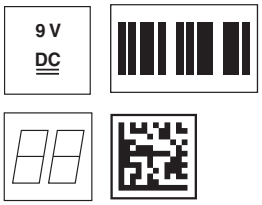
IT 4820 2D-code hand-held scanner with Bluetooth data transmission



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

Dimensioned drawing

Electrical connection

for TTL RS 232 cable / PIN 9

9-pin Sub-D	Signal	IT 4820 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 4820 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 4820 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

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

Specifications

Electrical data	IT 4820	ST 2020
Operating voltage U_B	4.2VDC internal battery	9VDC
Power consumption		max. 8W @ 9VDC
Li-ion battery		
Capacity	2.000mAh	
Max. number of scans	57.000	
Max. operating time	16h at 1scan/s	
Charging time at 9VDC	4h for complete charge following complete discharge	
RF data transmission		
Frequency	2.4 … 2.4835GHz (ISM band) Frequency hopping, Bluetooth ® V1.2, Class 2	
Typ. Range	10m	
Transmission speed	720kBit/s	
Interfaces		
Interface type	RS 232, PS/2 and USB	
Trigger	via button or serial command	
Code types		
2D codes	Data Matrix ECC 200, MaxiCode, PDF417, MicroPDF, QR Code, Aztec, Aztec Mesas, Code 49, EAN/UCC Composite	
Bar codes	2/5 Interleaved, Code 39, Code 128, Code 93, Codabar, UPC/EAN, RSS, Codablock	
OCR	OCR-A, OCR-B	
Optical data		
Optical system	high-resolution pixel array 752x480	
Contrast	45% (black/white)	
Light source	integrated diffuse LED 626nm	
Read distance	33 … 333mm	
Read direction	omnidirectional, various tilt and rotational angles up to 45°	
Mechanical data	**IT 4820**	**ST 2020**
Housing	UL94V0 grade	
Weight	255g	250g (without cable)
Dimensions	157x135x81mm	79x142x109mm
Shock resistance	50 falls from a height of 1.8m	50 falls from a height of 1m
Environmental data		
Ambient temp. (operation)	0°C … +50°C	0°C … +50°C
Ambient temp. (storage)	-20°C … +35°C	-40°C … +60°C
Relative air humidity	0 … 95% (non-condensing)	0 … 95% (non-condensing)
Protection class	IP 41	IP 41

Reading field

IT 4820 SR	Module or cell	from	to
Bar codes	8.3mil / 0.21mm	89mm	191mm
UPC bar code	13mil / 0.33mm	53mm	333mm
PDF 417 Code	6.6mil / 0.17mm	112mm	155mm
	10mil / 0.25mm	76mm	226mm
Data Matrix Code	15mil / 0.38mm	58mm	257mm
Maxi Code	35mil / 0.89mm	51mm	328mm

IT 4820 SF	Module or cell	from	to
Bar codes	7,5mil / 0,19mm	64mm	163mm
UPC bar code	13mil / 0,33mm	51mm	224mm
PDF 417 Code	6,6mil / 0,17mm	71mm	150mm
	10mil / 0,25mm	50mm	191mm
Data Matrix Code	15mil / 0,38mm	40mm	188mm
QR Code	15mil / 0,38mm	56mm	180mm

Order guide

2D-code hand-held scanner for high-contrast Data Matrix codes (standard range)		Part No.
IT 4820 SR OC1C	IT 4820 SR with RS 232/USB/PS/2 interface	501 03988

2D-code hand-held scanner for high-contrast Data Matrix codes (special focus for small codes)		Part No.
IT 4820 SF OC1C	IT 4820 SF with RS 232/USB/PS/2 interface	501 03987

Base station for Bluetooth transmission		Part No.
ST 2020	ST 2020 with RS 232/USB/PS/2 interface (without cable)	501 03990

Tables

Diagrams

Remarks

Ergonomically shaped hand-held scanner with integrated decoder for high-contrast codes.

Data transmission via configurable RS 232 interface.

