

# SCANNER

Operating Manual – DS457



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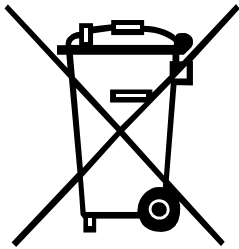
## 1 General Notes

By means of the scanner option the immediate verification of printed bar codes is possible. Moreover errors such as defective printhead, transfer ribbons etc. can be avoided.

The bar code scanner is a state-of-the-art device which complies with the recognized safety-related rules and regulations. Despite this, a danger to life and limb of the user or third parties could arise and the bar code scanner or other property could be damaged while operating the device.

The bar code scanner may only be used while in proper working order and for the intended purpose. Users must be safe, aware of potential dangers and must comply with the operating instructions. Faults, in particular those which affect safety, must be remedied immediately.

### 1.1 Environmentally-Friendly Disposal



Manufacturers of B2B equipment are obliged to take back and dispose of old equipment that was manufactured after 13 August 2005. As a principle, this old equipment may not be delivered to communal collecting points. It may only be organised, used and disposed of by the manufacturer. Valentin products accordingly labelled can therefore be returned to Carl Valentin GmbH.

This way, you can be sure your old equipment will be disposed of correctly.

Carl Valentin GmbH thereby fulfils all obligations regarding timely disposal of old equipment and facilitates the smooth reselling of these products. Please understand that we can only take back equipment that is sent free of carriage charges.

The electronics board of the printing system is equipped with a battery. This must only be discarded in battery collection containers or by public waste management authorities.

Further information on the WEEE directive is available on our website [www.carl-valentin.de](http://www.carl-valentin.de).

## 1.2 Product Description



**Figure 1**

The DS457 is a compact and robust scanner for 1D and 2D bar codes. The scanner can be attached to the printer without external voltage supply.

With a base of 5.8 x 6.2 cm, the scanner fits into any small operating environment. A permanently high scanning speed is achieved with the 624 MHz processor.

The DS457 is parameterized with the windows-based software 123Scan<sup>2</sup>.

## 2 Technical Data

Performance Characteristics	
Dimensions (H x L x W)	2.92 cm x 5.84 cm mm x 6.2 cm
Weight	111 g
Sensor resolution	752 x 480 pixels
Field of view	38,4° horizontal, 24,9° vertical
Pitch tolerance	± 60°
Skew tolerance	± 60°
Roll tolerance	360°
Focal distance from front of imager housing	5,84 cm
Target element	655 ± 10 nm (VLD)
Exposure element	625 ± 5 nm (LED)
Minimum print contrast	Minimum 25 % absolute light/dark reflexion level
Decoding possibilities	
1D	all important 1D bar codes
2D	Aztec-Code, DataMatrix, MAXICODE, PDF 417, QR Code, Composite Barcodes
Postal codes	US Postnet, US Platet, UK Postal, Australian Postal, Japan Postal
User environment	
Supply voltage	5,00 V ± 0,5 V
Current consumption	2,5 mA (typical)
Idle current	160 mA (typical)
Operating current (scan, decode)	280 mA (average)
Peak current	450 mA
Ambient light:	Absolute darkness up to 96900 lx
Humidity (operation)	95% RH, non-condensing at 50°C
Humidity (storage)	85% RH, non-condensing at 70°C
Sealing:	IP54
Drop rating	Unit functions normally after multiple 76 cm drops to tile over concrete
Operating temperature	-20° ... 50°C  Above 45°C the laser aimer is disabled. In high temperature environments the DS457 safeguards the laser from overheating by monitoring the internal system temperature. For this reason, if Time Delay to Presentation Idle Mode is set to a high value and the aiming pattern remains on for an extended period of time while in presentation mode, the imager may temporarily shut off the aiming pattern.
Storage temperature	-40° ... 70°C





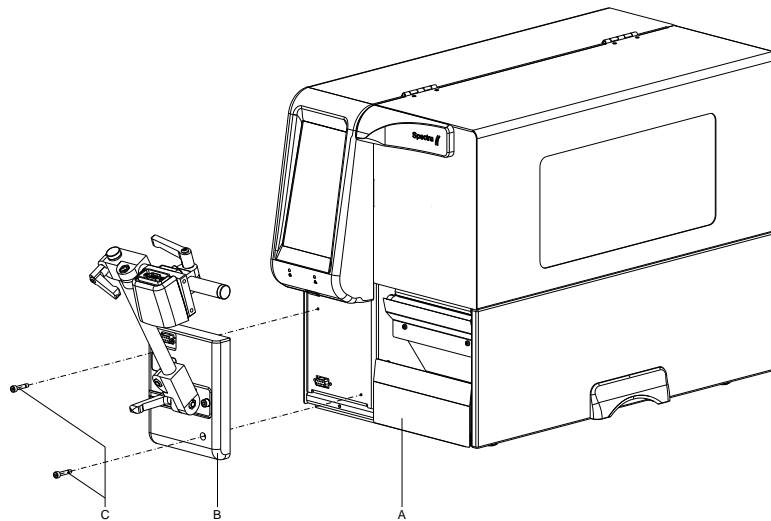
## 3 Installation of Scanner Bracket

### 3.1 Spectra II

**DANGER!**

Risk of death via electric shock!

