

The **l3pdffield-pushbutton** module  
Commands to create pushbutton form fields  
L<sup>A</sup>T<sub>E</sub>X PDF management bundle

The L<sup>A</sup>T<sub>E</sub>X 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

---

```
\pdfffield_pushbutton:n \pdfffield_pushbutton: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
\pdfffield_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 = $\langle appearance\ name \rangle$
appearance	appearance = $\langle appearance\ name \rangle$
AP/R	AP/R = $\langle appearance\ name \rangle$
rollover-appearance	rollover-appearance = $\langle appearance\ name \rangle$
AP/D	AP/D = $\langle appearance\ name \rangle$
down-appearance	down-appearance = $\langle appearance\ name \rangle$

---

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  $\langle appearance\ name \rangle$  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` 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 of definition for `\l__pdffield_pushbutton_appearance_code_tl` and others.)

### 3.2 Appearances

The default appearances are a rectangular frame with some text.

\\_pdffield\_pushbutton\_default\_appearances: 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.

```

pdffield/pushbutton/default-n
pdffield/pushbutton/defaultrollover-n
pdffield/pushbutton/defaultdown-n
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 \cs_if_exist:NF \draw_set_linewidth:n
14 { \cs_set_eq:NN \draw_set_linewidth:n \draw_linewidth:n }
15 \cs_new_protected:Npn \__pdffield_pushbutton_default_appearances:
16 {
17   \int_gincr:N \g__pdffield_pushbutton_cnt_int
18   \exp_args:Ne
19   \pdffield_appearance:nn {pdffield/pushbutton/default-\int_use:N \g__pdffield_pushbutton_
20   {
21     \draw_begin:
22     \color_set:nn {pdffield/push/text}{.}
23     \dim_set:Nn \l__pdffield_pushbutton_totalht_dim
24       {\l__pdffield_annot_ht_dim + \l__pdffield_annot_dp_dim}
25     \draw_set_linewidth:n {\l__pdffield_pushbutton_linewidth_dim}
26     \draw_path_rectangle_corners:nn
27       {0.5\l__pdffield_pushbutton_linewidth_dim,0.5\l__pdffield_pushbutton_linewidth_dim}
28     {
29       \l__pdffield_annot_wd_dim-0.5\l__pdffield_pushbutton_linewidth_dim,
30       \l__pdffield_pushbutton_totalht_dim-0.5\l__pdffield_pushbutton_linewidth_dim
31     }
32     \color_fill:n {pdffield/push/border}
33     \draw_path_use_clear:n { fill }
34     \draw_path_rectangle_corners:nn
35       {2\l__pdffield_pushbutton_linewidth_dim,2\l__pdffield_pushbutton_linewidth_dim}
36     {
37       \l__pdffield_annot_wd_dim-2\l__pdffield_pushbutton_linewidth_dim,
38       \l__pdffield_pushbutton_totalht_dim-2\l__pdffield_pushbutton_linewidth_dim
39     }
40     \color_fill:n {pdffield/push/bordertop}
41     \draw_path_use_clear:n { fill }
42     \draw_path_moveto:n
43     {
44       2\l__pdffield_pushbutton_linewidth_dim,
45       2\l__pdffield_pushbutton_linewidth_dim
46     }
47     \draw_path_lineto:n
48       {5\l__pdffield_pushbutton_linewidth_dim,5\l__pdffield_pushbutton_linewidth_dim}
49     \draw_path_lineto:n
50     {
51       \l__pdffield_annot_wd_dim-5\l__pdffield_pushbutton_linewidth_dim,
52       \l__pdffield_pushbutton_totalht_dim-5\l__pdffield_pushbutton_linewidth_dim
53     }
54     \draw_path_lineto:n
55     {
56       \l__pdffield_annot_wd_dim-2\l__pdffield_pushbutton_linewidth_dim,
57       \l__pdffield_pushbutton_totalht_dim-2\l__pdffield_pushbutton_linewidth_dim
58     }

```

