The l3pdffield-pushbutton module
Commands to create pushbutton form fields
LaTeX PDF management testphase bundle

The LaTeX Project*

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1   l3pdffield-pushbutton Introduction

This is the documentation for pushbutton fields, for general information about form fields check the documentation l3pdffield.

Please keep in mind

- Not every PDF viewer supports pushbuttons.

- The handling can depend on settings in the PDF viewer. In adobe reader for example I had to disable an option to avoid that it tries to create an appearance itself

- Standards like pdf/A disable features of form fields too (as you typically can't change the PDF).

- The compilations involving postscript/pdfmark (dvips with ps2pdf or dvips with distiller) can require special setups.

2   Pushbuttons

Click me:

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2.1 Commands

`\pdffield_push:n` `\pdffield_push:n{⟨key val list⟩}`

This creates a pushbutton. Unlike radio buttons and checkboxes pushbuttons don't change their state and they don't store or represent a value. Instead their purpose is to trigger an *action*. Important actions are for example Submit and Reset.

Interfaces for such actions will be setup in another module later. For now actions should be added through the widget dictionary. The following for example setups a named action.

```
\group_begin:
\pdfannot_dict_put:nnn {widget}{A}{<</S/Named /N/LastPage>>}
\sffamily\bfseries
\pdffield_pushbutton:n
  {name=my/go,
   width=4cm,
   caption=go~to~last~page,
   rollover-caption=click~me!}
\group_end:
```

The list of allowed keys is described below. The ⟨*key val list*⟩ should at least set the name, without it the default name `pushbutton` is used.

2.2 The look of the button

Pushbuttons have no value. PDF compensates this by giving much more options to setup the appearance. Beside the standard `AP` key there are number of settings in the dynamic appearance dictionary `MK`. Sadly it is quite unclear how all this settings interact (or should interact), and PDF viewers don't honor all of them. I was for example not able to get the down appearance to show off.

By default the code will draw (with l3draw) a button and place the caption and rollover-caption on it. The caption will honor the surrounding font, fontsize and the color, and will be placed on the baseline as described by the height and depth keys.

2.3 Keys

The new pushbutton command accept all field and annot keys from l3pdffield. A few keys are disabled or are forced to specific values. The `appearance` keys have a more pushbutton specific behaviour, other keys have other defaults than with the basic commands. Additionally there are a small number of keys specific to a pushbutton. For convenience a number of important keys are documented here too, even if they are already in the document from l3pdffield.

Disabled keys are

- `V`, `DV`. As a pushbutton has no permanent state, the keys should not be used.

- `FT` is overwritten.

- For pushbuttons only the field flags `ReadOnly`, `Required` and `NoExport` make sense. `Pushbutton` is set automatically by the code as this is required for a pushbutton.

preset-pushbutton   `preset-pushbutton = {⟨key-val-list⟩}`

This allows to set default keys for a pushbutton.

name   `name = ⟨partial name⟩`
T   `T = ⟨partial name⟩`

This sets the partial name of the field. The value shouldn't contain a period, be not empty and sensibly consist of simple chars. Additionally the value is used to create the field ID. This means that pushbuttons with the same partial name are annotations with the same field as parent. The field ID is then internal and can not be used to attach another annotation. For explicit control of the field ID use the `fieldID` key.

fieldID   `fieldID = ⟨field ID⟩`

For experts only! This allows to give the pushbutton field a specific ID. This is only useful in the context of a larger fieldset or if you want to attach another annotation to the field with `\pdffield_annot:n`. If used wrongly you can easily create invalid fieldset. It allows you to create to fields with the same partial name, but if you want to see both you need to ensure that their full names are different—for example by adding some parent fields.

parent   `parent = ⟨field ID⟩`

This is only needed if the field should be part of a larger fieldset. The value should be a field ID of a field created previously with `\pdffield_field:nn`.

altname   `altname = ⟨string⟩`
TU   `TU = ⟨string⟩`

This is sets an alternative name for user interaction. This name can only be set at the first pushbutton instance, when the field is initialized.

mappingname   `mappingname = ⟨string⟩`
TM   `TM = ⟨string⟩`

This is sets an alternative name for export. This name can only be set at the first pushbutton instance, when the field is initialized.

width   `width = ⟨dim expression⟩`
height   `height = ⟨dim expression⟩`
depth   `depth = ⟨dim expression⟩`

These keys allow to set the dimensions of the pushbutton instance. The value should be a dimension expression. By default `width` is $3\,cm$, `height` uses 1.05`\normalbaselineskip`, and `depth` is 0.45`\normalbaselineskip`.