- ⇒ Before installation/dismantling of the option scanner, disconnect the label printer from the mains supply and wait for a moment until the power supply unit has discharged.



**Figure 2**

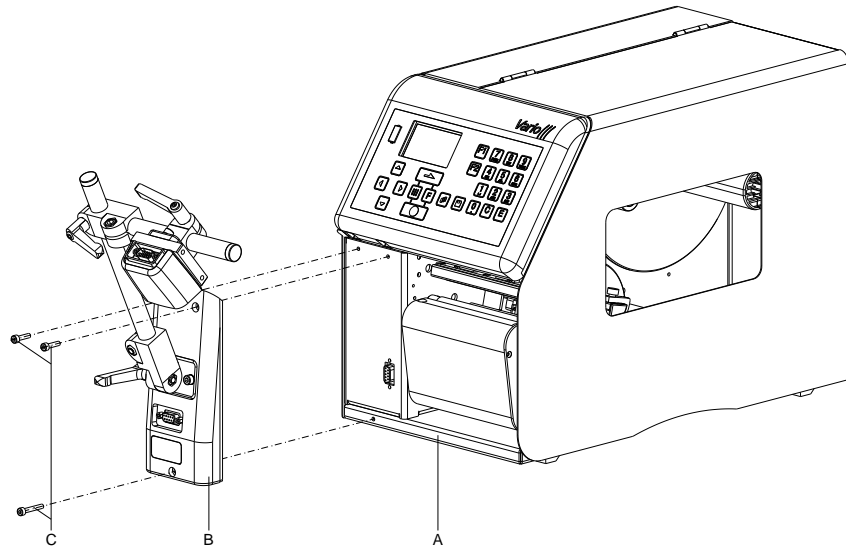
1. Open the right printer cover.
2. Remove the lower front panel.
3. Fasten the scanner bracket (B) with the fixing screws (C) at the printer (A).  
It is important to pay attention to the plug connection!
4. Insert the label material (as described in the operating manual).

### 3.2 Vario III

**DANGER!**

Risk of death via electric shock!

- ⇒ Before installation/dismantling of the option scanner, disconnect the label printer from the mains supply and wait for a moment until the power supply unit has discharged.



**Figure 3**

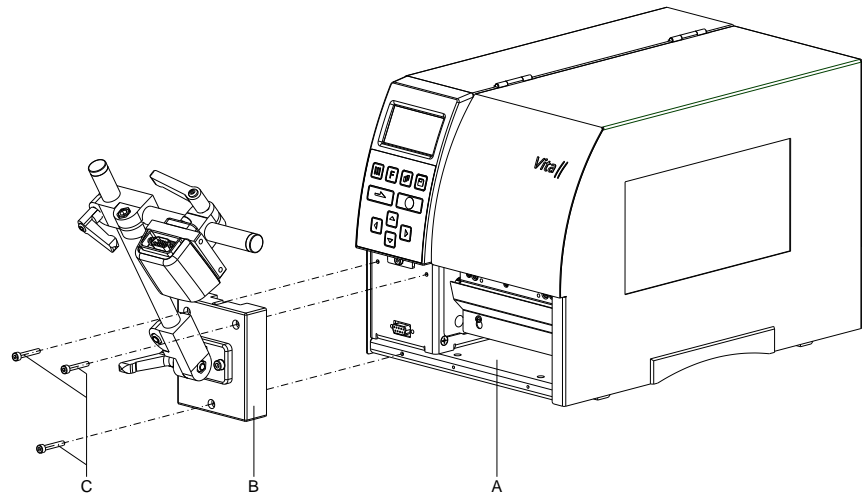
1. Open the right printer cover.
2. Remove the lower front panel.
3. Fasten the scanner bracket (B) with the fixing screws (C) at the printer (A).  
It is important to pay attention to the plug connection!
4. Insert the label material (as described in the operating manual).

### 3.3 Vita II

**DANGER!**

Risk of death via electric shock!

- ⇒ Before installation/dismantling of the option scanner, disconnect the label printer from the mains supply and wait for a moment until the power supply unit has discharged.