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

For a functional unit, an IT 4820 hand-held scanner and a ST 2020 base station as well as a power supply unit and corresponding cable must be ordered.

Bluetooth®

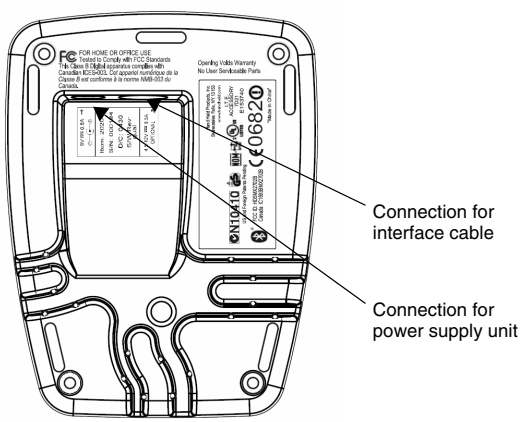
IT 4820 **2D-code hand-held scanner with Bluetooth data transmission**

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 4820

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.

Further information on this can be found in the User's Guide for the IT 4820.

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 4820 to factory settings

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

Attention!

All settings are lost!!!

Return the IT 4820 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 4820 deactivates itself.

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

Configuration for the Leuze standard protocol

Scan the adjacent 2D code.
The IT 4820 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>.

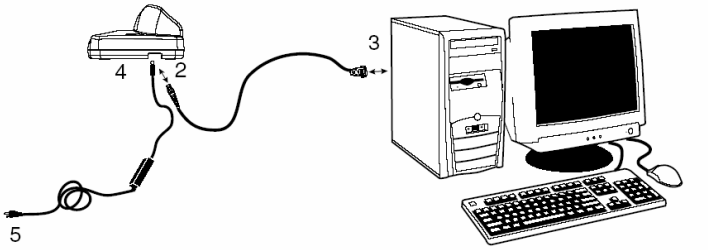
IT 4820 2D-code hand-held scanner with Bluetooth data transmission

Connecting the IT 4820 to the serial PC interface

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

required parts:

1x		**IT 4820 XX 0C1C**
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 4820 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 4820 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 4820.

Attention!

We recommend connecting the IT 4820 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 4820 to the MA 41 DP-K or MA 41 IS

required parts:

1x	**IT 4820 XX 0C1C**		
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)	✂
black	(GND)	✂
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 4820 to the serial PC interface").
3. Scan the adjacent 2D code.

The IT 4820 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>.

4. Return the IT 4820 to the base station to apply the settings. This procedure is concluded with audible confirmation signals.

Connecting the IT 4820 to the MA 21

required parts:

1x		**IT 4820 XX 0C1C**
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)	✂
black	(GND)	✂
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 4820 to the serial PC interface").
3. Scan the adjacent 2D code.

The IT 4820 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>.

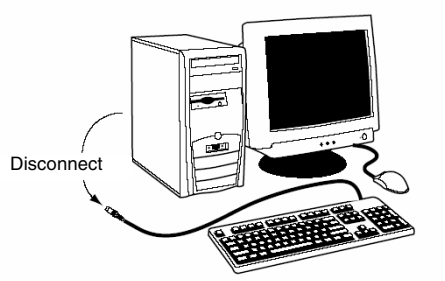
4. Return the IT 4820 to the base station to apply the settings. This procedure is concluded with audible confirmation signals.

Connecting the IT 4820 to the PS/2 interface

The operation of the IT 4820 in keyboard emulation mode 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.

