

Documentation

INBarcode.exe

V1.7



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Introduction

INBarcode.exe is a free commandline tool for finding and decoding barcodes in an image.

Features:

- recognizes **Code39**
- recognizes **Code128** (including calculation an revision of checksum)
- recognizes **EAN128** (including calculation an revision of checksum)
- recognizes **EAN13** (including calculation an revision of checksum)
- recognizes **EAN8** (including calculation an revision of checksum)
- recognizes **UPC-A** (including calculation an revision of checksum)
- recognizes **2/5** and **2/5 interleaved**
- able to find all supported barcodes inside documents
- supports BMP image format
- returns position, type and content of every supported barcode found
- recognizes barcodes rotated by 180°, horizontal and vertical
- runs on W98/ME/2000/2000 Server/XP/2003 Server

Restrictions:

- the maximum allowed aberration from horizontal or vertical is +6° / -6°
- every given bitmap must be smaller 8192x8192 pixel
- scanned images must be at least 200DPI
- depending on the size and quality of the barcodes, 200 to 400 DPI is recommended

REMEMBER:

There is a commercial INBarcodeOCR DLL available, too.
It works as a single DLL or as ActiveX/COM component.

It is maintained, updated, much faster, better optimizing and is able to use JPG, TIF, PNG and even PDF files directly. This DLL will return the position, size and orientation of the barcodes, too.

Please have a look at <http://www.inspirant.de>

Company and contact information

company

Inspirant is a company of 5 staff members. We have a rich fund of external cooperators which are available for the need of special knowledge or skills. In case of a shortage in development power we have a great assortment in available freelancers. We mainly develop for Windows systems using Visual Basic (5/6 and .NET) and PureBasic (Windows/Linux) to reduce time and cost for our customers. Some routines are also programmed in C, C++ or other languages if there is the need for. In the meantime we are also very familiar with linux-development.

special subjects

Our special subjects are the complete environment of document management and the solution of tricky problems. We are a excellent contact for document management, archieving, migration, workflow or storage as well as computer-aided production data acquisition, billing or warehousing. If you are in need of individual development for your special cases you are on the right homepage.

We are always trying to keep costs as low as possible. We also looking for open source and linux solutions whenever it is possible and better.

contact information

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Licence

This tool is **free for anyone**. Use it in commercial or free applications as much as you need.

IT IS NOT ALLOWED TO TAKE MONEY FOR THIS PRODUCT!

There is only one thing you have to do:

please insert this text inside the information-dialog of your applications:

Barcode recognition provided by INBarcodeOCR (www.inspirant.de)

Calling Conventions

This tool is a commandline executable. The calling syntax is:

```
INBarcode.exe <switches> <filename>
```

<switches> are one or more optional switches.

<filename> should be a complete path for a BMP image.

Switches:

- /P return position information, too
- /F use fine-search (for images with less then 150DPI or non scanned barcodes)
- /D use delay of 5 seconds after recognition

Examples:

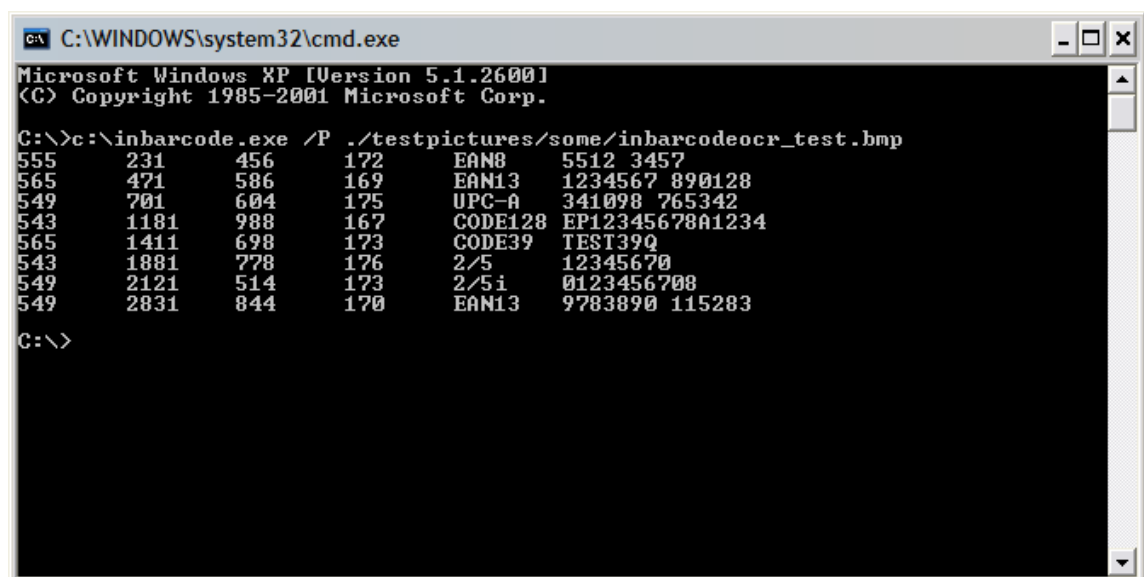
```
INBarcode.exe "c:\images\barcodes.bmp"
```

```
INBarcode.exe .\test\barcodes.bmp
```

```
INBarcode.exe /P "c:\images\barcodes.bmp"
```

```
INBarcode.exe /P /F ".\test\barcodes.bmp"
```