**Figure 4**

1. Open the right printer cover.
2. Remove the lower front panel.
3. Fasten the scanner bracket (B) with the fixing screws (C) at the printer (A).  
It is important to pay attention to the plug connection!
4. Insert the label material (as described in the operating manual).



## 4 Configuration

The scanner DS457 must be configured to operate on a printer (Spectra, Spectra II, Vario III, Vita II). The corresponding PC software 123Scan<sup>2</sup> can be download from the ZEBRA website ([www.zebra.com](http://www.zebra.com)). After installing this software, the scanner must be connected to the PC using the supplied USB cable (Zebra no 25-58926-04R). If necessary, for the operation at the printer, remove the RS 232 cable from the scanner.

In the main menu of 123Scan<sup>2</sup> software can be selected if

- a new configuration file for the scanner is to be created.
- an existing configuration file is to be loaded and transferred to the scanner.
- the configuration of the attached scanner is to be loaded and modified.
- the firmware of the scanner is to be updated.

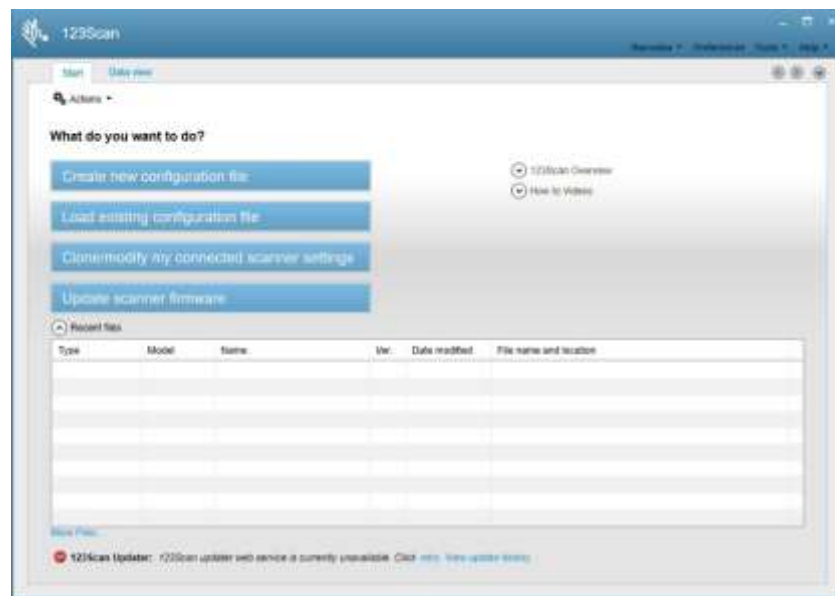


Figure 5

## 4.1 Settings of the Scanner Software

In order to modify the settings of the scanner attached to the PC, the function "Clone/modify my connected scanner settings" must be selected. The following dialog box "Potential USB parameter change" can be closed.



Figure 6

An overview of the configuration is displayed and either the configuration wizard can be started with "Start configuration wizard" or a parameter area can be directly selected for modifications to the configuration.

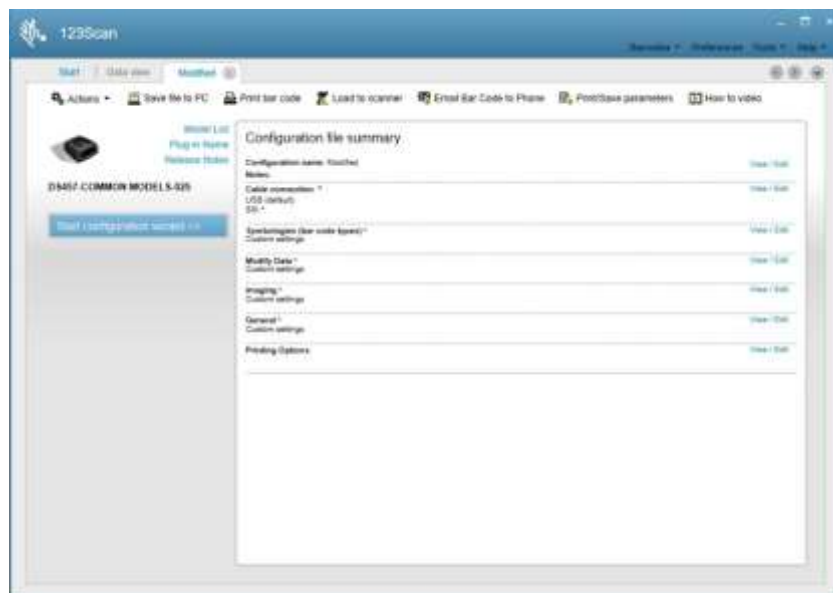
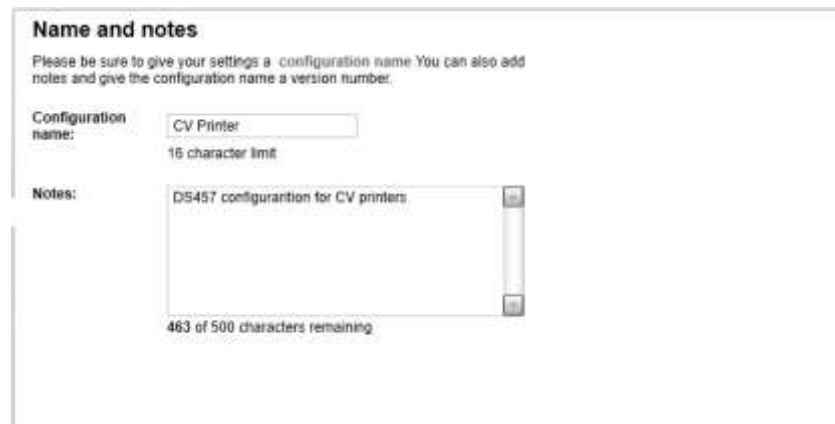