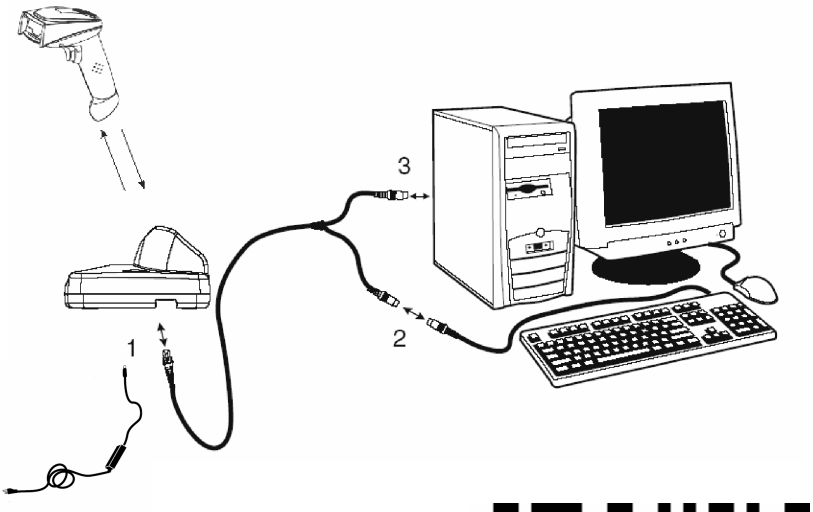
required parts:

1x		**IT 4820 XX 0C1C**
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 2D code shown below.
6. Return the IT 4820 to the base station to apply the settings. This procedure is concluded with audible confirmation signals.



Notice!

To charge the IT 4820, the power supply unit must be plugged in and the hand-held scanner placed in the ST 2020 base station.

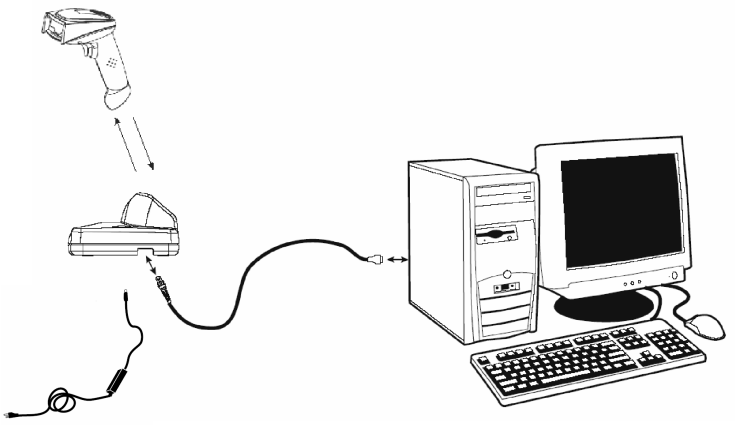
IT 4820 2D-code hand-held scanner with Bluetooth data transmission

Connecting the IT 4820 to the USB interface (keyboard emulation)

The operation of the IT 4820 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		**IT 4820 XX 0C1C**
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 adjacent 2D code.

Notice!

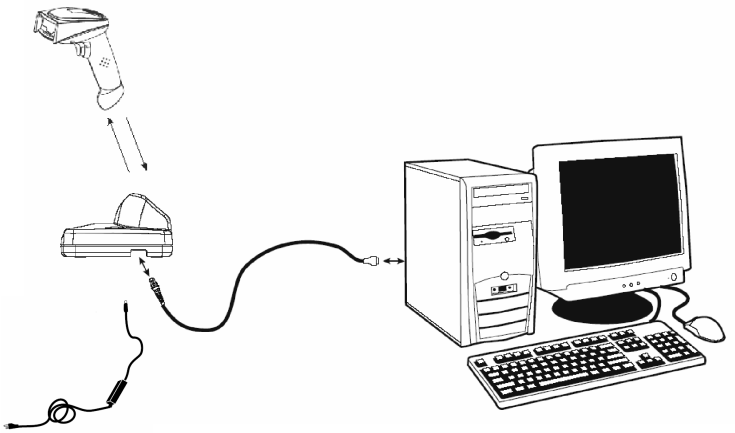
To charge the IT 4820, the power supply unit must be plugged in and the hand-held scanner placed in the ST 2020 base station.

Connecting the IT 4820 to the USB interface (COM-port emulation)

The operation of the IT 4820 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		**IT 4820 XX 0C1C**
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 adjacent 2D code.
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>.

Notice!

To charge the IT 4820, the power supply unit must be plugged in and the hand-held scanner placed in the ST 2020 base station.