

# The `hyperbar` package\*

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This package extends the `hyperref` functionality for creating interactive forms to allow adding Barcode form fields supported by some modern PDF readers.

## 1 Usage

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```
\BarcodeField \BarcodeField[
  <type>,
  width=<Barcode width>,
  height=<Barcode height>,
  tsv={<fields to encode in barcode>},<Further parameters>
]<Some field name>
```

Barcode fields can be used like ordinary form fields as documented in the `hyperref` manual, section “PDF and HTML forms”. Especially all parameters documented there can be used in *<Further parameters>*. There are some additional parameters specific to `\BarcodeField`:

***<type>*** One of the parameters `qr`, `datamatrix` or `pdf417` can be used to select the format of the generated barcode. If no such parameter is given, a PDF417 barcode is used.

***symwidth*** The horizontal distance between the modules of the barcode in pixel assuming a resolution of 300 DPI. Default is 6.

***symfactor*** Only used for PDF417. The ratio between the height and the width of the modules. Must be one of the values 1, 2, 3, 4. Default 4.

***ecc*** The level of redundancy added to the data for error correction. Not used for Data-Matrix, valid values for QR-Codes are 0, 1, 2, 3. For PDF417 the valid range are integer values between 0 and 8.

***tsv*** This is used as `tsv={<field1>,<field2>,<...>}` to automatically generate the encoded value of the barcode as a combination of the form fields with names *<field1>*, *<field2>*, .... The format is based on the Tab-separated value option of Adobe Acrobat with field names. The generated value contains two lines, the first line are all used field names separated by a tab, the second line consists of the tab-separated values.

If you prefer another format, the `calculate` parameter can be used instead to generate the value with customized Javascript code.

---

\*This document corresponds to `hyperbar` v0.1, dated 2018/07/04.

Currently the only supported backend is pdfTeX.

## 2 Example

```
...
\usepackage{hyperbar}
...
\begin{document}
...
\begin{Form}
  \TextField[name=first,width=3cm,charsize=12pt]{Prename} \\
  \TextField[name=last,width=3cm,charsize=12pt]{Name} \\
  \BarcodeField[width=10cm,height=1cm,tsv={first,last}]{BarcodeField} \\
  \BarcodeField[datamatrix,symwidth=10,width=3cm,height=3cm,tsv={first,last}]{BarcodeField} \\
  \BarcodeField[qr,width=3cm,height=3cm,tsv={first,last}]{BarcodeField3}
\end{Form}
\end{document}
```

This example creates a simple PDF form. In PDF-Reader supporting Barcode fields three types of barcodes will be visible under the form, which contain the information entered into the fields.

## 3 The implementation

```
1 \RequirePackage{hyperref}
2
3 \def\BarField@SetKeys{\kvsetkeys{BarField}}
4 \kv@set@family@handler{BarField}{\kv@processor@default{Field}{#1}{#2}}
5 \newcount\BarFld@barcodetype
6 \newcount\BarFld@symwidth
7 \newcount\BarFld@symfactor
8 \newcount\BarFld@ecc
9 \BarFld@barcodetype=0
10 \BarFld@symwidth=6
11 \BarFld@symfactor=2
12 \BarFld@ecc=2
13 \define@key{BarField}{pdf417}[]{%
14   \BarFld@barcodetype=0
15 }
16 \define@key{BarField}{qr}[]{%
17   \BarFld@barcodetype=1
18 }
19 \define@key{BarField}{datamatrix}[]{%
20   \BarFld@barcodetype=2
21 }
22 \define@key{BarField}{symwidth}{%
23   \BarFld@symwidth=#1\relax
24 }
25 \define@key{BarField}{symfactor}{%
26   \BarFld@symfactor=#1\relax
27 }
```

```

28 \define@key{BarField}{ecc}{%
29   \BarFld@ecc=#1\relax
30 }
31 \def\qBarcodeFld{\qBarcodeFld}
32 \def\BarFld@barcode@set@calculate@names#1#2#3,#4{%
33   \ifx\qBarcodeFld#4%
34     \expandafter\@firstoftwo
35   \else
36     \expandafter\@secondoftwo
37   \fi
38 {\def\Fld@calculate@code{event.value = event.value + " "}%
39 \def\Fld@format@code{event.value="#1#3\string\\n#2"+getField("#3").valueAsString;}}%
40 {\BarFld@barcode@set@calculate@names
41   {#1#3\string\\t}
42   {#2"+getField("#3").valueAsString+"\string\\t}%
43   #4%
44 }%
45 }
46 \define@key{Field}{tsv}{%
47   \BarFld@barcode@set@calculate@names{}{}#1,\qBarcodeFld
48 }
49 \DeclareRobustCommand\BarcodeField{%
50   \@ifnextchar[\{\@BarcodeField\}{\@BarcodeField[]}%
51 }
52 %% The following is based on the TextField implementation
53 %% from the hyperref bundle, file hpdftex.def, with only the
54 %% barcode specific fields added.
55 \def\BarField@FlagsBarcode{%
56   \HyField@FlagsAnnot{barcode field}%
57   \bitsetReset{\HyField@Ff}%
58   \HyField@UseFlag{Ff}{ReadOnly}%
59   \HyField@UseFlag{Ff}{Required}%
60   \HyField@UseFlag{Ff}{NoExport}%
61   \HyField@UseFlag{Ff}{Multiline}%
62   \HyField@UseFlag{Ff}{DoNotSpellCheck}%
63   \HyField@UseFlag{Ff}{DoNotScroll}%
64   \HyField@PrintFlags{Ff}{text field}%
65   \bitsetIsEmpty{\HyField@Ff}{%
66     \let\Fl@flags\ltx@empty
67   }{%
68     \edef\Fl@flags{/Ff \bitsetGetDec{\HyField@Ff}}%
69   }%
70 }
71 \def\LayoutBarcodeField#1#2{#2}
72 \def\MakeBarcodeField#1#2{\vbox to #2{\hbox to #1{\hfill}\vfill}}

```

The list used as the \DefaultOptionsofBarcode are the flags set by Acrobat according to Implementation Note E-7 to Adobe Extensions to ISO 32000.