Figure 7

## Names and Notes



**Name and notes**

Please be sure to give your settings a configuration name. You can also add notes and give the configuration name a version number.

**Configuration name:** CV Printer  
15 character limit

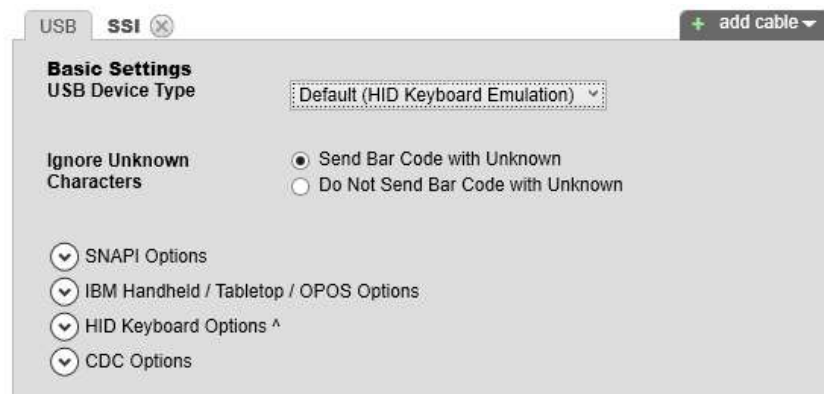
**Notes:** DS457 configuration for CV printers  
483 of 500 characters remaining

**Figure 8**

For the scanner configuration a name and a version number can be assigned here. Moreover notes can be entered. These data are not relevant for the operation of the scanner at the printer and serve only for information purposes.

## Cable Connection

The scanner communicates via the serial interface with the printer. Therefore no settings are necessary on the "USB" register tab.



USB SS1 + add cable

**Basic Settings**

USB Device Type: Default (HID Keyboard Emulation)

Ignore Unknown Characters:  Send Bar Code with Unknown  Do Not Send Bar Code with Unknown

SNAPI Options

IBM Handheld / Tabletop / OPOS Options

HID Keyboard Options ^

CDC Options

**Figure 9**

Instead of that with "add cable" the SSI (Simple Serial Interface) must be added. The following settings are necessary:

USB SSI + add cable

**Set as reboot default**  Enabled

**Basic Settings**

Baud Rate: 9600

Parity: None

Check Parity:

Software Handshaking  ACK/NAK  None

Host RTS Line State:  Low  High

Decode Data Packet Format:  Send Raw Decode Data  Send Packeted Decode Data

Host Serial Response Timeout: Maximum - 9.9 Seconds

Host Character Timeout: Maximum - 990 ms

Multipacket Options

Event Reporting

**Figure 10**

The parameter "Set as reboot default" must be set to "Enabled" so that the scanner activates as default the serial interface after switching on. The baud rate and parity must comply with the values set in the 'Scanner menu' of the printer. The parity verification is deactivated. No software handshake is used. The status of RTS line is "Low". The scanner sends the decoded data in "Raw Format". The response times of the Host (printer) are set to the maximum values.



## Symbologies



Figure 11

Settings for the different bar code types which are to be read from the scanner can be made here depending on application. Further information to the possible settings can be found in the Help of *123Scan*<sup>2</sup>. As default the scanner is adjusted in that way to read the most usual bar codes.