AP/N	AP/N = ⟨*appearance name*⟩
appearance	appearance = ⟨*appearance name*⟩
AP/R	AP/R = ⟨*appearance name*⟩
rollover-appearance	rollover-appearance = ⟨*appearance name*⟩
AP/D	AP/D = ⟨*appearance name*⟩
down-appearance	down-appearance = ⟨*appearance name*⟩

This keys sets the normal appearance, the rollover appearance (when the mouse hovers over the pushbutton) and the down appearance (when the mouse clicks). They take as value a ⟨*appearance name*⟩ and expects that one form Xobjects with this name has been created before. It depends on the PDF viewer if such appearances are shown. adobe reader for example ignores the down appearance.

action	action = ...

This key doesn't exist yet. It will (probably) be added when a interface for actions are added.

2.4 Using with hyperref

The \Pushbutton command from hyperref also adds a label. Something like this could more or less fake it. But be aware that the options are not identical.

```
\ExplSyntaxOn\makeatletter
\def\@PushButton[#1]#2{\LayoutPushButtonField{#2}{\pdffield_pushbutton:n {name=#2,#1}}
\ExplSyntaxOff\makeatother
```

3 l3pdffield-pushbutton Implementation

1 ⟨∗package⟩
2 ⟨@@=pdffield⟩

3.1 Variables

A variable to store the appearance code, and two dimensions for the appearances. We can't use a single default appearance, so we use a count.

\l__pdffield_pushbutton_appearance_code_tl
\l__pdffield_pushbutton_linewidth_dim
\l__pdffield_pushbutton_totalht_dim
\g__pdffield_pushbutton_cnt_int

A pushbutton can setup the appearance only after the texts are known, so the code is stored and executed later.

```
3 \tl_new:N   \l__pdffield_pushbutton_appearance_code_tl
4 \dim_new:N  \l__pdffield_pushbutton_linewidth_dim
5 \dim_new:N  \l__pdffield_pushbutton_totalht_dim
6 \int_new:N  \g__pdffield_pushbutton_cnt_int
```

(*End definition for* \l__pdffield_pushbutton_appearance_code_tl *and others.*)

3.2 Appearances

The default appearances are a rectangular frame with some text.