```

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

```

```

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

```

```

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

```



```

221         \l__pdffield_annot_wd_dim-1.5\l__pdffield_pushbutton_linewidth_dim,
222         \l__pdffield_pushbutton_totalht_dim-1.5\l__pdffield_pushbutton_linewidth_dim
223     }
224     \color_stroke:n {pdffield/push/border}
225     \draw_path_use_clear:n { stroke }
226     \draw_path_rectangle_corners:nn
227     {4\l__pdffield_pushbutton_linewidth_dim,4\l__pdffield_pushbutton_linewidth_dim}
228     {
229         \l__pdffield_annot_wd_dim-4\l__pdffield_pushbutton_linewidth_dim,
230         \l__pdffield_pushbutton_totalht_dim-4\l__pdffield_pushbutton_linewidth_dim
231     }
232     \color_fill:n {pdffield/push/fill}
233     \draw_path_use_clear:n { fill }
234     \color_fill:n {pdffield/push/text}
235     \draw_transform_shift:n
236     {0.5 \l__pdffield_annot_wd_dim, \l__pdffield_annot_dp_dim }
237     \hbox_set:Nn \l_tmpa_box { \makebox[0pt]{\l__pdffield_down_caption_tl} }
238     \draw_box_use:N \l_tmpa_box
239     \draw_end:
240 }
241 }

```

(End of definition for `\__pdffield_pushbutton_default_appearances:` and others.)

### 3.3 Creating the field

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

```

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

```

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

### 3.4 Assembling the Pushbutton

```

\__pdffield_pushbutton:n
251 \cs_new_protected:Npn \__pdffield_pushbutton:n #1
252 {
253     \group_begin:
254     \tl_set:Nn\l__pdffield_pushbutton_appearance_code_tl{}
255     \cs_set_eq:NN\__pdffield_appearance_handler:mnn \__pdffield_pushbutton_appearance_handler

```

Setting up the defaults.

```

256     \keys_set:nn {pdffield}
257     {
258         fieldID=,
259         name=pushbutton,

```

```

260     width = 3cm,
261     height = 1.05\normalbaselineskip,
262     depth = 0.45\normalbaselineskip,
263 }

```

Value keys should be undefined.

```

264 \keys_set:nn { pdfffield }{__pdfffield/preset/pushbutton,#1}
265 \keys_set:nn { pdfffield }
266 {
267     ,V=
268     ,DV=
269     ,setFf={Pushbutton}
270     ,FT= Btn
271 }
272 \tl_if_empty:NT\l__pdfffield_fieldID_tl
273 {
274     \pdfdict_get:nnN {l__pdfffield/field}{T}\l__pdfffield_fieldID_tl
275     \tl_put_left:Nn \l__pdfffield_fieldID_tl {__pdfffield/pushbutton/}
276 }
277 \tl_if_empty:NT\l__pdfffield_pushbutton_appearance_code_tl
278 {
279     __pdfffield_pushbutton_default_appearances:
280     \exp_args:Nne
281     \keys_set:nn {pdfffield}
282     {
283         appearance = pdfffield/pushbutton/default-\int_eval:n{ \g__pdfffield_push
284         down-appearance = pdfffield/pushbutton/defaultdown-\int_eval:n{ \g__pdfffield
285         rollover-appearance = pdfffield/pushbutton/defaultrollover-\int_eval:n{ \g__pdffi
286     }
287 }
288 \l__pdfffield_pushbutton_appearance_code_tl
289 \__pdfffield_pushbutton_field:V\l__pdfffield_fieldID_tl
290 \__pdfffield_annot:
291 \group_end:
292 }

```

(End of definition for \\_\_pdfffield\_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.

\_pdfffield\_pushbutton\_appearance\_handler:nnn

```

293 \cs_new_protected:Npn \__pdfffield_pushbutton_appearance_handler:nnn #1 #2 #3 %name, type, tex
294 {
295     \tl_put_right:Nn \l__pdfffield_pushbutton_appearance_code_tl
296     {
297         \pdfxform_if_exist:nTF { #1 }
298         {
299             \pdfannot_dict_put:nne {widget/AP}{#2}{\pdfxform_ref:n{#1}}
300         }
301         {
302             \msg_error:nnnn{pdfffield}{appearance-missing}{#1}{#3}

```

```

303         }
304     }
305 }

```

(End of definition for `\_pdfffield_pushbutton_appearance_handler:nnn`.)

### 3.6 user commands

`\pdfffield_pushbutton:n`

```

306 \cs_set_eq:NN \pdfffield_pushbutton:n \_pdfffield_pushbutton:n
307 \</package>

```

(End of definition for `\pdfffield_pushbutton:n`. This function is documented on page 2.)

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