## Modify Data

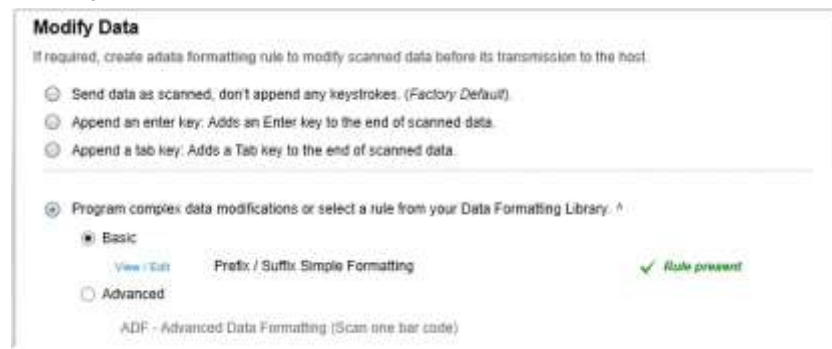


Figure 12

The check box "Basic" must be selected and the next dialog box is opened.

**Prefix / Suffix Simple Formatting** Back

Select the layout for prefix & suffix value you want to use.

<PREFIX> <DATA>  
 <PREFIX> <DATA> <SUFFIX 1>  
 <PREFIX> <DATA> <SUFFIX 2>  
 <PREFIX> <DATA> <SUFFIX 1> <SUFFIX 2>

<DATA> <SUFFIX 1>  
 <DATA> <SUFFIX 2>  
 <DATA> <SUFFIX 1> <SUFFIX 2>

Enter values for prefix and suffix.

PREFIX:  [code list](#)

SUFFIX 1:  [code list](#)

SUFFIX 2:  [code list](#)

The above figure shows the necessary settings at the printer for the operation of the scanner for the data formats:

- before the read data, as prefix the STX sign is send (CTRL-B, 02hex)
- behind the read data, as suffix 2 the ETX sign is send (CTRL-C, 03hex)
- the enter sign (0Dhex) is reserved as suffix 1 for later use

## Imaging

There are no settings to enter for the operation at the printer. The default settings are displayed in the following figures.

**Imaging Parameters**

Decoding Autoexposure	<input checked="" type="checkbox"/>
Decode Illumination	<input checked="" type="checkbox"/>
Hand-Held Decode Aiming Pattern	Enable ▾
Aim Brightness	0 ▴ ▾
Illumination Brightness	10 ▴ ▾
Low Light Enhancement	<input type="checkbox"/>
Presentation Mode Field of View	Reduced ▾
Frame Rate	Auto ▾
Image Capture Autoexposure	<input checked="" type="checkbox"/>
Image Capture Illumination	<input checked="" type="checkbox"/>

Figure 13

Exposure Time	100 <input type="text"/>
	100 us
Fixed Gain ^	100 <input type="text"/>
Image Brightness (TargetWhite)	180 <input type="text"/>
Image Resolution	Full <input type="text"/>
Image Enhancement	OFF <input type="text"/>
Image File Format Selector	JPEG <input type="text"/>
Bits Per Pixel	8 BPP <input type="text"/>
Image Edge Sharpening	Low <input type="text"/>
Image Contrast Enhancement	<input type="checkbox"/>
Image Rotation	Rotate 0 Degrees <input type="text"/>
Image File Meta Data	0 <input type="text"/>

Figure 14

**JPEG Image Optimization**

JPEG Image Options  JPEG Size Selector  JPEG Quality Selector

JPEG Size Value 160   
1 Kbyte

JPEG Quality Value 65

Figure 15

**Snapshot Mode**

Snapshot Mode Timeout	30 sec ▾
Snapshot Aiming Pattern	<input checked="" type="checkbox"/>
Presentation Snapshot by Motion	<input type="checkbox"/>
Continuous Snapshot	<input type="checkbox"/>

Figure 16

**Signature Capture**

<input type="checkbox"/> Signature	
Signature Capture File Format	JPEG ▾
Signature Capture Bits Per Pixel	8 BPP ▾
Signature Capture Width	400 ▲ ▾
Signature Capture Height	100 ▲ ▾
Signature Capture JPEG Quality	65 ▲ ▾

Figure 17

**Image Cropping**

Image Cropping

Top Pixel Address

Left Pixel Address

Bottom Pixel Address

Right Pixel Address

Figure 18

**Video**

Video View Finder

Video View Finder Image Size

100-byte block

Target Video Frame Size

100-byte block

Video Resolution

Video Mode Format

Figure 19

## General

Several general settings for the operation of the scanner at the printer are set.

Power	
Power Mode ^	Continuous On ▾
Time Delay To Low Power	1 Second ▾

**Figure 20**

The "Power Mode" is to be set to "Continuous On", otherwise the scanner changes after the set time to the "Low Power" mode and possibly does not react to commands of the printer.