This defines the standard appearances. They are setup at the first use of a pushbutton, and will adapt to the font family in use then.

```
7  \dim_set:Nn \l__pdffield_pushbutton_linewidth_dim {0.4pt}
8  \color_set:nn {pdffield/push/text}{black}
9  \color_set:nn {pdffield/push/border}{black!95!white}
10 \color_set:nn {pdffield/push/bordertop}{yellow!5!white}
11 \color_set:nn {pdffield/push/borderbot}{black!50!white}
12 \color_set:nn {pdffield/push/fill}{black!20!white}
13
14 \cs_new_protected:Npn \__pdffield_pushbutton_default_appearances:
15   {
16     \int_gincr:N \g__pdffield_pushbutton_cnt_int
17     \exp_args:Nx
18     \pdffield_appearance:nn {pdffield/pushbutton/default-\int_use:N \g__pdffield_pushbutton_
19       {
20         \draw_begin:
21         \color_set:nn {pdffield/push/text}{.}
22         \dim_set:Nn \l__pdffield_pushbutton_totalht_dim
23           {\l__pdffield_annot_ht_dim + \l__pdffield_annot_dp_dim}
24         \draw_linewidth:n {\l__pdffield_pushbutton_linewidth_dim}
25         \draw_path_rectangle_corners:nn
26           {0.5\l__pdffield_pushbutton_linewidth_dim,0.5\l__pdffield_pushbutton_linewidth_di
27           {
28            \l__pdffield_annot_wd_dim-0.5\l__pdffield_pushbutton_linewidth_dim,
29            \l__pdffield_pushbutton_totalht_dim-0.5\l__pdffield_pushbutton_linewidth_dim
30           }
31         \color_fill:n {pdffield/push/border}
32         \draw_path_use_clear:n { fill }
33         \draw_path_rectangle_corners:nn
34           {2\l__pdffield_pushbutton_linewidth_dim,2\l__pdffield_pushbutton_linewidth_dim}
35           {
36            \l__pdffield_annot_wd_dim-2\l__pdffield_pushbutton_linewidth_dim,
37            \l__pdffield_pushbutton_totalht_dim-2\l__pdffield_pushbutton_linewidth_dim
38           }
39         \color_fill:n {pdffield/push/bordertop}
40         \draw_path_use_clear:n { fill }
41         \draw_path_moveto:n
42           {
43            2\l__pdffield_pushbutton_linewidth_dim,
44            2\l__pdffield_pushbutton_linewidth_dim
45           }
46         \draw_path_lineto:n
47           {5\l__pdffield_pushbutton_linewidth_dim,5\l__pdffield_pushbutton_linewidth_dim}
48         \draw_path_lineto:n
49           {
50            \l__pdffield_annot_wd_dim-5\l__pdffield_pushbutton_linewidth_dim,
51            \l__pdffield_pushbutton_totalht_dim-5\l__pdffield_pushbutton_linewidth_dim
52           }
53         \draw_path_lineto:n
54           {
55            \l__pdffield_annot_wd_dim-2\l__pdffield_pushbutton_linewidth_dim,
56            \l__pdffield_pushbutton_totalht_dim-2\l__pdffield_pushbutton_linewidth_dim
57           }
58         \draw_path_lineto:n
```

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```
59                {
60                  \l__pdffield_annot_wd_dim-2\l__pdffield_pushbutton_linewidth_dim,
61                  2\l__pdffield_pushbutton_linewidth_dim
62                }
63            \draw_path_close:
64            \color_fill:n {pdffield/push/borderbot}
65            \draw_path_use_clear:n { fill }
66            \draw_path_rectangle_corners:nn
67              {
68                1.5\l__pdffield_pushbutton_linewidth_dim,
69                1.5\l__pdffield_pushbutton_linewidth_dim
70              }
71              {
72                \l__pdffield_annot_wd_dim-1.5\l__pdffield_pushbutton_linewidth_dim,
73                \l__pdffield_pushbutton_totalht_dim-1.5\l__pdffield_pushbutton_linewidth_dim
74              }
75            \color_stroke:n {pdffield/push/border}
76            \draw_path_use_clear:n { stroke }
77            \draw_path_rectangle_corners:nn
78              {4\l__pdffield_pushbutton_linewidth_dim,4\l__pdffield_pushbutton_linewidth_dim}
79              {
80                \l__pdffield_annot_wd_dim-4\l__pdffield_pushbutton_linewidth_dim,
81                \l__pdffield_pushbutton_totalht_dim-4\l__pdffield_pushbutton_linewidth_dim
82              }
83            \color_fill:n {pdffield/push/fill}
84            \draw_path_use_clear:n { fill }
85            \color_fill:n {pdffield/push/text}
86            \draw_transform_shift:n
87              {0.5 \l__pdffield_annot_wd_dim, \l__pdffield_annot_dp_dim }
88            \hbox_set:Nn \l_tmpa_box { \makebox[0pt]{\l__pdffield_caption_tl} }
89            \draw_box_use:N \l_tmpa_box
90          \draw_end:
91        }
92    \exp_args:Nx
93    \pdffield_appearance:nn {pdffield/pushbutton/defaultrollover-\int_use:N \g__pdffield_push
94        {
95          \draw_begin:
96          \dim_set:Nn \l__pdffield_pushbutton_totalht_dim
97            {\l__pdffield_annot_ht_dim + \l__pdffield_annot_dp_dim}
98          \draw_linewidth:n {\l__pdffield_pushbutton_linewidth_dim}
99          \draw_path_rectangle_corners:nn
100             {0.5\l__pdffield_pushbutton_linewidth_dim,0.5\l__pdffield_pushbutton_linewidth_di
101             {
102              \l__pdffield_annot_wd_dim-0.5\l__pdffield_pushbutton_linewidth_dim,
103              \l__pdffield_pushbutton_totalht_dim-0.5\l__pdffield_pushbutton_linewidth_dim
104             }
105           \color_fill:n {pdffield/push/border}
106           \draw_path_use_clear:n { fill }
107           \draw_path_rectangle_corners:nn
108             {2\l__pdffield_pushbutton_linewidth_dim,2\l__pdffield_pushbutton_linewidth_dim}
109             {
110               \l__pdffield_annot_wd_dim-2\l__pdffield_pushbutton_linewidth_dim,
111               \l__pdffield_pushbutton_totalht_dim-2\l__pdffield_pushbutton_linewidth_dim
112             }
```