```

73 \def\DefaultOptionsofBarcode{readonly,noexport,multiline,donotspellcheck}
74 \def\BarPDF@BarcodeDict{%
75   /Subtype/Widget%
76   \Fl@annotflags
77   \Fl@pageobjref
78   \Fl@annotnames
79   /FT/Tx%

```

```

80   \Fld@flags
81   /PMD \the\pdflastobj\space0 R%
82   /Q \Fld@align
83   /BS<</W \Fld@borderwidth\space /S /\Fld@borderstyle>>%
The /DataPrep field is optional with a default value of 0 according to the Adobe Supplement to ISO 32000, Extension Level 3. We still explicitly provide it because in reality Acrobat will not render the Barcode otherwise.
84   /DataPrep 0%
85   \ifcase0\ifnum\Fld@rotation=\z@\ \else 1\fi
86       \ifx\Fld@bordercolor\relax\else 1\fi
87       \ifx\Fld@bcolor\relax\else 1\fi
88       \space
89   \else
90     /MK<<%
91     \ifnum\Fld@rotation=\z@
92     \else
93         /R \Fld@rotation
94     \fi
95     \ifx\Fld@bordercolor\relax
96     \else
97         /BC[\Fld@bordercolor]%
98     \fi
99     \ifx\Fld@bcolor\relax
100    \else
101        /BG[\Fld@bcolor]%
102    \fi
103    >>%
104 \fi
105 /DA(/Helv \strip@pt\Fld@charsize\space Tf%
106   \ifx\Fld@color\@empty\else\space\Fld@color\fi)%
107 /DV(\Hy@escapestring{\Fld@default})%
108 /V(\Hy@escapestring{\Fld@value})%
109 \Fld@additionalactions
110 }
111 \def\@BarcodeField[#1]#2{%
112   \def\Fld@name{#2}%
113   \let\Fld@default\ltx@empty
114   \let\Fld@value\@empty
115   \def\Fld@width{\DefaultWidthofText}%
116   \def\Fld@height{\DefaultHeightofTextMultiline}%
117   \begingroup
118     \expandafter\BarField@SetKeys\expandafter{%
119       \DefaultOptionsofBarcode,#1%
120     }%
121     \PDFForm@Name
122     \BarField@FlagsBarcode
123     \ifFld@hidden\def\Fld@width{1sp}\fi
124     \ifx\Fld@value\@empty\def\Fld@value{\Fld@default}\fi
125     \LayoutBarcodeField{#2}{%
126       \leavevmode
127       \HyAnn@AbsPageLabel
128       \immediate\pdfobj{<<%
129         /Type/PaperMetaData%
130         /Version 1%}
```

```

131      /Width \strip@pt\dimexpr\Fld@width*65536/\number\dimexpr1in\relax\relax
132      /Height \strip@pt\dimexpr\Fld@height*65536/\number\dimexpr1in\relax\relax
133      /XSymWidth \the\BarFld@symwidth
134      \ifcase\BarFld@barcodetype
135          /Symbology/PDF417%
136          /XSymHeight \the\numexpr\BarFld@symwidth*\BarFld@symfactor\relax
137          /ECC \the\BarFld@ecc
138      \or
139          /Symbology/QRCode%
140          /ECC \the\BarFld@ecc
141      \or
142          /Symbology/DataMatrix%
143      \fi

```

The `/Resolution` is optional according to the Specification but required in practice like `/DataPrep` above. Acrobat also fails with the default value 300, instead a decimal part is required.

```

144      /Resolution 300.0%
145      >>}%
146      \Hy@escapeform\BarPDF@BarcodeDict
147          \pdfstartlink user {\BarPDF@BarcodeDict}\relax
148          \MakeBarcodeField{\Fld@width}{\Fld@height}\pdfendlink
149          \HyField@AddToFields
150      }%
151  \endgroup
152 }

```

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