System	
Parameter Scanning Allowed	<input checked="" type="checkbox"/>
Transmit No Read Message ^	<input checked="" type="checkbox"/>
Timeout Between Same Symbols ^	0 ▾
	x100ms
Picklist Mode	Disabled Always ▾
Decode Session Timeout	99 ▾
	x100ms
Transmit Code Id	None ▾
Trigger Mode ^	Host ▾

**Figure 21**

The parameter "Transmit No Read Message" is to be activated so that the scanner gives out the NoRead message in case of bad readings. "Timeout Between Same Symbols" is to be set to 0. The "Trigger Mode" is to be set to "Host" so that the scanner can be activated by the printer.

<b>Presentation Performance Mode</b>	Standard ▾
<b>Time Delay to Presentation Sleep Mode</b>	1 minute ▾
<b>Time Delay to Presentation Idle Mode</b>	1 minute ▾
<b>Continuous Bar Code Read</b>	<input type="checkbox"/>
<b>Multicode Mode</b>	<input type="checkbox"/>
<b>Multicode Mode Concatenation</b>	<input type="checkbox"/>
<b>Multicode Concatenation Symbology</b>	Concatenate as Code PDF-417 ▾

**Figure 22**



Unique Bar Code Reporting	<input checked="" type="checkbox"/>
Mirrored Image	<input type="checkbox"/>
Mobile Phone / Digital Display	Disable ▾
Powerup Light in Presentation Mode	<input type="checkbox"/>
PDF Prioritization Timeout	400 <input type="text"/>
	x1ms
PDF Prioritization	Do Not Prioritize ▾
<b>Beeper</b>	
Beeper Volume ^	Medium ▾
Beeper Tone	Medium ▾
Beep After Good Decode ^	<input type="checkbox"/>
Suppress Power Up Beeps	<input type="checkbox"/>

**Figure 23**

The "Beeper Volume" is set to the value "Medium" and the parameter "Beep After Good Decode" is deactivated. Otherwise the scanner gives a beep after each scanned bar code.

## 4.2 Save the Settings



**Figure 24**

The revised scanner configuration

- can be saved as a file on the PC
- can be printed as bar code to program the scanner
- can be transferred to the scanner
- can be sent per email
- can be printed or exported as parameter report

## 5 Function Menu Scanner

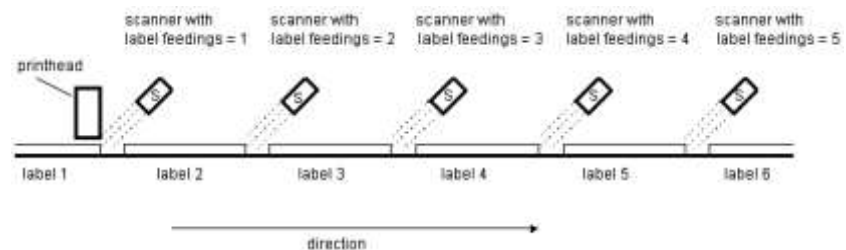
### 5.1 Scanner Mode

This display provides the possibility to set the desired scanner mode (Mode), the number of acceptable non-readable (NoRd) as well as the number of label feedings (Flab).

<b>Operating mode (Mode)</b>	0 = Off
	1 = Mode 1 (data comparison), i.e. bar code data which was read by the scanner is compared with the printed data.
	2 = Mode 2 (check readability), i.e. it is only checked if the scanner can read the printed bar codes.
	3 = Mode 3 (check readability, graphic), i.e. it is only checked if the scanner can read the printed bar codes. This mode is to use if the bar code is available as graphic (e.g. printing with printer driver). In this case the printer cannot recognize that a bar code is placed onto the label.

<b>Non-readable (NoRd)</b>	Indication of number of successive non readables, i.e. when the printer indicates an error message. Value range: 0 ... 9
	1 = the printer stops at the first label which cannot be red from the scanner and shows an error message.
	0 = the printer do not stop at non-readable. A message appears at the display only.

<b>Label feed (VEti)</b>	In many cases the scanner cannot be positioned directly on the printhead. In this case, use this parameter to set a label feed between 1 and 5. The illustration shows the meaning of this parameter.
--------------------------	---



## 5.2 Scanner Type

The different scanners are controlled by different commands and/or the scanners return the scanned data in different manners. Therefore this window provides the possibility to select the scanner model corresponding to the connected scanner.

## 5.3 Scanner Setup

With this parameter, the position of the scanner can be set. However, first of all you have to connect the scanner, select the corresponding scanner model in 'scanner type' window, set the corresponding interface and correctly to set the parameters in the 'interface parameter' window.