```
113        \color_fill:n {pdffield/push/borderbot}
114        \draw_path_use_clear:n { fill }
115        \draw_path_moveto:n
116          {
117            2\l__pdffield_pushbutton_linewidth_dim,
118            2\l__pdffield_pushbutton_linewidth_dim
119          }
120        \draw_path_lineto:n
121          {5\l__pdffield_pushbutton_linewidth_dim,5\l__pdffield_pushbutton_linewidth_dim}
122        \draw_path_lineto:n
123          {
124            \l__pdffield_annot_wd_dim-5\l__pdffield_pushbutton_linewidth_dim,
125            \l__pdffield_pushbutton_totalht_dim-5\l__pdffield_pushbutton_linewidth_dim
126          }
127        \draw_path_lineto:n
128          {
129            \l__pdffield_annot_wd_dim-2\l__pdffield_pushbutton_linewidth_dim,
130            \l__pdffield_pushbutton_totalht_dim-2\l__pdffield_pushbutton_linewidth_dim
131          }
132        \draw_path_lineto:n
133          {
134            \l__pdffield_annot_wd_dim-2\l__pdffield_pushbutton_linewidth_dim,
135            2\l__pdffield_pushbutton_linewidth_dim
136          }
137        \draw_path_close:
138        \color_fill:n {pdffield/push/bordertop}
139        \draw_path_use_clear:n { fill }
140        \draw_path_rectangle_corners:nn
141          {
142            1.5\l__pdffield_pushbutton_linewidth_dim,
143            1.5\l__pdffield_pushbutton_linewidth_dim
144          }
145          {
146            \l__pdffield_annot_wd_dim-1.5\l__pdffield_pushbutton_linewidth_dim,
147            \l__pdffield_pushbutton_totalht_dim-1.5\l__pdffield_pushbutton_linewidth_dim
148          }
149        \color_stroke:n {pdffield/push/border}
150        \draw_path_use_clear:n { stroke }
151        \draw_path_rectangle_corners:nn
152          {4\l__pdffield_pushbutton_linewidth_dim,4\l__pdffield_pushbutton_linewidth_dim}
153          {
154            \l__pdffield_annot_wd_dim-4\l__pdffield_pushbutton_linewidth_dim,
155            \l__pdffield_pushbutton_totalht_dim-4\l__pdffield_pushbutton_linewidth_dim
156          }
157         \color_fill:n {pdffield/push/fill}
158        \draw_path_use_clear:n { fill }
159        \color_fill:n {pdffield/push/text}
160        \draw_transform_shift:n
161          {0.5 \l__pdffield_annot_wd_dim, \l__pdffield_annot_dp_dim }
162        \hbox_set:Nn \l_tmpa_box { \makebox[0pt]{\l__pdffield_rollover_caption_tl} }
163        \draw_box_use:N \l_tmpa_box
164        \draw_end:
165      }
166    \exp_args:Nx
```