Please call INBarcode.exe without any parameters for some information about the company.



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\>c:\inbarcode.exe /P ./testpictures/some/inbarcodeocr_test.bmp
555      231      456      172      EAN8      5512 3457
565      471      586      169      EAN13      1234567 890128
549      701      604      175      UPC-A      341098 765342
543      1181     988      167      CODE128     EP12345678A1234
565      1411     698      173      CODE39      TEST39Q
543      1881     778      176      2/5         12345670
549      2121     514      173      2/5i        01234567008
549      2831     844      170      EAN13      9783890 115283

C:\>
```

example of calling inbarcode.exe

Returned Values

The returned results are in the following format:

- one barcode per line
- without /P option, each result is the type and the value divided by a tabulator (ASCII 9)
- with /P option, each result is the position, type and the value divided by a tabulator

Example results without /P switch:

```

EAN8      5512 3457
EAN13     1234567 890128
UPC-A     341098 765342
2/5i      1234567
CODE128    EP12345678A1234
CODE39     TEST39Q
2/5        0123456708
```

The result is encoded:

Type - Value

Example results with /P switch:

```

555      231      456      172      EAN8      5512 3457
565      471      586      169      EAN13     1234567 890128
549      701      604      175      UPC-A     341098 765342
543      1181     988      167      CODE128    EP12345678A1234
565      1411     698      173      CODE39     TEST39Q
543      1881     778      176      2/5        12345670
549      2121     514      173      2/5i      0123456708
549      2831     844      170      EAN13     9783890 115283
```

The result is encoded:

Left - Top - Width - Height - Type - Value

You can process the results line by line.

The following types are returned:

EAN8, EAN13, EAN128, UPC-A, CODE128, CODE39, 2/5 and 2/5i

Supported charsets

Supported Code128 / EAN128 charsets

To use this kind of codes, a scan-resolution of 300DPI or higher is recommended.

Value	Code A	Code B	Code C
0	[Space]	[Space]	00
1	!	!	01
2	"	"	02
3	#	#	03
4	\$	\$	04
5	%	%	05
6	&	&	06
7	'	'	07
8	((08
9))	09
10	*	*	10
11	+	+	11
12	,	,	12
13	-	-	13
14	.	.	14
15	/	/	15
16	0	0	16
17	1	1	17
18	2	2	18
19	3	3	19
20	4	4	20
21	5	5	21
22	6	6	22
23	7	7	23
24	8	8	24
25	9	9	25
26	:	:	26
27	;	;	27
28	<	<	28
29	=	=	29
30	>	>	30
31	?	?	31
32	@	@	32
33	A	A	33
34	B	B	34
35	C	C	35
36	D	D	36
37	E	E	37
38	F	F	38
39	G	G	39
40	H	H	40
41	I	I	41
42	J	J	42
43	K	K	43
44	L	L	44
45	M	M	45
46	N	N	46
47	O	O	47
48	P	P	48
49	Q	Q	49
50	R	R	50

Value	Code A	Code B	Code C
51	S	S	51
52	T	T	52
53	U	U	53
54	V	v	54
55	W	W	55
56	X	X	56
57	Y	Y	57
58	Z	Z	58
59	[[59
60	\	\	60
61]]	61
62	^	^	62
63	_	_	63
64	<NUL>	,	64
65	<SOH>	a	65
66	<STX>	b	66
67	<ETX>	c	67
68	<EOT>	d	68
69	<ENQ>	e	69
70	<ACK>	f	70
71	<BEL>	g	71