After pressing the enter key (red button) the scanner is set to on and tries to read bar codes continuously. In case a bar code is read then the read data is indicated in the display and the scanner is immediately again set to on. Is the scanner in the correct position it starts to flicker. Is the scanner not in the correct position then it is set to on as long as again a bar code is read. The scanner is to position in the way that at feeding labels of 1 the bar code is directly read at the printhead.

## 5.4 Scan Offset

In scan mode 'while print' the scanner is switched On if the first pixel line is printed (= of bar code which is to scan). The scanner is switched Off either by reading the bar code (Good Read) or explicitly by the printer, if the last pixel line is printed (= of the bar code which is to scan - No Read). By means of this value the switch On and Off position of scanner in printing direction can be shifted.

In scan mode 'after print), the label is advanced by the set offset, before the scanner is switchen On and after scanning again retracted.

## 5.5 Scan Length

If this parameter is set to 0 (AUTO), the switch on and off position of scanner is calculated by means of position and height of bar code onto the label. If the parameter Scan Length is not 0, so this defines the length of scan sector. The start of scan sector is then set by the parameter 'Scan Offset'.

This parameter is not relevant in scan mode 'after print'

The following drawing shows the meaning of the parameters 'Scan Offset' and 'Scan length'.

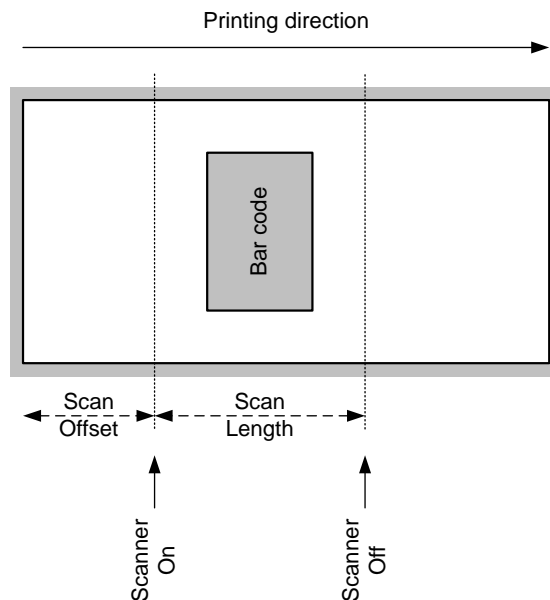


Figure 25

## 5.6 Scan Mode

With this parameter can be adjusted, at which time the scanning of the bar code is to be effected - during printing or after printing.

**While printing** The scanning of bar code is effected while the label is printed. By means of the parameter 'number of feeding labels' can be defined which label should be scanned. With the parameters 'Scan offset' and 'Scan length' the scan sector can be specified.

**After printing** The scanning of bar code is effected after the label was printed. With the parameter 'Scan delay' the time can be varied between printing the label and switching on the scanner. With the parameter 'Scan timeout' the time can be specified which is available for scanning the label. After successful scanning of bar code the next label is printed and/or in dispensing mode the printer changes to 'waiting' mode.

## 5.7 Scan Delay

In scan mode 'after print' the scanner is switched On after the label was printed. With this value the time can be specified between printing the label and switching On the scanner.

This parameter is not relevant in scan mode 'while print'.

## 5.8 Scan Timeout

In scan mode 'after print' can be specified with this value the time which is available for scanning the label. If the parameter 'scan timeout' is set to 0, the printer waits until the bar code could be read. If the bar code is not read within the fixed time the printer switches Off the scanner again (non readable). When reaching the fixed number of consecutive non-readable an error message appears at the display.

This parameter is not relevant in scan mode 'while print'.

## 5.9 Interface Parameter

Set the parameter of serial interface at which the scanner is connected to the printer.

COMx	0 = Off 1 = On 2 = On, no error message at interface errors
Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600 Baud
P - Parity	N = None O = Odd E = Even
D – Data bits	7, 8 Bits
S – Stop bits	1, 2 Bits

## 6 Parameter Sets for Scanner Mode

### Set scanner operating mode

SOH	F	C	D	M	-	-	r	M	P	N	F	-	-	-	-	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

M: 0 = Off

M: 1 = Mode 1 (data comparison)

M: 2 = Mode 2 (check only readability)

M: 3 = Mode 3 (check only readability, graphic)

P: 0 = Interface COM1

P: 1 = Interface COM2

This parameter is ignored because COM2 is always used as scanner interface

N: - = 0 bad readings (NoReads)

N: 0 = 1 bad readings

N: 1 = 2 bad readings

N: 2 = 3 bad readings

N: 3 = 4 bad readings

N: 4 = 5 bad readings

N: 5 = 6 bad readings

N: 6 = 7 bad readings

N: 7 = 8 bad readings

N: 8 = 9 bad readings

Number of consecutive bad readings after which an error message is displayed. With '-' (0 NoReads) no error message occurs, i.e. the print procedure is not interrupted. Only a warning will be shown on the display.