```
167      \pdffield_appearance:nn {pdffield/pushbutton/defaultdown-\int_use:N \g__pdffield_pushbut
168        {
169          \draw_begin:
170          \dim_set:Nn \l__pdffield_pushbutton_totalht_dim
171            {\l__pdffield_annot_ht_dim + \l__pdffield_annot_dp_dim}
172          \draw_linewidth:n {\l__pdffield_pushbutton_linewidth_dim}
173          \draw_path_rectangle_corners:nn
174            {0.5\l__pdffield_pushbutton_linewidth_dim,0.5\l__pdffield_pushbutton_linewidth_di
175            {
176             \l__pdffield_annot_wd_dim-0.5\l__pdffield_pushbutton_linewidth_dim,
177             \l__pdffield_pushbutton_totalht_dim-0.5\l__pdffield_pushbutton_linewidth_dim
178            }
179          \color_fill:n {pdffield/push/border}
180          \draw_path_use_clear:n { fill }
181          \draw_path_rectangle_corners:nn
182            {2\l__pdffield_pushbutton_linewidth_dim,2\l__pdffield_pushbutton_linewidth_dim}
183            {
184              \l__pdffield_annot_wd_dim-2\l__pdffield_pushbutton_linewidth_dim,
185              \l__pdffield_pushbutton_totalht_dim-2\l__pdffield_pushbutton_linewidth_dim
186            }
187          \color_fill:n {pdffield/push/borderbot}
188          \draw_path_use_clear:n { fill }
189          \draw_path_moveto:n
190            {
191              2\l__pdffield_pushbutton_linewidth_dim,
192              2\l__pdffield_pushbutton_linewidth_dim
193            }
194          \draw_path_lineto:n
195            {5\l__pdffield_pushbutton_linewidth_dim,5\l__pdffield_pushbutton_linewidth_dim}
196          \draw_path_lineto:n
197            {
198              \l__pdffield_annot_wd_dim-5\l__pdffield_pushbutton_linewidth_dim,
199              \l__pdffield_pushbutton_totalht_dim-5\l__pdffield_pushbutton_linewidth_dim
200            }
201          \draw_path_lineto:n
202            {
203              \l__pdffield_annot_wd_dim-2\l__pdffield_pushbutton_linewidth_dim,
204              \l__pdffield_pushbutton_totalht_dim-2\l__pdffield_pushbutton_linewidth_dim
205            }
206          \draw_path_lineto:n
207            {
208              \l__pdffield_annot_wd_dim-2\l__pdffield_pushbutton_linewidth_dim,
209              2\l__pdffield_pushbutton_linewidth_dim
210            }
211          \draw_path_close:
212          \color_fill:n {pdffield/push/bordertop}
213          \draw_path_use_clear:n { fill }
214          \draw_path_rectangle_corners:nn
215            {
216              1.5\l__pdffield_pushbutton_linewidth_dim,
217              1.5\l__pdffield_pushbutton_linewidth_dim
218            }
219            {
220              \l__pdffield_annot_wd_dim-1.5\l__pdffield_pushbutton_linewidth_dim,
```

```
221                \l__pdffield_pushbutton_totalht_dim-1.5\l__pdffield_pushbutton_linewidth_dim
222              }
223          \color_stroke:n {pdffield/push/border}
224          \draw_path_use_clear:n { stroke }
225          \draw_path_rectangle_corners:nn
226            {4\l__pdffield_pushbutton_linewidth_dim,4\l__pdffield_pushbutton_linewidth_dim}
227            {
228              \l__pdffield_annot_wd_dim-4\l__pdffield_pushbutton_linewidth_dim,
229              \l__pdffield_pushbutton_totalht_dim-4\l__pdffield_pushbutton_linewidth_dim
230            }
231          \color_fill:n {pdffield/push/fill}
232          \draw_path_use_clear:n { fill }
233          \color_fill:n {pdffield/push/text}
234          \draw_transform_shift:n
235            {0.5 \l__pdffield_annot_wd_dim, \l__pdffield_annot_dp_dim }
236          \hbox_set:Nn \l_tmpa_box { \makebox[0pt]{\l__pdffield_down_caption_tl} }
237          \draw_box_use:N \l_tmpa_box
238        \draw_end:
239      }
240    }
```

(*End definition for* `\__pdffield_pushbutton_default_appearances:` *and others. These functions are documented on page* **??**.)

3.3 Creating the field

A field should be created if the name doesn't exist

`\__pdffield_pushbutton_field:n`