72	<BS>	h	72
73	<HT>	i	73
74	<LF>	j	74
75	<VT>	k	75
76	<FF>	l	76
77	<CR>	m	77
78	<SO>	n	78
79	<SI>	o	79
80	<DLE>	p	80
81	<DC1>	q	81
82	<DC2>	r	82
83	<DC3>	s	83
84	<DC4>	t	84
85	<NAK>	u	85
86	<SYN>	v	86
87	<ETB>	w	87
88	<CAN>	x	88
89		y	89
90	<SUB>	z	90
91	<ESC>	{	91
92	<FS>		92
93	<GS>	}	93
94	<RS>	~	94
95	<US>		95
96	<FNC3>	<FNC3>	96
97	<FNC2>	<FNC2>	97
98	<SHIFT>	<SHIFT>	98
99	reserved	reserved	99
100	reserved	<FNC4>	reserved
101	<FNC4>	reserved	reserved
102	<FNC1>	<FNC1>	<FNC1>

Supported Code39 charsets

Value	Code	Value	Code
1	0	23	M
2	1	24	N
3	2	25	O
4	3	26	P
5	4	27	Q
6	5	28	R
7	6	29	S
8	7	30	T
9	8	31	U
10	9	32	V
11	A	33	W
12	B	34	X
13	C	35	Y
14	D	36	Z
15	E	37	-
16	F	38	.
17	G	39	[Space]
18	H	40	\$
19	I	41	/
20	J	42	+
21	K	43	%
22	L	44	*

To use this kind of code, a scan-resolution of 240DPI or higher is recommended.

Supported 2/5, 2/5 interleaved and EAN/UPC charsets

Value	Code
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7
9	8
10	9

To use this kind of codes, a scan-resolution of 200DPI or higher is recommended.

Recognition Problems?

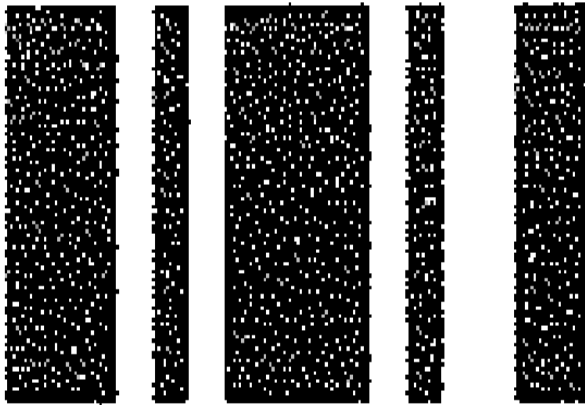
Most problems occur when

- barcode-type is not supported
- image quality is bad
- image resolution is too low (<200 DPI)
- less contrast (background colour?)
- barcodes are rotated more than 6°
- barcode is distorted
- the left or right whitespace is too small

Tips:

- try scanning using 300 DPI or even more
- experiment using brightness and contrast of the images (scanner interface)
- try B/W scanning with various thresholds
- remember, that only the first page is scanned inside of TIF and PDF documents

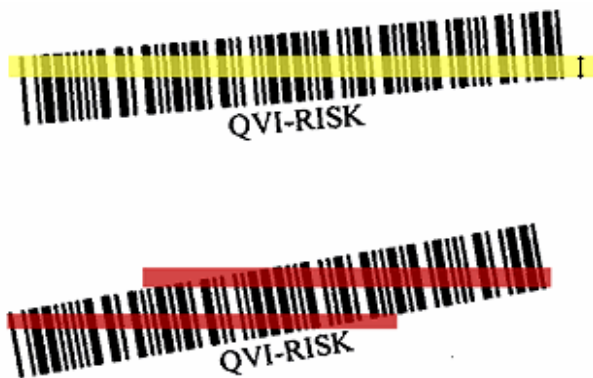
Examples:



This is a section of a scanned barcode in high resolution. As you can see, the bars are containing very much noise.

As the INBarcodeOCR-library checks a barcode pixel by pixel, it is not really clear if the bar ends or if it is just a part of the noise. So, this barcode has not been readable.

To avoid such noisy barcodes, try to change the black/white threshold values of your scanning device.



The INBarcodeOCR-library works horizontal and vertical to find and read barcodes. As the complete barcode is needed to verify a checksum or find the end-code, rotation is a critical problem.

In this example you can see, how the usable part of a barcode decreases with rotation. The yellow portion is the only usable part. With even more rotation, the barcode is no longer readable (red).



Here you can see a barcode printed with an old or defect printer. There is some 'jitter' in the bars. If you look closely at the first bar, you will see that the width is varying. This example has been readable by INBarcodeOCR but more of this problems may cause failure of recognition.



Here is the contrast of the scanned image not very good. It has been readable, but a higher contrast would increase the liability very much.