F: 0 = No label feed (FeedLabel)

F: 1 = Feed by 1 label

F: 2 = Feed by 2 labels

F: 3 = Feed by 3 labels

F: 4 = Feed by 4 labels

F: 5 = Feed by 5 labels

### Enquire scanner operating mode

SOH	F	C	D	M	-	-	w	p	p	p	p	p	p	p	p	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

### Answer

SOH	A	M	P	N	F	-	-	-	p	p	p	p	p	p	p	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

### Set scan offset

SOH	F	C	D	M	A	-	r	N	N	N	N	-	-	-	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

N = Scan offset in 1/10 mm

### Enquiry scan offset

SOH	F	C	D	M	A	-	w	p	p	p	p	p	p	p	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

### Antwort

SOH	A	N	N	N	N	-	-	-	p	p	p	p	p	p	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

N = Current scan offset in 1/10 mm

**Set scan length**

SOH F C D M B - r N N N N - - - - ETB

N = Scan length in 1/10 mm

**Enquiry scan length**

SOH F C D M B - w p p p p p p p p ETB

**Answer**

SOH A N N N N - - - - p p p p p p p p ETB

N = current scan length in 1/10 mm

**Set scan mode**

SOH F C D M C - r N N N N - - - - ETB

N: 0 = Scanning while printing

N: 1 = Scanning after printing

**Enquire scan mode**

SOH F C D M C - w p p p p p p p p ETB

**Answer**

SOH A N - - - - - p p p p p p p p ETB

N = current scan mode

**Set scan delay (scanning after printing)**

SOH F C D M D - r N N N N - - - - ETB

N = Scan delay in ms [0 ... 9990]

**Enquire scan delay**

SOH F C D M D - w p p p p p p p p ETB

**Answer**

SOH A N N N N - - - - p p p p p p p p ETB

N = Current scan delay in ms

**Set scan timeout (scanning after printing)**

SOH F C D M E - r N N N N - - - - ETB

N = Scan timeout in ms [0 ... 9990]

**Enquire scan timeout**

SOH F C D M E - w p p p p p p p p ETB

**Answer**

SOH A N N N N - - - - p p p p p p p p ETB

N = Current scan timeout in ms



**Set scanner type**

SOH	F	C	D	M	F	-	r	N	N	N	N	-	-	-	-	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

N: 5 = DS457

N: 6 = SICK ICR620

N: 7 = SICK CLV6XX

**Enquire scanner type**

SOH	F	C	D	M	F	-	w	p	p	p	p	p	p	p	p	p	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

**Answer**

SOH	A	N	-	-	-	-	-	p	p	p	p	p	p	p	p	p	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

N = Current set scanner type

**6.1 Scanner Variable**

In operating mode 1 (data comparison) the printer has to provide the possibility to define the order of bar code data to scan multiple codes onto a label. Because of this reason it is necessary to define the bar code data in the text statements as scanner 'variable'. The text statement has the following structure:

**Scanner variable**

SOH	BM	[n]	=	S	V	(	a	;	f	)	text data	ETB
-----	----	-----	---	---	---	---	---	---	---	---	-----------	-----

'=SV' Identification of scanner variable

a Field active

0 = not active

1 = active, i.e. the code is scanned

f Field number for definition of code order (1 ...)

**Examples**

Text fix:

(SOH)BM[1]=SV(1;1)123456(ETB)

Text variable (counter):

(SOH)BM[1]=SV(1;1)=CN(10;0;4;+1;1)0001(ETB)



## 7 Error Messages

Error message	Cause	Remedy
68 Scanner	The connected bar code scanner signals a device error.	Check the connection scanner/printer. Check the scanner (dirty).
69 Scanner NoRead	Bad print quality. Printhead completely soiled or defective. Print speed too high.	Increase the contrast. Clean the printhead or exchange (if necessary). Reduce the print speed.
70 Scanner data	Scanned data does not correspond to the data which is to print.	Exchange printhead.
94 Scanner Timeout	The scanner could not read the bar code within the set timeout time.  Defective printhead. Wrinkles in the transfer ribbon. Scanner wrong positioned. Timeout time too short.	Check the printhead. Check the transfer ribbon. Position the scanner correctly, corresponding to the set feeding. Select longer timeout time.



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