```
241 \cs_new_protected:Npn \__pdffield_pushbutton_field:n #1 %name
242   {
243     \pdf_object_if_exist:nF {__pdffield/field/__pdffield/pushbutton/#1}
244       {
245         \__pdffield_field:n { __pdffield/pushbutton/#1 }
246       }
247     \keys_set:nn {pdffield}{parent=__pdffield/pushbutton/#1}
248   }
249 \cs_generate_variant:Nn \__pdffield_pushbutton_field:n {V}
```

(*End definition for* `\__pdffield_pushbutton_field:n`.)

3.4 Assembling the Pushbutton

`\__pdffield_pushbutton:n`

```
250 \cs_new_protected:Npn \__pdffield_pushbutton:n #1
251   {
252     \group_begin:
253     \tl_set:Nn\l__pdffield_pushbutton_appearance_code_tl{}
254     \cs_set_eq:NN\__pdffield_appearance_handler:nnn \__pdffield_pushbutton_appearance_handler
```
Setting up the defaults.
```
255     \keys_set:nn {pdffield}
256       {
257         fieldID=,
258         name=pushbutton,
```

```
259          width  = 3cm,
260          height = 1.05\normalbaselineskip,
261          depth  = 0.45\normalbaselineskip,
262        }
```

Value keys should be undefined.

```
263        \keys_set:nn { pdffield }{__pdffield/preset/pushbutton,#1}
264        \keys_set:nn { pdffield }
265          {
266            ,V=
267            ,DV=
268            ,setFf={Pushbutton}
269            ,FT= Btn
270          }
271        \tl_if_empty:NT\l__pdffield_fieldID_tl
272          {
273            \pdfdict_get:nnN {l__pdffield/field}{T}\l__pdffield_fieldID_tl
274            \tl_put_left:Nn \l__pdffield_fieldID_tl {__pdffield/pushbutton/}
275          }
276        \tl_if_empty:NT\l__pdffield_pushbutton_appearance_code_tl
277          {
278            \__pdffield_pushbutton_default_appearances:
279            \exp_args:Nnx
280             \keys_set:nn {pdffield}
281               {
282                 appearance          = pdffield/pushbutton/default-\int_eval:n{ \g__pdffield_push
283                 down-appearance     = pdffield/pushbutton/defaultdown-\int_eval:n{ \g__pdffield_
284                 rollover-appearance = pdffield/pushbutton/defaultrollover-\int_eval:n{ \g__pdffi
285               }
286          }
287        \l__pdffield_pushbutton_appearance_code_tl
288        \__pdffield_pushbutton_field:V\l__pdffield_fieldID_tl
289        \__pdffield_annot:
290        \group_end:
291      }
```

(*End definition for* `\__pdffield_pushbutton:n`.)

3.5   Keys

Most keys are inherited from the generic field and annot keys. We only need to handle
the appearance in a special way.

_pdffield_pushbutton_appearance_handler:nnn

```
292 \cs_new_protected:Npn \__pdffield_pushbutton_appearance_handler:nnn #1 #2 #3 %name, type, tex
293   {
294     \tl_put_right:Nn \l__pdffield_pushbutton_appearance_code_tl
295       {
296         \pdfxform_if_exist:nTF {  #1  }
297           {
298            \pdfannot_dict_put:nnx {widget/AP}{#2}{\pdfxform_ref:n{#1}}
299           }
300           {
301             \msg_error:nnnn{pdffield}{appearance-missing}{#1}{#3}
```

```
302                    }
303                }
304        }
```

(*End definition for* `\__pdffield_pushbutton_appearance_handler:nnn.`)

3.6 user commands

`\pdffield_pushbutton:n`

```
305 \cs_set_eq:NN \pdffield_pushbutton:n \__pdffield_pushbutton:n
306 ⟨/package⟩
```

(*End definition for* `\pdffield_pushbutton:n`. *This function is documented on page* **??**.)

Index

The italic numbers denote the pages where the corresponding entry is described, numbers underlined point to the definition, all others indicate the places where it is used.